

System Check_HSL3500_20250522**DUT: Dipole:3500 MHz;Type:D3500V2**

Communication System: CW; Frequency: 3500 MHz;Duty Cycle: 1:1

Medium: HSL3500_0522 Medium parameters used: $f = 3500$ MHz; $\sigma = 3.017$ S/m; $\epsilon_r = 39.758$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.3°C; Liquid Temperature : 22.5°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(6.71, 6.71, 6.71) @ 3500 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=100mW/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 12.4 W/kg**Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 40.37 V/m; Power Drift = 0.14 dB

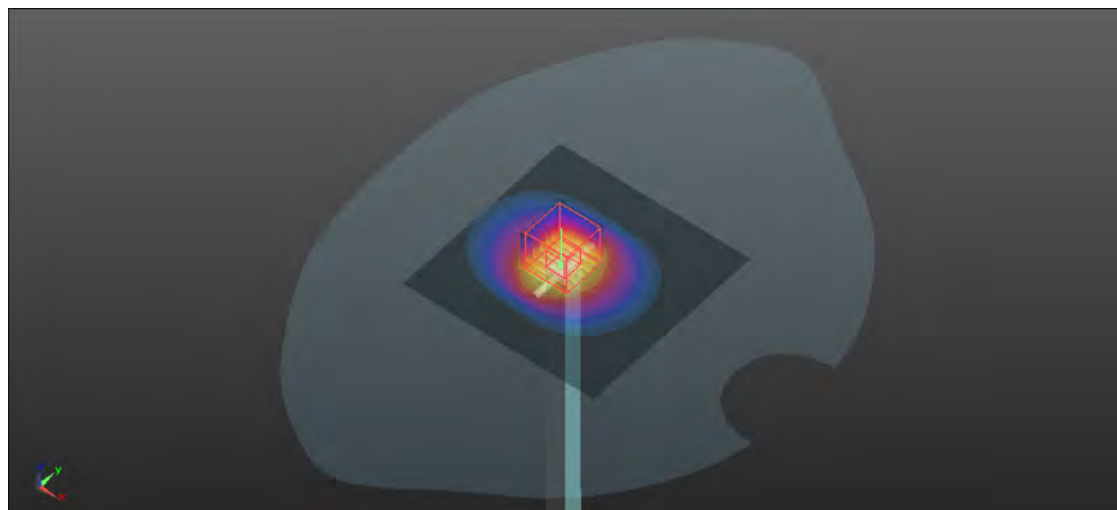
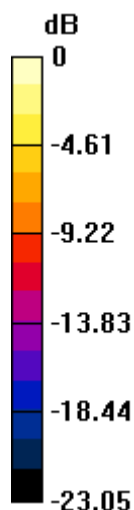
Peak SAR (extrapolated) = 17.3 W/kg

SAR(1 g) = 6.53 W/kg; SAR(10 g) = 2.48 W/kg

Smallest distance from peaks to all points 3 dB below = 8 mm

Ratio of SAR at M2 to SAR at M1 = 66.7%

Maximum value of SAR (measured) = 12.7 W/kg



0 dB = 12.7 W/kg

System Check_HSL3700_20250519**DUT: Dipole:3700 MHz;Type:D3700V2**

Communication System: CW; Frequency: 3700 MHz;Duty Cycle: 1:1

Medium: HSL3700_0519 Medium parameters used: $f = 3700$ MHz; $\sigma = 3.054$ S/m; $\epsilon_r = 38.374$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5°C; Liquid Temperature : 22.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(6.5, 6.5, 6.5) @ 3700 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=100mW/Area Scan (81x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 13.7 W/kg**Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 34.31 V/m; Power Drift = 0.15 dB

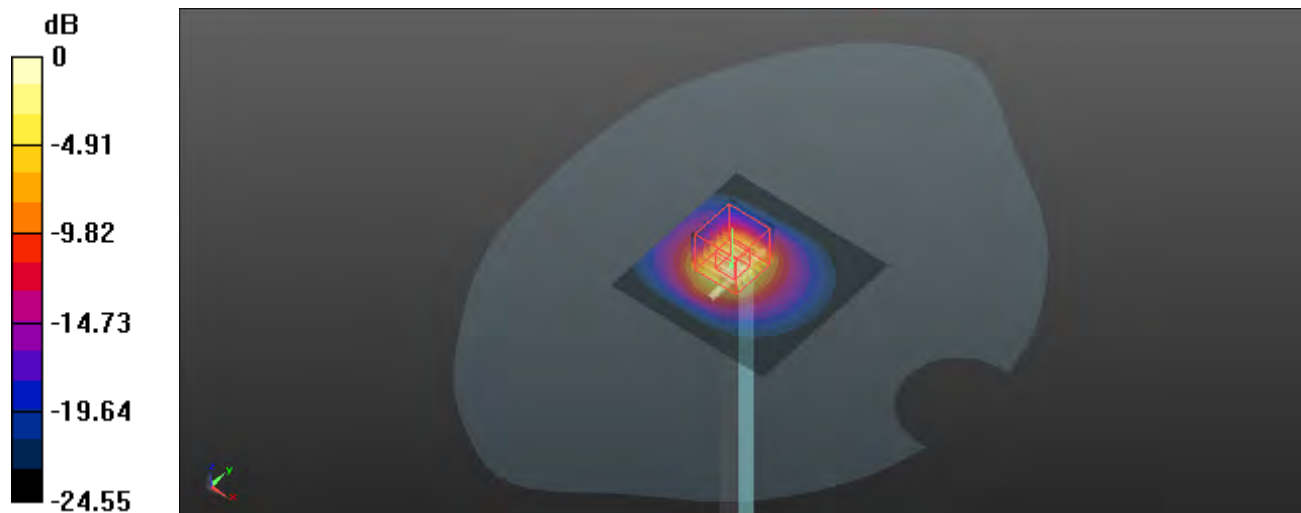
Peak SAR (extrapolated) = 18.9 W/kg

SAR(1 g) = 6.79 W/kg; SAR(10 g) = 2.5 W/kg

Smallest distance from peaks to all points 3 dB below = 8 mm

Ratio of SAR at M2 to SAR at M1 = 65.1%

Maximum value of SAR (measured) = 13.6 W/kg



0 dB = 13.6 W/kg

System Check_HSL3700_20250524**DUT: Dipole:3700 MHz;Type:D3700V2**

Communication System: CW; Frequency: 3700 MHz;Duty Cycle: 1:1

Medium: HSL3700_0524 Medium parameters used: $f = 3700$ MHz; $\sigma = 3.005$ S/m; $\epsilon_r = 39.297$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4°C; Liquid Temperature : 22.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(6.5, 6.5, 6.5) @ 3700 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=100mW/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 13.4 W/kg**Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 34.30 V/m; Power Drift = 0.14 dB

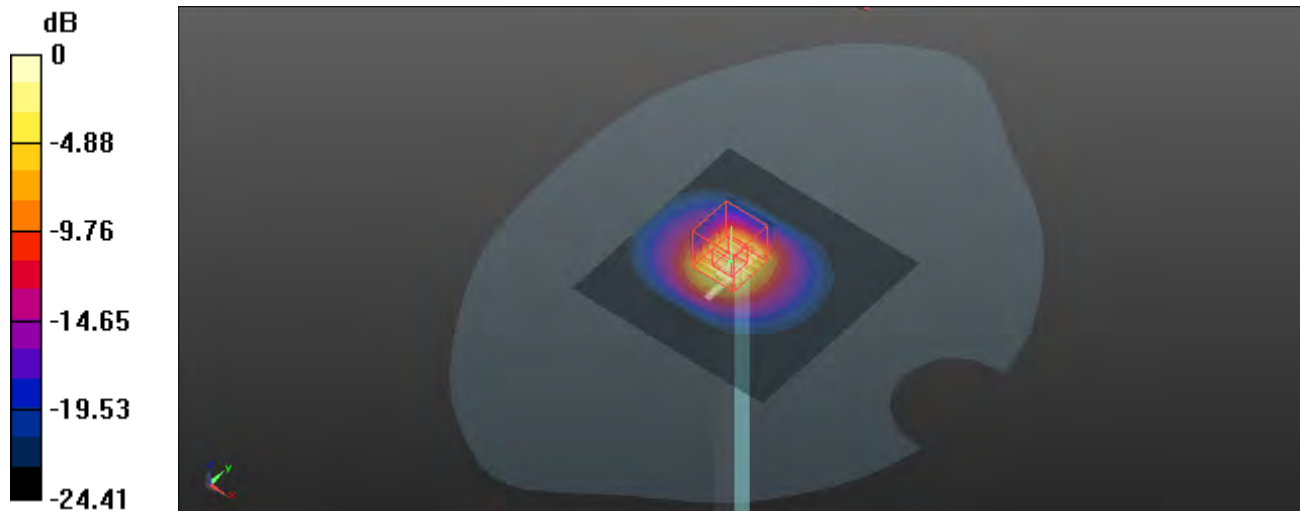
Peak SAR (extrapolated) = 18.3 W/kg

SAR(1 g) = 6.71 W/kg; SAR(10 g) = 2.49 W/kg

Smallest distance from peaks to all points 3 dB below = 8 mm

Ratio of SAR at M2 to SAR at M1 = 65.6%

Maximum value of SAR (measured) = 13.4 W/kg



0 dB = 13.4 W/kg

System Check_HSL3900_20250521**DUT: Dipole:3900 MHz;Type:D3900V2**

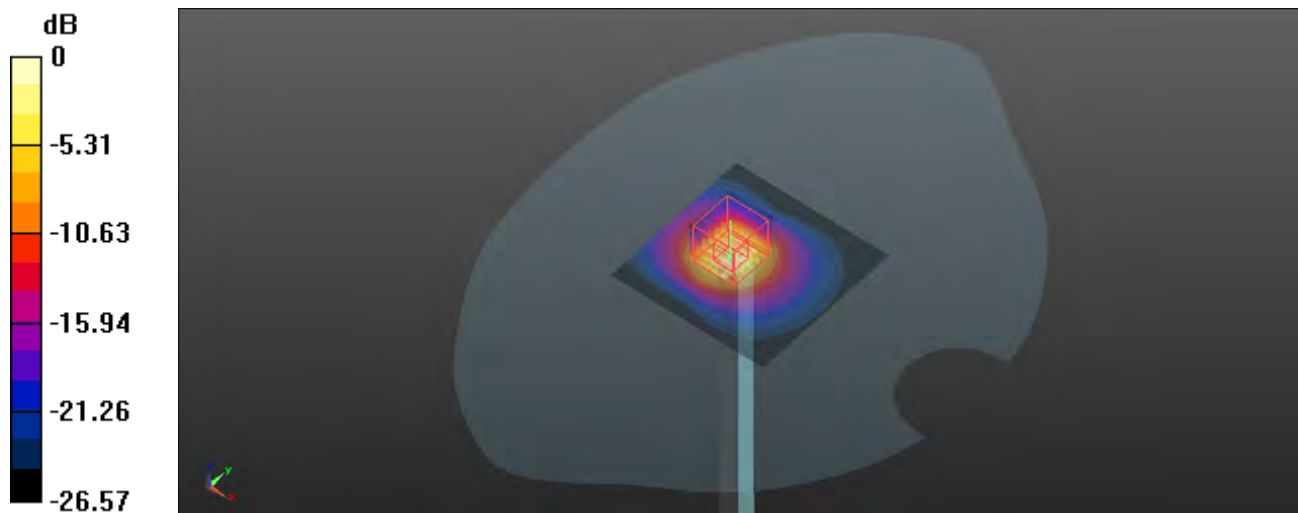
Communication System: CW; Frequency: 3900 MHz;Duty Cycle: 1:1

Medium: HSL3900_0521 Medium parameters used: $f = 3900$ MHz; $\sigma = 3.199$ S/m; $\epsilon_r = 38.142$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.3°C; Liquid Temperature : 22.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(6.4, 6.4, 6.4) @ 3900 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=100mW/Area Scan (81x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 14.1 W/kg**Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 33.60 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 19.7 W/kg
SAR(1 g) = 6.9 W/kg; SAR(10 g) = 2.42 W/kg
Smallest distance from peaks to all points 3 dB below = 7.9 mm
Ratio of SAR at M2 to SAR at M1 = 64.5%
Maximum value of SAR (measured) = 14.2 W/kg

0 dB = 14.2 W/kg



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Appendix B. SAR Plots of SAR Measurement

The SAR plots for highest measured SAR in each exposure configuration, wireless mode and frequency band combination, and measured SAR > 1.5 W/kg are shown as follows.

P01_LTE Band 7_QPSK20M_Vertical-Top_0.5cm_Ch21100_1RB_OS0

Communication System: LTE_FDD; Frequency: 2535 MHz; Duty Cycle: 1:1

Medium: HSL2600_0509 Medium parameters used: $f = 2535$ MHz; $\sigma = 1.906$ S/m; $\epsilon_r = 39.648$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.6°C; Liquid Temperature : 22.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.31, 7.31, 7.31) @ 2535 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (51x71x1): Interpolated grid: $dx=1.200$ mm, $dy=1.200$ mm

Maximum value of SAR (interpolated) = 1.89 W/kg

-Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 26.21 V/m; Power Drift = 0.13 dB

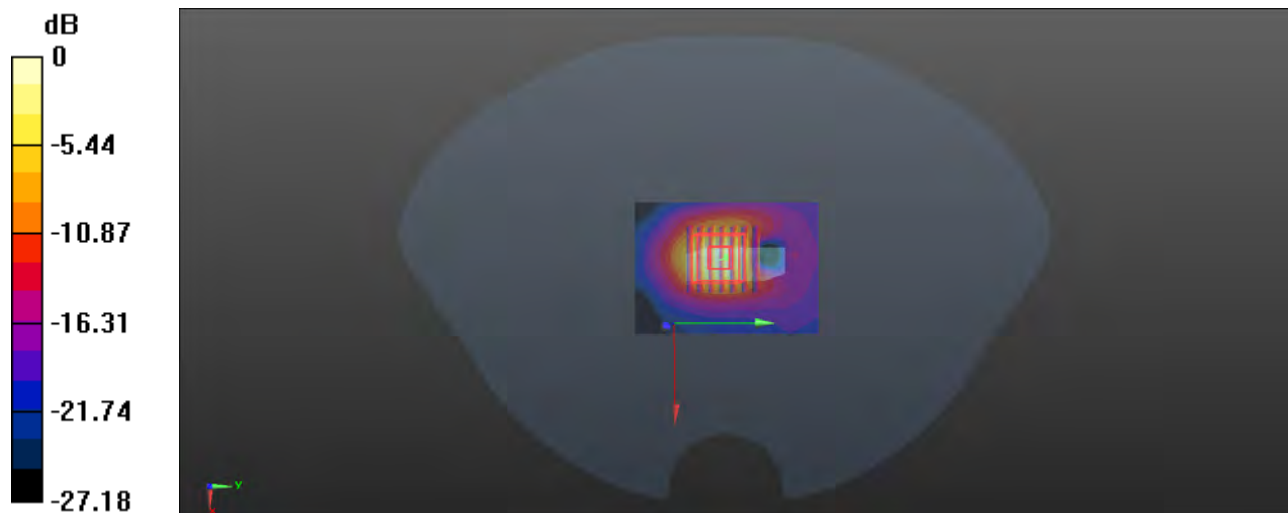
Peak SAR (extrapolated) = 2.02 W/kg

SAR(1 g) = 0.894 W/kg; SAR(10 g) = 0.366 W/kg

Smallest distance from peaks to all points 3 dB below = 8 mm

Ratio of SAR at M2 to SAR at M1 = 46.3%

Maximum value of SAR (measured) = 1.54 W/kg



0 dB = 1.54 W/kg

P02_LTE Band 12_QPSK10M_Horizontal-Up_0.5cm_Ch23095_1RB_OS0

Communication System: LTE_FDD; Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium: HSL750_0511 Medium parameters used: $f = 707.5$ MHz; $\sigma = 0.894$ S/m; $\epsilon_r = 43.256$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5°C; Liquid Temperature : 22.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.87, 9.87, 9.87) @ 707.5 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (51x91x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.792 W/kg

-Zoom Scan (6x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 27.15 V/m; Power Drift = 0.11 dB

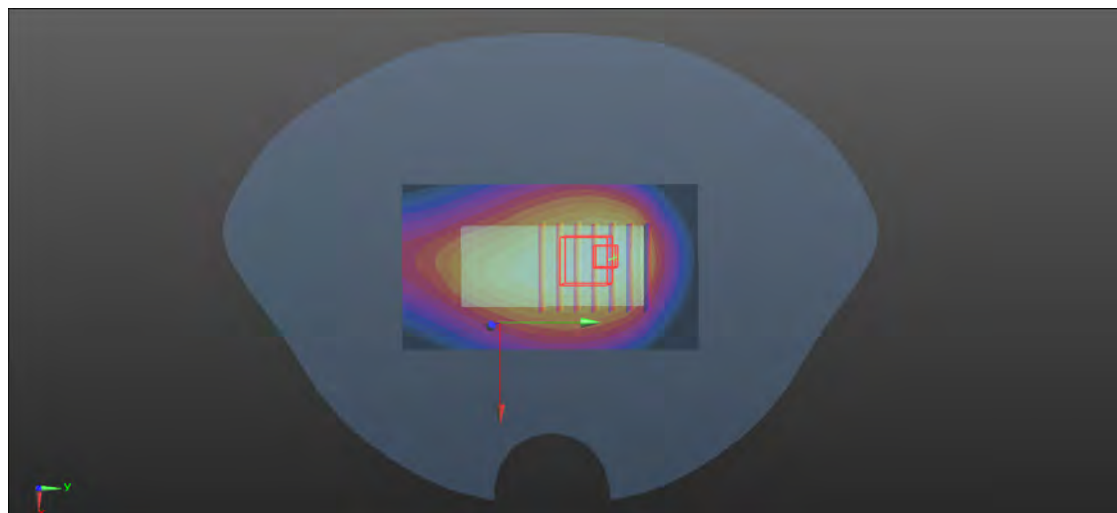
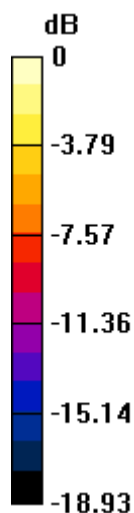
Peak SAR (extrapolated) = 1.12 W/kg

SAR(1 g) = 0.572 W/kg; SAR(10 g) = 0.363 W/kg

Smallest distance from peaks to all points 3 dB below = 11.6 mm

Ratio of SAR at M2 to SAR at M1 = 50.8%

Maximum value of SAR (measured) = 0.865 W/kg



0 dB = 0.865 W/kg

P03_LTE Band 13_QPSK10M_Horizontal-Up_0.5cm_Ch23230_1RB_OS49

Communication System: LTE_FDD; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: HSL750_0511 Medium parameters used: $f = 782$ MHz; $\sigma = 0.918$ S/m; $\epsilon_r = 42.95$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5°C; Liquid Temperature : 22.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.87, 9.87, 9.87) @ 782 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (51x91x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.12 W/kg

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

Reference Value = 32.37 V/m; Power Drift = 0.08 dB

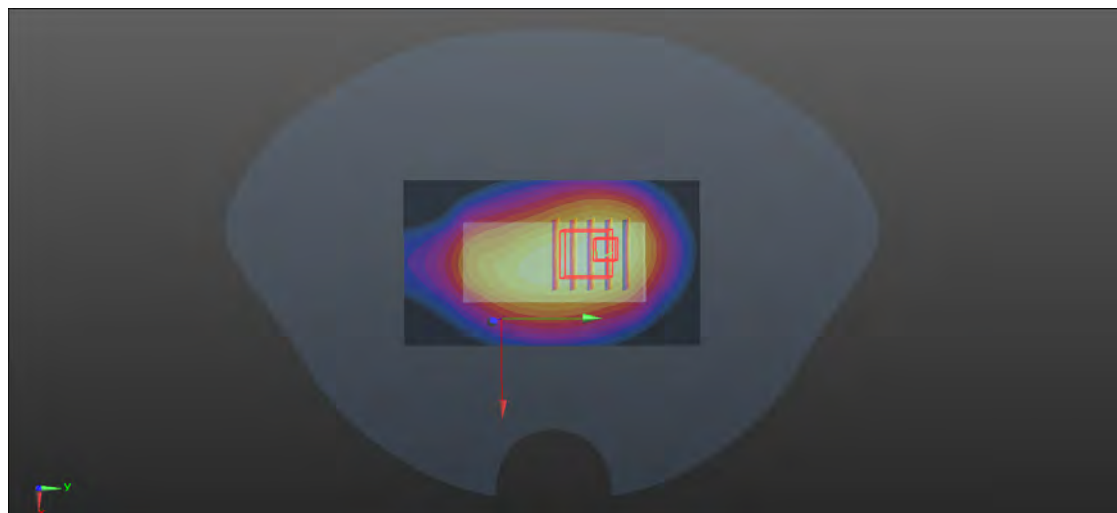
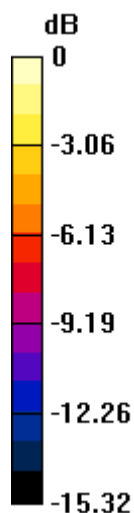
Peak SAR (extrapolated) = 1.50 W/kg

SAR(1 g) = 0.802 W/kg; SAR(10 g) = 0.506 W/kg

Smallest distance from peaks to all points 3 dB below = 12.5 mm

Ratio of SAR at M2 to SAR at M1 = 54.2%

Maximum value of SAR (measured) = 1.20 W/kg



0 dB = 1.20 W/kg

P04_LTE Band 14_QPSK10M_Horizontal-Up_0.5cm_Ch23330_1RB_OS49

Communication System: LTE_FDD; Frequency: 793 MHz; Duty Cycle: 1:1

Medium: HSL750_0511 Medium parameters used: $f = 793$ MHz; $\sigma = 0.922$ S/m; $\epsilon_r = 42.898$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5°C; Liquid Temperature : 22.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.87, 9.87, 9.87) @ 793 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (51x91x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.04 W/kg

-Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 33.02 V/m; Power Drift = -0.09 dB

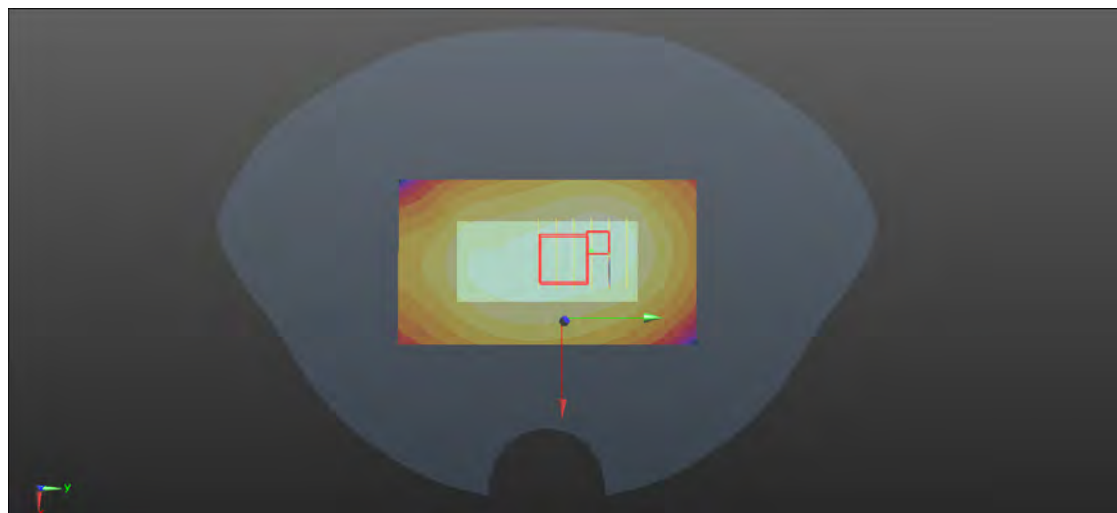
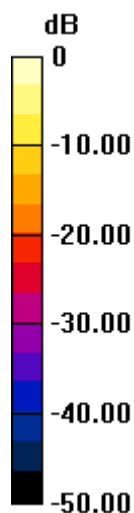
Peak SAR (extrapolated) = 1.55 W/kg

SAR(1 g) = 0.755 W/kg; SAR(10 g) = 0.493 W/kg

Smallest distance from peaks to all points 3 dB below = 8.6 mm

Ratio of SAR at M2 to SAR at M1 = 53.5%

Maximum value of SAR (measured) = 1.10 W/kg



0 dB = 1.10 W/kg

P05_LTE Band 25_QPSK20M_Horizontal-Up_0.5cm_Ch26590_1RB_OS0

Communication System: LTE_FDD; Frequency: 1905 MHz; Duty Cycle: 1:1

Medium: HSL1900_0515 Medium parameters used: $f = 1905$ MHz; $\sigma = 1.444$ S/m; $\epsilon_r = 40.244$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4°C; Liquid Temperature : 22.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.97, 7.97, 7.97) @ 1905 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (51x91x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.40 W/kg

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

Reference Value = 17.66 V/m; Power Drift = 0.18 dB

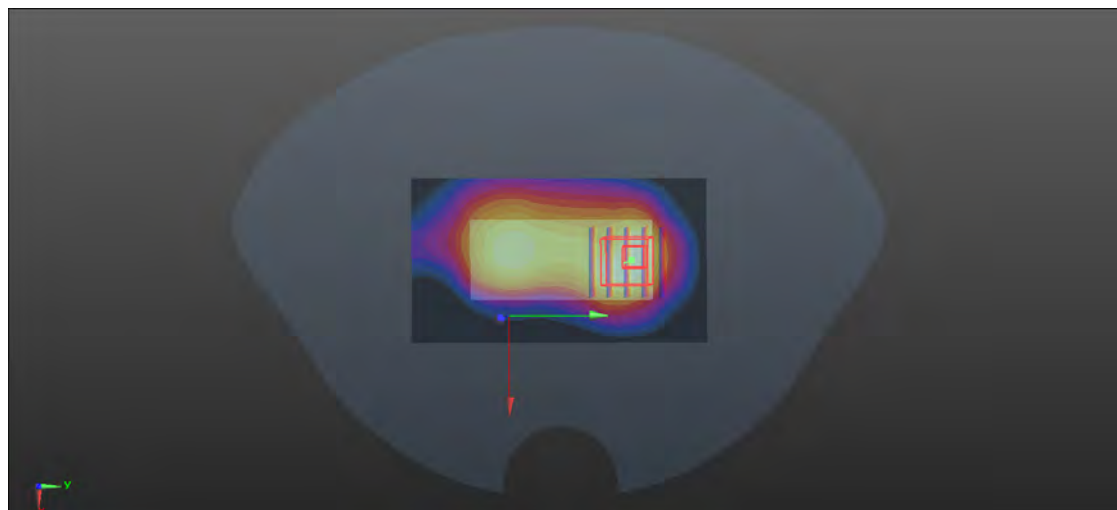
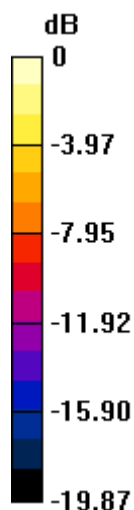
Peak SAR (extrapolated) = 1.49 W/kg

SAR(1 g) = 0.746 W/kg; SAR(10 g) = 0.366 W/kg

Smallest distance from peaks to all points 3 dB below = 8.6 mm

Ratio of SAR at M2 to SAR at M1 = 49.6%

Maximum value of SAR (measured) = 1.18 W/kg



0 dB = 1.18 W/kg

P06_LTE Band 26_QPSK15M_Horizontal-Up_0.5cm_Ch26865_1RB_OS0

Communication System: LTE_FDD; Frequency: 831.5 MHz; Duty Cycle: 1:1

Medium: HSL835_0513 Medium parameters used: $f = 831.5$ MHz; $\sigma = 0.916$ S/m; $\epsilon_r = 41.11$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.3°C; Liquid Temperature : 22.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.47, 9.47, 9.47) @ 831.5 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (51x91x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.923 W/kg

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

Reference Value = 27.50 V/m; Power Drift = 0.02 dB

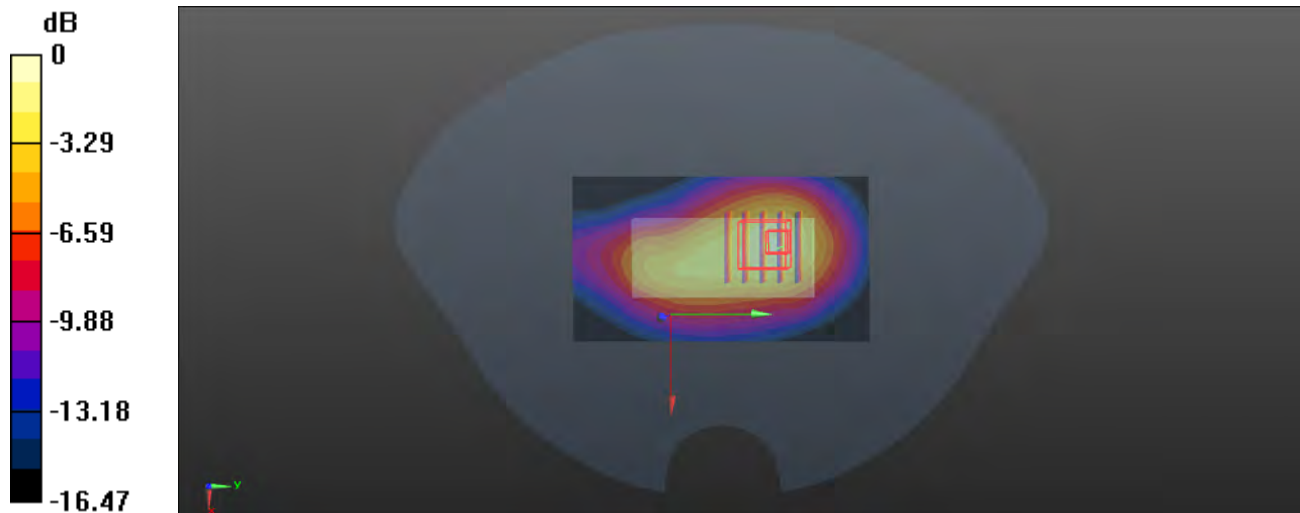
Peak SAR (extrapolated) = 1.46 W/kg

SAR(1 g) = 0.702 W/kg; SAR(10 g) = 0.397 W/kg

Smallest distance from peaks to all points 3 dB below = 9.3 mm

Ratio of SAR at M2 to SAR at M1 = 48.7%

Maximum value of SAR (measured) = 1.14 W/kg



0 dB = 1.14 W/kg = 0.57 dBW/kg

P07_LTE Band 30_QPSK10M_Horizontal-Up_0.5cm_Ch27710_1RB_OS24

Communication System: LTE_FDD; Frequency: 2310 MHz; Duty Cycle: 1:1

Medium: HSL2300_0516 Medium parameters used: $f = 2310$ MHz; $\sigma = 1.672$ S/m; $\epsilon_r = 39.372$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4°C; Liquid Temperature : 22.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.71, 7.71, 7.71) @ 2310 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (61x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 1.35 W/kg

-Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.93 V/m; Power Drift = 0.15 dB

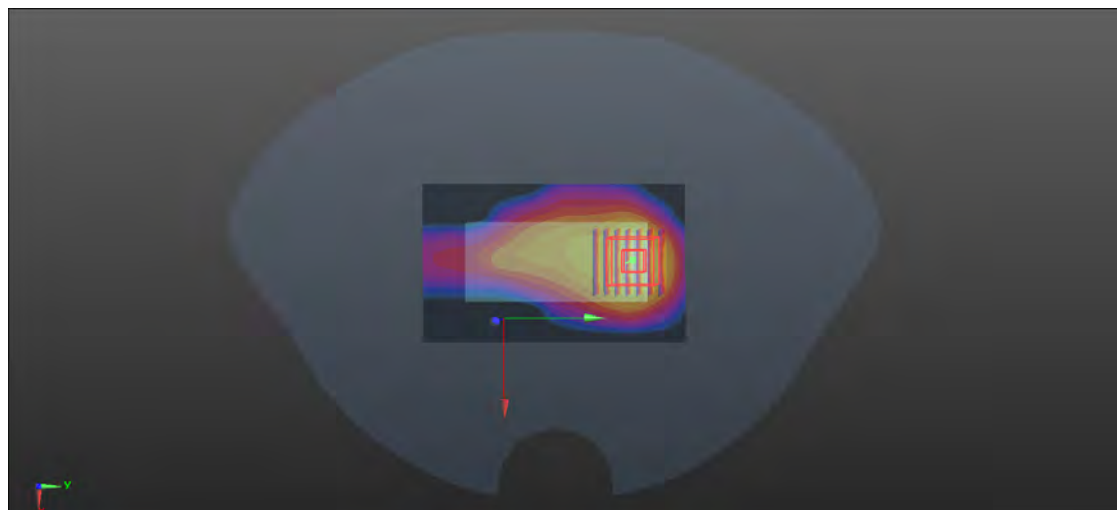
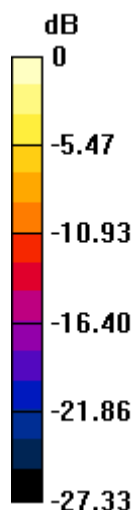
Peak SAR (extrapolated) = 1.74 W/kg

SAR(1 g) = 0.803 W/kg; SAR(10 g) = 0.338 W/kg

Smallest distance from peaks to all points 3 dB below = 8 mm

Ratio of SAR at M2 to SAR at M1 = 47.9%

Maximum value of SAR (measured) = 1.39 W/kg



0 dB = 1.39 W/kg

P08_LTE Band 41_QPSK20M_Vertical-Top_0.5cm_Ch40185_1RB_OS50

Communication System: LTE_TDD; Frequency: 2549.5 MHz; Duty Cycle: 1:1.59

Medium: HSL2600_0509 Medium parameters used: $f = 2549.5$ MHz; $\sigma = 1.918$ S/m; $\epsilon_r = 39.622$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.6°C; Liquid Temperature : 22.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.31, 7.31, 7.31) @ 2549.5 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (51x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.962 W/kg

-Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.88 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 1.37 W/kg

SAR(1 g) = 0.531 W/kg; SAR(10 g) = 0.201 W/kg

Smallest distance from peaks to all points 3 dB below = 6.6 mm

Ratio of SAR at M2 to SAR at M1 = 45.1%

Maximum value of SAR (measured) = 0.935 W/kg



0 dB = 0.935 W/kg

P09_LTE Band 42_QPSK20M_Horizontal-Up_0.5cm_Ch43190_1RB_OS0

Communication System: LTE_TDD; Frequency: 3560 MHz; Duty Cycle: 1:1.59

Medium: HSL3500_0517 Medium parameters used: $f = 3560$ MHz; $\sigma = 2.953$ S/m; $\epsilon_r = 38.539$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4°C; Liquid Temperature : 22.5°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(6.71, 6.71, 6.71) @ 3560 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (61x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.798 W/kg

-Zoom Scan (7x7x8)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm

Reference Value = 10.13 V/m; Power Drift = -0.12 dB

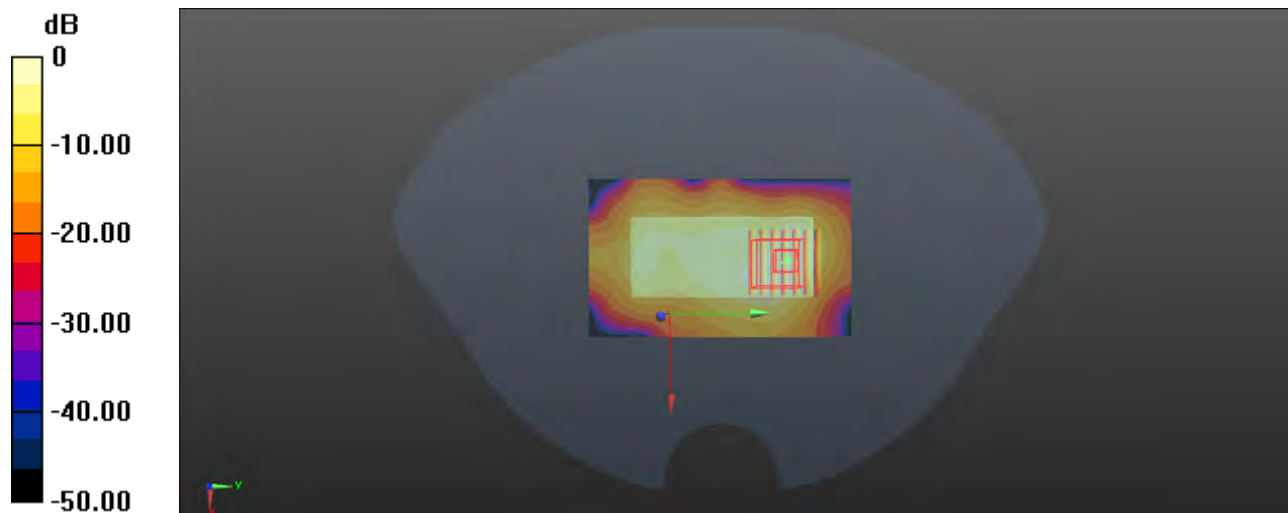
Peak SAR (extrapolated) = 1.03 W/kg

SAR(1 g) = 0.402 W/kg; SAR(10 g) = 0.167 W/kg

Smallest distance from peaks to all points 3 dB below = 8.9 mm

Ratio of SAR at M2 to SAR at M1 = 45.7%

Maximum value of SAR (measured) = 0.770 W/kg



0 dB = 0.770 W/kg

P10_LTE Band 48_QPSK20M_Vertical-Front_1.6cm_Ch56150_1RB_OS0

Communication System: LTE_TDD; Frequency: 3641 MHz; Duty Cycle: 1:1.59

Medium: HSL3700_0519 Medium parameters used: $f = 3641$ MHz; $\sigma = 3.01$ S/m; $\epsilon_r = 38.455$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5°C; Liquid Temperature : 22.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(6.5, 6.5, 6.5) @ 3641 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (41x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.971 W/kg

-Zoom Scan (7x7x8)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm

Reference Value = 10.24 V/m; Power Drift = 0.07 dB

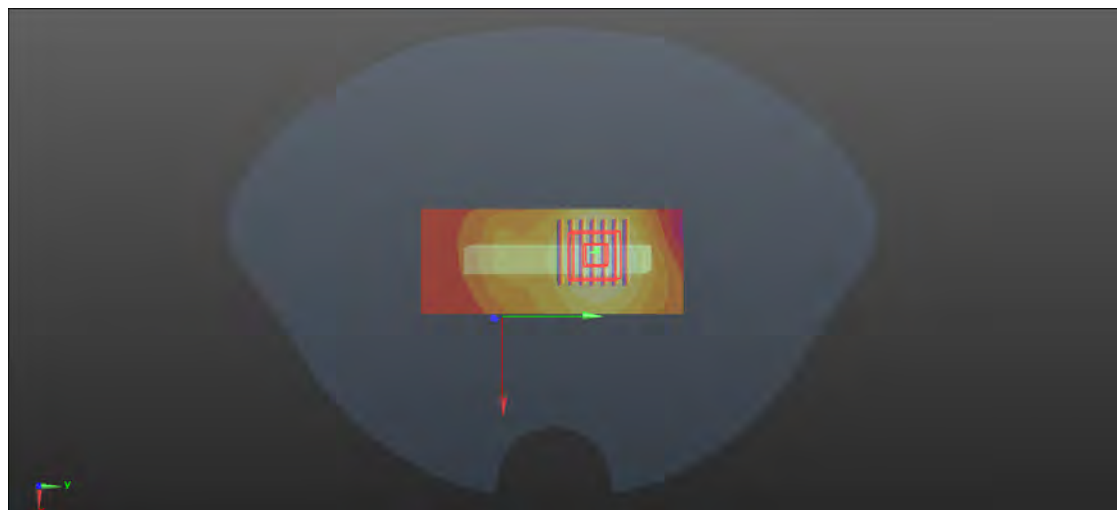
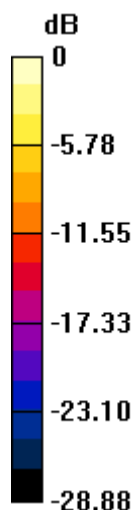
Peak SAR (extrapolated) = 1.24 W/kg

SAR(1 g) = 0.532 W/kg; SAR(10 g) = 0.249 W/kg

Smallest distance from peaks to all points 3 dB below = 15.2 mm

Ratio of SAR at M2 to SAR at M1 = 47.8%

Maximum value of SAR (measured) = 0.933 W/kg



0 dB = 0.933 W/kg

P11_LTE Band 66_QPSK20M_Horizontal-Up_0.5cm_Ch132322_1RB_OS50

Communication System: LTE_FDD; Frequency: 1745 MHz; Duty Cycle: 1:1

Medium: HSL1750_0514 Medium parameters used: $f = 1745$ MHz; $\sigma = 1.352$ S/m; $\epsilon_r = 39.804$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5°C; Liquid Temperature : 22.5°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(8.31, 8.31, 8.31) @ 1745 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (51x91x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.724 W/kg

-Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.48 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.864 W/kg

SAR(1 g) = 0.510 W/kg; SAR(10 g) = 0.314 W/kg

Smallest distance from peaks to all points 3 dB below = 8.4 mm

Ratio of SAR at M2 to SAR at M1 = 65.1%

Maximum value of SAR (measured) = 0.687 W/kg

-Zoom Scan (5x6x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.48 V/m; Power Drift = 0.03 dB

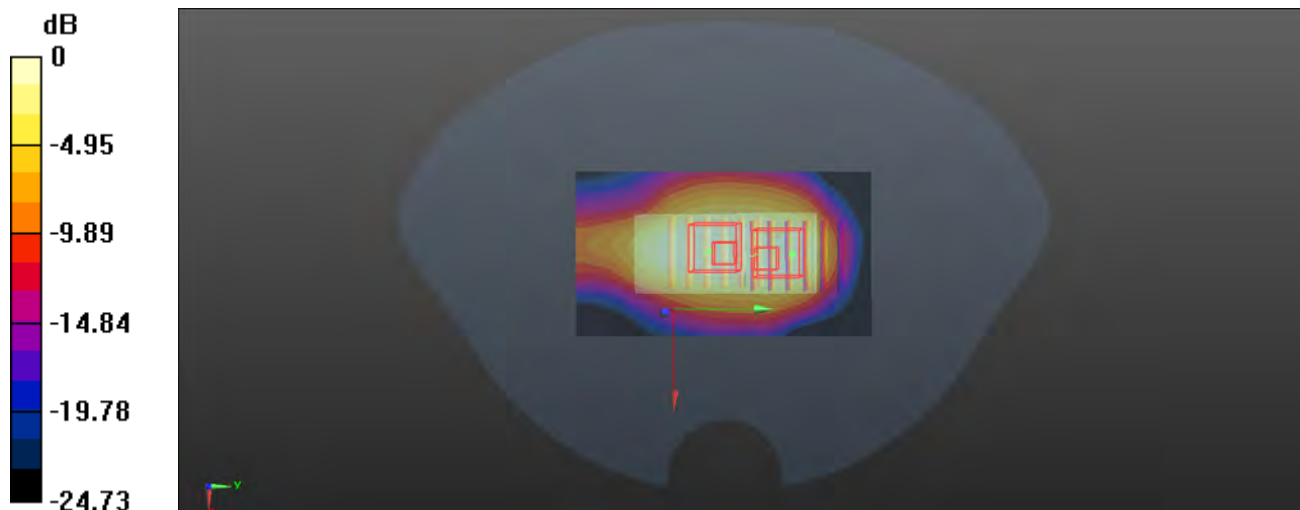
Peak SAR (extrapolated) = 0.726 W/kg

SAR(1 g) = 0.348 W/kg; SAR(10 g) = 0.188 W/kg

Smallest distance from peaks to all points 3 dB below = 16.5 mm

Ratio of SAR at M2 to SAR at M1 = 55.9%

Maximum value of SAR (measured) = 0.609 W/kg



0 dB = 0.609 W/kg

P12_LTE Band 71_QPSK20M_Horizontal-Up_0.5cm_Ch133322_1RB_OS50

Communication System: LTE_FDD; Frequency: 683 MHz; Duty Cycle: 1:1

Medium: HSL750_0511 Medium parameters used: $f = 683$ MHz; $\sigma = 0.887$ S/m; $\epsilon_r = 43.336$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5°C; Liquid Temperature : 22.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.87, 9.87, 9.87) @ 683 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (51x91x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.896 W/kg

-Zoom Scan (6x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 29.69 V/m; Power Drift = 0.09 dB

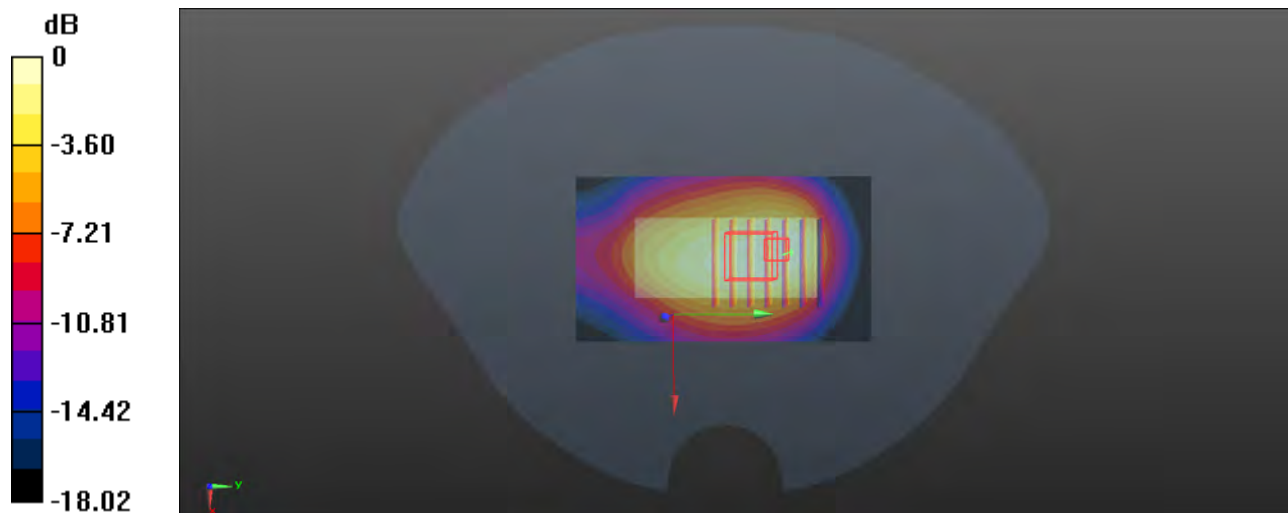
Peak SAR (extrapolated) = 1.22 W/kg

SAR(1 g) = 0.626 W/kg; SAR(10 g) = 0.413 W/kg

Smallest distance from peaks to all points 3 dB below = 12.2 mm

Ratio of SAR at M2 to SAR at M1 = 52%

Maximum value of SAR (measured) = 0.908 W/kg



P13_FR1 n5_DFT-QPSK20M_Horizontal-Up_0.5cm_Ch167300_1RB_OS1

Communication System: 5G NR; Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: HSL835_0513 Medium parameters used: $f = 836.5$ MHz; $\sigma = 0.917$ S/m; $\epsilon_r = 41.089$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.3°C; Liquid Temperature : 22.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.47, 9.47, 9.47) @ 836.5 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (51x91x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.862 W/kg

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

Reference Value = 26.63 V/m; Power Drift = -0.04 dB

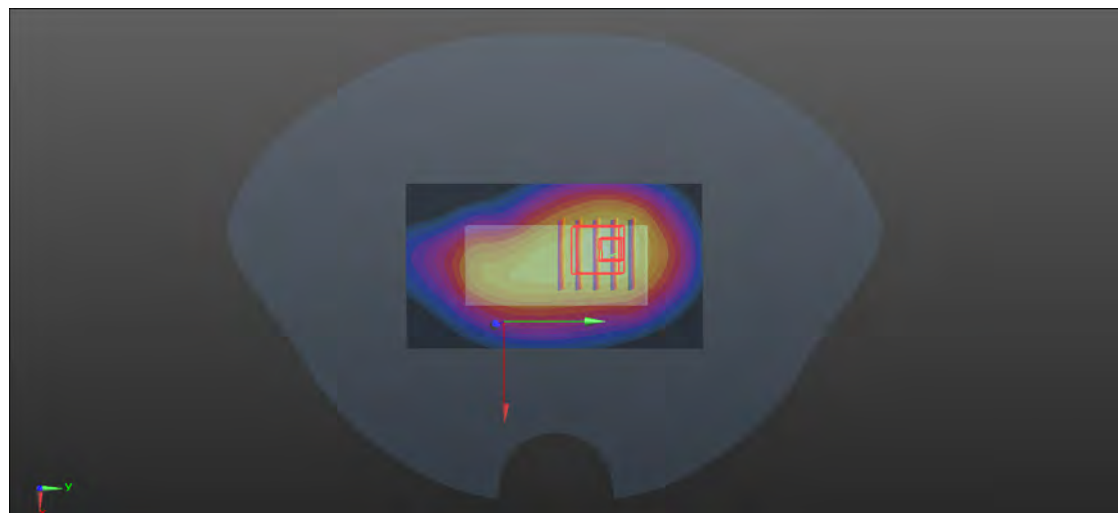
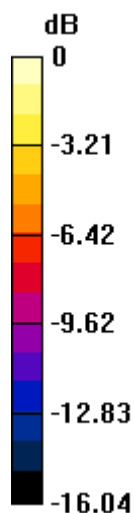
Peak SAR (extrapolated) = 1.35 W/kg

SAR(1 g) = 0.663 W/kg; SAR(10 g) = 0.378 W/kg

Smallest distance from peaks to all points 3 dB below = 9.7 mm

Ratio of SAR at M2 to SAR at M1 = 49.5%

Maximum value of SAR (measured) = 1.07 W/kg



0 dB = 1.07 W/kg

P14_FR1 n12_DFT-QPSK15M_Horizontal-Up_0.5cm_Ch141500_1RB_OS1

Communication System: 5G NR; Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium: HSL750_0511 Medium parameters used: $f = 707.5$ MHz; $\sigma = 0.894$ S/m; $\epsilon_r = 43.256$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5°C; Liquid Temperature : 22.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.87, 9.87, 9.87) @ 707.5 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (51x91x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.825 W/kg

-Zoom Scan (6x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 27.79 V/m; Power Drift = -0.02 dB

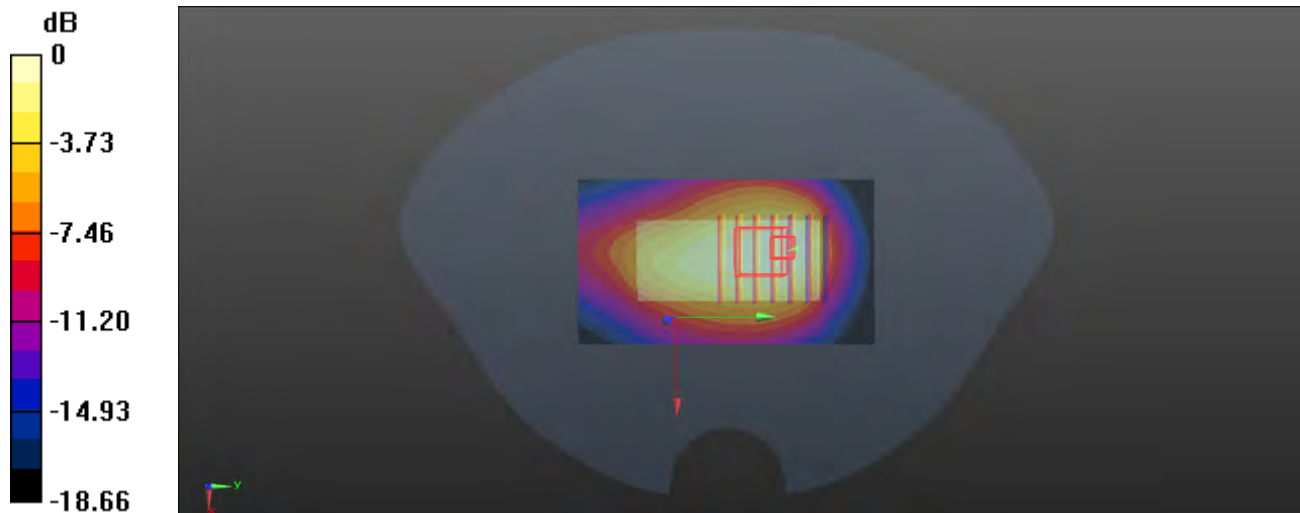
Peak SAR (extrapolated) = 1.10 W/kg

SAR(1 g) = 0.566 W/kg; SAR(10 g) = 0.363 W/kg

Smallest distance from peaks to all points 3 dB below = 10.7 mm

Ratio of SAR at M2 to SAR at M1 = 50.2%

Maximum value of SAR (measured) = 0.833 W/kg



0 dB = 0.833 W/kg

P15_FR1 n14_DFT-QPSK10M_Horizontal-Up_0.5cm_Ch158600_25RB_OS14

Communication System: 5G NR; Frequency: 793 MHz; Duty Cycle: 1:1

Medium: HSL750_0511 Medium parameters used: $f = 793$ MHz; $\sigma = 0.922$ S/m; $\epsilon_r = 42.898$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5°C; Liquid Temperature : 22.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.87, 9.87, 9.87) @ 793 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (51x91x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.01 W/kg

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

Reference Value = 31.57 V/m; Power Drift = -0.00 dB

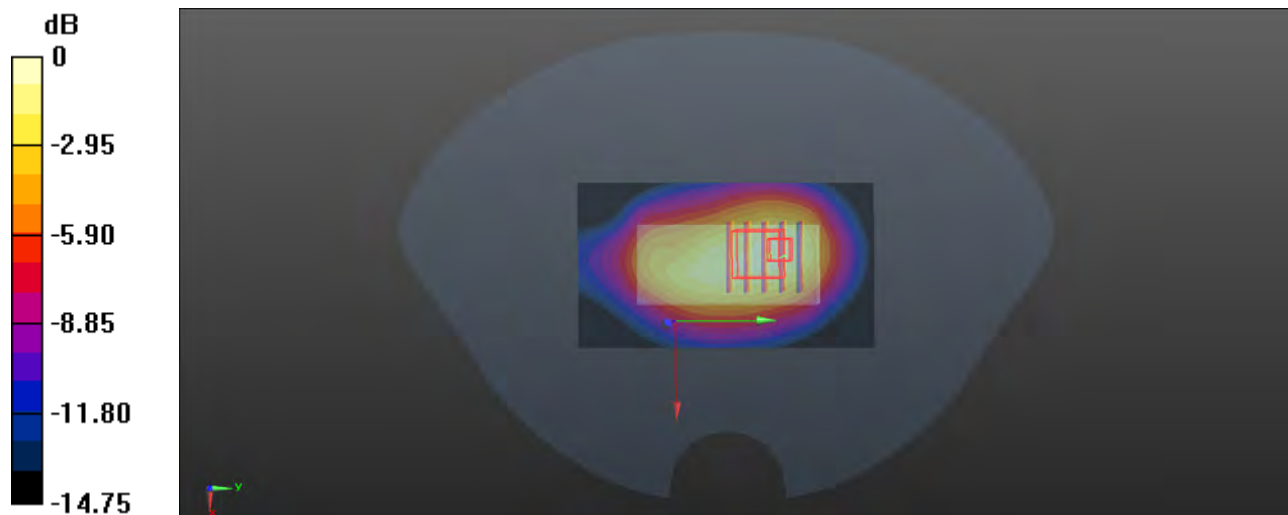
Peak SAR (extrapolated) = 1.38 W/kg

SAR(1 g) = 0.743 W/kg; SAR(10 g) = 0.473 W/kg

Smallest distance from peaks to all points 3 dB below = 12.5 mm

Ratio of SAR at M2 to SAR at M1 = 54.7%

Maximum value of SAR (measured) = 1.10 W/kg



P16_FR1 n25_DFT-QPSK20M_Horizontal-Up_0.5cm_Ch376500_50RB_OS28

Communication System: 5G NR; Frequency: 1882.5 MHz; Duty Cycle: 1:1

Medium: HSL1900_0515 Medium parameters used: $f = 1882.5$ MHz; $\sigma = 1.418$ S/m; $\epsilon_r = 40.275$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4°C; Liquid Temperature : 22.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.97, 7.97, 7.97) @ 1882.5 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (51x91x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.32 W/kg

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

Reference Value = 17.81 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 1.33 W/kg

SAR(1 g) = 0.660 W/kg; SAR(10 g) = 0.324 W/kg

Smallest distance from peaks to all points 3 dB below = 9.3 mm

Ratio of SAR at M2 to SAR at M1 = 49.1%

Maximum value of SAR (measured) = 1.01 W/kg

-Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.81 V/m; Power Drift = 0.15 dB

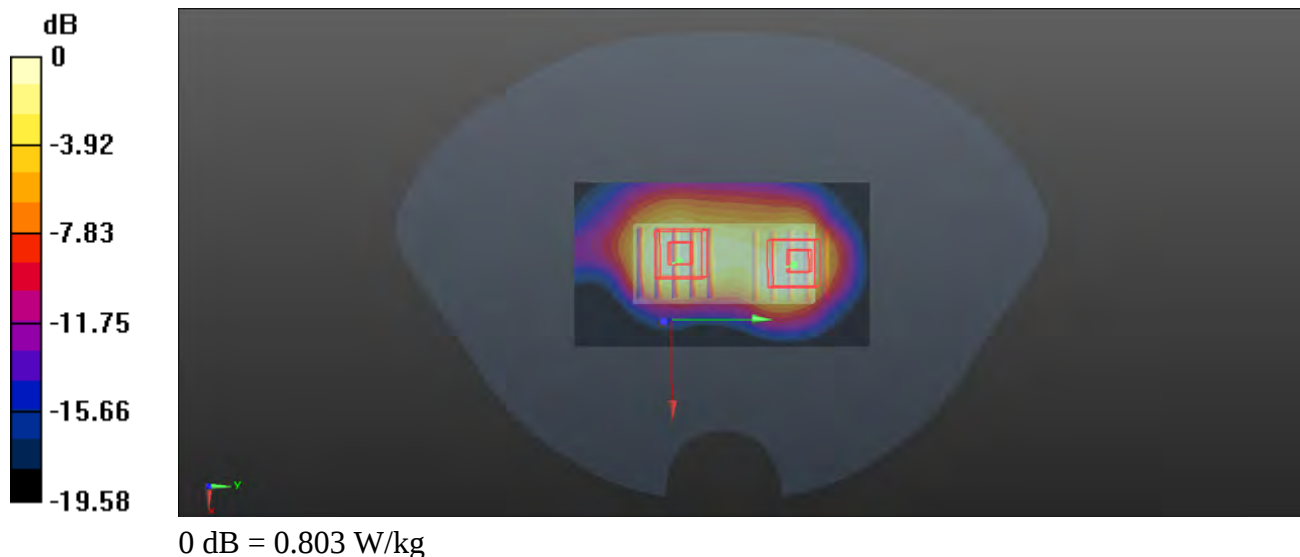
Peak SAR (extrapolated) = 0.975 W/kg

SAR(1 g) = 0.589 W/kg; SAR(10 g) = 0.338 W/kg

Smallest distance from peaks to all points 3 dB below = 14.3 mm

Ratio of SAR at M2 to SAR at M1 = 60%

Maximum value of SAR (measured) = 0.803 W/kg



P17_FR1 n30-DFT_QPSK10M_Horizontal-Up_0.5cm_Ch462000_25RB_OS14

Communication System: 5G NR; Frequency: 2310 MHz; Duty Cycle: 1:1

Medium: HSL2300_0516 Medium parameters used: $f = 2310$ MHz; $\sigma = 1.672$ S/m; $\epsilon_r = 39.372$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4°C; Liquid Temperature : 22.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.71, 7.71, 7.71) @ 2310 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (61x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 1.55 W/kg

-Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.56 V/m; Power Drift = 0.12 dB

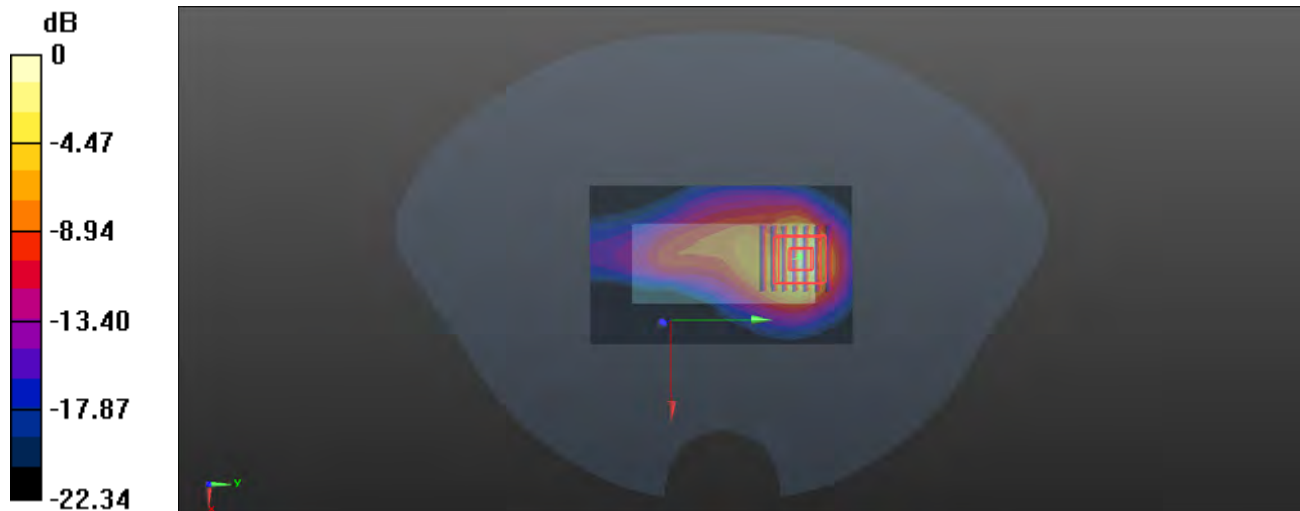
Peak SAR (extrapolated) = 1.95 W/kg

SAR(1 g) = 0.908 W/kg; SAR(10 g) = 0.386 W/kg

Smallest distance from peaks to all points 3 dB below = 7.6 mm

Ratio of SAR at M2 to SAR at M1 = 48.5%

Maximum value of SAR (measured) = 1.57 W/kg



P18_FR1 n41_DFT-QPSK20M_Verical-Top_0.5cm_Ch518598_1RB_OS1

Communication System: 5G NR; Frequency: 2592.99 MHz; Duty Cycle: 1:1

Medium: HSL2600_0509 Medium parameters used: $f = 2593$ MHz; $\sigma = 1.954$ S/m; $\epsilon_r = 39.519$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.6°C; Liquid Temperature : 22.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(7.31, 7.31, 7.31) @ 2592.99 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (51x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 1.61 W/kg

-Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 22.13 V/m; Power Drift = 0.16 dB

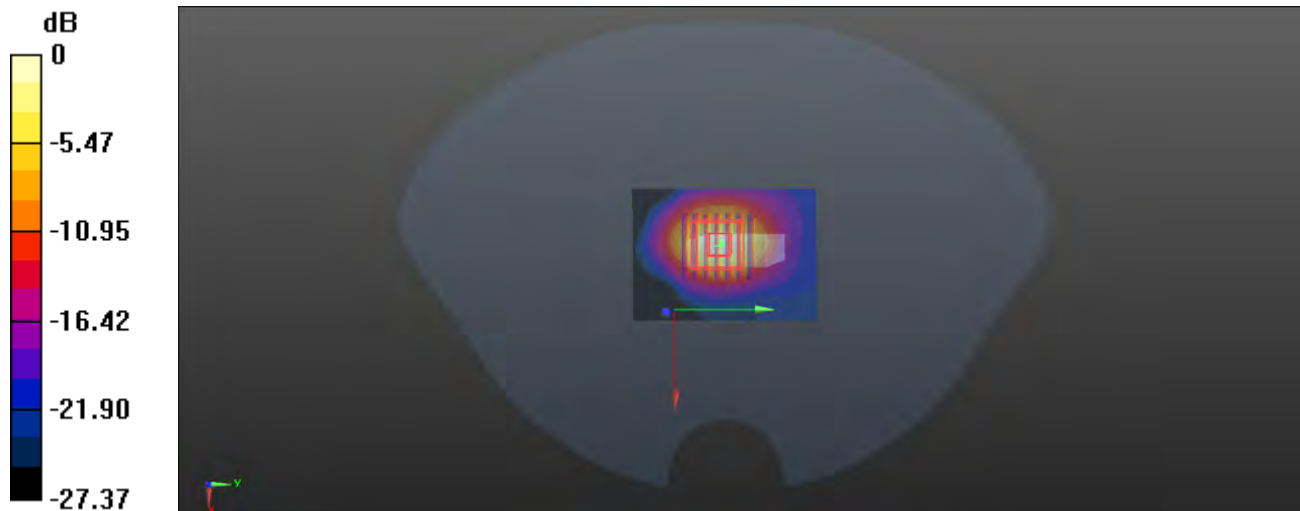
Peak SAR (extrapolated) = 1.93 W/kg

SAR(1 g) = 0.835 W/kg; SAR(10 g) = 0.338 W/kg

Smallest distance from peaks to all points 3 dB below = 8 mm

Ratio of SAR at M2 to SAR at M1 = 45.4%

Maximum value of SAR (measured) = 1.49 W/kg



0 dB = 1.49 W/kg

P19_FR1 n66_DFT-QPSK20M_Horizontal-Up_0.5cm_Ch349000_1RB_OS1

Communication System: 5G NR; Frequency: 1745 MHz; Duty Cycle: 1:1

Medium: HSL1750_0514 Medium parameters used: $f = 1745$ MHz; $\sigma = 1.352$ S/m; $\epsilon_r = 39.804$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5°C; Liquid Temperature : 22.5°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(8.31, 8.31, 8.31) @ 1745 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (51x91x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.660 W/kg

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

Reference Value = 21.31 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.747 W/kg

SAR(1 g) = 0.470 W/kg; SAR(10 g) = 0.288 W/kg

Smallest distance from peaks to all points 3 dB below = 14.3 mm

Ratio of SAR at M2 to SAR at M1 = 64.6%

Maximum value of SAR (measured) = 0.642 W/kg

-Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.31 V/m; Power Drift = 0.15 dB

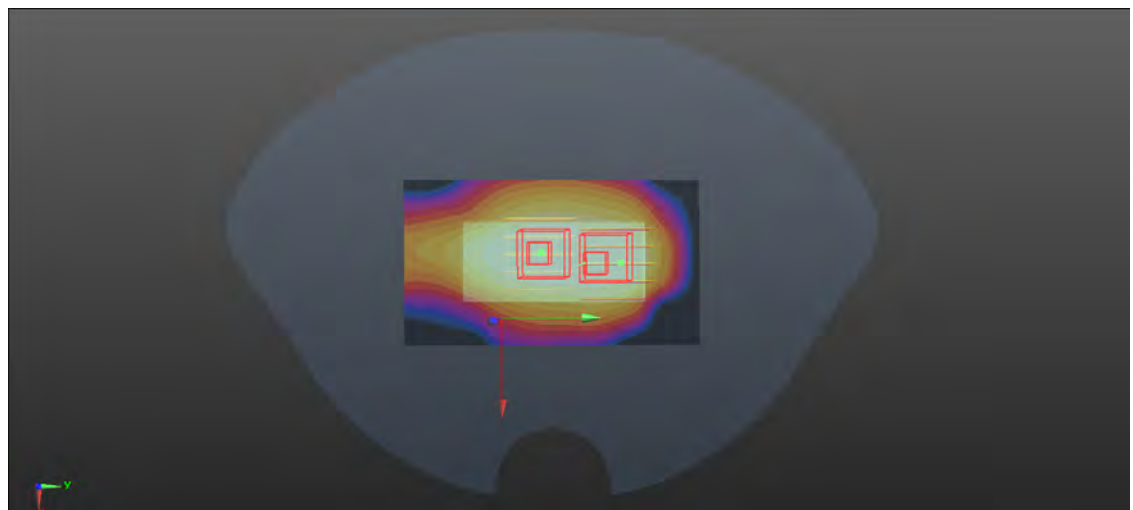
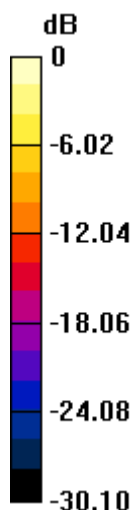
Peak SAR (extrapolated) = 0.655 W/kg

SAR(1 g) = 0.315 W/kg; SAR(10 g) = 0.170 W/kg

Smallest distance from peaks to all points 3 dB below = 17.6 mm

Ratio of SAR at M2 to SAR at M1 = 55.7%

Maximum value of SAR (measured) = 0.538 W/kg



0 dB = 0.538 W/kg

P20_FR1 n71_DFT-QPSK20M_Horizontal-Up_0.5cm_Ch136100_1RB_OS1

Communication System: 5G NR; Frequency: 680.5 MHz; Duty Cycle: 1:1

Medium: HSL750_0511 Medium parameters used: $f = 680.5$ MHz; $\sigma = 0.886$ S/m; $\epsilon_r = 43.346$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5°C; Liquid Temperature : 22.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(9.87, 9.87, 9.87) @ 680.5 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (51x91x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.969 W/kg

-Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 29.12 V/m; Power Drift = -0.11 dB

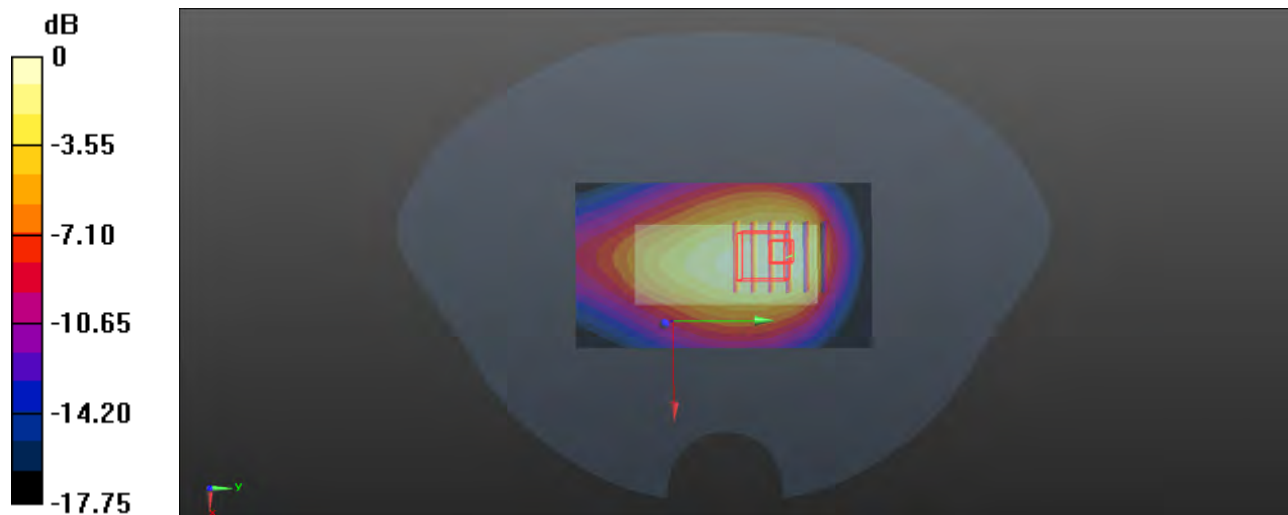
Peak SAR (extrapolated) = 1.20 W/kg

SAR(1 g) = 0.609 W/kg; SAR(10 g) = 0.389 W/kg

Smallest distance from peaks to all points 3 dB below = 11.3 mm

Ratio of SAR at M2 to SAR at M1 = 50.9%

Maximum value of SAR (measured) = 0.900 W/kg



0 dB = 0.900 W/kg

P21_FR1 n77_DFT-QPSK20M_Verical-Front_1.6cm_Ch656000_25RB_OS13

Communication System: 5G NR; Frequency: 3840 MHz; Duty Cycle: 1:1

Medium: HSL3900_0521 Medium parameters used: $f = 3840$ MHz; $\sigma = 3.156$ S/m; $\epsilon_r = 38.215$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.3°C; Liquid Temperature : 22.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3873; ConvF(6.4, 6.4, 6.4) @ 3840 MHz; Calibrated: 2024/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn755; Calibrated: 2024/7/5
- Phantom: SAM with CRP V5.0; Type: QD000P40CB; Serial: TP:1502
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

-Area Scan (51x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 1.73 W/kg

-Zoom Scan (7x7x8)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=4mm

Reference Value = 17.05 V/m; Power Drift = 0.16 dB

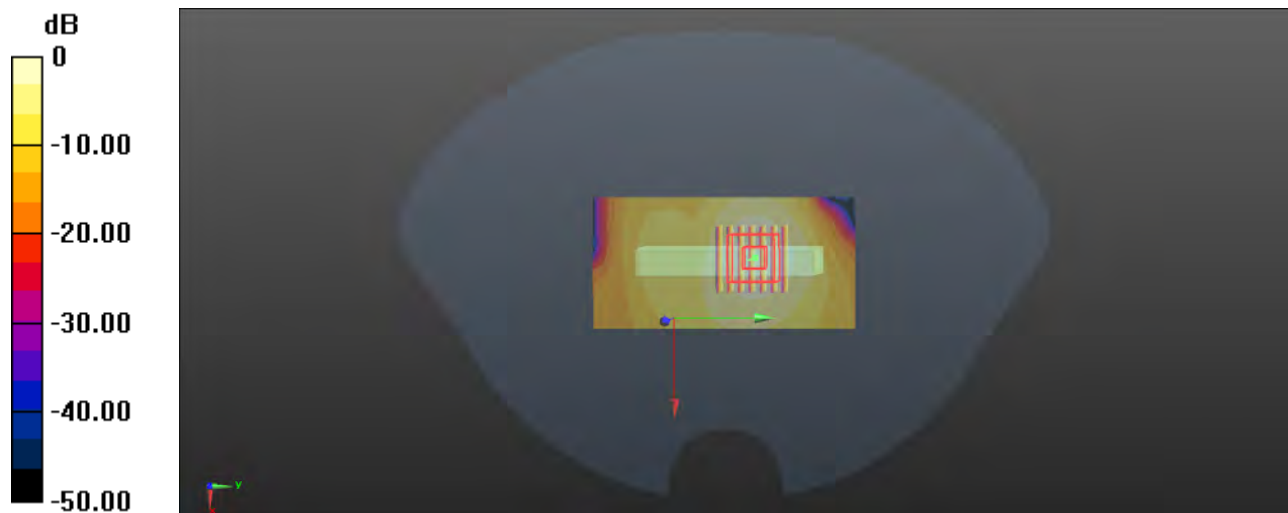
Peak SAR (extrapolated) = 2.22 W/kg

SAR(1 g) = 0.932 W/kg; SAR(10 g) = 0.424 W/kg

Smallest distance from peaks to all points 3 dB below = 15 mm

Ratio of SAR at M2 to SAR at M1 = 46.2%

Maximum value of SAR (measured) = 1.67 W/kg



0 dB = 1.67 W/kg



Appendix C. Calibration Certificate for Probe and Dipole

The SPEAG calibration certificates are shown as follows.

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191
Tel: +86-10-62304633-2117
E-mail: emf@caict.ac.cn http://www.caict.ac.cn

Client: B.V.ADT

Certificate No: 24J02Z000323

CALIBRATION CERTIFICATE

Object D750V3 - SN: 1067

Calibration Procedure(s) FF-Z11-003-01
Calibration Procedures for dipole validation kits

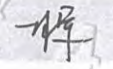
Calibration date: June 17, 2024

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106276	17-May-24 (CTTL, No. J24X04107)	May-25
Power sensor NRP6A	101369	17-May-24 (CTTL, No. J24X04107)	May-25
Reference Probe EX3DV4	SN 7307	28-May-24(SPEAG, No. EX-7307_May24)	May-25
DAE4	SN 1556	03-Jan-24(CTTL-SPEAG, No.24J02Z80002)	Jan-25
Secondary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	25-Dec-23 (CTTL, No. J23X13426)	Dec-24
NetworkAnalyzer E5071C	MY46110673	25-Dec-23 (CTTL, No. J23X13425)	Dec-24
OCP DAK-3.5(weighted)	1040	22-Jan-24(SPEAG, No.OCP-DAK3.5-1040_Jan24)	Jan-25

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Jun	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: June 22, 2024

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



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Tel: +86-10-62304633-2117
E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM _{x,y,z}
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEC/IEEE 62209-1528, "Measurement Procedure for The Assessment of Specific Absorption Rate of Human Exposure to Radio Frequency Fields from Hand-held and Body-mounted Wireless Communication Devices- Part 1528: Human Models, Instrumentation and Procedures (Frequency range of 4 MHz to 10 GHz)", October 2020
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- c) DASY4/5 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 Parameters with TSL:* 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.
- *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. The Return Loss 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 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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%.

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Measurement Conditions

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

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	41.7 $\pm$ 6 %	0.87 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.09 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	8.49 W/kg $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm³ (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	1.38 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	5.59 W/kg $\pm$ 18.7 % (k=2)



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$54.8\Omega + 2.71j\Omega$
Return Loss	- 25.6dB

General Antenna Parameters and Design

Electrical Delay (one direction)	0.945 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point 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 feed-point may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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<http://www.caict.ac.cn>**DASY5 Validation Report for Head TSL**

Date: 2024-06-17

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1067

Communication System: UID 0, CW; Frequency: 750 MHz

Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.871 \text{ S/m}$; $\epsilon_r = 41.65$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7307; ConvF(9.25, 9.17, 10.18) @ 750 MHz; Calibrated: 2024-05-28
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2024-01-03
- Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 56.28 V/m; Power Drift = -0.01 dB

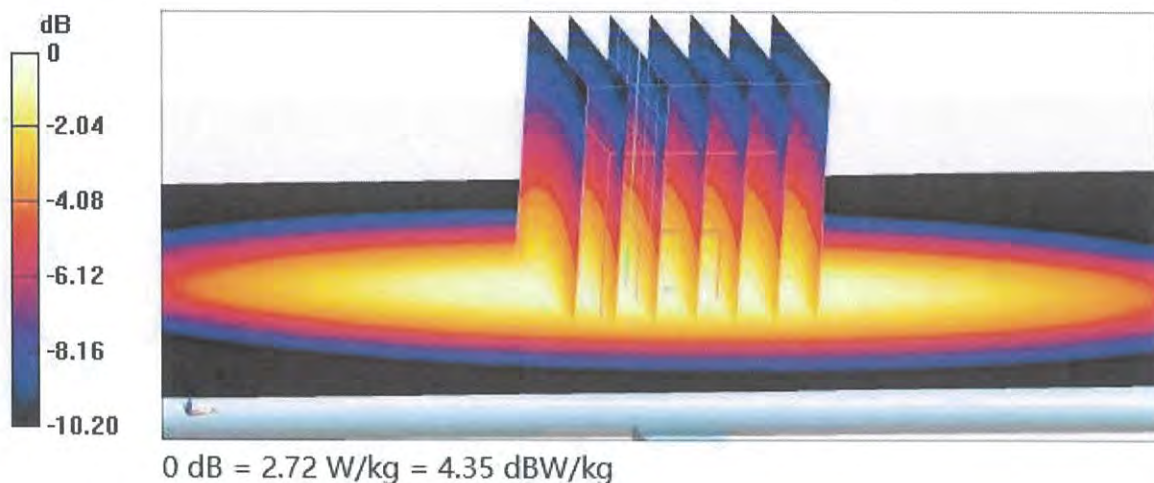
Peak SAR (extrapolated) = 2.99 W/kg

SAR(1 g) = 2.09 W/kg; SAR(10 g) = 1.38 W/kg

Smallest distance from peaks to all points 3 dB below = 18.6 mm

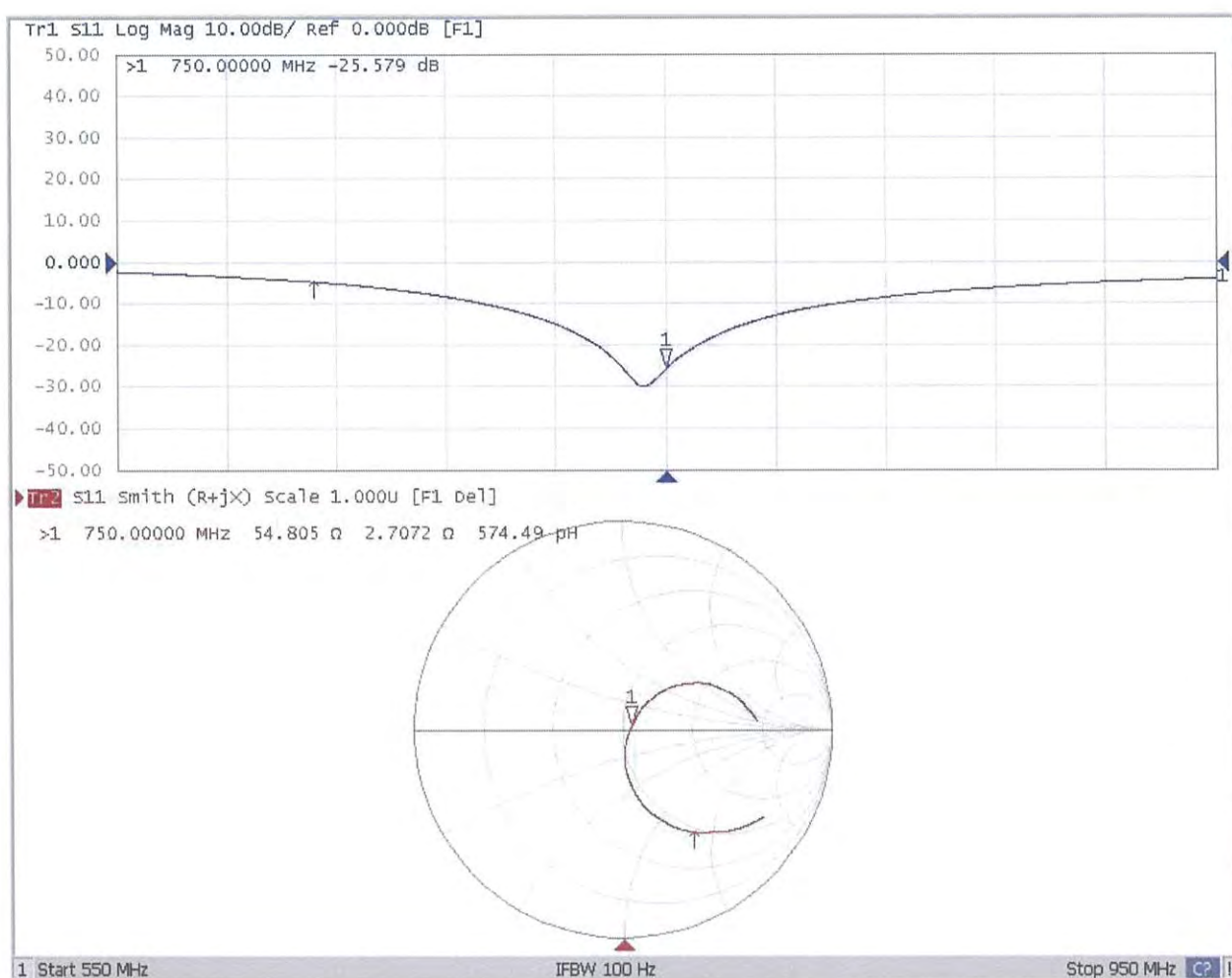
Ratio of SAR at M2 to SAR at M1 = 69.1%

Maximum value of SAR (measured) = 2.72 W/kg



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Impedance Measurement Plot for Head TSL



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Client

B.V.ADT

Certificate No: 24J02Z000324

CALIBRATION CERTIFICATE

Object **D835V2 - SN: 4d139**

Calibration Procedure(s) **FF-Z11-003-01**
Calibration Procedures for dipole validation kits

Calibration date: **June 16, 2024**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106276	17-May-24 (CTTL, No. J24X04107)	May-25
Power sensor NRP6A	101369	17-May-24 (CTTL, No. J24X04107)	May-25
Reference Probe EX3DV4	SN 7307	28-May-24(SPEAG, No. EX-7307_May24)	May-25
DAE4	SN 1556	03-Jan-24(CTTL-SPEAG, No.24J02Z80002)	Jan-25
Secondary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	25-Dec-23 (CTTL, No. J23X13426)	Dec-24
NetworkAnalyzer E5071C	MY46110673	25-Dec-23 (CTTL, No. J23X13425)	Dec-24
OCP DAK-3.5(weighted)	1040	22-Jan-24(SPEAG, No.OCP-DAK3.5-1040_Jan24)	Jan-25

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Jun	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: June 22, 2024

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Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM _{x,y,z}
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEC/IEEE 62209-1528, "Measurement Procedure for The Assessment of Specific Absorption Rate of Human Exposure to Radio Frequency Fields from Hand-held and Body-mounted Wireless Communication Devices- Part 1528: Human Models, Instrumentation and Procedures (Frequency range of 4 MHz to 10 GHz)", October 2020
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- c) DASY4/5 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 Parameters with TSL:* 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.
- *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. The Return Loss 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 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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%.

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Measurement Conditions

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

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	41.0 $\pm$ 6 %	0.88 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.36 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	9.57 W/kg $\pm$ 18.8 % (<i>k</i>=2)
SAR averaged over 10 cm³ (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	1.56 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	6.31 W/kg $\pm$ 18.7 % (<i>k</i>=2)



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.3Ω- 2.76jΩ
Return Loss	- 30.8dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.298 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point 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 feed-point may be damaged.

Additional EUT Data

Manufactured by	SPEAG
-----------------	-------

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DASY5 Validation Report for Head TSL

Date: 2024-06-16

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d139

Communication System: UID 0, CW; Frequency: 835 MHz

Medium parameters used: $f = 835$ MHz; $\sigma = 0.88$ S/m; $\epsilon_r = 40.97$; $\rho = 1000$ kg/m³

Phantom section: Right Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7307; ConvF(9.48, 9.4, 10) @ 835 MHz; Calibrated: 2024-05-28
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2024-01-03
- Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 59.29 V/m; Power Drift = -0.02 dB

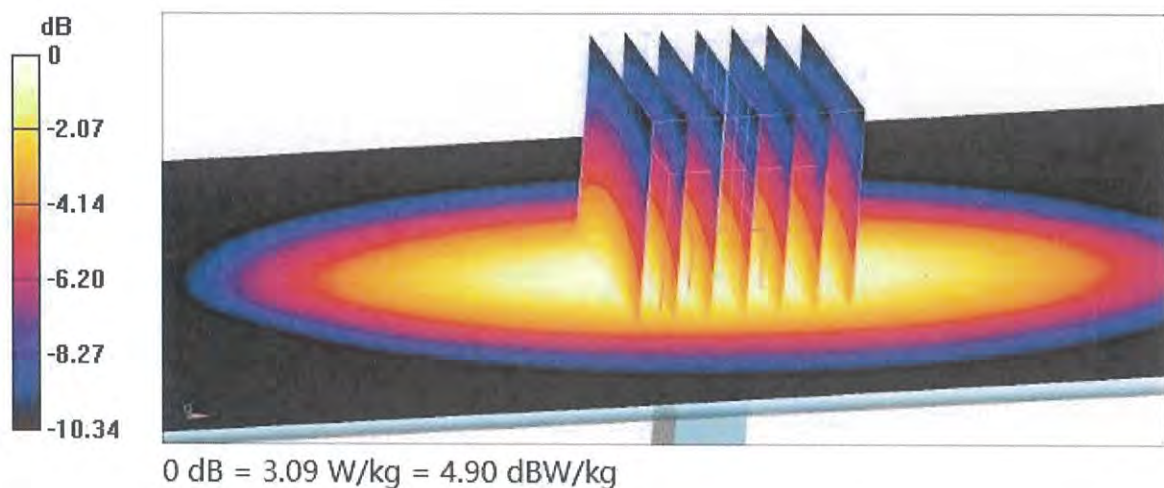
Peak SAR (extrapolated) = 3.39 W/kg

SAR(1 g) = 2.36 W/kg; SAR(10 g) = 1.56 W/kg

Smallest distance from peaks to all points 3 dB below = 16.6 mm

Ratio of SAR at M2 to SAR at M1 = 69.5%

Maximum value of SAR (measured) = 3.09 W/kg





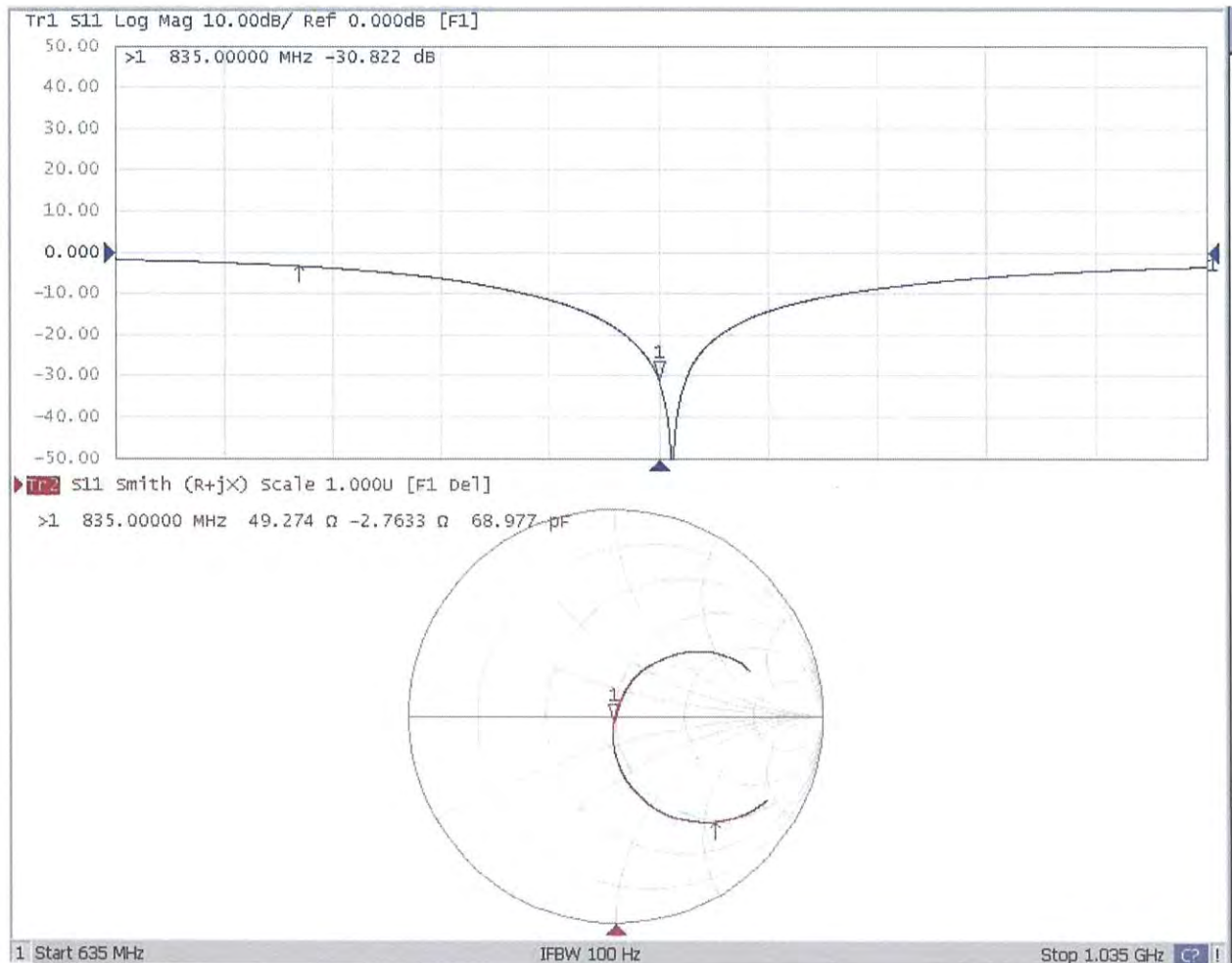
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Impedance Measurement Plot for Head TSL



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Client **B.V.ADT**

Certificate No: **24J02Z000326**

CALIBRATION CERTIFICATE

Object **D1750V2 - SN: 1071**

Calibration Procedure(s) **FF-Z11-003-01**
Calibration Procedures for dipole validation kits

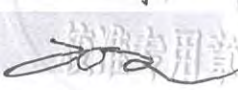
Calibration date: **June 17, 2024**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106276	17-May-24 (CTTL, No. J24X04107)	May-25
Power sensor NRP6A	101369	17-May-24 (CTTL, No. J24X04107)	May-25
Reference Probe EX3DV4	SN 7307	28-May-24(SPEAG, No. EX-7307_May24)	May-25
DAE4	SN 1556	03-Jan-24(CTTL-SPEAG, No.24J02Z80002)	Jan-25
Secondary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	25-Dec-23 (CTTL, No. J23X13426)	Dec-24
NetworkAnalyzer E5071C	MY46110673	25-Dec-23 (CTTL, No. J23X13425)	Dec-24
OCP DAK-3.5(weighted)	1040	22-Jan-24(SPEAG, No.OCP-DAK3.5-1040_Jan24)	Jan-25

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Jun	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: June 22, 2024

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Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM _{x,y,z}
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEC/IEEE 62209-1528, "Measurement Procedure for The Assessment of Specific Absorption Rate of Human Exposure to Radio Frequency Fields from Hand-held and Body-mounted Wireless Communication Devices- Part 1528: Human Models, Instrumentation and Procedures (Frequency range of 4 MHz to 10 GHz)", October 2020
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- c) DASY4/5 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 Parameters with TSL:* 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.
- *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. The Return Loss 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 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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%.

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Measurement Conditions

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

DASY Version	DASY52	52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1750 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	40.7 $\pm$ 6 %	1.40 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.17 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	36.3 W/kg $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm³ (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	4.92 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	19.5 W/kg $\pm$ 18.7 % (k=2)



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	47.8Ω- 0.77jΩ
Return Loss	- 32.3dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.126 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point 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 feed-point may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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DASY5 Validation Report for Head TSL

Date: 2024-06-17

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1071

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.401$ S/m; $\epsilon_r = 40.73$; $\rho = 1000$ kg/m³

Phantom section: Right Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7307; ConvF(7.9, 7.9, 8.54) @ 1750 MHz; Calibrated: 2024-05-28
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2024-01-03
- Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 95.64 V/m; Power Drift = -0.01 dB

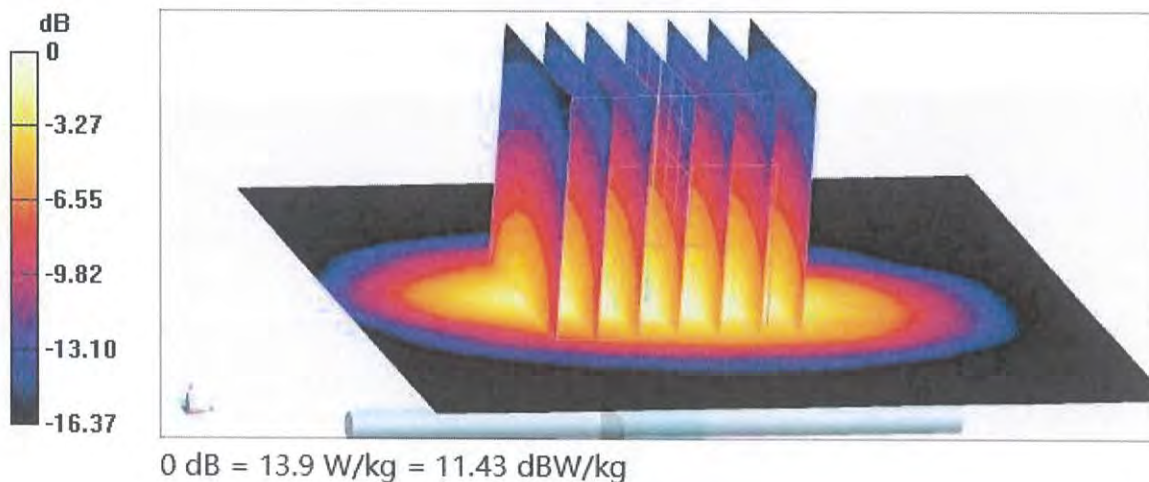
Peak SAR (extrapolated) = 16.3 W/kg

SAR(1 g) = 9.17 W/kg; SAR(10 g) = 4.92 W/kg

Smallest distance from peaks to all points 3 dB below = 9.5 mm

Ratio of SAR at M2 to SAR at M1 = 56.9%

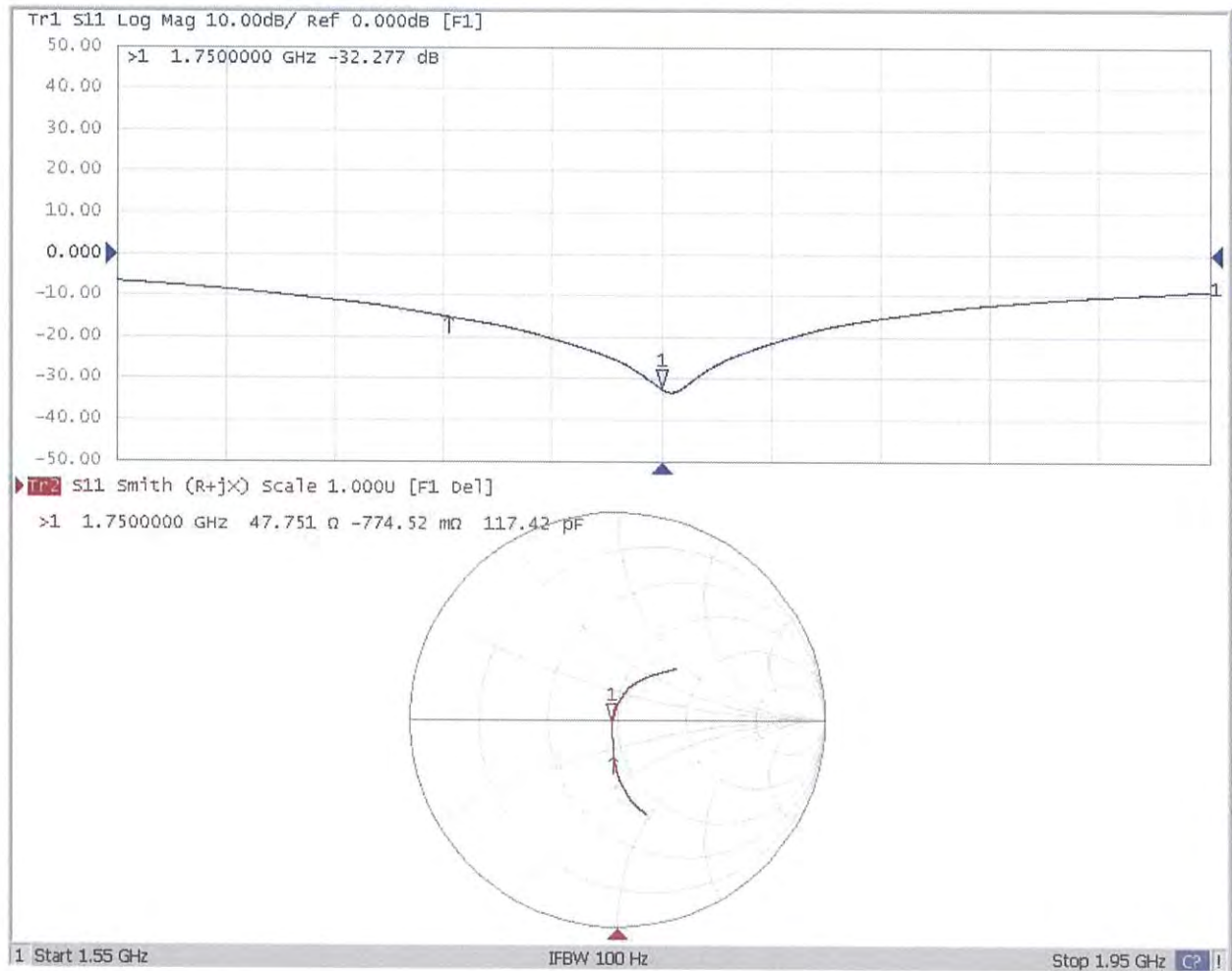
Maximum value of SAR (measured) = 13.9 W/kg





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Impedance Measurement Plot for Head TSL



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E-mail: cttl@chinattl.com

http://www.caict.ac.cn

Client: **B.V.ADT**

Certificate No: **24J02Z000327**

CALIBRATION CERTIFICATE

Object **D1900V2 - SN: 5d159**

Calibration Procedure(s) **FF-Z11-003-01**
Calibration Procedures for dipole validation kits

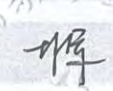
Calibration date: **June 15, 2024**

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 $(22\pm3)^{\circ}\text{C}$ and humidity $<70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106276	17-May-24 (CTTL, No. J24X04107)	May-25
Power sensor NRP6A	101369	17-May-24 (CTTL, No. J24X04107)	May-25
Reference Probe EX3DV4	SN 7307	28-May-24(SPEAG, No. EX-7307_May24)	May-25
DAE4	SN 1556	03-Jan-24(CTTL-SPEAG, No.24J02Z80002)	Jan-25
Secondary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	25-Dec-23 (CTTL, No. J23X13426)	Dec-24
NetworkAnalyzer E5071C	MY46110673	25-Dec-23 (CTTL, No. J23X13425)	Dec-24
OCP DAK-3.5(weighted)	1040	22-Jan-24(SPEAG, No.OCP-DAK3.5-1040_Jan24)	Jan-25

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Jun	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: June 22, 2024

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Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM _{x,y,z}
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEC/IEEE 62209-1528, "Measurement Procedure for The Assessment of Specific Absorption Rate of Human Exposure to Radio Frequency Fields from Hand-held and Body-mounted Wireless Communication Devices- Part 1528: Human Models, Instrumentation and Procedures (Frequency range of 4 MHz to 10 GHz)", October 2020
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- c) DASY4/5 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 Parameters with TSL:* 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.
- *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. The Return Loss 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 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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%.



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Measurement Conditions

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

DASY Version	DASY52	52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	41.2 $\pm$ 6 %	1.41 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.92 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	39.8 W/kg $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm³ (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	5.21 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	20.9 W/kg $\pm$ 18.7 % (k=2)



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$51.2\Omega + 7.48j\Omega$
Return Loss	- 22.5dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.107 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point 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 feed-point may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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DASY5 Validation Report for Head TSL

Date: 2024-06-15

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d159

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.405$ S/m; $\epsilon_r = 41.15$; $\rho = 1000$ kg/m³

Phantom section: Right Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7307; ConvF(7.62, 7.62, 8.28) @ 1900 MHz; Calibrated: 2024-05-28
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2024-01-03
- Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 86.24 V/m; Power Drift = -0.03 dB

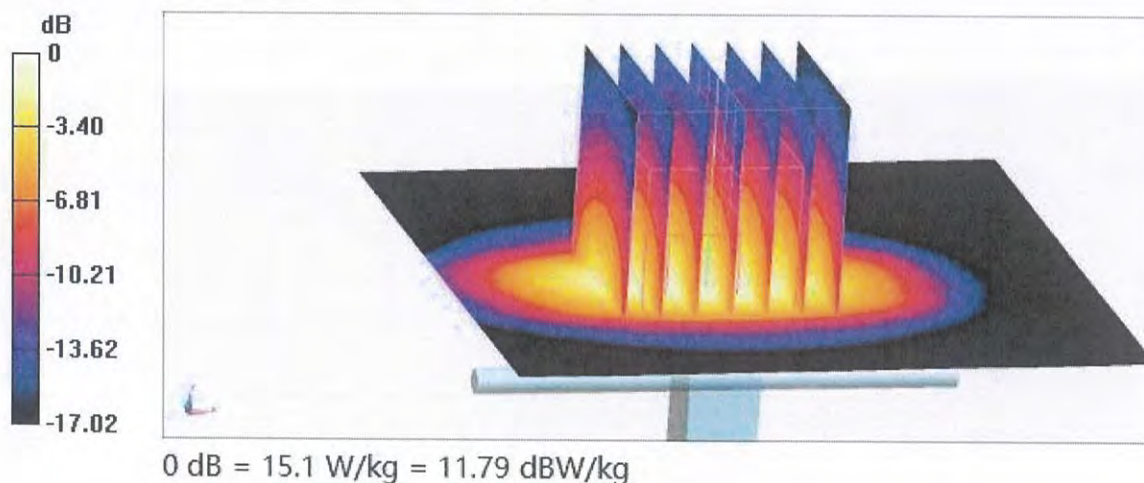
Peak SAR (extrapolated) = 17.8 W/kg

SAR(1 g) = 9.92 W/kg; SAR(10 g) = 5.21 W/kg

Smallest distance from peaks to all points 3 dB below = 9.8 mm

Ratio of SAR at M2 to SAR at M1 = 56.6%

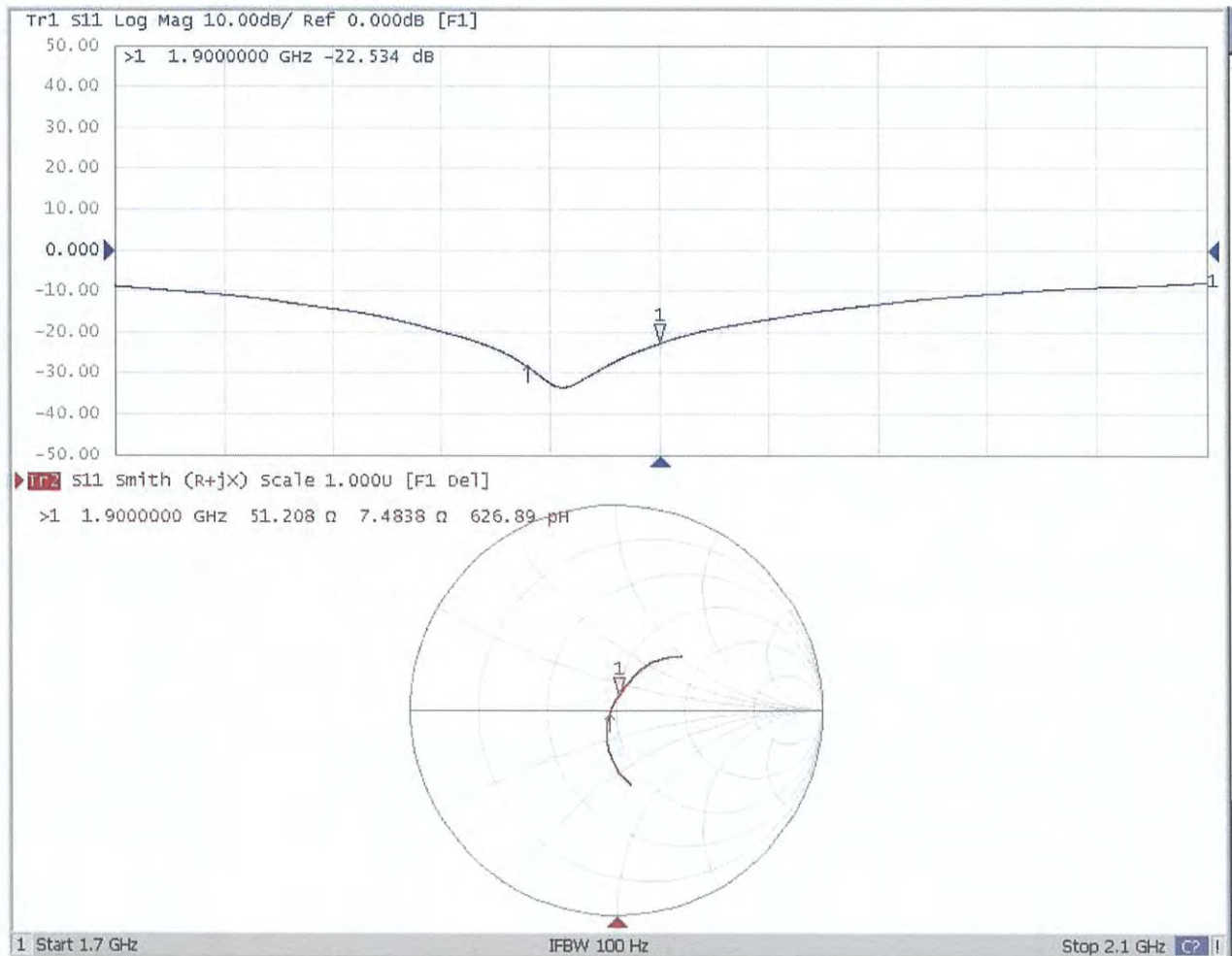
Maximum value of SAR (measured) = 15.1 W/kg





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Impedance Measurement Plot for Head TSL



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Client: **B.V.ADT**

Certificate No: **24J02Z000328**

CALIBRATION CERTIFICATE

Object: **D2300V2 - SN: 1053**

Calibration Procedure(s): **FF-Z11-003-01**
Calibration Procedures for dipole validation kits

Calibration date: **June 16, 2024**

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 $(22\pm3)^{\circ}\text{C}$ and humidity $<70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106276	17-May-24 (CTTL, No. J24X04107)	May-25
Power sensor NRP6A	101369	17-May-24 (CTTL, No. J24X04107)	May-25
Reference Probe EX3DV4	SN 7307	28-May-24(SPEAG, No. EX-7307_May24)	May-25
DAE4	SN 1556	03-Jan-24(CTTL-SPEAG, No.24J02Z80002)	Jan-25
Secondary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	25-Dec-23 (CTTL, No. J23X13426)	Dec-24
NetworkAnalyzer E5071C	MY46110673	25-Dec-23 (CTTL, No. J23X13425)	Dec-24
OCP DAK-3.5(weighted)	1040	22-Jan-24(SPEAG, No.OCP-DAK3.5-1040_Jan24)	Jan-25

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Jun	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: June 22, 2024

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Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM _{x,y,z}
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEC/IEEE 62209-1528, "Measurement Procedure for The Assessment of Specific Absorption Rate of Human Exposure to Radio Frequency Fields from Hand-held and Body-mounted Wireless Communication Devices- Part 1528: Human Models, Instrumentation and Procedures (Frequency range of 4 MHz to 10 GHz)", October 2020
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- c) DASY4/5 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 Parameters with TSL:* 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.
- *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. The Return Loss 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 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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%.

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Measurement Conditions

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

DASY Version	DASY52	52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2300 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.5	1.67 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	39.8 $\pm$ 6 %	1.68 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	12.4 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	49.6 W/kg $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm³ (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	5.99 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.0 W/kg $\pm$ 18.7 % (k=2)

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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	47.4Ω- 4.32jΩ
Return Loss	- 25.8dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.083 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point 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 feed-point may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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DASY5 Validation Report for Head TSL

Date: 2024-06-16

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 2300 MHz; Type: D2300V2; Serial: D2300V2 - SN: 1053

Communication System: UID 0, CW; Frequency: 2300 MHz

Medium parameters used: $f = 2300$ MHz; $\sigma = 1.678$ S/m; $\epsilon_r = 39.82$; $\rho = 1000$ kg/m³

Phantom section: Right Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7307; ConvF(7.65, 7.63, 8.26) @ 2300 MHz; Calibrated: 2024-05-28
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2024-01-03
- Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 103.0 V/m; Power Drift = -0.02 dB

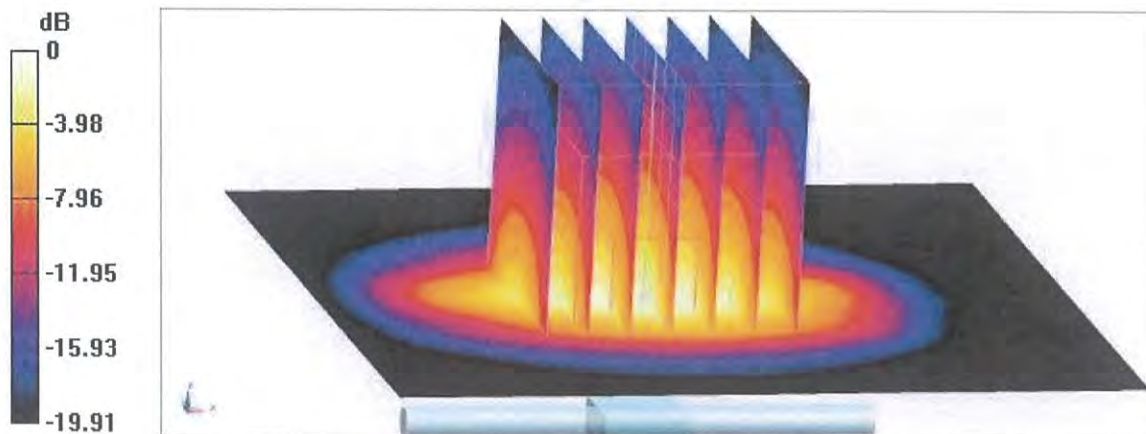
Peak SAR (extrapolated) = 23.6 W/kg

SAR(1 g) = 12.4 W/kg; SAR(10 g) = 5.99 W/kg

Smallest distance from peaks to all points 3 dB below = 9 mm

Ratio of SAR at M2 to SAR at M1 = 53.6%

Maximum value of SAR (measured) = 19.9 W/kg



0 dB = 19.9 W/kg = 12.99 dBW/kg



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Impedance Measurement Plot for Head TSL

