ANNEX A Graph Results

LTE B2 20MHz 1RB 50offset Back Side Mode High 5mm

Date/Time: 2025/4/15

Electronics: DAE4 Sn1331

Medium parameters used: f = 1900 MHz; σ = 1.404 S/m; ε_r = 38.54; ρ = 1000 kg/m^3

Ambient Temperature:21.6°C   Liquid Temperature:20.5°C

Communication System: LTE Band 2 Professional 1900MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(8.1, 8.1, 8.1) @ 1900 MHz

LTE B2 20MHz 1RB 50offset Back Side Mode High 5mm/Area Scan (7x9x1):

Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 1.21 W/kg

LTE B2 20MHz 1RB 50offset Back Side Mode High 5mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.525 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 1.91 W/kg

SAR(1 g) = 0.933 W/kg; SAR(10 g) = 0.437 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 49.7%

Maximum value of SAR (measured) = 1.56 W/kg

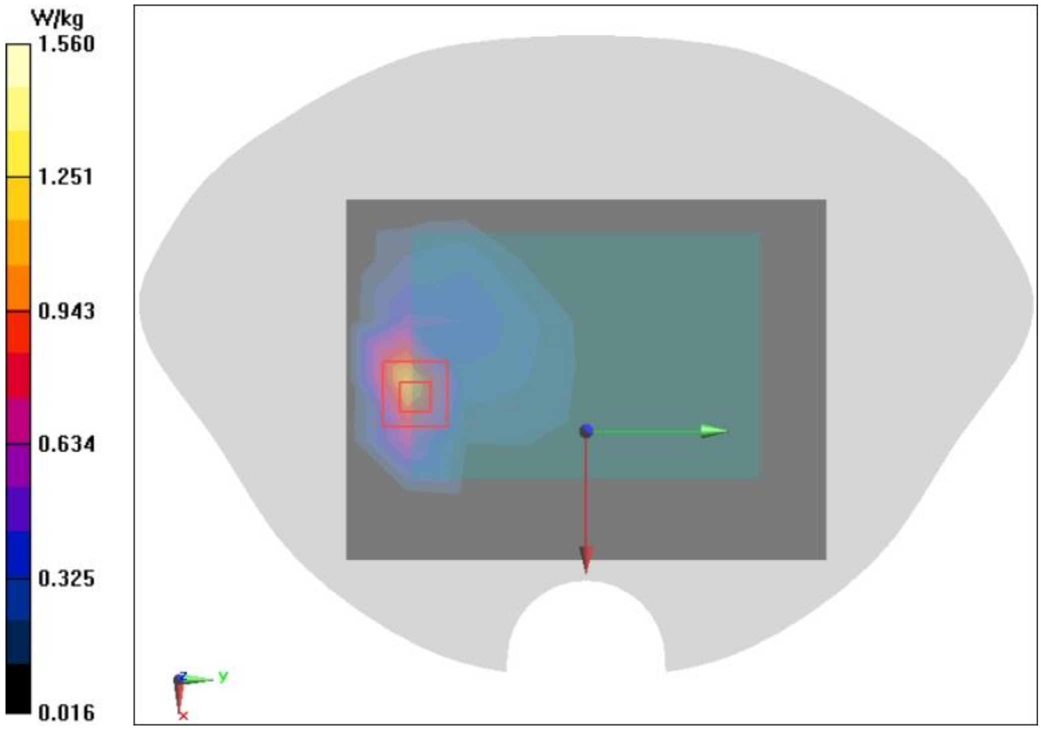


FIG A.1

LTE B2 20MHz 1RB 0offset Left Side Mode High 10mm

Date/Time: 2025/4/15

Electronics: DAE4 Sn1331

Medium parameters used: f = 1900 MHz; σ = 1.404 S/m; ε_r = 38.54; ρ = 1000 kg/m^3

Ambient Temperature:21.6°C Liquid Temperature:20.5°C

Communication System: LTE Band 2 Professional 1900MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(8.1, 8.1, 8.1) @ 1900 MHz

LTE B2 20MHz 1RB 0offset Left Side Mode High 10mm/Area Scan (5x7x1):

Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.968 W/kg

LTE B2 20MHz 1RB 0offset Left Side Mode High 10mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 27.22 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 1.61 W/kg

SAR(1 g) = 0.915 W/kg; SAR(10 g) = 0.492 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 58.2%

Maximum of SAR (measured) = 1.26 W/kg

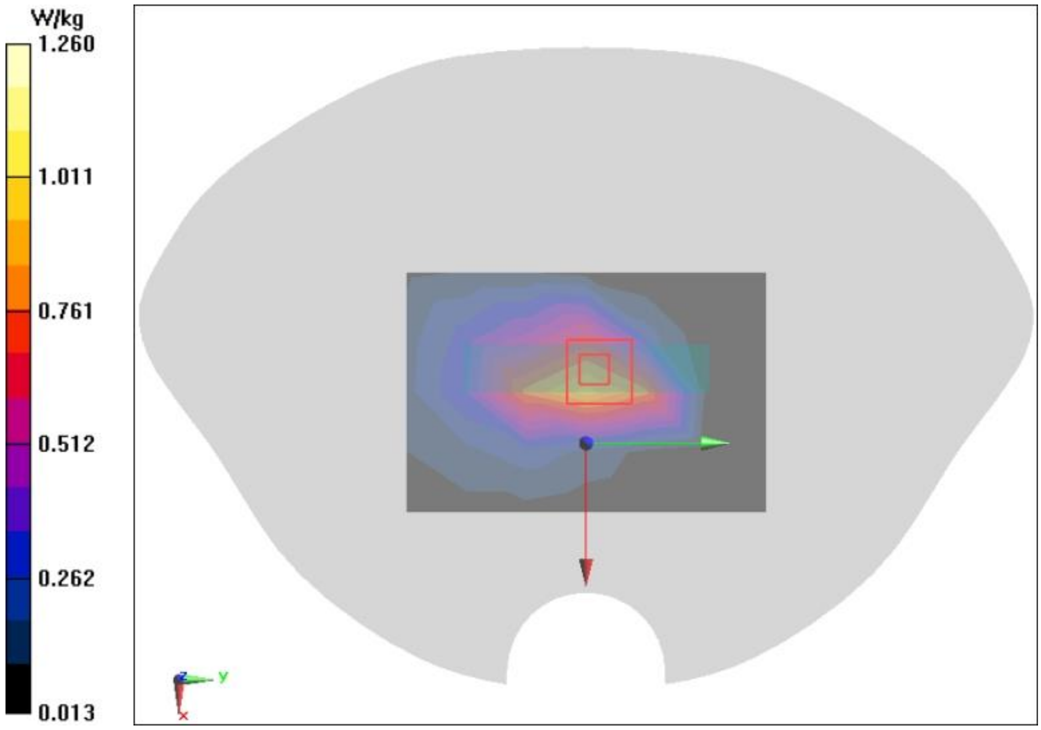


FIG A.2

LTE B12 10MHz 1RB 0offset Bottom Side Mode Middle 5mm

Date/Time: 2025/4/18

Electronics: DAE4 Sn1331

Medium parameters used (interpolated): f = 707.5 MHz; σ = 0.873 S/m; ε_r = 41.919; ρ = 1000 kg/m^3

Ambient Temperature:21.7°C Liquid Temperature:20.6°C

Communication System: LTE Band 12 Professional 900MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(10.45, 10.45, 10.45) @ 707.5 MHz

LTE B12 10MHz 1RB 0offset Bottom Side Mode Middle 5mm/Area Scan (5x9x1):

Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.727 W/kg

LTE B12 10MHz 1RB 0offset Bottom Side Mode Middle 5mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 28.93 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 1.14 W/kg

SAR(1 g) = 0.592 W/kg; SAR(10 g) = 0.359 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 49.9%

Maximum of SAR (measured) = 0.882 W/kg

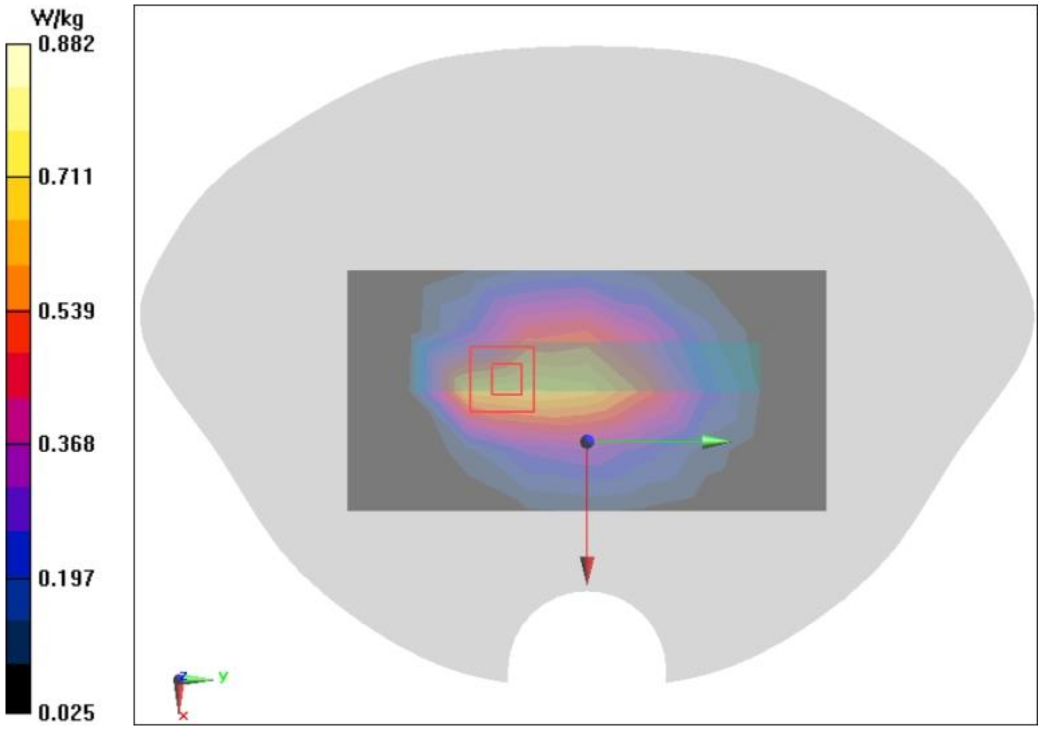


FIG A.3

LTE B12 10MHz 1RB 0offset Front Side Mode Middle 10mm

Date/Time: 2025/4/18

Electronics: DAE4 Sn1331

Medium parameters used (interpolated): f = 707.5 MHz; σ = 0.873 S/m; ε_r = 41.919; ρ = 1000 kg/m^3

Ambient Temperature:21.7°C   Liquid Temperature:20.6°C

Communication System: LTE Band 12 Professional 900MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(10.45, 10.45, 10.45) @ 707.5 MHz

LTE B12 10MHz 1RB 0offset Front Side Mode Middle 10mm/Area Scan (7x9x1):

Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.558 W/kg

LTE B12 10MHz 1RB 0offset Front Side Mode Middle 10mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 24.03 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.622 W/kg

SAR(1 g) = 0.465 W/kg; SAR(10 g) = 0.347 W/kg

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid

Ratio of SAR at M2 to SAR at M1 = 74.8%

Maximum value of SAR (measured) = 0.565 W/kg

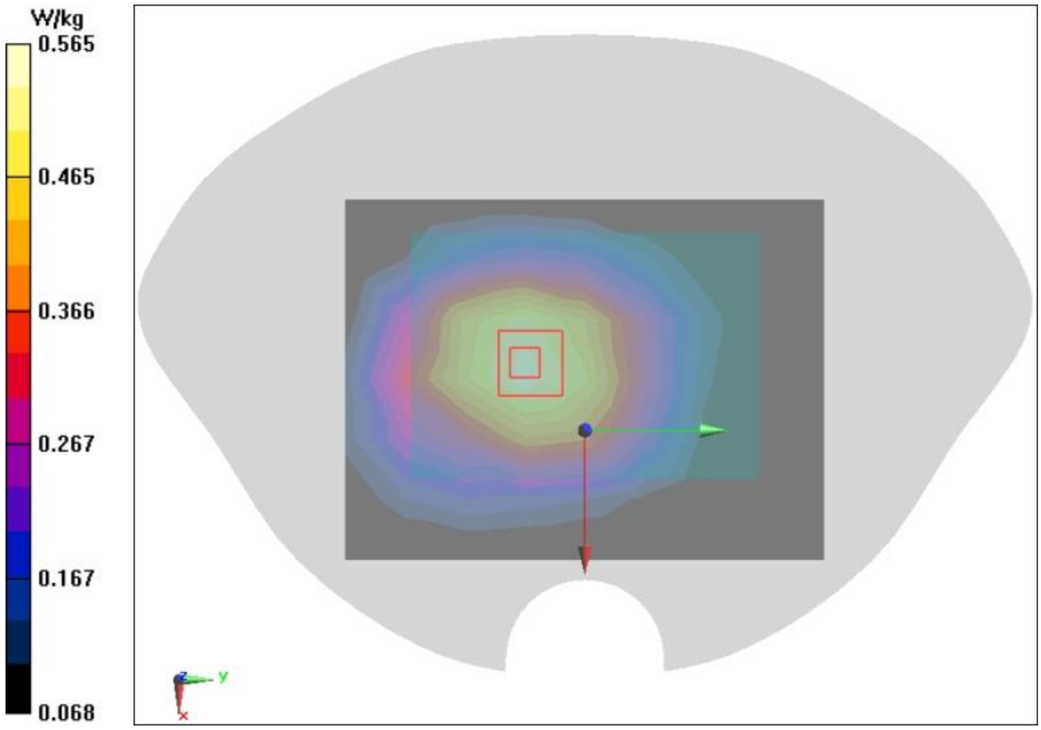


FIG A.4

LTE B25 20MHz 1RB 0offset Back Side Mode High 5mm

Date/Time: 2025/5/13

Electronics: DAE4 Sn1331

Medium parameters used: f = 1905 MHz; σ = 1.428 S/m; ε_r = 39.149; ρ = 1000 kg/m^3

Ambient Temperature:21.7°C   Liquid Temperature:20.6°C

Communication System: LTE Band 25 Professional 1900MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(8.1, 8.1, 8.1) @ 1905 MHz

LTE B25 20MHz 1RB 0offset Back Side Mode High 5mm/Area Scan (7x9x1):

Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 1.29 W/kg

LTE B25 20MHz 1RB 0offset Back Side Mode High 5mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.28 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 1.82 W/kg

SAR(1 g) = 0.886 W/kg; SAR(10 g) = 0.419 W/kg

Smallest distance from peaks to all points 3 dB below = 8.2 mm

Ratio of SAR at M2 to SAR at M1 = 48.9%

Maximum value of SAR (measured) = 1.45 W/kg

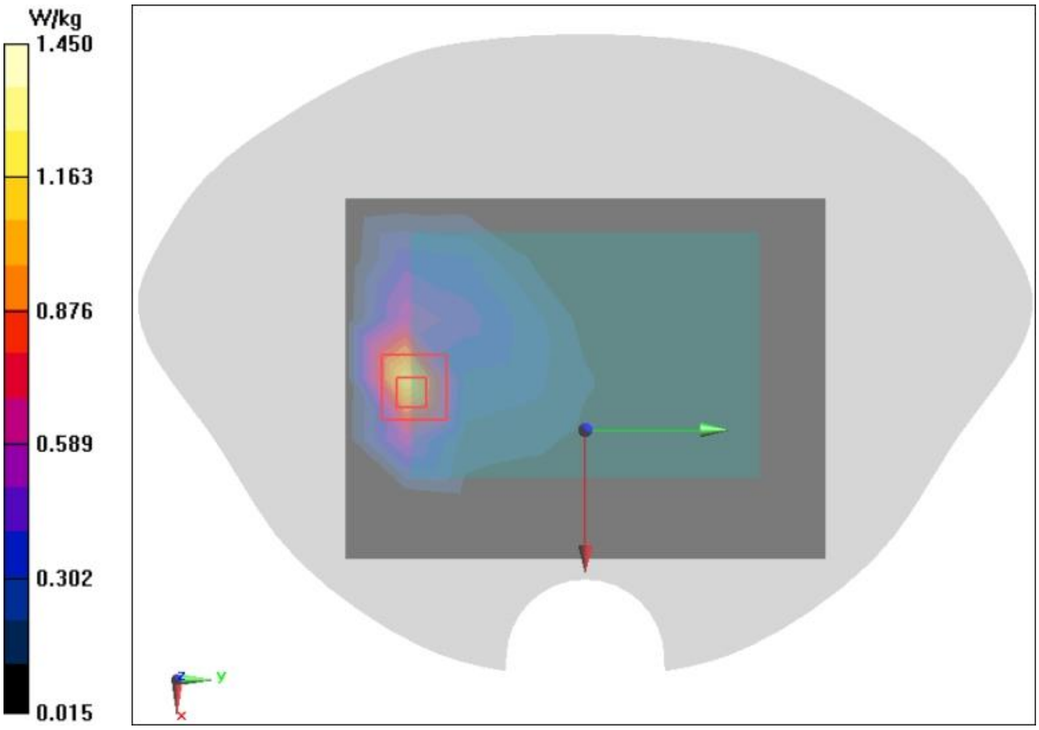


FIG A.5

LTE B25 20MHz 1RB 0offset Left Side Mode High 10mm

Date/Time: 2025/4/29

Electronics: DAE4 Sn1331

Medium parameters used: f = 1905 MHz; σ = 1.414 S/m; ε_r = 39.01; ρ = 1000 kg/m^3

Ambient Temperature:21.7°C   Liquid Temperature:20.7°C

Communication System: LTE B25 1900MHz; Frequency: 1905 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(8.1, 8.1, 8.1) @ 1905 MHz

LTE B25 20MHz 1RB 0offset Left Side Mode High 10mm/Area Scan (5x7x1):

Measurement grid: dx=12mm, dy=12mm

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

LTE B25 20MHz 1RB 0offset Left Side Mode High 10mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 28.99 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.88 W/kg

SAR(1 g) = 1.04 W/kg; SAR(10 g) = 0.567 W/kg

Smallest distance from peaks to all points 3 dB below = 11.2 mm

Ratio of SAR at M2 to SAR at M1 = 55.5%

Maximum value of SAR (measured) = 1.56 W/kg

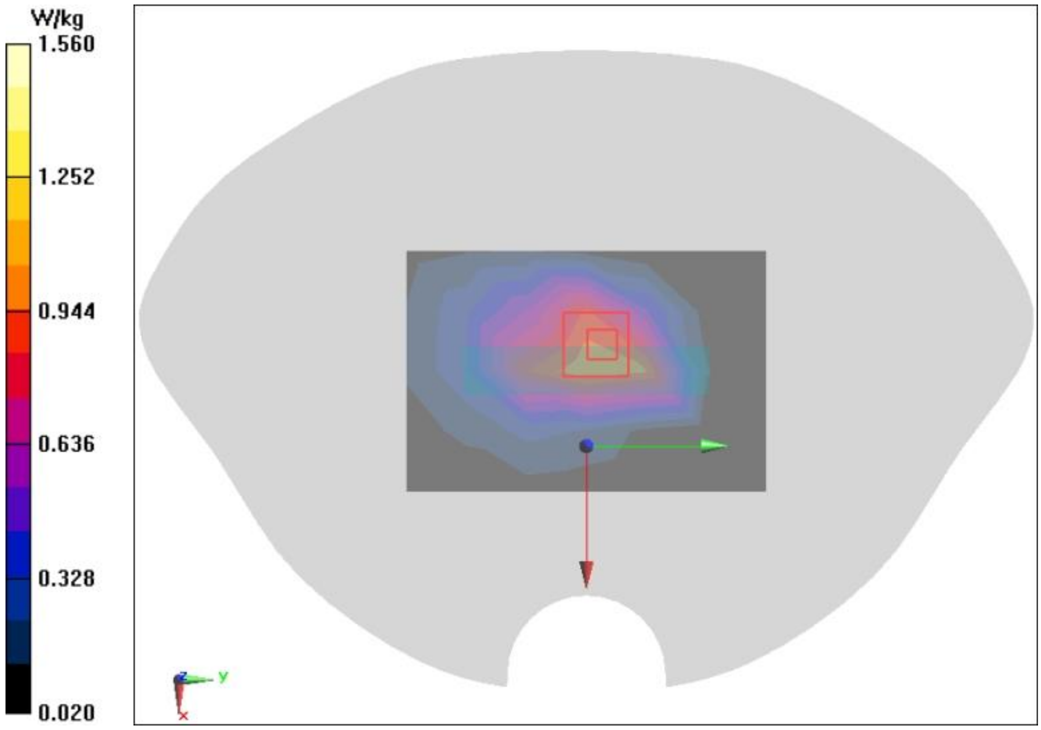


FIG A.6

LTE B66 20MHz 1RB 0offset Back Side Mode High 5mm
Date/Time: 2025/4/17
Electronics: DAE4 Sn1331
Medium parameters used: f = 1770 MHz; σ = 1.326 S/m; ε_r = 38.605; ρ = 1000 kg/m^3
Ambient Temperature:21.6°C Liquid Temperature:20.4°C
Communication System: LTE Band 66 Professional 1900MHz; Duty Cycle: 1:1
Probe: EX3DV4 - SN7673ConvF(8.45, 8.45, 8.45) @ 1770 MHz
LTE B66 20MHz 1RB 0offset Back Side Mode High 5mm/Area Scan (7x9x1):
Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 1.13 W/kg
LTE B66 20MHz 1RB 0offset Back Side Mode High 5mm/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.048 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.53 W/kg
SAR(1 g) = 0.848 W/kg; SAR(10 g) = 0.461 W/kg
Smallest distance from peaks to all points 3 dB below = 11.2 mm
Ratio of SAR at M2 to SAR at M1 = 56.7%
Maximum value of SAR (measured) = 1.30 W/kg

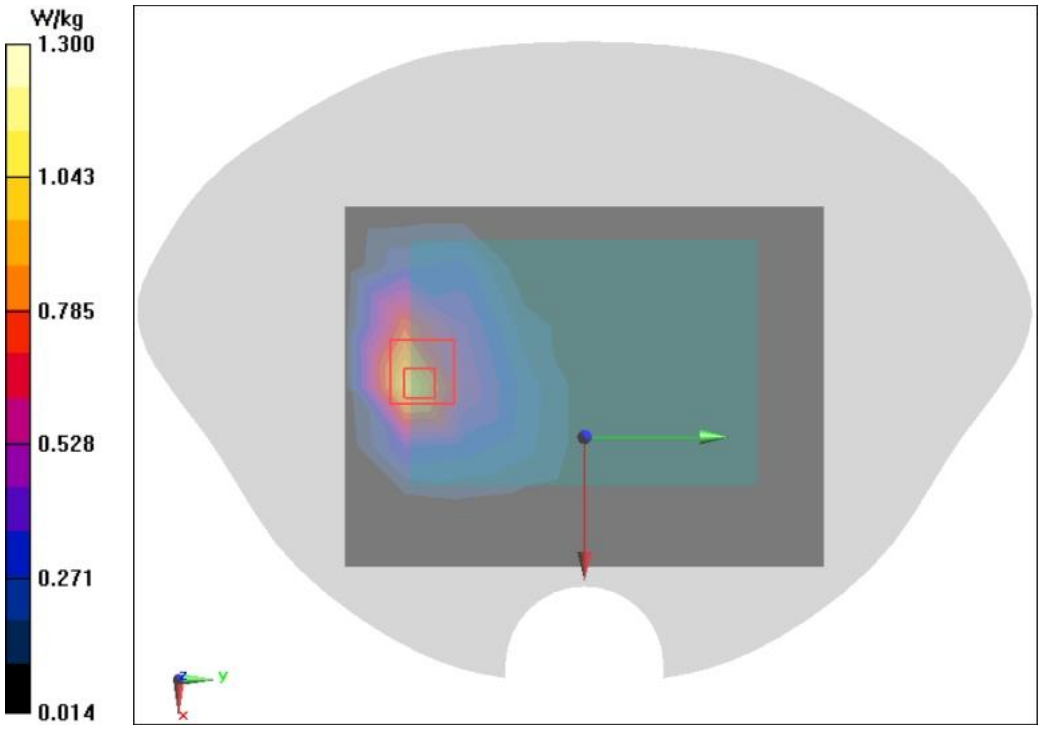


FIG A.7

LTE B66 20MHz 1RB 0offset Back Side Mode High 10mm

Date/Time: 2025/4/17

Electronics: DAE4 Sn1331

Medium parameters used: f = 1770 MHz; σ = 1.326 S/m; ε_r = 38.605; ρ = 1000 kg/m^3

Ambient Temperature:21.6°C Liquid Temperature:20.4°C

Communication System: LTE Band 66 Professional 1900MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(8.45, 8.45, 8.45) @ 1770 MHz

LTE B66 20MHz 1RB 0offset Back Side Mode High 10mm/Area Scan (7x9x1):

Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 1.19 W/kg

LTE B66 20MHz 1RB 0offset Back Side Mode High 10mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.952 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 1.43 W/kg

SAR(1 g) = 0.869 W/kg; SAR(10 g) = 0.516 W/kg

Smallest distance from peaks to all points 3 dB below = 14.4 mm

Ratio of SAR at M2 to SAR at M1 = 61.1%

Maximum value of SAR (measured) = 1.23 W/kg

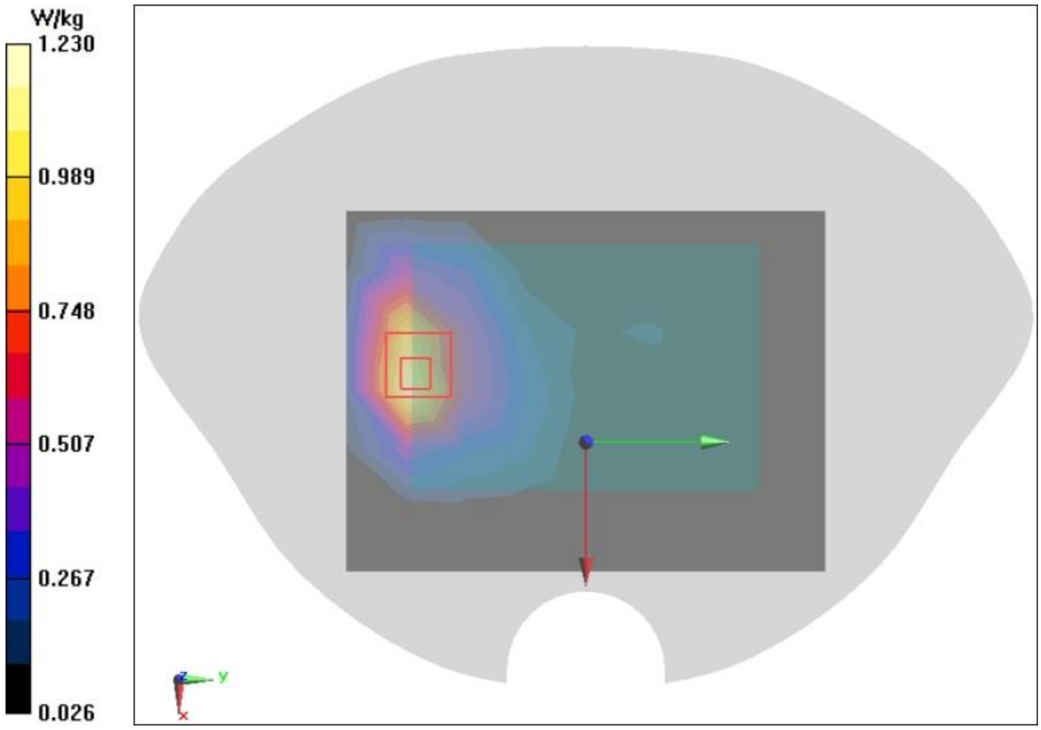


FIG A.8

LTE B71 20MHz 1RB 50offset Bottom Side Mode Low 5mm

Date/Time: 2025/4/18

Electronics: DAE4 Sn1331

Medium parameters used: f = 673 MHz; σ = 0.861 S/m; ε_r = 42.063; ρ = 1000 kg/m^3

Ambient Temperature:21.7°C　　Liquid Temperature:20.6°C

Communication System: LTE B71 750MHz;　Frequency: 673 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(10.45, 10.45, 10.45) @ 673 MHz

LTE B71 20MHz 1RB 50offset Bottom Side Mode Low 5mm/Area Scan (4x9x1):

Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 1.08 W/kg

LTE B71 20MHz 1RB 50offset Bottom Side Mode Low 5mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 33.95 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 2.29 W/kg

SAR(1 g) = 0.964 W/kg; SAR(10 g) = 0.550 W/kg

Smallest distance from peaks to all points 3 dB below = 10.1 mm

Ratio of SAR at M2 to SAR at M1 = 43.4%

Maximum of SAR (measured) = 1.55 W/kg

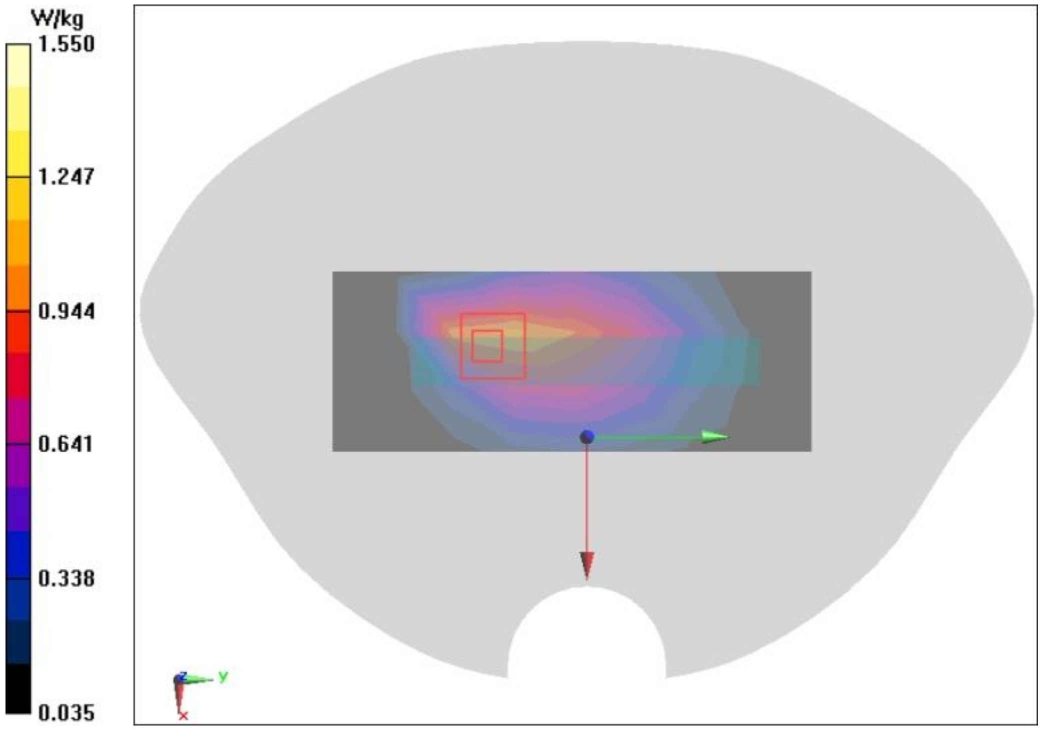


FIG A.9

LTE B71 20MHz 1RB 50offset Front Side Mode Middle 10mm

Date/Time: 2025/4/18

Electronics: DAE4 Sn1331

Medium: Head 750MHz

Medium parameters used: f = 683 MHz; σ = 0.865 S/m; ε_r = 42.024; ρ = 1000 kg/m^3

Ambient Temperature:21.7°C   Liquid Temperature:20.6°C

Communication System: LTE B71 750MHz;   Frequency: 683 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(10.45, 10.45, 10.45) @ 683 MHz

LTE B71 20MHz 1RB 50offset Front Side Mode Middle 10mm/Area Scan (7x9x1):

Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.791 W/kg

LTE B71 20MHz 1RB 50offset Front Side Mode Middle 10mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 28.76 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.881 W/kg

SAR(1 g) = 0.659 W/kg; SAR(10 g) = 0.493 W/kg

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid

Ratio of SAR at M2 to SAR at M1 = 75.2%

Maximum of SAR (measured) = 0.799 W/kg

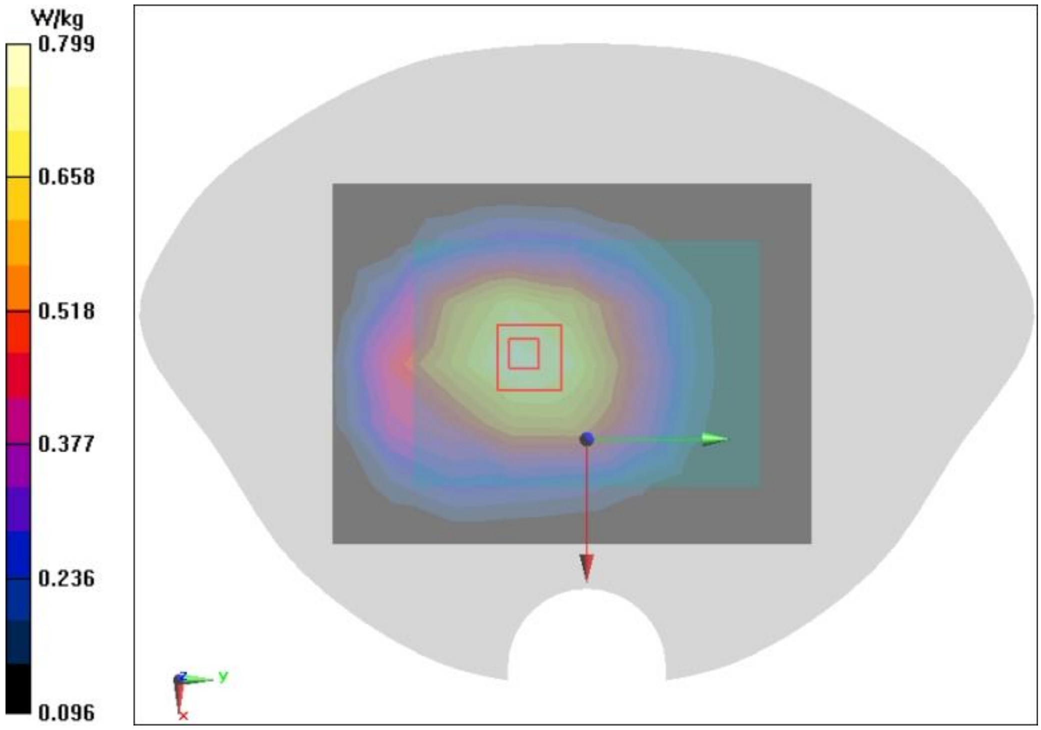


FIG A.10

NR n25 20MHz 50RB 25offset Back Side Mode Low 5mm

Date/Time: 2025/4/17

Electronics: DAE4 Sn1331

Medium parameters used: f = 1860 MHz; σ = 1.377 S/m; ε_r = 38.529; ρ = 1000 kg/m^3

Ambient Temperature:21.5°C Liquid Temperature:20.4°C

Communication System: NR FR1 n25 1750MHz; Frequency: 1860 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(8.1, 8.1, 8.1) @ 1860 MHz

NR n25 20MHz 50RB 25offset Back Side Mode Low 5mm/Area Scan (7x9x1):

Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.511 W/kg

NR n25 20MHz 50RB 25offset Back Side Mode Low 5mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.441 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 1.59 W/kg

SAR(1 g) = 0.759 W/kg; SAR(10 g) = 0.359 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 48.2%

Maximum value of SAR (measured) = 1.29 W/kg

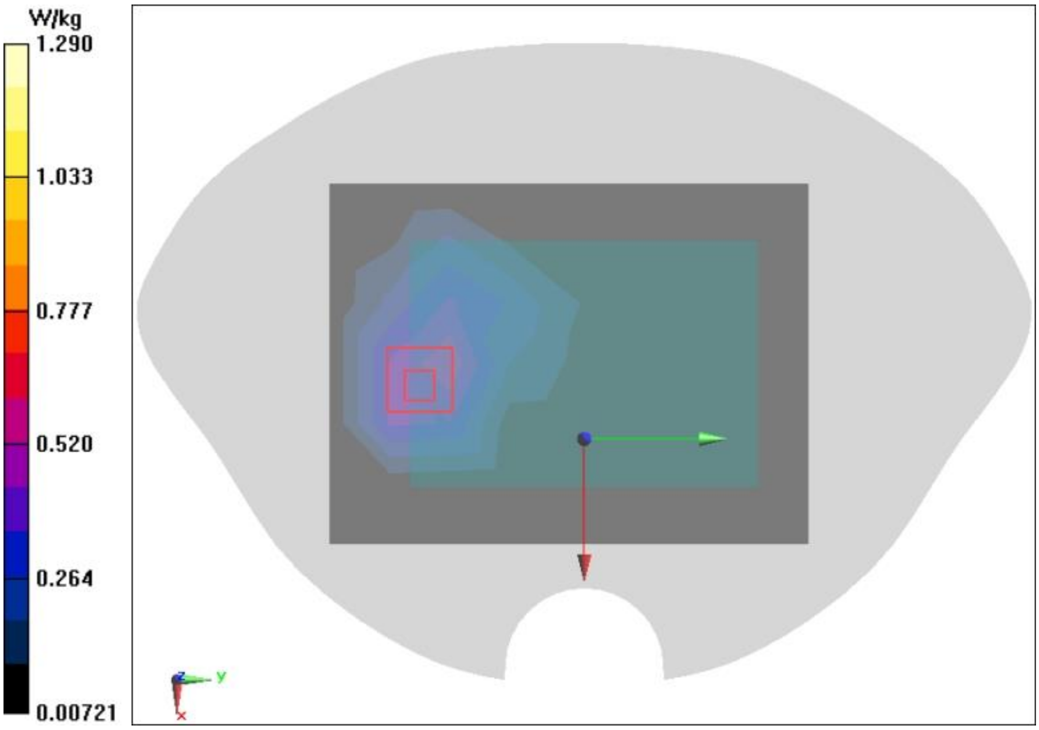


FIG A.11

NR n25 20MHz 50RB 25offset Left Side Mode Middle 10mm

Date/Time: 2025/4/29

Electronics: DAE4 Sn1331

Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.399 S/m; ε_r = 39.04; ρ = 1000 kg/m^3

Ambient Temperature:21.7°C Liquid Temperature:20.7°C

Communication System: NR FR1 n25 1750MHz; Frequency: 1882.5 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(8.1, 8.1, 8.1) @ 1882.5 MHz

NR n25 20MHz 50RB 25offset Left Side Mode Middle 10mm/Area Scan (4x7x1):

Measurement grid: dx=12mm, dy=12mm

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

NR n25 20MHz 50RB 25offset Left Side Mode Middle 10mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 26.48 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 1.74 W/kg

SAR(1 g) = 0.958 W/kg; SAR(10 g) = 0.522 W/kg

Smallest distance from peaks to all points 3 dB below = 11.2 mm

Ratio of SAR at M2 to SAR at M1 = 55.6%

Maximum value of SAR (measured) = 1.43 W/kg

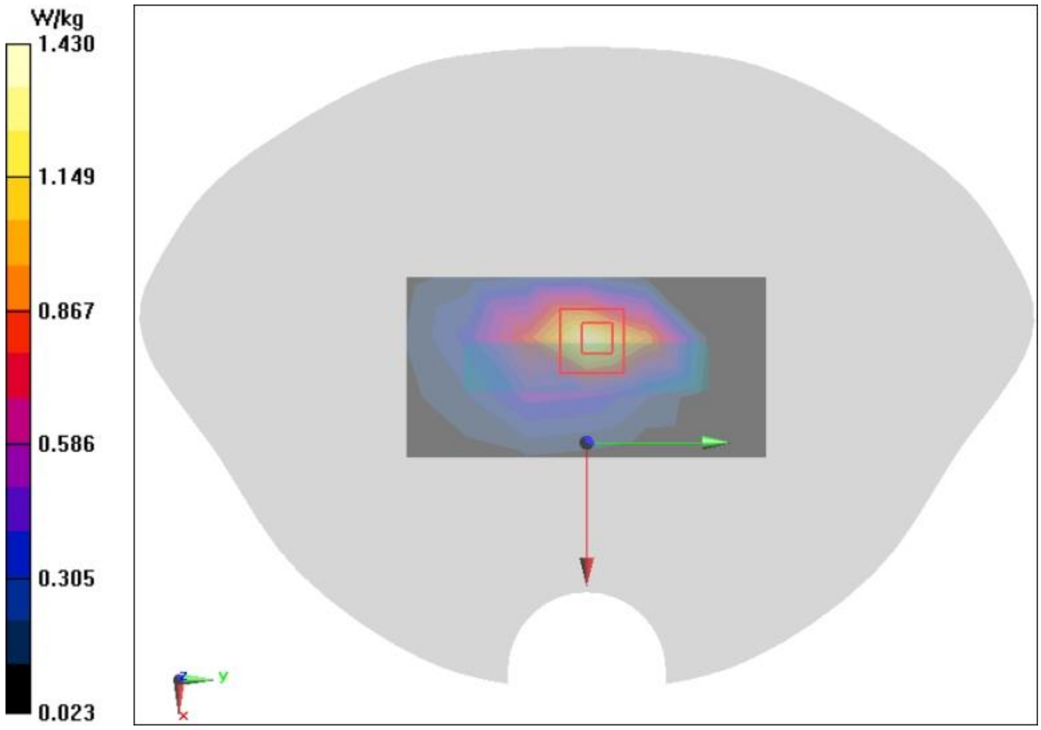


FIG A.12

NR n41 ANT2 100MHz 135RB 67offset Top Side Mode High 5mm

Date/Time: 2025/5/13

Electronics: DAE4 Sn1331

Medium parameters used: f = 2640 MHz; σ = 1.99 S/m; ε_r = 39.7; ρ = 1000 kg/m^3

Ambient Temperature:21.7°C   Liquid Temperature:20.6°C

Communication System: NR FR1 n41 2450MHz; Frequency: 2640 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(7.44, 7.44, 7.44) @ 2640 MHz

NR n41 ANT2 100MHz 135RB 67offset Top Side Mode High 5mm/Area Scan (5x9x1):

Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.808 W/kg

NR n41 ANT2 100MHz 135RB 67offset Top Side Mode High 5mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.717 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 2.06 W/kg

SAR(1 g) = 0.867 W/kg; SAR(10 g) = 0.342 W/kg

Smallest distance from peaks to all points 3 dB below = 6.8 mm

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

Maximum of SAR (measured) = 1.55 W/kg

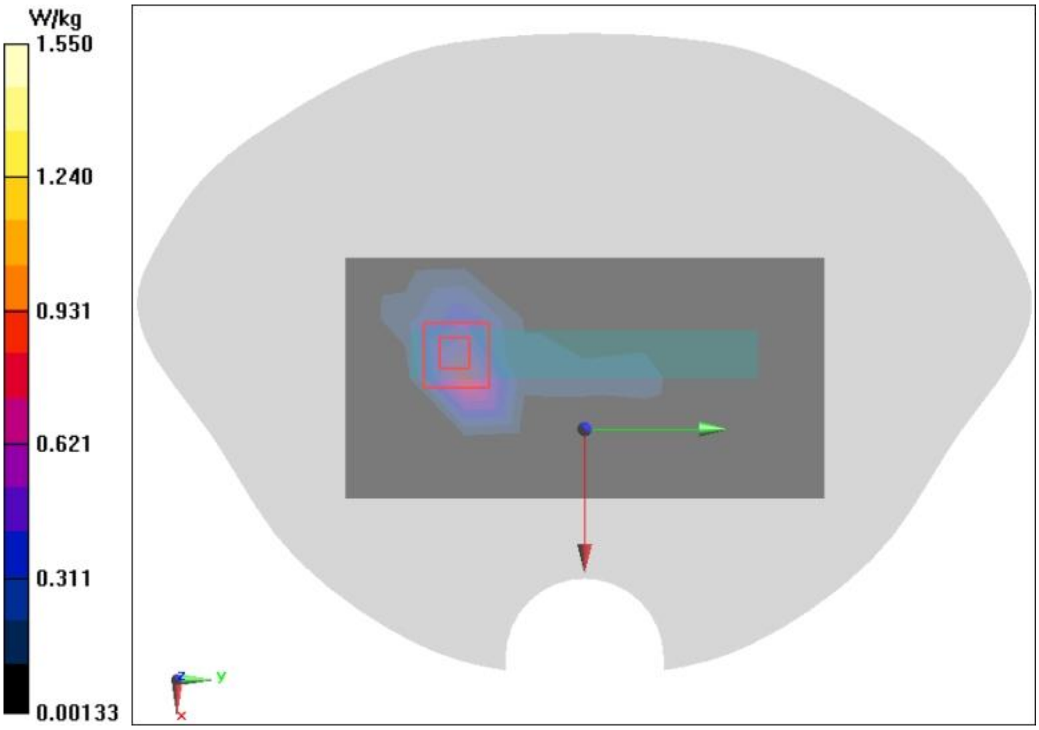


FIG A.13

NR n41 ANT2 100MHz 1RB 1offset Front Side Mode Low 10mm

Date/Time: 2025/4/21

Electronics: DAE4 Sn1331

Medium parameters used (interpolated): f = 2546.01 MHz; σ = 1.918 S/m; ε_r = 37.837; ρ = 1000 kg/m^3

Ambient Temperature:21.5°C   Liquid Temperature:20.6°C

Communication System: NR FR1 n41 2450MHz;   Frequency: 2546.01 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(7.6, 7.6, 7.6) @ 2546.01 MHz

NR n41 ANT2 100MHz 1RB 1offset Front Side Mode Low 10mm/Area Scan (7x9x1):

Measurement grid: dx=12mm, dy=12mm

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

NR n41 ANT2 100MHz 1RB 1offset Front Side Mode Low 10mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.899 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.91 W/kg

SAR(1 g) = 1.08 W/kg; SAR(10 g) = 0.589 W/kg

Smallest distance from peaks to all points 3 dB below = 15.8 mm

Ratio of SAR at M2 to SAR at M1 = 56.5%

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

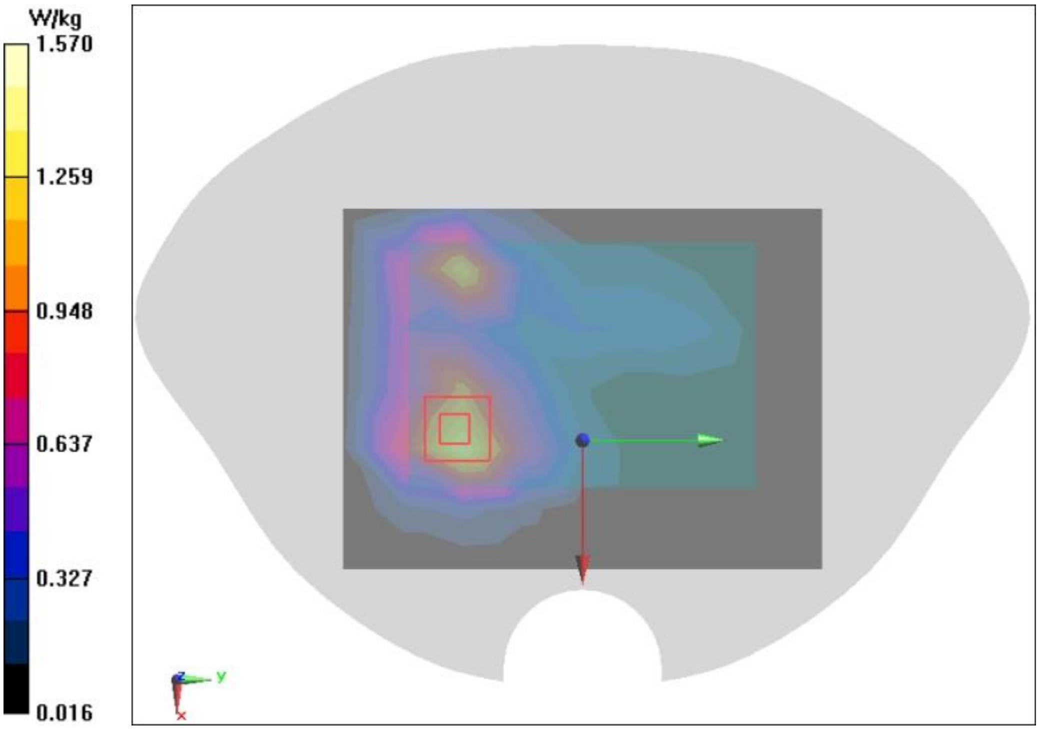


FIG A.14

NR n66 20MHz 50RB 25offset Back Side Mode Middle 5mm

Date/Time: 2025/4/17

Electronics: DAE4 Sn1331

Medium parameters used: f = 1745 MHz; σ = 1.314 S/m; ε_r = 38.641; ρ = 1000 kg/m^3

Ambient Temperature:21.7°C   Liquid Temperature:20.6°C

Communication System: NR FR1 n66 1750MHz;   Frequency: 1745 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(8.45, 8.45, 8.45) @ 1745 MHz

NR n66 20MHz 50RB 25offset Back Side Mode Middle 5mm/Area Scan (7x9x1):

Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 1.03 W/kg

NR n66 20MHz 50RB 25offset Back Side Mode Middle 5mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.191 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 2.06 W/kg

SAR(1 g) = 1.09 W/kg; SAR(10 g) = 0.569 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 53.2%

Maximum value of SAR (measured) = 1.66 W/kg

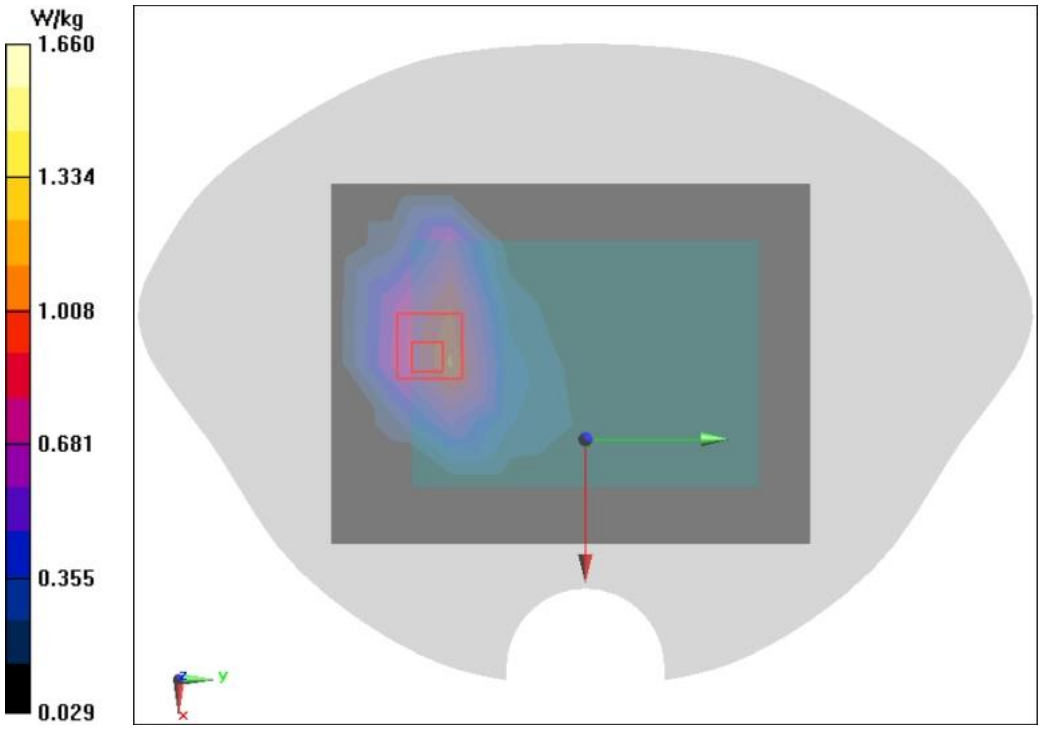


FIG A.15

NR n66 20MHz 50RB 25offset Back Side Mode Middle 10mm

Date/Time: 2025/4/17

Electronics: DAE4 Sn1331

Medium parameters used: f = 1745 MHz; σ = 1.314 S/m; ε_r = 38.641; ρ = 1000 kg/m^3

Ambient Temperature:21.6°C   Liquid Temperature:20.4°C

Communication System: NR FR1 n66 1750MHz;   Frequency: 1745 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(8.45, 8.45, 8.45) @ 1745 MHz

NR n66 20MHz 50RB 25offset Back Side Mode Middle 10mm/Area Scan (7x9x1):

Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 1.27 W/kg

NR n66 20MHz 50RB 25offset Back Side Mode Middle 10mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.962 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 1.88 W/kg

SAR(1 g) = 1.09 W/kg; SAR(10 g) = 0.639 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 58.9%

Maximum value of SAR (measured) = 1.58 W/kg

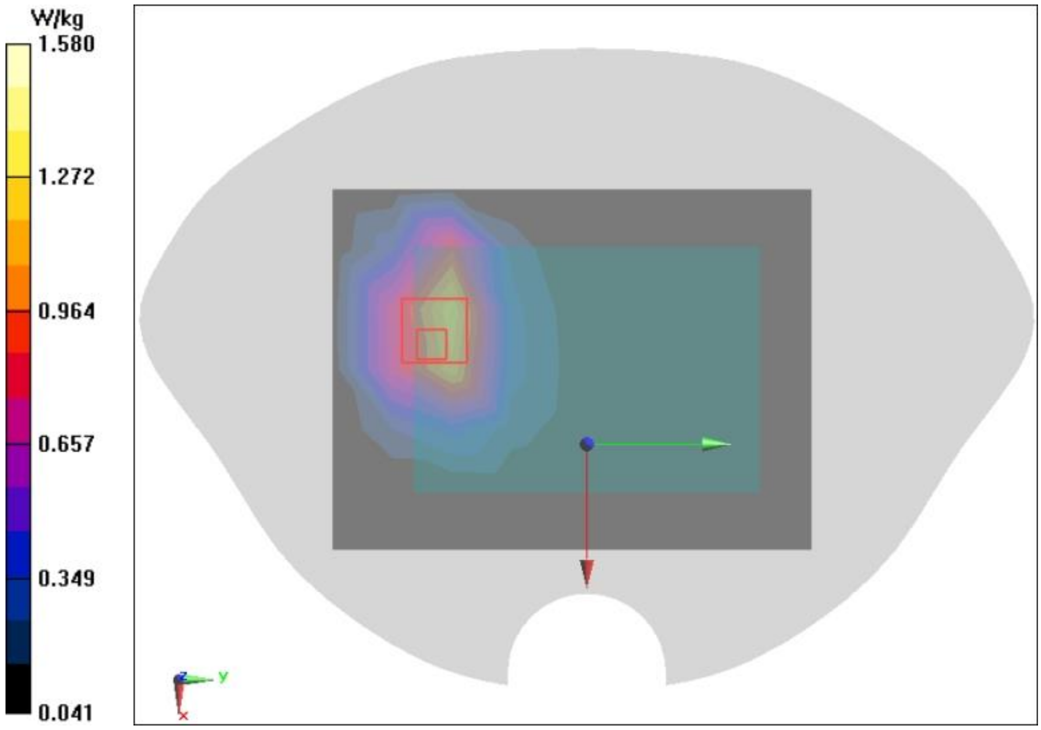


FIG A.16

NR n71 20MHz 1RB 1offset Bottom Side Mode Low 5mm

Date/Time: 2025/4/18

Electronics: DAE4 Sn1331

Medium parameters used: f = 673 MHz; σ = 0.861 S/m; ε_r = 42.063; ρ = 1000 kg/m^3

Ambient Temperature:21.7°C Liquid Temperature:20.6°C

Communication System: NR FR1 n71 750MHz; Frequency: 673 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(10.45, 10.45, 10.45) @ 673 MHz

NR n71 20MHz 1RB 1offset Bottom Side Mode Low 5mm/Area Scan (4x9x1):

Measurement grid: dx=12mm, dy=12mm

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

NR n71 20MHz 1RB 1offset Bottom Side Mode Low 5mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 34.90 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 2.29 W/kg

SAR(1 g) = 0.994 W/kg; SAR(10 g) = 0.590 W/kg

Smallest distance from peaks to all points 3 dB below = 10.1 mm

Ratio of SAR at M2 to SAR at M1 = 47.5%

Maximum of SAR (measured) = 1.54 W/kg

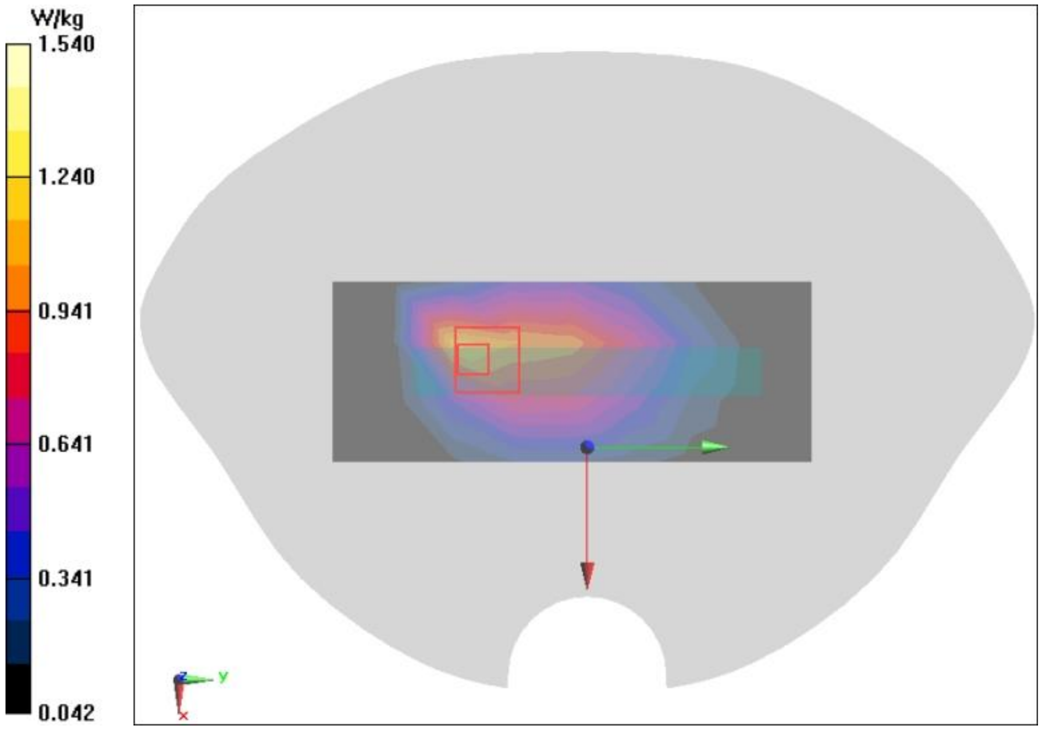


FIG A.17

NR n71 20MHz 1RB 1offset Back Side Mode Middle 10mm

Date/Time: 2025/4/18

Electronics: DAE4 Sn1331

Medium parameters used (extrapolated): f = 680.5 MHz; σ = 0.864 S/m; ε_r = 42.034; ρ = 1000 kg/m^3

Ambient Temperature:21.7°C   Liquid Temperature:20.6°C

Communication System: NR FR1 n71 750MHz; Frequency: 680.5 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(10.45, 10.45, 10.45) @ 680.5 MHz

NR n71 20MHz 1RB 1offset Back Side Mode Middle 10mm/Area Scan (7x9x1):

Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.819 W/kg

NR n71 20MHz 1RB 1offset Back Side Mode Middle 10mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 27.48 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.907 W/kg

SAR(1 g) = 0.656 W/kg; SAR(10 g) = 0.484 W/kg

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid

Ratio of SAR at M2 to SAR at M1 = 72.6%

Maximum value of SAR (measured) = 0.814 W/kg

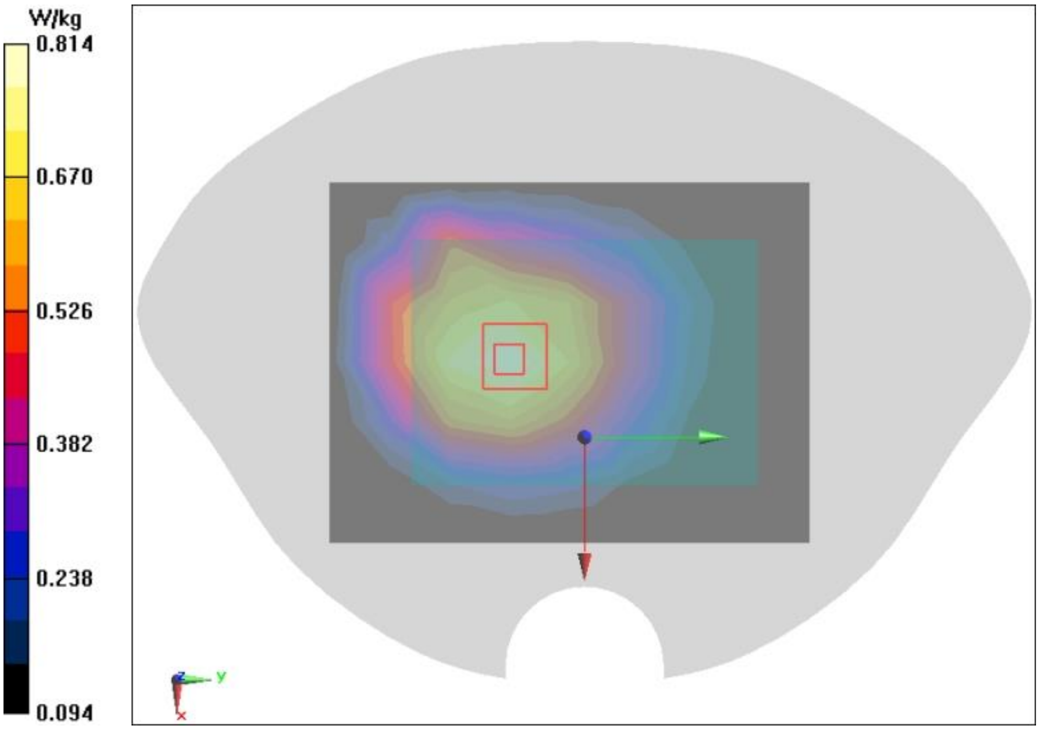


FIG A.18

Wi-Fi 2.4G 802.11b Back Side Mode Middle 10mm

Date/Time: 2025/4/21

Electronics: DAE4 Sn1331

Medium parameters used: f = 2437 MHz; σ = 1.837 S/m; ε_r = 38.037; ρ = 1000 kg/m^3

Ambient Temperature:21.6°C Liquid Temperature:20.7°C

Communication System: WLan 2450MHz; Frequency: 2437 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(7.6, 7.6, 7.6) @ 2437 MHz

Wi-Fi 2.4G 802.11b Back Side Mode Middle 10mm/Area Scan (7x9x1):

Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.713 W/kg

Wi-Fi 2.4G 802.11b Back Side Mode Middle 10mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.944 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.00 W/kg

SAR(1 g) = 0.534 W/kg; SAR(10 g) = 0.293 W/kg

Smallest distance from peaks to all points 3 dB below = 14.8 mm

Ratio of SAR at M2 to SAR at M1 = 51.6%

Maximum value of SAR (measured) = 0.797 W/kg

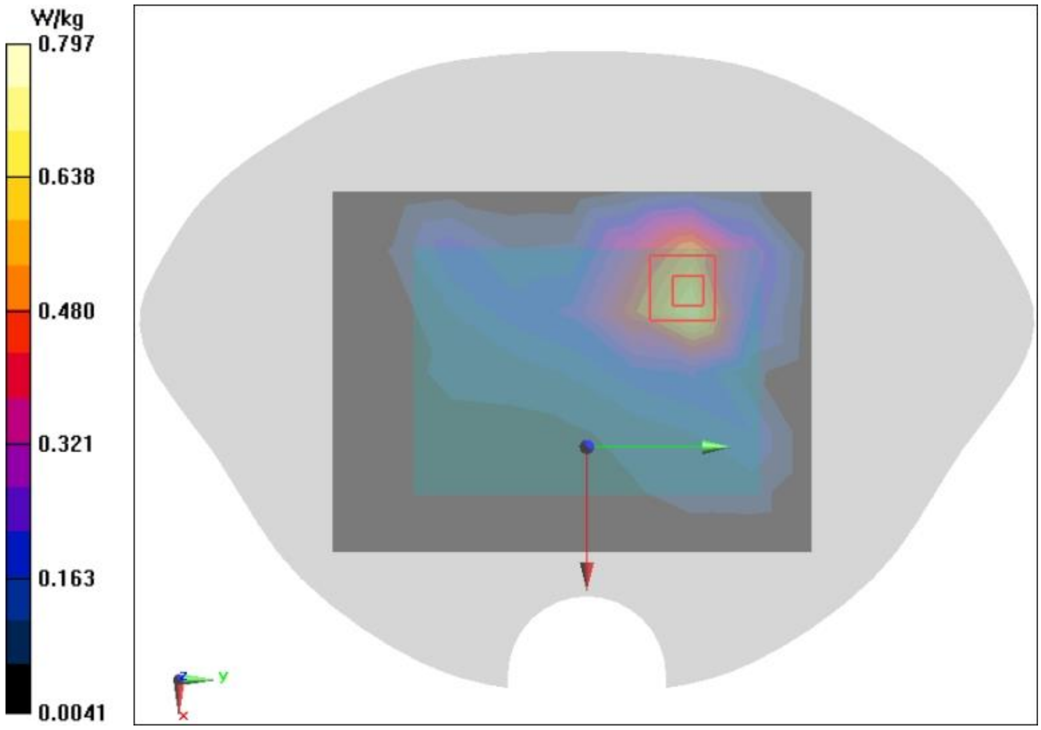


FIG A.19

Wi-Fi 5G U-NII-1 802.11a Right Side Mode High 10mm

Date/Time: 2025/4/16

Electronics: DAE4 Sn1331

Medium parameters used: f = 5240 MHz; σ = 4.763 S/m; ε_r = 35.627; ρ = 1000 kg/m^3

Ambient Temperature:21.6°C Liquid Temperature:20.7°C

Communication System: 5G-U-NII-1 5GHz; Frequency: 5240 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(5.18, 5.18, 5.18) @ 5240 MHz

Wi-Fi 5G U-NII-1 802.11a Right Side Mode High 10mm/Area Scan (4x7x1):

Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.795 W/kg

Wi-Fi 5G U-NII-1 802.11a Right Side Mode High 10mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 9.191 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 2.99 W/kg

SAR(1 g) = 0.783 W/kg; SAR(10 g) = 0.288 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 32.4%

Maximum of SAR (measured) = 1.81 W/kg

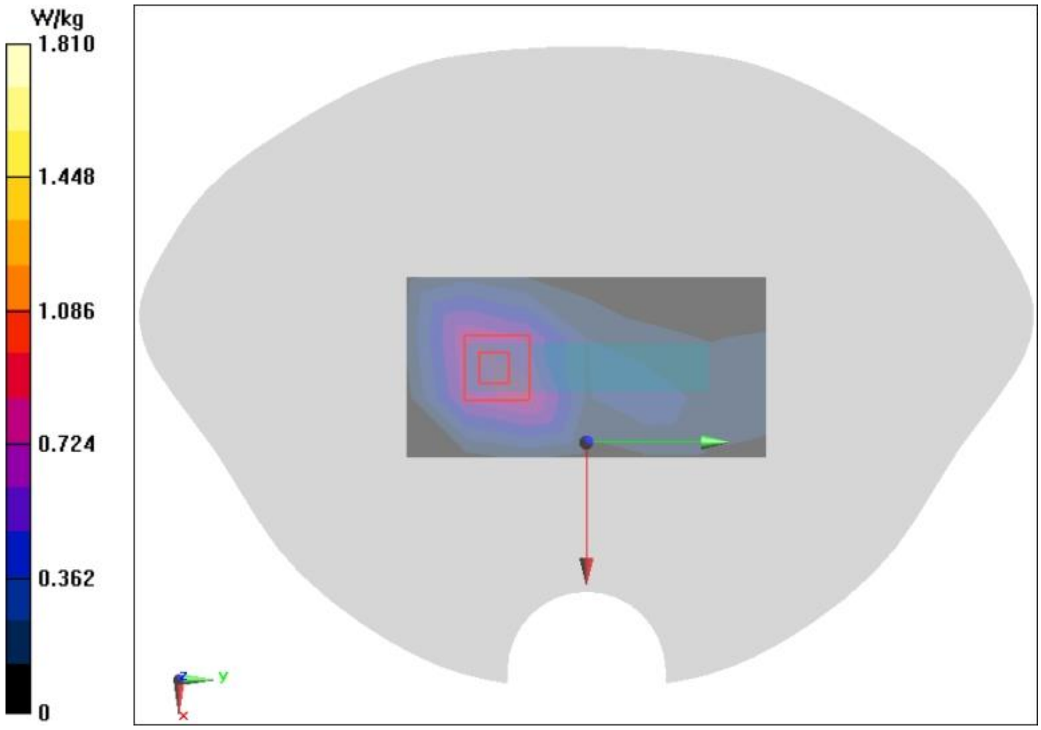


FIG A.20

Wi-Fi 5G U-NII-3 802.11a Right Side Mode Middle 10mm

Date/Time: 2025/4/16

Electronics: DAE4 Sn1331

Medium parameters used: f = 5785 MHz; σ = 5.4 S/m; ε_r = 34.564; ρ = 1000 kg/m^3

Ambient Temperature:21.6°C   Liquid Temperature:20.7°C

Communication System: 5G-U-NII-3 5GHz;   Frequency: 5785 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(4.71, 4.71, 4.71) @ 5785 MHz

Wi-Fi 5G U-NII-3 802.11a Right Side Mode Middle 10mm/Area Scan (4x7x1):

Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 1.28 W/kg

Wi-Fi 5G U-NII-3 802.11a Right Side Mode Middle 10mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 7.035 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 4.63 W/kg

SAR(1 g) = 1.03 W/kg; SAR(10 g) = 0.352 W/kg

Smallest distance from peaks to all points 3 dB below = 10.1 mm

Ratio of SAR at M2 to SAR at M1 = 37.9%

Maximum of SAR (measured) = 2.50 W/kg

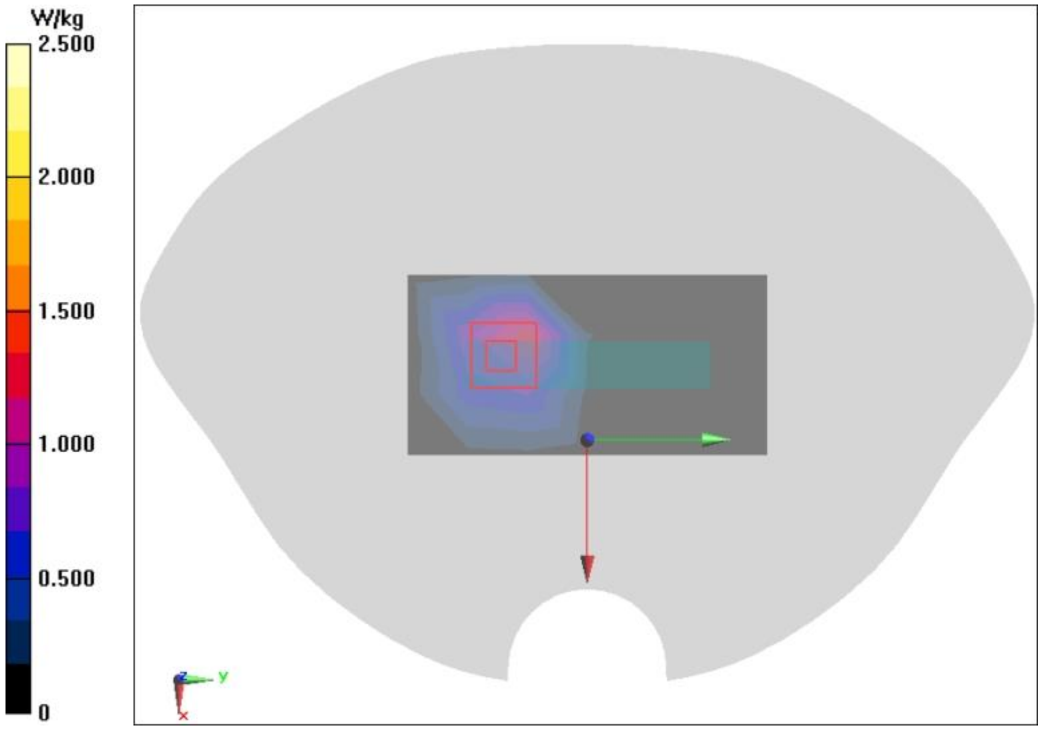


FIG A.21

ANNEX B System Verification Results

750MHz

System Check 750MHz

Date/Time: 2025/4/18

Electronics: DAE4 Sn1331

Medium parameters used: f = 750 MHz; σ = 0.888 S/m; ε_r = 41.766; ρ = 1000 kg/m^3

Ambient Temperature:21.6°C   Liquid Temperature:20.6°C

Communication System: CW 750MHz;   Frequency: 750 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(10.45, 10.45, 10.45) @ 750 MHz

System Check 750MHz/Area Scan (7x13x1):

Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 2.59 W/kg

System Check 750MHz/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 58.93 V/m; Power Drift = -0.01 dB

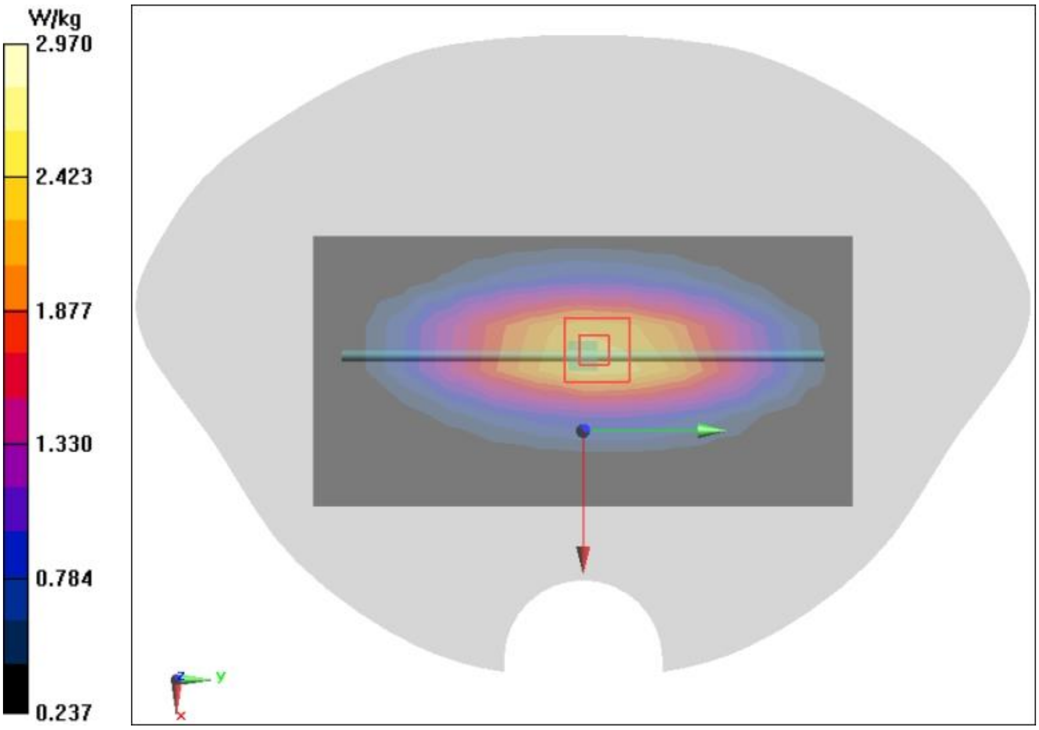
Peak SAR (extrapolated) = 3.44 W/kg

SAR(1 g) = 2.15 W/kg; SAR(10 g) = 1.39 W/kg

Smallest distance from peaks to all points 3 dB below = 16 mm

Ratio of SAR at M2 to SAR at M1 = 62.3%

Maximum value of SAR (measured) = 2.97 W/kg



1750MHz

System Check 1750MHz

Date/Time: 2025/4/17

Electronics: DAE4 Sn1331

Medium parameters used: f = 1750 MHz; σ = 1.316 S/m; ε_r = 38.633; ρ = 1000 kg/m^3

Ambient Temperature:21.4°C Liquid Temperature:20.5°C

Communication System: CW 1750MHz; Frequency: 1750 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(8.45, 8.45, 8.45) @ 1750 MHz

System Check 1750MHz/Area Scan (8x7x1):

Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 9.85 W/kg

System Check 1750MHz/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 105.3 V/m; Power Drift = 0.06 dB

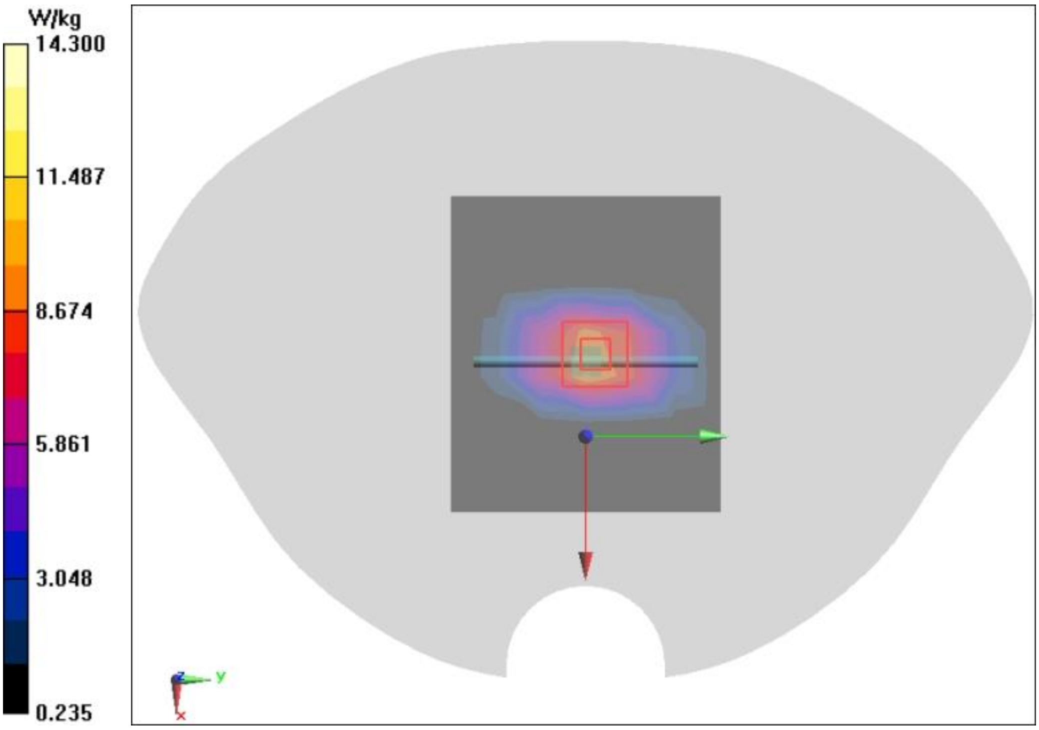
Peak SAR (extrapolated) = 17.2 W/kg

SAR(1 g) = 9.32 W/kg; SAR(10 g) = 4.94 W/kg

Smallest distance from peaks to all points 3 dB below = 10.1 mm

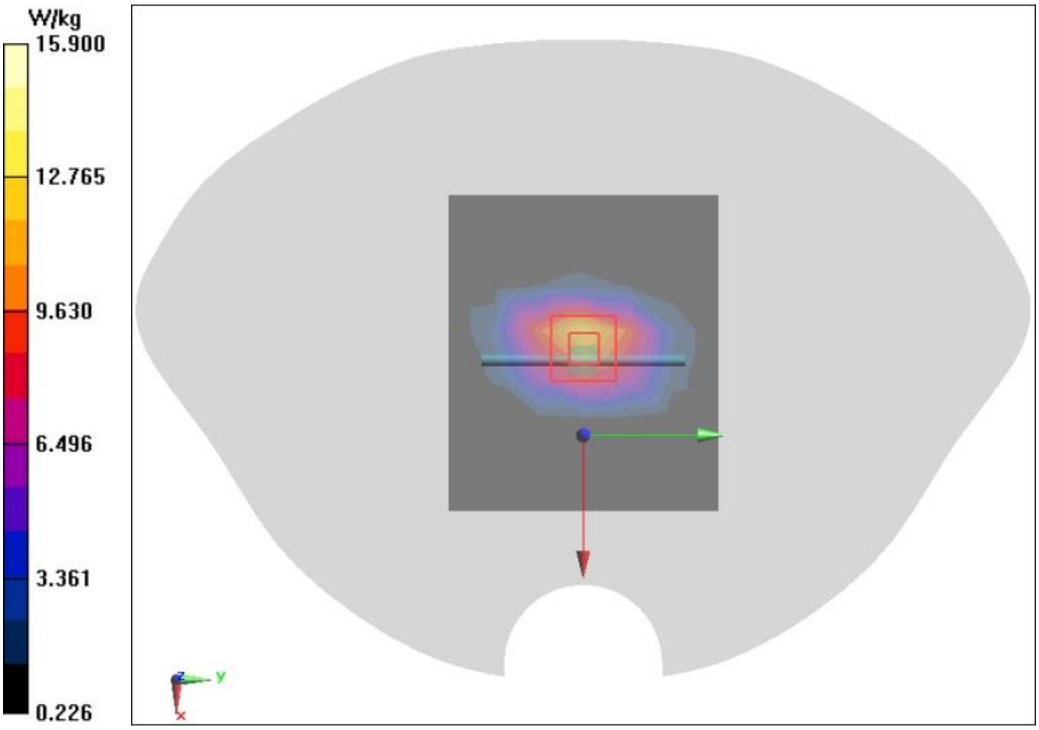
Ratio of SAR at M2 to SAR at M1 = 53.9%

Maximum value of SAR (measured) = 14.3 W/kg



1900MHz

System Check 1900MHz
Date/Time: 2025/4/15
Electronics: DAE4 Sn1331
Medium parameters used: f = 1900 MHz; σ = 1.404 S/m; ε_r = 38.54; ρ = 1000 kg/m^3
Ambient Temperature:21.5°C Liquid Temperature:20.6°C
Communication System: CW 1900MHz; Frequency: 1900 MHz; Duty Cycle: 1:1
Probe: EX3DV4 - SN7673ConvF(8.1, 8.1, 8.1) @ 1900 MHz
System Check 1900MHz/Area Scan (8x7x1):
Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 13.3 W/kg
System Check 1900MHz/Zoom Scan (5x5x7) (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 104.6 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 19.3 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.2 W/kg
Smallest distance from peaks to all points 3 dB below = 10 mm
Ratio of SAR at M2 to SAR at M1 = 52.1%
Maximum value of SAR (measured) = 15.9 W/kg



System Check 1900MHz

Date/Time: 2025/4/17

Electronics: DAE4 Sn1331

Medium parameters used: f = 1900 MHz; σ = 1.403 S/m; ε_r = 38.489; ρ = 1000 kg/m^3

Ambient Temperature:21.5°C Liquid Temperature:20.5°C

Communication System: CW 1900MHz; Frequency: 1900 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(8.1, 8.1, 8.1) @ 1900 MHz

System Check 1900MHz/Area Scan (8x7x1):

Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 12.8 W/kg

System Check 1900MHz/Zoom Scan (5x5x7) (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 106.3 V/m; Power Drift = -0.10 dB

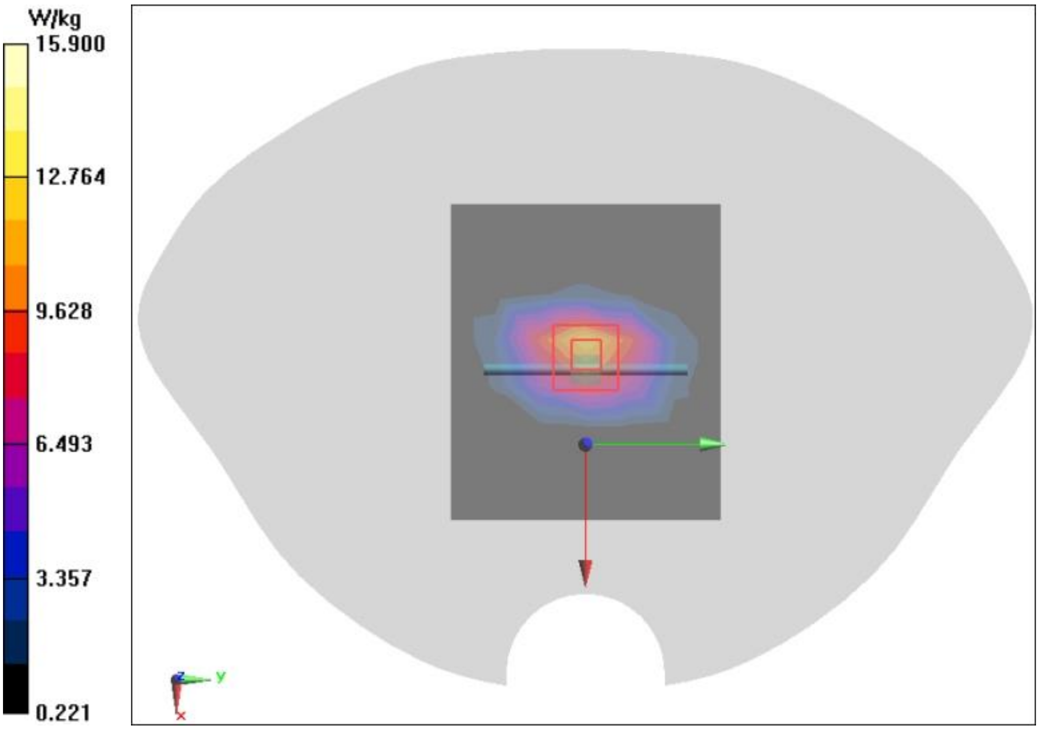
Peak SAR (extrapolated) = 19.4 W/kg

SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.22 W/kg

Smallest distance from peaks to all points 3 dB below = 10 mm

Ratio of SAR at M2 to SAR at M1 = 52.3%

Maximum value of SAR (measured) = 15.9 W/kg



System Check 1900MHz

Date/Time: 2025/4/29

Electronics: DAE4 Sn1331

Medium parameters used: f = 1900 MHz; σ = 1.411 S/m; ε_r = 39.017; ρ = 1000 kg/m^3

Ambient Temperature:21.7°C   Liquid Temperature:20.6°C

Communication System: CW 1900MHz;   Frequency: 1900 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(8.1, 8.1, 8.1) @ 1900 MHz

System Check 1900MHz/Area Scan (8x7x1):

Measurement grid: dx=12mm, dy=12mm

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

System Check 1900MHz/Zoom Scan (5x5x7) (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 105.6 V/m; Power Drift = -0.09 dB

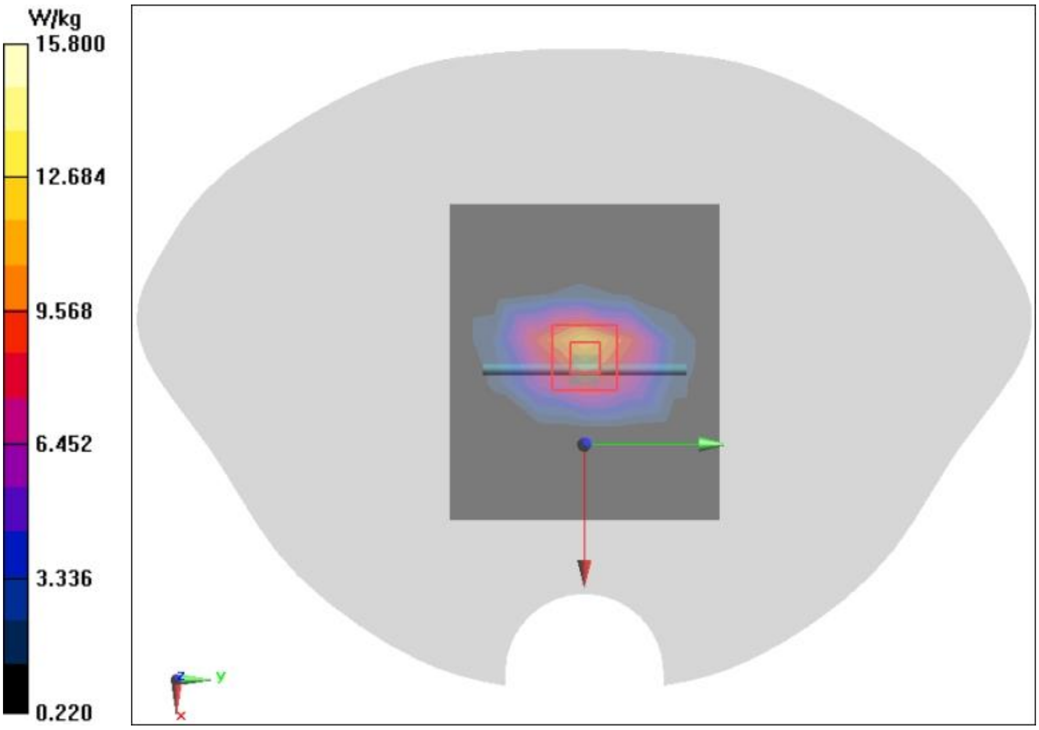
Peak SAR (extrapolated) = 19.3 W/kg

SAR(1 g) = 10 W/kg; SAR(10 g) = 5.17 W/kg

Smallest distance from peaks to all points 3 dB below = 10 mm

Ratio of SAR at M2 to SAR at M1 = 52.2%

Maximum value of SAR (measured) = 15.8 W/kg



System Check 1900MHz

Date/Time: 2025/5/13

Electronics: DAE4 Sn1331

Medium parameters used: f = 1900 MHz; σ = 1.425 S/m; ε_r = 39.156; ρ = 1000 kg/m^3

Ambient Temperature:21.7°C Liquid Temperature:20.6°C

Communication System: CW 1900MHz; Frequency: 1900 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(8.1, 8.1, 8.1) @ 1900 MHz

System Check 1900MHz/Area Scan (8x7x1):

Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 12.0 W/kg

System Check 1900MHz/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 109.7 V/m; Power Drift = 0.10 dB

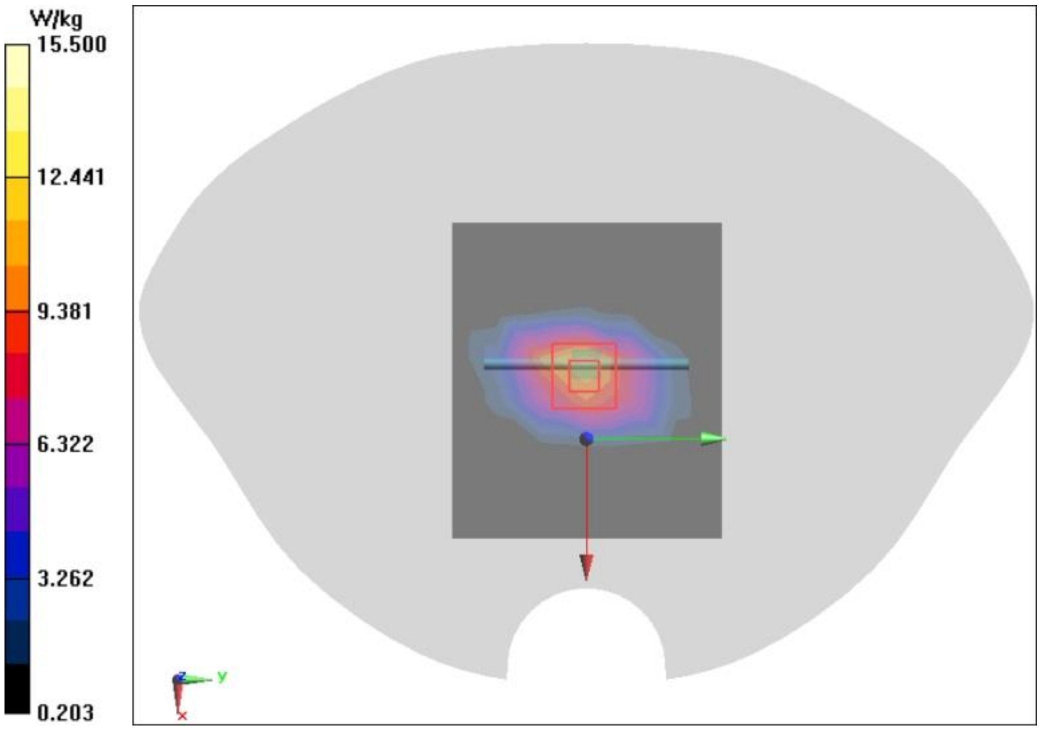
Peak SAR (extrapolated) = 18.9 W/kg

SAR(1 g) = 10 W/kg; SAR(10 g) = 5.19 W/kg

Smallest distance from peaks to all points 3 dB below = 10.1 mm

Ratio of SAR at M2 to SAR at M1 = 53%

Maximum value of SAR (measured) = 15.5 W/kg



2450MHz

System Check 2450MHz

Date/Time: 2025/4/21

Electronics: DAE4 Sn1331

Medium parameters used: f = 2450 MHz; σ = 1.845 S/m; ε_r = 38.005; ρ = 1000 kg/m^3

Ambient Temperature:21.6°C   Liquid Temperature:20.7°C

Communication System: CW 2450MHz;   Frequency: 2450 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(7.6, 7.6, 7.6) @ 2450 MHz

System Check 2450MHz/Area Scan (9x9x1):

Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 12.6 W/kg

System Check 2450MHz/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 87.88 V/m; Power Drift = 0.11 dB

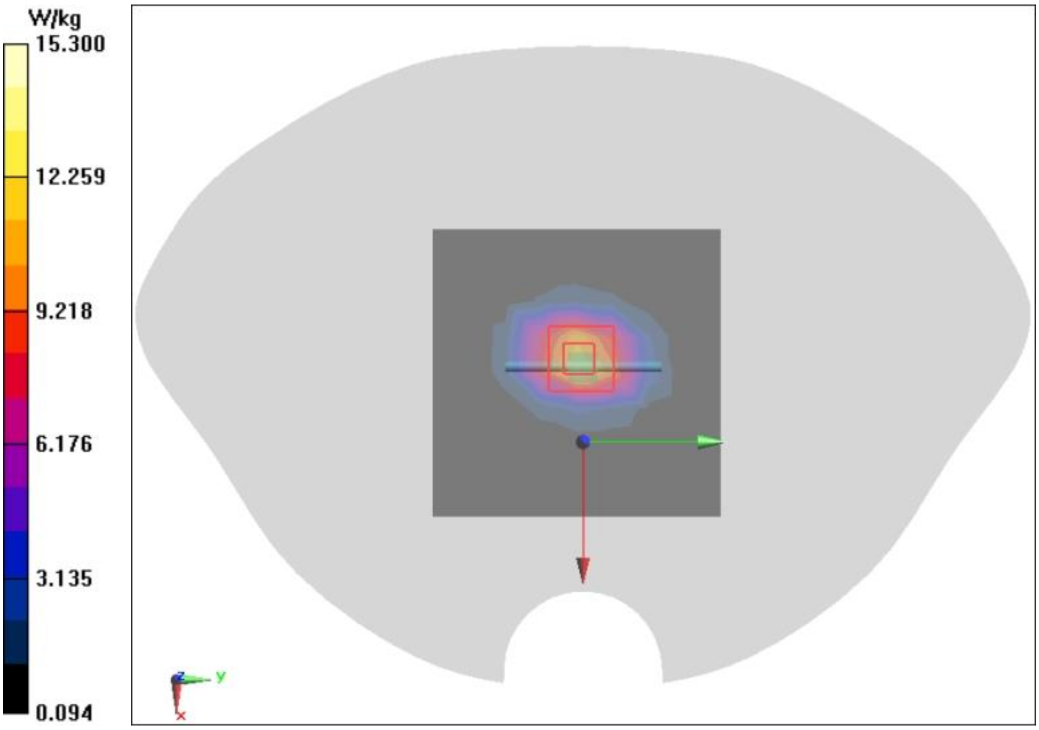
Peak SAR (extrapolated) = 28.4 W/kg

SAR(1 g) = 13.5 W/kg; SAR(10 g) = 6.26 W/kg

Smallest distance from peaks to all points 3 dB below = 10 mm

Ratio of SAR at M2 to SAR at M1 = 49.2%

Maximum value of SAR (measured) = 15.3 W/kg



2600MHz

System Check 2600MHz

Date/Time: 2025/4/21

Electronics: DAE4 Sn1331

Medium parameters used: f = 2600 MHz; σ = 1.961 S/m; ε_r = 37.783; ρ = 1000 kg/m^3

Ambient Temperature:21.6°C   Liquid Temperature:20.5°C

Communication System: CW 2600MHz; Frequency: 2600 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(7.44, 7.44, 7.44) @ 2600 MHz

System Check 2600MHz/Area Scan (8x8x1):

Measurement grid: dx=12mm, dy=12mm

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

System Check 2600MHz/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 109.9 V/m; Power Drift = 0.07 dB

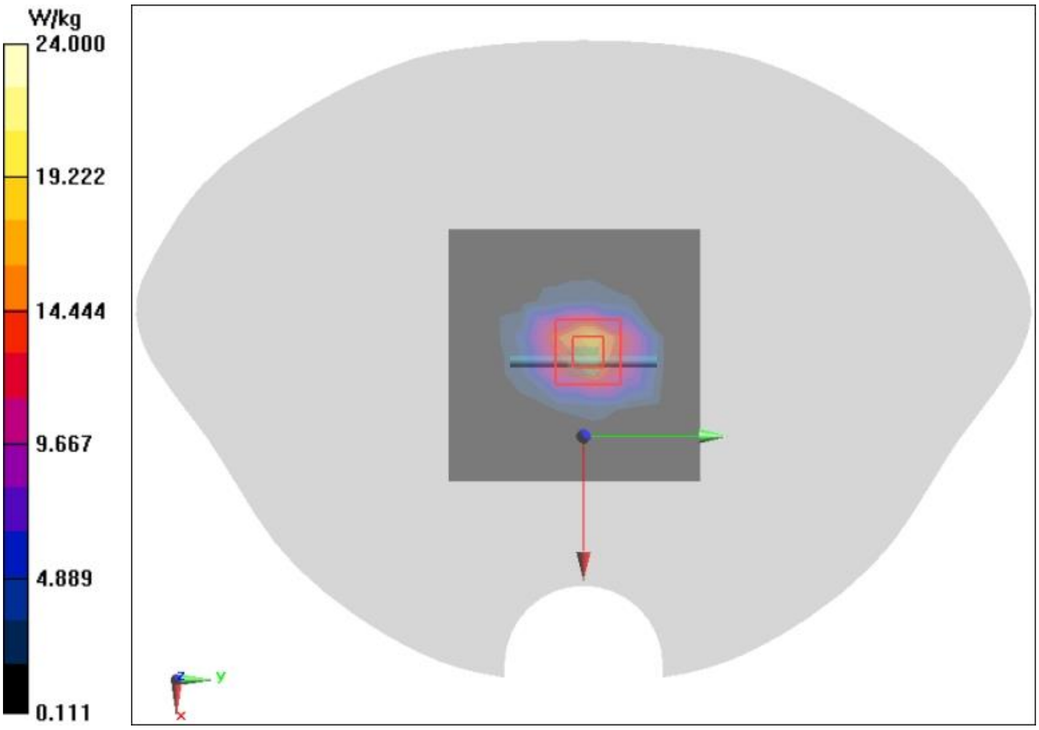
Peak SAR (extrapolated) = 30.0 W/kg

SAR(1 g) = 14.1 W/kg; SAR(10 g) = 6.35 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 46.9%

Maximum value of SAR (measured) = 24.0 W/kg



System Check 2600MHz

Date/Time: 2025/5/13

Electronics: DAE4 Sn1331

Medium parameters used: f = 2600 MHz; σ = 1.956 S/m; ε_r = 39.773; ρ = 1000 kg/m^3

Ambient Temperature:21.7°C   Liquid Temperature:20.6°C

Communication System: CW 2600MHz;   Frequency: 2600 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(7.44, 7.44, 7.44) @ 2600 MHz

System Check 2600MHz/Area Scan (8x8x1):

Measurement grid: dx=12mm, dy=12mm

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

System Check 2600MHz/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 113.5 V/m; Power Drift = -0.17 dB

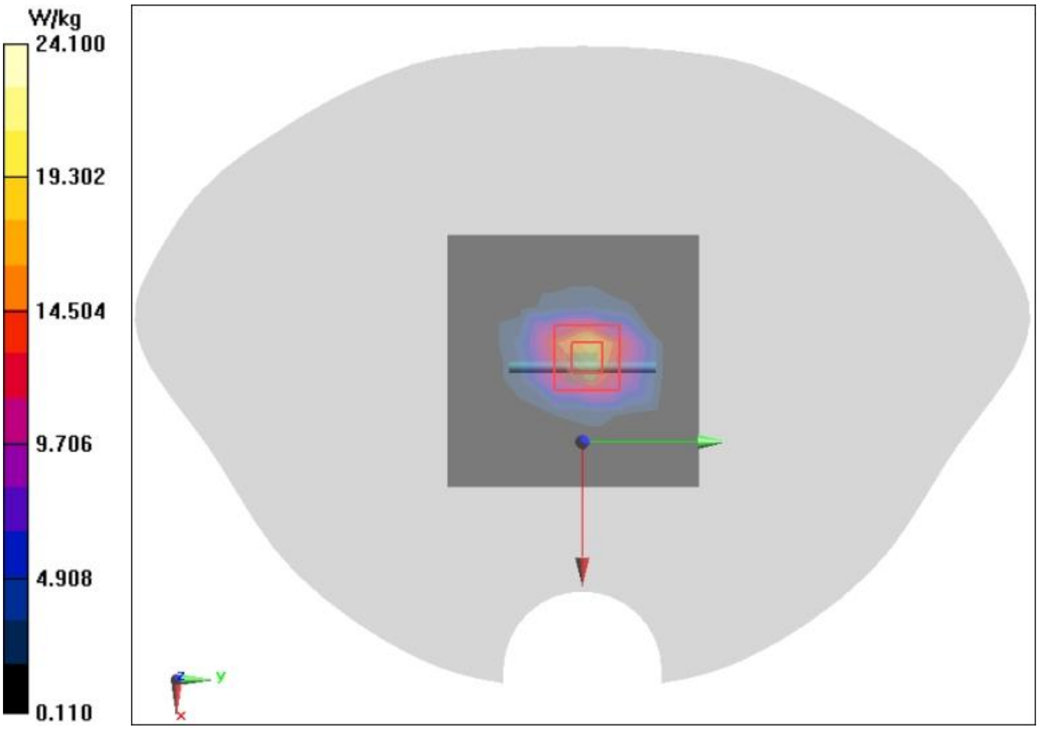
Peak SAR (extrapolated) = 30.0 W/kg

SAR(1 g) = 14.1 W/kg; SAR(10 g) = 6.37 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 47.1%

Maximum value of SAR (measured) = 24.1 W/kg



5200MHz

System Check 5200MHz

Date/Time: 2025/4/16

Electronics: DAE4 Sn1331

Medium parameters used: f = 5200 MHz; σ = 4.714 S/m; ε_r = 35.706; ρ = 1000 kg/m^3

Ambient Temperature:21.6°C Liquid Temperature:20.5°C

Communication System: CW 5GHz; Frequency: 5200 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(5.18, 5.18, 5.18) @ 5200 MHz

System Check 5200MHz/Area Scan (8x8x1):

Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 18.6 W/kg

System Check 5200MHz/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 72.42 V/m; Power Drift = -0.07 dB

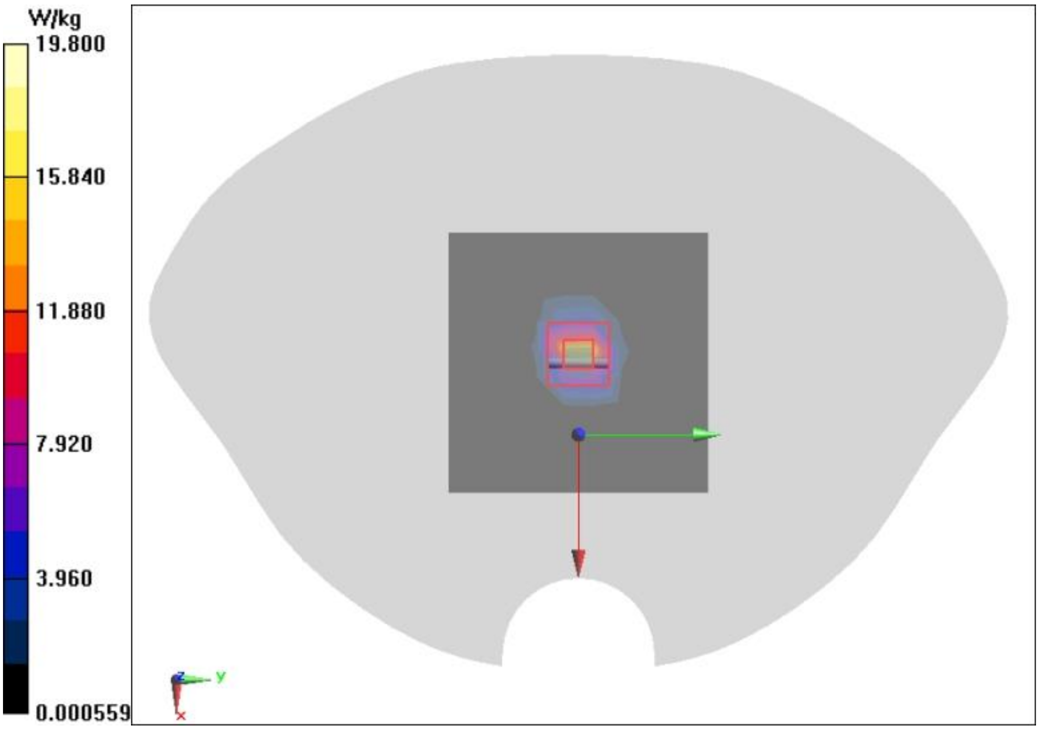
Peak SAR (extrapolated) = 31.3 W/kg

SAR(1 g) = 7.85 W/kg; SAR(10 g) = 2.26 W/kg

Smallest distance from peaks to all points 3 dB below = 7.2 mm

Ratio of SAR at M2 to SAR at M1 = 65.2%

Maximum of SAR (measured) = 19.8 W/kg



5800MHz

System Check 5800MHz

Date/Time: 2025/4/16

Electronics: DAE4 Sn1331

Medium parameters used: f = 5800 MHz; σ = 5.418 S/m; ε_r = 34.54; ρ = 1000 kg/m^3

Ambient Temperature:21.6°C Liquid Temperature:20.5°C

Communication System: CW 5GHz; Frequency: 5800 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7673ConvF(4.71, 4.71, 4.71) @ 5800 MHz

System Check 5800MHz/Area Scan (10x10x1):

Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 15.9 W/kg

System Check 5800MHz/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 63.28 V/m; Power Drift = 0.11 dB

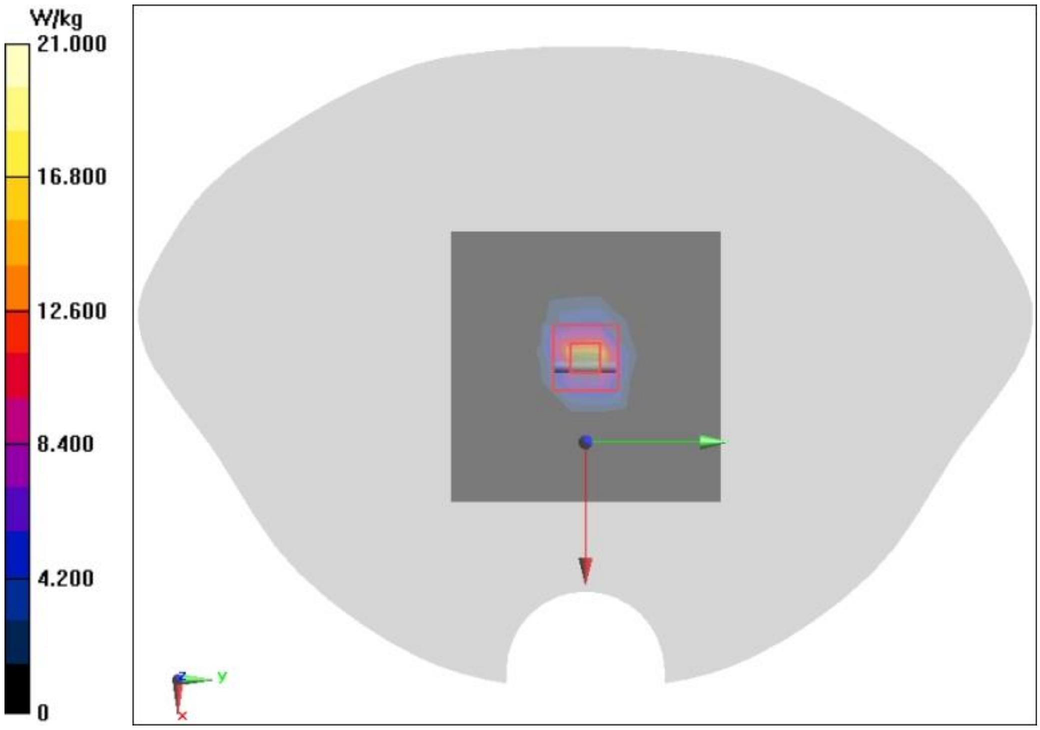
Peak SAR (extrapolated) = 34.9 W/kg

SAR(1 g) = 7.94 W/kg; SAR(10 g) = 2.26 W/kg

Smallest distance from peaks to all points 3 dB below = 7.4 mm

Ratio of SAR at M2 to SAR at M1 = 61.9%

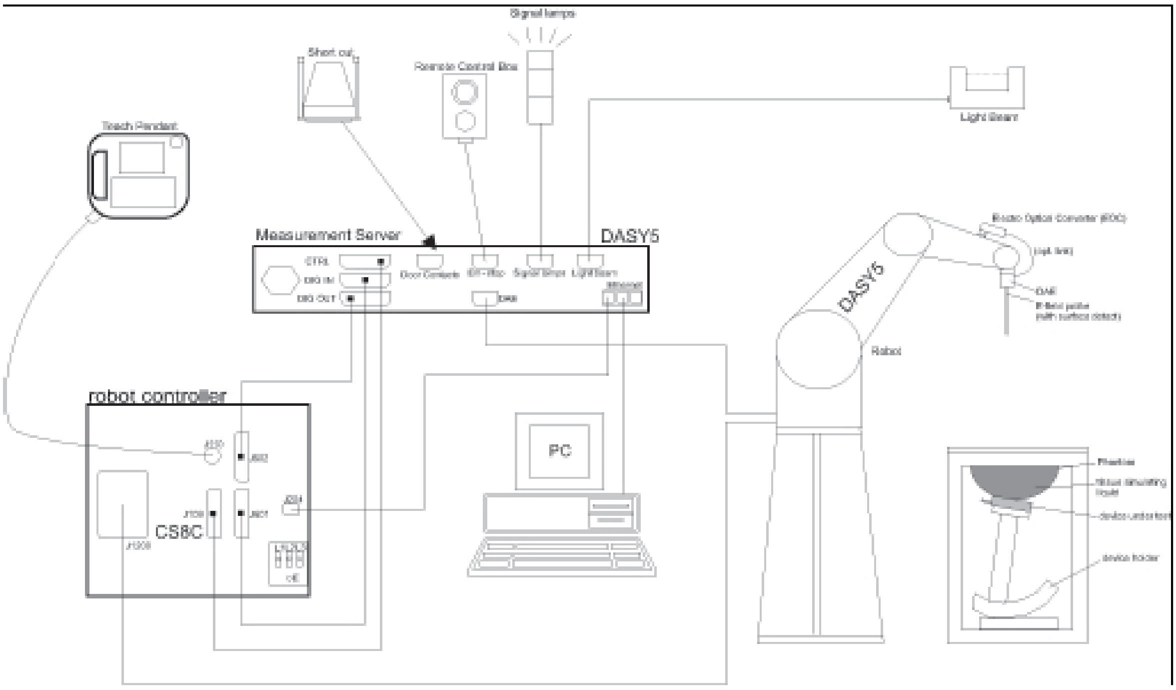
Maximum of SAR (measured) = 21.0 W/kg



ANNEX C SAR Measurement Setup

C.1 Measurement Set-up

The Dasy5 or DASY8 system for performing compliance tests is illustrated above graphically. This system consists of the following items:



Picture C.1 SAR Lab Test Measurement Set-up

- A standard high precision 6-axis robot (Stäubli TX=RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win10 and the DASY5 or DASY8 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as
- warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

C.2 DASY5 or DASY8 E-field Probe System

The SAR measurements were conducted with the dosimetric probe designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multifiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY5 or DASY8 software reads the reflection during a software approach and looks for the maximum using 2^{nd} curve fitting. The approach is stopped at reaching the maximum.

Probe Specifications:

Model: EX3DV4

Frequency Range: 10MHz — 6.0GHz(EX3DV4)

Calibration: In head and body simulating tissue at Frequencies from 835 up to 5800MHz

Linearity: ± 0.2 dB(30 MHz to 6 GHz) for EX3DV4

Dynamic Range: 10 mW/kg — 100W/kg

Probe Length: 330 mm

Probe Tip Length: 20 mm

Body Diameter: 12 mm

Tip Diameter: 2.5 mm

Tip-Center: 1 mm

Application: SAR Dosimetry Testing
Compliance tests of mobile phones
Dosimetry in strong gradient fields

Picture C.2 Near-field Probe

Picture C.3 E-field Probe

C.3 E-field Probe Calibration

Each E-Probe/Probe Amplifier combination has unique calibration parameters. A TEM cell calibration procedure is conducted to determine the proper amplifier settings to enter in the probe parameters. The amplifier settings are determined for a given frequency by subjecting the probe to a known E-field density (1 mW/cm^2) using an RF Signal generator, TEM cell, and RF Power Meter.

The free space E-field from amplified probe outputs is determined in a test chamber. This calibration can be performed in a TEM cell if the frequency is below 1 GHz and inn a waveguide or other methodologies above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees until the three channels show the maximum reading. The power density readings equates to 1 mW/cm^2.

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The E-field in the medium correlates with the temperature rise in the dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C\frac{\Delta T}{\Delta t}$$

Where:

Δt = Exposure time (30 seconds),

C = Heat capacity of tissue (brain or muscle),

ΔT = Temperature increase due to RF exposure.

$$SAR = \frac{|E|^2 \cdot \sigma}{\rho}$$

Where:

σ = Simulated tissue conductivity,

ρ = Tissue density (kg/m^3).

C.4 Other Test Equipment

C.4.1 Data Acquisition Electronics(DAE)

The data acquisition electronics consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.

The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Picture C.4: DAE

C.4.2 Robot

The SPEAG DASY system uses the high precision robots (DASY5: RX160L; DASY8: TX2-90XL spe) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability 0.02mm)
- High reliability (industrial design)
- Low maintenance costs (virtually maintenance free due to direct drive gears; no belt drives)
- Jerk-free straight movements (brushless synchron motors; no stepper motors)
- Low ELF interference (motor control fields shielded via the closed metallic construction shields)

Picture C.5 DASY 5

Picture C.6 DASY 8

C.4.3 Measurement Server

The Measurement server is based on a PC/104 CPU broad with CPU (DASY5/DASY8: 400 MHz, Intel Celeron), chipdisk (DASY5/DASY8: 128MB), RAM (DASY5/DASY8: 128MB). The necessary circuits for communication with the DAE electronic box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY I/O broad, which is directly connected to the PC/104 bus of the CPU broad.

The measurement server performs all real-time data evaluation of field measurements and surface detection, controls robot movements and handles safety operation. The PC operating system cannot interfere with these time critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program-controlled robot movements. Furthermore, the measurement server is equipped with an expansion port which is reserved for future applications. Please note that this expansion port does not have a standardized pinout, and therefore only devices provided by SPEAG can be connected. Devices from any other supplier could seriously damage the measurement server.

Picture C.7 Server for DASY 5

Picture C.8 Server for DASY 8

C.4.4 Device Holder for Phantom

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5mm distance, a positioning uncertainty of ±0.5mm would produce a SAR uncertainty of ±20%. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

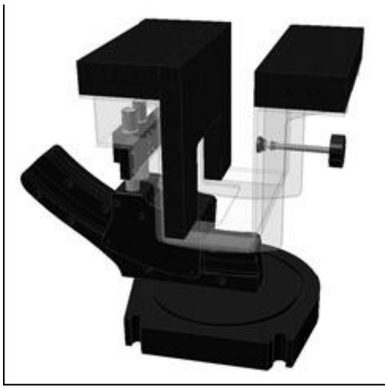
The DASY device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales are the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity ε =3 and loss tangent δ =0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

<Laptop Extension Kit>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the Mounting Device in place of the phone positioner. The extension is fully compatible with the Twin-SAM and ELI phantoms.

Picture C.9: Device Holder

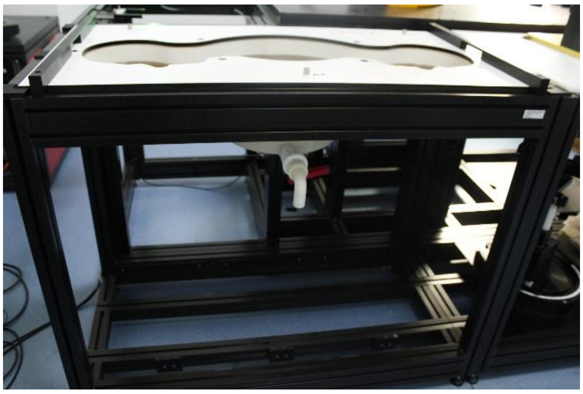


Picture C.10: Laptop Extension Kit

C.4.5 Phantom

The SAM Twin Phantom V4.0 is constructed of a fiberglass shell integrated in a table. The shape of the shell is based on data from an anatomical study designed to
Represent the 90th percentile of the population. The phantom enables the dissymmetric evaluation of SAR for both left and right handed handset usage, as well as body-worn usage using the flat phantom region. Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot. The shell phantom has a 2mm shell thickness (except the ear region where shell thickness increases to 6 mm).

Shell Thickness: 2±0. 2 mm
Filling Volume: Approx. 25 liters
Dimensions: 810 x l000 x 500 mm (H x L x W)
Available: Special

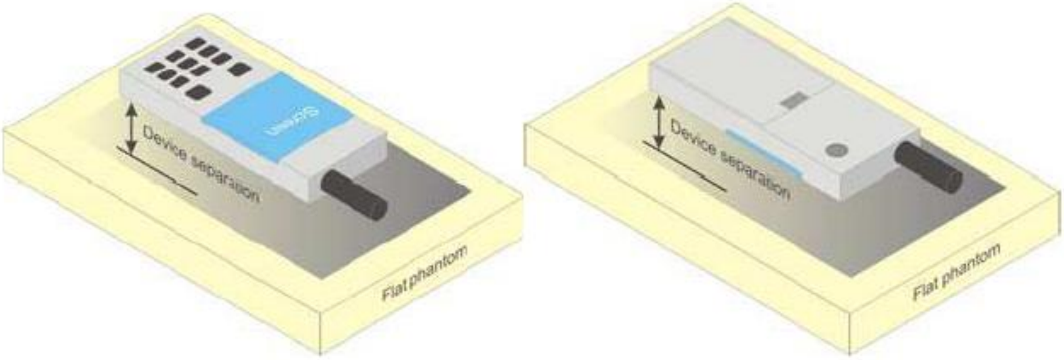


Picture C.11 SAM Twin Phantom

ANNEX D Position of the wireless device in relation to the phantom

D.1 Body-worn device

A typical example of a body-worn device is a mobile phone, wireless enabled PDA or other battery operated wireless device with the ability to transmit while mounted on a person's body using a carry accessory approved by the wireless device manufacturer.

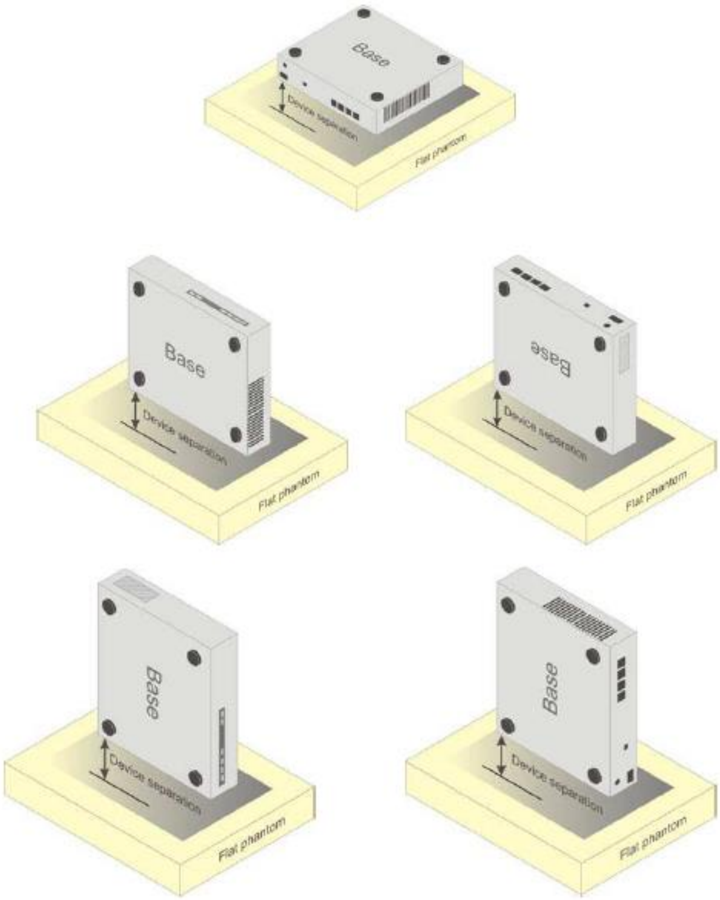


Picture D.1 Test positions for body-worn devices

D.2 Desktop device

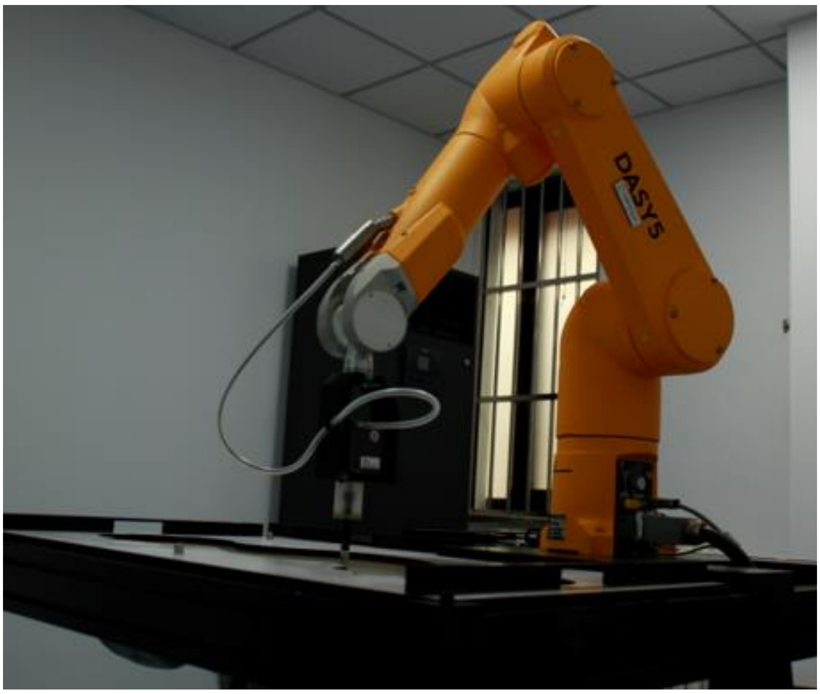
A typical example of a desktop device is a wireless enabled desktop computer placed on a table or desk when used.

The DUT shall be positioned at the distance and in the orientation to the phantom that corresponds to the intended use as specified by the manufacturer in the user instructions. For devices that employ an external antenna with variable positions, tests shall be performed for all antenna positions specified. Picture8.5 show positions for desktop device SAR tests. If the intended use is not specified, the device shall be tested directly against the flat phantom.



Picture D.2 Test positions for desktop devices

D.3 DUT Setup Photos



Picture D.3

ANNEX E Equivalent Media Recipes

The liquid used for the frequency range of 800-3000 MHz consisted of water, sugar, salt, preventol, glycol monobutyl and Cellulose. The liquid has been previously proven to be suited for worst-case. The Table E.1 shows the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the IEEE Std 1528 and EN IEC/IEEE 62209-1528:2021.

TableE.1: Composition of the Tissue Equivalent Matter

Frequency (MHz)	835Head	835Body	1900 Head	1900 Body	2450 Head	2450 Body	5800 Head	5800 Body
Ingredients (% by weight)								
Water	41.45	52.5	55.242	69.91	58.79	72.60	65.53	65.53
Sugar	56.0	45.0	\	\	\	\	\	\
Salt	1.45	1.4	0.306	0.13	0.06	0.18	\	\
Preventol	0.1	0.1	\	\	\	\	\	\
Cellulose	1.0	1.0	\	\	\	\	\	\
Glycol Monobutyl	\	\	44.452	29.96	41.15	27.22	\	\
Diethylenglycol monohexylether	\	\	\	\	\	\	17.24	17.24
Triton X-100	\	\	\	\	\	\	17.24	17.24
Dielectric Parameters Target Value	ε=41.5 σ=0.90	ε=55.2 σ=0.97	ε=40.0 σ=1.40	ε=53.3 σ=1.52	ε=39.2 σ=1.80	ε=52.7 σ=1.95	ε=35.3 σ=5.27	ε=48.2 σ=6.00

Note: There are a little adjustment respectively for 750, 1750, 2600, 5200, 5300 and 5600 based on the recipe of closest frequency in table E.1.

ANNEX F System Validation

The SAR system must be validated against its performance specifications before it is deployed. When SAR probes, system components or software are changed, upgraded or recalibrated, these must be validated with the SAR system(s) that operates with such components.

Table F.1: System Validation for 7673

Probe SN.	Liquid name	Validation date	Frequency point	Status (OK or Not)
7673	Head 750MHz	July.30,2024	750 MHz	OK
7673	Head 900MHz	July.30,2024	900 MHz	OK
7673	Head 1750MHz	July.30,2024	1750 MHz	OK
7673	Head 1900MHz	July.30,2024	1900 MHz	OK
7673	Head 2000MHz	July.30,2024	2000 MHz	OK
7673	Head 2300MHz	July.30,2024	2300 MHz	OK
7673	Head 2450MHz	July.30,2024	2450 MHz	OK
7673	Head 2600MHz	July.30,2024	2600 MHz	OK
7673	Head 3500MHz	July.30,2024	3500 MHz	OK
7673	Head 3700MHz	July.30,2024	3700 MHz	OK
7673	Head 5250MHz	July.30,2024	5250 MHz	OK
7673	Head 5600MHz	July.30,2024	5600 MHz	OK
7673	Head 5750MHz	July.30,2024	5750 MHz	OK

ANNEX G Probe Calibration Certificate

Probe 7673 Calibration Certificate

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中国认可 国际互认 校准 CALIBRATION CNAS L0570

Client CTTL Certificate No: 24J02Z000429

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN : 7673
Calibration Procedure(s)	FF-Z11-004-02 Calibration Procedures for Dosimetric E-field Probes
Calibration date:	July 29, 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)℃ 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	106277	19-Oct-23(CTTL, No.J23X11026)	Oct-24
Power sensor NRP8S	104291	19-Oct-23(CTTL, No.J23X11026)	Oct-24
Power sensor NRP8S	104292	19-Oct-23(CTTL, No.J23X11026)	Oct-24
Reference 10dBAttenuator	18N50W-10dB	19-Jan-23(CTTL, No.J23X00212)	Jan-25
Reference 20dBAttenuator	18N50W-20dB	19-Jan-23(CTTL, No.J23X00211)	Jan-25
Reference Probe EX3DV4	SN 7307	28-May-24(SPEAG, No.EX-7307_May24)	May-25
DAE4	SN 1555	24-Aug-23(SPEAG, No.DAE4-1555_Aug23)	Aug-24
Secondary Standards	**ID #**	**Cal Date(Calibrated by, Certificate No.)**	**Scheduled Calibration**
SignalGenerator MG3700A	6201052605	12-Jun-24(CTTL, No.24J02X005419)	Jun-25
SignalGenerator APSIN26G	181-33A6D0700-1959	26-Mar-24(CTTL, No.24J02X002468)	Mar-25
Network Analyzer E5071C	MY46110673	25-Dec-23(CTTL, No.J23X13425)	Dec-24
Reference 10dBAttenuator	BT0520	11-May-23(CTTL, No.J23X04061)	May-25
Reference 20dBAttenuator	BT0267	11-May-23(CTTL, No.J23X04062)	May-25
OCP DAK-12	SN 1174	25-Oct-23(SPEAG, No.OCP-DAK12-1174_Oct23)	Oct-24

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

Issued: August 05, 2024

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Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A,B,C,D	modulation dependent linearization parameters
Polarization Φ	Φ rotation around probe axis
Polarization θ	θ rotation around an axis that is in the plane normal to probe axis (at measurement center), i θ=0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013

b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016

c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010

d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization θ=0 (f≤900MHz in TEM-cell; f＞1800MHz: waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E^2-field uncertainty inside TSL (see below ConvF).
- *NORM(f)x,y,z = NORMx,y,z* frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics.
- *Ax,y,z; Bx,y,z; Cx,y,z;VRx,y,z:*A,B,C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f≤800MHz) and inside waveguide using analytical field distributions based on power measurements for f >800MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty valued are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx,y,z* ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from±50MHz to±100MHz.
- *Spherical isotropy (3D deviation from isotropy):* in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset:* The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle:* The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

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DASY/EASY – Parameters of Probe: EX3DV4 – SN:7673

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (*k*=2)
Norm(μV/(V/m)^2)[A]	0.62	0.63	0.60	±10.0%
DCP(mV)[B]	109.4	111.6	108.0	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (*k*=2)
0	CW	X	0.0	0.0	1.0	0.00	214.8	±2.1%
		Y	0.0	0.0	1.0		218.1	
		Z	0.0	0.0	1.0		207.9	

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

[A] The uncertainties of Norm X, Y, Z do not affect the E^2-field uncertainty inside TSL (see Page 4).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainly is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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DASY/EASY – Parameters of Probe: EX3DV4 – SN:7673

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz][C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha[G]	Depth[G] (mm)	Unct. (*k*=2)
750	41.9	0.89	10.45	10.45	10.45	0.23	1.09	±12.7%
900	41.5	0.97	10.03	10.03	10.03	0.21	1.24	±12.7%
1450	40.5	1.20	8.74	8.74	8.74	0.18	1.04	±12.7%
1750	40.1	1.37	8.45	8.45	8.45	0.25	1.02	±12.7%
1900	40.0	1.40	8.10	8.10	8.10	0.25	1.04	±12.7%
2000	40.0	1.40	8.15	8.15	8.15	0.26	1.05	±12.7%
2300	39.5	1.67	7.85	7.85	7.85	0.58	0.69	±12.7%
2450	39.2	1.80	7.60	7.60	7.60	0.57	0.71	±12.7%
2600	39.0	1.96	7.44	7.44	7.44	0.64	0.67	±12.7%
3300	38.2	2.71	6.93	6.93	6.93	0.47	0.88	±13.9%
3500	37.9	2.91	6.73	6.73	6.73	0.45	1.00	±13.9%
3700	37.7	3.12	6.48	6.48	6.48	0.35	1.20	±13.9%
3900	37.5	3.32	6.44	6.44	6.44	0.30	1.52	±13.9%
4100	37.2	3.53	6.43	6.43	6.43	0.35	1.25	±13.9%
4200	37.1	3.63	6.33	6.33	6.33	0.30	1.52	±13.9%
4400	36.9	3.84	6.23	6.23	6.23	0.30	1.52	±13.9%
4600	36.7	4.04	6.18	6.18	6.18	0.35	1.40	±13.9%
4800	36.4	4.25	6.07	6.07	6.07	0.35	1.55	±13.9%
4950	36.3	4.40	5.74	5.74	5.74	0.35	1.55	±13.9%
5250	35.9	4.71	5.18	5.18	5.18	0.40	1.52	±13.9%
5600	35.5	5.07	4.60	4.60	4.60	0.40	1.52	±13.9%
5750	35.4	5.22	4.71	4.71	4.71	0.40	1.55	±13.9%

[C] Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[F] At frequency up to 6 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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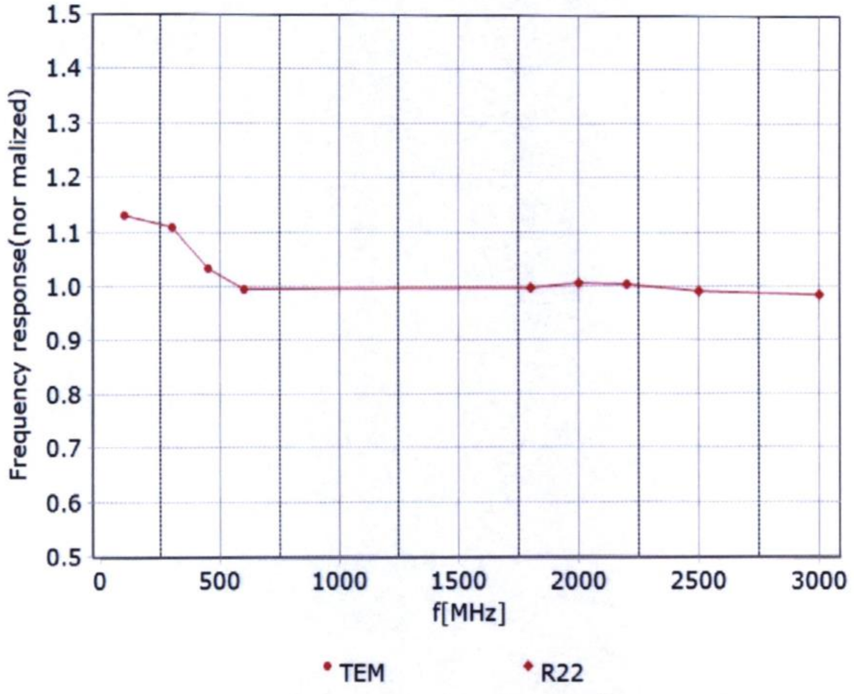
Frequency Response of E-Field
(TEM-Cell: ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ±7.4% (*k*=2)

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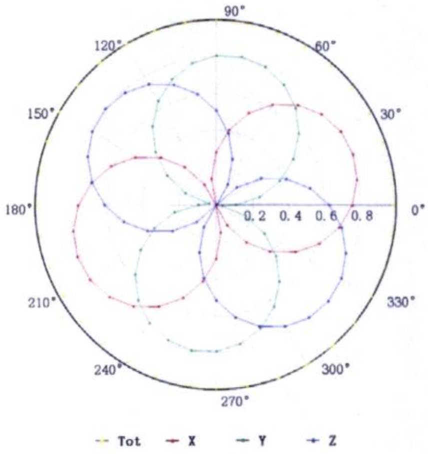
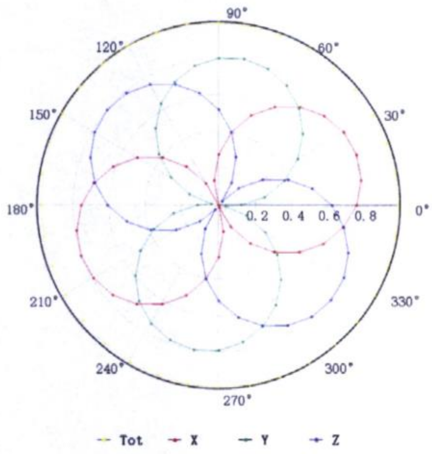
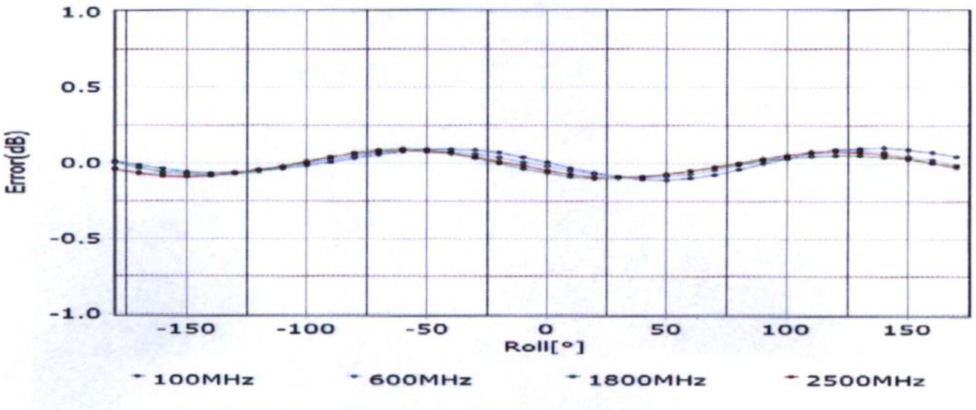
Receiving Pattern (Φ), θ=0°

f=600 MHz, TEM



f=1800 MHz, R22





Uncertainty of Axial Isotropy Assessment: ±1.2% (k=2)

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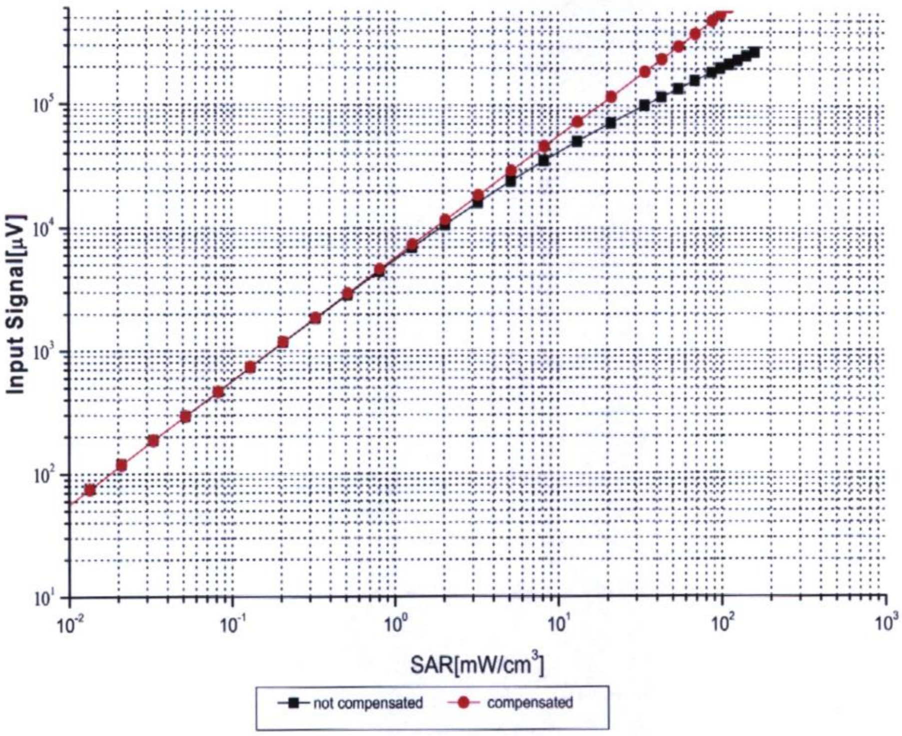
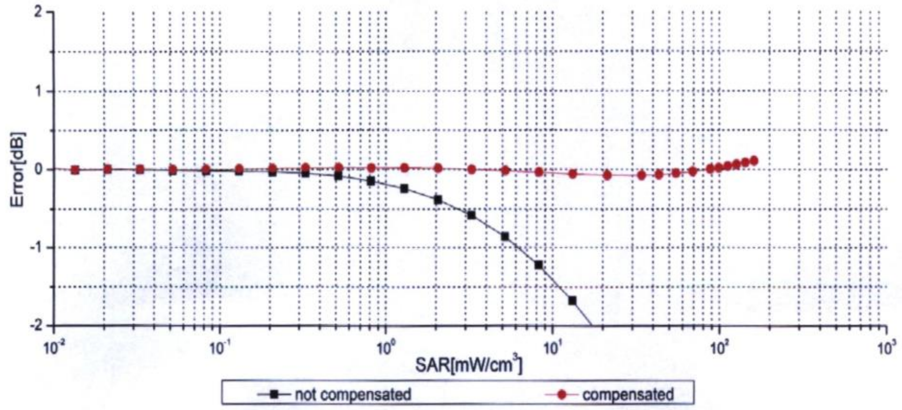
Dynamic Range f(SAR$_{head}$)
(TEM cell, f = 900 MHz)





Uncertainty of Linearity Assessment: ±0.9% (*k*=2)

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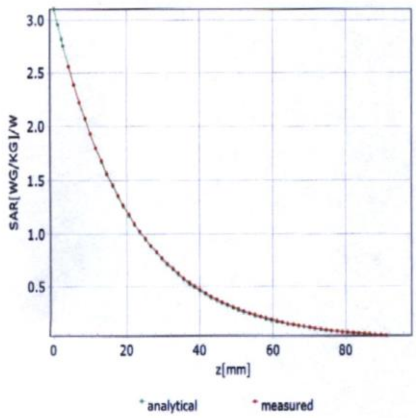
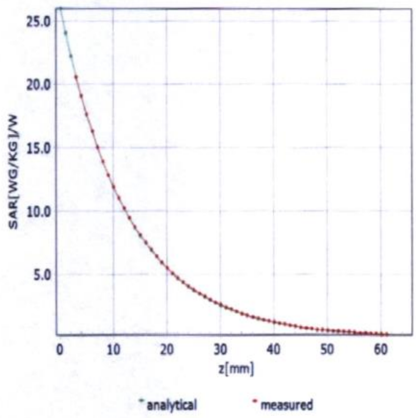
Conversion Factor Assessment

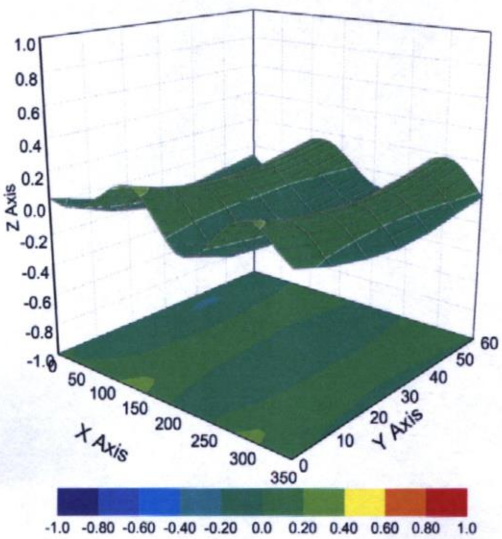
f=750 MHz,WGLS R9(H_convF)



f=1750 MHz,WGLS R22(H_convF)



Deviation from Isotropy in Liquid



Uncertainty of Spherical Isotropy Assessment: ±3.2% (*k*=2)

In Collaboration with
s p e a g
CALIBRATION LABORATORY

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DASY/EASY – Parameters of Probe: EX3DV4 – SN:7673

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	146.2
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disable
Probe Overall Length	337mm
Probe Body Diameter	10mm
Tip Length	9mm
Tip Diameter	2.5mm
Probe Tip to Sensor X Calibration Point	1mm
Probe Tip to Sensor Y Calibration Point	1mm
Probe Tip to Sensor Z Calibration Point	1mm
Recommended Measurement Distance from Surface	1.4mm

ANNEX H Dipole Calibration Certificate

750 MHz Dipole Calibration Certificate

Calibration Laboratory of
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Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: **SCS 0108**

Client **CTTL** **Beijing**

Certificate No. **D750V3-1017_Jul24**

CALIBRATION CERTIFICATE

Object: D750V3 - SN: 1017

Calibration procedure(s): QA CAL-05.v12
Calibration Procedure for SAR Validation Sources between 0.7 - 3 GHz

Calibration date: July 9, 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 (Certificate No.)	Scheduled Cal
Power Sensor R&S NRP-33T	SN: 100967	28-Mar-24 (No. 217-04038)	Mar-25
Power Sensor R&S NRP18A	SN: 101859	21-Mar-24 (No. 4030A315007801)	Mar-25
Spectrum Analyzer R&S FSV40	SN: 101832	25-Jan-24 (No. 4030-315007551)	Jan-25
Mismatch; Short [S4188] Attenuator [S4423]	SN: 1152	28-Mar-24 (No. 217-04050)	Mar-25
OCP DAK-12	SN: 1016	05-Oct-23 (No. OCP-DAK12-1016_Oct23)	Oct-24
OCP DAK-3.5	SN: 1249	05-Oct-23 (No. OCP-DAK3.5-1249_Oct23)	Oct-24
Reference Probe EX3DV4	SN: 7349	03-Jun-24 (No. EX3-7349_Jun24)	Jun-25
DAE4ip	SN: 1836	10-Jan-24 (No. DAE4ip-1836_Jan24)	Jan-25

Secondary Standards	ID	Check Date (in house)	Scheduled Check
ACAD Source Box	SN: 1000	28-May-24 (No. 675-ACAD_Source_Box-240528)	May-25
Signal Generator R&S SMB100A	SN: 182081	28-May-24 (No. 0001-300719404)	May-25
Mismatch; SMA	SN: 1102	22-May-24 (No. 675-Mismatch_SMA-240522)	May-25

	Name	Function	Signature
Calibrated by	Paulo Pina	Laboratory Technician	
Approved by	Sven Kühn	Technical Manager	

Issued: July 9, 2024

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Certificate No: D750V3-1017_Jul24 Page 1 of 6

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Accreditation No.: **SCS 0108**

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

- 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-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation

- DASY 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%.

Measurement Conditions

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

DASY Version	DASY8 Module SAR	16.4.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with spacer
Zoom Scan Resolution	dx, dy = 6mm, dz = 1.5mm	Graded Ratio = 1.5 mm (Z direction)
Frequency	750MHz ±1MHz	

Head TSL parameters at 750 MHz

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.9	0.890 mho/m
Measured Head TSL parameters	(22.0 ±0.2)°C	42.5 ±6%	0.910 mho/m ±6%
Head TSL temperature change during test	< 0.5 °C		

SAR result with Head TSL at 750 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR for nominal Head TSL parameters	24 dBm input power	2.14 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	8.52 W/kg ±17.0% ($k = 2$)

SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR for nominal Head TSL parameters	24 dBm input power	1.39 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	5.53 W/kg ±16.5% ($k = 2$)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 750 MHz

Impedance	53.2 Ω – 0.7 jΩ
Return Loss	-30.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.034 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

System Performance Check Report

Summary

Dipole	Frequency [MHz]	TSL	Power [dBm]
D750V3 - SN1017	750	HSL	24

Exposure Conditions

Phantom Section, TSL	Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat	15		CW, 0--	750, 0	9.9	0.91	42.5

Hardware Setup

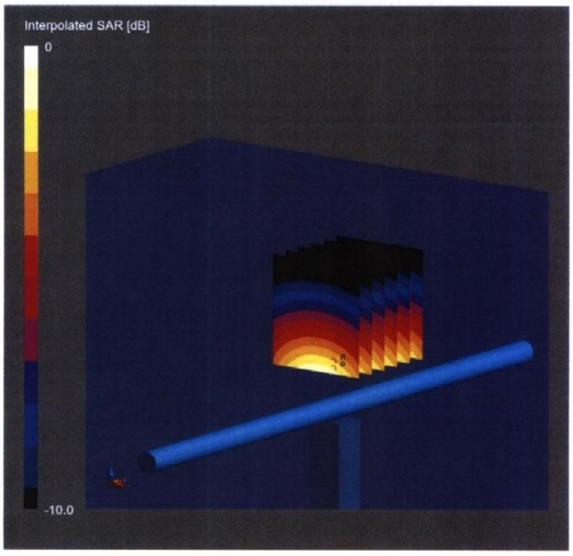
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Flat V4.9 mod	HSL, 2024-07-09	EX3DV4 - SN7349, 2024-06-03	DAE4ip Sn1836, 2024-01-10

Scans Setup

	Zoom Scan
Grid Extents [mm]	30 x 30 x 30
Grid Steps [mm]	6.0 x 6.0 x 1.5
Sensor Surface [mm]	1.4
Graded Grid	Yes
Grading Ratio	1.5
MAIA	N/A
Surface Detection	VMS + 6p
Scan Method	Measured

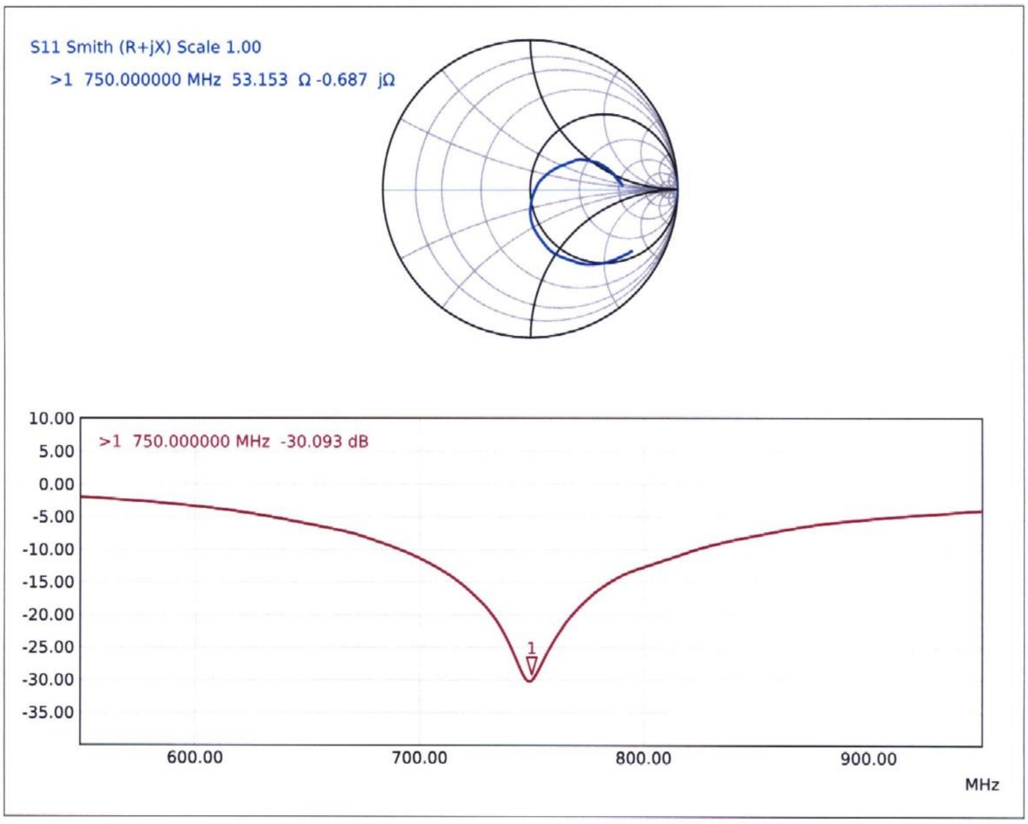
Measurement Results

	Zoom Scan
Date	2024-07-09
psSAR1g [W/Kg]	2.14
psSAR10g [W/Kg]	1.39
Power Drift [dB]	0.00
Power Scaling	Disabled
Scaling Factor [dB]	
TSL Correction	Positive / Negative



0 dB = 3.48 W/Kg

Impedance Measurement Plot for Head TSL



1750 MHz Dipole Calibration Certificate

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Accreditation No.: **SCS 0108**

Client **CTTL**
Beijing

Certificate No. **D1750V2-1003_Jul24**

CALIBRATION CERTIFICATE

Object: D1750V2 - SN: 1003

Calibration procedure(s): QA CAL-05.v12
Calibration Procedure for SAR Validation Sources between 0.7 - 3 GHz

Calibration date: July 11, 2024

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Calibrated by	Paulo Pina	Laboratory Technician	I.V.
Approved by	Sven Kühn	Technical Manager	

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