



Measurement Conditions

DASY system configuration, as far as not given on page 1.

| DASY Version | DASY5 | V52.10.2 |
|------------------------------|--|----------------------------------|
| Extrapolation | Advanced Extrapolation | |
| Phantom | Modular Flat Phantom V5.0 | |
| Distance Dipole Center - TSL | 10 mm | with Spacer |
| Zoom Scan Resolution | dx, dy = 4.0 mm, dz = 1.4 mm | Graded Ratio = 1.4 (Z direction) |
| Frequency | 5200 MHz ± 1 MHz 5250 MHz ± 1 MHz 5300 MHz ± 1 MHz 5500 MHz ± 1 MHz 5600 MHz ± 1 MHz 5750 MHz ± 1 MHz 5800 MHz ± 1 MHz | |

Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Head TSL parameters | 22.0 °C | 36.0 | 4.66 mho/m |
| Measured Head TSL parameters | (22.0 ± 0.2) °C | 35.5 ± 6 % | 4.46 mho/m ± 6 % |
| Head TSL temperature change during test | < 0.5 °C | i_ | |

SAR result with Head TSL at 5200 MHz

| SAR averaged over 1 cm ³ (1 g) of Head TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 8.06 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 80.3 W/kg ± 19.9 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Head TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 2.32 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 23.0 W/kg ± 19.5 % (k=2) |





Head TSL parameters at 5250 MHz The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Head TSL parameters | 22.0 °C | 35.9 | 4.71 mho/m |
| Measured Head TSL parameters | (22.0 ± 0.2) °C | 35.5 ± 6 % | 4.51 mho/m ± 6 % |
| Head TSL temperature change during test | < 0.5 °C | | |

SAR result with Head TSL at 5250 MHz

| SAR averaged over 1 cm ³ (1 g) of Head TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 8.07 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 80.4 W/kg ± 19.9 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Head TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 2.33 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 23.2 W/kg ± 19.5 % (k=2) |

Head TSL parameters at 5300 MHz

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Head TSL parameters | 22.0 °C | 35.9 | 4.76 mho/m |
| Measured Head TSL parameters | (22.0 ± 0.2) °C | 35.4 ± 6 % | 4.56 mho/m ± 6 % |
| Head TSL temperature change during test | < 0.5 °C | | |

SAR result with Head TSL at 5300 MHz

| SAR averaged over 1 cm ³ (1 g) of Head TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 8.23 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 82.0 W/kg ± 19.9 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Head TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 2.37 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 23.5 W/kg ± 19.5 % (k=2) |





Head TSL parameters at 5500 MHz

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Head TSL parameters | 22.0 °C | 35.6 | 4.96 mho/m |
| Measured Head TSL parameters | (22.0 ± 0.2) °C | 35.1 ± 6 % | 4.76 mho/m ± 6 % |
| Head TSL temperature change during test | < 0.5 °C | | |

SAR result with Head TSL at 5500 MHz

| SAR averaged over 1 cm ³ (1 g) of Head TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 8.51 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 84.7 W/kg ± 19.9 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Head TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 2.43 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 24.2 W/kg ± 19.5 % (k=2) |

Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

| • | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Head TSL parameters | 22.0 °C | 35.5 | 5.07 mho/m |
| Measured Head TSL parameters | (22.0 ± 0.2) °C | 35.0 ± 6 % | 4.86 mho/m ± 6 % |
| Head TSL temperature change during test | < 0.5 °C | | |

SAR result with Head TSL at 5600 MHz

| SAR averaged over 1 cm ³ (1 g) of Head TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 8.49 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 84.5 W/kg ± 19.9 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Head TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 2.43 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 24.1 W/kg ± 19.5 % (k=2) |

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Head TSL parameters at 5750 MHz

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Head TSL parameters | 22.0 °C | 35.4 | 5.22 mho/m |
| Measured Head TSL parameters | (22.0 ± 0.2) °C | 34.8 ± 6 % | 5.02 mho/m ± 6 % |
| Head TSL temperature change during test | < 0.5 °C | | |

SAR result with Head TSL at 5750 MHz

| SAR averaged over 1 cm ³ (1 g) of Head TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 8.08 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 80.4 W/kg ± 19.9 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Head TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 2.31 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 23.0 W/kg ± 19.5 % (k=2) |

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 | 34.7 ± 6 % | 5.07 mho/m ± 6 % |
| Head TSL temperature change during test | < 0.5 °C | | |

SAR result with Head TSL at 5800 MHz

| SAR averaged over 1 cm ³ (1 g) of Head TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 8.14 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 80.9 W/kg ± 19.9 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Head TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 2.30 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 22.9 W/kg ± 19.5 % (k=2) |

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Body TSL parameters at 5200 MHz

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Body TSL parameters | 22.0 °C | 49.0 | 5.30 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 47.3 ± 6 % | 5.43 mho/m ± 6 % |
| Body TSL temperature change during test | < 0.5 °C | | |

SAR result with Body TSL at 5200 MHz

| SAR averaged over 1 cm ³ (1 g) of Body TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 7.41 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 73.6 W/kg ± 19.9 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Body TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 2.08 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 20.6 W/kg ± 19.5 % (k=2) |

Body TSL parameters at 5250 MHz

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Body TSL parameters | 22.0 °C | 48.9 | 5.36 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 47.2 ± 6 % | 5.49 mho/m ± 6 % |
| Body TSL temperature change during test | < 0.5 °C | | |

SAR result with Body TSL at 5250 MHz

| SAR averaged over 1 cm ³ (1 g) of Body TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 7.67 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 76.2 W/kg ± 19.9 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Body TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 2.15 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 21.3 W/kg ± 19.5 % (k=2) |

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Body TSL parameters at 5300 MHz

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Body TSL parameters | 22.0 °C | 48.9 | 5.42 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 47.1 ± 6 % | 5.56 mho/m ± 6 % |
| Body TSL temperature change during test | < 0.5 °C | | |

SAR result with Body TSL at 5300 MHz

| SAR averaged over 1 cm ³ (1 g) of Body TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 7.52 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 74.7 W/kg ± 19.9 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Body TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 2.13 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 21.1 W/kg ± 19.5 % (k=2) |

Body TSL parameters at 5500 MHz

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Body TSL parameters | 22.0 °C | 48.6 | 5.65 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 46.7 ± 6 % | 5.83 mho/m ± 6 % |
| Body TSL temperature change during test | < 0.5 °C | | |

SAR result with Body TSL at 5500 MHz

| SAR averaged over 1 cm ³ (1 g) of Body TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 8.00 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 79.5 W/kg ± 19.9 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Body TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 2.23 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 22.1 W/kg ± 19.5 % (k=2) |

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Body TSL parameters at 5600 MHz The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Body TSL parameters | 22.0 °C | 48.5 | 5.77 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 46.6 ± 6 % | 5.97 mho/m ± 6 % |
| Body TSL temperature change during test | < 0.5 °C | | |

SAR result with Body TSL at 5600 MHz

| SAR averaged over 1 cm ³ (1 g) of Body TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 7.87 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 78.2 W/kg ± 19.9 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Body TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 2.22 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 22.0 W/kg ± 19.5 % (k=2) |

Body TSL parameters at 5750 MHz

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Body TSL parameters | 22.0 °C | 48.3 | 5.94 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 46.3 ± 6 % | 6.17 mho/m ± 6 % |
| Body TSL temperature change during test | < 0.5 °C | | |

SAR result with Body TSL at 5750 MHz

| SAR averaged over 1 cm ³ (1 g) of Body TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 7.79 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 77.4 W/kg ± 19.9 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Body TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 2.18 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 21.5 W/kg ± 19.5 % (k=2) |

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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 | 46.2 ± 6 % | 6.24 mho/m ± 6 % |
| Body TSL temperature change during test | < 0.5 °C | | |

SAR result with Body TSL at 5800 MHz

| SAR averaged over 1 cm ³ (1 g) of Body TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 7.51 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 74.6 W/kg ± 19.9 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Body TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 2.09 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 20.7 W/kg ± 19.5 % (k=2) |

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 5200 MHz

| Impedance, transformed to feed point | 48.7 Ω - 5.5 jΩ | |
|--------------------------------------|-----------------|--|
| Return Loss | - 24.9 dB | |

Antenna Parameters with Head TSL at 5250 MHz

| Impedance, transformed to feed point | 48.6 Ω - 4.0 jΩ |
|--------------------------------------|-----------------|
| Return Loss | - 27.5 dB |

Antenna Parameters with Head TSL at 5300 MHz

| Impedance, transformed to feed point | 47.7 Ω - 3.3 jΩ |
|--------------------------------------|-----------------|
| Return Loss | - 27.7 dB |

Antenna Parameters with Head TSL at 5500 MHz

| Impedance, transformed to feed point | 50.9 Ω - 3.9 jΩ | |
|--------------------------------------|-----------------|--|
| Return Loss | - 28.2 dB | |

Antenna Parameters with Head TSL at 5600 MHz

| Impedance, transformed to feed point | $54.2~\Omega + 0.3~\mathrm{j}\Omega$ |
|--------------------------------------|--------------------------------------|
| Return Loss | - 27.9 dB |

Antenna Parameters with Head TSL at 5750 MHz

| Impedance, transformed to feed point | 51.7 Ω - 0.8 jΩ |
|--------------------------------------|-----------------|
| Return Loss | - 34.7 dB |

Antenna Parameters with Head TSL at 5800 MHz

| Impedance, transformed to feed point | 52.1 Ω - 2.4 jΩ |
|--------------------------------------|-----------------|
| Return Loss | - 30.1 dB |

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Antenna Parameters with Body TSL at 5200 MHz

| Impedance, transformed to feed point | 48.9 Ω - 5.6 jΩ | |
|--------------------------------------|-----------------|--|
| Return Loss | - 24.8 dB | |

Antenna Parameters with Body TSL at 5250 MHz

| Impedance, transformed to feed point | 48.0 Ω - 2.2 jΩ | |
|--------------------------------------|-----------------|--|
| Return Loss | - 30.4 dB | |

Antenna Parameters with Body TSL at 5300 MHz

| Impedance, transformed to feed point | 48.3 Ω - 3.0 jΩ | |
|--------------------------------------|-----------------|--|
| Return Loss | - 29.1 dB | |

Antenna Parameters with Body TSL at 5500 MHz

| 50.2 Ω - 2.2 j Ω | |
|--------------------------------|----------------------|
| - 33.1 dB | |
| | 2000 BA 2000 BA 2000 |

Antenna Parameters with Body TSL at 5600 MHz

| Impedance, transformed to feed point | $55.5 \Omega + 1.0 j\Omega$ | |
|--------------------------------------|-----------------------------|--|
| Return Loss | - 25.5 dB | |

Antenna Parameters with Body TSL at 5750 MHz

| Impedance, transformed to feed point | $52.3~\Omega + 0.8~\mathrm{j}\Omega$ | |
|--------------------------------------|--------------------------------------|--|
| Return Loss | - 32.3 dB | |

Antenna Parameters with Body TSL at 5800 MHz

| Impedance, transformed to feed point | 52.9 Ω - 1.8 jΩ | |
|--------------------------------------|-----------------|--|
| Return Loss | - 29.5 dB | |

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General Antenna Parameters and Design

| Electrical Delay (one direction) 1.2 | 01 ns |
|--------------------------------------|-------|
|--------------------------------------|-------|

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 | |
|-----------------------|--|
|-----------------------|--|

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DASY5 Validation Report for Head TSL

Date: 22.07.2019

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1060

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5250 MHz, Frequency: 5300 MHz, Frequency: 5500 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz, Frequency: 5800 MHz Medium parameters used: f=5200 MHz; $\sigma=4.46$ S/m; $\epsilon_r=35.5;$ $\rho=1000$ kg/m 3 , Medium parameters used: f=5250 MHz; $\sigma=4.51$ S/m; $\epsilon_r=35.5;$ $\rho=1000$ kg/m 3 , Medium parameters used: f=5300 MHz; $\sigma=4.56$ S/m; $\epsilon_r=35.4;$ $\rho=1000$ kg/m 3 , Medium parameters used: f=5500 MHz; $\sigma=4.76$ S/m; $\epsilon_r=35.1;$ $\rho=1000$ kg/m 3 , Medium parameters used: f=5600 MHz; $\sigma=4.86$ S/m; $\epsilon_r=35.1;$ $\rho=1000$ kg/m 3 , Medium parameters used: f=5600 MHz; $\sigma=4.86$ S/m; $\epsilon_r=35;$ $\rho=1000$ kg/m 3 , Medium parameters used: f=5750 MHz; $\sigma=5.02$ S/m; $\epsilon_r=34.8;$ $\rho=1000$ kg/m 3 , Medium parameters used: f=5800 MHz; $\sigma=5.07$ S/m; $\epsilon_r=34.7;$ $\rho=1000$ kg/m 3 Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN3503; ConvF(5.64, 5.64, 5.64) @ 5200 MHz, ConvF(5.4, 5.4, 5.4) @ 5250 MHz, ConvF(5.39, 5.39, 5.39) @ 5300 MHz, ConvF(5.1, 5.1, 5.1) @ 5500 MHz, ConvF(4.95, 4.95, 4.95) @ 5600 MHz, ConvF(4.98, 4.98, 4.98) @ 5750 MHz, ConvF(4.96, 4.96, 4.96) @ 5800 MHz; Calibrated: 25.03.2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2019
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.2(1504); SEMCAD X 14.6.12(7470)

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 = 74.16 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 28.1 W/kg

SAR(1 g) = 8.06 W/kg; SAR(10 g) = 2.32 W/kg

Maximum value of SAR (measured) = 17.8 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 74.71 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 27.3 W/kg

SAR(1 g) = 8.07 W/kg; SAR(10 g) = 2.33 W/kg

Maximum value of SAR (measured) = 17.8 W/kg

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Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 75.07 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 28.8 W/kg

SAR(1 g) = 8.23 W/kg; SAR(10 g) = 2.37 W/kg

Maximum value of SAR (measured) = 18.5 W/kg

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 = 74.21 V/m; Power Drift = 0.7 dB

Peak SAR (extrapolated) = 32.1 W/kg

SAR(1 g) = 8.51 W/kg; SAR(10 g) = 2.43 W/kg

Maximum value of SAR (measured) = 19.6 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 75.03 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 31.0 W/kg

SAR(1 g) = 8.49 W/kg; SAR(10 g) = 2.43 W/kg

Maximum value of SAR (measured) = 19.4 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 71.89 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 31.1 W/kg

SAR(1 g) = 8.08 W/kg; SAR(10 g) = 2.31 W/kg

Maximum value of SAR (measured) = 18.8 W/kg

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 = 72.69 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 31.8 W/kg

SAR(1 g) = 8.14 W/kg; SAR(10 g) = 2.30 W/kg

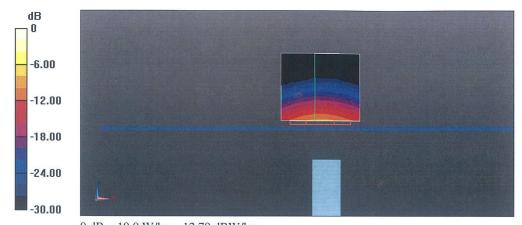
Maximum value of SAR (measured) = 19.0 W/kg

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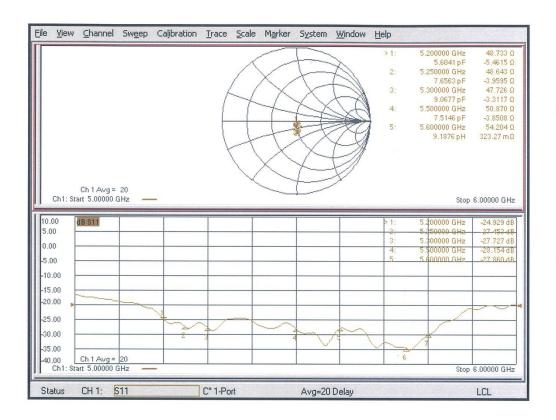


0 dB = 19.0 W/kg = 12.79 dBW/kg





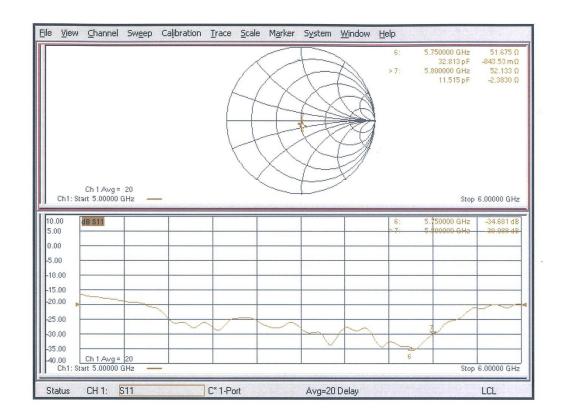
Impedance Measurement Plot for Head TSL (5200, 5250, 5300, 5500, 5600 MHz)







Impedance Measurement Plot for Head TSL (5750, 5800 MHz)







DASY5 Validation Report for Body TSL

Date: 22.07.2019

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1060

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5250 MHz, Frequency: 5300 MHz, Frequency: 5500 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz, Frequency: 5800 MHz Medium parameters used: f=5200 MHz; $\sigma=5.43$ S/m; $\epsilon_r=47.3$; $\rho=1000$ kg/m 3 , Medium parameters used: f=5250 MHz; $\sigma=5.49$ S/m; $\epsilon_r=47.2$; $\rho=1000$ kg/m 3 , Medium parameters used: f=5300 MHz; $\sigma=5.56$ S/m; $\epsilon_r=47.1$; $\rho=1000$ kg/m 3 , Medium parameters used: f=5500 MHz; $\sigma=5.83$ S/m; $\epsilon_r=46.7$; $\rho=1000$ kg/m 3 , Medium parameters used: f=5600 MHz; $\sigma=5.97$ S/m; $\epsilon_r=46.6$; $\rho=1000$ kg/m 3 , Medium parameters used: f=5750 MHz; $\sigma=6.17$ S/m; $\epsilon_r=46.3$; $\rho=1000$ kg/m 3 , Medium parameters used: f=5800 MHz; $\sigma=6.24$ S/m; $\epsilon_r=46.2$; $\rho=1000$ kg/m 3 Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN3503; ConvF(5.14, 5.14, 5.14) @ 5200 MHz, ConvF(5.26, 5.26, 5.26) @ 5250 MHz, ConvF(5.25, 5.25, 5.25) @ 5300 MHz, ConvF(4.79, 4.79, 4.79) @ 5500 MHz, ConvF(4.74, 4.74, 4.74) @ 5600 MHz, ConvF(4.62, 4.62, 4.62) @ 5750 MHz, ConvF(4.62, 4.62, 4.62) @ 5800 MHz; Calibrated: 25.03.2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2019
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.2(1504); SEMCAD X 14.6.12(7470)

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 = 68.89 V/m; Power Drift = -0.00 dB

Peak SAR (extrapolated) = 27.5 W/kg

SAR(1 g) = 7.41 W/kg; SAR(10 g) = 2.08 W/kg

Maximum value of SAR (measured) = 17.2 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 69.26 V/m; Power Drift = 0.00 dB Peak SAR (extrapolated) = 29.2 W/kg SAR(1 g) = 7.67 W/kg; SAR(10 g) = 2.15 W/kg Maximum value of SAR (measured) = 17.9 W/kg

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Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 68.18 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 29.0 W/kg

SAR(1 g) = 7.52 W/kg; SAR(10 g) = 2.13 W/kg

Maximum value of SAR (measured) = 17.4 W/kg

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 = 69.45 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 32.7 W/kg

SAR(1 g) = 8 W/kg; SAR(10 g) = 2.23 W/kg

Maximum value of SAR (measured) = 19.1 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 68.13 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 32.9 W/kg

SAR(1 g) = 7.87 W/kg; SAR(10 g) = 2.22 W/kg

Maximum value of SAR (measured) = 18.8 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 67.49 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 34.1 W/kg

SAR(1 g) = 7.79 W/kg; SAR(10 g) = 2.18 W/kg

Maximum value of SAR (measured) = 19.0 W/kg

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 = 66.59 V/m; Power Drift = 0.01 dB

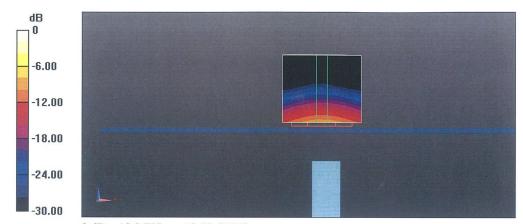
Peak SAR (extrapolated) = 32.0 W/kg

SAR(1 g) = 7.51 W/kg; SAR(10 g) = 2.09 W/kg

Maximum value of SAR (measured) = 18.0 W/kg







0 dB = 18.0 W/kg = 12.55 dBW/kg