

Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 9/6/2020

P20 LTE 66_QPSK20M_Right Cheek_Ch132322_1RB_OS50

DUT: EUT

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

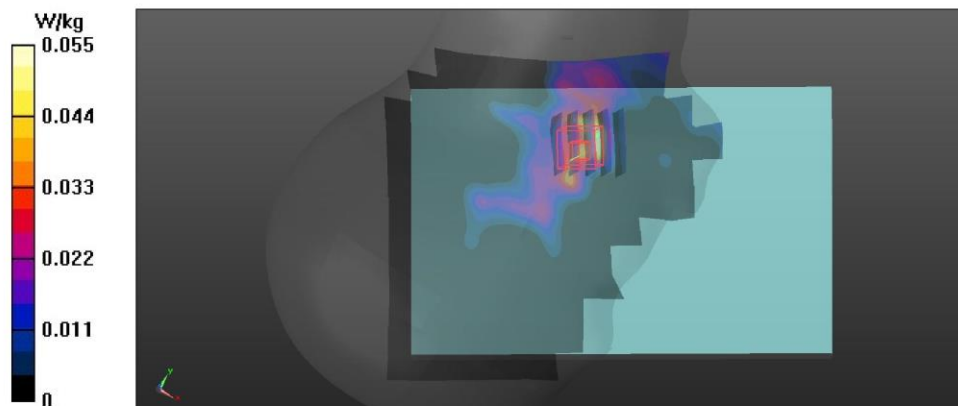
Medium: H1750 Medium parameters used: $f = 1745 \text{ MHz}$; $\sigma = 1.372 \text{ S/m}$; $\epsilon_r = 39.481$; $\rho = 1000 \text{ kg/m}^3$

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(8.73, 8.73, 8.73) @ 1745 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (121x171x1):** Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$
Maximum value of SAR (interpolated) = 0.0549 W/kg

- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 1.959 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.0390 W/kg
SAR(1 g) = 0.028 W/kg; SAR(10 g) = 0.019 W/kg
Maximum value of SAR (measured) = 0.0356 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 9/10/2020

P21 802.11b_Left Cheek_Ch11

DUT: EUT

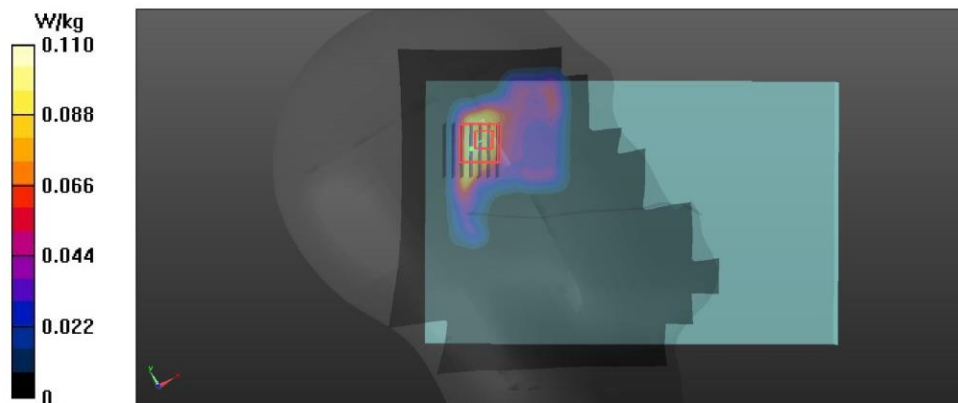
Communication System: 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium: H2450 Medium parameters used: $f = 2462$ MHz; $\sigma = 1.837$ S/m; $\epsilon_r = 37.954$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(7.58, 7.58, 7.58) @ 2462 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (151x221x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.110 W/kg

- **Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.772 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.108 W/kg
SAR(1 g) = 0.062 W/kg; SAR(10 g) = 0.032 W/kg
Maximum value of SAR (measured) = 0.0912 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 9/11/2020

P22 802.11ac_VHT80_Right Cheek_Ch58

DUT: EUT

Communication System: 802.11ac; Frequency: 5290 MHz; Duty Cycle: 1:1

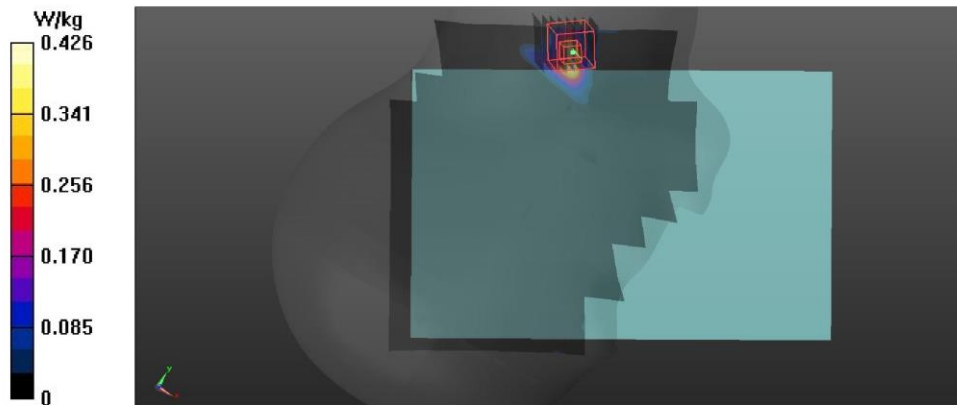
Medium: HSG Medium parameters used: $f = 5290 \text{ MHz}$; $\sigma = 4.782 \text{ S/m}$; $\epsilon_r = 36.181$; $\rho = 1000 \text{ kg/m}^3$

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(5.34, 5.34, 5.34) @ 5290 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (181x251x1):** Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$
Maximum value of SAR (interpolated) = 0.426 W/kg

- **Zoom Scan (8x8x7)/Cube 0:** Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$
Reference Value = 0 V/m ; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.450 W/kg
SAR(1 g) = 0.072 W/kg ; SAR(10 g) = 0.030 W/kg
Maximum value of SAR (measured) = 0.185 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 9/11/2020

P23 802.11n_HT40_Right Cheek_Ch134

DUT: EUT

Communication System: 802.11n; Frequency: 5670 MHz; Duty Cycle: 1:1

Medium: H5G Medium parameters used: $f = 5670$ MHz; $\sigma = 5.172$ S/m; $\epsilon_r = 35.637$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(4.88, 4.88, 4.88) @ 5670 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (181x251x1):** Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm

Maximum value of SAR (interpolated) = 0.295 W/kg

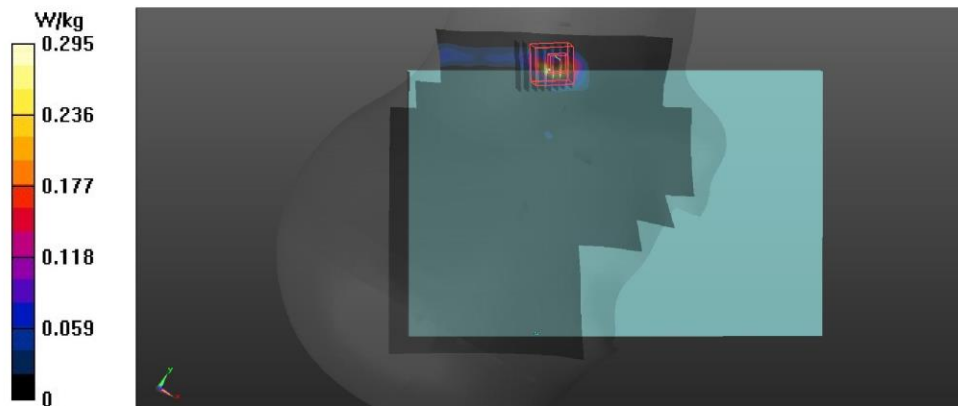
- **Zoom Scan (8x8x7)/Cube 0:** Measurement grid: $dx=4$ mm, $dy=4$ mm, $dz=1.4$ mm

Reference Value = 1.539 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.151 W/kg

SAR(1 g) = 0.039 W/kg; SAR(10 g) = 0.015 W/kg

Maximum value of SAR (measured) = 0.0921 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 9/11/2020

P24 802.11n_HT40_Right Cheek_Ch151

DUT: EUT

Communication System: 802.11n; Frequency: 5755 MHz; Duty Cycle: 1:1

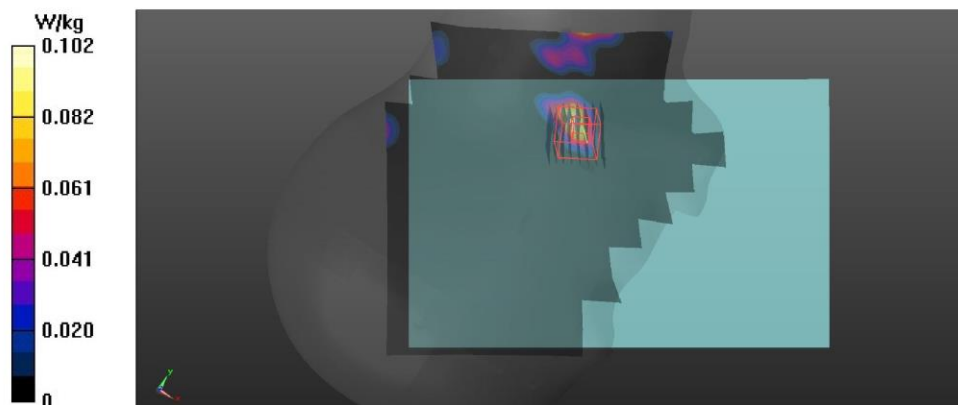
Medium: H5G Medium parameters used: $f = 5755$ MHz; $\sigma = 5.272$ S/m; $\epsilon_r = 35.519$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(4.94, 4.94, 4.94) @ 5755 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (181x251x1):** Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm
Maximum value of SAR (interpolated) = 0.102 W/kg

- **Zoom Scan (8x8x7)/Cube 0:** Measurement grid: $dx=4$ mm, $dy=4$ mm, $dz=1.4$ mm
Reference Value = 0.8890 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.202 W/kg
SAR(1 g) = 0.033 W/kg; SAR(10 g) = 0.012 W/kg
Maximum value of SAR (measured) = 0.0831 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 8/31/2020

P25 GSM850_GPRS11_Rear Face_0cm_Ch190_w/o

DUT: EUT

Communication System: GPRS11; Frequency: 836.6 MHz; Duty Cycle: 1:2.67

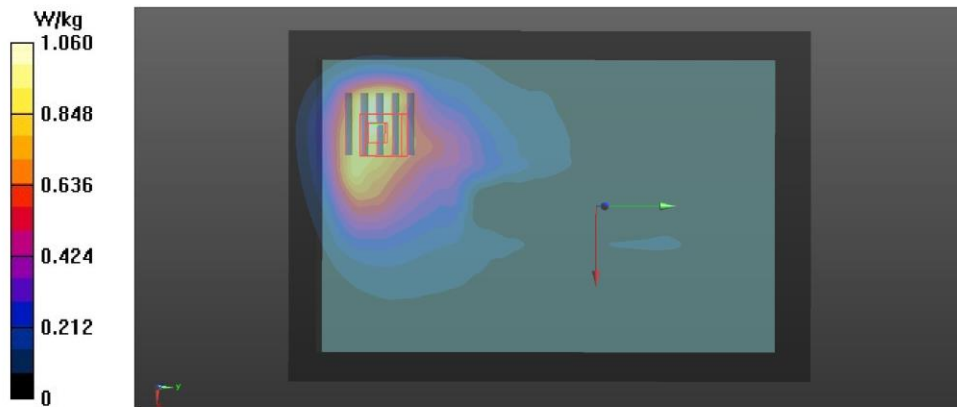
Medium: B835 Medium parameters used: $f = 837 \text{ MHz}$; $\sigma = 0.959 \text{ S/m}$; $\epsilon_r = 56.338$; $\rho = 1000 \text{ kg/m}^3$

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(10.01, 10.01, 10.01) @ 836.6 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (121x181x1):** Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$
Maximum value of SAR (interpolated) = 1.06 W/kg

- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 9.368 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 1.43 W/kg
SAR(1 g) = 0.637 W/kg; SAR(10 g) = 0.368 W/kg
Maximum value of SAR (measured) = 1.13 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 9/1/2020

P26 GSM1900_GPRS11_Rear Face_0cm_Ch810_w/o

DUT: EUT

Communication System: GPRS11; Frequency: 1909 MHz; Duty Cycle: 1:2.67

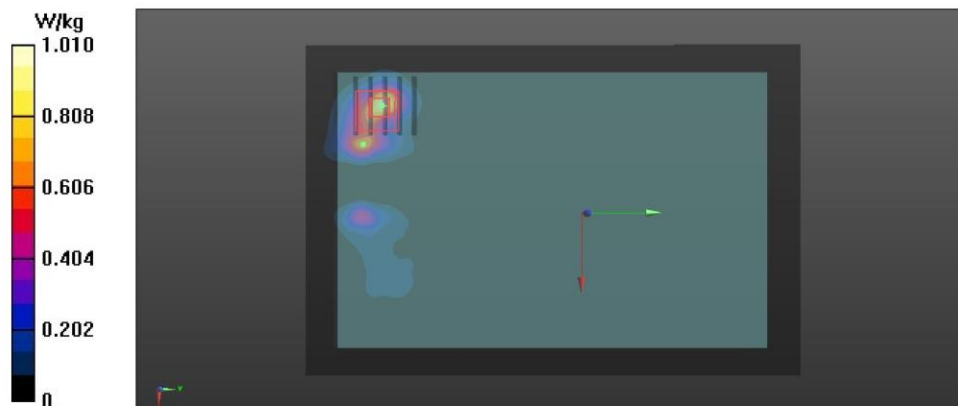
Medium: B1900 Medium parameters used: $f = 1909$ MHz; $\sigma = 1.593$ S/m; $\epsilon_r = 53.031$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(8.08, 8.08, 8.08) @ 1909 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (121x181x1):** 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: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm
Reference Value = 0 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.17 W/kg
SAR(1 g) = 0.559 W/kg; SAR(10 g) = 0.261 W/kg
Maximum value of SAR (measured) = 0.947 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 8/29/2020

P27 WCDMA II_RMC12.2K_Rear Face_0cm_Ch9400_w/o

DUT: EUT

Communication System: WCDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

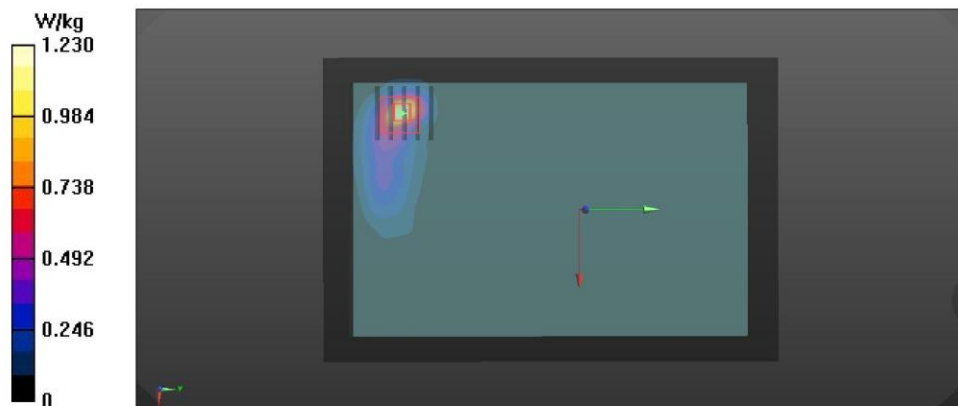
Medium: B1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.562$ S/m; $\epsilon_r = 53.141$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(8.08, 8.08, 8.08) @ 1880 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (121x181x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.23 W/kg

- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.46 W/kg
SAR(1 g) = 0.702 W/kg; SAR(10 g) = 0.324 W/kg
Maximum value of SAR (measured) = 1.17 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 8/30/2020

P28 WCDMA IV_RMC12.2K_Rear Face_0cm_Ch1413_w/o

DUT: EUT

Communication System: WCDMA; Frequency: 1732.6 MHz; Duty Cycle: 1:1

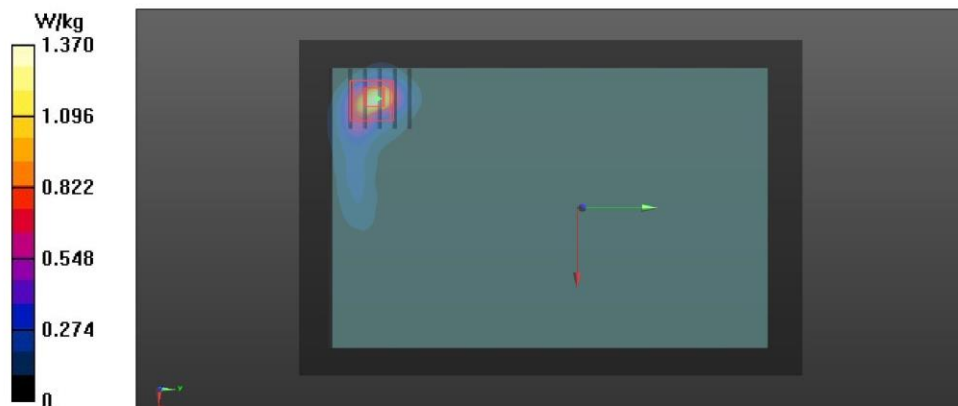
Medium: B1750 Medium parameters used: $f = 1733$ MHz; $\sigma = 1.426$ S/m; $\epsilon_r = 53.725$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(8.35, 8.35, 8.35) @ 1732.6 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (121x181x1):** Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm
Maximum value of SAR (interpolated) = 1.37 W/kg

- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm
Reference Value = 1.313 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.62 W/kg
SAR(1 g) = 0.709 W/kg; SAR(10 g) = 0.318 W/kg
Maximum value of SAR (measured) = 1.28 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 8/31/2020

P29 WCDMA V_RMC12.2K_Rear Face_0cm_Ch4233_w/o

DUT: EUT

Communication System: WCDMA; Frequency: 846.6 MHz; Duty Cycle: 1:1

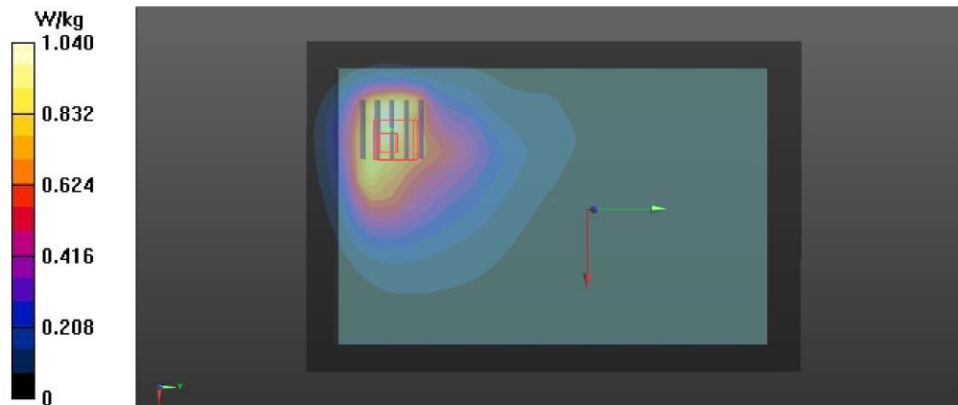
Medium: B835 Medium parameters used: $f = 847 \text{ MHz}$; $\sigma = 0.969 \text{ S/m}$; $\epsilon_r = 56.249$; $\rho = 1000 \text{ kg/m}^3$

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(10.01, 10.01, 10.01) @ 846.6 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (121x181x1):** Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$
Maximum value of SAR (interpolated) = 1.04 W/kg

- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 8.117 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.35 W/kg
SAR(1 g) = 0.672 W/kg; SAR(10 g) = 0.424 W/kg
Maximum value of SAR (measured) = 1.06 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 8/29/2020

P30 LTE 2_QPSK20M_Rear Face_0cm_Ch18900_50RB_OS0_w/o

DUT: EUT

Communication System: LTE; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: B1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.562$ S/m; $\epsilon_r = 53.141$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(8.08, 8.08, 8.08) @ 1880 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (121x181x1):** Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 0.958 W/kg

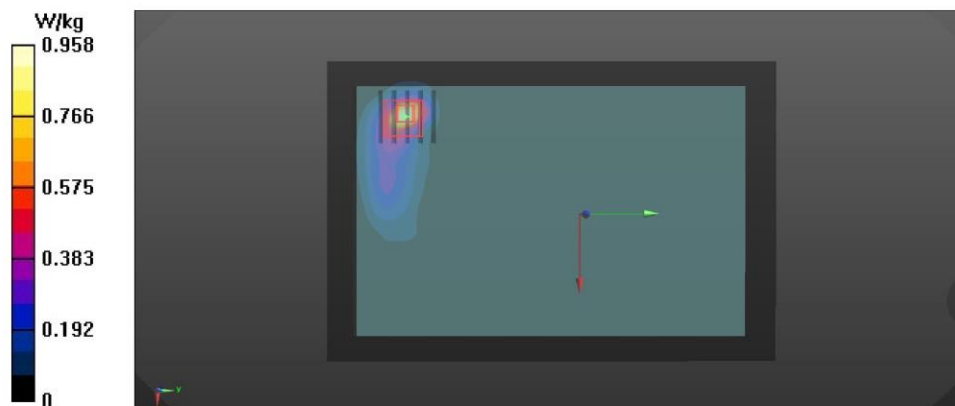
- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 0 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 1.29 W/kg

SAR(1 g) = 0.623 W/kg; SAR(10 g) = 0.292 W/kg

Maximum value of SAR (measured) = 1.05 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 8/30/2020

P31 LTE 4_QPSK20M_Rear Face_0cm_Ch20300_50RB_OS0_w/o

DUT: EUT

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

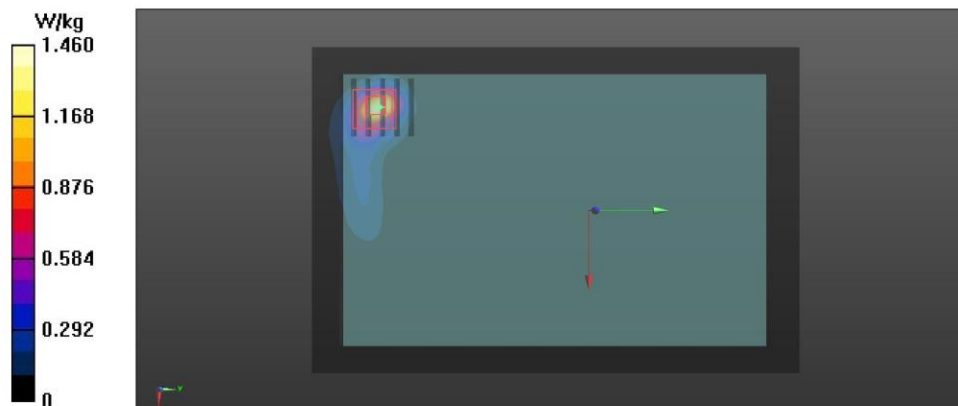
Medium: B1750 Medium parameters used: $f = 1745$ MHz; $\sigma = 1.435$ S/m; $\epsilon_r = 53.706$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(8.35, 8.35, 8.35) @ 1745 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (121x181x1):** Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm
Maximum value of SAR (interpolated) = 1.46 W/kg

- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm
Reference Value = 0 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.59 W/kg
SAR(1 g) = 0.703 W/kg; SAR(10 g) = 0.318 W/kg
Maximum value of SAR (measured) = 1.25 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 8/31/2020

P32 LTE 5_QPSK10M_Rear Face_0cm_Ch20600_1RB_OS0_w/o

DUT: EUT

Communication System: LTE; Frequency: 844 MHz; Duty Cycle: 1:1

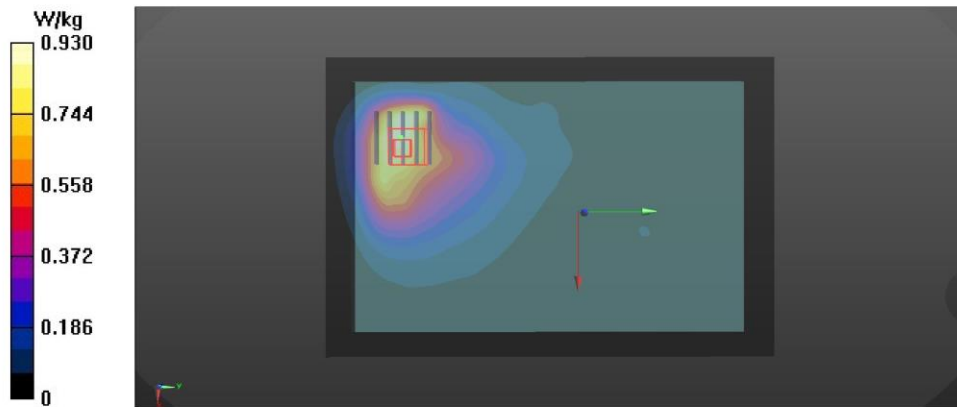
Medium: B835 Medium parameters used: $f = 844 \text{ MHz}$; $\sigma = 0.966 \text{ S/m}$; $\epsilon_r = 56.276$; $\rho = 1000 \text{ kg/m}^3$

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(10.01, 10.01, 10.01) @ 844 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (121x181x1):** Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$
Maximum value of SAR (interpolated) = 0.930 W/kg

- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 7.990 V/m ; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 1.32 W/kg
SAR(1 g) = 0.622 W/kg ; SAR(10 g) = 0.384 W/kg
Maximum value of SAR (measured) = 1.01 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 8/26/2020

P33 LTE 7_QPSK20M_Rear Face_0cm_Ch21350_1RB_OS0_w/o

DUT: EUT

Communication System: LTE; Frequency: 2560 MHz; Duty Cycle: 1:1

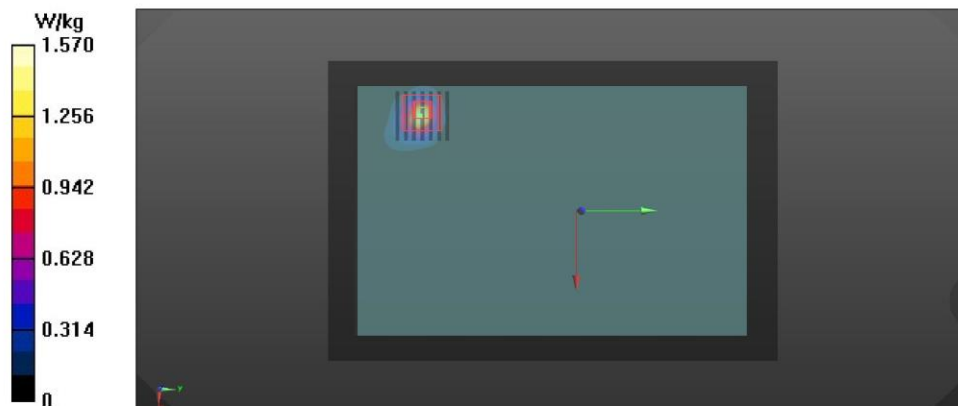
Medium: B2600 Medium parameters used: $f = 2560$ MHz; $\sigma = 2.063$ S/m; $\epsilon_r = 51.244$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(7.48, 7.48, 7.48) @ 2560 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (151x221x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.57 W/kg

- **Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.115 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 1.65 W/kg
SAR(1 g) = 0.648 W/kg; SAR(10 g) = 0.263 W/kg
Maximum value of SAR (measured) = 1.18 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 9/28/2020

P34 LTE 12_QPSK10M_Rear Face_0cm_Ch23130_1RB_OS0_w/o

DUT: EUT

Communication System: UID 0, LTE; Frequency: 711 MHz; Duty Cycle: 1:1

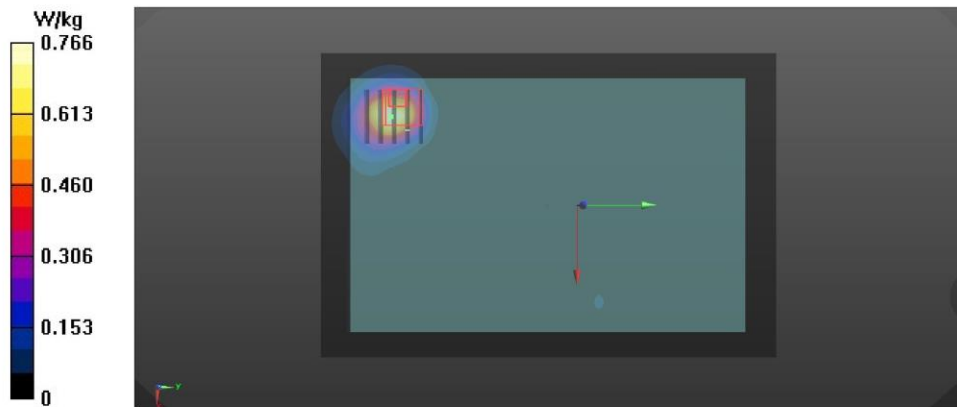
Medium: B750 Medium parameters used: $f = 711 \text{ MHz}$; $\sigma = 0.922 \text{ S/m}$; $\epsilon_r = 54.233$; $\rho = 1000 \text{ kg/m}^3$

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(10.37, 10.37, 10.37) @ 711 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (121x181x1):** Interpolated grid: $dx=2.000 \text{ mm}$, $dy=2.000 \text{ mm}$
Maximum value of SAR (interpolated) = 0.766 W/kg

- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 0 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.701 W/kg
SAR(1 g) = 0.219 W/kg; SAR(10 g) = 0.099 W/kg
Maximum value of SAR (measured) = 0.453 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 8/28/2020

P35 LTE 13_QPSK10M_Rear Face_0cm_Ch23230_1RB_OS0_w/o

DUT: EUT

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

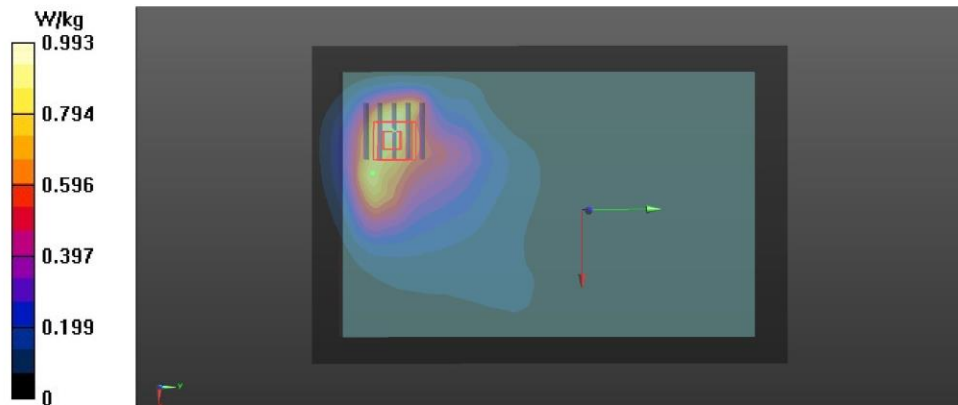
Medium: B750 Medium parameters used: $f = 782 \text{ MHz}$; $\sigma = 0.995 \text{ S/m}$; $\epsilon_r = 53.489$; $\rho = 1000 \text{ kg/m}^3$

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(10.37, 10.37, 10.37) @ 782 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (121x181x1):** Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$
Maximum value of SAR (interpolated) = 0.993 W/kg

- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 7.671 V/m ; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.32 W/kg
SAR(1 g) = 0.630 W/kg ; SAR(10 g) = 0.396 W/kg
Maximum value of SAR (measured) = 1.02 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 8/28/2020

P36 LTE 14_QPSK10M_Rear Face_0cm_Ch23330_1RB_OS0_w/o

DUT: EUT

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

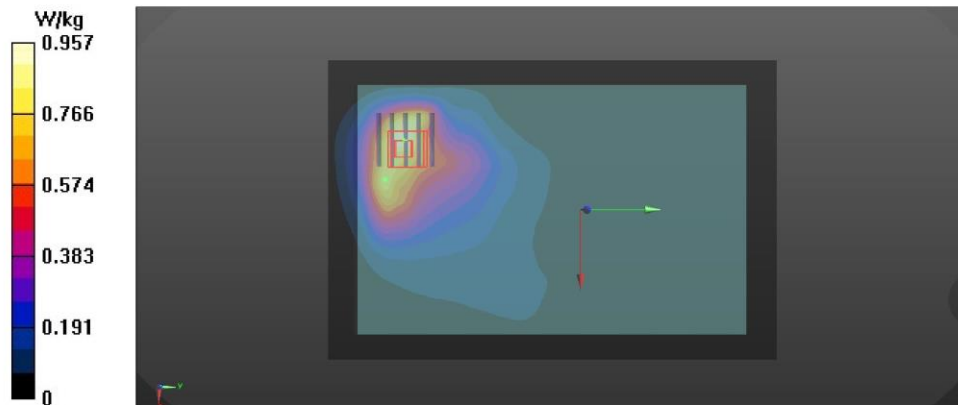
Medium: B750 Medium parameters used: $f = 793 \text{ MHz}$; $\sigma = 1.007 \text{ S/m}$; $\epsilon_r = 53.363$; $\rho = 1000 \text{ kg/m}^3$

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(10.37, 10.37, 10.37) @ 793 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (121x181x1):** Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$
Maximum value of SAR (interpolated) = 0.957 W/kg

- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 7.887 V/m ; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.26 W/kg
SAR(1 g) = 0.607 W/kg ; SAR(10 g) = 0.382 W/kg
Maximum value of SAR (measured) = 0.981 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 8/28/2020

P37 LTE 17_QPSK10M_Rear Face_0cm_Ch23800_1RB_OS0_w/o

DUT: EUT

Communication System: LTE; Frequency: 711 MHz; Duty Cycle: 1:1

Medium: B750 Medium parameters used: $f = 711 \text{ MHz}$; $\sigma = 0.922 \text{ S/m}$; $\epsilon_r = 54.233$; $\rho = 1000 \text{ kg/m}^3$

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(10.37, 10.37, 10.37) @ 711 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (121x181x1):** Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$
Maximum value of SAR (interpolated) = 0.626 W/kg

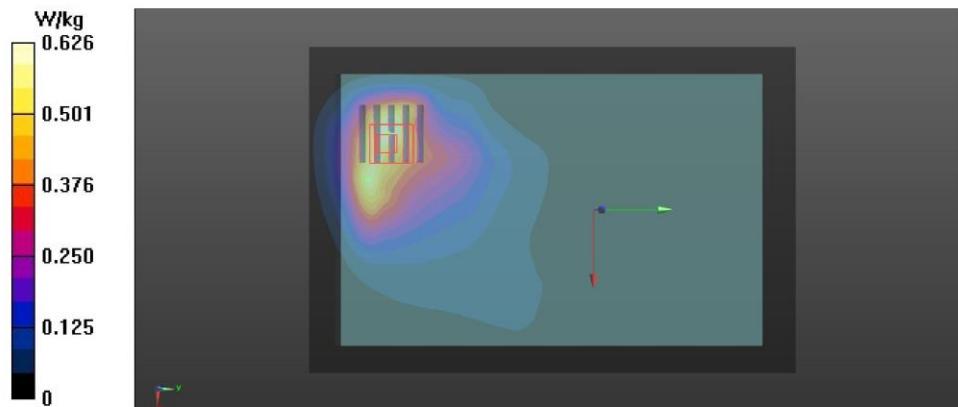
- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 0 V/m ; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.744 W/kg

SAR(1 g) = 0.226 W/kg ; SAR(10 g) = 0.099 W/kg

Maximum value of SAR (measured) = 0.506 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 8/29/2020

P38 LTE 25_QPSK20M_Rear Face_0cm_Ch26365_50RB_OS0_w/o

DUT: EUT

Communication System: LTE; Frequency: 1882.5 MHz; Duty Cycle: 1:1

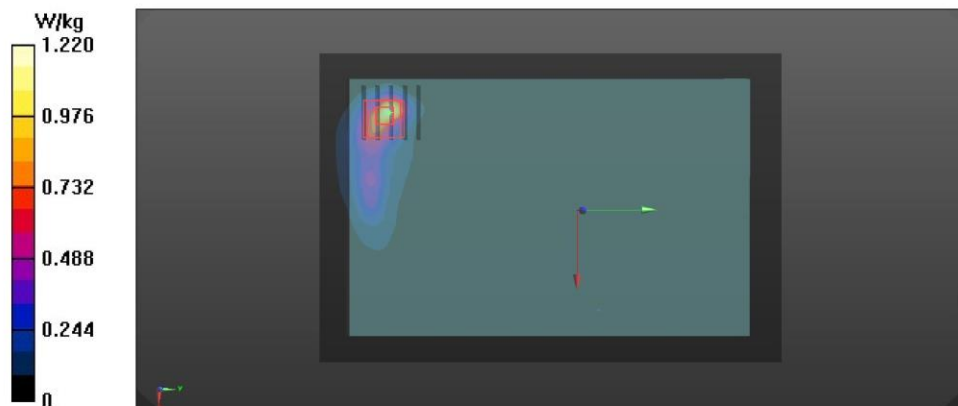
Medium: B1900 Medium parameters used: $f = 1882.5$ MHz; $\sigma = 1.565$ S/m; $\epsilon_r = 53.134$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(8.08, 8.08, 8.08) @ 1882.5 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (121x181x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.22 W/kg

- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.42 W/kg
SAR(1 g) = 0.672 W/kg; SAR(10 g) = 0.315 W/kg
Maximum value of SAR (measured) = 1.13 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 8/31/2020

P39 LTE 26_QPSK15M_Rear Face_0cm_Ch26965_1RB_OS0_w/o

DUT: EUT

Communication System: LTE; Frequency: 841.5 MHz; Duty Cycle: 1:1

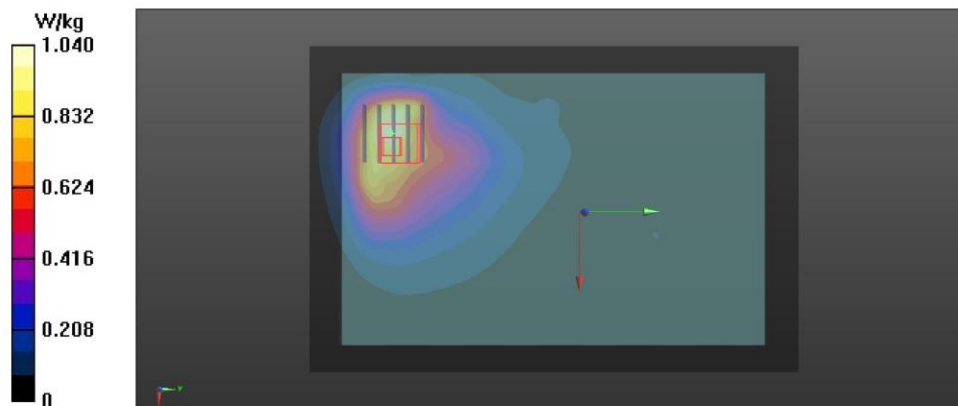
Medium: B835 Medium parameters used: $f = 841.5$ MHz; $\sigma = 0.963$ S/m; $\epsilon_r = 56.298$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(10.01, 10.01, 10.01) @ 841.5 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (121x181x1):** Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm
Maximum value of SAR (interpolated) = 1.04 W/kg

- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm
Reference Value = 8.208 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 0.656 W/kg; SAR(10 g) = 0.409 W/kg
Maximum value of SAR (measured) = 1.07 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 8/27/2020

P40 LTE 30_QPSK10M_Rear Face_0cm_Ch27710_1RB_OS0_w/o

DUT: EUT

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

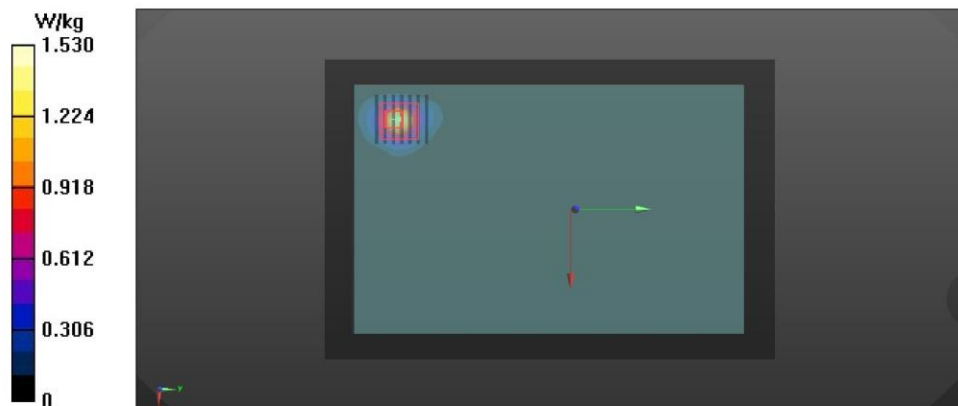
Medium: B2300 Medium parameters used: $f = 2310$ MHz; $\sigma = 1.812$ S/m; $\epsilon_r = 52.616$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(7.83, 7.83, 7.83) @ 2310 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (151x221x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.53 W/kg

- **Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.50 W/kg
SAR(1 g) = 0.736 W/kg; SAR(10 g) = 0.332 W/kg
Maximum value of SAR (measured) = 1.23 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 8/26/2020

P41 LTE 38_QPSK20M_Rear Face_0cm_Ch38150_1RB_OS0_w/o

DUT: EUT

Communication System: LTE; Frequency: 2610 MHz; Duty Cycle: 1:1.58

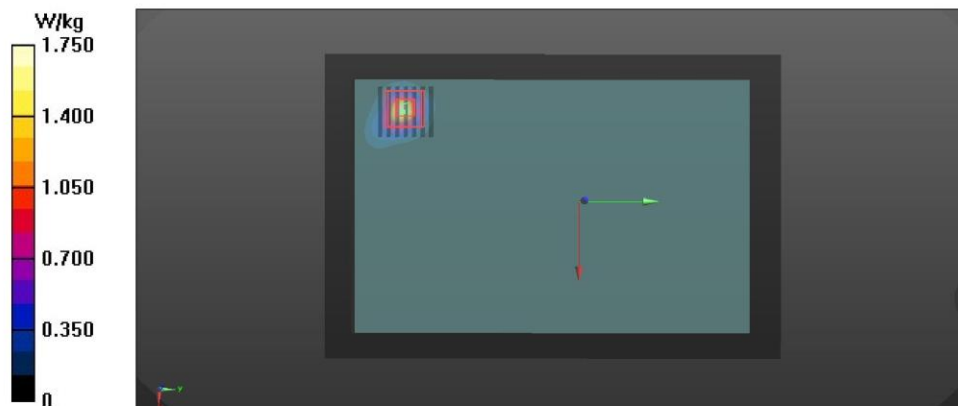
Medium: B2600 Medium parameters used: $f = 2610$ MHz; $\sigma = 2.129$ S/m; $\epsilon_r = 51.096$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(7.48, 7.48, 7.48) @ 2610 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (151x221x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.75 W/kg

- **Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.322 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 2.06 W/kg
SAR(1 g) = 0.773 W/kg; SAR(10 g) = 0.303 W/kg
Maximum value of SAR (measured) = 1.59 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 8/27/2020

P42 LTE 40_QPSK20M_Rear Face_0cm_Ch38750_1RB_OS0_w/o

DUT: EUT

Communication System: LTE; Frequency: 2310 MHz; Duty Cycle: 1:1.58

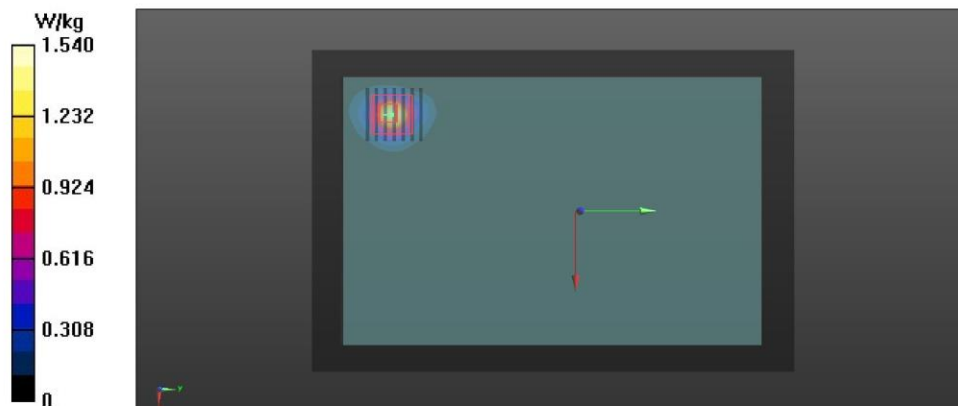
Medium: B2300 Medium parameters used: $f = 2310$ MHz; $\sigma = 1.812$ S/m; $\epsilon_r = 52.616$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(7.83, 7.83, 7.83) @ 2310 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (151x221x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.54 W/kg

- **Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.52 W/kg
SAR(1 g) = 0.742 W/kg; SAR(10 g) = 0.327 W/kg
Maximum value of SAR (measured) = 1.24 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 8/26/2020

P43 LTE 41_QPSK20M_Rear Face_0cm_Ch41490_1RB_OS0_w/o

DUT: EUT

Communication System: UID 0, LTE; Frequency: 2680 MHz; Duty Cycle: 1:1.58

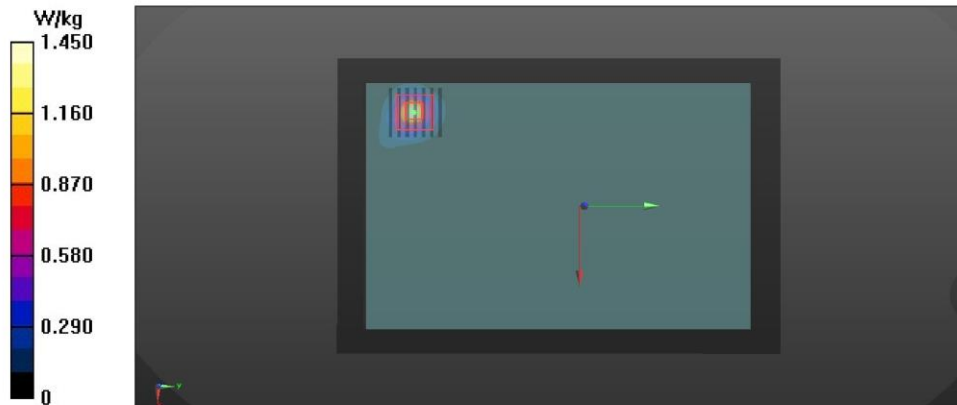
Medium: B2600 Medium parameters used: $f = 2680$ MHz; $\sigma = 2.213$ S/m; $\epsilon_r = 50.883$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(7.48, 7.48, 7.48) @ 2680 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (151x221x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.45 W/kg

- **Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.78 W/kg
SAR(1 g) = 0.743 W/kg; SAR(10 g) = 0.295 W/kg
Maximum value of SAR (measured) = 1.28 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 8/30/2020

P44 LTE 66_QPSK20M_Rear Face_0cm_Ch132322_1RB_OS0_w/o

DUT: EUT

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

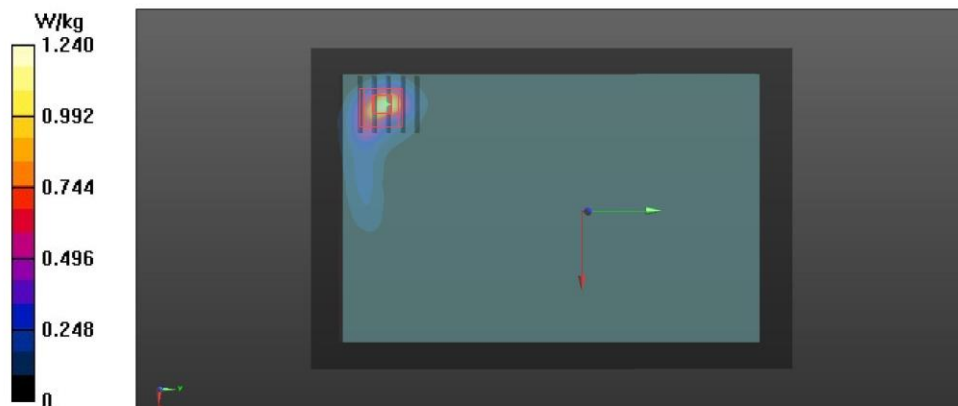
Medium: B1750 Medium parameters used: $f = 1745$ MHz; $\sigma = 1.435$ S/m; $\epsilon_r = 53.706$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(8.35, 8.35, 8.35) @ 1745 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (121x181x1):** Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm
Maximum value of SAR (interpolated) = 1.24 W/kg

- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm
Reference Value = 0 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.47 W/kg
SAR(1 g) = 0.633 W/kg; SAR(10 g) = 0.283 W/kg
Maximum value of SAR (measured) = 1.17 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 9/10/2020

P45 802.11b_Rear Face_0cm_Ch11

DUT: EUT

Communication System: 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1

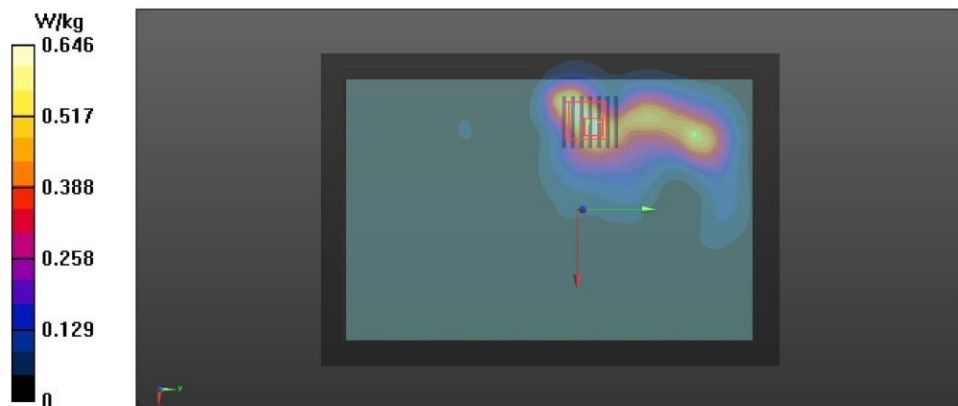
Medium: B2450 Medium parameters used: $f = 2462$ MHz; $\sigma = 1.918$ S/m; $\epsilon_r = 51.408$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(7.51, 7.51, 7.51) @ 2462 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (151x221x1):** Interpolated grid: $dx=1.200$ mm, $dy=1.200$ mm
Maximum value of SAR (interpolated) = 0.646 W/kg

- **Zoom Scan (7x7x7)/Cube 0:** Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm
Reference Value = 4.549 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.863 W/kg
SAR(1 g) = 0.395 W/kg; SAR(10 g) = 0.203 W/kg
Maximum value of SAR (measured) = 0.657 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 9/11/2020

P46 802.11ac_VHT80_Rear Face_0cm_Ch58

DUT: EUT

Communication System: 802.11ac; Frequency: 5290 MHz; Duty Cycle: 1:1

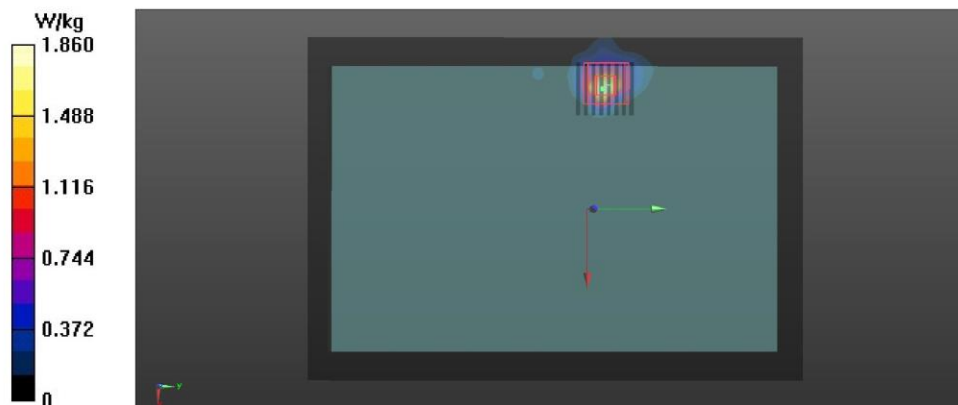
Medium: B5G Medium parameters used: $f = 5290 \text{ MHz}$; $\sigma = 5.559 \text{ S/m}$; $\epsilon_r = 48.243$; $\rho = 1000 \text{ kg/m}^3$

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(5, 5, 5) @ 5290 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (181x261x1):** Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$
Maximum value of SAR (interpolated) = 1.86 W/kg

- **Zoom Scan (8x8x7)/Cube 0:** Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$
Reference Value = 0 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 3.25 W/kg
SAR(1 g) = 0.757 W/kg; SAR(10 g) = 0.221 W/kg
Maximum value of SAR (measured) = 1.83 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 9/11/2020

P47 802.11n_HT40_Rear Face_0cm_Ch134

DUT: EUT

Communication System: 802.11n; Frequency: 5670 MHz; Duty Cycle: 1:1

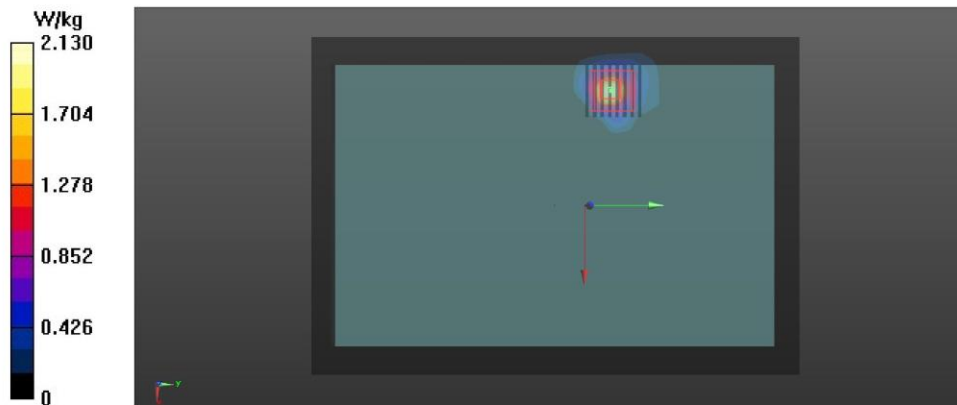
Medium: B5G Medium parameters used: $f = 5670 \text{ MHz}$; $\sigma = 6.045 \text{ S/m}$; $\epsilon_r = 47.609$; $\rho = 1000 \text{ kg/m}^3$

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(4.28, 4.28, 4.28) @ 5670 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (181x261x1):** Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$
Maximum value of SAR (interpolated) = 2.13 W/kg

- **Zoom Scan (8x8x7)/Cube 0:** Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$
Reference Value = 0 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 3.60 W/kg
SAR(1 g) = 0.714 W/kg; SAR(10 g) = 0.209 W/kg
Maximum value of SAR (measured) = 2.04 W/kg



Test Laboratory: TÜV Rheinland IoT Excellence Center

Date: 9/11/2020

P48 802.11n_HT40_Rear Face_0cm_Ch151

DUT: EUT

Communication System: 802.11n; Frequency: 5755 MHz; Duty Cycle: 1:1

Medium: B5G Medium parameters used: $f = 5755 \text{ MHz}$; $\sigma = 6.169 \text{ S/m}$; $\epsilon_r = 47.495$; $\rho = 1000 \text{ kg/m}^3$

DASY5 Configuration:

- Probe: EX3DV4 - SN7506; ConvF(4.32, 4.32, 4.32) @ 5755 MHz; Calibrated: 5/29/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 5/27/2020
- Phantom: ELI V8.0; Type: QD OVA 004 Ax; Serial: 2094
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

- **Area Scan (181x261x1):** Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$ Maximum value of SAR (interpolated) = 1.95 W/kg

- **Zoom Scan (8x8x7)/Cube 0:** Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$

Reference Value = 0 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 3.45 W/kg

SAR(1 g) = 0.699 W/kg; SAR(10 g) = 0.202 W/kg

Maximum value of SAR (measured) = 1.77 W/kg

