Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.6 ± 6 %	5.09 mho/m ± 6 %
Head TSL temperature during test	(22.2 ± 0.2) °C	----	----

SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	condition	
SAR measured	250 mW input power	20.7 mW / g
SAR normalized	normalized to 1W	82.8 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**82.2 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.80 mW / g
SAR normalized	normalized to 1W	23.2 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**23.0 mW / g ± 19.5 % (k=2)**

Body TSL parameters at 5500 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.6	5.66 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	48.4 ± 6 %	5.50 mho/m ± 6 %
Body TSL temperature during test	(22.2 ± 0.2) °C	----	----

SAR result with Body TSL at 5500 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	condition	
SAR measured	250 mW input power	19.7 mW / g
SAR normalized	normalized to 1W	78.8 mW / g
SAR for nominal Body TSL parameters [1]	normalized to 1W	**78.6 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.54 mW / g
SAR normalized	normalized to 1W	22.2 mW / g
SAR for nominal Body TSL parameters [1]	normalized to 1W	**22.1 mW / g ± 19.5 % (k=2)**

Body TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.2	6.00 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.8 ± 6 %	5.88 mho/m ± 6 %
Body TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	condition	
SAR measured	250 mW input power	18.0 mW / g
SAR normalized	normalized to 1W	72.0 mW / g
SAR for nominal Body TSL parameters [1]	normalized to 1W	**71.8 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.04 mW / g
SAR normalized	normalized to 1W	20.2 mW / g
SAR for nominal Body TSL parameters [1]	normalized to 1W	**20.1 mW / g ± 19.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL at 5500 MHz

Impedance, transformed to feed point	50.4 Ω - 1.4 jΩ
Return Loss	-36.7 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	54.9 Ω + 1.6 jΩ
Return Loss	-26.1 dB

Antenna Parameters with Body TSL at 5500 MHz

Impedance, transformed to feed point	49.8 Ω - 0.7 jΩ
Return Loss	-42.7 dB

Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	55.8 Ω + 3.2 jΩ
Return Loss	-24.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.203 ns

After long term use with 40 W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	April 2, 2003

DASY4 Validation Report for Head TSL

Date/Time: 02.05.2006 15:01:43

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHz; Serial: D5100V2 - SN:1001

Communication System: CW-5GHz; Frequency: 5500 MHz Frequency: 5800 MHz; Duty Cycle: 1:1
Medium: HSL 5800 MHz;
Medium parameters used: f = 5500 MHz; σ = 4.8 mho/m; ε_r = 35.1; ρ = 1000 kg/m^3 Medium parameters used: f = 5800 MHz; σ = 5.08 mho/m; ε_r = 34.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

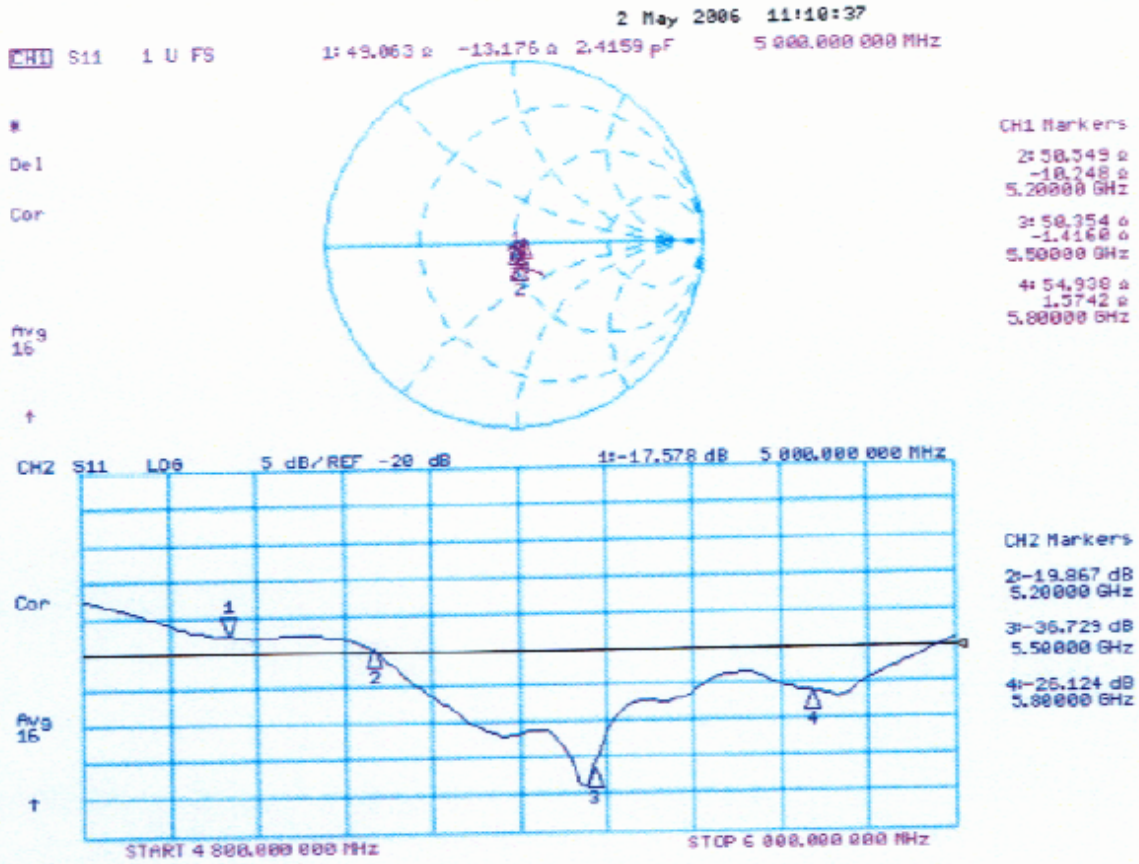
- Probe: EX3DV4 - SN3503; ConvF(5.18, 5.18, 5.18)ConvF(5.02, 5.02, 5.02); Calibrated: 18.03.2006
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 21; Postprocessing SW: SEMCAD, V1.8 Build 165

d=10mm, Pin=250mW, f=5500 MHz/Area Scan (91x91x1): Measurement grid: dx=dy=10mm
Maximum value of SAR (interpolated) = 44.1 mW/g

d=10mm, Pin=250mW, f=5500 MHz/Zoom Scan (8x8x8), dist=2mm 2 (8x8x8)/Cube 0:
Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 79.1 V/m; Power Drift = 0.048 dB
Peak SAR (extrapolated) = 84.3 W/kg
SAR(1 g) = 21.3 mW/g; SAR(10 g) = 6 mW/g
Maximum value of SAR (measured) = 41.2 mW/g

d=10mm, Pin=250mW, f=5800 MHz/Zoom Scan (8x8x8), dist=2mm (8x8x8)/Cube 0:
Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 75.5 V/m; Power Drift = 0.144 dB
Peak SAR (extrapolated) = 86.2 W/kg
SAR(1 g) = 20.7 mW/g; SAR(10 g) = 5.8 mW/g
Maximum value of SAR (measured) = 43.3 mW/g

Impedance Measurement Plot for Head TSL



DASY4 Validation Report for Body TSL

Date/Time: 03.05.2006 12:55:54

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHz; Serial: D5100V2 - SN:1001

Communication System: CW-5GHz; Frequency: 5500 MHz Frequency: 5800 MHz; Duty Cycle: 1:1
Medium: MSL U10 BB;
Medium parameters used: f = 5500 MHz; σ = 5.5 mho/m; ε_r = 48.4; ρ = 1000 kg/m^3 Medium parameters used: f = 5800 MHz; σ = 5.88 mho/m; ε_r = 47.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(4.67, 4.67, 4.67)ConvF(4.72, 4.72, 4.72); Calibrated: 18.03.2006
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 21; Postprocessing SW: SEMCAD, V1.8 Build 165

d=10mm, Pin=250mW, f=5500 MHz/Area Scan (91x91x1): Measurement grid: dx=dy=10mm
Maximum value of SAR (interpolated) = 43.5 mW/g

d=10mm, Pin=250mW, f=5500 MHz/Zoom Scan (8x8x8), dist=2mm (8x8x8)/Cube 0:
Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 77.5 V/m; Power Drift = 0.074 dB
Peak SAR (extrapolated) = 72.4 W/kg
SAR(1 g) = 19.7 mW/g; SAR(10 g) = 5.54 mW/g
Maximum value of SAR (measured) = 37.5 mW/g

d=10mm, Pin=250mW, f=5800 MHz/Zoom Scan (8x8x8), dist=2mm (8x8x8)/Cube 0:
Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 73.3 V/m; Power Drift = 0.010 dB
Peak SAR (extrapolated) = 70.9 W/kg
SAR(1 g) = 18 mW/g; SAR(10 g) = 5.04 mW/g
Maximum value of SAR (measured) = 35.1 mW/g