



Attachment 1 – System Validation Plots

Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

System Validation (Head 2450 MHz)

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 714

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

Medium: HSL2450 Medium parameters used: $f = 2450 \text{ MHz}$; $\sigma = 1.85 \text{ mho/m}$; $\epsilon_r = 39$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASYS4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3808; ConvF(7.07, 7.07, 7.07); Calibrated: 2011/09/02
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2010/11/11
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASYS4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Antenna Input Power 250 mW/Area Scan (5x5x1): Measurement grid: $dx=20\text{mm}$, $dy=20\text{mm}$

Maximum value of SAR (measured) = 14.7 mW/g

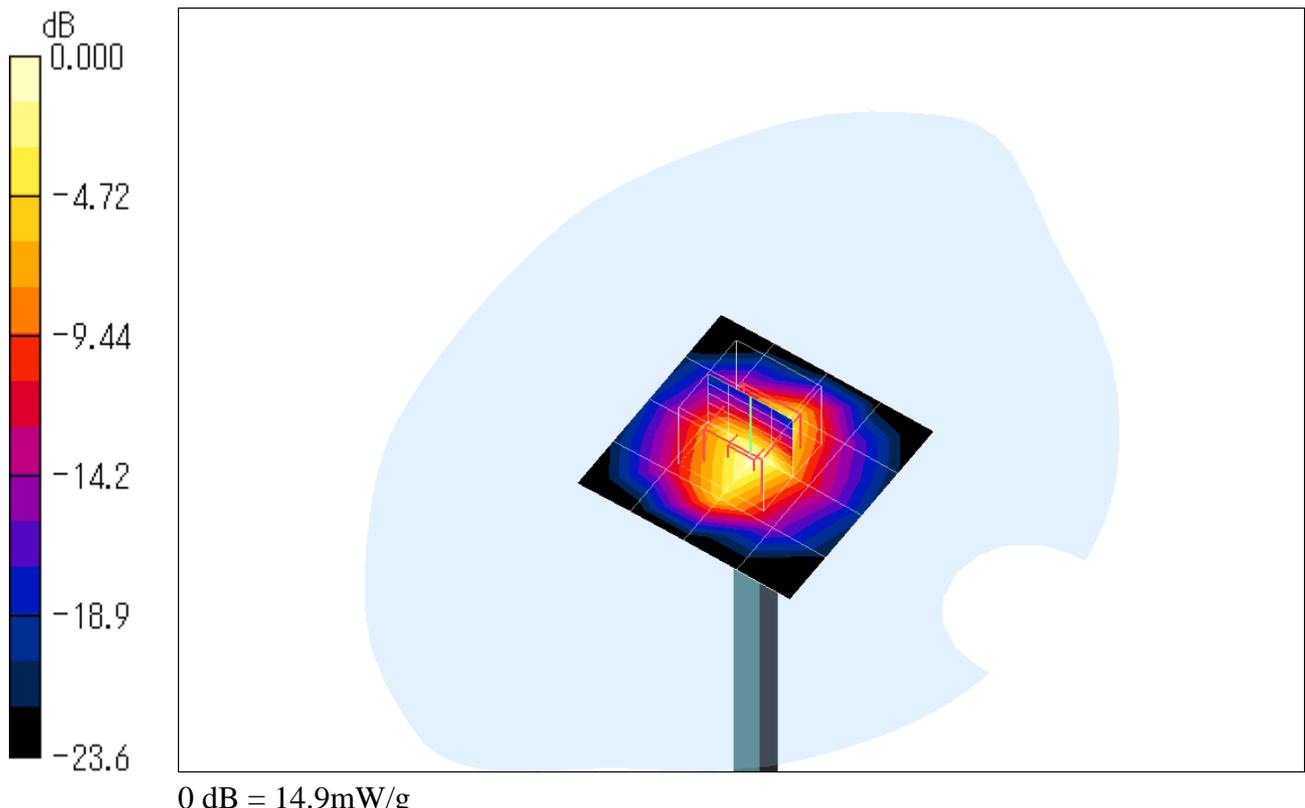
Antenna Input Power 250 mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 88.5 V/m; Power Drift = 0.008 dB

Peak SAR (extrapolated) = 29.4 W/kg

SAR(1 g) = 13.2 mW/g; SAR(10 g) = 5.96 mW/g

Maximum value of SAR (measured) = 14.9 mW/g



Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

System Validation (Body 2450 MHz)

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 714

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

Medium: M2450 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.96$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3808; ConvF(6.85, 6.85, 6.85); Calibrated: 2011/09/02
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2010/11/11
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Antenna Input Power 250 mW/Area Scan (5x5x1): Measurement grid: dx=20mm, dy=20mm

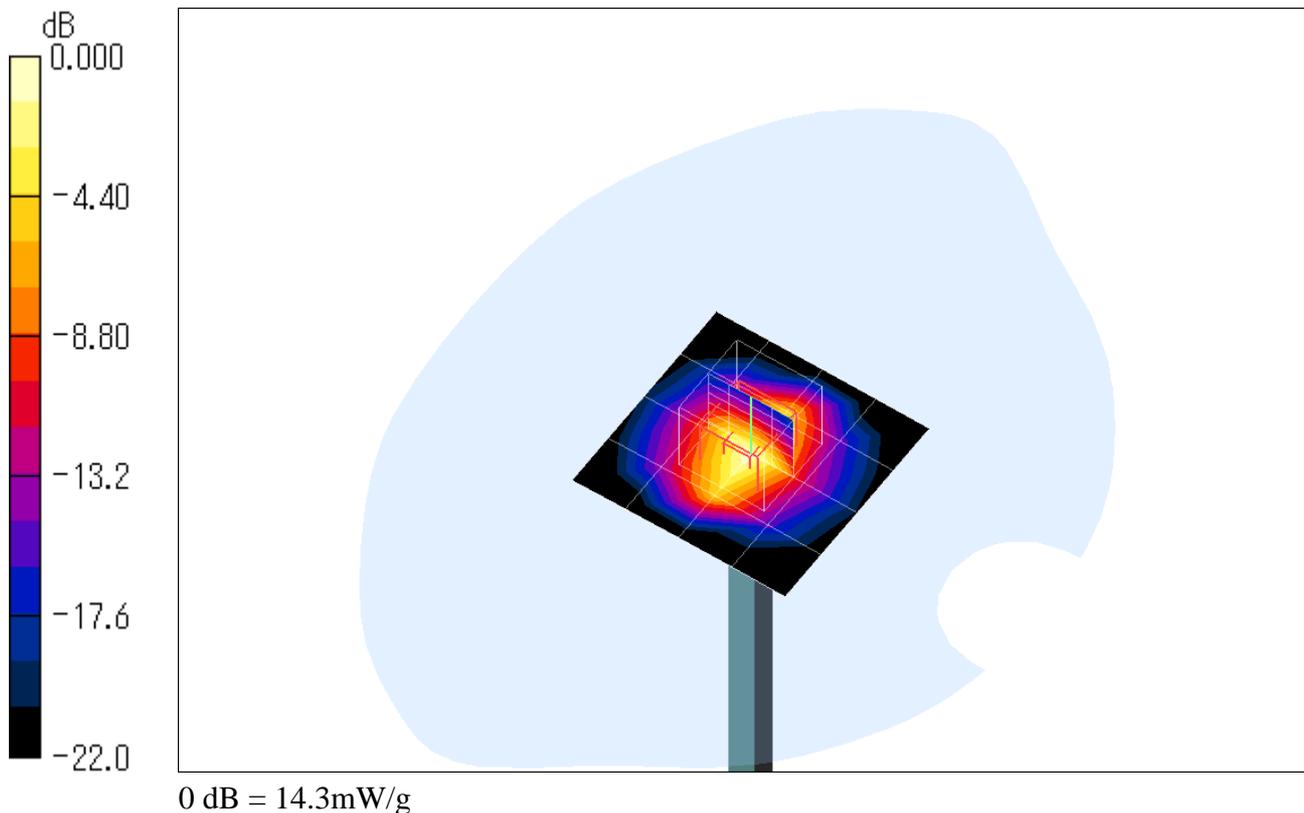
Maximum value of SAR (measured) = 14.3 mW/g

Antenna Input Power 250 mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 85.4 V/m; Power Drift = -0.015 dB

Peak SAR (extrapolated) = 26.6 W/kg

SAR(1 g) = 12.7 mW/g; SAR(10 g) = 5.8 mW/g





Attachment 2 – SAR Test Plots

Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Left Head 6ch / 802.11b 1Mbps (Keypad Open)

DUT: Cellular Phone; Type: 101SH; Serial: 004401/11/354518/6

Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: HSL2450 Medium parameters used: $f = 2437 \text{ MHz}$; $\sigma = 1.83 \text{ mho/m}$; $\epsilon_r = 39$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3808; ConvF(7.07, 7.07, 7.07); Calibrated: 2011/09/02
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2010/11/11
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Cheek/Touch Position/Area Scan (11x6x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.014 mW/g

Cheek/Touch Position/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 2.17 V/m; Power Drift = -0.095 dB

Peak SAR (extrapolated) = 0.034 W/kg

SAR(1 g) = 0.013 mW/g; SAR(10 g) = 0.00583 mW/g

Maximum value of SAR (measured) = 0.016 mW/g

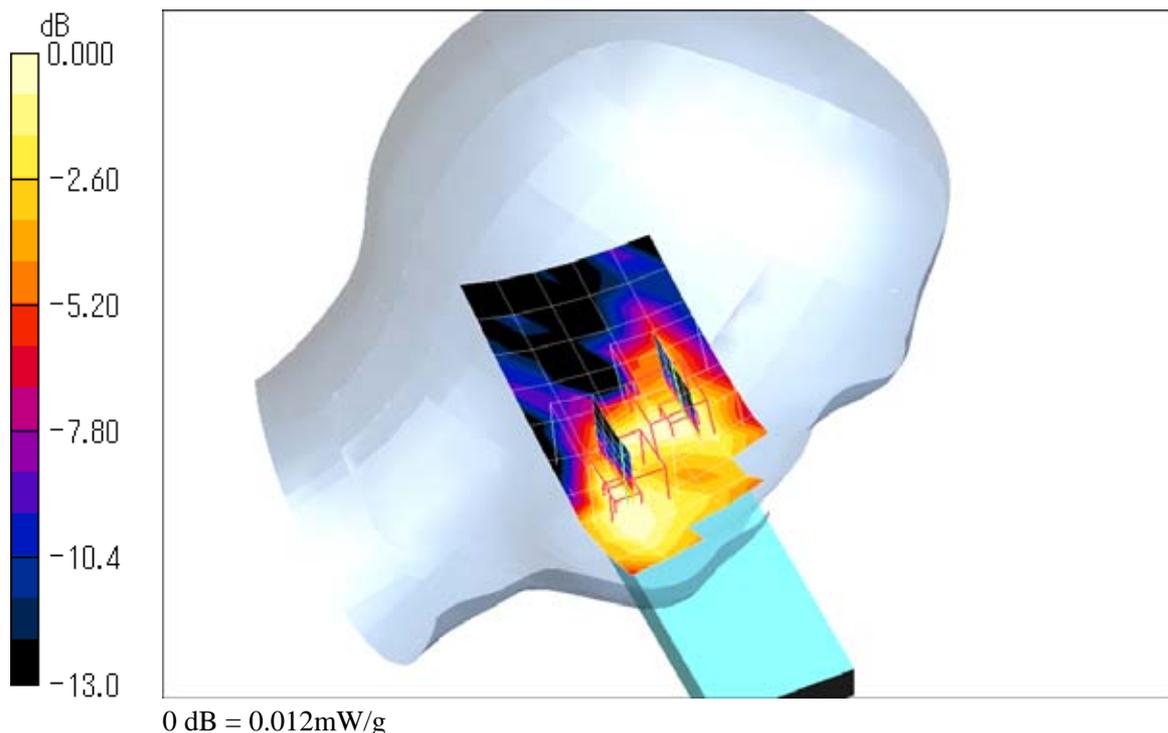
Cheek/Touch Position/Zoom Scan (5x5x7)/Cube 1: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 2.17 V/m; Power Drift = -0.095 dB

Peak SAR (extrapolated) = 0.060 W/kg

SAR(1 g) = 0.013 mW/g; SAR(10 g) = 0.00612 mW/g

Maximum value of SAR (measured) = 0.012 mW/g



Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Left Head 6ch / 802.11b 1Mbps (Keypad Open)

DUT: Cellular Phone; Type: 101SH; Serial: 004401/11/354518/6

Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: HSL2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.83$ mho/m; $\epsilon_r = 39$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Measurement Standard: DAS4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3808; ConvF(7.07, 7.07, 7.07); Calibrated: 2011/09/02
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2010/11/11
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DAS4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Ear/Tilt Position/Area Scan (11x6x1): Measurement grid: dx=15mm, dy=15mm

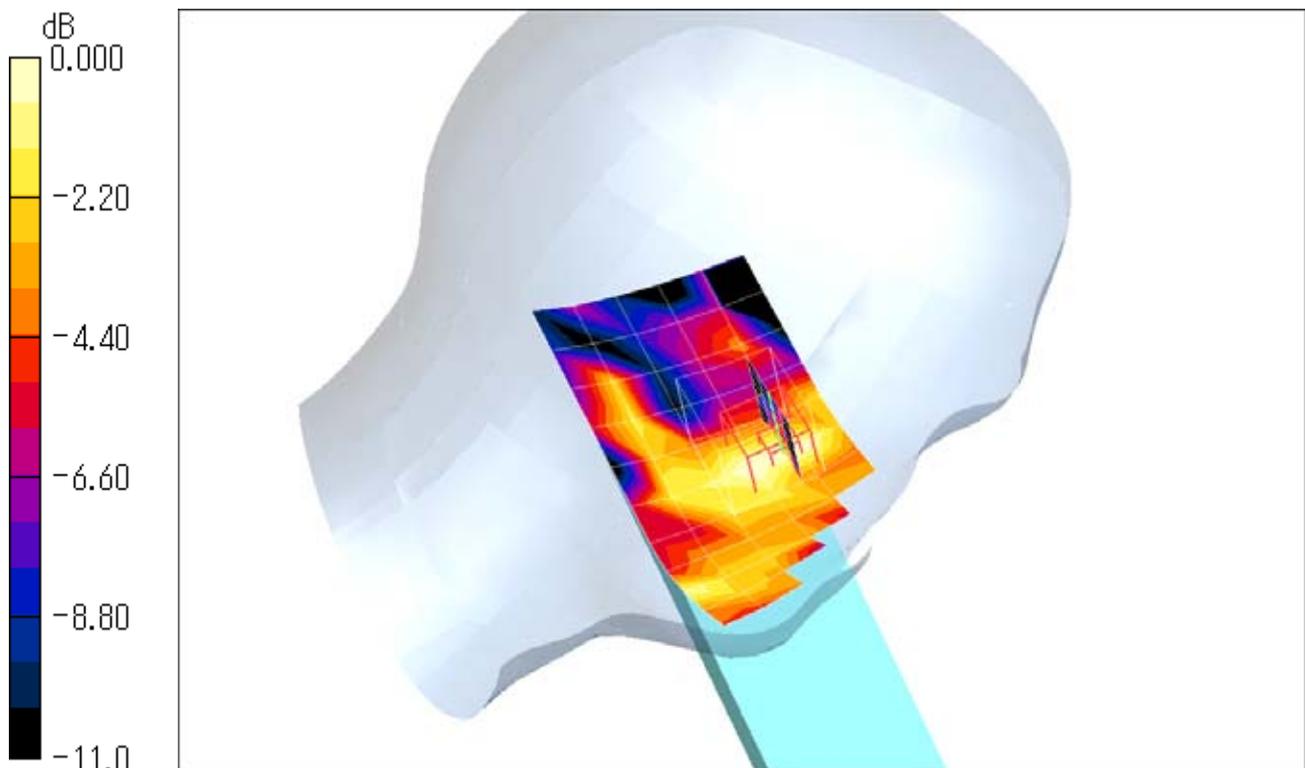
Maximum value of SAR (measured) = 0.004 mW/g

Ear/Tilt Position/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.65 V/m; Power Drift = 0.153 dB

Peak SAR (extrapolated) = 0.016 W/kg

SAR(1 g) = 0.00403 mW/g; SAR(10 g) = 0.00134 mW/g



Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Right Head 6ch / 802.11b 1Mbps (Keypad Open)

DUT: Cellular Phone; Type: 101SH; Serial: 004401/11/354518/6

Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: HSL2450 Medium parameters used: $f = 2437 \text{ MHz}$; $\sigma = 1.83 \text{ mho/m}$; $\epsilon_r = 39$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Measurement Standard: DAS4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3808; ConvF(7.07, 7.07, 7.07); Calibrated: 2011/09/02
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2010/11/11
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Cheek/Touch Position/Area Scan (11x6x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.014 mW/g

Cheek/Touch Position/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 2.33 V/m; Power Drift = 0.110 dB

Peak SAR (extrapolated) = 0.025 W/kg

SAR(1 g) = 0.014 mW/g; SAR(10 g) = 0.0068 mW/g

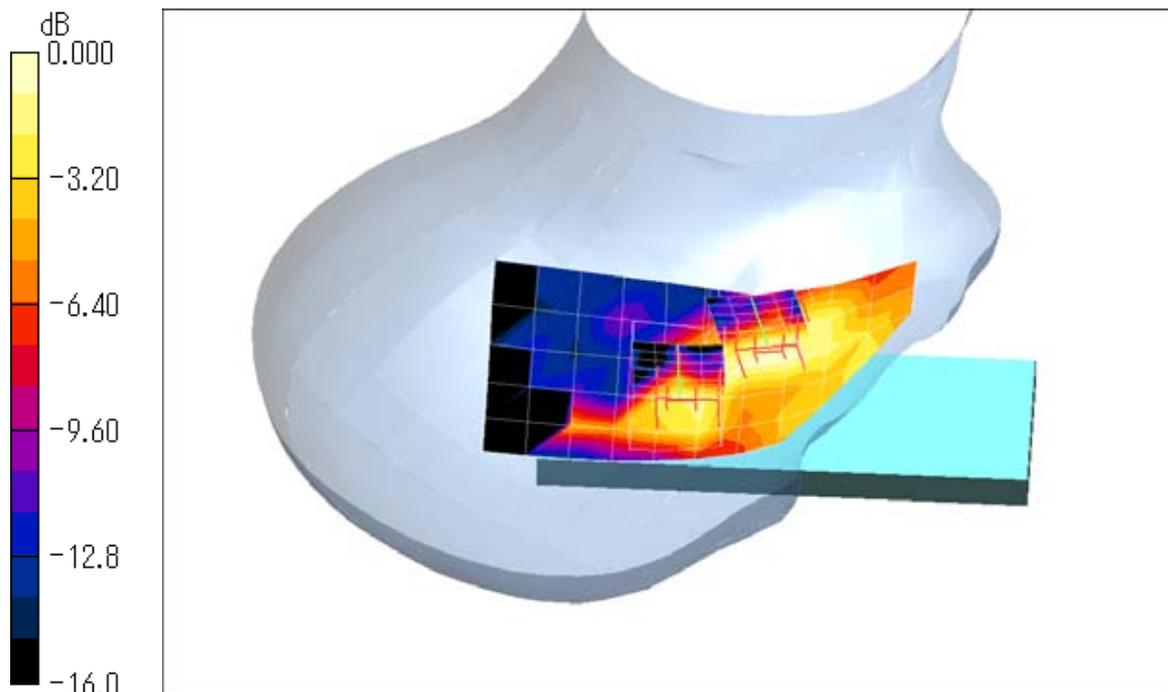
Maximum value of SAR (measured) = 0.017 mW/g

Cheek/Touch Position/Zoom Scan (5x5x7)/Cube 1: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 2.33 V/m; Power Drift = 0.110 dB

Peak SAR (extrapolated) = 0.037 W/kg

SAR(1 g) = 0.013 mW/g; SAR(10 g) = 0.00605 mW/g



Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Right Head 6ch / 802.11b 1Mbps (Keypad Open)**DUT: Cellular Phone; Type: 101SH; Serial: 004401/11/354518/6**

Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: HSL2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.83$ mho/m; $\epsilon_r = 39$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASYS4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3808; ConvF(7.07, 7.07, 7.07); Calibrated: 2011/09/02
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2010/11/11
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Ear/Tilt Position/Area Scan (11x6x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.005 mW/g

Ear/Tilt Position/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.60 V/m; Power Drift = 0.106 dB

Peak SAR (extrapolated) = 0.015 W/kg

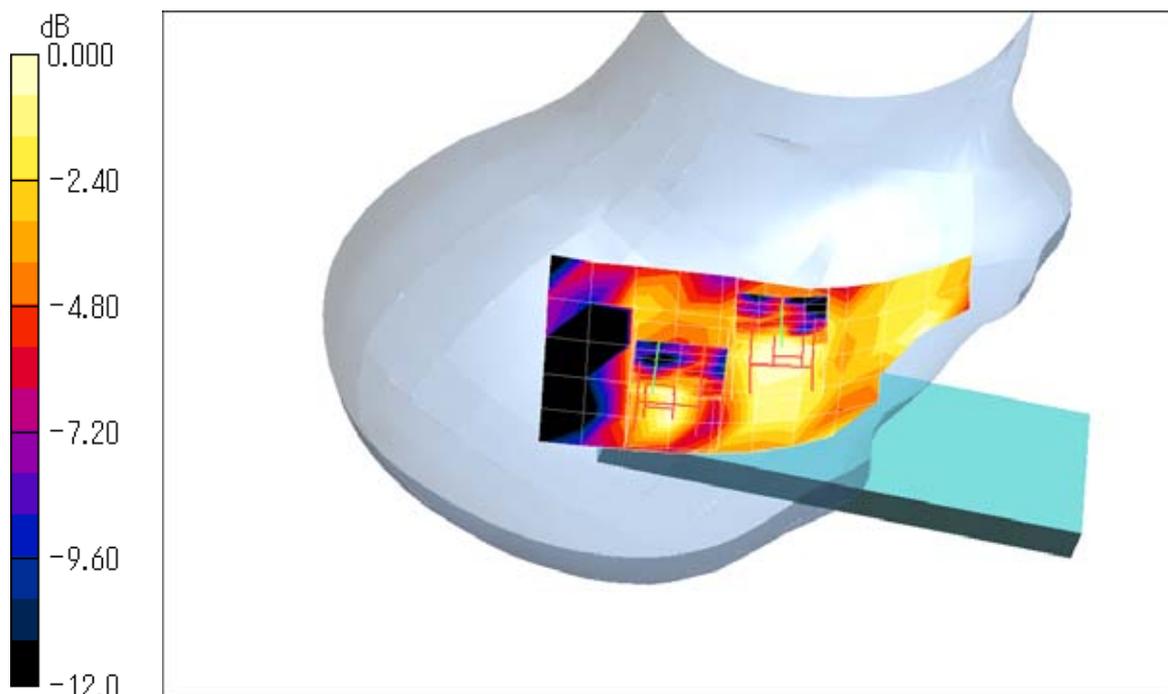
SAR(1 g) = 0.00481 mW/g; SAR(10 g) = 0.00184 mW/g**Ear/Tilt Position/Zoom Scan (5x5x7)/Cube 1:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.60 V/m; Power Drift = 0.106 dB

Peak SAR (extrapolated) = 0.022 W/kg

SAR(1 g) = 0.0064 mW/g; SAR(10 g) = 0.00202 mW/g

Maximum value of SAR (measured) = 0.007 mW/g



Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Left Head 1ch / 802.11b 1Mbps (Keypad Close)

DUT: Cellular Phone; Type: 101SH; Serial: 004401/11/354518/6

Communication System: WLAN; Frequency: 2412 MHz; Duty Cycle: 1:1

Medium: HSL2450 Medium parameters used: $f = 2412$ MHz; $\sigma = 1.8$ mho/m; $\epsilon_r = 39.1$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Measurement Standard: DAS4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3808; ConvF(7.07, 7.07, 7.07); Calibrated: 2011/09/02
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2010/11/11
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DAS4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Cheek/Touch Position/Area Scan (11x6x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.075 mW/g

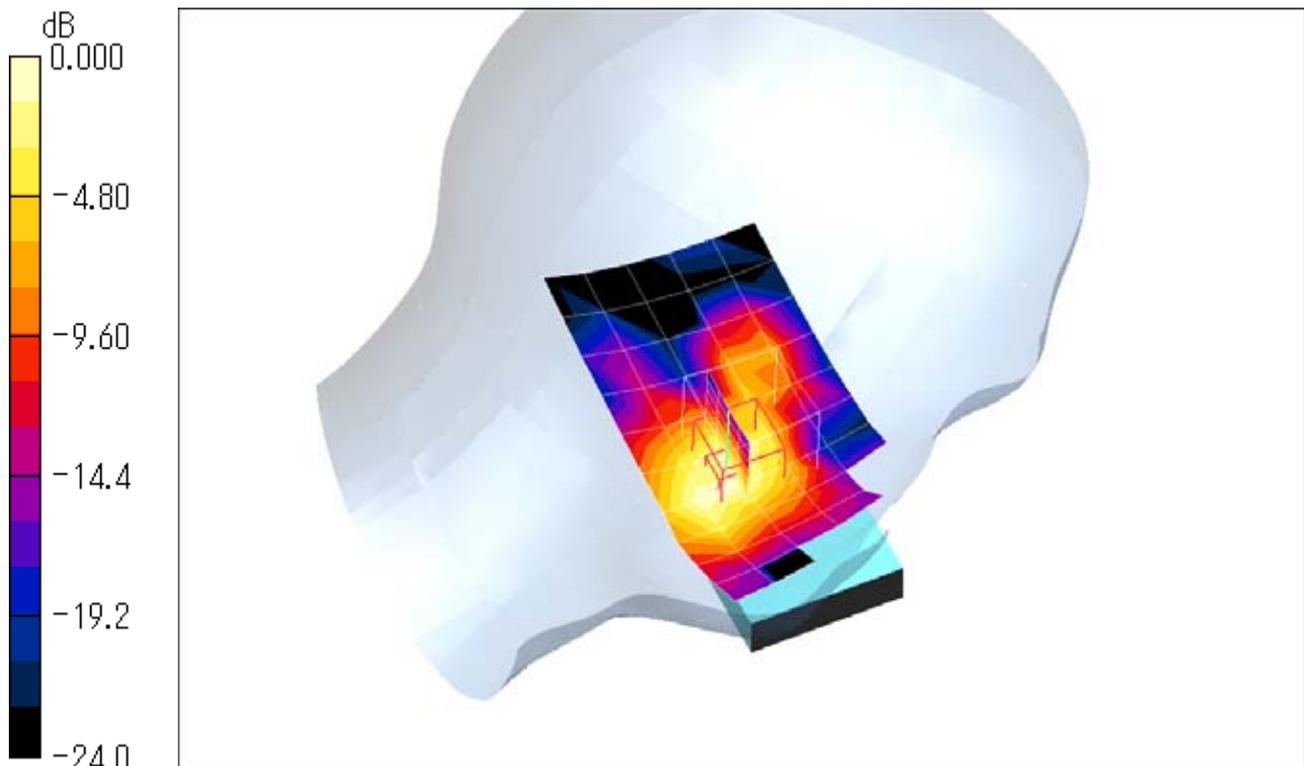
Cheek/Touch Position/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.00 V/m; Power Drift = -0.019 dB

Peak SAR (extrapolated) = 0.143 W/kg

SAR(1 g) = 0.076 mW/g; SAR(10 g) = 0.039 mW/g

Maximum value of SAR (measured) = 0.083 mW/g



Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Left Head 1ch / 802.11b 1Mbps (Keypad Close)

DUT: Cellular Phone; Type: 101SH; Serial: 004401/11/354518/6

Communication System: WLAN; Frequency: 2412 MHz; Duty Cycle: 1:1

Medium: HSL2450 Medium parameters used: $f = 2412 \text{ MHz}$; $\sigma = 1.8 \text{ mho/m}$; $\epsilon_r = 39.1$; $\rho = 1000 \text{ kg/m}^3$

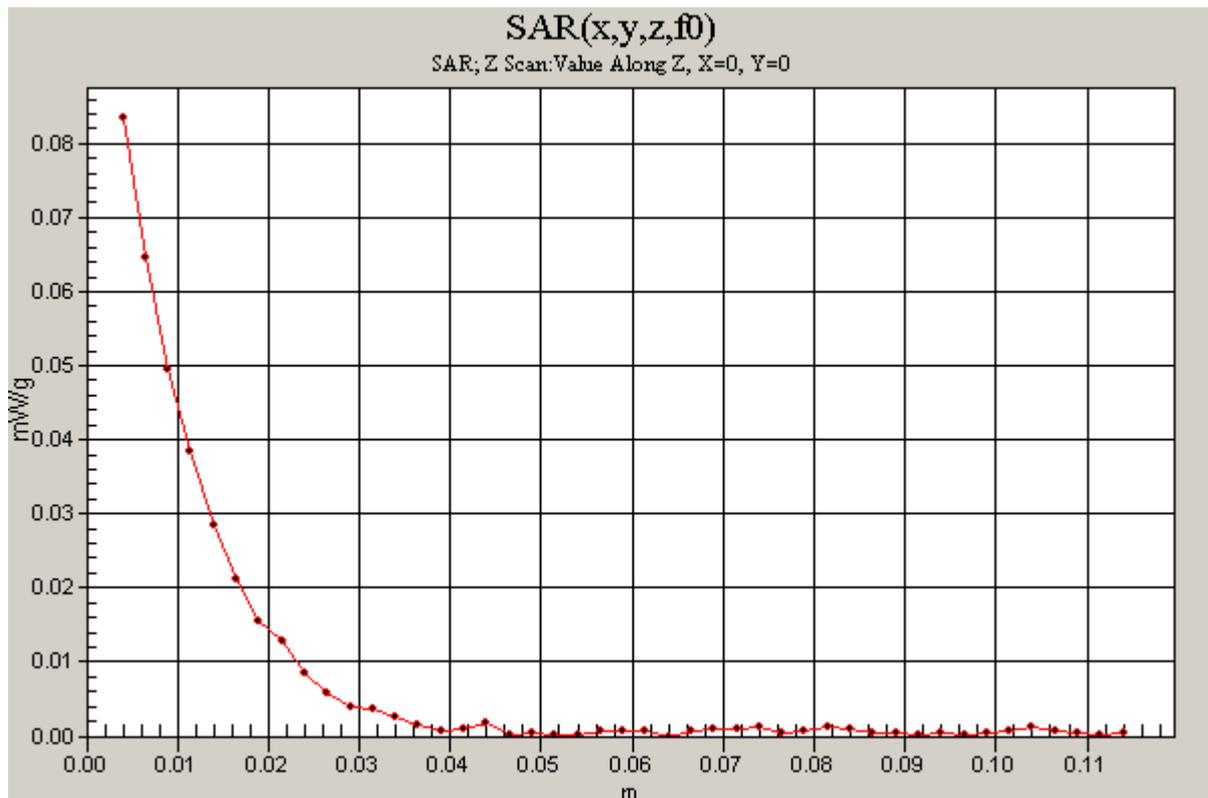
Phantom section: Left Section

Measurement Standard: DAS4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3808; ConvF(7.07, 7.07, 7.07); Calibrated: 2011/09/02
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2010/11/11
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DAS4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Cheek/Touch Position/Z Scan (1x1x45): Measurement grid: $dx=20\text{mm}$, $dy=20\text{mm}$, $dz=2.5\text{mm}$
 Maximum value of SAR (measured) = 0.083 mW/g



Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Left Head 6ch / 802.11b 1Mbps (Keypad Close)

DUT: Cellular Phone; Type: 101SH; Serial: 004401/11/354518/6

Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: HSL2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.83$ mho/m; $\epsilon_r = 39$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Measurement Standard: DAS4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3808; ConvF(7.07, 7.07, 7.07); Calibrated: 2011/09/02
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2010/11/11
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DAS4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Cheek/Touch Position/Area Scan (11x6x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.070 mW/g

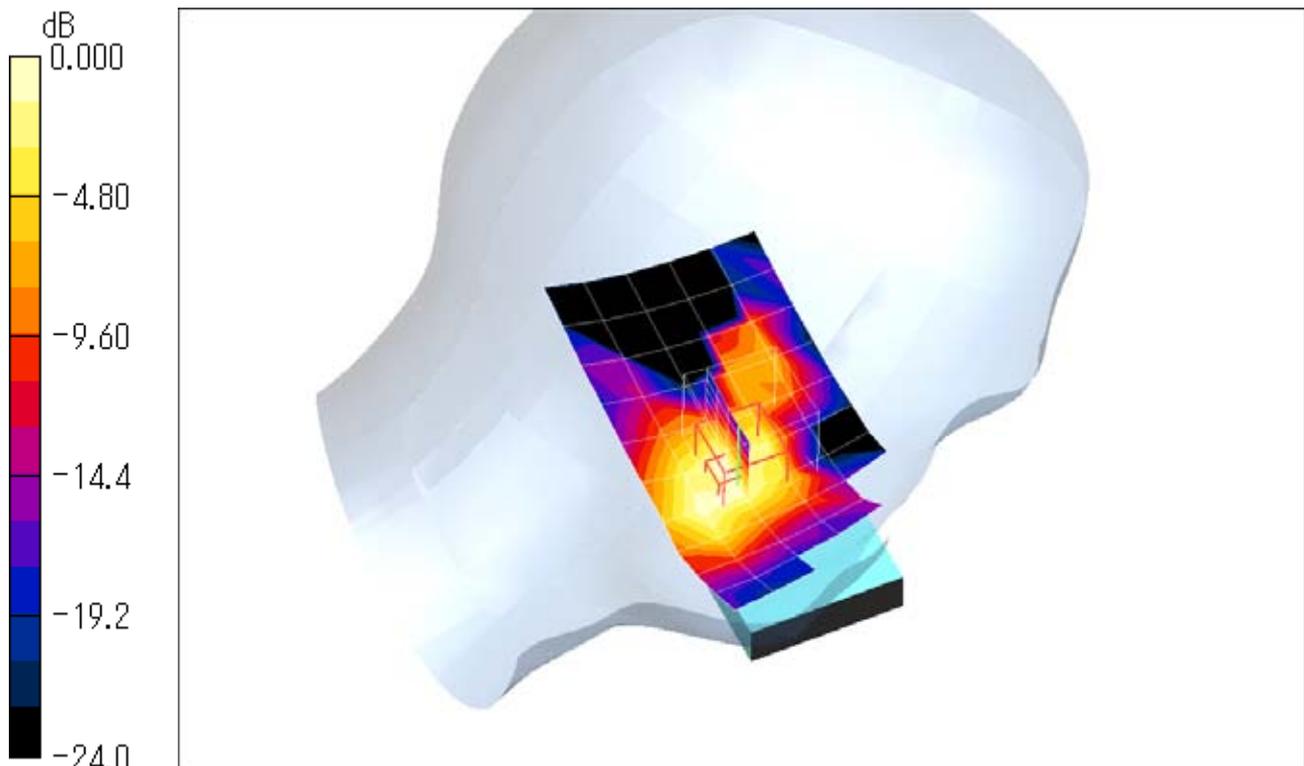
Cheek/Touch Position/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.82 V/m; Power Drift = 0.061 dB

Peak SAR (extrapolated) = 0.148 W/kg

SAR(1 g) = 0.069 mW/g; SAR(10 g) = 0.035 mW/g

Maximum value of SAR (measured) = 0.076 mW/g



Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Left Head 11ch / 802.11b 1Mbps (Keypad Close)

DUT: Cellular Phone; Type: 101SH; Serial: 004401/11/354518/6

Communication System: WLAN; Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: HSL2450 Medium parameters used: $f = 2462$ MHz; $\sigma = 1.86$ mho/m; $\epsilon_r = 38.9$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Measurement Standard: DASy4 (High Precision Assessment)

DASy4 Configuration:

- Probe: EX3DV4 - SN3808; ConvF(7.07, 7.07, 7.07); Calibrated: 2011/09/02
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2010/11/11
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASy4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Cheek/Touch Position/Area Scan (11x6x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.053 mW/g

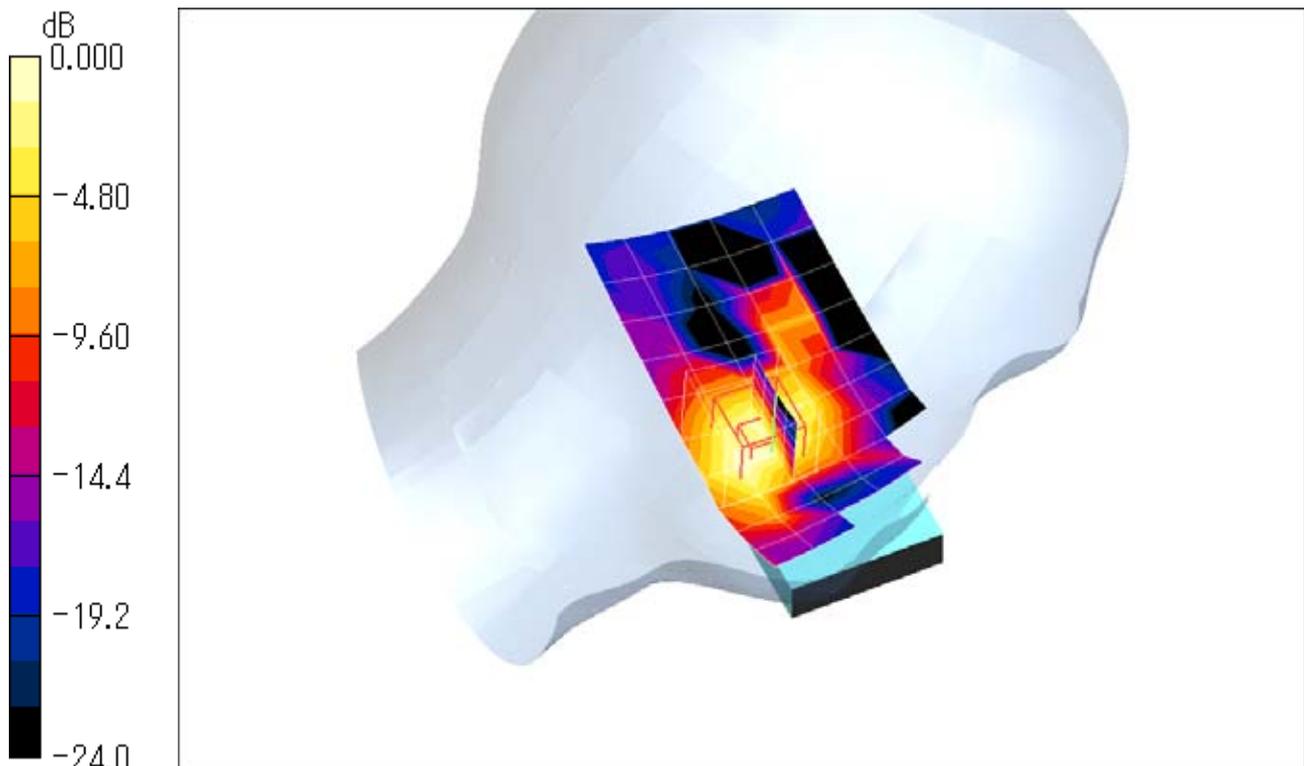
Cheek/Touch Position/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.58 V/m; Power Drift = 0.099 dB

Peak SAR (extrapolated) = 0.238 W/kg

SAR(1 g) = 0.050 mW/g; SAR(10 g) = 0.025 mW/g

Maximum value of SAR (measured) = 0.056 mW/g



Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Left Head 6ch / 802.11b 1Mbps (Keypad Close)

DUT: Cellular Phone; Type: 101SH; Serial: 004401/11/354518/6

Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: HSL2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.83$ mho/m; $\epsilon_r = 39$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Measurement Standard: DAS4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3808; ConvF(7.07, 7.07, 7.07); Calibrated: 2011/09/02
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2010/11/11
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DAS4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Ear/Tilt Position/Area Scan (11x6x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.018 mW/g

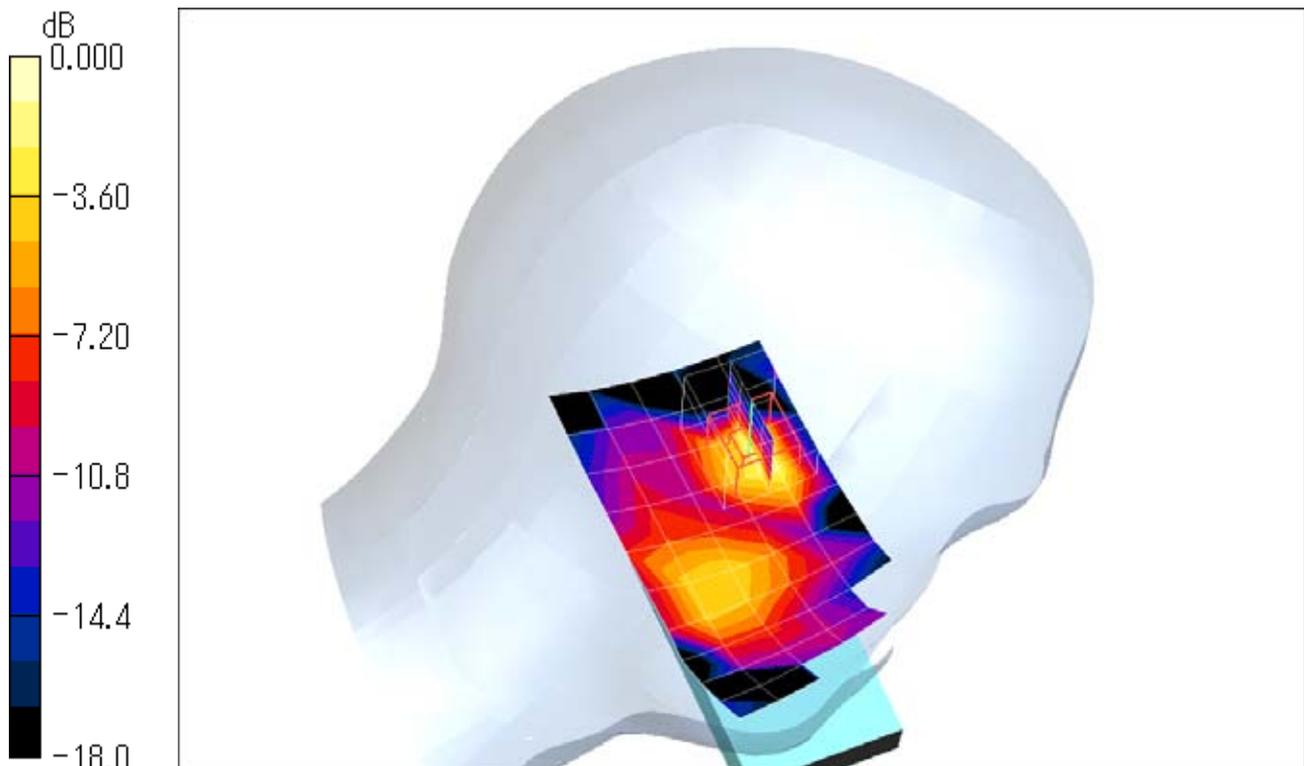
Ear/Tilt Position/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.98 V/m; Power Drift = 0.026 dB

Peak SAR (extrapolated) = 0.051 W/kg

SAR(1 g) = 0.025 mW/g; SAR(10 g) = 0.00957 mW/g

Maximum value of SAR (measured) = 0.026 mW/g



Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Right Head 6ch / 802.11b 1Mbps (Keypad Close)

DUT: Cellular Phone; Type: 101SH; Serial: 004401/11/354518/6

Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: HSL2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.83$ mho/m; $\epsilon_r = 39$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DAS4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3808; ConvF(7.07, 7.07, 7.07); Calibrated: 2011/09/02
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2010/11/11
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DAS4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Cheek/Touch Position/Area Scan (10x6x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.058 mW/g

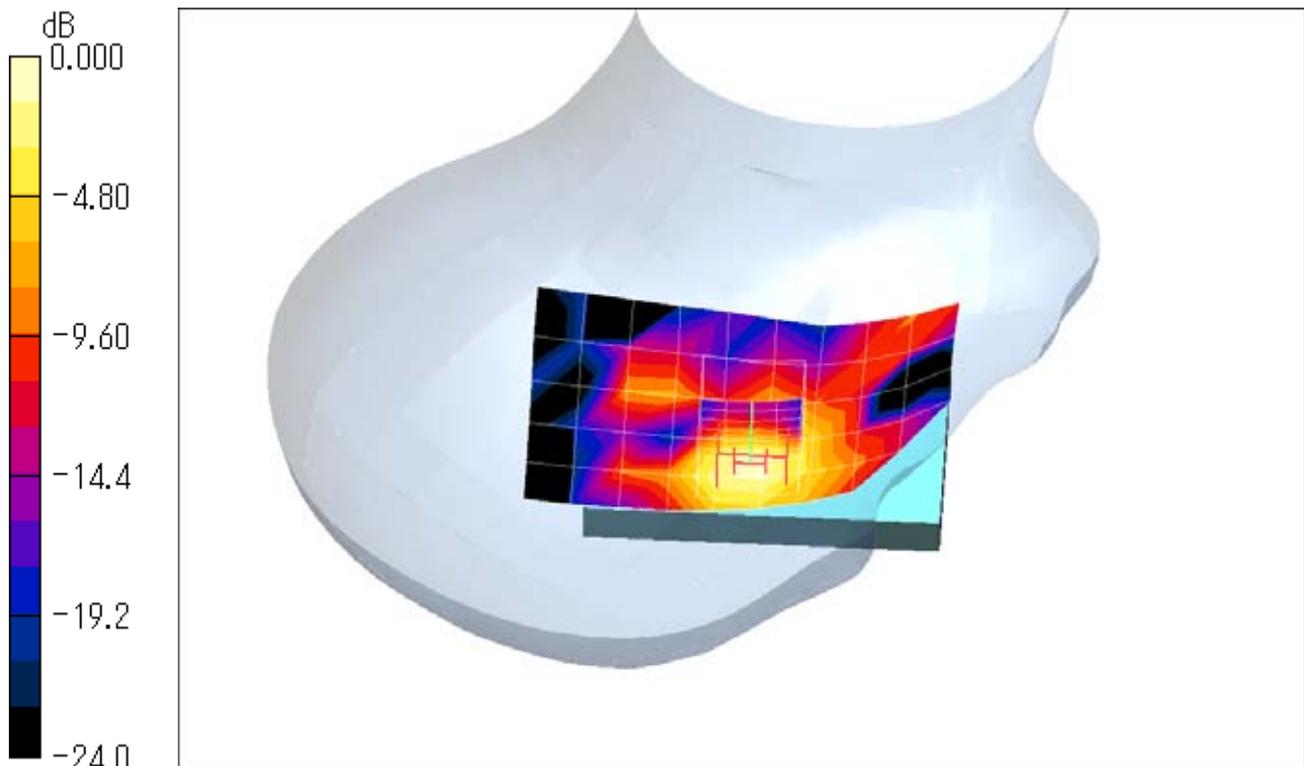
Cheek/Touch Position/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.83 V/m; Power Drift = 0.035 dB

Peak SAR (extrapolated) = 0.110 W/kg

SAR(1 g) = 0.061 mW/g; SAR(10 g) = 0.031 mW/g

Maximum value of SAR (measured) = 0.071 mW/g



0 dB = 0.071mW/g

Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Right Head 6ch / 802.11b 1Mbps (Keypad Close)

DUT: Cellular Phone; Type: 101SH; Serial: 004401/11/354518/6

Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: HSL2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.83$ mho/m; $\epsilon_r = 39$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DAS4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3808; ConvF(7.07, 7.07, 7.07); Calibrated: 2011/09/02
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2010/11/11
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DAS4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Ear/Tilt Position/Area Scan (10x6x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.015 mW/g

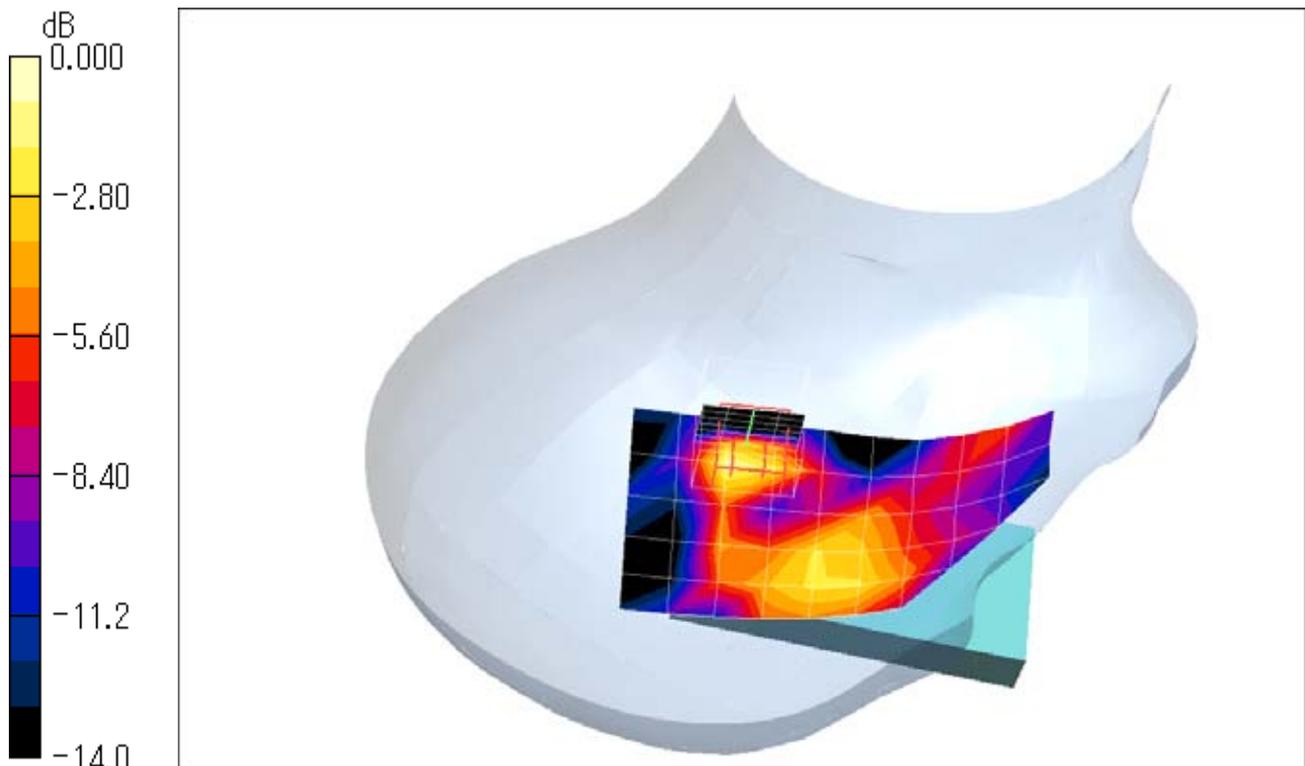
Ear/Tilt Position/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.65 V/m; Power Drift = 0.009 dB

Peak SAR (extrapolated) = 0.044 W/kg

SAR(1 g) = 0.016 mW/g; SAR(10 g) = 0.00497 mW/g

Maximum value of SAR (measured) = 0.018 mW/g



0 dB = 0.018mW/g

Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Body 6ch / 802.11b 1Mbps**DUT: Cellular Phone; Type: 101SH; Serial: 004401/11/354518/6**

Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 52.1$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3808; ConvF(6.85, 6.85, 6.85); Calibrated: 2011/09/02
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2010/11/11
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Front Side/Area Scan (8x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.011 mW/g

Front Side/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.40 V/m; Power Drift = 0.046 dB

Peak SAR (extrapolated) = 0.025 W/kg

SAR(1 g) = 0.012 mW/g; SAR(10 g) = 0.00605 mW/g

Maximum value of SAR (measured) = 0.014 mW/g

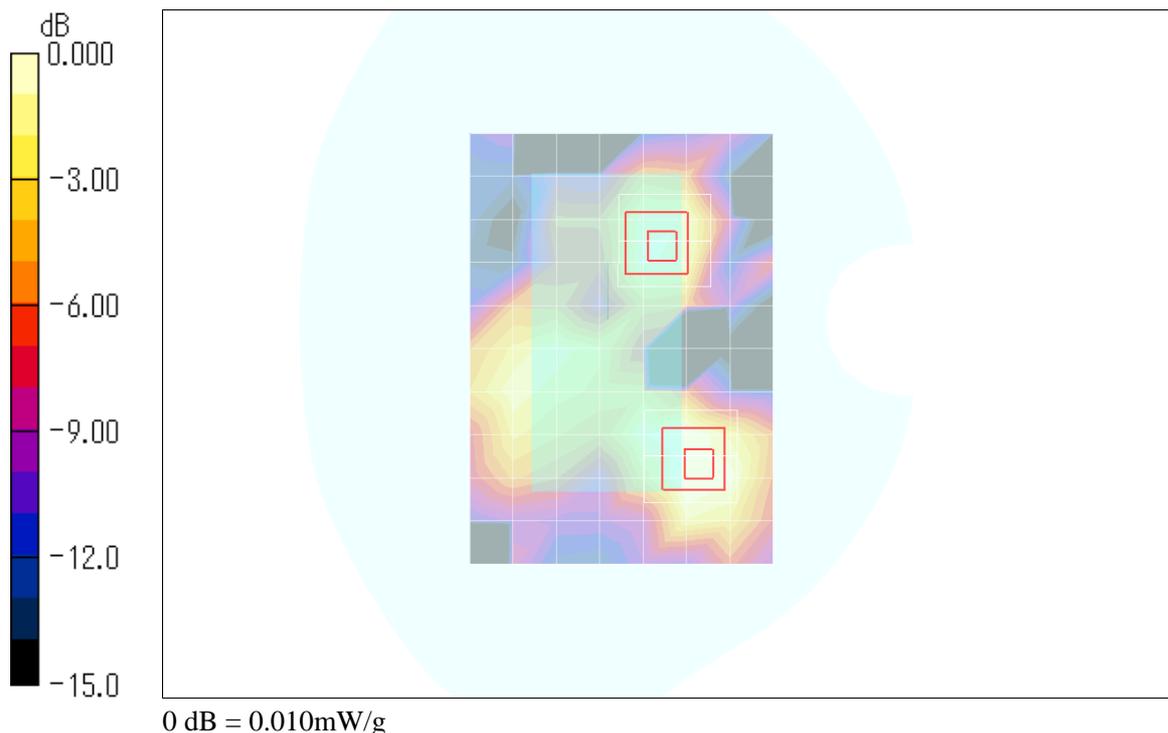
Front Side/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.40 V/m; Power Drift = 0.046 dB

Peak SAR (extrapolated) = 0.028 W/kg

SAR(1 g) = 0.00955 mW/g; SAR(10 g) = 0.00396 mW/g

Maximum value of SAR (measured) = 0.010 mW/g



Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Body 1ch / 802.11b 1Mbps

DUT: Cellular Phone; Type: 101SH; Serial: 004401/11/354518/6

Communication System: WLAN; Frequency: 2412 MHz; Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2412$ MHz; $\sigma = 1.91$ mho/m; $\epsilon_r = 52.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DAS4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3808; ConvF(6.85, 6.85, 6.85); Calibrated: 2011/09/02
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2010/11/11
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DAS4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Rear Side/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.081 mW/g

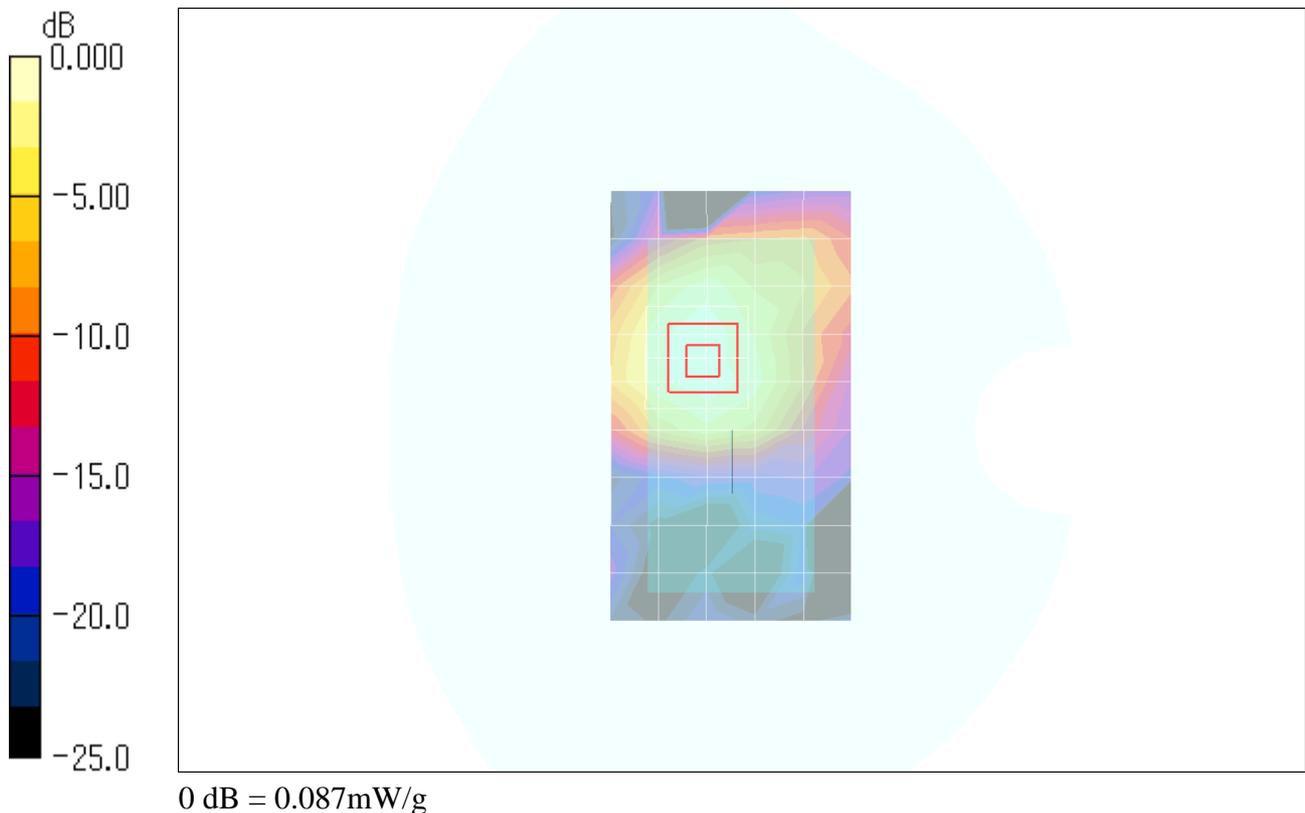
Rear Side/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.10 V/m; Power Drift = -0.070 dB

Peak SAR (extrapolated) = 0.135 W/kg

SAR(1 g) = 0.079 mW/g; SAR(10 g) = 0.046 mW/g

Maximum value of SAR (measured) = 0.087 mW/g



Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Body 1ch / 802.11b 1Mbps

DUT: Cellular Phone; Type: 101SH; Serial: 004401/11/354518/6

Communication System: WLAN; Frequency: 2412 MHz; Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2412$ MHz; $\sigma = 1.91$ mho/m; $\epsilon_r = 52.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

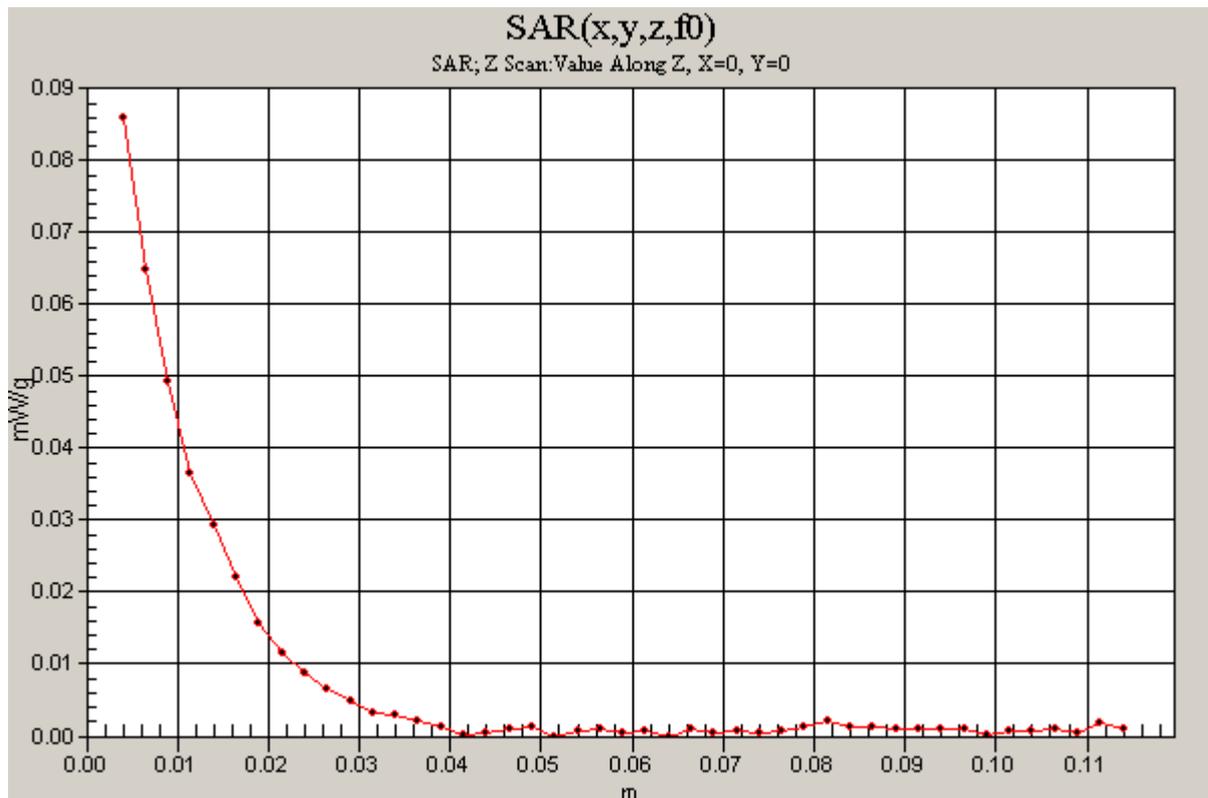
Measurement Standard: DASy4 (High Precision Assessment)

DASy4 Configuration:

- Probe: EX3DV4 - SN3808; ConvF(6.85, 6.85, 6.85); Calibrated: 2011/09/02
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2010/11/11
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASy4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Rear Side/Z Scan (1x1x45): Measurement grid: dx=20mm, dy=20mm, dz=2.5mm

Maximum value of SAR (measured) = 0.086 mW/g



Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Body 6ch / 802.11b 1Mbps

DUT: Cellular Phone; Type: 101SH; Serial: 004401/11/354518/6

Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 52.1$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASy4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3808; ConvF(6.85, 6.85, 6.85); Calibrated: 2011/09/02
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2010/11/11
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASy4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Rear Side/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.074 mW/g

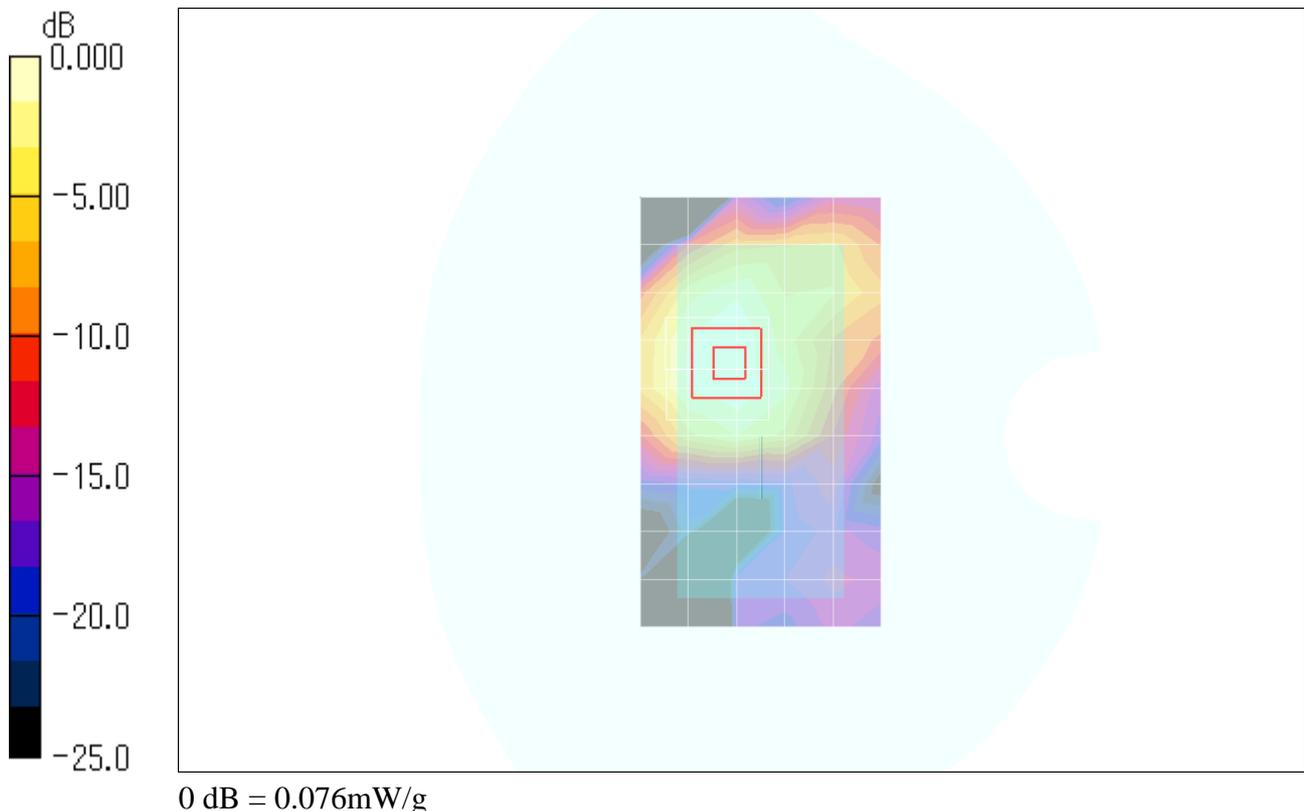
Rear Side/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.07 V/m; Power Drift = 0.088 dB

Peak SAR (extrapolated) = 0.126 W/kg

SAR(1 g) = 0.071 mW/g; SAR(10 g) = 0.041 mW/g

Maximum value of SAR (measured) = 0.076 mW/g



Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Body 11ch / 802.11b 1Mbps

DUT: Cellular Phone; Type: 101SH; Serial: 004401/11/354518/6

Communication System: WLAN; Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2462$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DAS4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3808; ConvF(6.85, 6.85, 6.85); Calibrated: 2011/09/02
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2010/11/11
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DAS4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Rear Side/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.071 mW/g

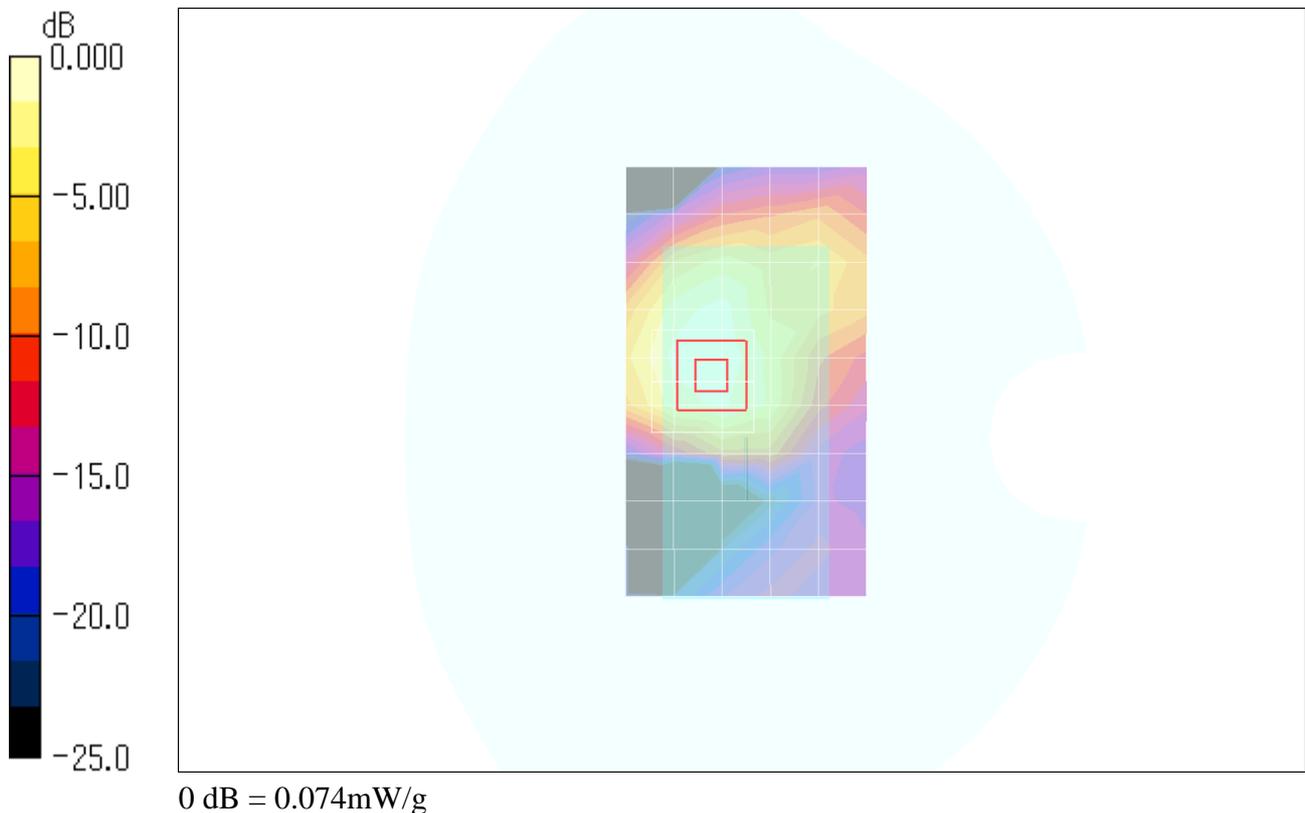
Rear Side/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.95 V/m; Power Drift = 0.054 dB

Peak SAR (extrapolated) = 0.119 W/kg

SAR(1 g) = 0.068 mW/g; SAR(10 g) = 0.038 mW/g

Maximum value of SAR (measured) = 0.074 mW/g



Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Body 1ch / 802.11b 1Mbps

DUT: Cellular Phone; Type: 101SH; Serial: 004401/11/354518/6

Communication System: WLAN; Frequency: 2412 MHz; Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2412$ MHz; $\sigma = 1.91$ mho/m; $\epsilon_r = 52.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DAS4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3808; ConvF(6.85, 6.85, 6.85); Calibrated: 2011/09/02
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2010/11/11
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DAS4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Rear Side w/headset/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.071 mW/g

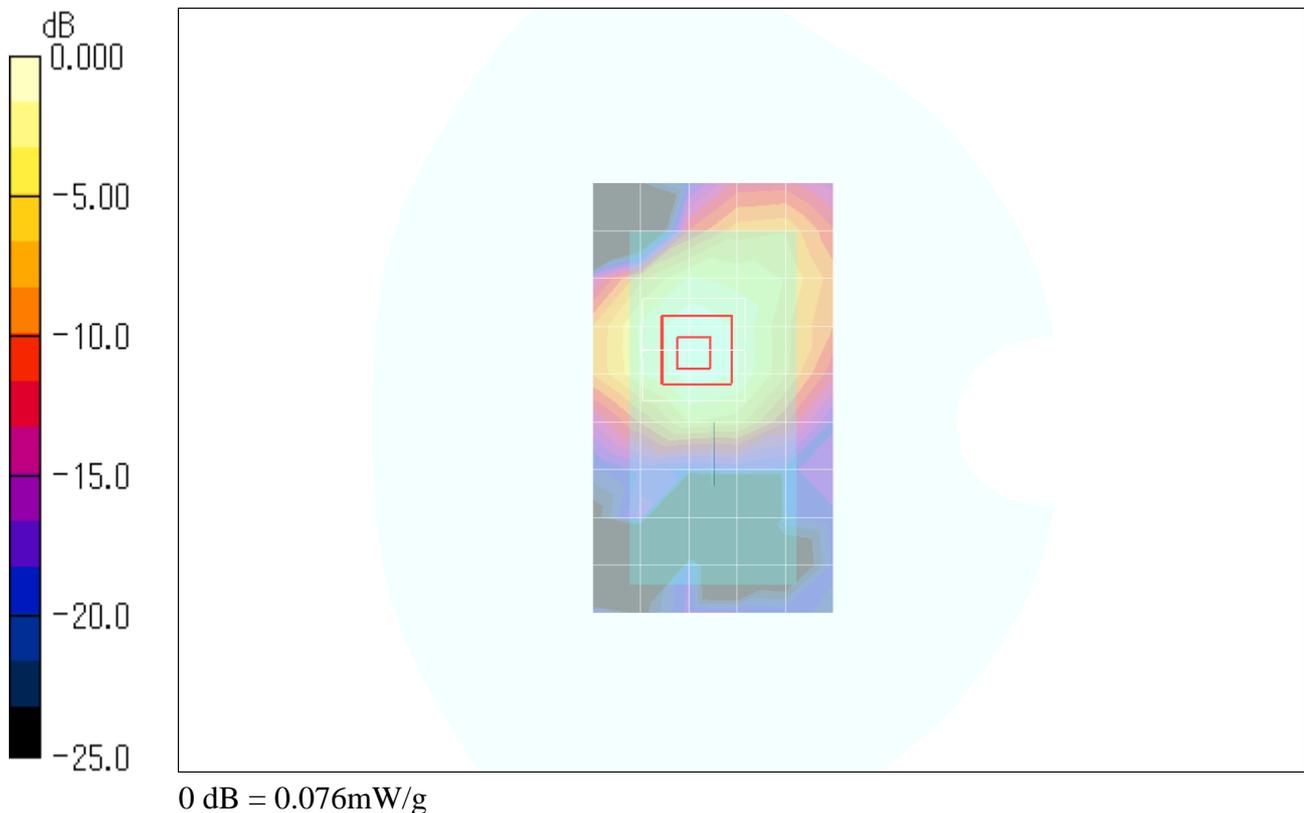
Rear Side w/headset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.48 V/m; Power Drift = 0.153 dB

Peak SAR (extrapolated) = 0.127 W/kg

SAR(1 g) = 0.070 mW/g; SAR(10 g) = 0.040 mW/g

Maximum value of SAR (measured) = 0.076 mW/g





Attachment 3 – Dosimetric E-Field Probe – EX3DV4, S/N: 3808 Calibration Data



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **JQA (PTT)**

Certificate No: **EX3-3808_Sep11**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3808**

Calibration procedure(s) **QA CAL-01.v8, QA CAL-14.v3, QA CAL-23.v4, QA CAL-25.v4
Calibration procedure for dosimetric E-field probes**

Calibration date: **September 2, 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 ± 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	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-10 (No. ES3-3013_Dec10)	Dec-11
DAE4	SN: 654	3-May-11 (No. DAE4-654_May11)	May-12
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-10)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Niels Kuster	Quality Manager	
			Issued: September 3, 2011
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

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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 affect the E^2 -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.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- 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.

Probe EX3DV4

SN:3808

Manufactured: June 6, 2011
Calibrated: September 2, 2011

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3808

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.44	0.39	0.42	$\pm 10.1 \%$
DCP (mV) ^B	99.5	103.0	97.8	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc ^E (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	103.1	$\pm 3.5 \%$
			Y	0.00	0.00	1.00	99.5	
			Z	0.00	0.00	1.00	100.4	

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

^A The uncertainties of NormX,Y,Z do not affect the E^2 -field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter: uncertainty not required.

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3808

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
2300	39.5	1.67	7.54	7.54	7.54	0.53	0.76	± 12.0 %
2450	39.2	1.80	7.07	7.07	7.07	0.53	0.75	± 12.0 %
2600	39.0	1.96	6.98	6.98	6.98	0.53	0.77	± 12.0 %
3500	37.9	2.91	6.68	6.68	6.68	0.21	1.77	± 13.1 %
5200	36.0	4.66	5.02	5.02	5.02	0.40	1.80	± 13.1 %
5300	35.9	4.76	4.74	4.74	4.74	0.42	1.80	± 13.1 %
5500	35.6	4.96	4.55	4.55	4.55	0.45	1.80	± 13.1 %
5600	35.5	5.07	4.37	4.37	4.37	0.50	1.80	± 13.1 %
5800	35.3	5.27	4.42	4.42	4.42	0.50	1.80	± 13.1 %

^C Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: EX3DV4- SN:3808

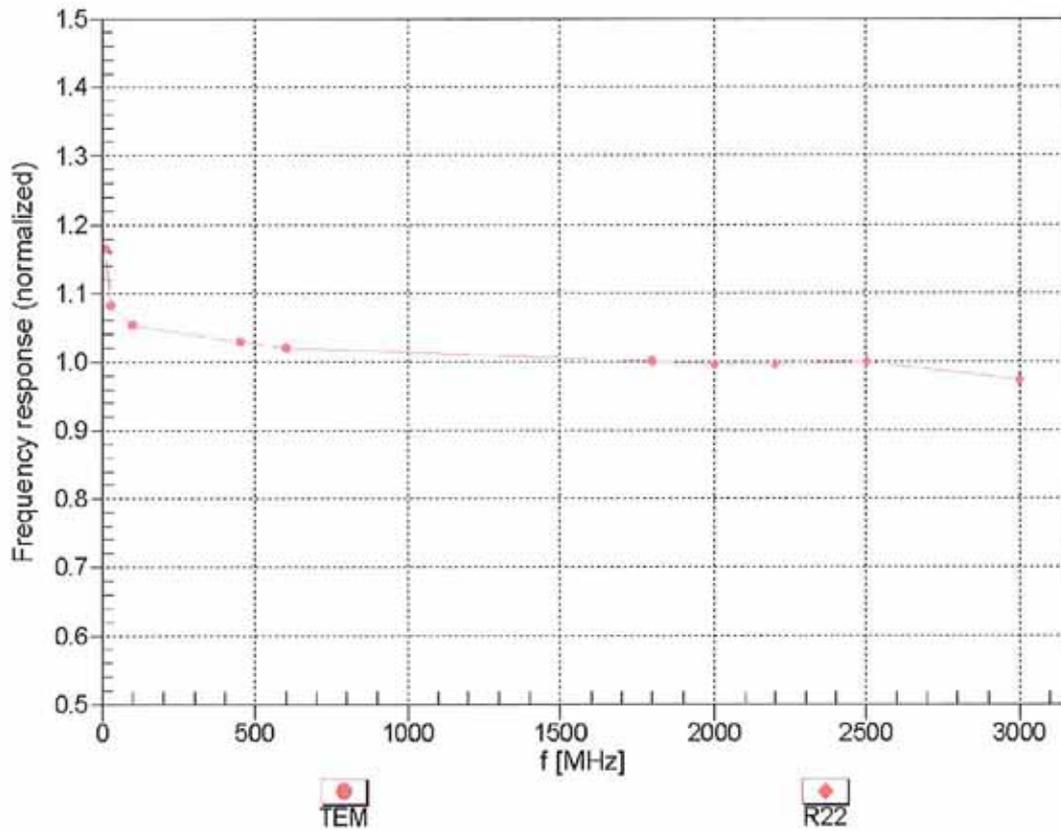
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
2300	52.9	1.81	7.36	7.36	7.36	0.80	0.64	± 12.0 %
2450	52.7	1.95	6.85	6.85	6.85	0.80	0.60	± 12.0 %
2600	52.5	2.16	6.76	6.76	6.76	0.80	0.61	± 12.0 %
3500	51.3	3.31	6.33	6.33	6.33	0.31	1.30	± 13.1 %
5200	49.0	5.30	4.21	4.21	4.21	0.52	1.95	± 13.1 %
5300	48.9	5.42	3.91	3.91	3.91	0.55	1.95	± 13.1 %
5500	48.6	5.65	3.87	3.87	3.87	0.55	1.95	± 13.1 %
5600	48.5	5.77	3.70	3.70	3.70	0.55	1.95	± 13.1 %
5800	48.2	6.00	3.90	3.90	3.90	0.55	1.95	± 13.1 %

^C Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

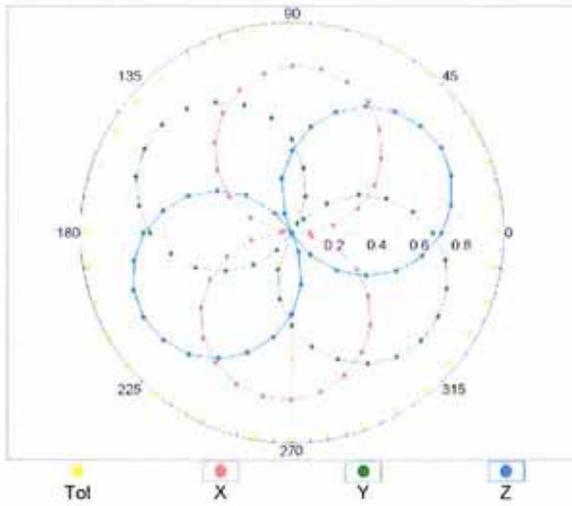
Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)



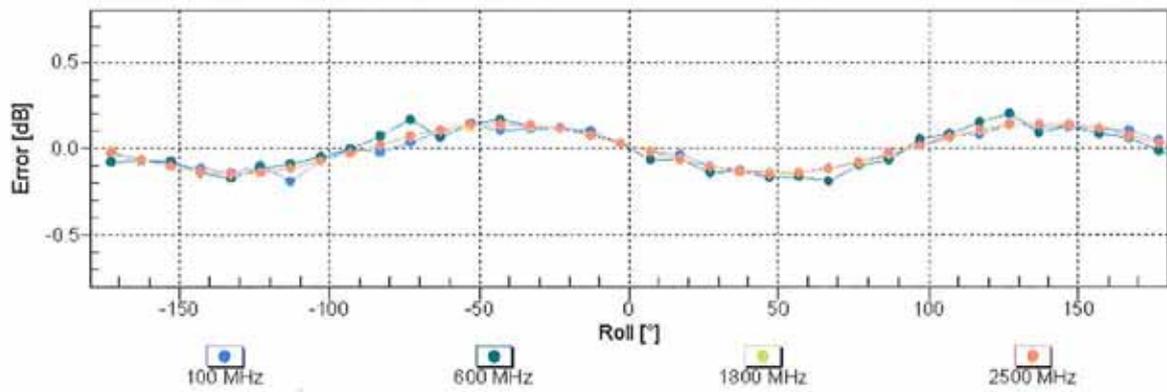
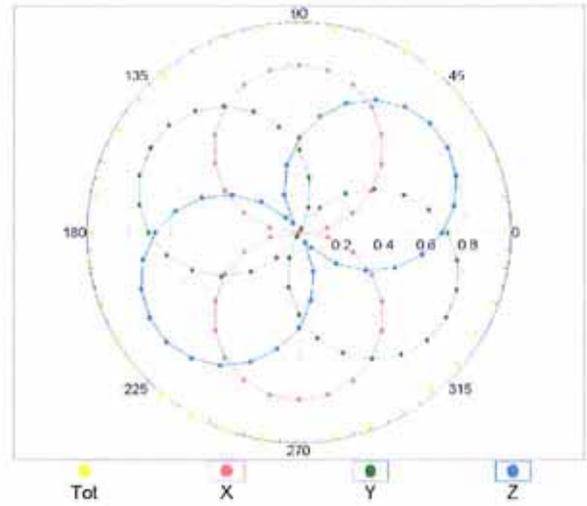
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

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

f=600 MHz,TEM

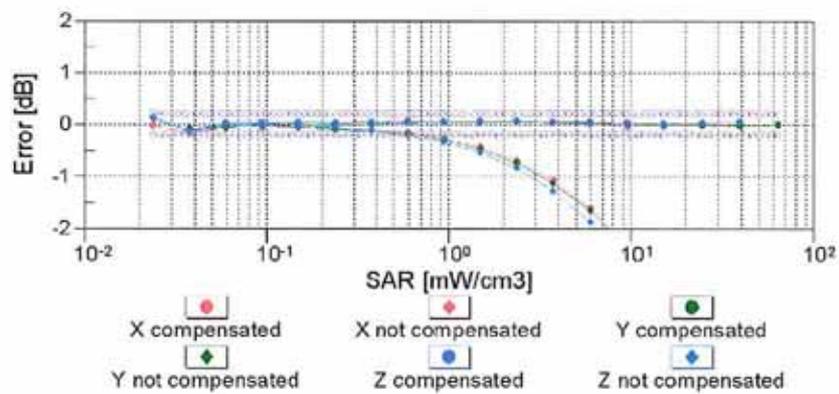
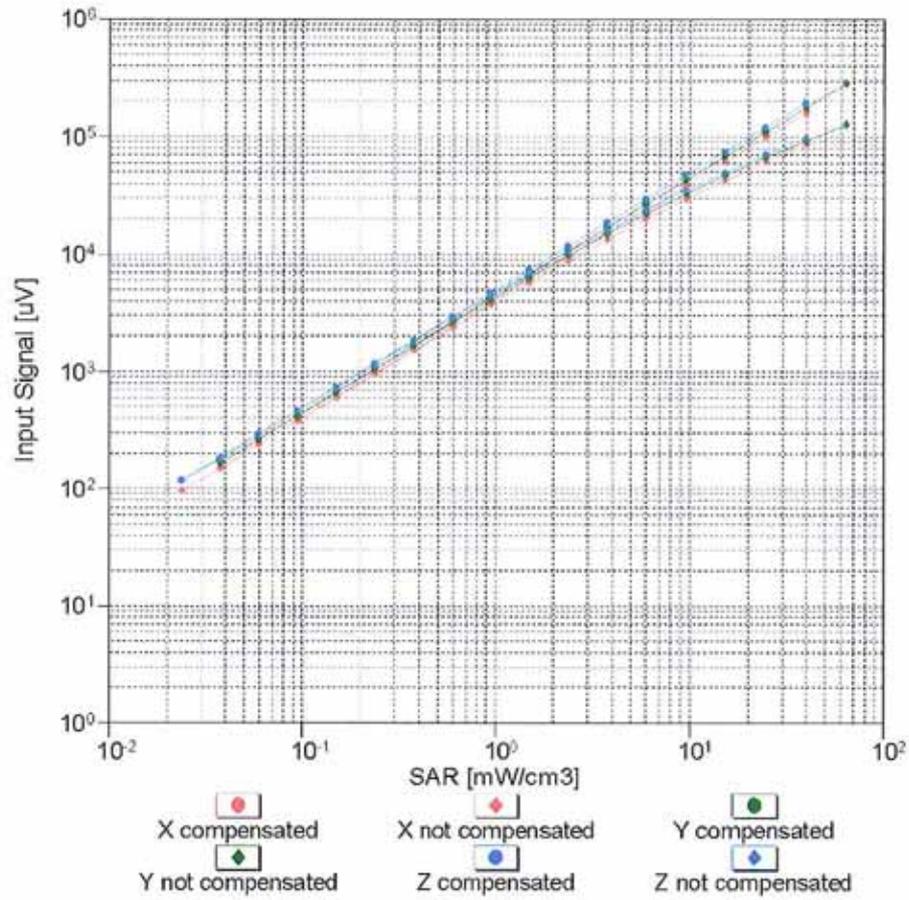


f=1800 MHz,R22



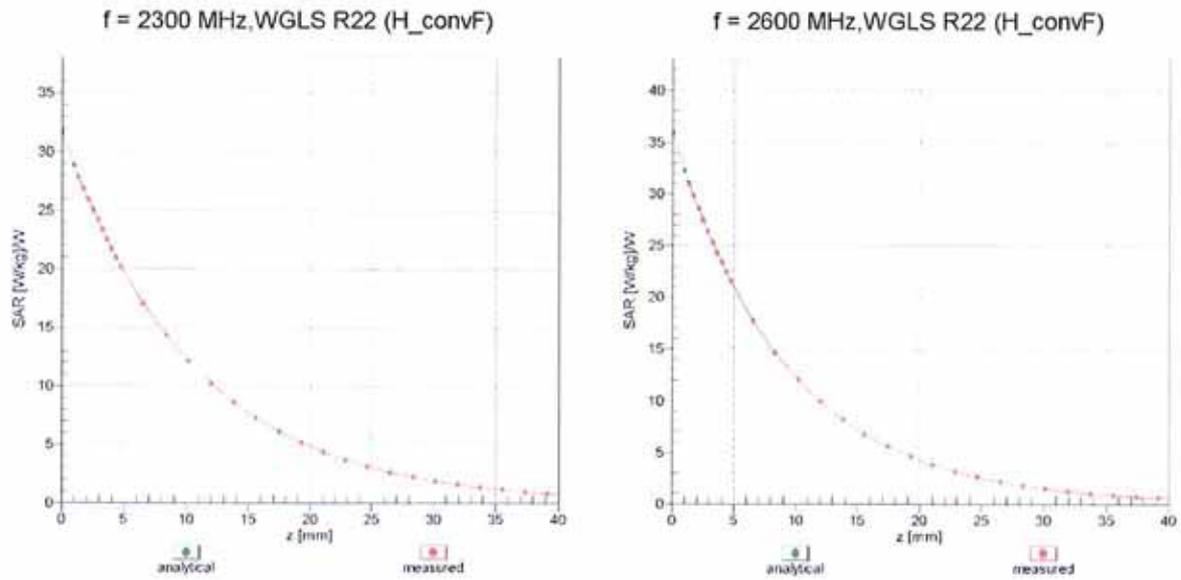
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ (k=2)

Dynamic Range f(SAR_{head}) (TEM cell , f = 900 MHz)

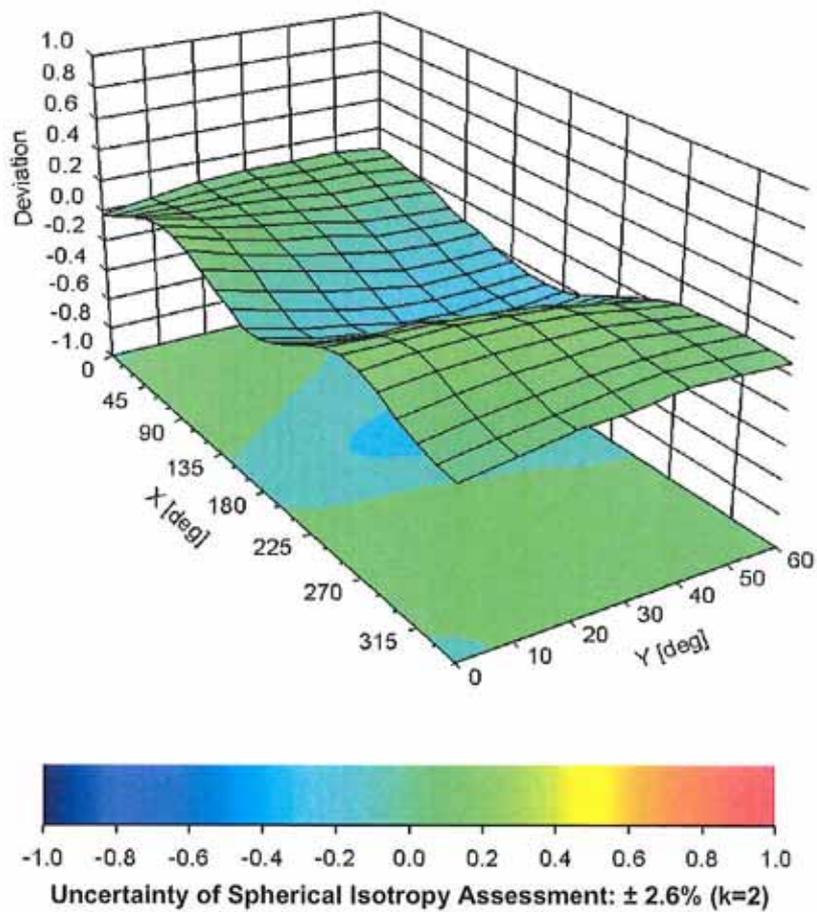


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment



Deviation from Isotropy in Liquid Error (ϕ , θ), f = 900 MHz



DASY/EASY - Parameters of Probe: EX3DV4 - SN:3808

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	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm



Attachment 4 – System Validation Dipole – D2450V2, S/N: 714 Calibration Data



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 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **JQA (Auden)**

Certificate No: **D2450V2-714_Nov10**

CALIBRATION CERTIFICATE

Object **D2450V2 - SN: 714**

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

Calibration date: **November 11, 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-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
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	10-Jun-10 (No. DAE4-601_Jun10)	Jun-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-10)	In house check: Oct-11

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

Approved by: **Katja Pokovic** Technical Manager

Issued: November 12, 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:

- a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- b) 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
- c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

- d) DASY4/5 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	V52.2
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	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	38.8 \pm 6 %	1.72 mho/m \pm 6 %
Head TSL temperature during test	(22.5 \pm 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.2 mW / g
SAR normalized	normalized to 1W	52.8 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	53.8 mW /g \pm 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.18 mW / g
SAR normalized	normalized to 1W	24.7 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	24.9 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	52.3 ± 6 %	1.92 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	12.6 mW / g
SAR normalized	normalized to 1W	50.4 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	50.7 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.85 mW / g
SAR normalized	normalized to 1W	23.4 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	23.4 mW / g ± 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$52.9 \Omega + 1.8 j\Omega$
Return Loss	- 29.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$48.4 \Omega + 4.1 j\Omega$
Return Loss	- 27.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.163 ns
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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	July 05, 2002

DASY5 Validation Report for Head TSL

Date/Time: 11.11.2010 10:49:33

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:714

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

Medium: HSL U12 BB

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.72$ mho/m; $\epsilon_r = 38.8$; $\rho = 1000$ 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: 10.06.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY52, V52.2 Build 0, Version 52.2.0 (163)
- Postprocessing SW: SEMCAD X, V14.2 Build 2, Version 14.2.2 (1685)

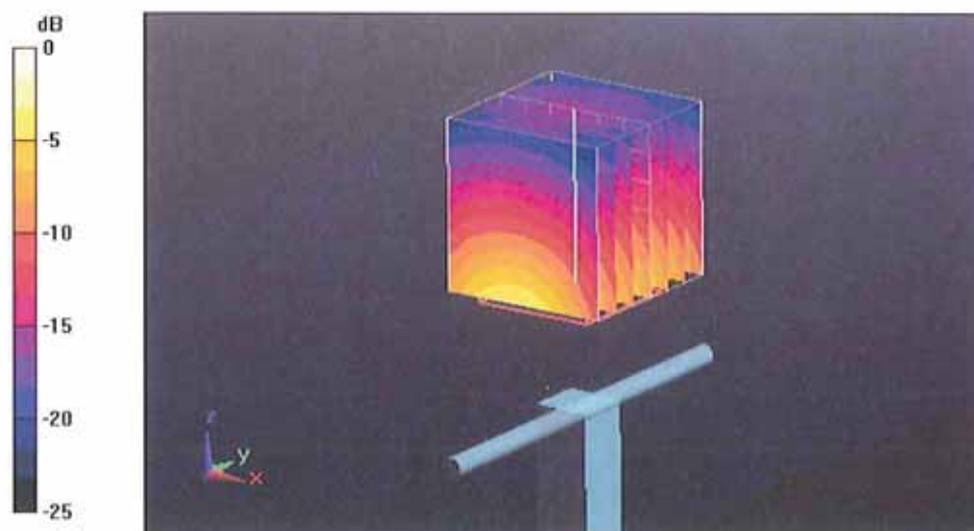
Pin=250 mW/d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 102.6 V/m; Power Drift = 0.054 dB

Peak SAR (extrapolated) = 27.1 W/kg

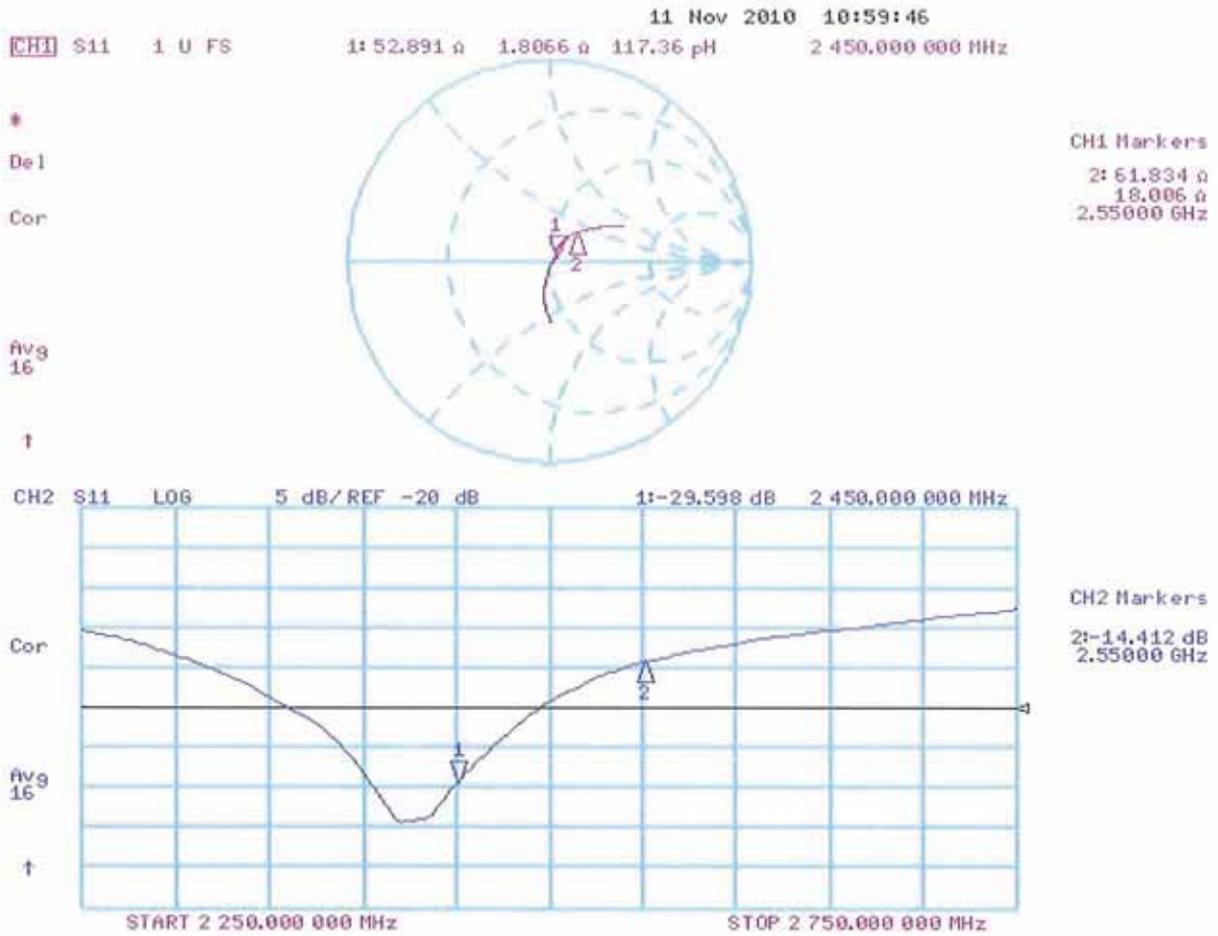
SAR(1 g) = 13.2 mW/g; SAR(10 g) = 6.18 mW/g

Maximum value of SAR (measured) = 16.9 mW/g



0 dB = 16.9mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body

Date/Time: 11.11.2010 13:18:12

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:714

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

Medium: MSL U12 BB

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.92$ mho/m; $\epsilon_r = 52.3$; $\rho = 1000$ 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: 10.06.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY52, V52.2 Build 0, Version 52.2.0 (163)
- Postprocessing SW: SEMCAD X, V14.2 Build 2, Version 14.2.2 (1685)

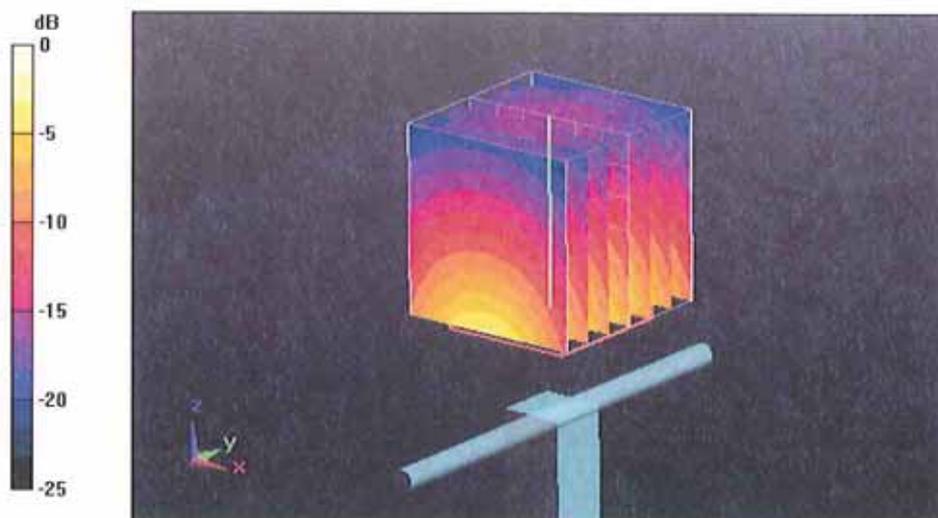
Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 96.2 V/m; Power Drift = 0.026 dB

Peak SAR (extrapolated) = 26.5 W/kg

SAR(1 g) = 12.6 mW/g; SAR(10 g) = 5.85 mW/g

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



0 dB = 16.7mW/g

Impedance Measurement Plot for Body TSL

