

Appendix**Antenna Parameters with Head TSL at 5200 MHz**

Impedance, transformed to feed point	60.8 Ω + 1.1 j Ω
Return Loss	- 20.1 dB

Antenna Parameters with Head TSL at 5500 MHz

Impedance, transformed to feed point	55.2 Ω - 4.7 j Ω
Return Loss	- 23.6 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	54.6 Ω + 2.1 j Ω
Return Loss	- 26.3 dB

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	51.8 Ω - 12.5 j Ω
Return Loss	- 18.2 dB

Antenna Parameters with Body TSL at 5500 MHz

Impedance, transformed to feed point	47.1 Ω - 2.7 j Ω
Return Loss	- 27.8 dB

Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	56.8 Ω + 6.9 j Ω
Return Loss	- 20.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.199 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured. The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	August 28, 2003

DASY5 Validation Report for Head TSL

Date: 14.12.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1008

Communication System: CW; Frequency: 5200 MHz, Frequency: 5500 MHz, Frequency: 5800 MHz

Medium parameters used: $f = 5200$ MHz; $\sigma = 4.65$ mho/m; $\epsilon_r = 36.1$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 5500$ MHz; $\sigma = 4.96$ mho/m; $\epsilon_r = 35.6$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 5800$ MHz; $\sigma = 5.27$ mho/m; $\epsilon_r = 35.1$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.41, 5.41, 5.41), ConvF(4.91, 4.91, 4.91), ConvF(4.81, 4.81, 4.81); Calibrated: 04.03.2011
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:

Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 64.135 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 29.6850

SAR(1 g) = 8.01 mW/g; SAR(10 g) = 2.28 mW/g

Maximum value of SAR (measured) = 17.959 mW/g

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:

Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 65.059 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 34.0090

SAR(1 g) = 8.56 mW/g; SAR(10 g) = 2.41 mW/g

Maximum value of SAR (measured) = 19.656 mW/g

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:

Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

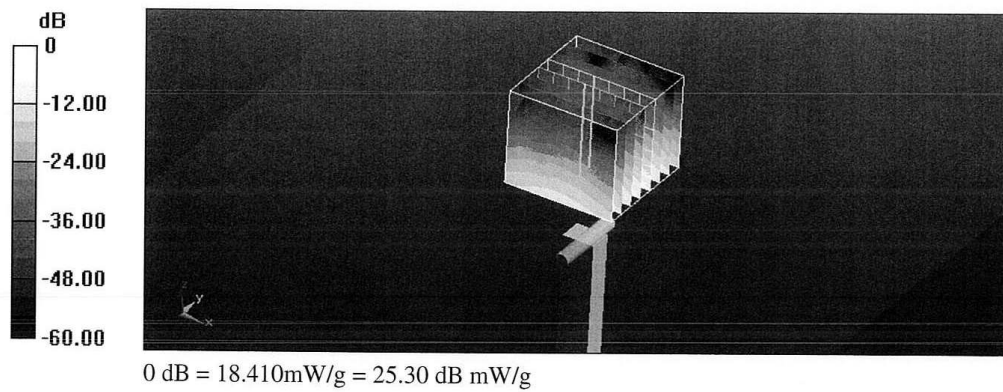
Reference Value = 60.602 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 32.7510

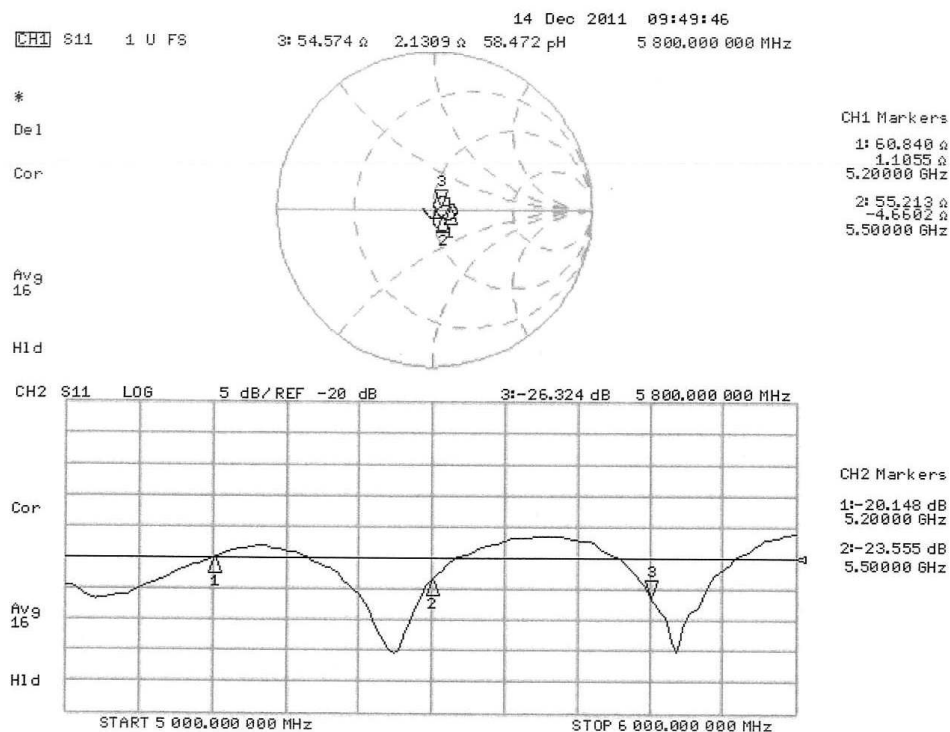
SAR(1 g) = 7.79 mW/g; SAR(10 g) = 2.2 mW/g

Maximum value of SAR (measured) = 18.411 mW/g





Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 13.12.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1008

Communication System: CW; Frequency: 5200 MHz, Frequency: 5500 MHz, Frequency: 5800 MHz

Medium parameters used: $f = 5200$ MHz; $\sigma = 5.44$ mho/m; $\epsilon_r = 49.6$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 5500$ MHz; $\sigma = 5.86$ mho/m; $\epsilon_r = 49$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 5800$ MHz; $\sigma = 6.28$ mho/m; $\epsilon_r = 48.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(4.91, 4.91, 4.91), ConvF(4.43, 4.43, 4.43), ConvF(4.38, 4.38, 4.38); Calibrated: 04.03.2011
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 58.776 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 29.4610

SAR(1 g) = 7.54 mW/g; SAR(10 g) = 2.1 mW/g

Maximum value of SAR (measured) = 17.191 mW/g

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 59.224 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 35.0790

SAR(1 g) = 8.2 mW/g; SAR(10 g) = 2.26 mW/g

Maximum value of SAR (measured) = 19.300 mW/g

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

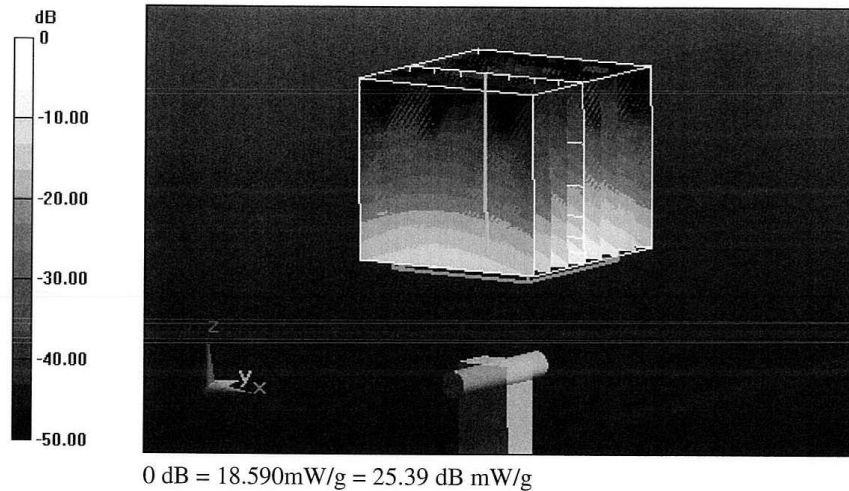
Reference Value = 55.474 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 35.6620

SAR(1 g) = 7.65 mW/g; SAR(10 g) = 2.1 mW/g

Maximum value of SAR (measured) = 18.593 mW/g





Impedance Measurement Plot for Body TSL

