

PCTEST ENGINEERING LABORATORY, INC.

DUT: CF -19; Type: Panasonic Notebook PC with WLAN + Bluetooth; Sample #1

Communication System: IEEE 802.11g; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Muscle ($\sigma = 1.92$ mho/m, $\epsilon_r = 51.34$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; Bystander Position; Space: 1.5 cm

Test Date: 09-13-2006; Ambient Temp: 23.8°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN3550; ConvF(6.27, 6.27, 6.27); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Mode: IEEE 802.11g, Bystander position, LCD Flip, Mid.ch, 6Mbps, Main Ant

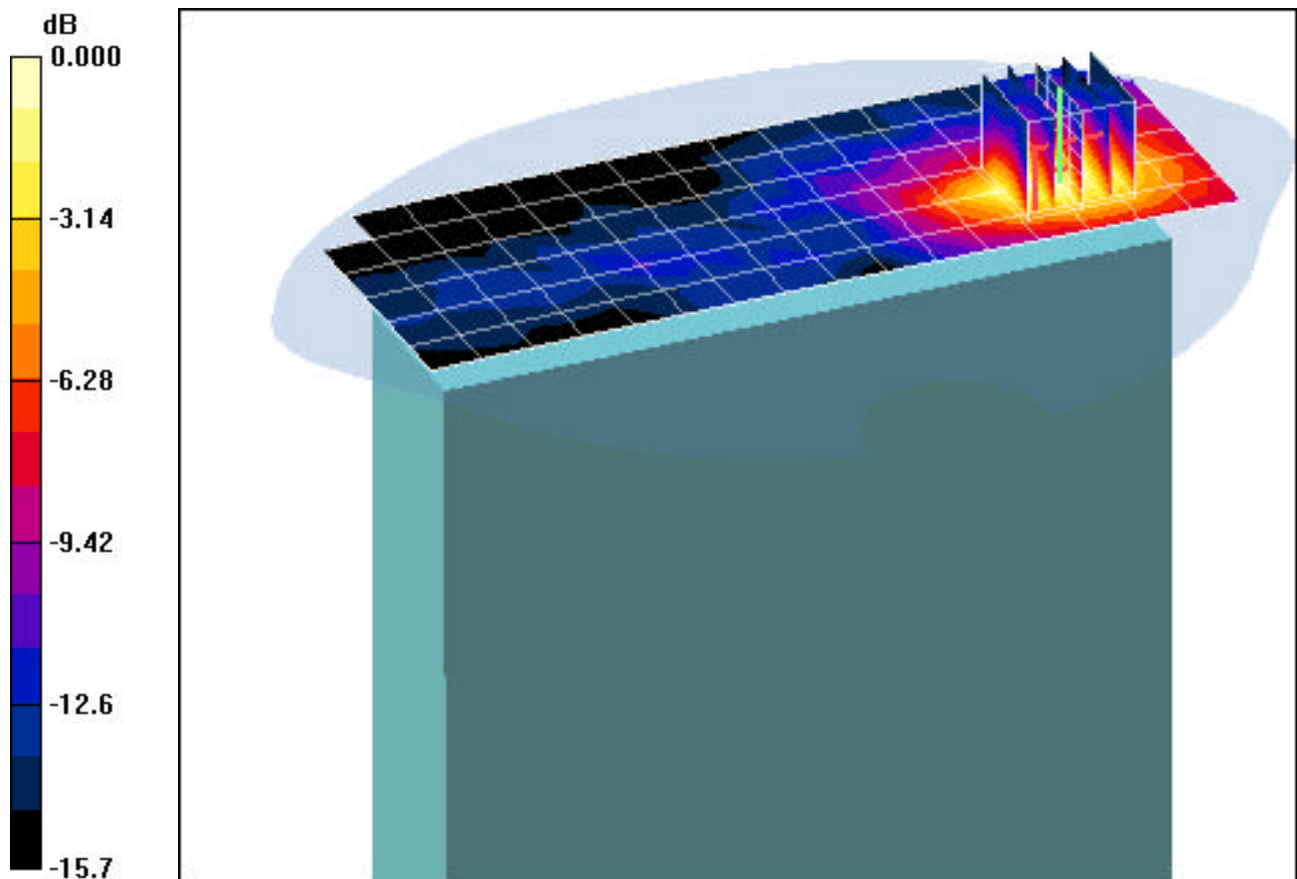
Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 7.12 V/m

Peak SAR (extrapolated) = 0.147 W/kg

SAR(1 g) = 0.076 mW/g; SAR(10 g) = 0.040 mW/g



0 dB = 0.096mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: CF-19; Type: Panasonic Notebook PC with WLAN + Bluetooth; Sample #1

Communication System: IEEE 802.11g; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Muscle ($\sigma = 1.92$ mho/m, $\epsilon_r = 51.34$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; Bystander Position; Space: 1.5 cm

Test Date: 09-13-2006; Ambient Temp: 23.8°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN3550; ConvF(6.27, 6.27, 6.27); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Mode: IEEE 802.11g, Bystander position, LCD Flip, Mid.ch, 6Mbps, Aux Ant

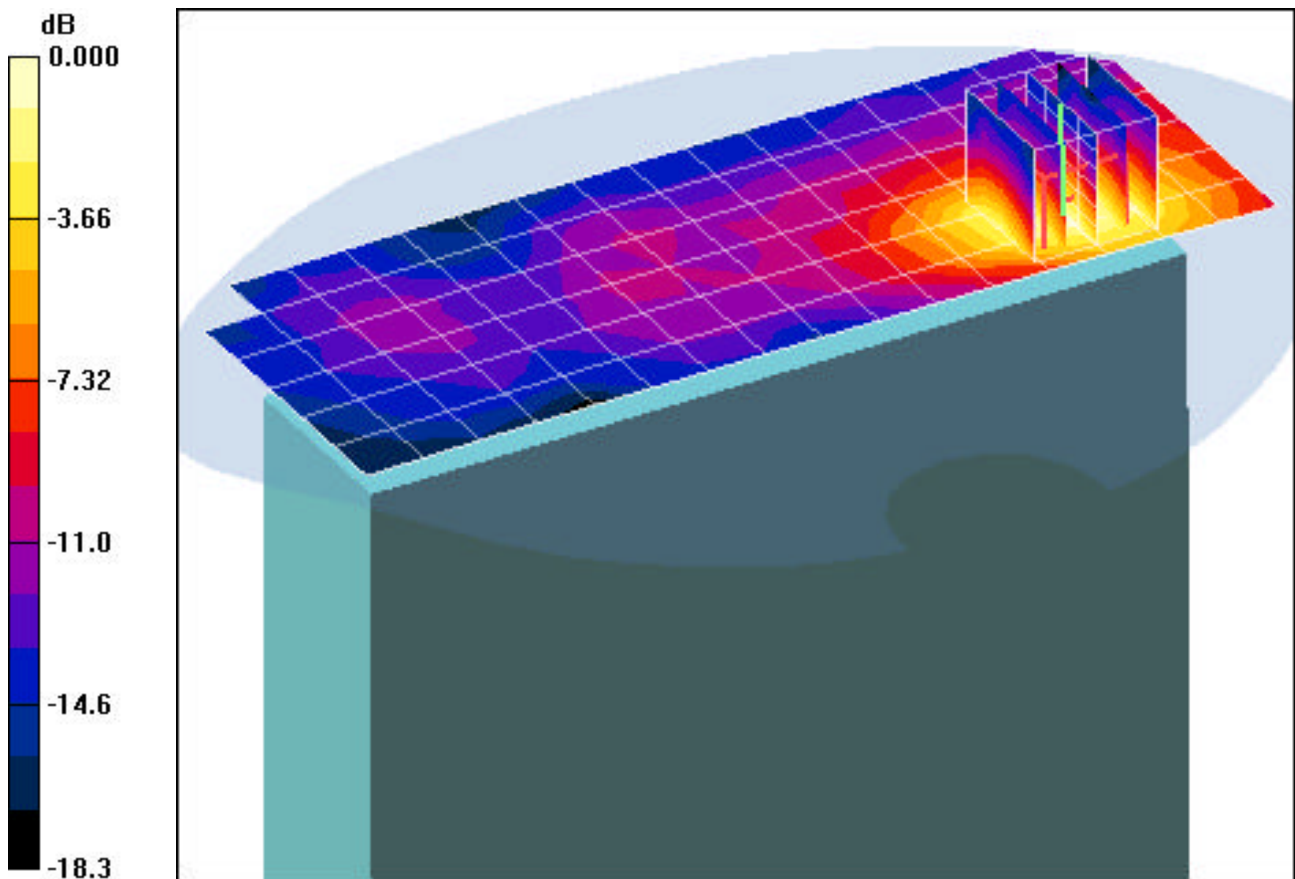
Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 8.64 V/m

Peak SAR (extrapolated) = 0.215 W/kg

SAR(1 g) = 0.115 mW/g; SAR(10 g) = 0.062 mW/g



0 dB = 0.144mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: CF-19; Type: Panasonic Notebook PC with WLAN + Bluetooth; Sample #1

Communication System: IEEE 802.11g; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Muscle ($\sigma = 1.92$ mho/m, $\epsilon_r = 51.34$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; Laptop Position; Space: 0.0 cm

Test Date: 09-14-2006; Ambient Temp: 23.5°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN3550; ConvF(6.27, 6.27, 6.27); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Mode: IEEE 802.11g, Laptop position, LCD Flip, Mid.ch, 6Mbps, Main Ant, with Bluetooth

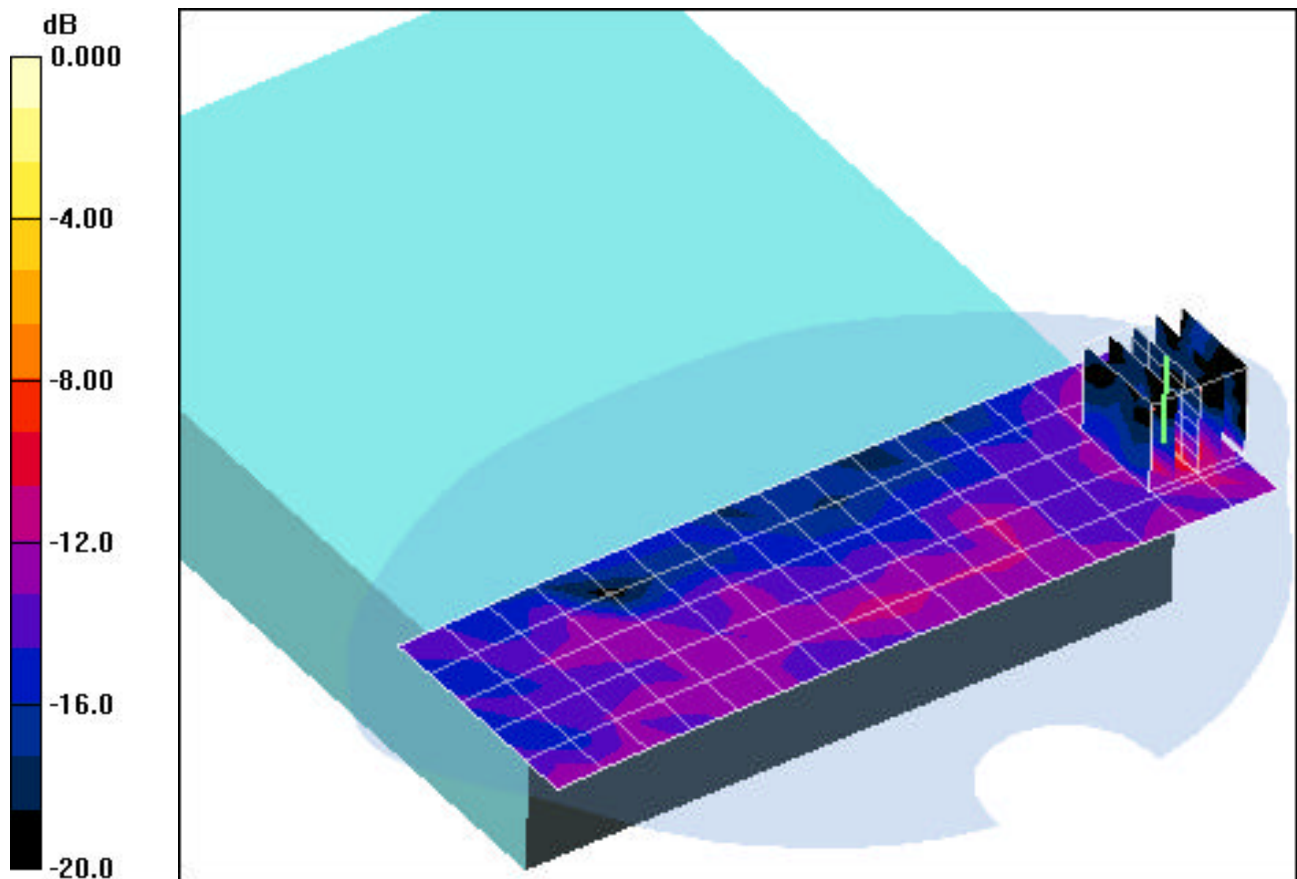
Area Scan (6x17x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 3.90 V/m

Peak SAR (extrapolated) = 0.048 W/kg

SAR(1 g) = 0.023 mW/g; SAR(10 g) = 0.012 mW/g



0 dB = 0.200mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: CF -19; Type: Panasonic Notebook PC with WLAN + Bluetooth; Sample #1

Communication System: IEEE 802.11g; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Muscle ($\sigma = 1.92$ mho/m, $\epsilon_r = 51.34$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; Laptop Position; Space: 0.0 cm

Test Date: 09-14-2006; Ambient Temp: 23.5°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN3550; ConvF(6.27, 6.27, 6.27); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Mode: IEEE 802.11g, Laptop position, LCD Flip, Mid.ch, 6Mbps, Aux Ant

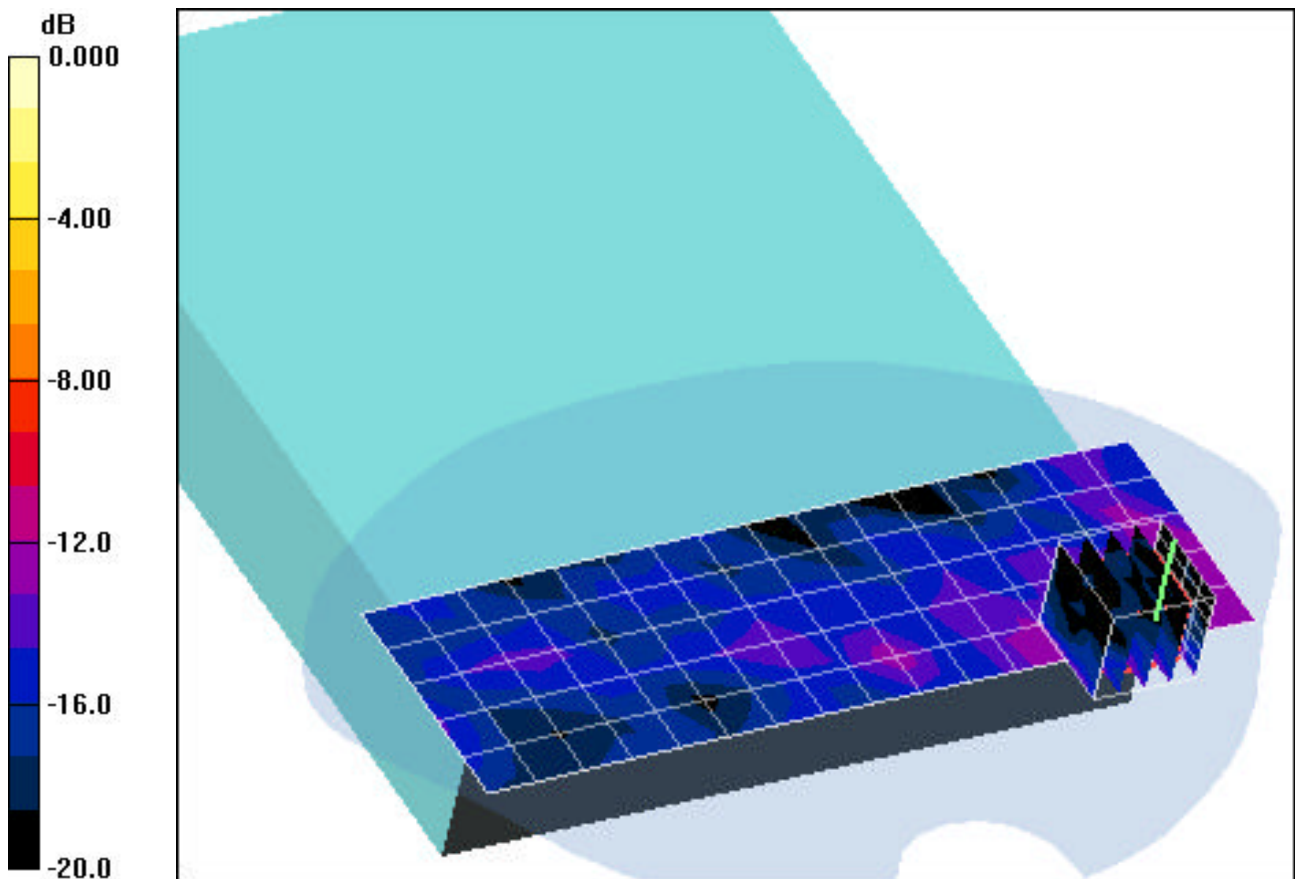
Area Scan (6x17x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 2.36 V/m

Peak SAR (extrapolated) = 0.017 W/kg

SAR(1 g) = 0.00938 mW/g; SAR(10 g) = 0.0059 mW/g



0 dB = 0.200mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: CF -19; Type: Panasonic Notebook PC with WLAN + Bluetooth; Sample #1

Communication System: IEEE 802.11g; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Muscle ($\sigma = 1.92$ mho/m, $\epsilon_r = 51.34$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; LCD Top Side; Space: 0.0 cm

Test Date: 09-13-2006; Ambient Temp: 23.8°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN3550; ConvF(6.27, 6.27, 6.27); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Mode: IEEE 802.11g, Tablet position, LCD Flip, Top side, Mid.ch, 6Mbps, Main Ant

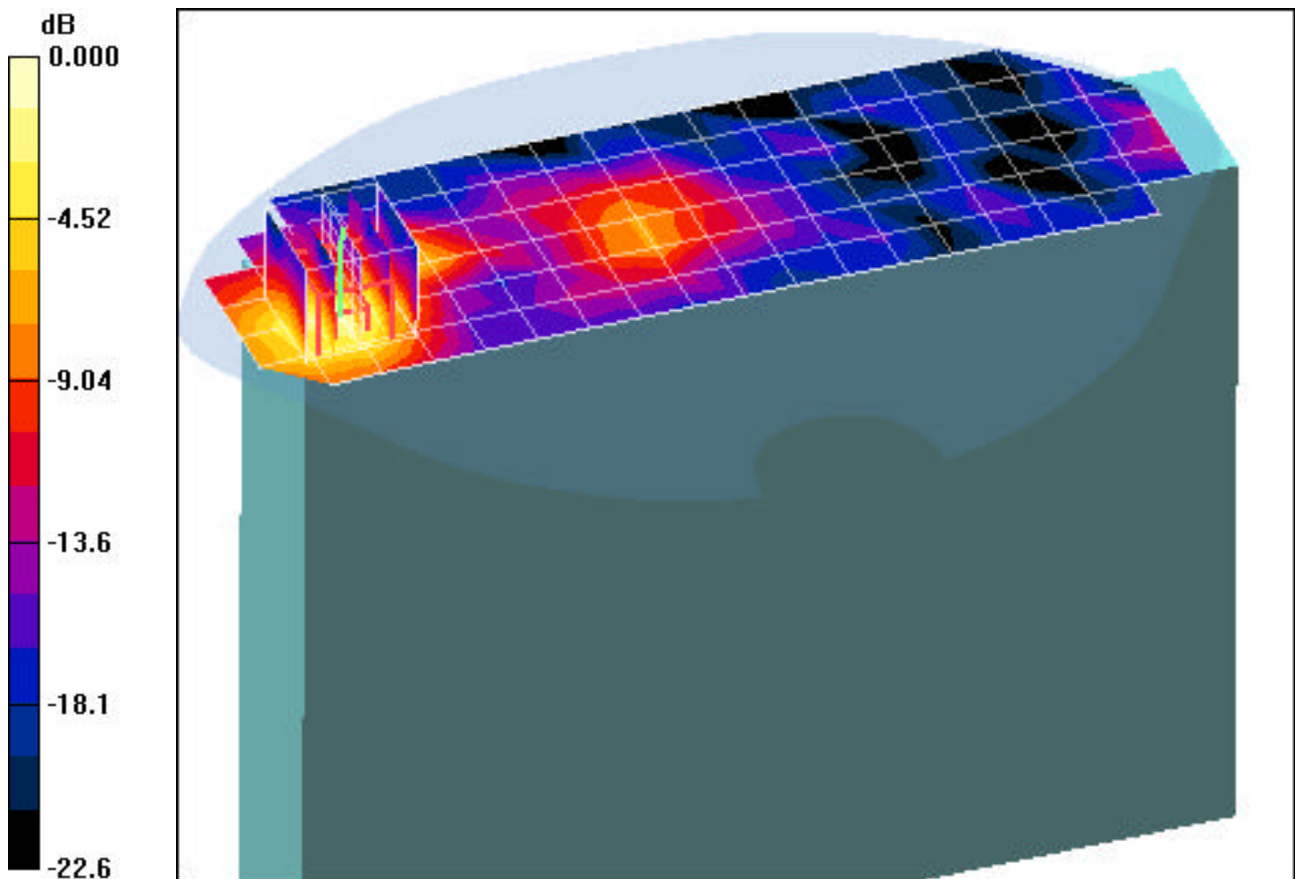
Area Scan (7x21x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 8.63 V/m

Peak SAR (extrapolated) = 0.231 W/kg

SAR(1 g) = 0.108 mW/g; SAR(10 g) = 0.050 mW/g



0 dB = 0.139mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: CF-19; Type: Panasonic Notebook PC with WLAN + Bluetooth; Sample #1

Communication System: IEEE 802.11g; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Muscle ($\sigma = 1.92$ mho/m, $\epsilon_r = 51.34$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; LCD Bottom Side; Space: 0.0 cm

Test Date: 09-13-2006; Ambient Temp: 23.8°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN3550; ConvF(6.27, 6.27, 6.27); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Mode: IEEE 802.11g, Tablet position, LCD Flip, Bottom side, Mid.ch, 6Mbps, Aux Ant

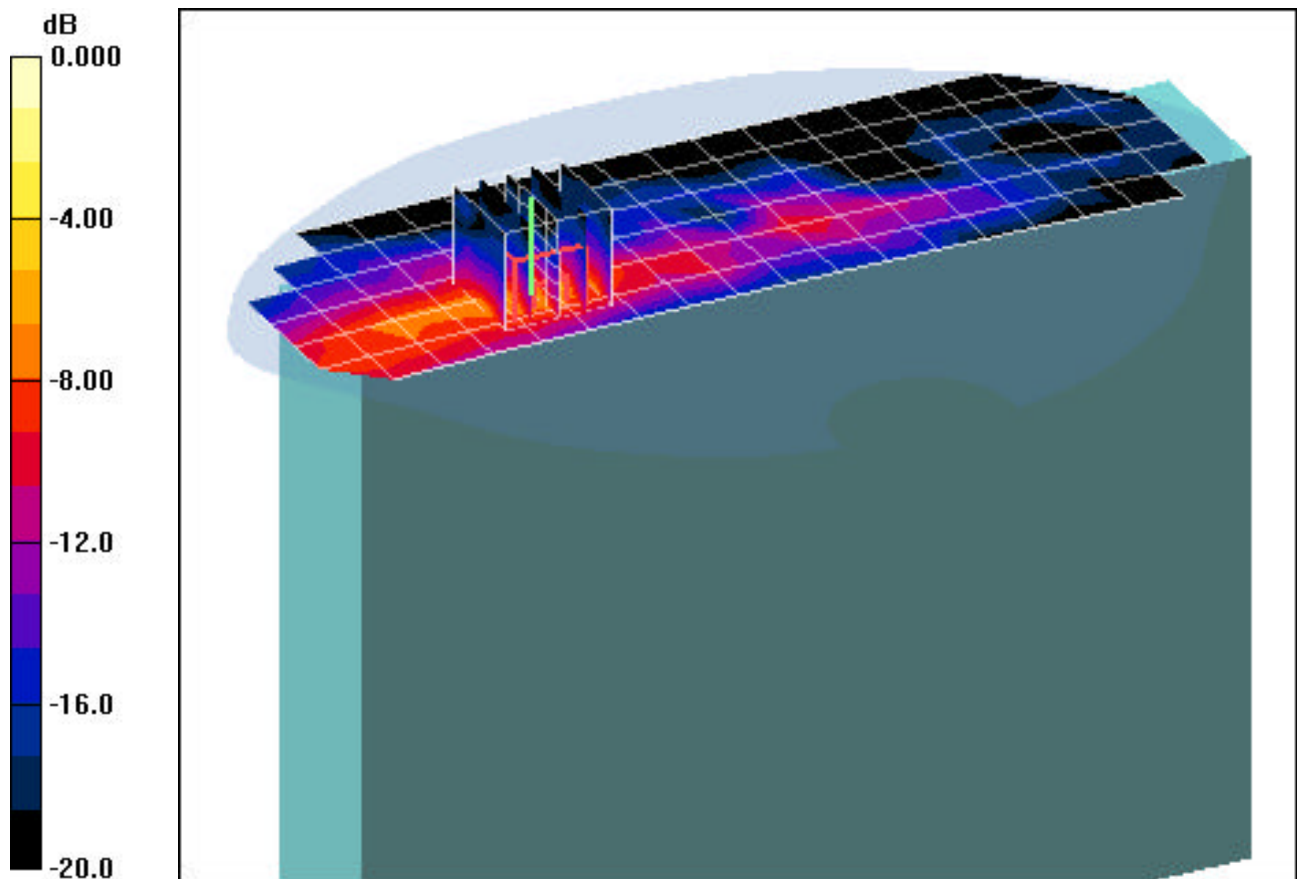
Area Scan (7x21x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 5.48 V/m

Peak SAR (extrapolated) = 0.088 W/kg

SAR(1 g) = 0.044 mW/g; SAR(10 g) = 0.023 mW/g



0 dB = 0.200mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: CF -19; Type: Panasonic Notebook PC with WLAN + Bluetooth; Sample #1

Communication System: Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1

Medium: 2450 Muscle ($\sigma = 1.92$ mho/m, $\epsilon_r = 51.34$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; Laptop Position; Space: 0.0 cm

Test Date: 09-14-2006; Ambient Temp: 23.5°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN3550; ConvF(6.27, 6.27, 6.27); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Mode: Bluetooth, Laptop position, LCD Flip, Mid.ch

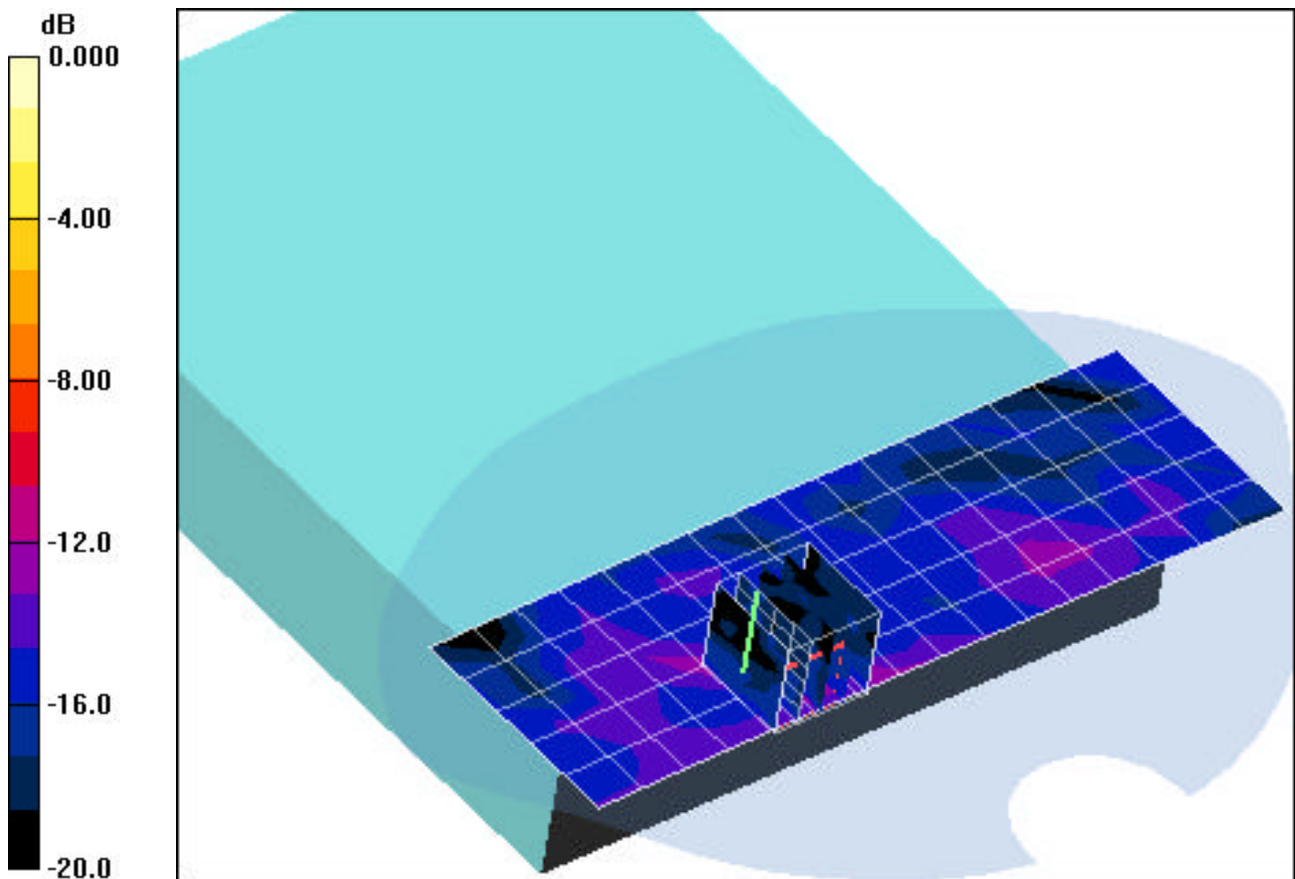
Area Scan (6x17x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 1.92 V/m

Peak SAR (extrapolated) = 0.014 W/kg

SAR(1 g) = 0.00687 mW/g; SAR(10 g) = 0.00506 mW/g



0 dB = 0.200mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: CF -19; Type: Panasonic Notebook PC with WLAN + Bluetooth; Sample #1

Communication System: Bluetooth; Frequency: 2402 MHz; Duty Cycle: 1:1

Medium: 2450 Muscle ($\sigma = 1.92$ mho/m, $\epsilon_r = 51.34$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; Tablet position; Space: 0.0 cm

Test Date: 09-14-2006; Ambient Temp: 23.5°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN3550; ConvF(6.27, 6.27, 6.27); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Mode: Bluetooth, Tablet position, LCD Flip, Left side, Low.ch

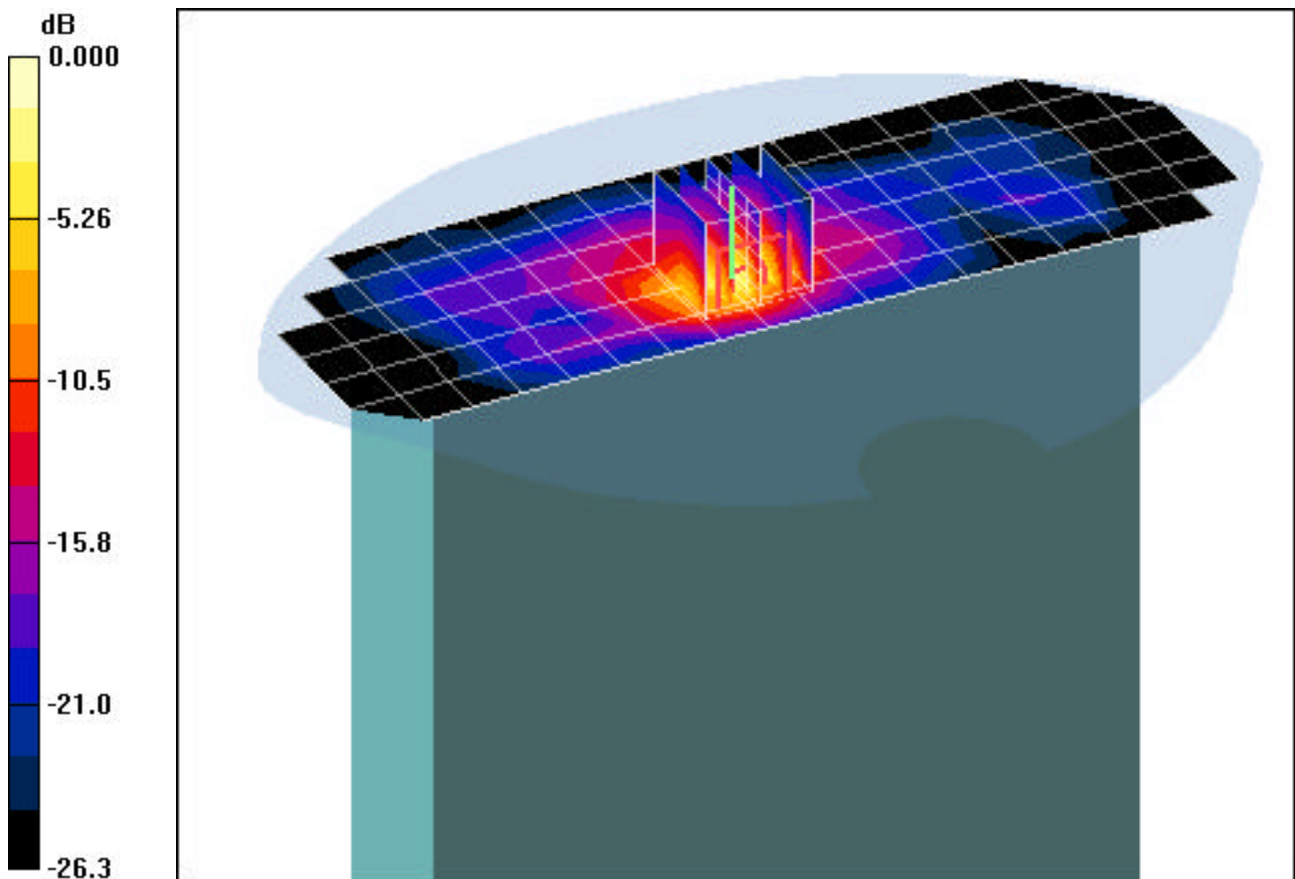
Area Scan (7x21x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 25.8 V/m

Peak SAR (extrapolated) = 2.19 W/kg

SAR(1 g) = 0.883 mW/g; SAR(10 g) = 0.331 mW/g



0 dB = 1.27mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: CF-19; Type: Panasonic Notebook PC with WLAN + Bluetooth; Sample #1

Communication System: IEEE 802.11a; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: 5800 Muscle ($\sigma = 5.84$ mho/m, $\epsilon_r = 47.12$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; Bystander Position; Space: 1.5 cm

Test Date: 09-11-2006; Ambient Temp: 23.7°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN3550; ConvF(3.79, 3.79, 3.79); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Mode: IEEE 802.11a, Bystander position, LCD Open, Mid.ch, 9Mbps, Main Ant

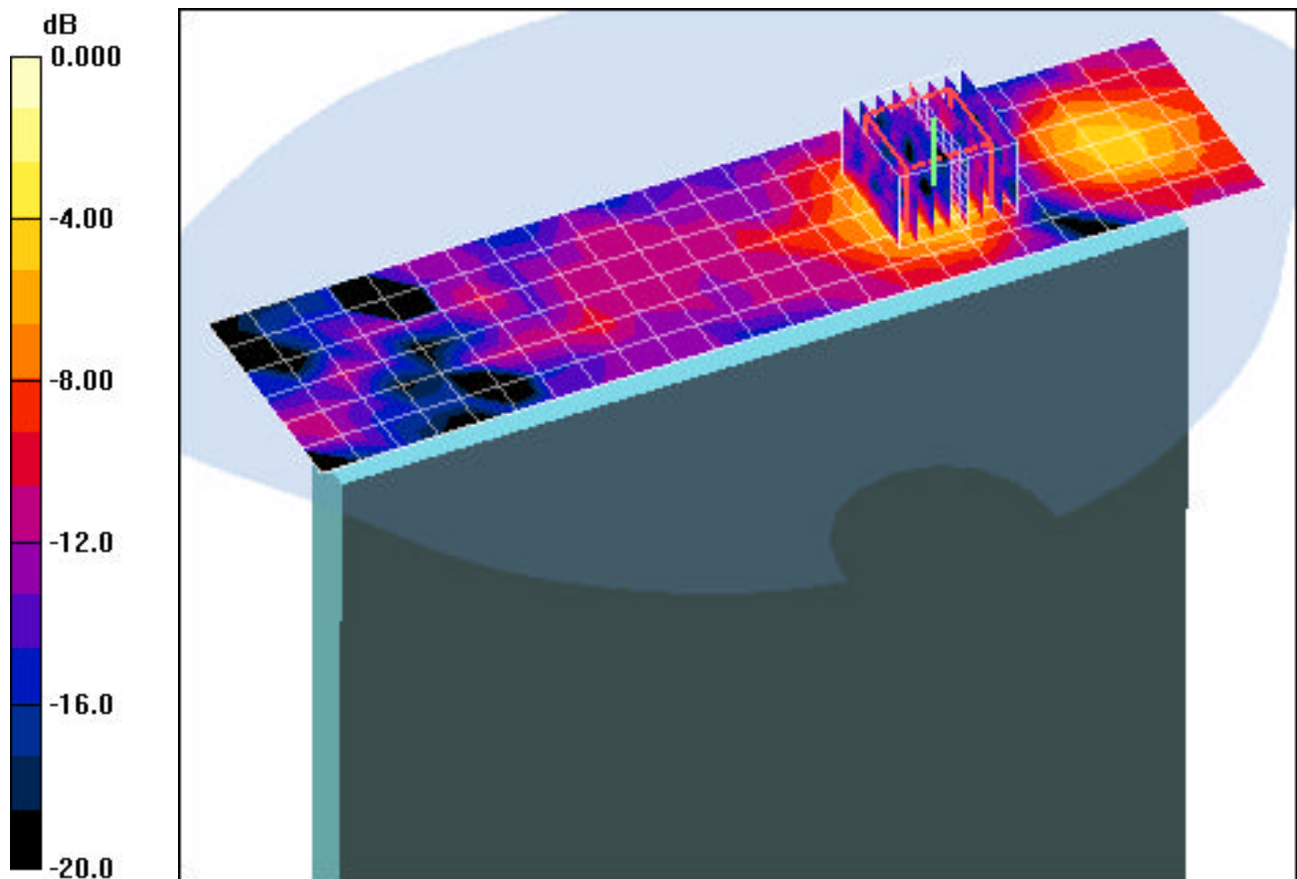
Area Scan (7x25x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 3.96 V/m

Peak SAR (extrapolated) = 0.235 W/kg

SAR(1 g) = 0.069 mW/g; SAR(10 g) = 0.028 mW/g



0 dB = 0.200mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: CF-19; Type: Panasonic Notebook PC with WLAN + Bluetooth; Sample #1

Communication System: IEEE 802.11a; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: 5800 Muscle ($\sigma = 5.84$ mho/m, $\epsilon_r = 47.12$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; Bystander Position; Space: 1.5 cm

Test Date: 09-11-2006; Ambient Temp: 23.7°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN3550; ConvF(3.79, 3.79, 3.79); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Mode: IEEE 802.11a, Bystander position, LCD Open, Mid.ch, 9Mbps, Aux Ant

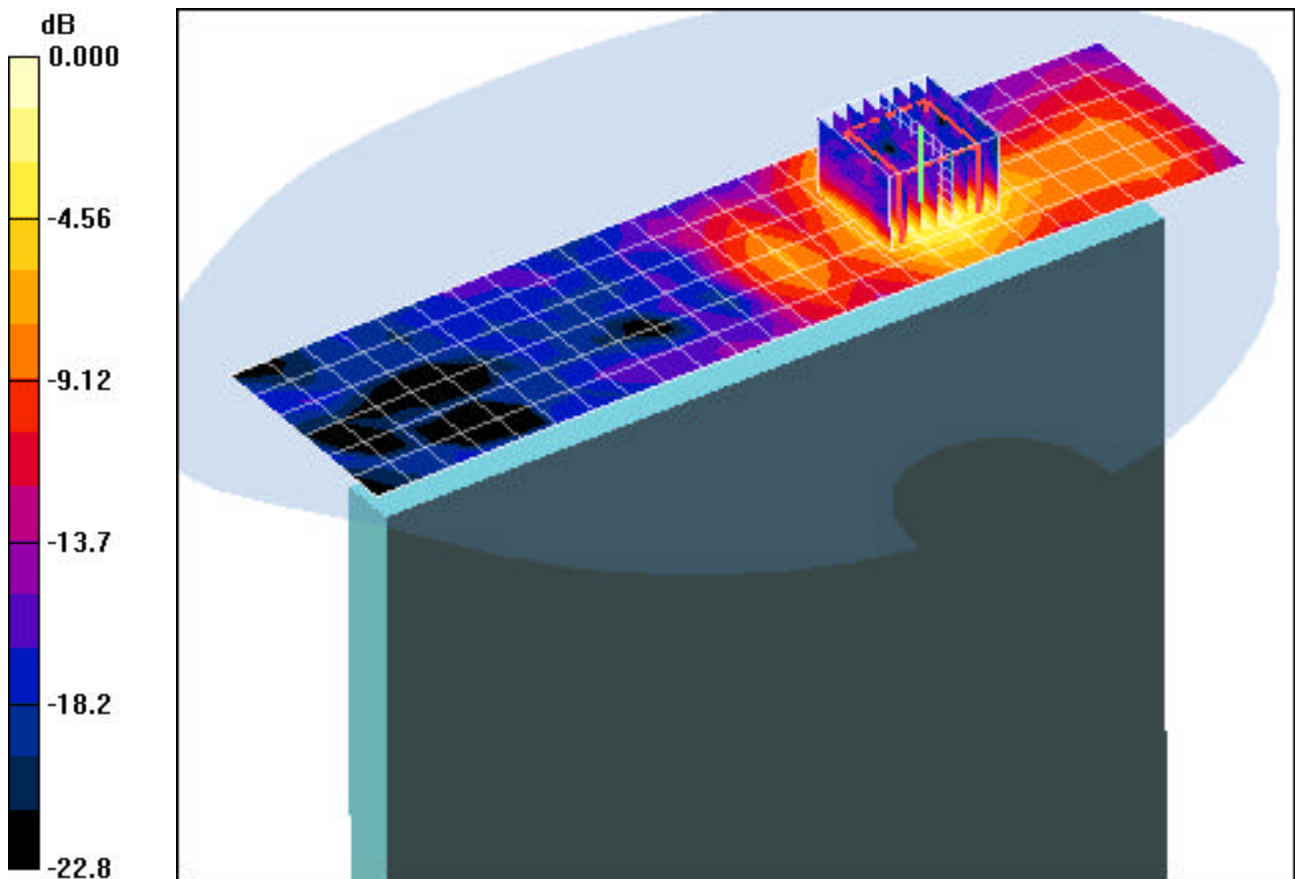
Area Scan (7x25x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 9.65 V/m

Peak SAR (extrapolated) = 1.53 W/kg

SAR(1 g) = 0.377 mW/g; SAR(10 g) = 0.154 mW/g



0 dB = 0.485mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: CF-19; Type: Panasonic Notebook PC with WLAN + Bluetooth; Sample #1

Communication System: IEEE 802.11a; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: 5800 Muscle ($\sigma = 5.84$ mho/m, $\epsilon_r = 47.12$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; Bystander Position; Space: 1.5 cm

Test Date: 09-12-2006; Ambient Temp: 23.1°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN3550; ConvF(3.79, 3.79, 3.79); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Mode: IEEE 802.11a, Bystander position, LCD Flip, Mid.ch, 9Mbps, Main Ant

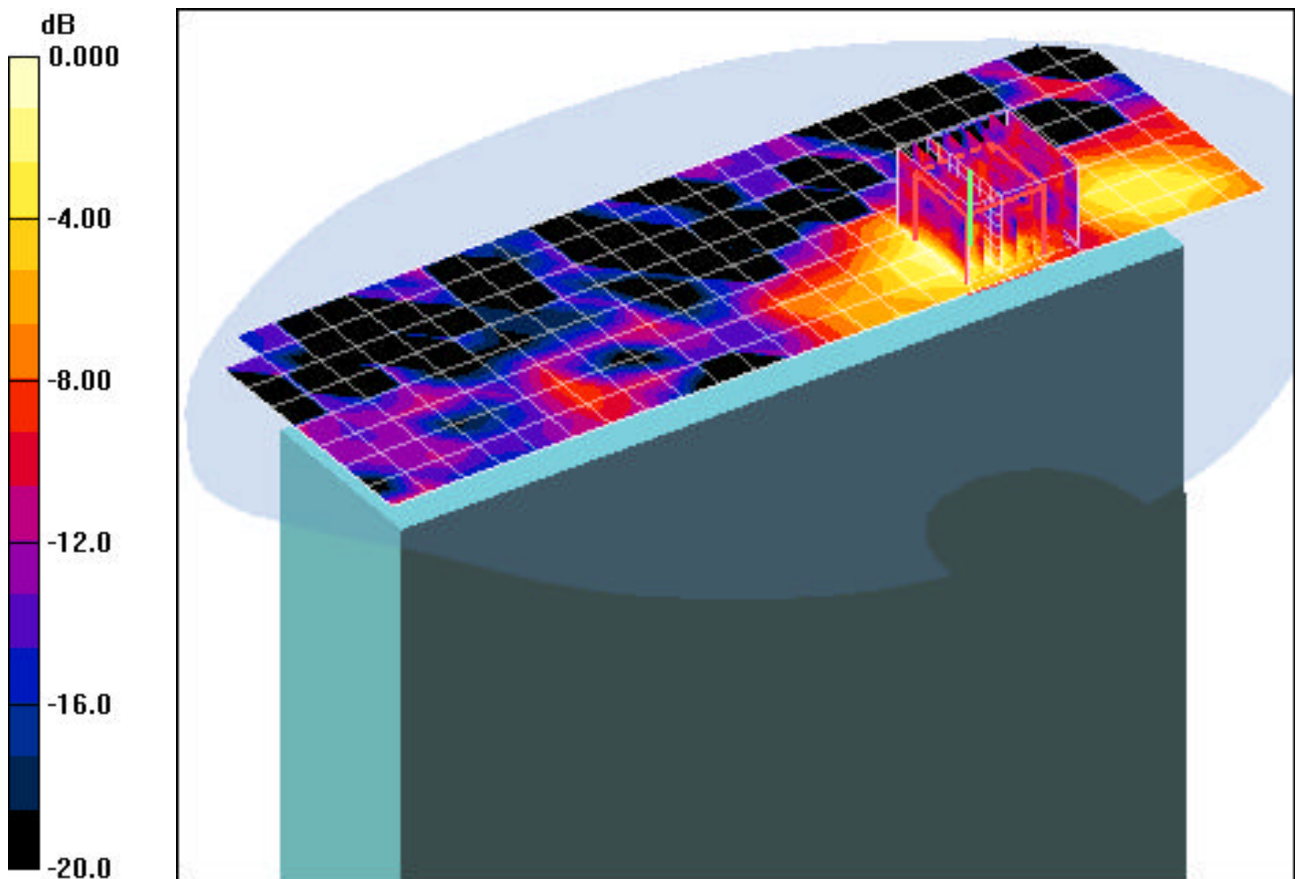
Area Scan (9x25x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 3.91 V/m

Peak SAR (extrapolated) = 0.279 W/kg

SAR(1 g) = 0.080 mW/g; SAR(10 g) = 0.031 mW/g



0 dB = 0.118mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: CF-19; Type: Panasonic Notebook PC with WLAN + Bluetooth; Sample #1

Communication System: IEEE 802.11a; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: 5800 Muscle ($\sigma = 5.84$ mho/m, $\epsilon_r = 47.12$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; Bystander Position; Space: 1.5 cm

Test Date: 09-11-2006; Ambient Temp: 23.7°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN3550; ConvF(3.79, 3.79, 3.79); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Mode: IEEE 802.11a, Bystander position, LCD Flip, Mid.ch, 9Mbps, Aux Ant

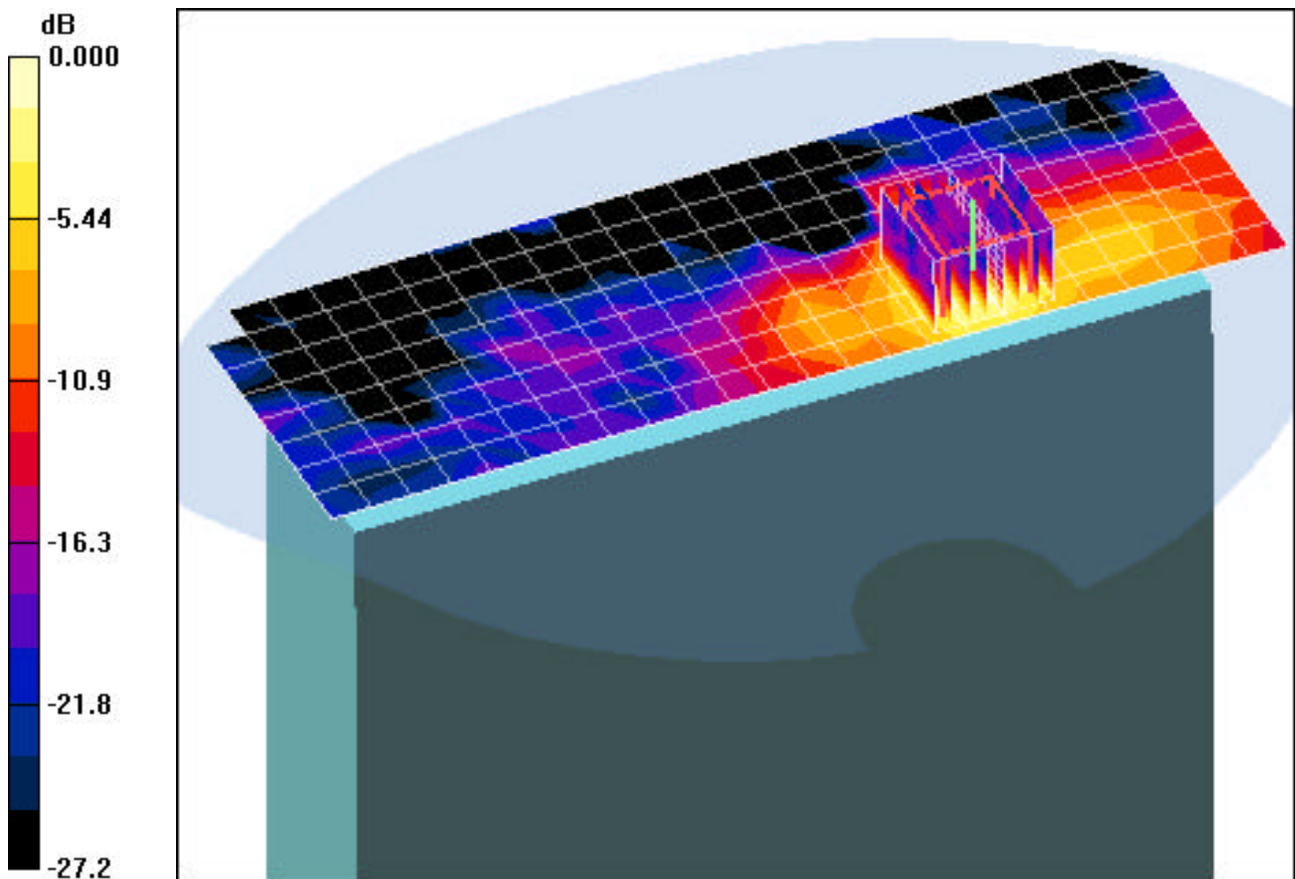
Area Scan (9x25x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 10.5 V/m

Peak SAR (extrapolated) = 1.86 W/kg

SAR(1 g) = 0.459 mW/g; SAR(10 g) = 0.177 mW/g



0 dB = 0.592mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: CF -19; Type: Panasonic Notebook PC with WLAN + Bluetooth; Sample #1

Communication System: IEEE 802.11a; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: 5800 Muscle ($\sigma = 5.84$ mho/m, $\epsilon_r = 47.12$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; Laptop Position; Space: 0.0 cm

Test Date: 09-12-2006; Ambient Temp: 23.1°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN3550; ConvF(3.79, 3.79, 3.79); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Mode: IEEE 802.11a, Laptop position, LCD Flip, Mid.ch, 9Mbps, Main Ant

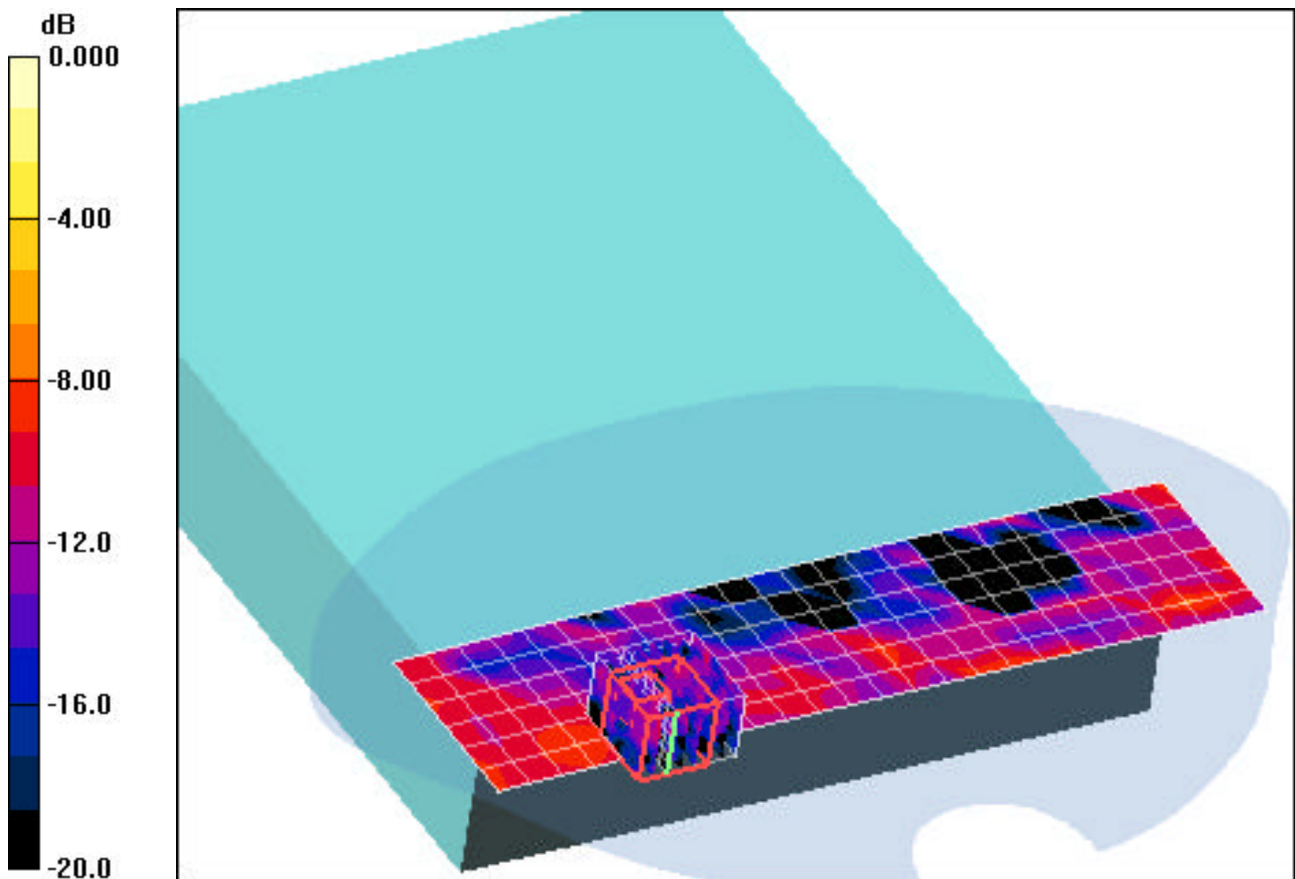
Area Scan (7x25x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 1.06 V/m

Peak SAR (extrapolated) = 0.032 W/kg

SAR(1 g) = 0.00967 mW/g; SAR(10 g) = 0.00282 mW/g



0 dB = 0.200mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: CF -19; Type: Panasonic Notebook PC with WLAN + Bluetooth; Sample #1

Communication System: IEEE 802.11a; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: 5800 Muscle ($\sigma = 5.84$ mho/m, $\epsilon_r = 47.12$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; Laptop Position; Space: 0.0 cm

Test Date: 09-12-2006; Ambient Temp: 23.1°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN3550; ConvF(3.79, 3.79, 3.79); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Mode: IEEE 802.11a, Laptop position, LCD Flip, Mid.ch, 9Mbps, Aux Ant

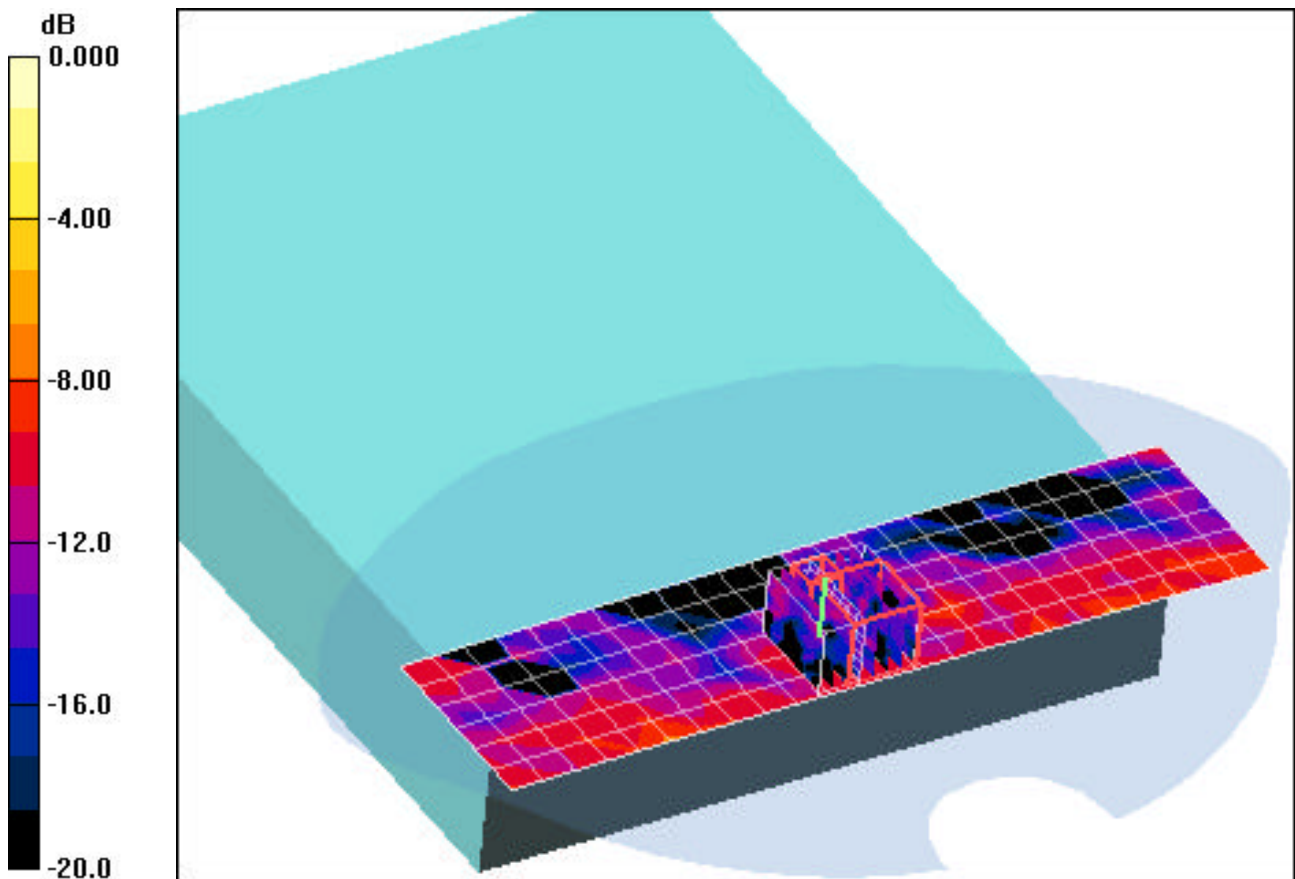
Area Scan (7x25x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 0.559 V/m

Peak SAR (extrapolated) = 0.036 W/kg

SAR(1 g) = 0.00305 mW/g; SAR(10 g) = 0.00144 mW/g



0 dB = 0.200mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: CF-19; Type: Panasonic Notebook PC with WLAN + Bluetooth; Sample #1

Communication System: IEEE 802.11a; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: 5800 Muscle ($\sigma = 5.84$ mho/m, $\epsilon_r = 47.12$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; LCD Top Side; Space: 0.0 cm

Test Date: 09-12-2006; Ambient Temp: 23.1°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN3550; ConvF(3.79, 3.79, 3.79); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Mode: IEEE 802.11a, Tablet position, LCD Flip, Top side, Mid.ch, 9Mbps, Main Ant

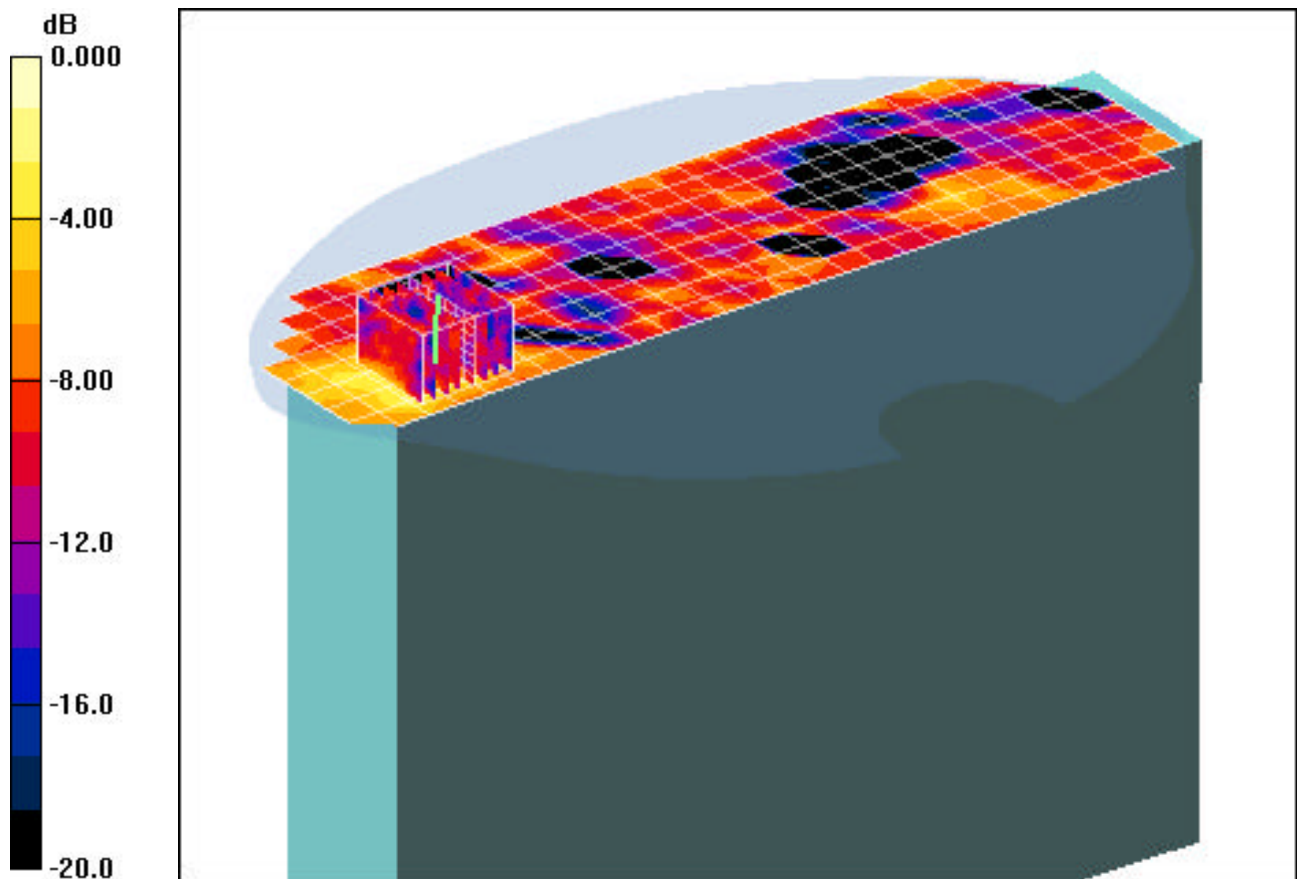
Area Scan (9x29x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 4.28 V/m

Peak SAR (extrapolated) = 0.238 W/kg

SAR(1 g) = 0.064 mW/g; SAR(10 g) = 0.021 mW/g



0 dB = 0.102mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: CF-19; Type: Panasonic Notebook PC with WLAN + Bluetooth; Sample #1

Communication System: IEEE 802.11a; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: 5800 Muscle ($\sigma = 5.84$ mho/m, $\epsilon_r = 47.12$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; LCD Bottom Side; Space: 0.0 cm

Test Date: 09-12-2006; Ambient Temp: 23.1°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN3550; ConvF(3.79, 3.79, 3.79); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Mode: IEEE 802.11a, Tablet position, LCD Flip, Bottom side, Mid.ch, 9Mbps, Aux Ant

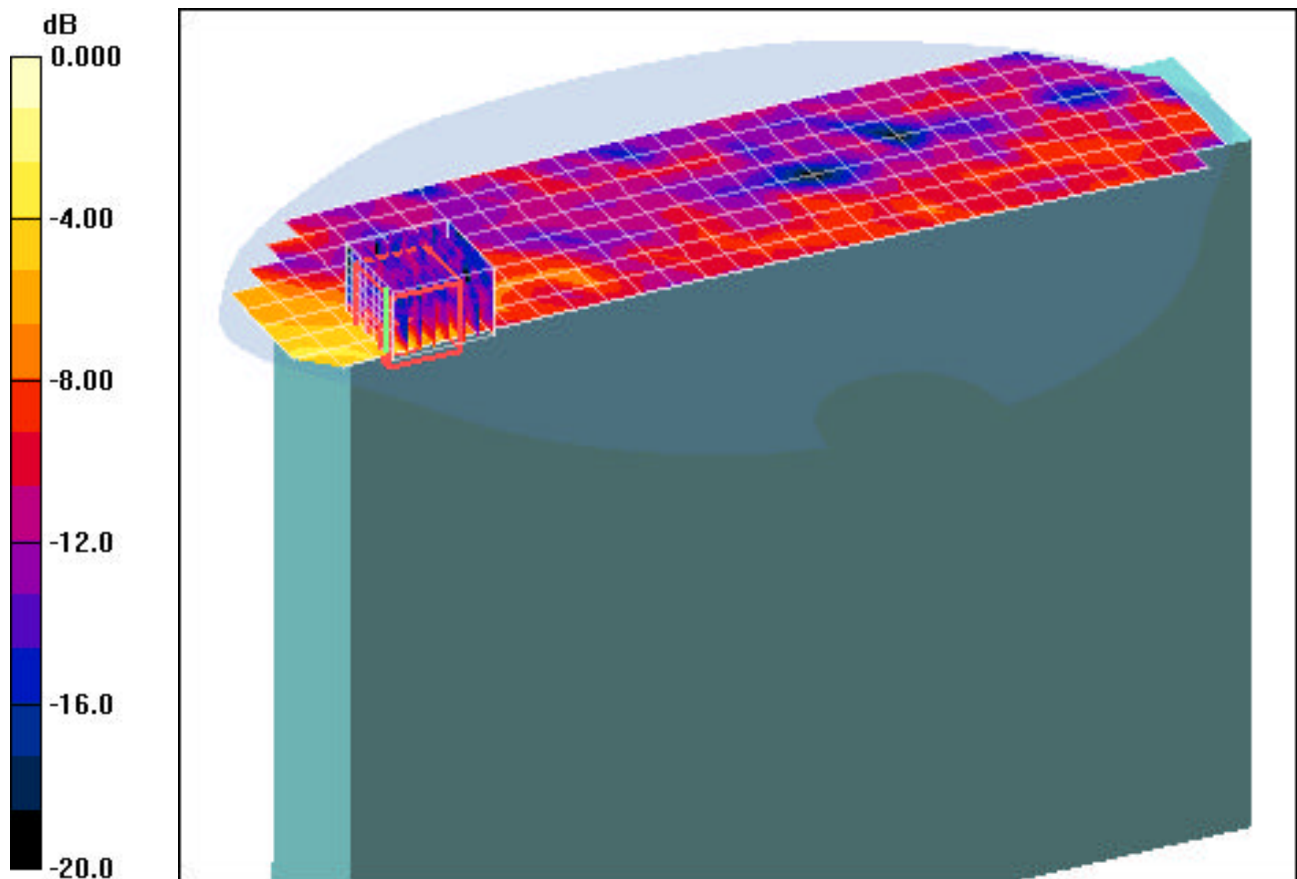
Area Scan (9x29x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 2.66 V/m

Peak SAR (extrapolated) = 0.220 W/kg

SAR(1 g) = 0.046 mW/g; SAR(10 g) = 0.022 mW/g



0 dB = 0.200mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: CF-19; Type: Panasonic Notebook PC with WLAN + Bluetooth; Sample #1

Communication System: Bluetooth; Frequency: 2402 MHz; Duty Cycle: 1:1

Medium: 2450 Muscle ($\sigma = 1.92$ mho/m, $\epsilon_r = 51.34$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; Tablet position; Space: 0.0 cm

Test Date: 09-14-2006; Ambient Temp: 23.5°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN3550; ConvF(6.27, 6.27, 6.27); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Mode: Bluetooth, Tablet position, LCD Flip, Left side, Low.ch

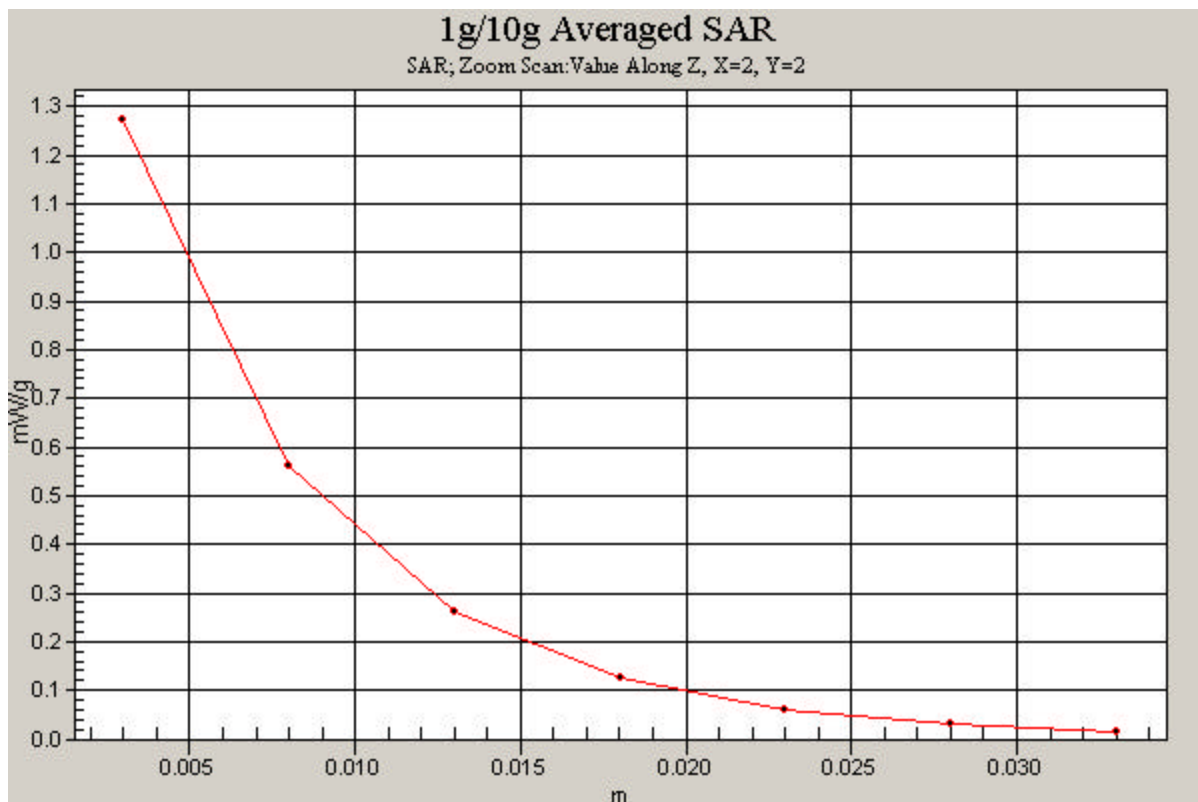
Area Scan (7x21x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 25.8 V/m

Peak SAR (extrapolated) = 2.19 W/kg

SAR(1 g) = 0.883 mW/g; SAR(10 g) = 0.331 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: CF-19; Type: Panasonic Notebook PC with WLAN + Bluetooth; Sample #1

Communication System: IEEE 802.11a; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: 5800 Muscle ($\sigma = 5.84$ mho/m, $\epsilon_r = 47.12$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; Bystander Position; Space: 1.5 cm

Test Date: 09-11-2006; Ambient Temp: 23.7°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN3550; ConvF(3.79, 3.79, 3.79); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Mode: IEEE 802.11a, Bystander position, LCD Flip, Mid.ch, 9Mbps, Aux Ant

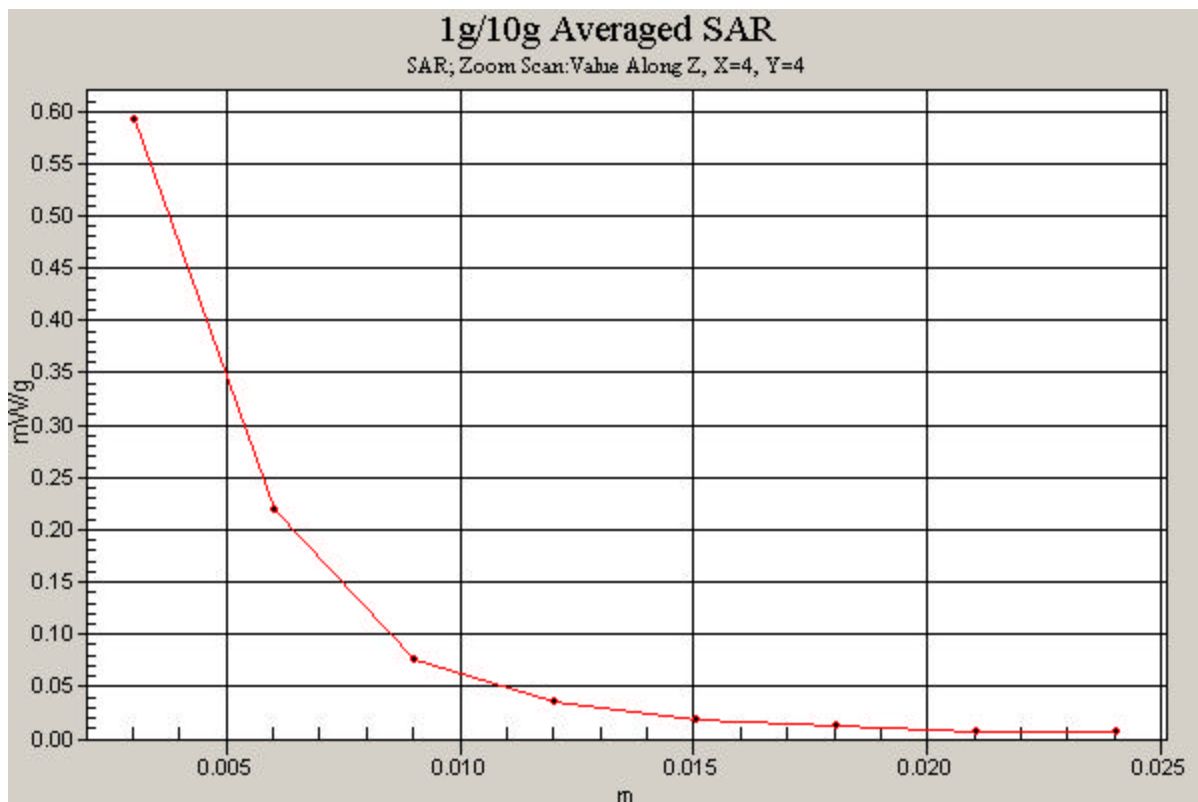
Area Scan (9x25x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 10.5 V/m

Peak SAR (extrapolated) = 1.86 W/kg

SAR(1 g) = 0.459 mW/g; SAR(10 g) = 0.177 mW/g



APPENDIX B: DIPOLE VALIDATION

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:719

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

Medium: 2450 Brain ($\sigma = 1.84$ mho/m, $\epsilon_r = 40.51$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-13-2006; Ambient Temp: 23.5°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN3550; ConvF(6.19, 6.19, 6.19); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: 1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

2450MHz Dipole Validation

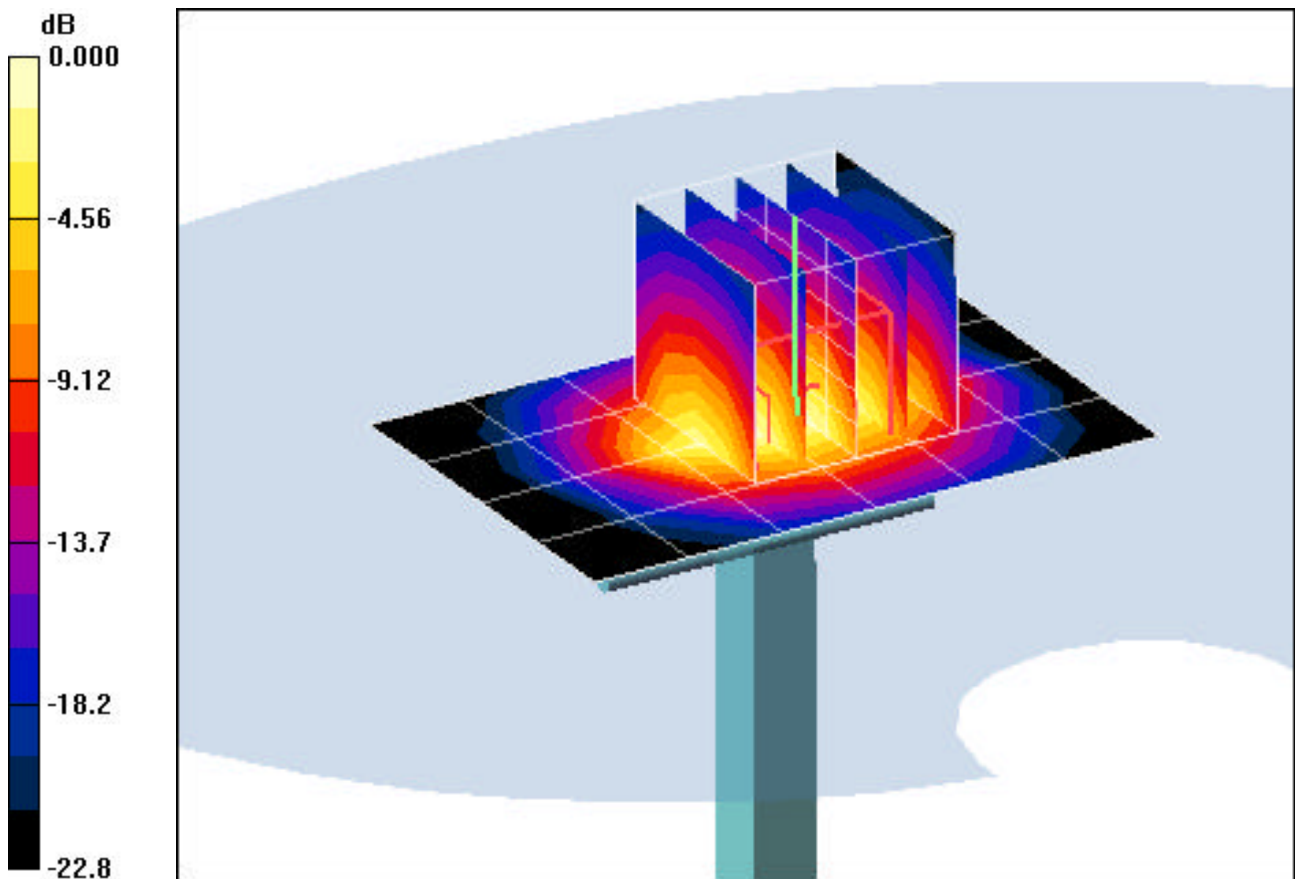
Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 4.91 mW/g; SAR(10 g) = 2.27 mW/g

Target SAR(1g) = 5.24 mW/g; Deviation = -6.29 %



0 dB = 6.33mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:719

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

Medium: 2450 Brain ($\sigma = 1.84$ mho/m, $\epsilon_r = 40.51$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-14-2006; Ambient Temp: 23.7°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN3550; ConvF(6.19, 6.19, 6.19); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: 1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

2450MHz Dipole Validation

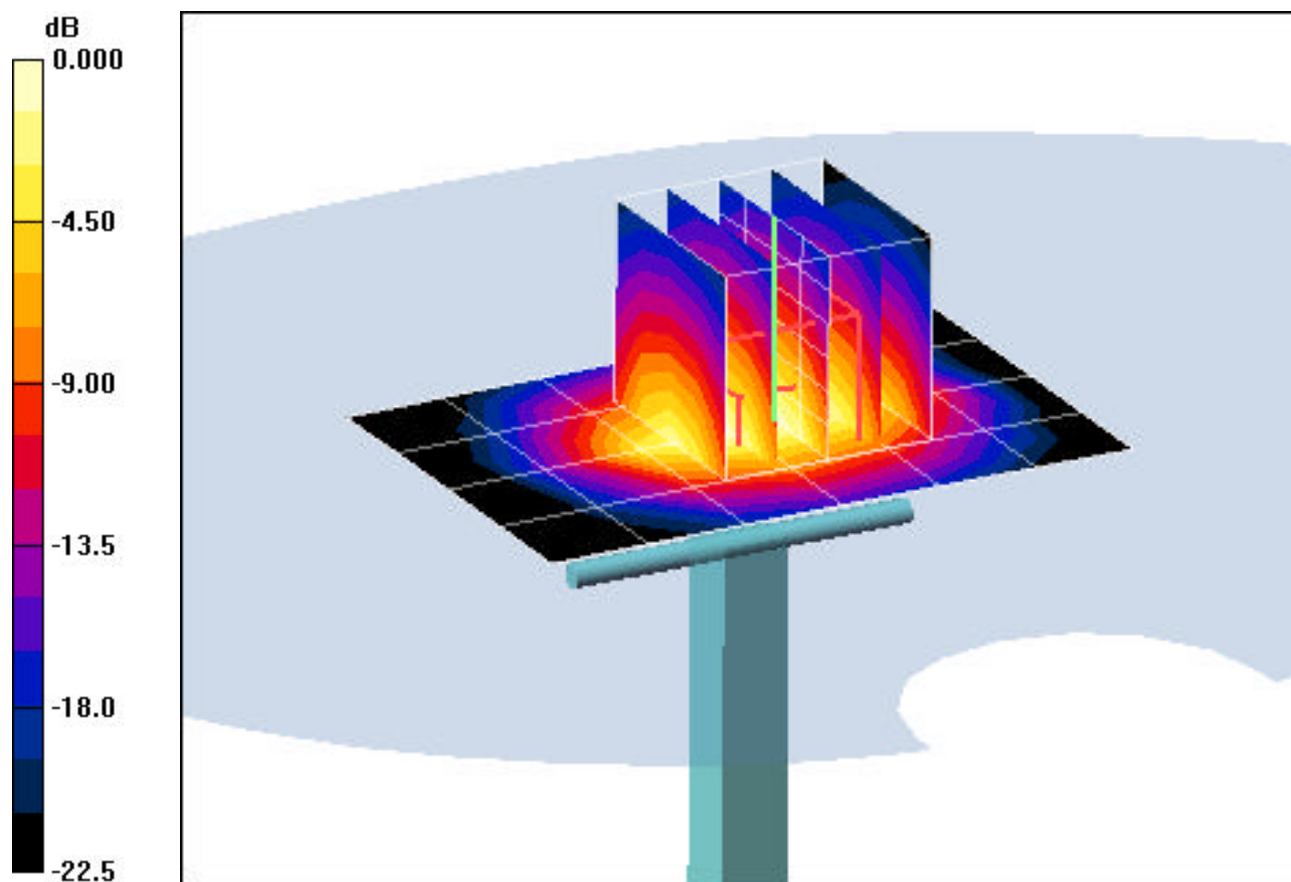
Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

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

Input Power = 20.0 dBm (100 mW)

SAR(1 g) = 5.01 mW/g; SAR(10 g) = 2.33 mW/g

Target SAR(1g) = 5.24 mW/g; Deviation = -4.38 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1007

Communication System: CW; Frequency: 5800 MHz; Duty Cycle: 1:1

Medium: 5800 Brain ($\sigma = 5.18$ mho/m, $\epsilon_r = 34.36$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-11-2006; Ambient Temp: 23.2°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN3550; ConvF(3.87, 3.87, 3.87); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

5800MHz Dipole Validation

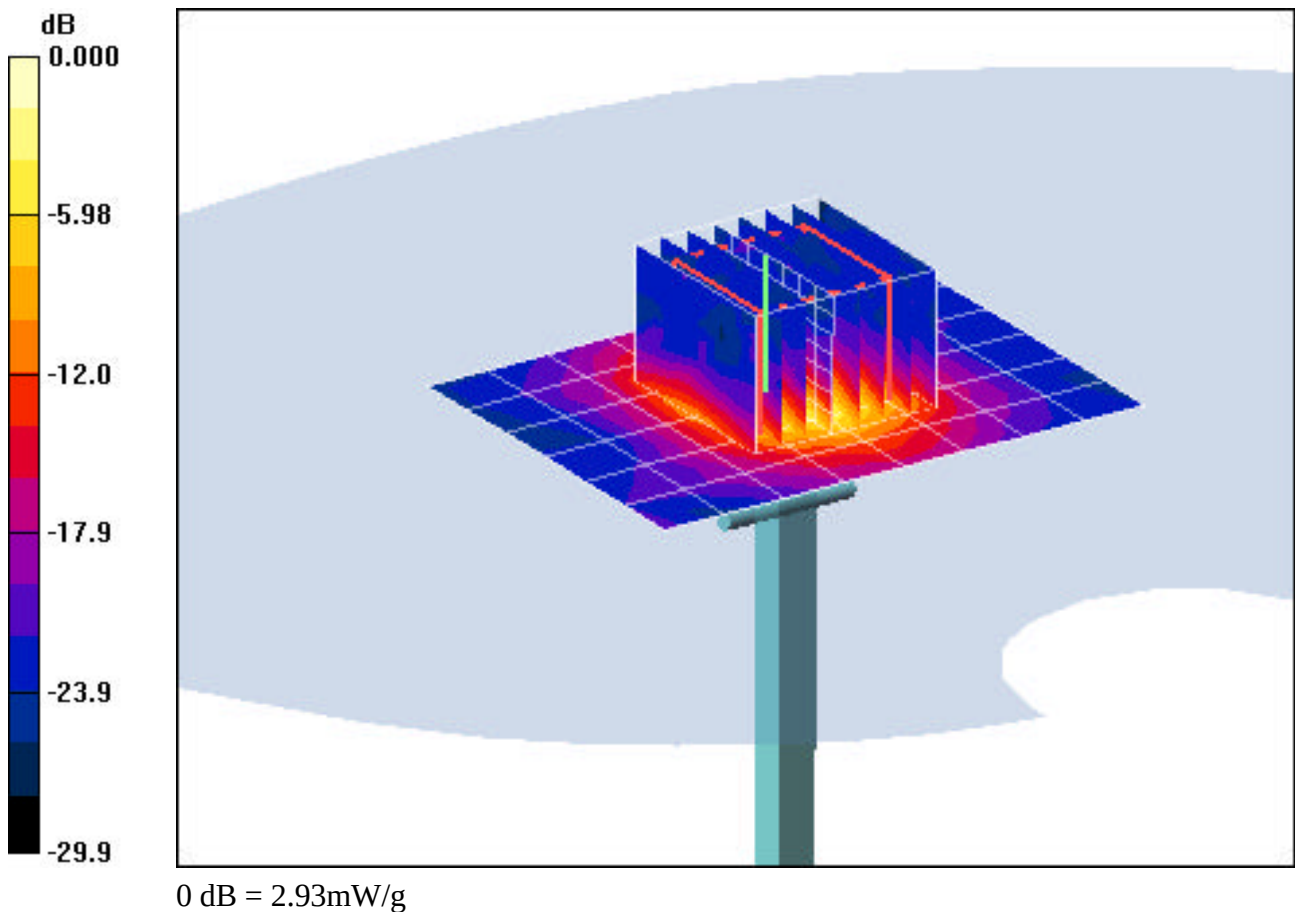
Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Input Power = 14.0 dBm (25 mW)

SAR(1 g) = 2.29 mW/g; SAR(10 g) = 0.631 mW/g

Target SAR(1g) = 2.25 mW/g; Deviation = +1.77 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1007

Communication System: CW; Frequency: 5800 MHz; Duty Cycle: 1:1

Medium: 5800 Brain ($\sigma = 5.18$ mho/m, $\epsilon_r = 34.36$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 09-12-2006; Ambient Temp: 23.0°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN3550; ConvF(3.87, 3.87, 3.87); Calibrated: 1/18/2006

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 9/4/2006

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

5800MHz Dipole Validation

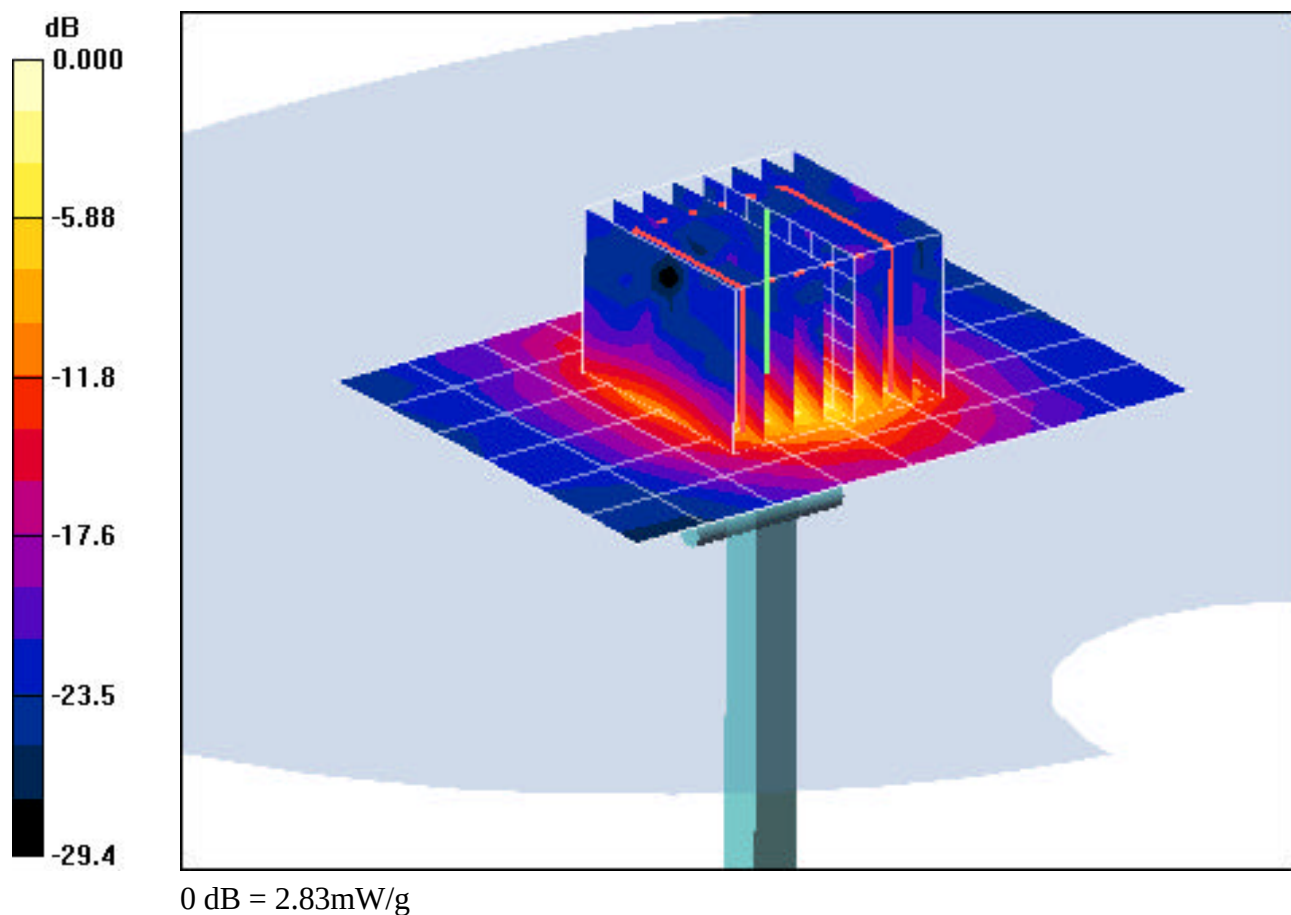
Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Input Power = 14.0 dBm (25 mW)

SAR(1 g) = 2.22 mW/g; SAR(10 g) = 0.609 mW/g

Target SAR(1g) = 2.25 mW/g; Deviation = -2.22 %



APPENDIX C: PROBE CALIBRATION



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

Accreditation No.: **SCS 108**

Client **PC Test**

Certificate No: **EX3-3550_Jan06**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3550**

Calibration procedure(s) **QA CAL-01.v5, QA CAL-12.v4 and QA CAL-14.v3
Calibration procedure for dosimetric E-field probes**

Calibration date: **January 18, 2006**

Condition of the calibrated item **In Tolerance**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	3-May-05 (METAS, No. 251-00466)	May-06
Power sensor E4412A	MY41495277	3-May-05 (METAS, No. 251-00466)	May-06
Power sensor E4412A	MY41498087	3-May-05 (METAS, No. 251-00466)	May-06
Reference 3 dB Attenuator	SN: S5054 (3c)	11-Aug-05 (METAS, No. 251-00499)	Aug-06
Reference 20 dB Attenuator	SN: S5086 (20b)	3-May-05 (METAS, No. 251-00467)	May-06
Reference 30 dB Attenuator	SN: S5129 (30b)	11-Aug-05 (METAS, No. 251-00500)	Aug-06
Reference Probe ES3DV2	SN: 3013	2-Jan-06 (SPEAG, No. ES3-3013_Jan06)	Jan-07
DAE4	SN: 654	27-Oct-05 (SPEAG, No. DAE4-654_Oct05)	Oct-06

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

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Fin Bomholt	R&D Director	

Issued: January 21, 2006

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



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

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ 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
- CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001

Methods Applied and Interpretation of Parameters:

- 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 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 (no uncertainty required). DCP does not depend on frequency nor media.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ 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:3550

Manufactured:	May 19, 2004
Last calibrated:	October 26, 2004
Recalibrated:	January 18, 2006

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: EX3DV4 SN:3550

Sensitivity in Free Space^A

Diode Compression^B

NormX	0.483 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP X	92 mV
NormY	0.485 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Y	92 mV
NormZ	0.494 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Z	92 mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL **900 MHz** **Typical SAR gradient: 5 % per mm**

Sensor Center to Phantom Surface Distance		2.0 mm	3.0 mm
SAR _{be} [%]	Without Correction Algorithm	3.3	1.0
SAR _{be} [%]	With Correction Algorithm	0.1	0.3

TSL **1810 MHz** **Typical SAR gradient: 10 % per mm**

Sensor Center to Phantom Surface Distance		2.0 mm	3.0 mm
SAR _{be} [%]	Without Correction Algorithm	4.2	2.2
SAR _{be} [%]	With Correction Algorithm	0.8	0.6

Sensor Offset

Probe Tip to Sensor Center **1.0 mm**

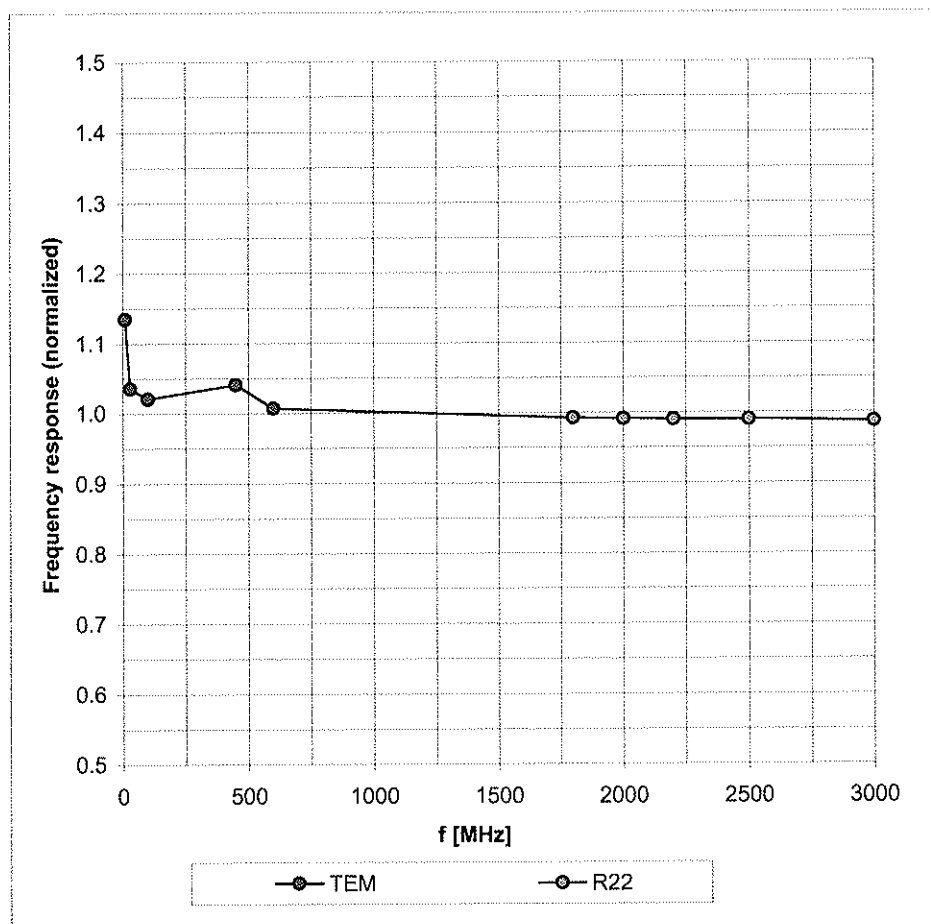
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

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

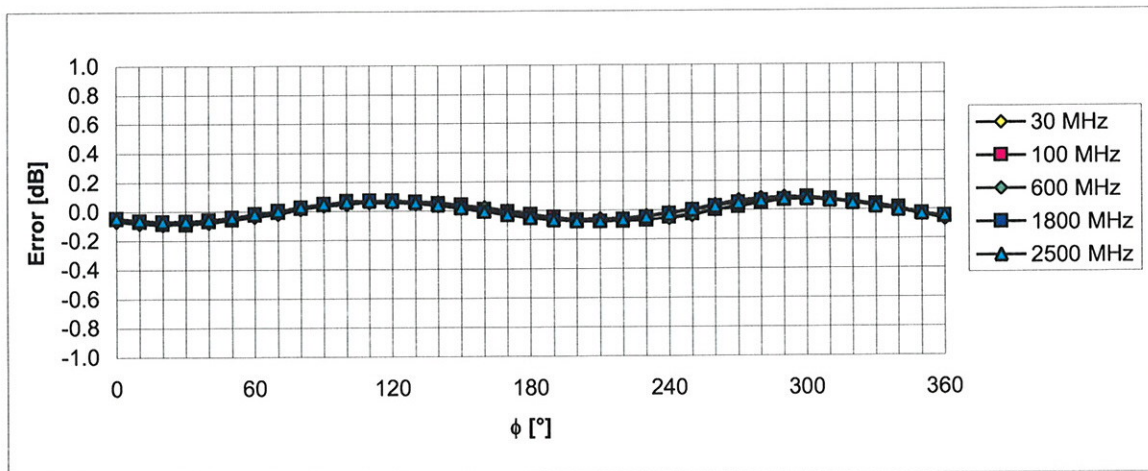
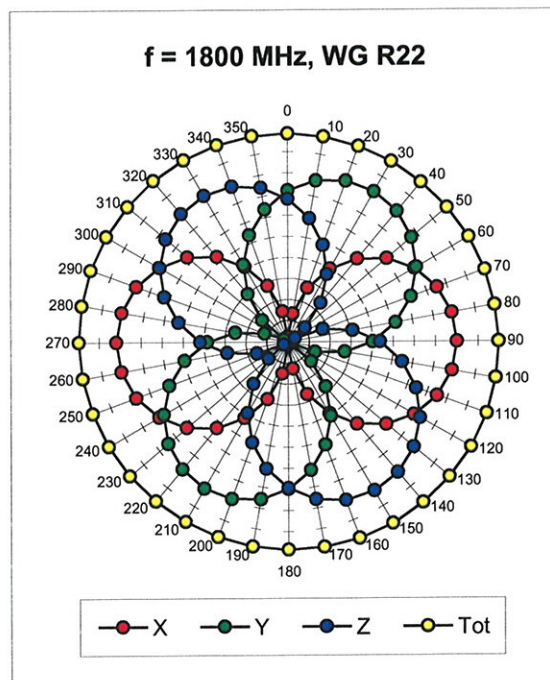
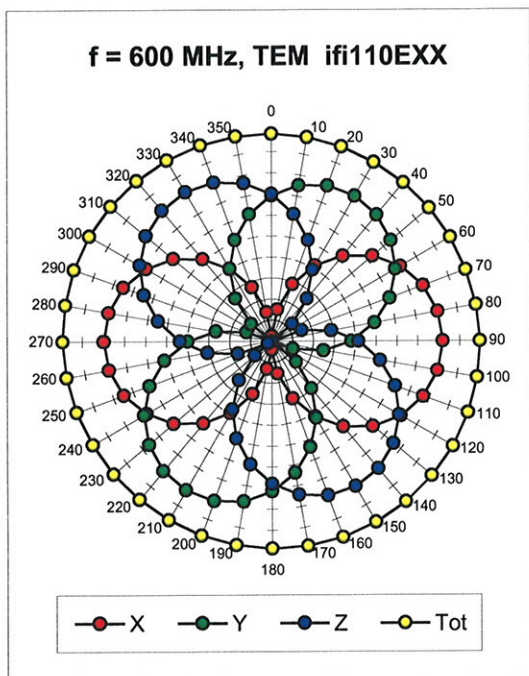
^B Numerical linearization parameter: uncertainty not required.

Frequency Response of E-Field

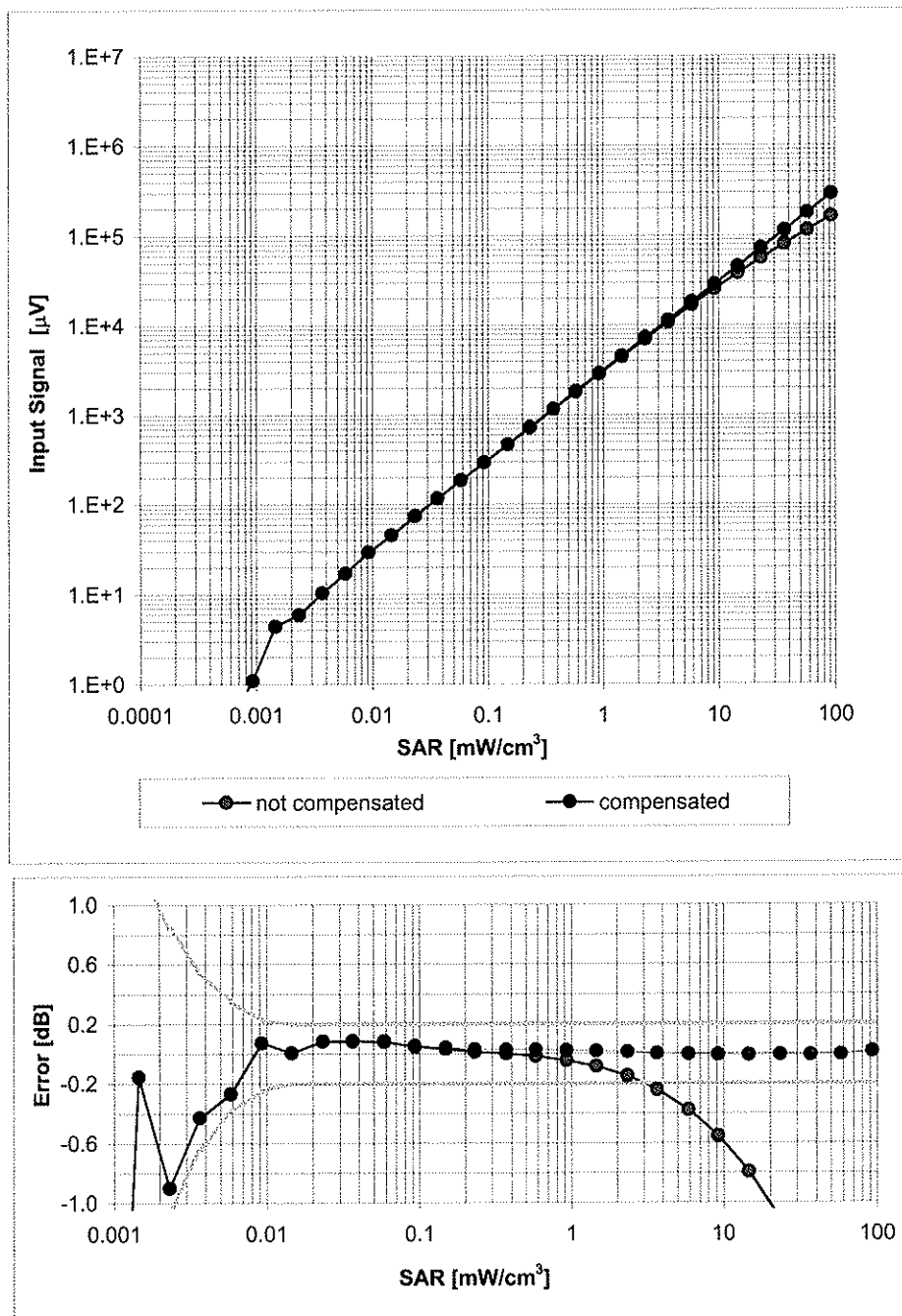
(TEM-Cell:ifi110 EXX, Waveguide: R22)



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

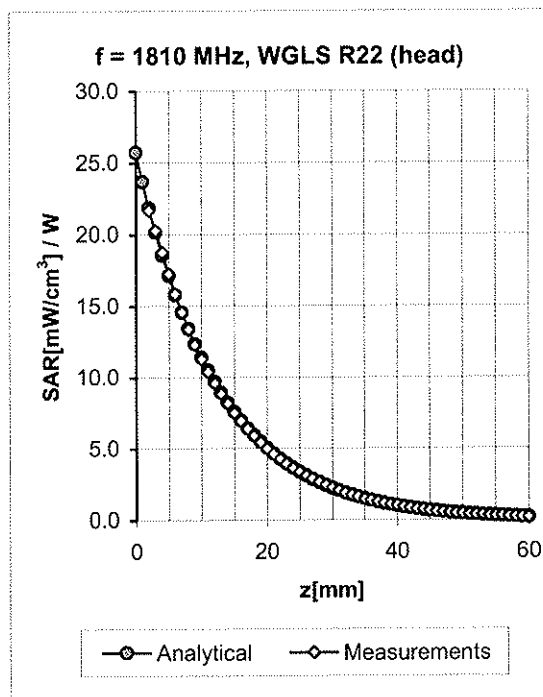
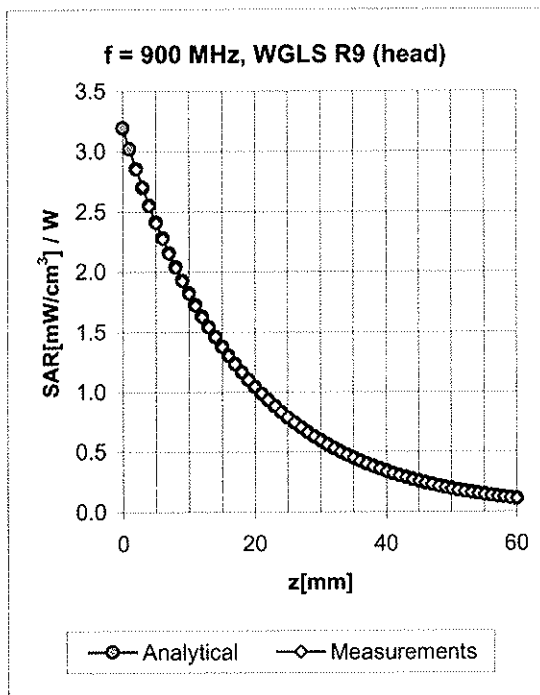
Receiving Pattern (ϕ), $\theta = 0^\circ$ Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

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



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

Conversion Factor Assessment

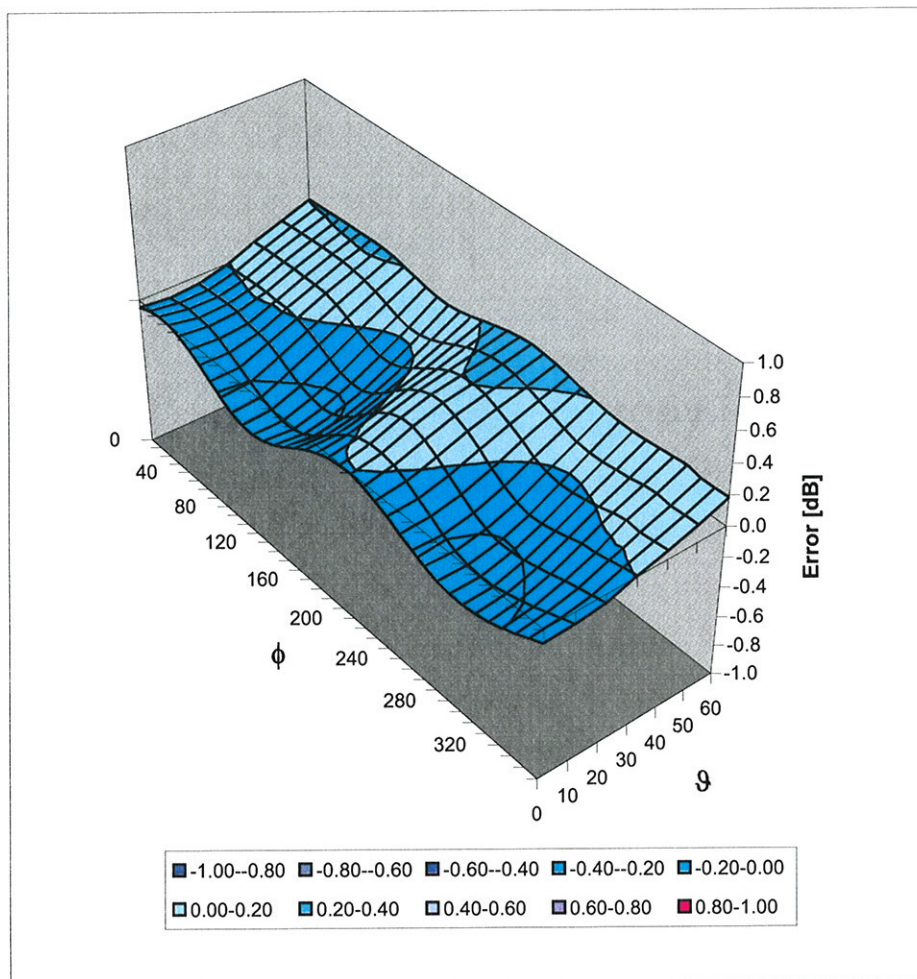


f [MHz]	Validity [MHz] ^c	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
450	± 50 / ± 100	Head	43.5 ± 5%	0.87 ± 5%	0.15	2.73	7.91 ± 13.3% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.72	0.65	7.71 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.49	0.86	6.65 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.54	0.55	6.19 ± 11.8% (k=2)
5200	± 50 / ± 100	Head	36.0 ± 5%	4.76 ± 5%	0.52	1.05	4.39 ± 13.1% (k=2)
5800	± 50 / ± 100	Head	35.3 ± 5%	5.27 ± 5%	0.56	0.93	3.87 ± 13.1% (k=2)
450	± 50 / ± 100	Body	56.7 ± 5%	0.94 ± 5%	0.12	2.95	8.61 ± 13.3% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.37	0.86	7.56 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.11	4.07	6.30 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	1.73	0.34	6.27 ± 11.8% (k=2)
5200	± 50 / ± 100	Body	49.0 ± 5%	5.30 ± 5%	0.50	1.54	4.19 ± 13.1% (k=2)
5800	± 50 / ± 100	Body	48.2 ± 5%	6.00 ± 5%	0.51	1.48	3.79 ± 13.1% (k=2)

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

Deviation from Isotropy in HSL

Error (ϕ , θ), $f = 900$ MHz



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