APPENDIX B - SYSTEM PERFORMANCE CHECK

2.4GHz Head Validation

Date/Time: 9/8/2008 7:15:07 AM

DUT: Dipole 2450 MHz; Type: 1S2452

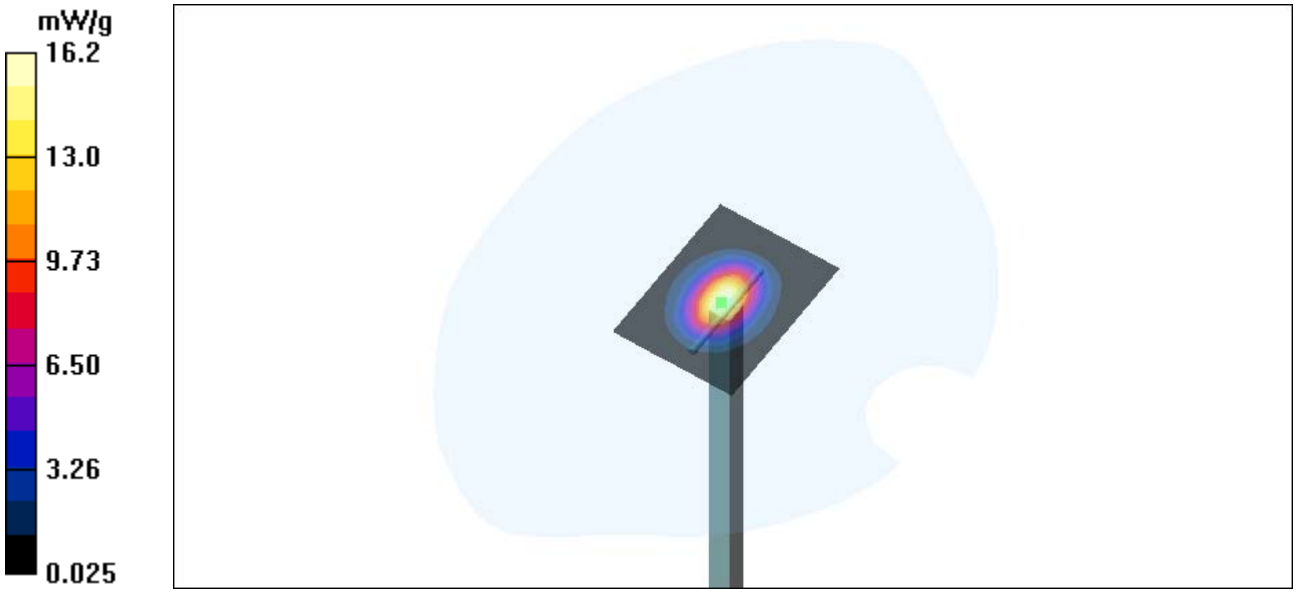
Ambient Temp: 22.0 deg C; Fluid Temp: 21.6 deg C

Communication System: CW; ; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL2450 Medium parameters used: f = 2450 MHz; σ = 1.87 mho/m; ε_r = 38.3; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(7.67, 7.67, 7.67); Calibrated: 5/16/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial: TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 16.2 mW/g

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 90.8 V/m; Power Drift = 0.004 dB
Peak SAR (extrapolated) = 30.5 W/kg
SAR(1 g) = 14.1 mW/g; SAR(10 g) = 6.4 mW/g
Maximum value of SAR (measured) = 15.9 mW/g



2.4GHz Body Validation

Date/Time: 9/8/2008 8:56:12 AM

DUT: Dipole 2450 MHz; Type: 1S2452

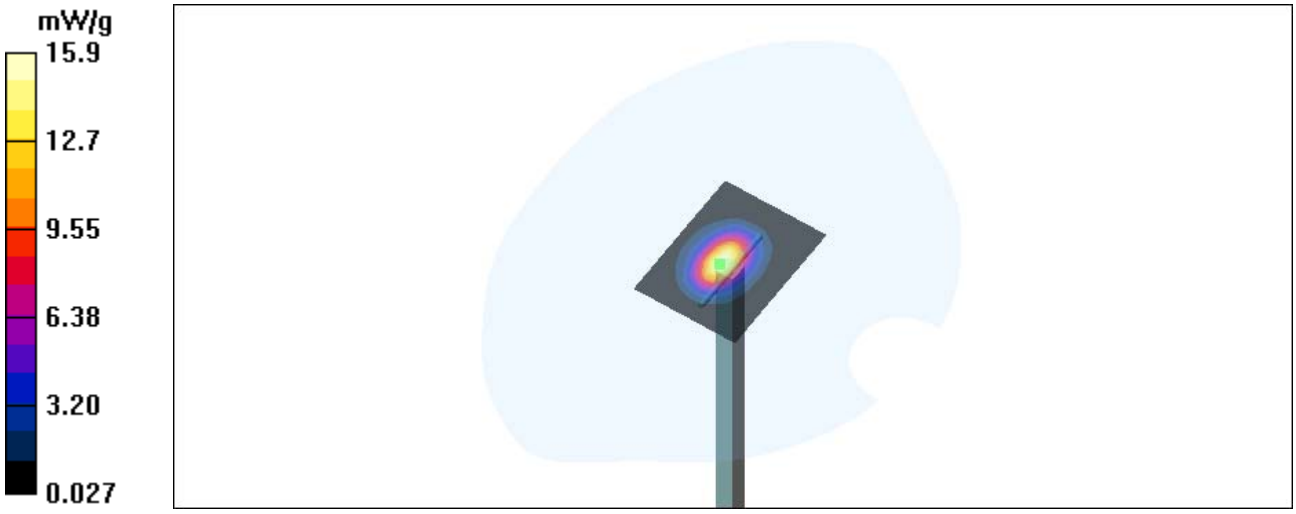
Ambient Temp: 22.0 deg C; Fluid Temp: 21.6 deg C

Communication System: CW; ; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: M2450 Medium parameters used: f = 2450 MHz; σ = 2 mho/m; ε_r = 50.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(7.89, 7.89, 7.89); Calibrated: 5/16/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial: TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 15.9 mW/g

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 84.7 V/m; Power Drift = -0.035 dB
Peak SAR (extrapolated) = 26.5 W/kg
SAR(1 g) = 13.2 mW/g; SAR(10 g) = 6.15 mW/g
Maximum value of SAR (measured) = 15.0 mW/g



5200MHz Validation

Date/Time: 9/9/2008 6:20:23 AM

DUT: Dipole 5500 MHz; Type: 1S2471

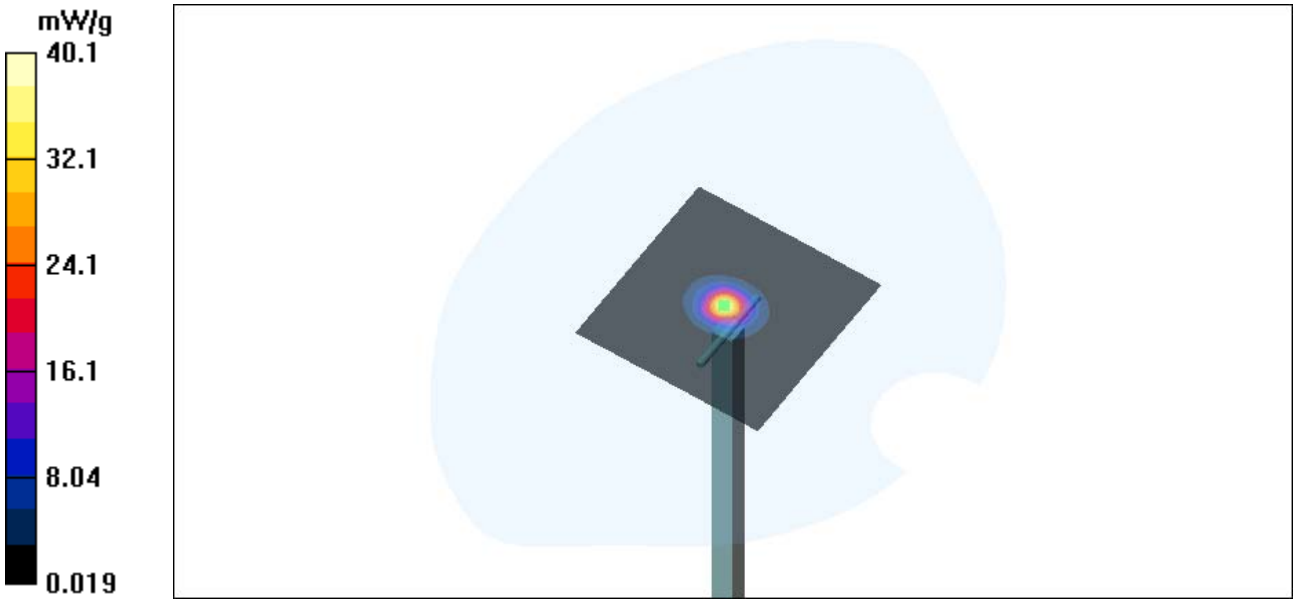
Medium Notes: Ambient Temp: 22.0 deg C; Fluid Temp: 21.6 deg C

Communication System: CW; ; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: 5200-5500-5800 MHz Head Medium parameters used: f = 5200 MHz; σ = 4.7 mho/m; ε_r = 35.4; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(5.04, 5.04, 5.04); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial: TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 40.1 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 78.1 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 77.3 W/kg
SAR(1 g) = 18.6 mW/g; SAR(10 g) = 5.19 mW/g
Maximum value of SAR (measured) = 39.0 mW/g



5500MHz Head Validation

Date/Time: 9/9/2008 7:23:05 AM

DUT: Dipole 5500 MHz; Type: 1S2571

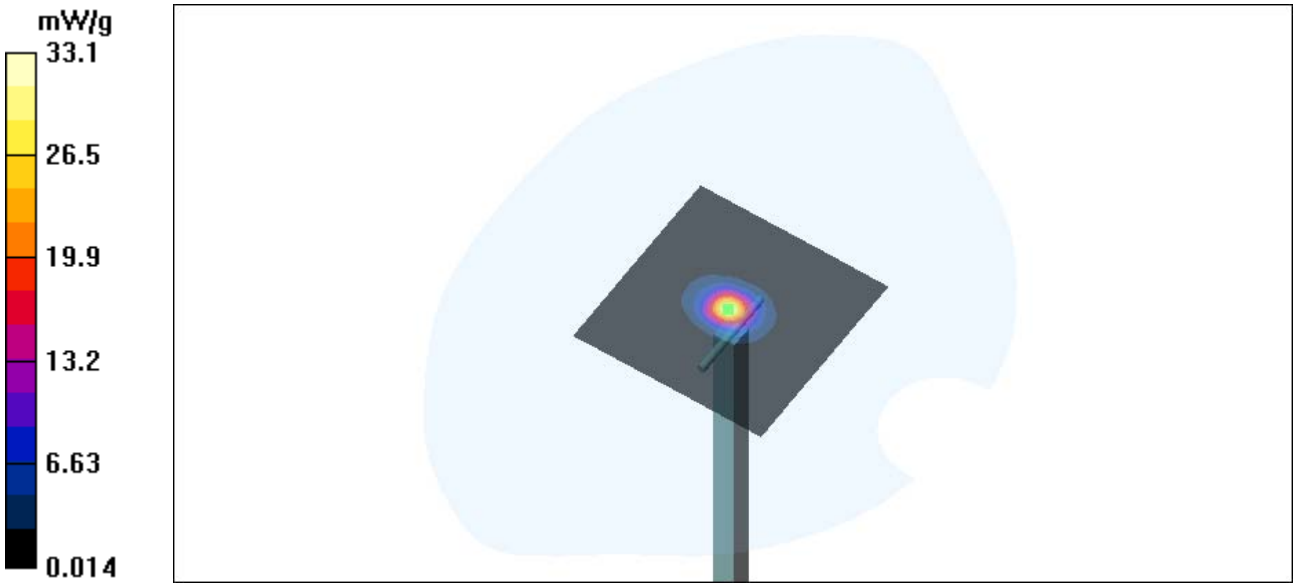
Medium Notes: Ambient Temp: 22.0 deg C; Fluid Temp: 21.6 deg C

Communication System: CW; ; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: 5200-5500-5800 MHz Head Medium parameters used: f = 5500 MHz; σ = 5.1 mho/m; ε_r = 34.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(4.61, 4.61, 4.61); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial: TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 33.1 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 72.1 V/m; Power Drift = 0.010 dB
Peak SAR (extrapolated) = 62.7 W/kg
SAR(1 g) = 15 mW/g; SAR(10 g) = 4.2 mW/g
Maximum value of SAR (measured) = 32.0 mW/g



5800MHz Head Validation

Date/Time: 9/9/2008 8:16:15 AM

DUT: Dipole 5500 MHz; Type: 1S2571

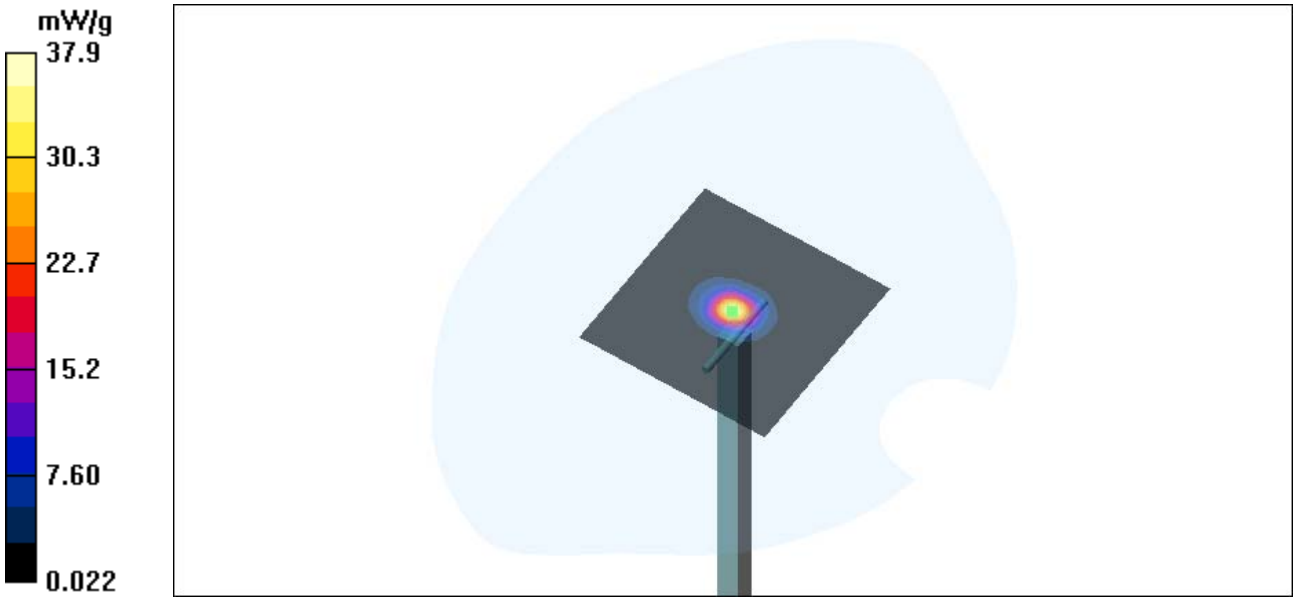
Medium Notes: Ambient Temp: 22.0 deg C; Fluid Temp: 21.6 deg C

Communication System: CW; ; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: 5200-5500-5800 MHz Head Medium parameters used: f = 5800 MHz; σ = 5.4 mho/m; ε_r = 34.3; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(4.53, 4.53, 4.53); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial: TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 37.9 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 71.1 V/m; Power Drift = -0.147 dB
Peak SAR (extrapolated) = 83.1 W/kg
SAR(1 g) = 17.4 mW/g; SAR(10 g) = 4.83 mW/g
Maximum value of SAR (measured) = 39.8 mW/g



5200MHz Head Validation

Date/Time: 9/10/2008 6:32:21 AM

DUT: Dipole 5500 MHz; Type: 1S2571

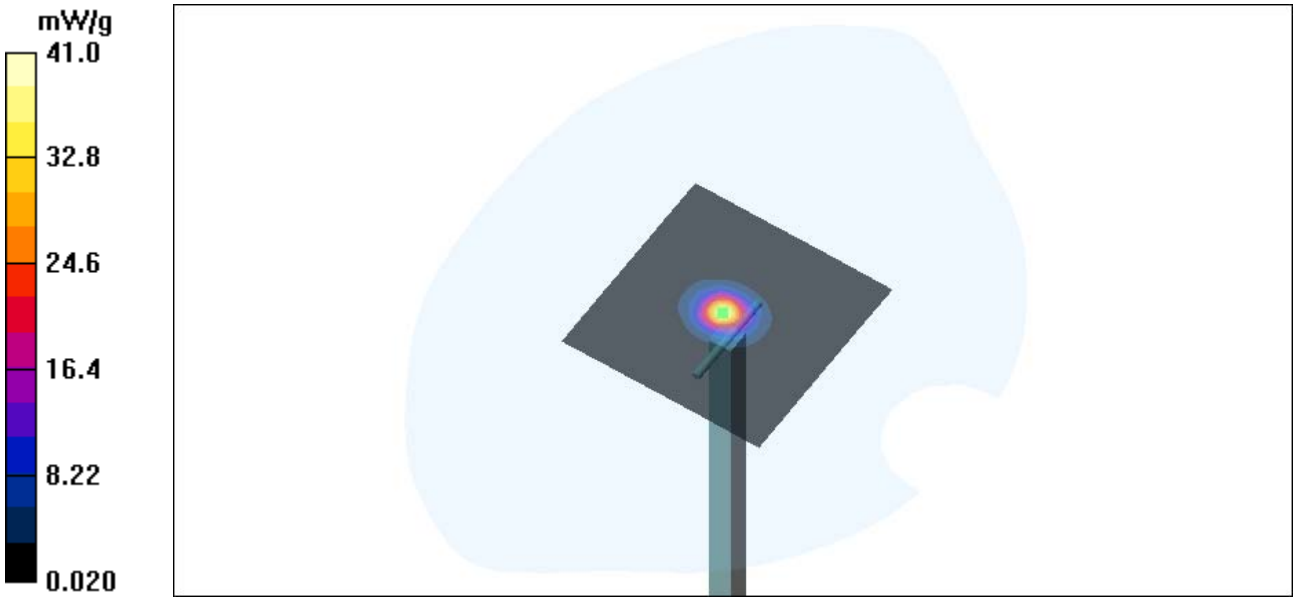
Medium Notes: Ambient Temp: 22.2 deg C; Fluid Temp: 21.9 deg C

Communication System: CW; ; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: 5200-5500-5800 MHz Head Medium parameters used: f = 5200 MHz; σ = 4.8 mho/m; ε_r = 36.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(5.04, 5.04, 5.04); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial: TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 41.0 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 78.9 V/m; Power Drift = 0.054 dB
Peak SAR (extrapolated) = 78.9 W/kg
SAR(1 g) = 19 mW/g; SAR(10 g) = 5.3 mW/g
Maximum value of SAR (measured) = 39.8 mW/g



5500MHz Head Validation

Date/Time: 9/10/2008 7:13:42 AM

DUT: Dipole 5500 MHz; Type: 1S2571

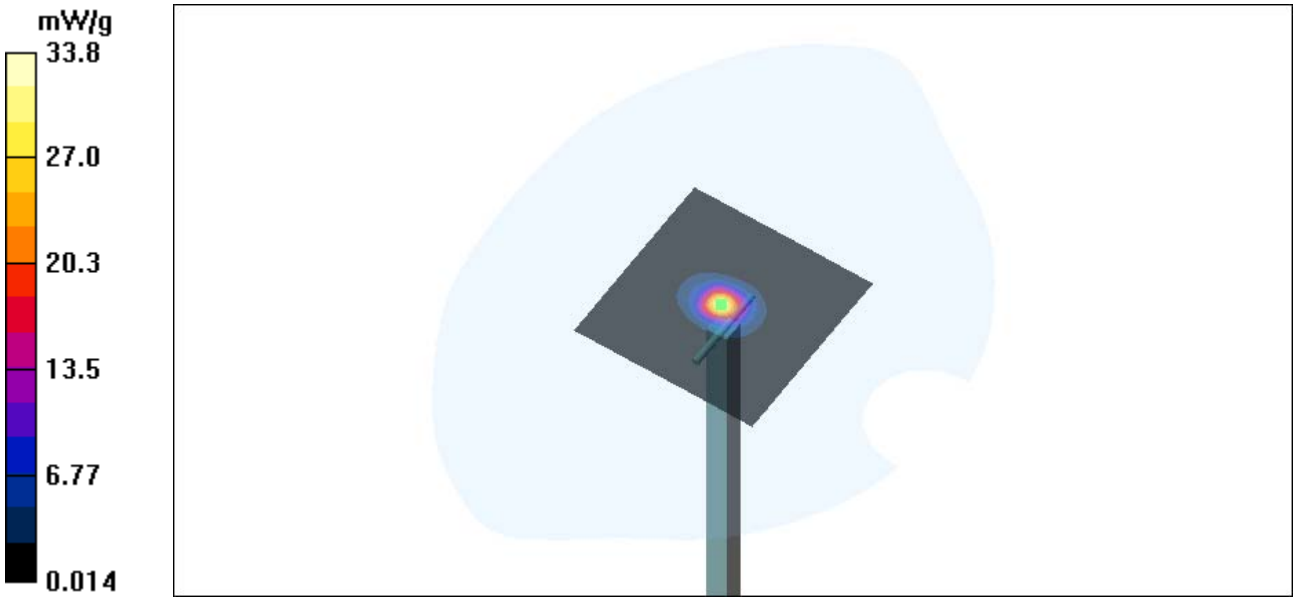
Medium Notes: Ambient Temp: 22.2 deg C; Fluid Temp: 21.9 deg C

Communication System: CW; ; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: 5200-5500-5800 MHz Head Medium parameters used: f = 5500 MHz; σ = 5.2 mho/m; ε_r = 35.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(4.61, 4.61, 4.61); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial: TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 33.8 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 71.1 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 63.9 W/kg
SAR(1 g) = 15.3 mW/g; SAR(10 g) = 4.28 mW/g
Maximum value of SAR (measured) = 32.6 mW/g



5800MHz Head Validation

Date/Time: 9/10/2008 8:08:15 AM

DUT: Dipole 5500 MHz; Type: 1S2571

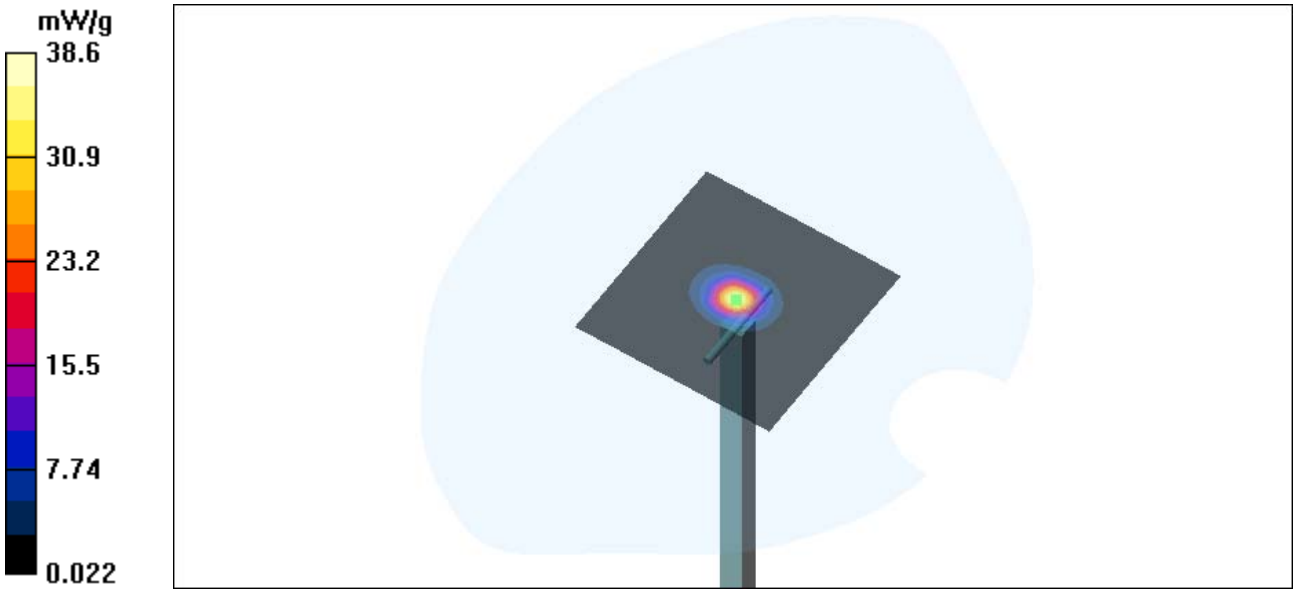
Medium Notes: Ambient Temp: 22.2 deg C; Fluid Temp: 21.9 deg C

Communication System: CW; ; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: 5200-5500-5800 MHz Head Medium parameters used: f = 5800 MHz; σ = 5.5 mho/m; ε_r = 34.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(4.53, 4.53, 4.53); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial: TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 38.6 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 72.8 V/m; Power Drift = 0.032 dB
Peak SAR (extrapolated) = 84.7 W/kg
SAR(1 g) = 17.7 mW/g; SAR(10 g) = 4.92 mW/g
Maximum value of SAR (measured) = 40.5 mW/g



5200MHz Head Validation

Date/Time: 9/11/2008 6:21:19 AM

DUT: Dipole 5500 MHz; Type: 1S2571

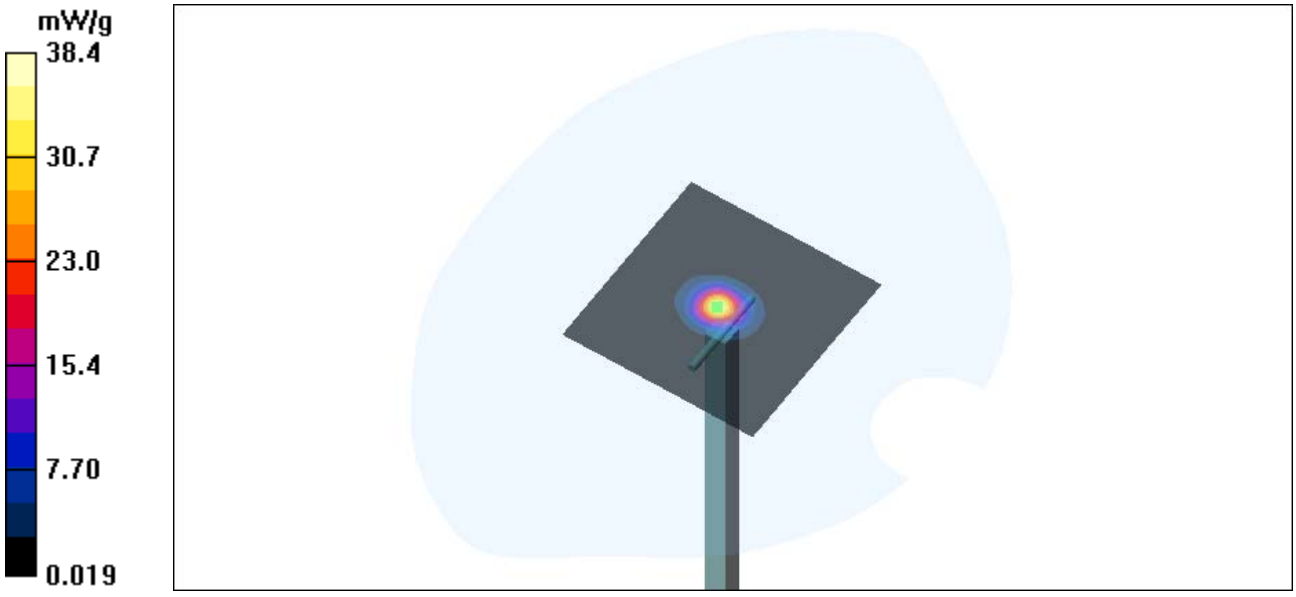
Medium Notes: Ambient Temp: 22.3 deg C; Fluid Temp: 21.8 deg C

Communication System: CW; ; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: 5200-5500-5800 MHz Head Medium parameters used: f = 5200 MHz; σ = 4.5 mho/m; ε_r = 35.6; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(5.04, 5.04, 5.04); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 38.4 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 80.5 V/m; Power Drift = 0.036 dB
Peak SAR (extrapolated) = 74.0 W/kg
SAR(1 g) = 17.8 mW/g; SAR(10 g) = 4.97 mW/g
Maximum value of SAR (measured) = 37.3 mW/g



5500MHz Head Validation

Date/Time: 9/11/2008 7:19:33 AM

DUT: Dipole 5500 MHz; Type: 1S2571

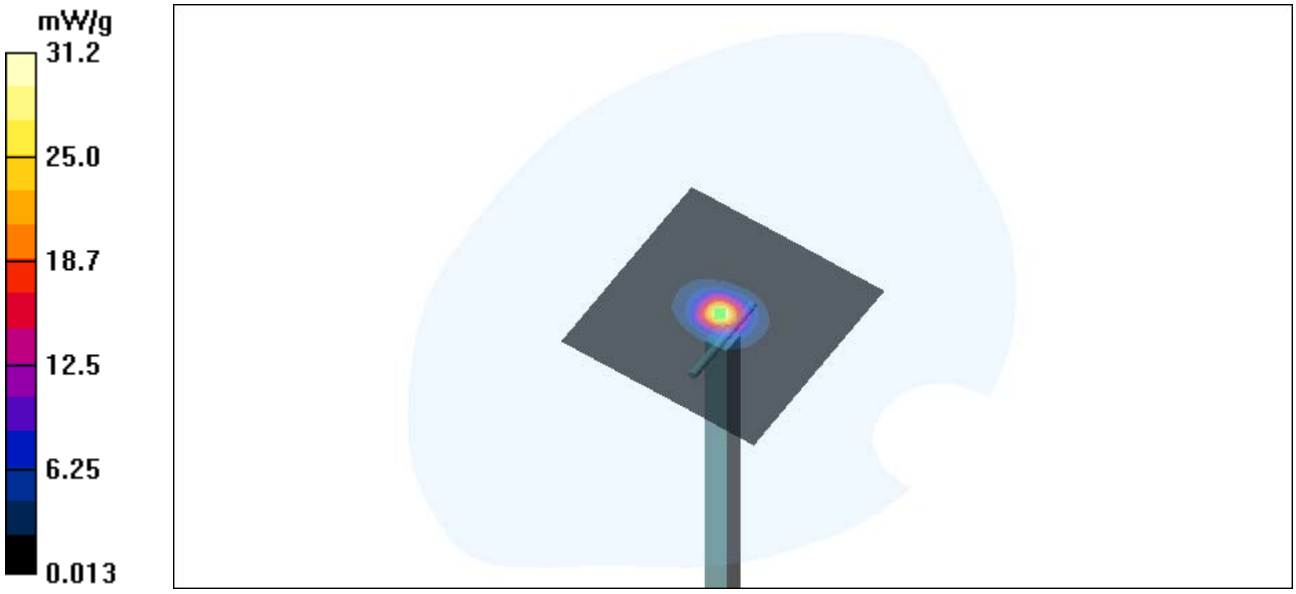
Medium Notes: Ambient Temp: 22.3 deg C; Fluid Temp: 21.8 deg C

Communication System: CW; ; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: 5200-5500-5800 MHz Head Medium parameters used: f = 5500 MHz; σ = 4.8 mho/m; ε_r = 35.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(4.61, 4.61, 4.61); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 31.2 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 69.8 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 59.0 W/kg
SAR(1 g) = 14.1 mW/g; SAR(10 g) = 3.96 mW/g
Maximum value of SAR (measured) = 30.1 mW/g



5800MHz Head Validation

Date/Time: 9/11/2008 8:11:56 AM

DUT: Dipole 5500 MHz; Type: 1S2571

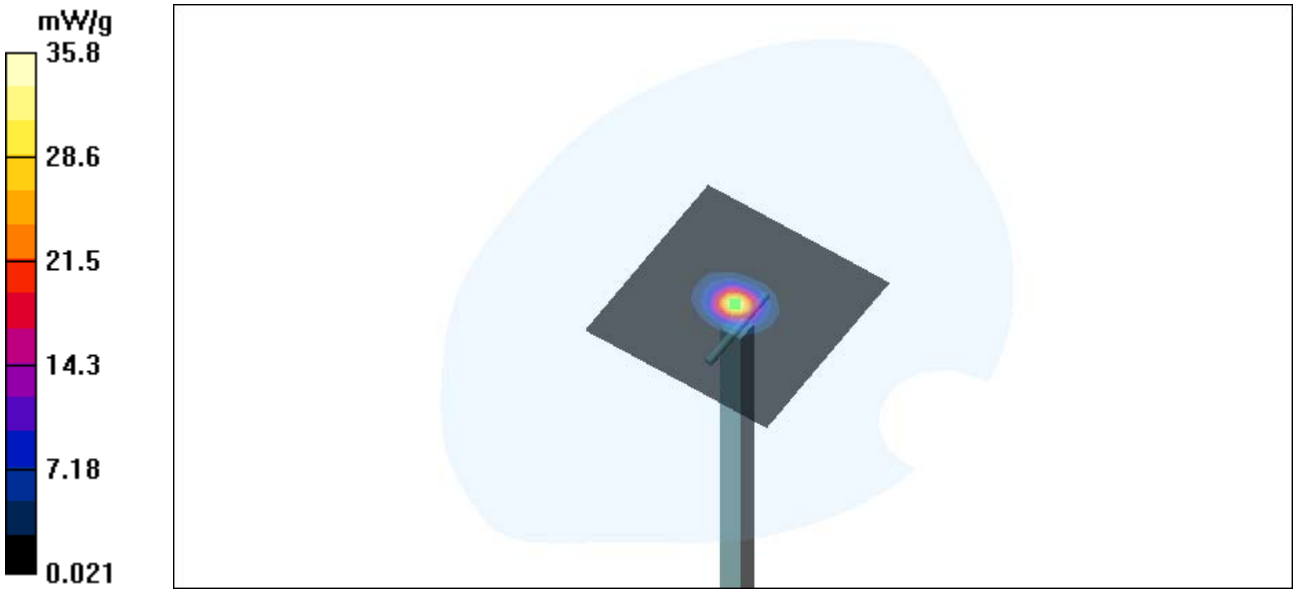
Medium Notes: Ambient Temp: 22.3 deg C; Fluid Temp: 21.8 deg C

Communication System: CW; ; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: 5200-5500-5800 MHz Head Medium parameters used: f = 5800 MHz; σ = 5.1 mho/m; ε_r = 34.6; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(4.53, 4.53, 4.53); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 35.8 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 71.5 V/m; Power Drift = -0.017 dB
Peak SAR (extrapolated) = 78.5 W/kg
SAR(1 g) = 16.4 mW/g; SAR(10 g) = 4.56 mW/g
Maximum value of SAR (measured) = 37.6 mW/g



5200MHz Head Validation

Date/Time: 9/12/2008 6:22:53 AM

DUT: Dipole 5500 MHz; Type: 1S2571

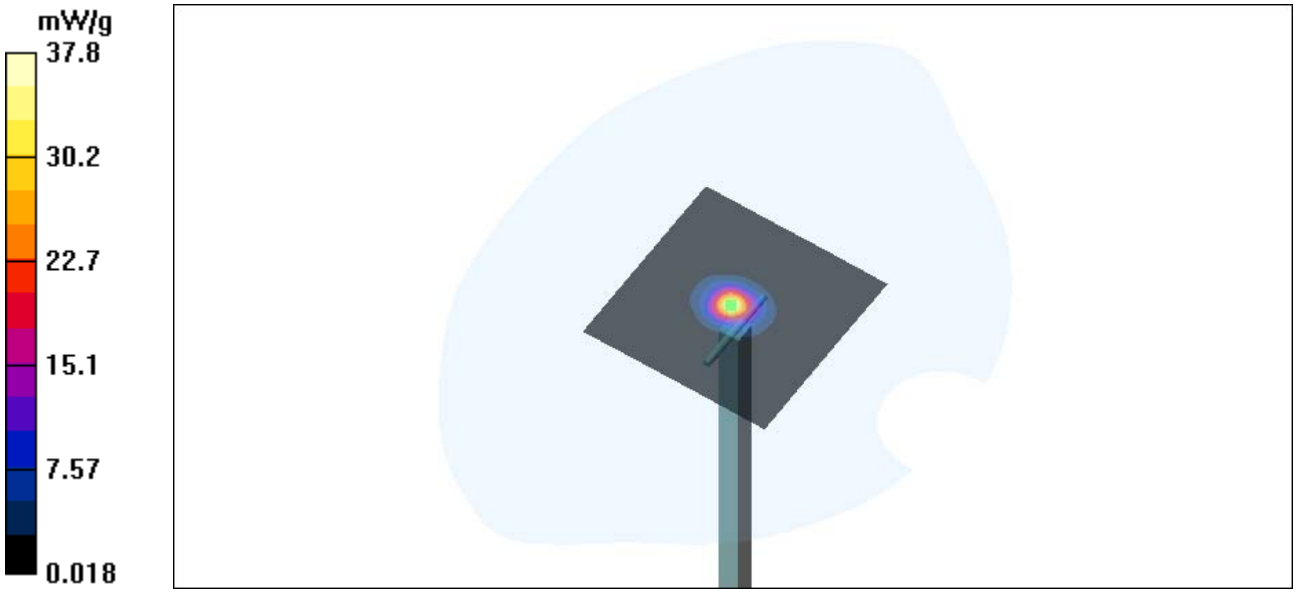
Medium Notes: Ambient Temp: 22.2 deg C; Fluid Temp: 21.5 deg C

Communication System: CW; ; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: 5200-5500-5800 MHz Head Medium parameters used: f = 5200 MHz; σ = 4.43 mho/m; ε_r = 35.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(5.04, 5.04, 5.04); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 37.8 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 78.5 V/m; Power Drift = 0.106 dB
Peak SAR (extrapolated) = 72.8 W/kg
SAR(1 g) = 17.6 mW/g; SAR(10 g) = 4.89 mW/g
Maximum value of SAR (measured) = 36.8 mW/g



5500MHz Head Validation

Date/Time: 9/12/2008 7:29:02 AM

DUT: Dipole 5500 MHz; Type: 1S2571

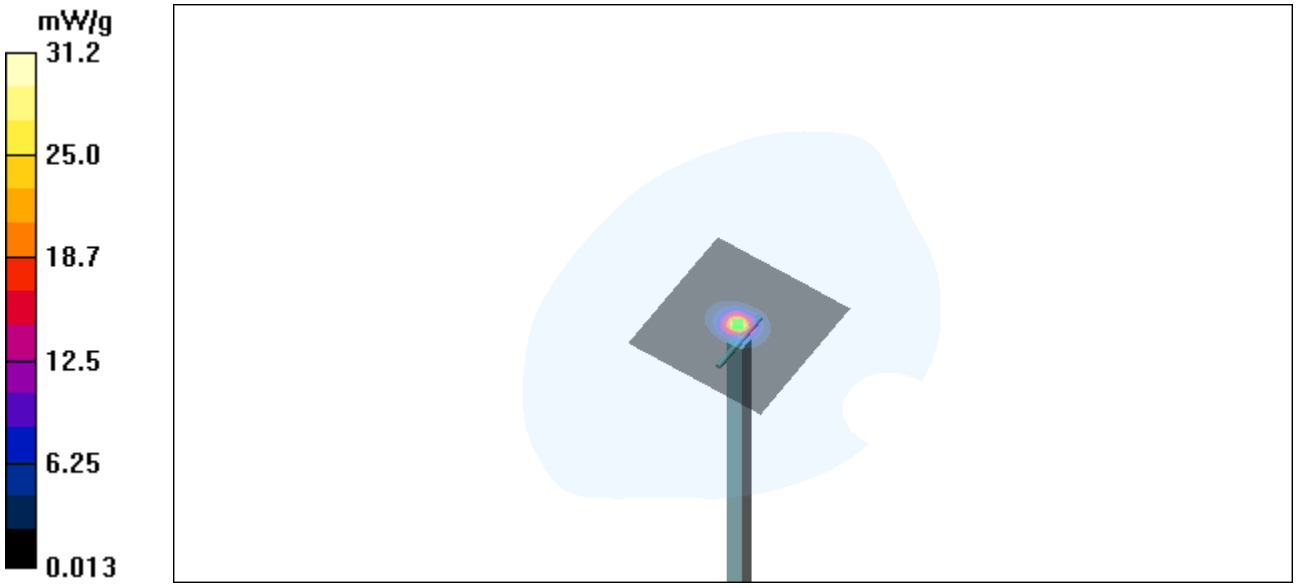
Medium Notes: Ambient Temp: 22.2 deg C; Fluid Temp: 21.5 deg C

Communication System: CW; ; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: 5200-5500-5800 MHz Head Medium parameters used: f = 5500 MHz; σ = 4.8 mho/m; ε_r = 35.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(4.61, 4.61, 4.61); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 31.2 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 71.2 V/m; Power Drift = -0.170 dB
Peak SAR (extrapolated) = 59.0 W/kg
SAR(1 g) = 14.1 mW/g; SAR(10 g) = 3.96 mW/g
Maximum value of SAR (measured) = 30.1 mW/g



5800MHz Head Validation

Date/Time: 9/12/2008 8:12:35 AM

DUT: Dipole 5500 MHz; Type: 1S2571

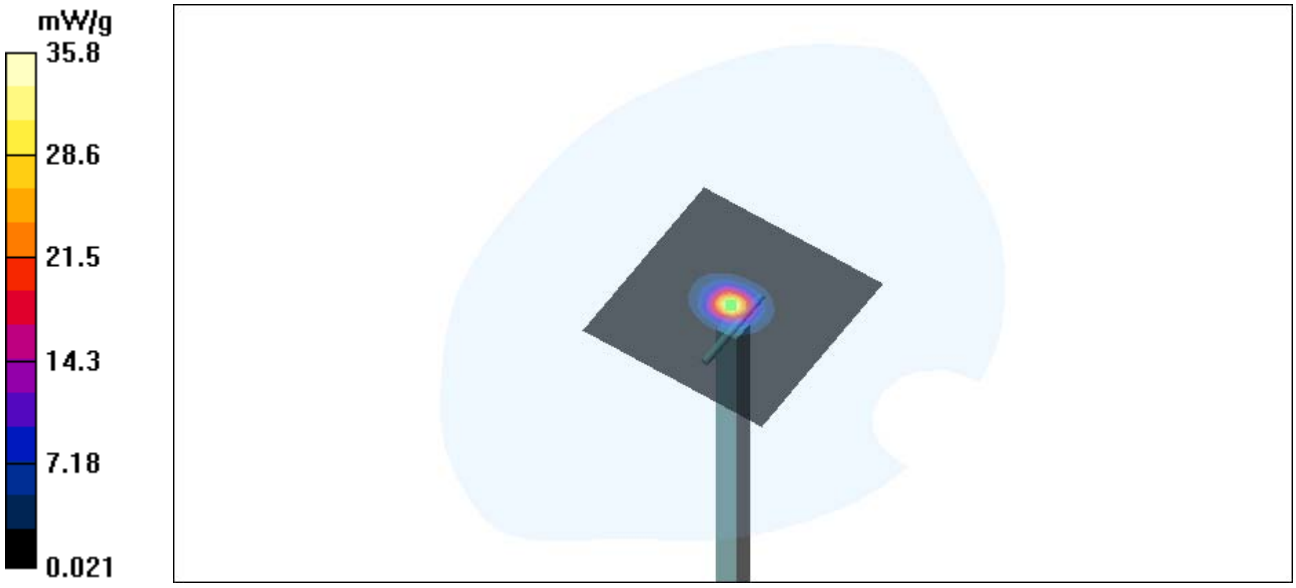
Medium Notes: Ambient Temp: 22.2 deg C; Fluid Temp: 21.5 deg C

Communication System: CW; ; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: 5200-5500-5800 MHz Head Medium parameters used: f = 5800 MHz; σ = 5.1 mho/m; ε_r = 34.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(4.53, 4.53, 4.53); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 35.8 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 73.1 V/m; Power Drift = -0.037 dB
Peak SAR (extrapolated) = 78.5 W/kg
SAR(1 g) = 16.4 mW/g; SAR(10 g) = 4.56 mW/g
Maximum value of SAR (measured) = 37.6 mW/g



5200MHz Body Validation

Date/Time: 9/15/2008 6:16:53 AM

DUT: Dipole 5500 MHz; Type: 1S2571

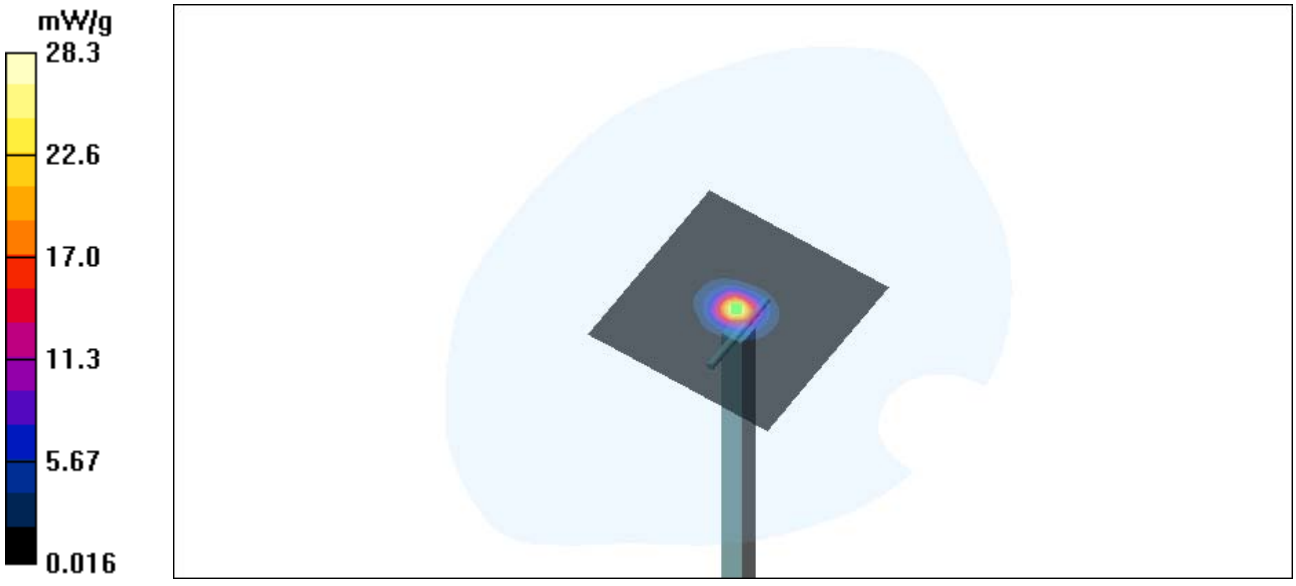
Medium Notes: Ambient Temp: 21.6 deg C; Fluid Temp: 21.1 deg C

Communication System: CW; ; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: 5500 MHz Body Medium parameters used: f = 5200 MHz; σ = 5.1 mho/m; ε_r = 47; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(4.61, 4.61, 4.61); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial: TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 28.3 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 63.1 V/m; Power Drift = -0.011 dB
Peak SAR (extrapolated) = 59.5 W/kg
SAR(1 g) = 12.4 mW/g; SAR(10 g) = 3.39 mW/g
Maximum value of SAR (measured) = 27.3 mW/g



5500MHz Body Validation

Date/Time: 9/15/2008 7:24:04 AM

DUT: Dipole 5500 MHz; Type: 1S2571

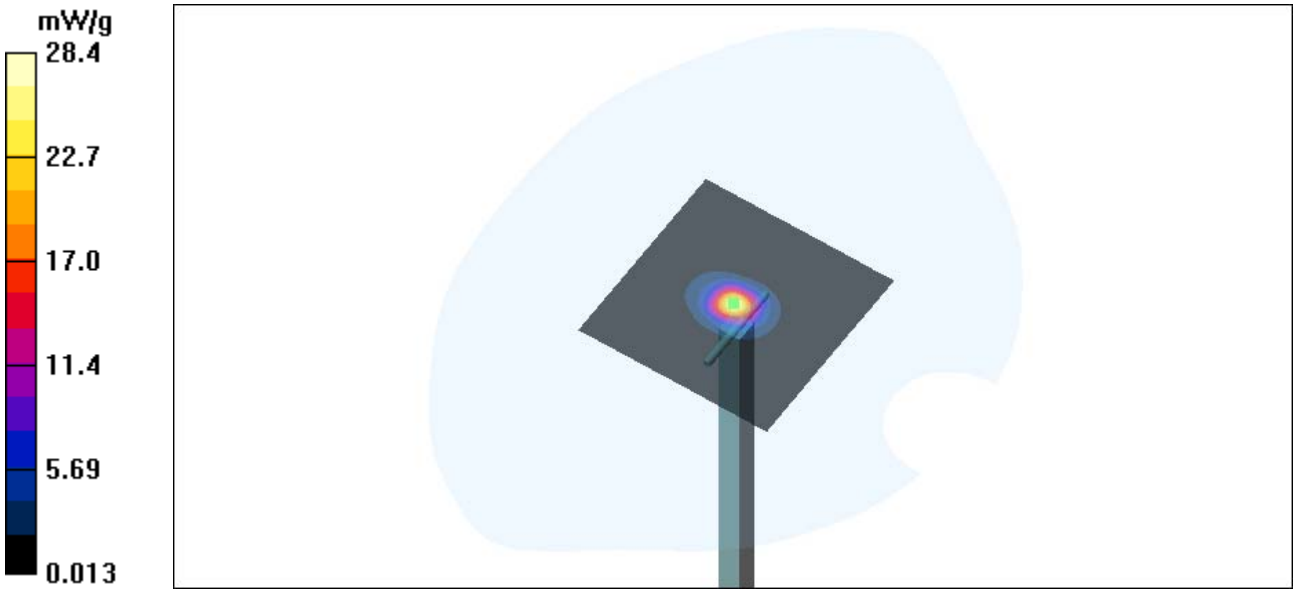
Medium Notes: Ambient Temp: 21.6 deg C; Fluid Temp: 21.1 deg C

Communication System: CW; ; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: 5500 MHz Body Medium parameters used: f = 5500 MHz; σ = 5.5 mho/m; ε_r = 46.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(4.4, 4.4, 4.4); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial: TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 28.4 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 64.2 V/m; Power Drift = -0.169 dB
Peak SAR (extrapolated) = 59.5 W/kg
SAR(1 g) = 13.2 mW/g; SAR(10 g) = 3.65 mW/g
Maximum value of SAR (measured) = 29.0 mW/g



5800MHz Body Validation

Date/Time: 9/15/2008 8:15:26 AM

DUT: Dipole 5500 MHz; Type: 1S2571

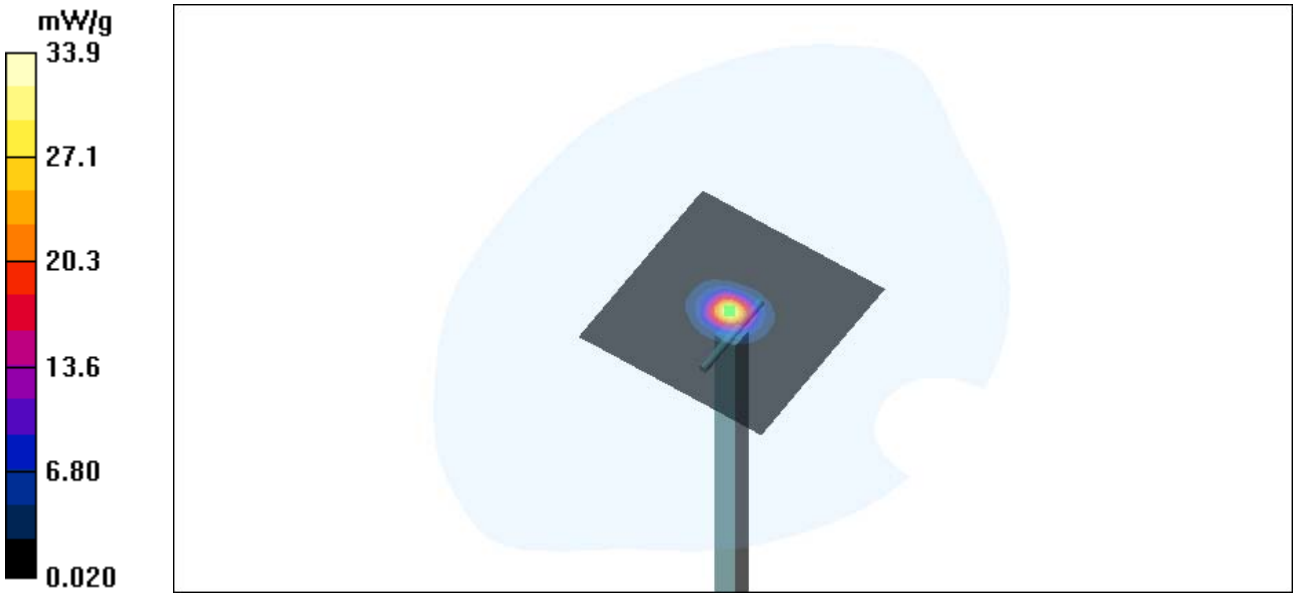
Medium Notes: Ambient Temp: 21.6 deg C; Fluid Temp: 21.1 deg C

Communication System: CW; ; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: 5500 MHz Body Medium parameters used: f = 5800 MHz; σ = 5.9 mho/m; ε_r = 45.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(4.25, 4.25, 4.25); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial: TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 33.9 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 66.4 V/m; Power Drift = -0.009 dB
Peak SAR (extrapolated) = 81.0 W/kg
SAR(1 g) = 15.9 mW/g; SAR(10 g) = 4.32 mW/g
Maximum value of SAR (measured) = 35.2 mW/g



APPENDIX C – 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
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 MET Laboratories

Certificate No: EX3-3511_May08

CALIBRATION CERTIFICATE

Object	EX3DV3 - SN:3511
Calibration procedure(s)	QA CAL-01.v6, QA CAL-14.v3 and QA CAL-23.v3 Calibration procedure for dosimetric E-field probes
Calibration date:	May 16, 2008
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 (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41495277	1-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41498087	1-Apr-08 (No. 217-00788)	Apr-09
Reference 3 dB Attenuator	SN: S5054 (3c)	8-Aug-07 (No. 217-00719)	Aug-08
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-08 (No. 217-00787)	Apr-09
Reference 30 dB Attenuator	SN: S5129 (30b)	8-Aug-07 (No. 217-00720)	Aug-08
Reference Probe ES3DV2	SN: 3013	2-Jan-08 (No. ES3-3013_Jan08)	Jan-09
DAE4	SN: 660	3-Sep-07 (No. DAE4-660_Sep07)	Sep-08

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-07)	In house check: Oct-08

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

Issued: May 17, 2008

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

S Schweizerischer Kalibrierdienst
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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

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) 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:

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

Probe EX3DV3

SN:3511

Manufactured:	December 15, 2003
Last calibrated:	January 23, 2006
Recalibrated:	May 16, 2008

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: EX3DV3 SN:3511

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

NormX	**0.77** ± 10.1%	$\mu V/(V/m)^2$	DCP X	**93** mV
NormY	**0.61** ± 10.1%	$\mu V/(V/m)^2$	DCP Y	**93** mV
NormZ	**0.62** ± 10.1%	$\mu V/(V/m)^2$	DCP Z	**94** 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	9.0	5.4
SAR_{be} [%]	With Correction Algorithm	0.5	0.2

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	6.8	3.9
SAR_{be} [%]	With Correction Algorithm	0.4	0.3

Sensor Offset

Probe Tip to Sensor Center	**1.0** mm

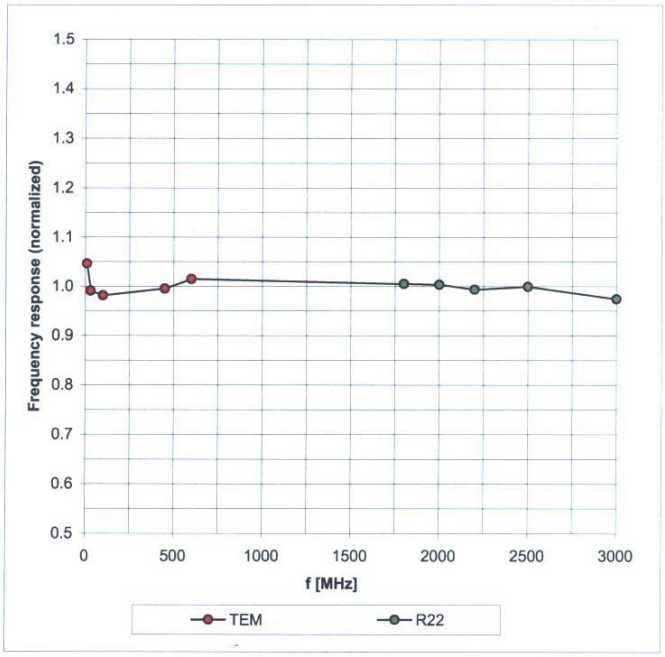
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[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.

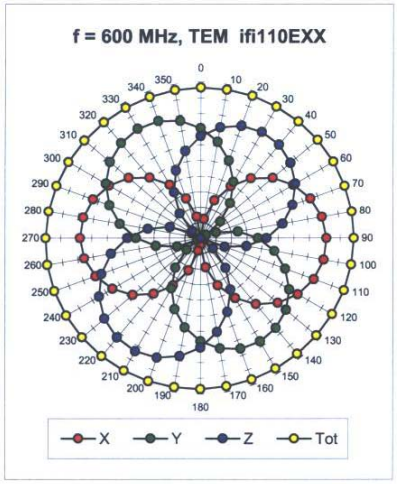
Frequency Response of E-Field

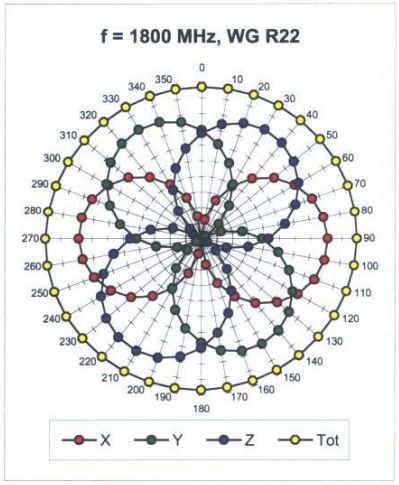
(TEM-Cell:ifi110 EXX, Waveguide: R22)

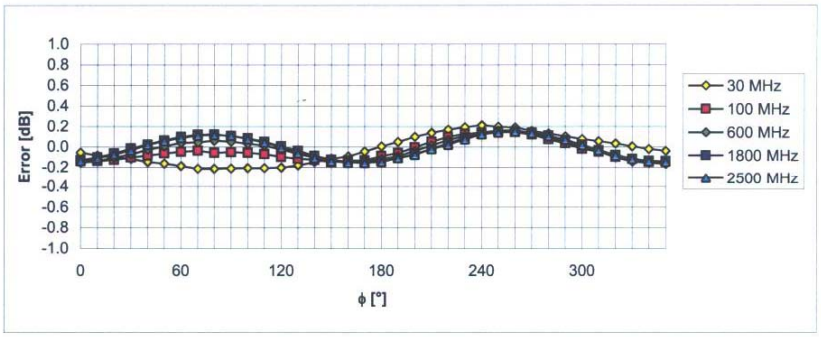


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Receiving Pattern (ϕ), ϑ = 0°



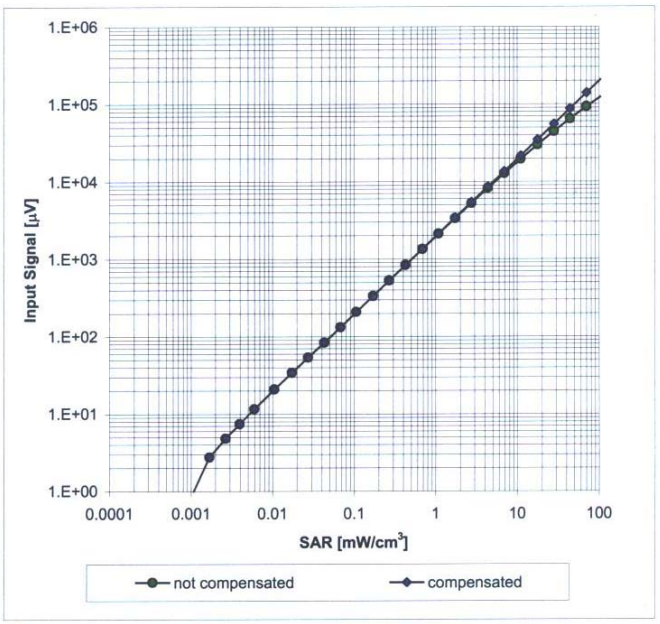


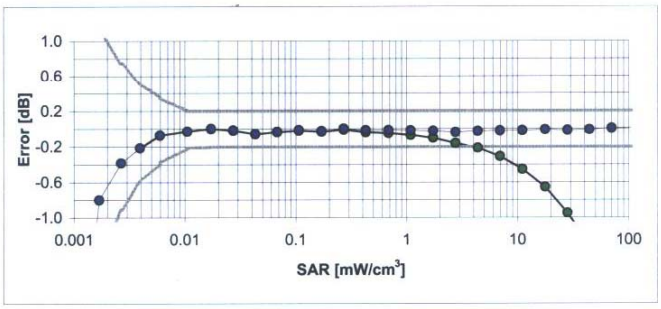


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})

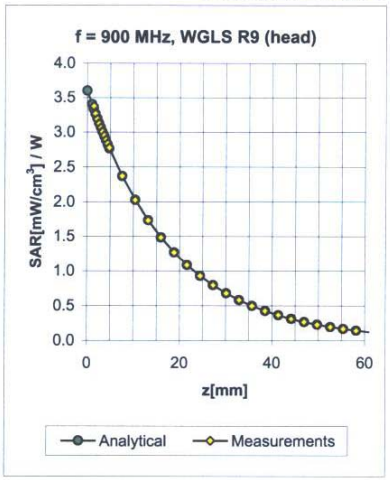
(Waveguide R22, f = 1800 MHz)

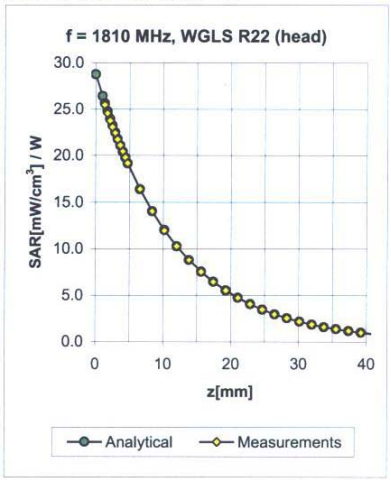




Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment



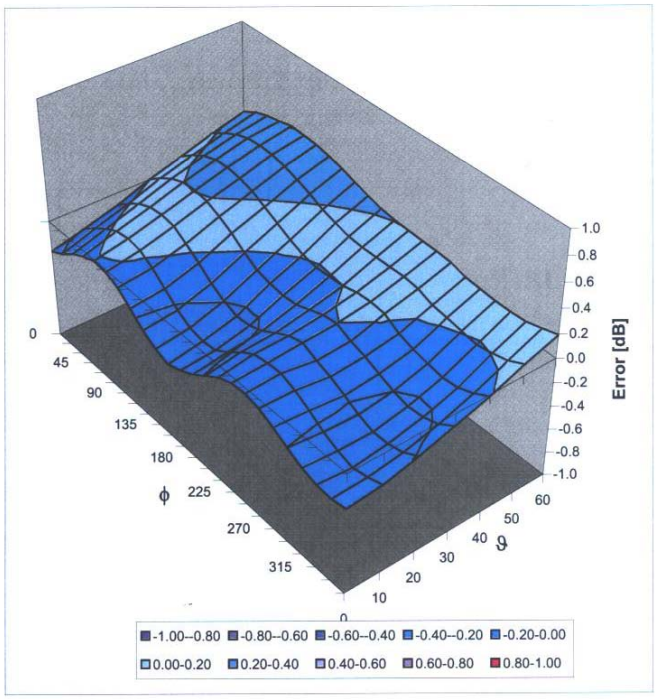


f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.23	1.14	9.56 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.20	1.13	8.40 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.23	1.02	7.67 ± 11.0% (k=2)
2600	± 50 / ± 100	Head	39.0 ± 5%	1.96 ± 5%	0.10	1.05	7.59 ± 11.0% (k=2)
5200	± 50 / ± 100	Head	36.0 ± 5%	4.66 ± 5%	0.40	1.70	5.04 ± 13.1% (k=2)
5500	± 50 / ± 100	Head	35.6 ± 5%	4.96 ± 5%	0.43	1.70	4.61 ± 13.1% (k=2)
5800	± 50 / ± 100	Head	35.3 ± 5%	5.27 ± 5%	0.45	1.70	4.53 ± 13.1% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.25	1.19	9.73 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.28	1.02	9.04 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.30	1.05	7.89 ± 11.0% (k=2)
2600	± 50 / ± 100	Body	52.5 ± 5%	2.16 ± 5%	0.15	1.05	7.34 ± 11.0% (k=2)
4950	± 50 / ± 100	Body	49.4 ± 5%	5.01 ± 5%	0.38	1.68	4.64 ± 13.1% (k=2)
5200	± 50 / ± 100	Body	49.0 ± 5%	5.30 ± 5%	0.38	1.68	4.61 ± 13.1% (k=2)
5500	± 50 / ± 100	Body	48.6 ± 5%	5.65 ± 5%	0.38	1.68	4.40 ± 13.1% (k=2)
5800	± 50 / ± 100	Body	48.2 ± 5%	6.00 ± 5%	0.30	1.68	4.25 ± 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: ± 2.6% (k=2)

APPENDIX D – DIPOLE CALIBRATION CERTIFICATE

CALIBRATION CERTIFICATE

Object: 2450MHz Validation Dipole 1S2452

Calibration Procedure: Calibration procedure for a validation dipole

Calibration Date: 8/3/08

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 a closed laboratory facility: environment temperature (22 ± 3) ^{o}C and humidity < 70%

Calibration equipment used

Model Type	Serial Number	MET Asset #	Cal Date
Anritsu Power Meter ML2488A	6K00001832	1S2430	March 2008
Anritsu Power Sensor	030864	1S2432	March 2008
HP E4418B Power Meter	GB40205140	1S2276	October 2007
HP 8482A Power Sensor	2607A11286	1S2140	October 2007
83650B Signal Generator	3844A00910	1S2278	May 2008
HP 8722D Vector Network Analyzer	3S36140188	1S2272	March 2008

Calibrated by: Anderson Soungpanya (Name) Test Technician (Function)  (Signature)

This calibration certificate shall not be reproduced except in full

Date of Issue: September 2, 2008

Calibration procedure for validation dipole

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 Communication Devices: Measurement Techniques", December 2003
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300MHz – 3GHz), July 2001
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Bulletin 65 Supplement C (Edition01-01).

Additional Documents

d) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All Figures stated in the certificate are valid at the frequency indicated.
- Antenna check: The antenna is checked for straightness using a straight edge placed parallel to the dipole arms prior to installing it against the phantom surface.
- 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.
- Antenna flatness: The spacer thickness used for the 2450MHz dipole is 10.00mm +/- 0.2mm. To insure the antenna is within +/- 2 degrees of flatness to the phantom surface use a caliper to measure the dipole ends from the surface of the phantom.
- Vector Network Analyzer: The network analyzer is calibrated as per the user's manual.
- 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. A Return Loss >20dB 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 1W at the antenna connector. No Uncertainty required
- SAR for nominal head and muscle parameters: The measured TSL parameters are used to calculate the SAR results.

Measurement Conditions

DASY system configuration

DASY Version	DASY4	V4.6
Extrapolation	Advanced Extrapolation	
Phantom	Planar Validation Phantom	1S2450
Dipole Spacer		
Distance Dipole Center-TSL	10.00mm ± 0.2mm	With spacer
Area Scan resolution	dx, dy = 10mm	
Zoom Scan resolution	dx, dy, dz = 5mm	
Frequency	2450MHz ± 1MHz	

Head TSL Parameters

The following parameters and calculations were applied

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL Parameters	22.0 ^{o}C	39.2	1.80
Measured Head TSL Parameters		39.5 ±5%	1.80 ±5%
Head TSL Temperature during Test	21.8 ^{o}C	--	--

Muscle TSL Parameters

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL Parameters	22.0 ^{o}C	52.7	1.95
Measured Head TSL Parameters		52.7 ±5%	1.95 ±5%
Head TSL Temperature during Test	22.0 ^{o}C	--	--

Measurement Uncertainty of Dipole Calibration

Error Description	**Uncertainty Value ±%**	**Probability Distribution**	**Divisor**	c_i **1g**	**Standard Uncertainty ±% (1g)**
Anritsu Power Meter ML2488A	± 1.4	normal	2	1	± 0.7
Anritsu Power Sensor	± 1.4	normal	2	1	± 0.7
HP E4418B Power Meter	± 0.2	normal	2	1	± 0.1
HP 8482A Power Sensor	± 0.8	normal	2	1	± 0.4
83650B Signal Generator	± 2.0	normal	2	1	± 1.0
HP 8722D Vector Network Analyzer	± 2.0	normal	2	1	± 1.0
				Combined Standard Uncertainty	± 3.9

SAR results with Head TSL and system uncertainty

SAR averaged over 1 cm^3 (1g) of Head TSL	Condition	13.5
SAR Normalized	Normalized to 1 W	56.8 mW/g
SAR for nominal Head TSL Parameters	Normalized to 1W	56.8 ± 24.29% mW/g (k=2)

SAR averaged over 1 cm^3 (10g) of Head TSL	Condition	6.16
SAR Normalized	Normalized to 1 W	25.6 mW/g
SAR for nominal Head TSL Parameters	Normalized to 1W	25.6 ± 23.51% mW/g (k=2)

SAR results with Muscle TSL and system uncertainty

SAR averaged over 1 cm^3 (1g) of Head TSL	Condition	12.5
SAR Normalized	Normalized to 1 W	53.6 mW/g
SAR for nominal Head TSL Parameters	Normalized to 1W	53.6 ± 24.29% mW/g (k=2)

SAR averaged over 1 cm^3 (10g) of Head TSL	Condition	5.74
SAR Normalized	Normalized to 1 W	24.4 mW/g
SAR for nominal Head TSL Parameters	Normalized to 1W	24.4 ± 23.51% mW/g (k=2)

2450MHz HEAD

Date/Time: 8/14/2008 11:15:07 AM

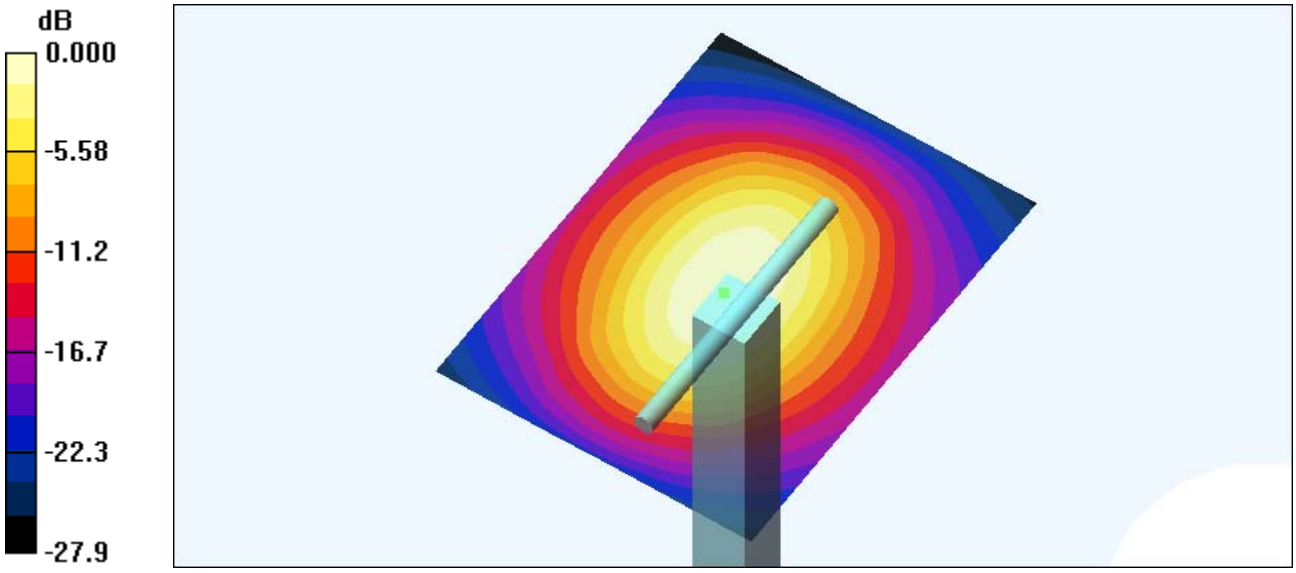
DUT: Dipole; Type: 2450MHz 1S2452

Communication System: CW; ; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL2450 Medium parameters used: f = 2450 MHz; σ = 1.8 mho/m; ε_r = 39.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(7.67, 7.67, 7.67); Calibrated: 5/16/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial: TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 15.6 mW/g

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 91.4 V/m; Power Drift = 0.002 dB
Peak SAR (extrapolated) = 29.4 W/kg
SAR(1 g) = 13.5 mW/g; SAR(10 g) = 6.16 mW/g
Maximum value of SAR (measured) = 15.3 mW/g



0 dB = 15.3mW/g

2450MHz BODY

Date/Time: 8/14/2008 2:02:35 PM

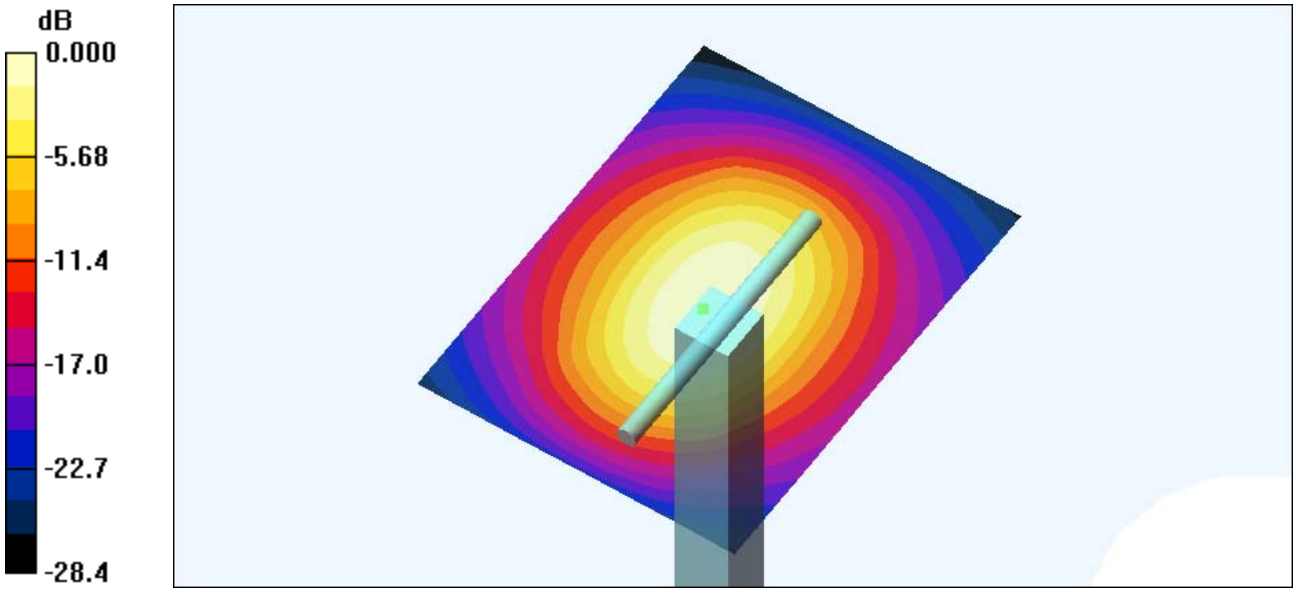
DUT: Dipole; Type: 2450MHz 1S2452

Communication System: CW; ; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: M2450 Medium parameters used: f = 2450 MHz; σ = 1.95 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(7.89, 7.89, 7.89); Calibrated: 5/16/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial: TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 15.0 mW/g

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 87.0 V/m; Power Drift = -0.236 dB
Peak SAR (extrapolated) = 26.0 W/kg
SAR(1 g) = 12.5 mW/g; SAR(10 g) = 5.74 mW/g
Maximum value of SAR (measured) = 14.4 mW/g



0 dB = 14.4mW/g

CALIBRATION CERTIFICATE

Object: 5000MHz Validation Dipole Asset #1S2571

Calibration Procedure: Calibration procedure for a validation dipole

Calibration Date: August 8, 2008

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 a closed laboratory facility: environment temperature (22 ± 3) ^{o}C and humidity < 70%

Calibration equipment used

Model Type	Serial Number	MET Asset #	Cal Date
Anritsu Power Meter ML2488A	6K00001832	1S2430	March 2008
Anritsu Power Sensor	030864	1S2432	March 2008
HP E4418B Power Meter	GB40205140	1S2276	October 2007
HP 8482A Power Sensor	2607A11286	1S2140	October 2007
83650B Signal Generator	3844A00910	1S2278	May 2008
HP 8722D Vector Network Analyzer	3S36140188	1S2272	March 2008

Calibrated by: Anderson Soungpanya (Name) Test Technician (Function)  (Signature)

This calibration certificate shall not be reproduced except in full

Date of Issue: September 2, 2008

Calibration procedure for validation dipole (5200-5500-5800MHz)

Calibration is performed according to the following standards:

a) IEC Std 62209 Part 2, "Evaluation of Human Exposure to Radio Frequency Fields from Handheld and Body-Mounted Wireless Communication Devices in the Frequency Range of 30MHz- 6GHz: Human models, Instrumentation and Procedures" Part 2: "Procedure to determine the Specific Absorption Rate (SAR) for including accessories and multiple transmitter", Draft Version 0.9, December 2004.
b) 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", Bulletin 65 Supplement C (Edition01-01).

Additional Documents

c) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All Figures stated in the certificate are valid at the frequency indicated.
- Antenna check: The antenna is checked for straightness using a straight edge placed parallel to the dipole arms prior to installing it against the phantom surface.
- 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.
- Antenna flatness: The spacer thickness used for the 5000MHz dipole is 10.00mm +/- 0.2mm. To insure the antenna is within +/- 2 degrees of flatness to the phantom surface use a caliper to measure the dipole ends from the surface of the phantom.
- Vector Network Analyzer: The network analyzer is calibrated as per the user's manual.
- 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. A Return Loss >20dB 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 1W at the antenna connector. No Uncertainty required
- SAR for nominal head and muscle parameters: The measured TSL parameters are used to calculate the SAR results.

Measurement Conditions

DASY system configuration

DASY Version	DASY4	V4.6
Extrapolation	Advanced Extrapolation	
Phantom	Planar Validation Phantom	
Dipole Spacer		
Distance Dipole Center-TSL	10.0mm ± 0.2mm	With spacer
Area Scan resolution	dx, dy = 10mm	
Zoom Scan resolution	dx, dy, = 4.3mm, dz = 3mm	
Frequency	5200MHz ± 1MHz 5500MHz ± 1MHz 5800MHz ± 1MHz	

Head TSL Parameters @ 5200 MHz

The following parameters and calculations were applied

	Temperature	Permittivity	Conductivity
Nominal Head TSL Parameters	22.0 °C	36.0	4.66
Measured Head TSL Parameters		37.4 ±5%	4.70 ±5%
Head TSL Temperature during Test	22.0 °C	--	--

SAR results with Head TSL @ 5200 MHz

SAR averaged over 1 cm^3 (1g) of Head TSL	Condition	18.5 mW/g
SAR Normalized	Normalized to 1 W	89.2 mW/g
SAR for nominal Head TSL Parameters	Normalized to 1W	89.2 ± 23.32% mW/g (k=2)

SAR averaged over 1 cm^3 (10g) of Head TSL	Condition	5.15 mW/g
SAR Normalized	Normalized to 1 W	27.2 mW/g
SAR for nominal Head TSL Parameters	Normalized to 1W	27.2 ± 21.46% mW/g (k=2)

Head TSL Parameters @ 5500 MHz

The following parameters and calculations were applied

	Temperature	Permittivity	Conductivity
Nominal Head TSL Parameters	22.0 °C	35.6	4.96
Measured Head TSL Parameters		37.1 ±5%	5.04 ±5%
Head TSL Temperature during Test	21.9 °C	--	--

SAR results with Head TSL @ 5500 MHz

SAR averaged over 1 cm^3 (1g) of Head TSL	Condition	14.6 mW/g
SAR Normalized	Normalized to 1 W	83.6 mW/g
SAR for nominal Head TSL Parameters	Normalized to 1W	83.6 ± 23.32% mW/g (k=2)

SAR averaged over 1 cm^3 (10g) of Head TSL	Condition	4.09 mW/g
SAR Normalized	Normalized to 1 W	25.6 mW/g
SAR for nominal Head TSL Parameters	Normalized to 1W	25.6 ± 21.46% mW/g (k=2)

Head TSL Parameters @ 5800 MHz

The following parameters and calculations were applied

	Temperature	Permittivity	Conductivity
Nominal Head TSL Parameters	22.0 °C	35.3	5.27
Measured Head TSL Parameters		36.4 ±5%	5.31 ±5%
Head TSL Temperature during Test	22.0 °C	--	--

SAR results with Head TSL @ 5800 MHz

SAR averaged over 1 cm^3 (1g) of Head TSL	Condition	16.9 mW/g
SAR Normalized	Normalized to 1 W	82.0 mW/g
SAR for nominal Head TSL Parameters	Normalized to 1W	82.0 ± 23.32% mW/g (k=2)

SAR averaged over 1 cm^3 (10g) of Head TSL	Condition	4.71 mW/g
SAR Normalized	Normalized to 1 W	25.4 mW/g
SAR for nominal Head TSL Parameters	Normalized to 1W	25.4 ± 21.46% mW/g (k=2)

Body TSL Parameters @ 5200 MHz

The following parameters and calculations were applied

	Temperature	Permittivity	Conductivity
Nominal Body TSL Parameters	22.0 °C	49.0	5.30
Measured Body TSL Parameters		48.2 ±5%	5.37 ±5%
Body TSL Temperature during Test	22.0 °C	--	--

SAR results with Body TSL @ 5200 MHz

SAR averaged over 1 cm^3 (1g) of Body TSL	Condition	12.9
SAR Normalized	Normalized to 1 W	68.0 mW/g
SAR for nominal Body TSL Parameters	Normalized to 1W	68.0 ± 23.32% mW/g (k=2)

SAR averaged over 1 cm^3 (10g) of Body TSL	Condition	3.52
SAR Normalized	Normalized to 1 W	20.5 mW/g
SAR for nominal Body TSL Parameters	Normalized to 1W	20.5 ± 21.46% mW/g (k=2)

Body TSL Parameters @ 5500 MHz

The following parameters and calculations were applied

	Temperature	Permittivity	Conductivity
Nominal Body TSL Parameters	22.0 °C	47.8	5.65
Measured Body TSL Parameters		47.8 ±5%	5.80 ±5%
Body TSL Temperature during Test	22.0 °C	--	--

SAR results with Body TSL @ 5500 MHz

SAR averaged over 1 cm^3 (1g) of Body TSL	Condition	13.6
SAR Normalized	Normalized to 1 W	67.2 mW/g
SAR for nominal Body TSL Parameters	Normalized to 1W	67.2 ± 23.32% mW/g (k=2)

SAR averaged over 1 cm^3 (10g) of Body TSL	Condition	3.75
SAR Normalized	Normalized to 1 W	20.9 mW/g
SAR for nominal Body TSL Parameters	Normalized to 1W	20.9 ± 21.46% mW/g (k=2)

Body TSL Parameters @ 5800 MHz

The following parameters and calculations were applied

	Temperature	Permittivity	Conductivity
Nominal Body TSL Parameters	22.0 °C	48.2	6.00
Measured Body TSL Parameters		47.1 ±5%	6.15 ±5%
Body TSL Temperature during Test	22.0 °C	--	--

SAR results with Body TSL @ 5800 MHz

SAR averaged over 1 cm^3 (1g) of Body TSL	Condition	16.1
SAR Normalized	Normalized to 1 W	64.8 mW/g
SAR for nominal Body TSL Parameters	Normalized to 1W	64.8 ± 23.32% mW/g (k=2)

SAR averaged over 1 cm^3 (10g) of Body TSL	Condition	4.4
SAR Normalized	Normalized to 1 W	19.6 mW/g
SAR for nominal Body TSL Parameters	Normalized to 1W	19.6 ± 21.46% mW/g (k=2)

5200MHz Head

Date/Time: 8/8/2008 2:40:23 PM

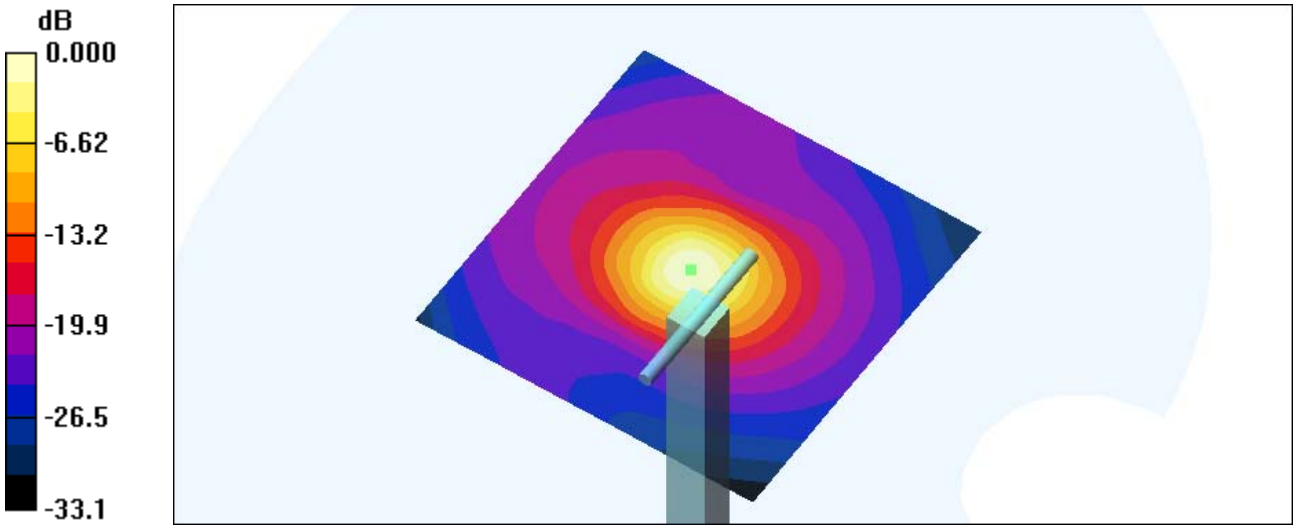
DUT: Dipole ; Type: 5500MHz 1S2571

Communication System: CW; ; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: 5200-5500-5800 MHz Head Medium parameters used: f = 5200 MHz; σ = 4.66 mho/m; ε_r = 36; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(5.04, 5.04, 5.04); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial: TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 39.8 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 79.7 V/m; Power Drift = -0.046 dB
Peak SAR (extrapolated) = 76.6 W/kg
SAR(1 g) = 18.5 mW/g; SAR(10 g) = 5.15 mW/g
Maximum value of SAR (measured) = 38.7 mW/g



0 dB = 38.7mW/g

5500MHz Head

Date/Time: 8/8/2008 3:23:05 PM

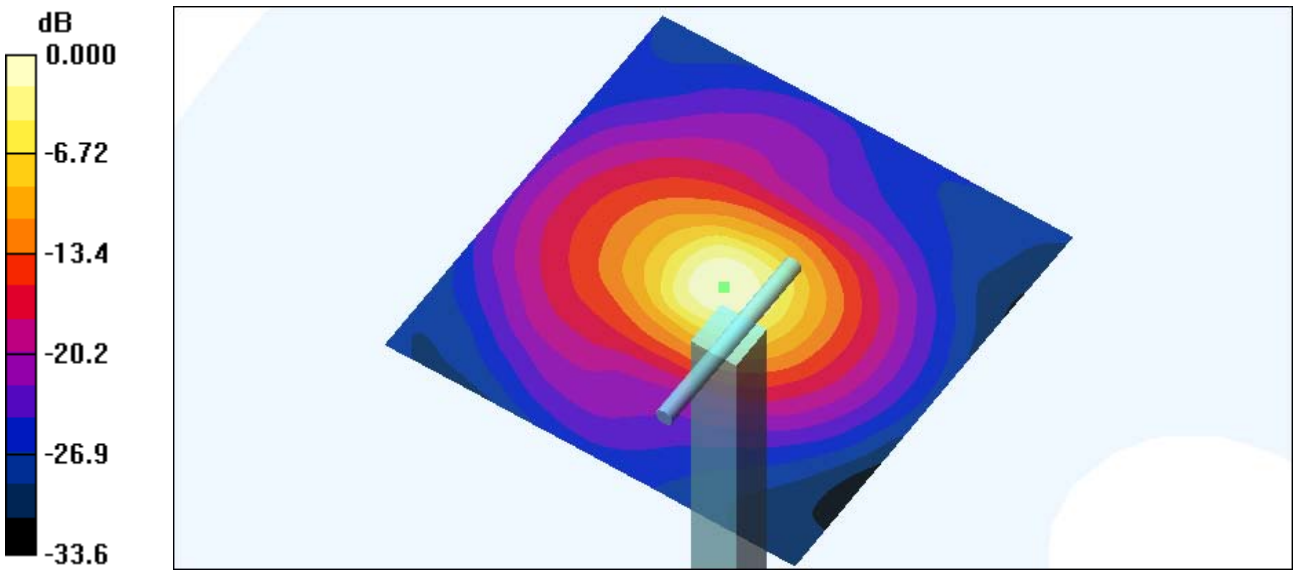
DUT: Dipole ; Type: 5500MHz 1S2571

Communication System: CW; ; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: 5200-5500-5800 MHz Head Medium parameters used: f = 5500 MHz; σ = 4.96 mho/m; ε_r = 35.6; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(4.61, 4.61, 4.61); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial: TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 32.2 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 70.7 V/m; Power Drift = -0.110 dB
Peak SAR (extrapolated) = 60.9 W/kg
SAR(1 g) = 14.6 mW/g; SAR(10 g) = 4.09 mW/g
Maximum value of SAR (measured) = 31.1 mW/g



0 dB = 31.1mW/g

5800MHz Head

Date/Time: 8/8/2008 4:08:15 PM

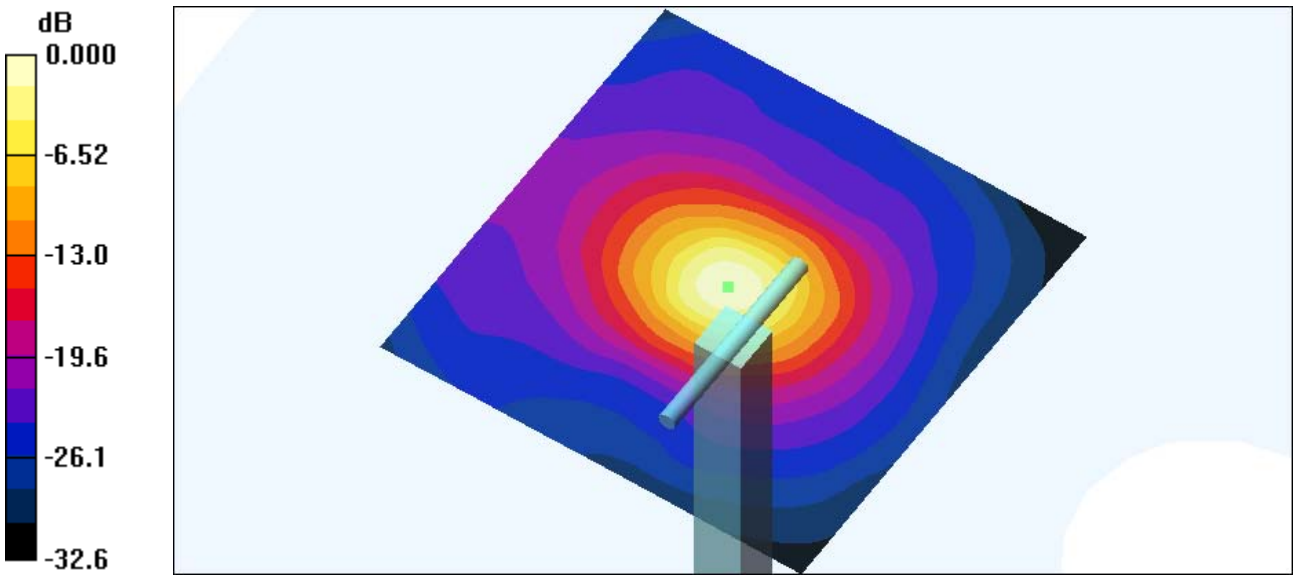
DUT: Dipole; Type: 5500MHz 1S2571

Communication System: CW; ; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: 5200-5500-5800 MHz Head Medium parameters used: f = 5800 MHz; σ = 5.27 mho/m; ε_r = 35.3; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(4.53, 4.53, 4.53); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial: TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 37.0 mW/g

Zoom Scan (11x11x12/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 72.2 V/m; Power Drift = 0.047 dB
Peak SAR (extrapolated) = 81.1 W/kg
SAR(1 g) = 16.9 mW/g; SAR(10 g) = 4.71 mW/g
Maximum value of SAR (measured) = 38.8 mW/g



0 dB = 38.8mW/g

5200MHz Body

Date/Time: 8/8/2008 9:56:43 AM

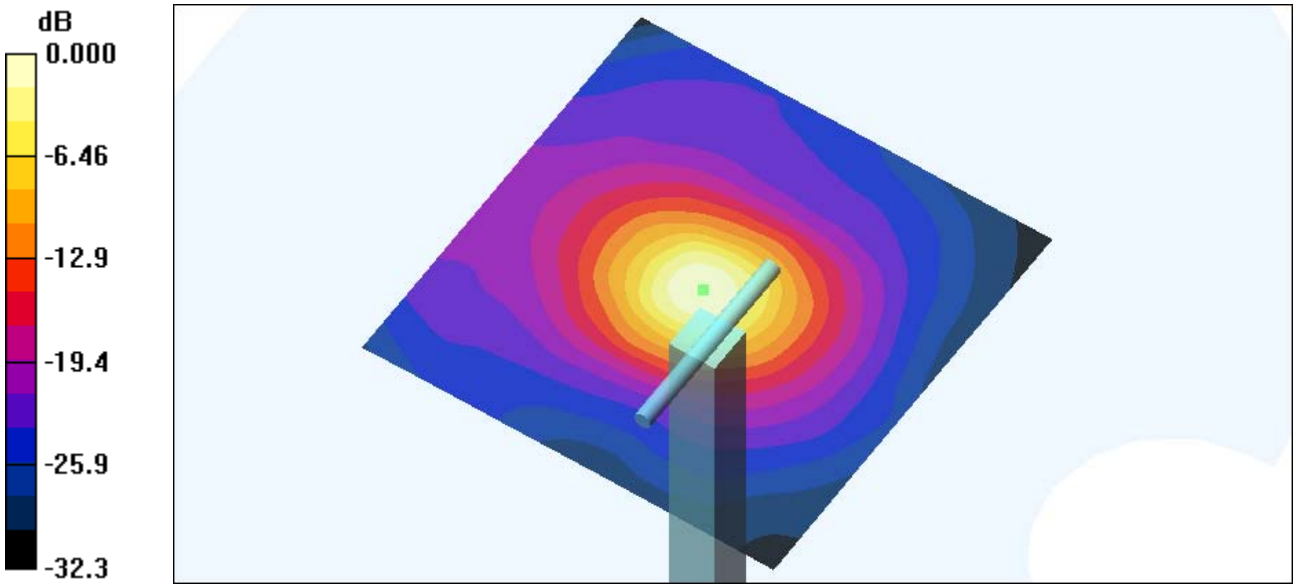
DUT: Dipole; Type: 5500MHz 1S2571

Communication System: CW; ; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: 5500 MHz Body Medium parameters used: f = 5200 MHz; σ = 5.3 mho/m; ε_r = 49; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(4.61, 4.61, 4.61); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial: TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 29.4 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 62.5 V/m; Power Drift = -0.114 dB
Peak SAR (extrapolated) = 61.8 W/kg
SAR(1 g) = 12.9 mW/g; SAR(10 g) = 3.52 mW/g
Maximum value of SAR (measured) = 28.3 mW/g



0 dB = 28.3mW/g

5500MHz Body

Date/Time: 8/8/2008 9:56:43 AM

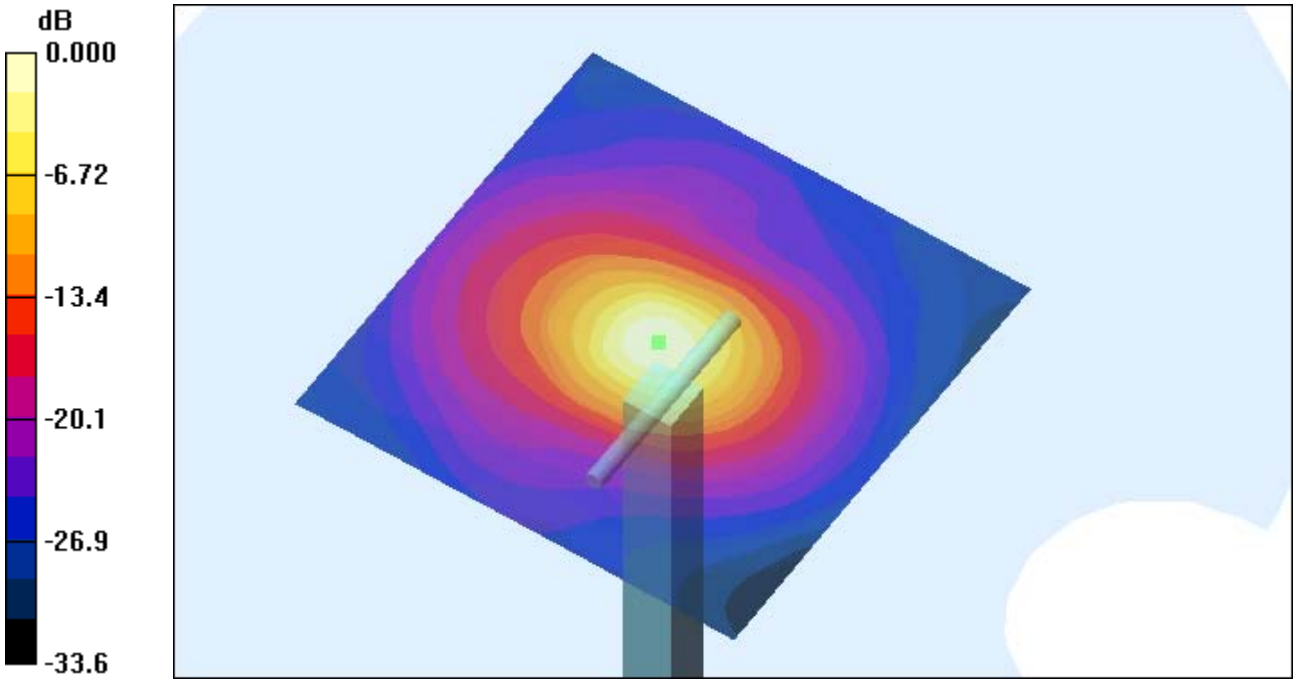
DUT: Dipole; Type: 5500MHz 1S2571

Communication System: CW; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: 5500 MHz Body Medium parameters used: f = 5500 MHz; σ = 5.65 mho/m; ε_r = 48.6; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(4.4, 4.4, 4.4); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial: TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 29.2 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 62.1 V/m; Power Drift = -0.075 dB
Peak SAR (extrapolated) = 61.2 W/kg
SAR(1 g) = 13.6 mW/g; SAR(10 g) = 3.75 mW/g
Maximum value of SAR (measured) = 29.8 mW/g



0 dB = 29.8mW/g

5800MHz Body

Date/Time: 8/8/2008 11:25:06 AM

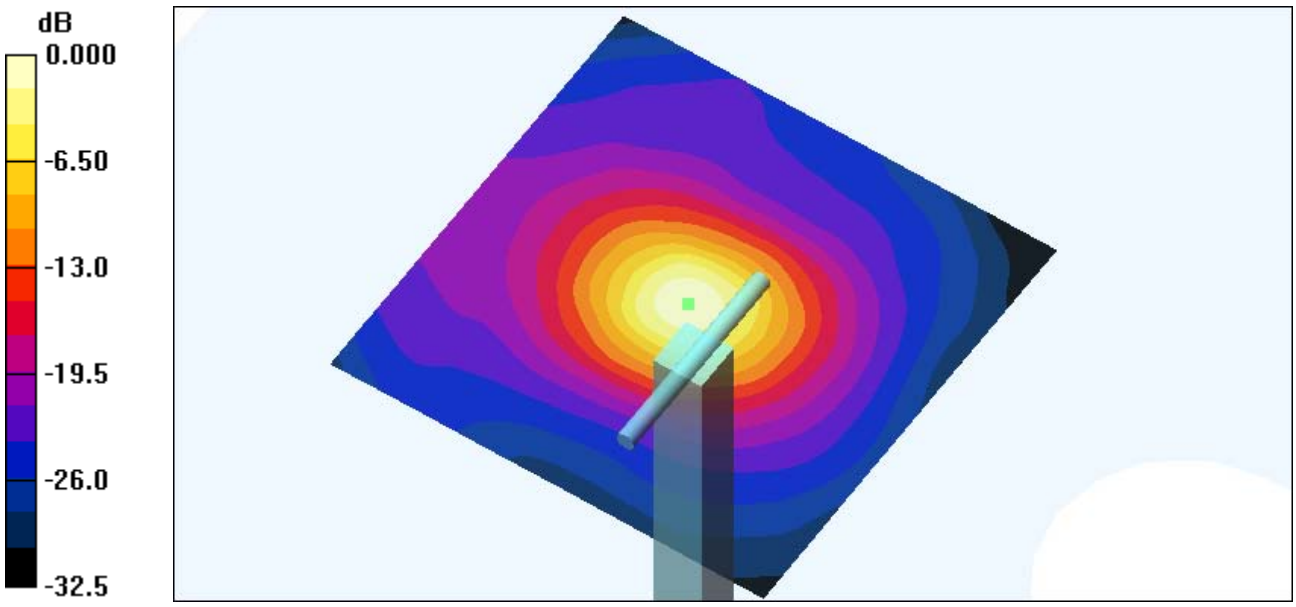
DUT: Dipole; Type: 5500MHz 1S2571

Communication System: CW; ; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: 5500 MHz Body Medium parameters used: f = 5800 MHz; σ = 6 mho/m; ε_r = 48.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

- Probe: EX3DV3 - SN3511; ConvF(4.25, 4.25, 4.25); Calibrated: 5/16/2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn584; Calibrated: 4/2/2007
- Phantom: SAM with CRP; Type: SAM; Serial: TP 1310
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 34.5 mW/g

Zoom Scan (11x11x12)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=2mm
Reference Value = 63.3 V/m; Power Drift = 0.059 dB
Peak SAR (extrapolated) = 82.4 W/kg
SAR(1 g) = 16.1 mW/g; SAR(10 g) = 4.4 mW/g
Maximum value of SAR (measured) = 35.8 mW/g



0 dB = 35.8mW/g

APPENDIX E - MEASURED FLUID DIELECTRIC PARAMETERS

2450MHz Head

September 08, 2008

Frequency	e'	e''
2.400000000 GI	38.440	13.5651
2.402000000 GI	38.427	13.5688
2.404000000 GI	38.435	13.5882
2.406000000 GI	38.430	13.5935
2.408000000 GI	38.425	13.5988
2.410000000 GI	38.412	13.5974
2.412000000 GI	38.414	13.6173
2.414000000 GI	38.406	13.6153
2.416000000 GI	38.394	13.6240
2.418000000 GI	38.396	13.6388
2.420000000 GI	38.385	13.6525
2.422000000 GI	38.376	13.6454
2.424000000 GI	38.373	13.6608
2.426000000 GI	38.371	13.6631
2.428000000 GI	38.374	13.6649
2.430000000 GI	38.362	13.6685
2.432000000 GI	38.347	13.6929
2.434000000 GI	38.354	13.6953
2.436000000 GI	38.342	13.6964
2.438000000 GI	38.341	13.6998
2.440000000 GI	38.330	13.7044
2.442000000 GI	38.327	13.7081
2.444000000 GI	38.324	13.7118
2.446000000 GI	38.332	13.7282
2.448000000 GI	38.308	13.7319
2.450000000 GI	38.305	13.7395
2.452000000 GI	38.293	13.7455
2.454000000 GI	38.295	13.7434
2.456000000 GI	38.282	13.7534
2.458000000 GI	38.284	13.7628
2.460000000 GI	38.284	13.7570
2.462000000 GI	38.261	13.7722
2.464000000 GI	38.266	13.7773
2.466000000 GI	38.253	13.7796
2.468000000 GI	38.248	13.7899

2450MHz Body

September 08, 2008

Frequency	e'	e''
2.400000000 GI	50.266	14.5166
2.402000000 GI	50.241	14.5124
2.404000000 GI	50.244	14.5392
2.406000000 GI	50.227	14.5571
2.408000000 GI	50.236	14.5596
2.410000000 GI	50.220	14.5683
2.412000000 GI	50.224	14.5727
2.414000000 GI	50.224	14.5847
2.416000000 GI	50.210	14.5988
2.418000000 GI	50.209	14.6144
2.420000000 GI	50.202	14.6135
2.422000000 GI	50.193	14.6348
2.424000000 GI	50.194	14.6374
2.426000000 GI	50.186	14.6272
2.428000000 GI	50.178	14.6392
2.430000000 GI	50.173	14.6530
2.432000000 GI	50.157	14.6522
2.434000000 GI	50.158	14.6823
2.436000000 GI	50.147	14.6768
2.438000000 GI	50.149	14.6774
2.440000000 GI	50.136	14.6738
2.442000000 GI	50.136	14.6891
2.444000000 GI	50.132	14.6963
2.446000000 GI	50.128	14.7080
2.448000000 GI	50.115	14.7080
2.450000000 GI	50.107	14.7198
2.452000000 GI	50.098	14.7132
2.454000000 GI	50.107	14.7282
2.456000000 GI	50.093	14.7393
2.458000000 GI	50.075	14.7439
2.460000000 GI	50.072	14.7537
2.462000000 GI	50.074	14.7402
2.464000000 GI	50.049	14.7599
2.466000000 GI	50.038	14.7652
2.468000000 GI	50.051	14.7753

5-6GHz head

September 09, 2008

Frequency	e'	e''
5.000000000 GI	35.826	16.1704
5.020000000 GI	35.791	16.1976
5.040000000 GI	35.762	16.2250
5.060000000 GI	35.722	16.2409
5.080000000 GI	35.696	16.2419
5.100000000 GI	35.660	16.2549
5.120000000 GI	35.621	16.2705
5.140000000 GI	35.585	16.2886
5.160000000 GI	35.531	16.3241
5.180000000 GI	35.487	16.3276
5.200000000 GI	35.444	16.3511
5.220000000 GI	35.405	16.3660
5.240000000 GI	35.383	16.3898
5.260000000 GI	35.335	16.4207
5.280000000 GI	35.307	16.4340
5.300000000 GI	35.265	16.4624
5.320000000 GI	35.214	16.4765
5.340000000 GI	35.180	16.4867
5.360000000 GI	35.157	16.4952
5.380000000 GI	35.104	16.5036
5.400000000 GI	35.058	16.5397
5.420000000 GI	35.016	16.5658
5.440000000 GI	34.978	16.5838
5.460000000 GI	34.943	16.6111
5.480000000 GI	34.916	16.6184
5.500000000 GI	34.890	16.6348
5.520000000 GI	34.863	16.6544
5.540000000 GI	34.810	16.6910
5.560000000 GI	34.773	16.7123
5.580000000 GI	34.731	16.7274
5.600000000 GI	34.697	16.7403
5.620000000 GI	34.672	16.7421
5.640000000 GI	34.633	16.7506
5.660000000 GI	34.585	16.8095
5.680000000 GI	34.547	16.8250

5.700000000 GI	34.503	16.8396
5.720000000 GI	34.502	16.8110
5.740000000 GI	34.464	16.7839
5.760000000 GI	34.360	16.8051
5.780000000 GI	34.408	16.8682
5.800000000 GI	34.354	16.8886
5.820000000 GI	34.313	16.9108
5.840000000 GI	34.295	16.9260
5.860000000 GI	34.279	16.9269
5.880000000 GI	34.257	16.9415
5.900000000 GI	34.229	16.9459
5.920000000 GI	34.158	16.9512
5.940000000 GI	34.095	16.9558
5.960000000 GI	34.022	16.9877
5.980000000 GI	33.996	16.9959
6.000000000 GI	33.986	17.0266

5-6GHz head

September 10, 2008

Frequency	e'	e''
5.000000000 GI	36.456	16.7490
5.020000000 GI	36.436	16.7804
5.040000000 GI	36.402	16.7969
5.060000000 GI	36.363	16.8103
5.080000000 GI	36.320	16.7955
5.100000000 GI	36.268	16.8116
5.120000000 GI	36.211	16.8518
5.140000000 GI	36.177	16.8657
5.160000000 GI	36.157	16.9095
5.180000000 GI	36.148	16.9224
5.200000000 GI	36.107	16.9255
5.220000000 GI	36.051	16.9275
5.240000000 GI	36.015	16.9422
5.260000000 GI	35.963	16.9576
5.280000000 GI	35.924	16.9898
5.300000000 GI	35.894	17.0054
5.320000000 GI	35.853	16.9879
5.340000000 GI	35.798	17.0170
5.360000000 GI	35.762	17.0277
5.380000000 GI	35.720	17.0518
5.400000000 GI	35.683	17.0712
5.420000000 GI	35.656	17.0832
5.440000000 GI	35.616	17.1020
5.460000000 GI	35.572	17.1110
5.480000000 GI	35.536	17.1249
5.500000000 GI	35.497	17.1327
5.520000000 GI	35.460	17.1576
5.540000000 GI	35.430	17.1997
5.560000000 GI	35.387	17.1976
5.580000000 GI	35.343	17.2267
5.600000000 GI	35.320	17.2260
5.620000000 GI	35.298	17.2493
5.640000000 GI	35.251	17.2576
5.660000000 GI	35.223	17.2874
5.680000000 GI	35.179	17.3033

5.700000000 GI	35.118	17.3076
5.720000000 GI	35.096	17.2846
5.740000000 GI	35.048	17.2578
5.760000000 GI	34.953	17.2882
5.780000000 GI	34.998	17.3546
5.800000000 GI	34.962	17.3666
5.820000000 GI	34.932	17.3941
5.840000000 GI	34.892	17.3978
5.860000000 GI	34.853	17.3851
5.880000000 GI	34.816	17.3858
5.900000000 GI	34.768	17.4106
5.920000000 GI	34.693	17.4150
5.940000000 GI	34.650	17.4369
5.960000000 GI	34.609	17.4517
5.980000000 GI	34.583	17.4724
6.000000000 GI	34.562	17.4828

5-6GHz head

September 11, 2008

Frequency	e'	e''
5.000000000 GI	35.978	15.5220
5.020000000 GI	35.956	15.5382
5.040000000 GI	35.909	15.5539
5.060000000 GI	35.860	15.5734
5.080000000 GI	35.835	15.5673
5.100000000 GI	35.804	15.5905
5.120000000 GI	35.778	15.6067
5.140000000 GI	35.747	15.6014
5.160000000 GI	35.703	15.6303
5.180000000 GI	35.659	15.6351
5.200000000 GI	35.631	15.6519
5.220000000 GI	35.588	15.6671
5.240000000 GI	35.566	15.6604
5.260000000 GI	35.527	15.6911
5.280000000 GI	35.496	15.7011
5.300000000 GI	35.440	15.7126
5.320000000 GI	35.399	15.7321
5.340000000 GI	35.370	15.7546
5.360000000 GI	35.364	15.7577
5.380000000 GI	35.329	15.7606
5.400000000 GI	35.287	15.7765
5.420000000 GI	35.239	15.7875
5.440000000 GI	35.190	15.8173
5.460000000 GI	35.140	15.8286
5.480000000 GI	35.127	15.8372
5.500000000 GI	35.107	15.8479
5.520000000 GI	35.079	15.8636
5.540000000 GI	35.048	15.8884
5.560000000 GI	34.995	15.9061
5.580000000 GI	34.940	15.9314
5.600000000 GI	34.927	15.9265
5.620000000 GI	34.901	15.9399
5.640000000 GI	34.876	15.9458
5.660000000 GI	34.836	15.9655
5.680000000 GI	34.777	16.0020

5.700000000 GI	34.731	16.0075
5.720000000 GI	34.736	15.9831
5.740000000 GI	34.710	15.9484
5.760000000 GI	34.620	15.9653
5.780000000 GI	34.669	16.0150
5.800000000 GI	34.609	16.0248
5.820000000 GI	34.574	16.0579
5.840000000 GI	34.548	16.0588
5.860000000 GI	34.534	16.0764
5.880000000 GI	34.537	16.0735
5.900000000 GI	34.519	16.1013
5.920000000 GI	34.462	16.0985
5.940000000 GI	34.397	16.1085
5.960000000 GI	34.340	16.1140
5.980000000 GI	34.303	16.1358
6.000000000 GI	34.294	16.1427

5-6GHz head

September 12, 2008

Frequency	e'	e''
5.000000000 GI	36.263	15.2090
5.020000000 GI	36.291	15.1531
5.040000000 GI	36.296	15.1573
5.060000000 GI	36.159	15.1874
5.080000000 GI	36.107	15.2034
5.100000000 GI	36.051	15.2844
5.120000000 GI	36.063	15.2928
5.140000000 GI	36.125	15.2633
5.160000000 GI	36.060	15.2545
5.180000000 GI	35.997	15.2489
5.200000000 GI	35.909	15.3228
5.220000000 GI	35.860	15.3408
5.240000000 GI	35.923	15.3621
5.260000000 GI	35.919	15.3625
5.280000000 GI	35.885	15.3230
5.300000000 GI	35.771	15.3482
5.320000000 GI	35.670	15.3802
5.340000000 GI	35.677	15.4527
5.360000000 GI	35.702	15.5002
5.380000000 GI	35.730	15.4603
5.400000000 GI	35.674	15.4295
5.420000000 GI	35.562	15.4077
5.440000000 GI	35.500	15.4980
5.460000000 GI	35.425	15.5777
5.480000000 GI	35.470	15.5729
5.500000000 GI	35.515	15.5748
5.520000000 GI	35.452	15.5376
5.540000000 GI	35.386	15.5256
5.560000000 GI	35.273	15.5939
5.580000000 GI	35.234	15.6571
5.600000000 GI	35.278	15.6950
5.620000000 GI	35.280	15.6655
5.640000000 GI	35.266	15.6258
5.660000000 GI	35.175	15.6594
5.680000000 GI	35.080	15.7229

5.700000000 GI	35.049	15.7903
5.720000000 GI	35.084	15.7764
5.740000000 GI	35.127	15.7124
5.760000000 GI	35.023	15.6928
5.780000000 GI	34.988	15.7257
5.800000000 GI	34.879	15.7846
5.820000000 GI	34.854	15.8663
5.840000000 GI	34.868	15.8992
5.860000000 GI	34.884	15.8670
5.880000000 GI	34.913	15.7921
5.900000000 GI	34.870	15.8456
5.920000000 GI	34.733	15.8846
5.940000000 GI	34.671	15.9131
5.960000000 GI	34.659	15.9379
5.980000000 GI	34.658	15.9384
6.000000000 GI	34.642	15.9283

5-6GHz head

September 15, 2008

Frequency	e'	e''
5.000000000 GI	47.408	17.3486
5.020000000 GI	47.375	17.3428
5.040000000 GI	47.324	17.3940
5.060000000 GI	47.245	17.4331
5.080000000 GI	47.230	17.4594
5.100000000 GI	47.208	17.5254
5.120000000 GI	47.189	17.5271
5.140000000 GI	47.192	17.5459
5.160000000 GI	47.116	17.5702
5.180000000 GI	47.068	17.5878
5.200000000 GI	47.010	17.6387
5.220000000 GI	46.989	17.6385
5.240000000 GI	47.003	17.6733
5.260000000 GI	46.940	17.6813
5.280000000 GI	46.908	17.6871
5.300000000 GI	46.827	17.7458
5.320000000 GI	46.764	17.7820
5.340000000 GI	46.776	17.8383
5.360000000 GI	46.805	17.8585
5.380000000 GI	46.779	17.8437
5.400000000 GI	46.718	17.8718
5.420000000 GI	46.662	17.8641
5.440000000 GI	46.617	17.9383
5.460000000 GI	46.567	17.9775
5.480000000 GI	46.570	17.9816
5.500000000 GI	46.565	17.9916
5.520000000 GI	46.488	17.9800
5.540000000 GI	46.438	18.0157
5.560000000 GI	46.375	18.0766
5.580000000 GI	46.351	18.0911
5.600000000 GI	46.343	18.1045
5.620000000 GI	46.307	18.0970
5.640000000 GI	46.274	18.1469
5.660000000 GI	46.186	18.1928
5.680000000 GI	46.153	18.2091

5.700000000 GI	46.139	18.2459
5.720000000 GI	46.117	18.2016
5.740000000 GI	46.065	18.1610
5.760000000 GI	45.922	18.1858
5.780000000 GI	45.901	18.2575
5.800000000 GI	45.878	18.3276
5.820000000 GI	45.882	18.3880
5.840000000 GI	45.866	18.3926
5.860000000 GI	45.826	18.3588
5.880000000 GI	45.765	18.3544
5.900000000 GI	45.695	18.4146
5.920000000 GI	45.605	18.4601
5.940000000 GI	45.617	18.5262
5.960000000 GI	45.617	18.5303
5.980000000 GI	45.617	18.5273
6.000000000 GI	45.549	18.5624

APPENDIX F – PHANTOM CERTIFICATE OF CONFORMITY

Schmid & Partner Engineering AG

s p e a g

Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com

Certificate of conformity / First Article Inspection

Item	SAM Twin Phantom V4.0
Type No	QD 000 P40 C
Series No	TP-1150 and higher
Manufacturer / Origin	Untersee Composites Hauptstr. 69 CH-8559 Fruthwilen Switzerland

Tests

The series production process used allows the limitation to test of first articles.
Complete tests were made on the pre-series Type No. QD 000 P40 AA, Serial No. TP-1001 and on the series first article Type No. QD 000 P40 BA, Serial No. TP-1006. Certain parameters have been retested using further series units (called samples).

Test	Requirement	Details	Units tested
Shape	Compliance with the geometry according to the CAD model.	IT'IS CAD File (*)	First article, Samples
Material thickness	Compliant with the requirements according to the standards	2mm +/- 0.2mm in specific areas; 6mm +/- 0.2mm at ERP	First article, Samples
Material parameters	Dielectric parameters for required frequencies	200 MHz – 3 GHz Relative permittivity < 5 Loss tangent < 0.05.	Material sample TP 104-5
Material resistivity	The material has been tested to be compatible with the liquids defined in the standards if handled and cleaned according to the instructions	DEGMBE based simulating liquids	Pre-series, First article, Samples

Standards

[1] CENELEC EN 50361
[2] IEEE Std 1528-200x Draft CD 1.1 (Dec 02)
[3] IEC 62209/CD (Nov 02)
(*) The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of [1] and [3].

Conformity

Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standard [1] and draft standards [2] and [3].

Date 7.8.2003

Signature / Stamp

s p e a g
Schmid & Partner Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com