

03_WCDMA II_RMC 12.2Kbps_Left Cheek_0mm_Ch9262

Communication System: UID 0, WCDMA (0); Frequency: 1852.4 MHz; Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: $f = 1852.4$ MHz; $\sigma = 1.29$ S/m; $\epsilon_r = 41.546$; $\rho = 1000$ kg/m³
Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.9 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.35, 5.35, 5.35); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch9262/Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.132 W/kg

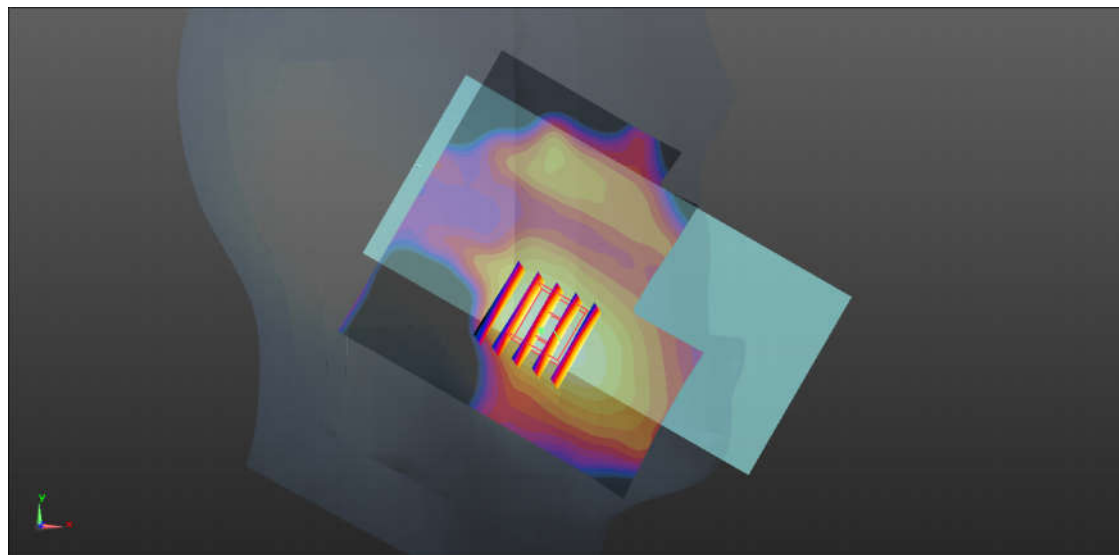
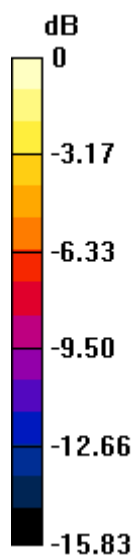
Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.548 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.153 W/kg

SAR(1 g) = 0.100 W/kg; SAR(10 g) = 0.063 W/kg

Maximum value of SAR (measured) = 0.134 W/kg



0 dB = 0.134 W/kg = -8.73 dBW/kg

04_WCDMA IV_RMC 12.2Kbps_Right Cheek_0mm_Ch1312

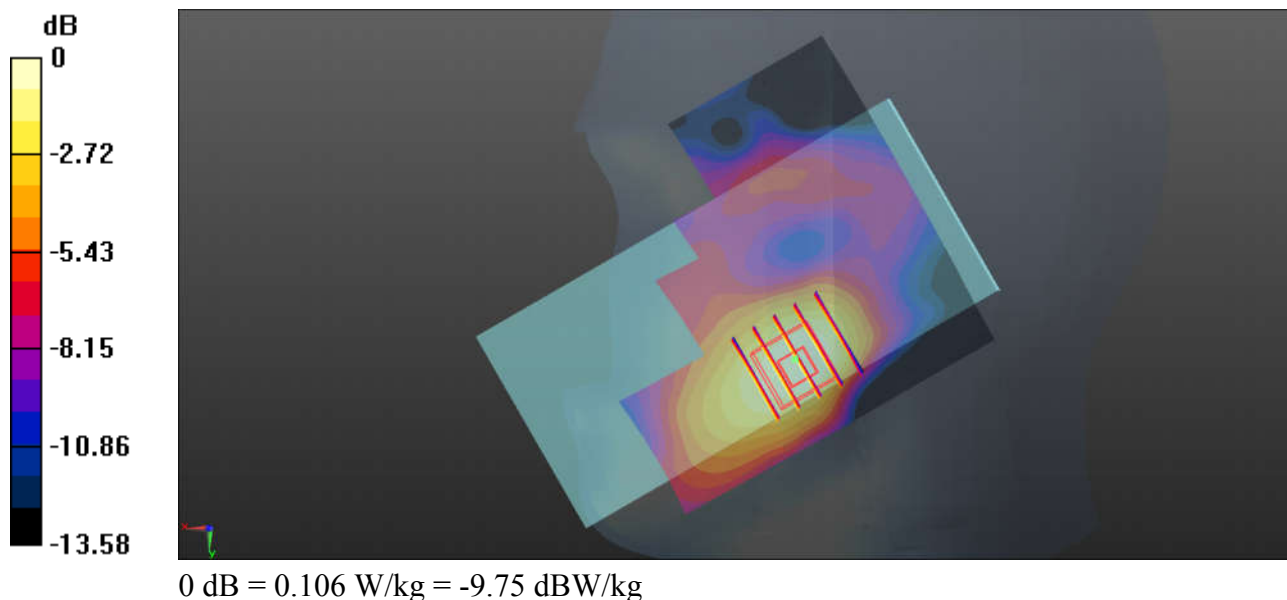
Communication System: UID 0, WCDMA (0); Frequency: 1712.4 MHz; Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: $f = 1712.4$ MHz; $\sigma = 1.342$ S/m; $\epsilon_r = 39.889$; $\rho = 1000$ kg/m³
Ambient Temperature : 23.3 °C ; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.59, 5.59, 5.59); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch1312/Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.113 W/kg

Ch1312/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.365 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.125 W/kg
SAR(1 g) = 0.084 W/kg; SAR(10 g) = 0.056 W/kg
Maximum value of SAR (measured) = 0.106 W/kg



05_WCDMA V_RMC 12.2Kbps_Right Cheek_0mm_Ch4132

Communication System: UID 0, WCDMA (0); Frequency: 826.4 MHz; Duty Cycle: 1:1
Medium: HSL_835 Medium parameters used: $f = 826.4$ MHz; $\sigma = 0.893$ S/m; $\epsilon_r = 41.35$; $\rho = 1000$ kg/m³
Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(6.38, 6.38, 6.38); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch4132/Area Scan (71x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.306 W/kg

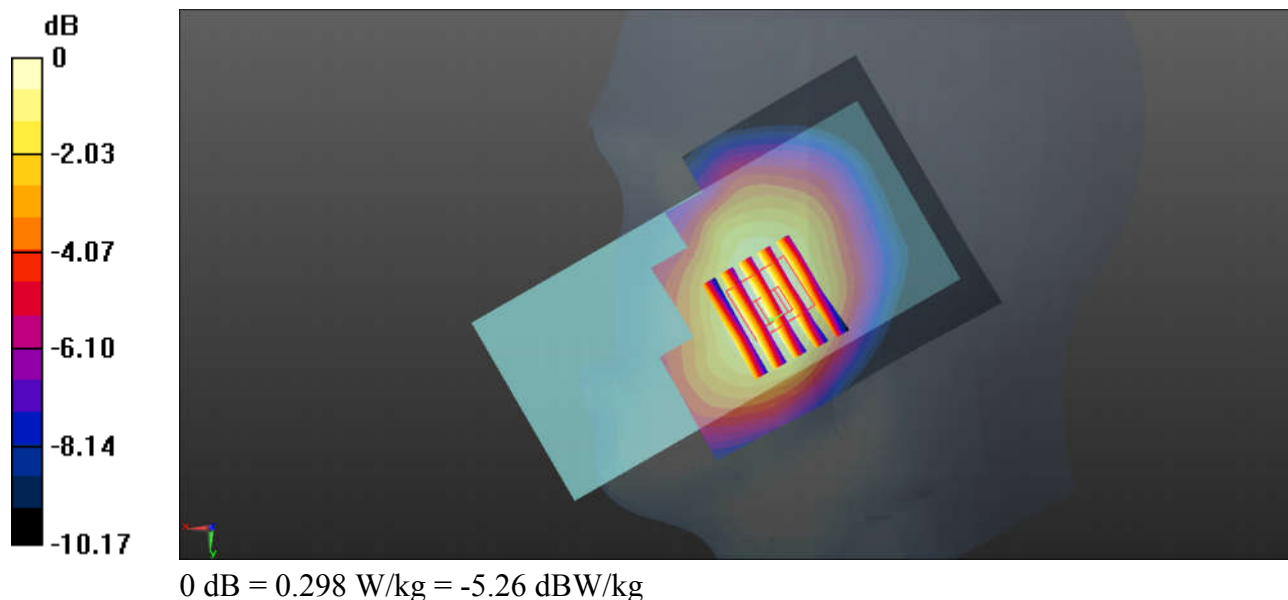
Ch4132/Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.491 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.349 W/kg

SAR(1 g) = 0.273 W/kg; SAR(10 g) = 0.205 W/kg

Maximum value of SAR (measured) = 0.298 W/kg



06_LTE Band 5_10M_1RB_25Offset_Right Cheek_0mm_Ch20525

Communication System: UID 0, LTE-FDD (0); Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: HSL_835 Medium parameters used: $f = 836.5$ MHz; $\sigma = 0.903$ S/m; $\epsilon_r = 41.224$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(6.38, 6.38, 6.38); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch20525/Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.318 W/kg

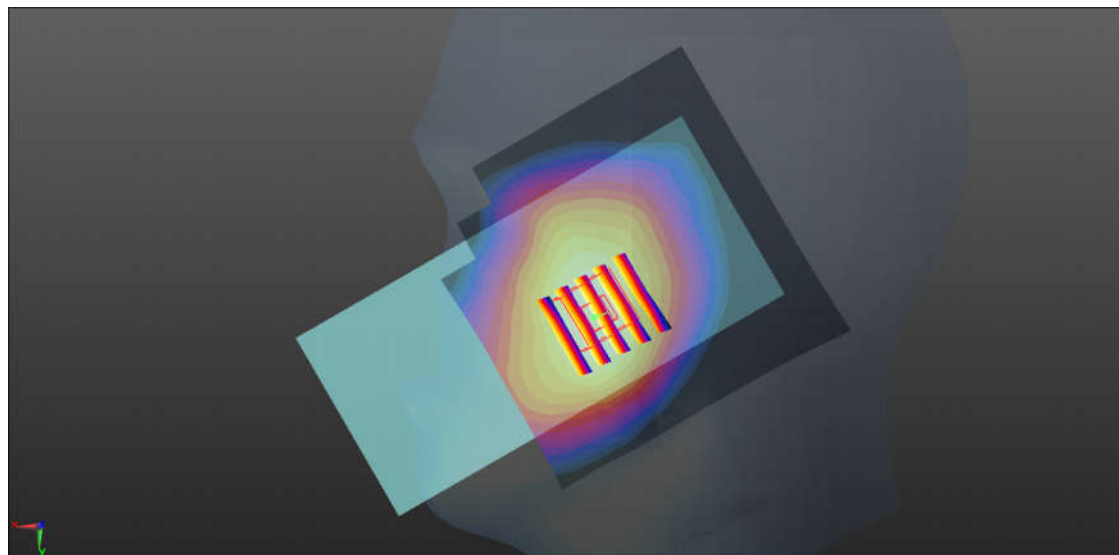
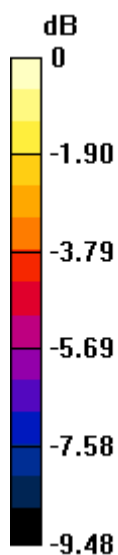
Ch20525/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.192 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.352 W/kg

SAR(1 g) = 0.277 W/kg; SAR(10 g) = 0.208 W/kg

Maximum value of SAR (measured) = 0.306 W/kg



0 dB = 0.306 W/kg = -5.14 dBW/kg

07_LTE Band 12_10M_1RB_25Offset_Right Cheek_0mm_Ch23095

Communication System: UID 0, LTE-FDD (0); Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium: HSL_750 Medium parameters used: $f = 707.5$ MHz; $\sigma = 0.852$ S/m; $\epsilon_r = 42.282$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.3 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(6.58, 6.58, 6.58); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch23095/Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.203 W/kg

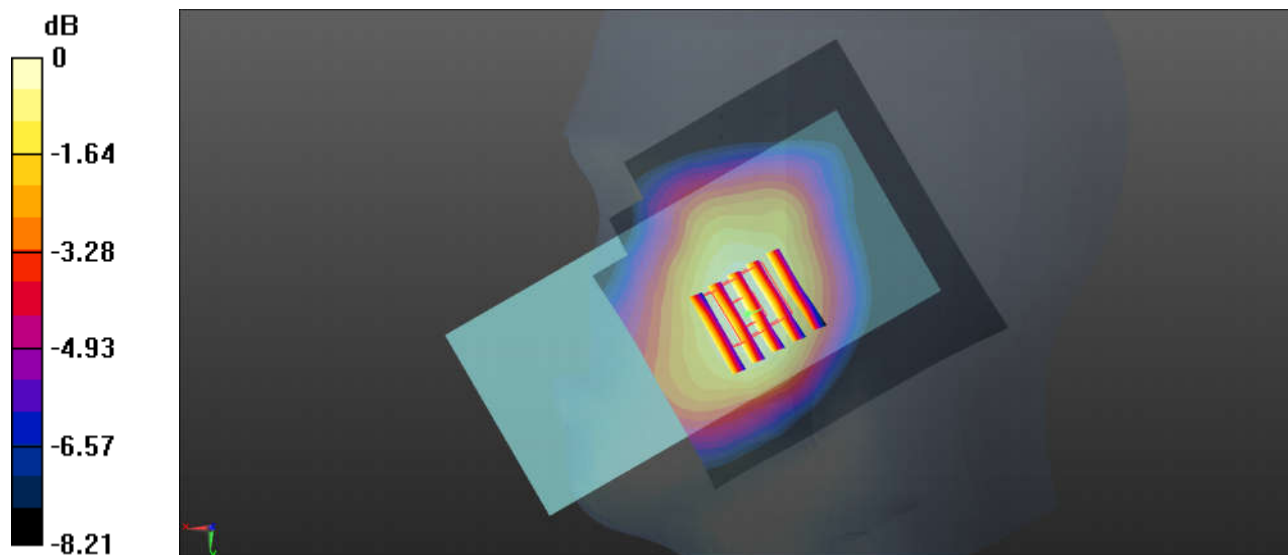
Ch23095/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.136 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.221 W/kg

SAR(1 g) = 0.182 W/kg; SAR(10 g) = 0.144 W/kg

Maximum value of SAR (measured) = 0.198 W/kg



0 dB = 0.198 W/kg = -7.03 dBW/kg

08_LTE Band 2_20M QPSK_1RB_49Offset_Left Cheek_0mm_Ch19100

Communication System: UID 0, LTE-FDD (0); Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL_1900 Medium parameters used: $f = 1900$ MHz; $\sigma = 1.348$ S/m; $\epsilon_r = 41.396$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.9 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.35, 5.35, 5.35); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch19100/Area Scan (71x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.122 W/kg

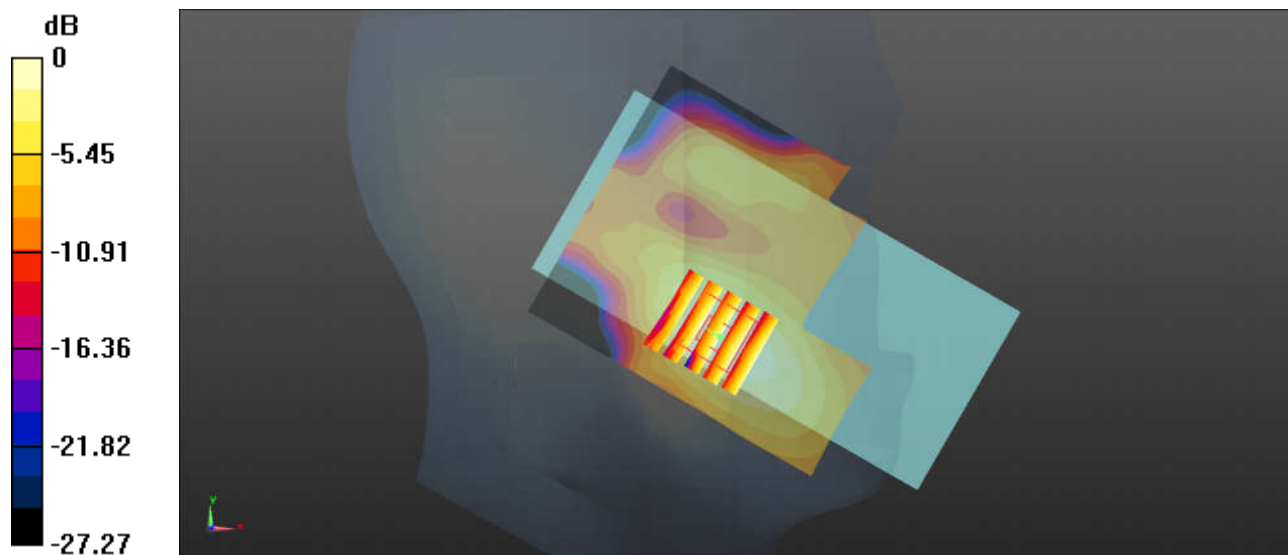
Ch19100/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.543 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.157 W/kg

SAR(1 g) = 0.088 W/kg; SAR(10 g) = 0.052 W/kg

Maximum value of SAR (measured) = 0.123 W/kg



0 dB = 0.123 W/kg = -9.10 dBW/kg

09_LTE Band 66_20M QPSK_1RB_0Offset_Right Cheek_0mm_Ch132072

Communication System: UID 0, LTE-FDD (0); Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: HSL_1750 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.349$ S/m; $\epsilon_r = 39.854$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.3 °C ; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.59, 5.59, 5.59); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch132072/Area Scan (71x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.117 W/kg

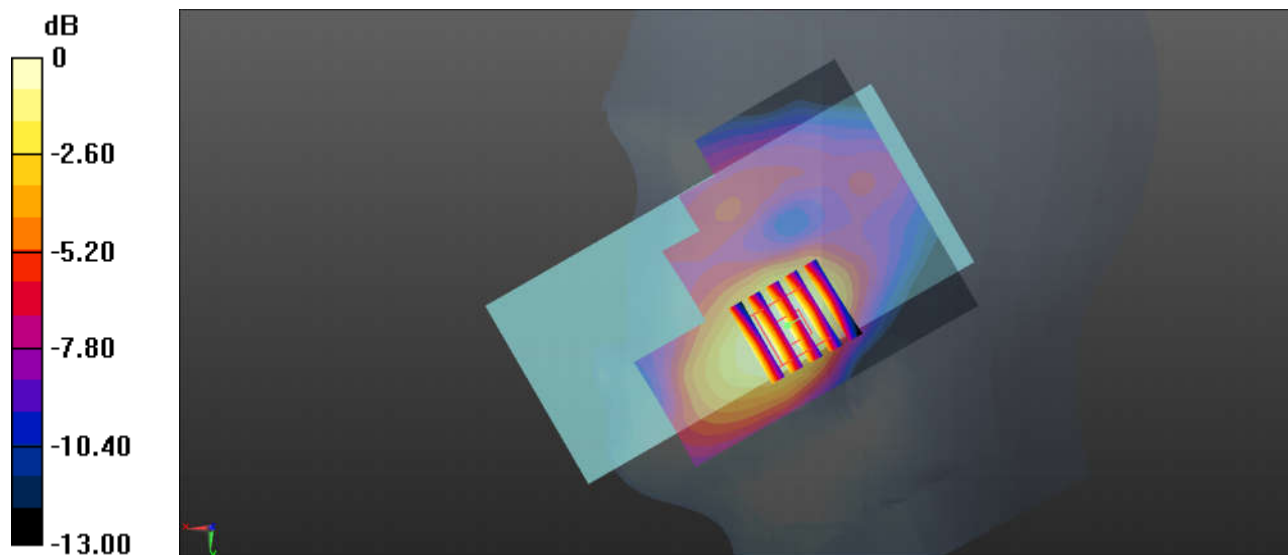
Ch132072/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.577 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.128 W/kg

SAR(1 g) = 0.086 W/kg; SAR(10 g) = 0.056 W/kg

Maximum value of SAR (measured) = 0.112 W/kg



0 dB = 0.112 W/kg = -9.51 dBW/kg

10_LTE Band 7_20M QPSK_1RB_99Offset_Left Cheek_0mm_Ch21350

Communication System: UID 0, LTE-FDD (0); Frequency: 2560 MHz; Duty Cycle: 1:1

Medium: HSL_2600 Medium parameters used: $f = 2560$ MHz; $\sigma = 1.978$ S/m; $\epsilon_r = 37.943$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(4.58, 4.58, 4.58); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch21350/Area Scan (91x91x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.699 W/kg

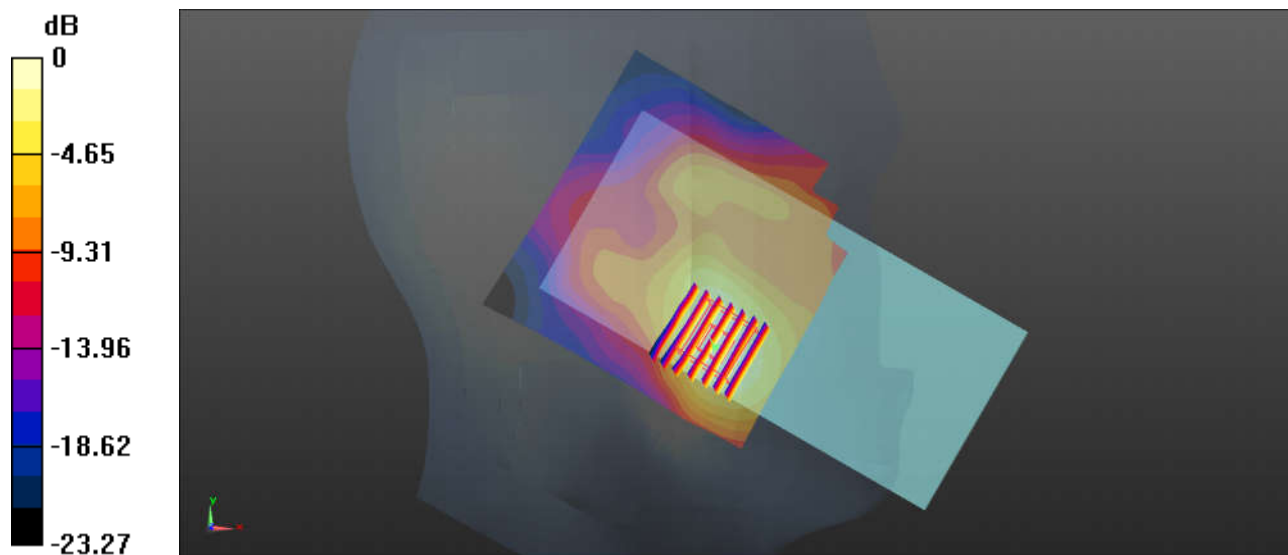
Ch21350/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.152 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 1.01 W/kg

SAR(1 g) = 0.545 W/kg; SAR(10 g) = 0.287 W/kg

Maximum value of SAR (measured) = 0.697 W/kg



0 dB = 0.697 W/kg = -1.57 dBW/kg

11_WLAN2.4GHz_802.11b 1Mbps_Left Cheek_0mm_Ch1

Communication System: UID 0, 802.11b (0); Frequency: 2412 MHz; Duty Cycle: 1:1.014

Medium: HSL_2450 Medium parameters used: $f = 2412$ MHz; $\sigma = 1.813$ S/m; $\epsilon_r = 38.696$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(4.77, 4.77, 4.77); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch1/Area Scan (91x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 1.31 W/kg

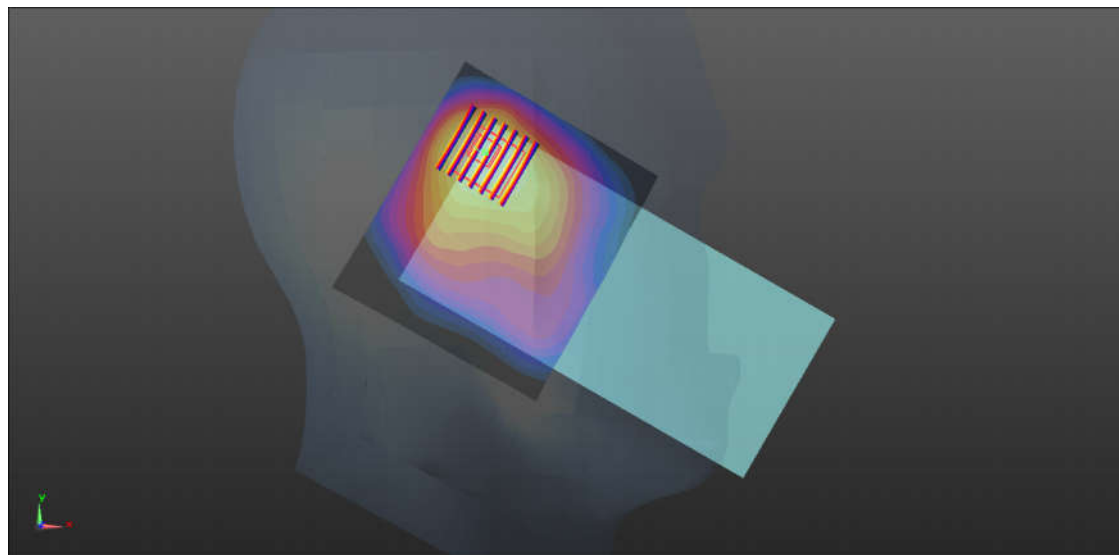
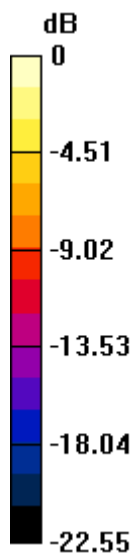
Ch1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.85 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 1.81 W/kg

SAR(1 g) = 0.831 W/kg; SAR(10 g) = 0.420 W/kg

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



0 dB = 1.05 W/kg = 0.21 dBW/kg

12_Bluetooth_1Mbps_Left Cheek_0mm_Ch39

Communication System: UID 0, Bluetooth (0); Frequency: 2441 MHz; Duty Cycle: 1:1.293

Medium: HSL_2450 Medium parameters used: $f = 2441$ MHz; $\sigma = 1.848$ S/m; $\epsilon_r = 38.569$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(4.77, 4.77, 4.77); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch39/Area Scan (91x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.305 W/kg

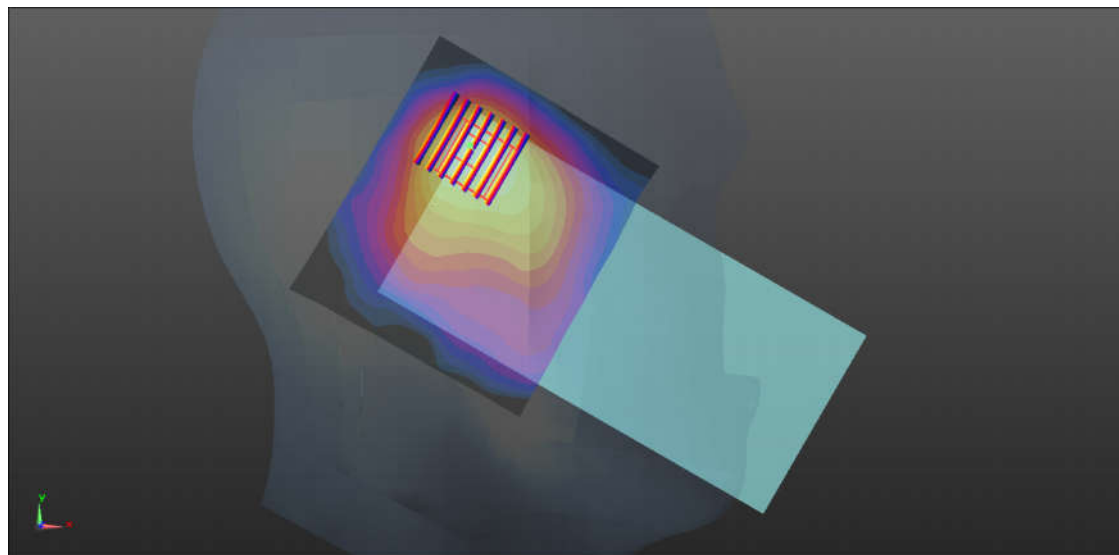
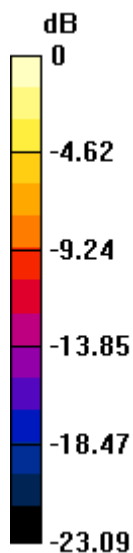
Ch39/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.570 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.475 W/kg

SAR(1 g) = 0.215 W/kg; SAR(10 g) = 0.108 W/kg

Maximum value of SAR (measured) = 0.272 W/kg



0 dB = 0.272 W/kg = -5.65 dBW/kg

13_GSM 850_GPRS 2 Tx slots_Back_5mm_Ch251

Communication System: UID 0, GSM850-2UP (0); Frequency: 848.8 MHz; Duty Cycle: 1:4.15
Medium: HSL_835 Medium parameters used: $f = 849$ MHz; $\sigma = 0.915$ S/m; $\epsilon_r = 41.074$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(6.38, 6.38, 6.38); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch251/Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

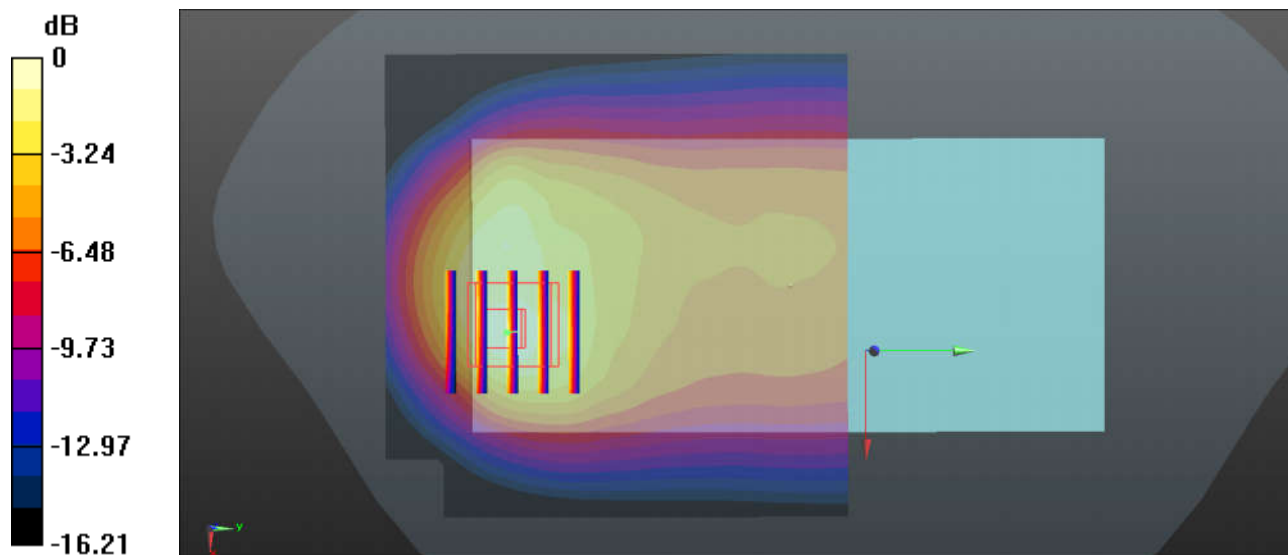
Ch251/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.49 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 1.94 W/kg

SAR(1 g) = 0.952 W/kg; SAR(10 g) = 0.516 W/kg

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



0 dB = 1.23 W/kg = 0.90 dBW/kg

14_GSM 1900_GPRS 2 Tx slots_Bottom Side_5mm_Ch512

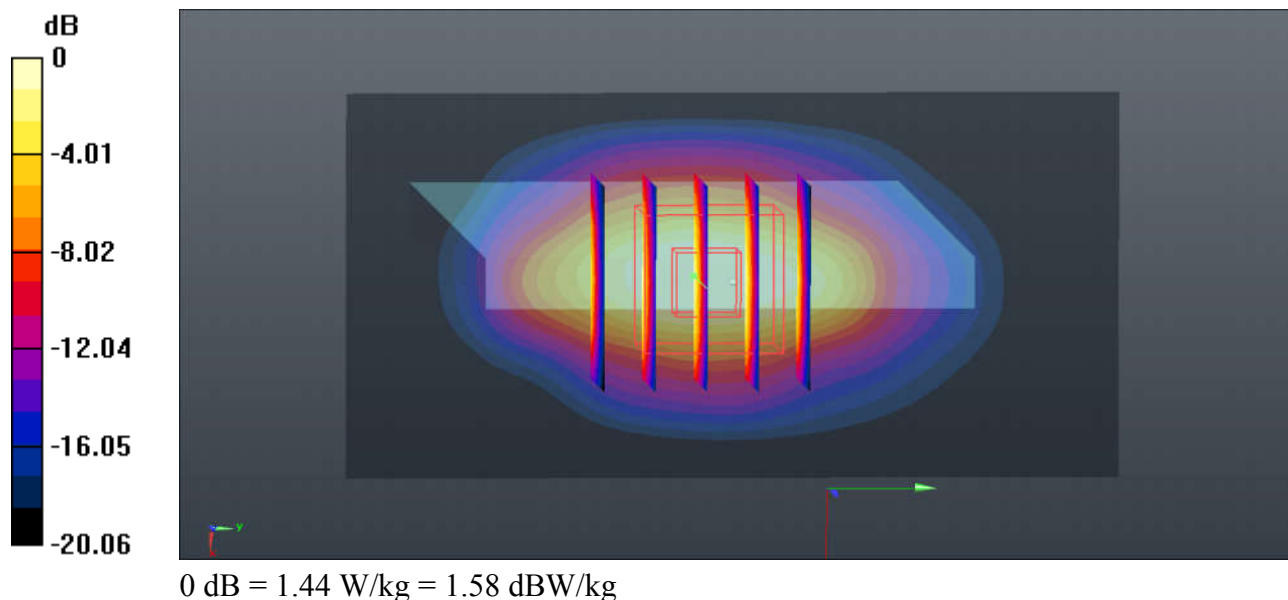
Communication System: UID 0, PCS-2UP (0); Frequency: 1850.2 MHz; Duty Cycle: 1:4.15
Medium: HSL_1900 Medium parameters used: $f = 1850.2$ MHz; $\sigma = 1.287$ S/m; $\epsilon_r = 41.558$; $\rho = 1000$ kg/m³
Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.9 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.35, 5.35, 5.35); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch512/Area Scan (41x81x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm
Maximum value of SAR (interpolated) = 1.67 W/kg

Ch512/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm
Reference Value = 23.89 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 2.28 W/kg
SAR(1 g) = 1.12 W/kg; SAR(10 g) = 0.521 W/kg
Maximum value of SAR (measured) = 1.44 W/kg



15_WCDMA II_RMC 12.2Kbps_Bottom Side_5mm_Ch9538

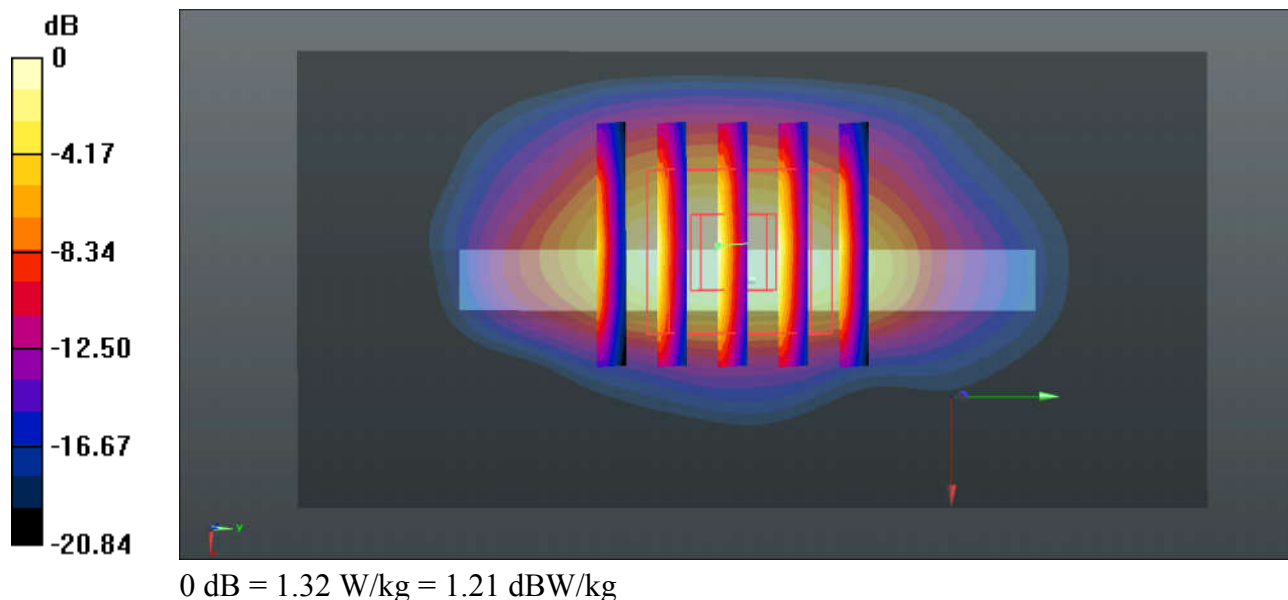
Communication System: UID 0, WCDMA (0); Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: $f = 1908$ MHz; $\sigma = 1.358$ S/m; $\epsilon_r = 41.375$; $\rho = 1000$ kg/m³
Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.9 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.35, 5.35, 5.35); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch9538/Area Scan (41x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.55 W/kg

Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.9530 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 2.06 W/kg
SAR(1 g) = 1.02 W/kg; SAR(10 g) = 0.459 W/kg
Maximum value of SAR (measured) = 1.32 W/kg



16_WCDMA IV_RMC 12.2Kbps_Back_5mm_Ch1513

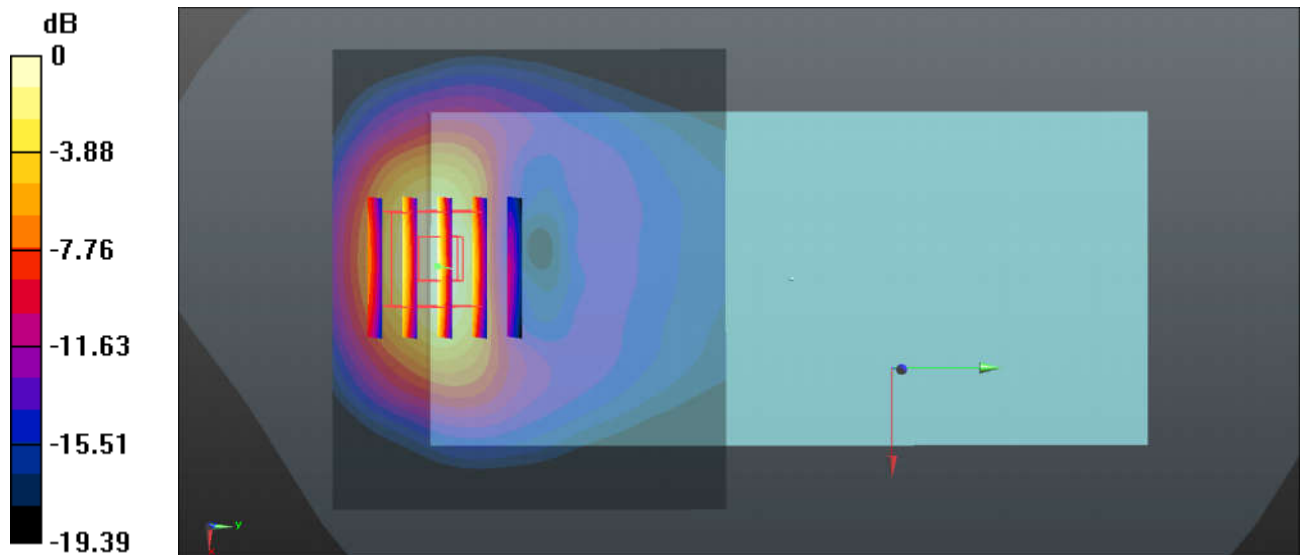
Communication System: UID 0, WCDMA (0); Frequency: 1752.6 MHz; Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: $f = 1753$ MHz; $\sigma = 1.385$ S/m; $\epsilon_r = 39.691$; $\rho = 1000$ kg/m³
Ambient Temperature : 23.3 °C ; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.59, 5.59, 5.59); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch1513/Area Scan (71x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.20 W/kg

Ch1513/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.534 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.47 W/kg
SAR(1 g) = 0.839 W/kg; SAR(10 g) = 0.432 W/kg
Maximum value of SAR (measured) = 1.03 W/kg



0 dB = 1.03 W/kg = 0.13 dBW/kg

17_WCDMA V_RMC 12.2Kbps_Back_5mm_Ch4233

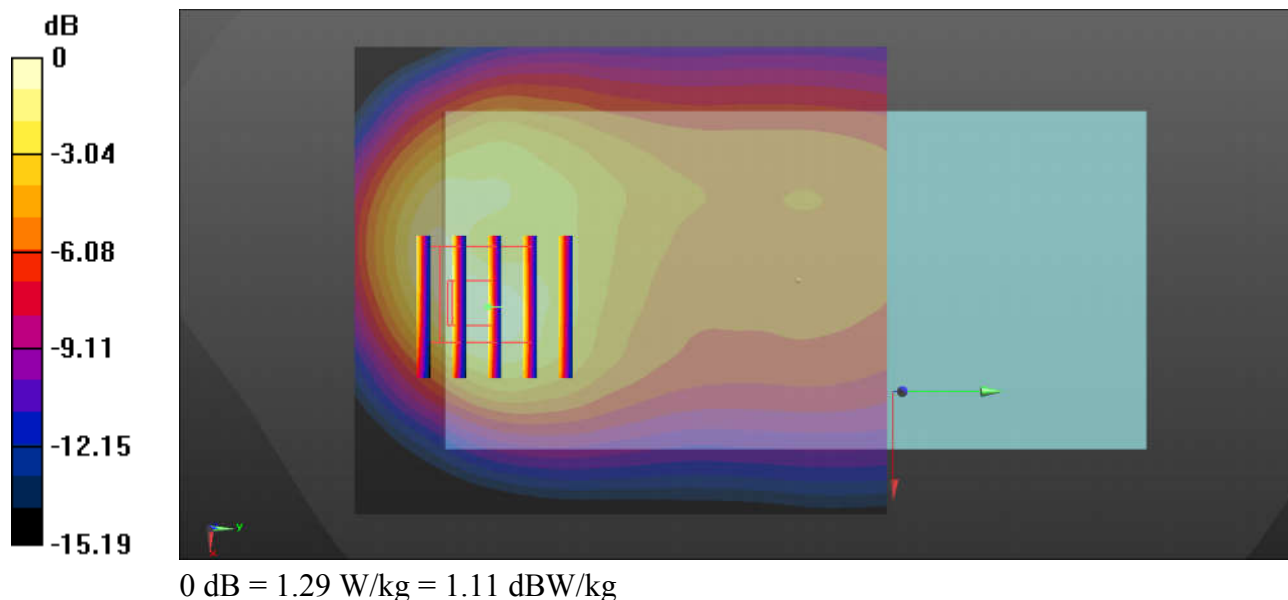
Communication System: UID 0, WCDMA (0); Frequency: 846.6 MHz; Duty Cycle: 1:1
Medium: HSL_835 Medium parameters used: $f = 847$ MHz; $\sigma = 0.913$ S/m; $\epsilon_r = 41.102$; $\rho = 1000$ kg/m³
Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(6.38, 6.38, 6.38); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch4233/Area Scan (71x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.32 W/kg

Ch4233/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.25 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 2.13 W/kg
SAR(1 g) = 1.05 W/kg; SAR(10 g) = 0.576 W/kg
Maximum value of SAR (measured) = 1.29 W/kg



18_LTE Band 5_10M_1RB_25Offset_Back_5mm_Ch20525

Communication System: UID 0, LTE-FDD (0); Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: HSL_835 Medium parameters used: $f = 836.5$ MHz; $\sigma = 0.903$ S/m; $\epsilon_r = 41.224$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(6.38, 6.38, 6.38); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch20525/Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

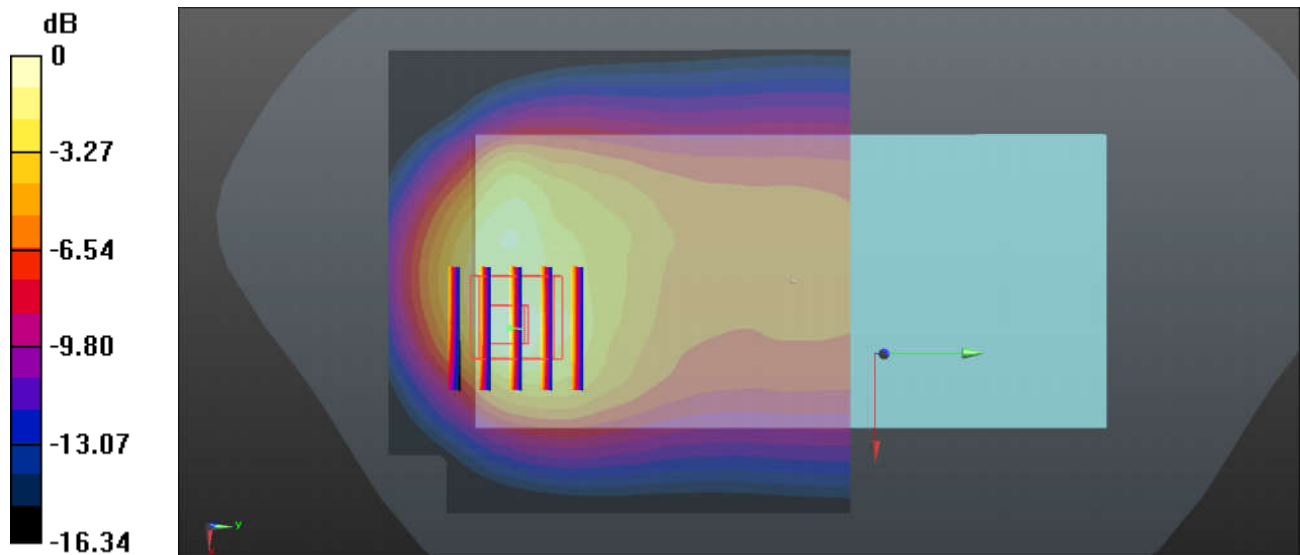
Ch20525/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.54 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 1.88 W/kg

SAR(1 g) = 0.896 W/kg; SAR(10 g) = 0.479 W/kg

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



0 dB = 1.18 W/kg = 0.72 dBW/kg

19_LTE Band 12_10M_1RB_25Offset_Back_5mm_Ch23095

Communication System: UID 0, LTE-FDD (0); Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium: HSL_750 Medium parameters used: $f = 707.5$ MHz; $\sigma = 0.852$ S/m; $\epsilon_r = 42.282$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.3 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(6.58, 6.58, 6.58); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch23095/Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.755 W/kg

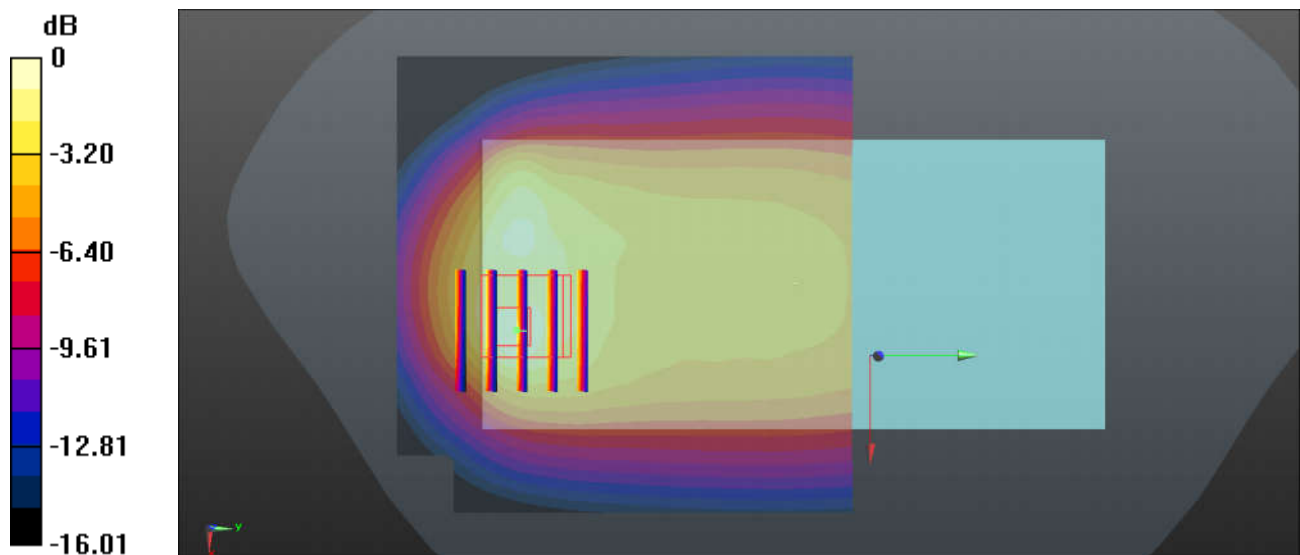
Ch23095/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.81 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.29 W/kg

SAR(1 g) = 0.561 W/kg; SAR(10 g) = 0.301 W/kg

Maximum value of SAR (measured) = 0.745 W/kg



0 dB = 0.745 W/kg = -1.28 dBW/kg

20_LTE Band 2_20M QPSK_100RB_0Offset_Bottom Side_5mm_Ch19100

Communication System: UID 0, LTE-FDD (0); Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL_1900 Medium parameters used: $f = 1900$ MHz; $\sigma = 1.348$ S/m; $\epsilon_r = 41.396$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.9 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.35, 5.35, 5.35); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch19100/Area Scan (41x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.41 W/kg

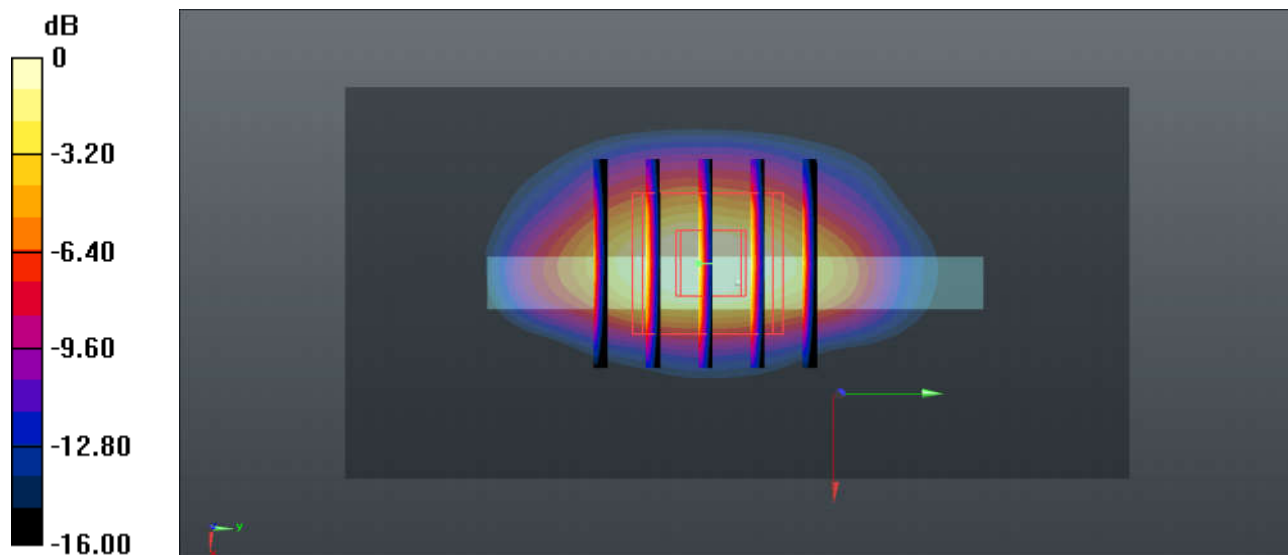
Ch19100/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.202 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 1.83 W/kg

SAR(1 g) = 0.912 W/kg; SAR(10 g) = 0.413 W/kg

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



0 dB = 1.21 W/kg = 0.83 dBW/kg

21_LTE Band 66_20M QPSK_50RB_0Offset_Bottom Side_5mm_Ch132572

Communication System: UID 0, LTE-FDD (0); Frequency: 1770 MHz; Duty Cycle: 1:1

Medium: HSL_1750 Medium parameters used: $f = 1770$ MHz; $\sigma = 1.401$ S/m; $\epsilon_r = 39.629$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.3 °C ; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.59, 5.59, 5.59); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch132572/Area Scan (41x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

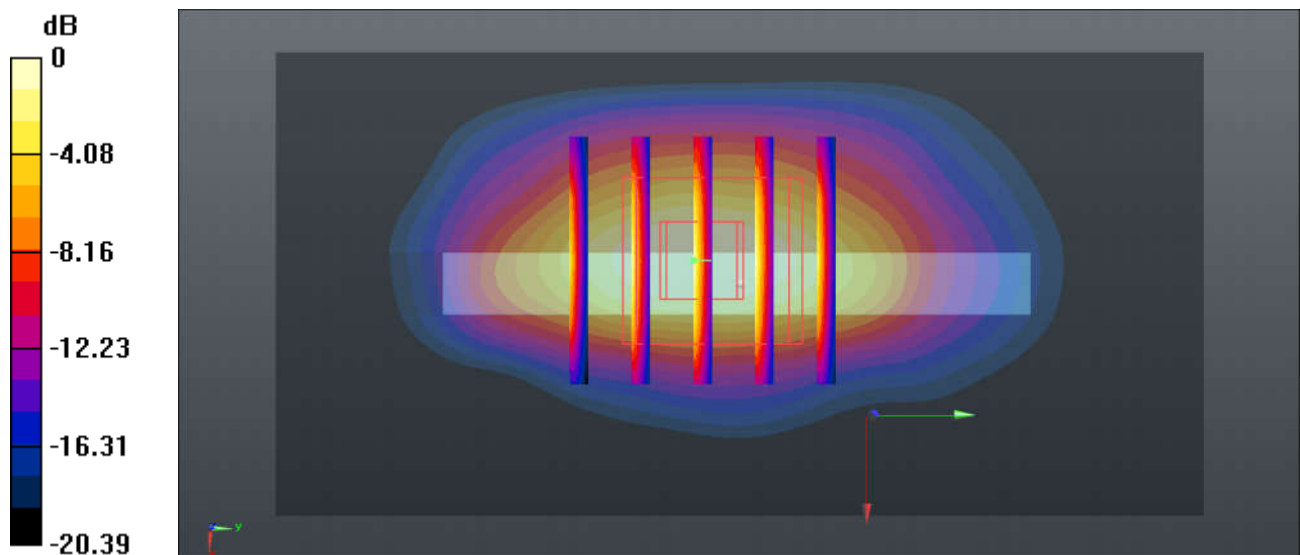
Ch132572/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.486 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 1.98 W/kg

SAR(1 g) = 1.01 W/kg; SAR(10 g) = 0.470 W/kg

Maximum value of SAR (measured) = 1.34 W/kg



0 dB = 1.34 W/kg = 1.27 dBW/kg

22_LTE Band 7_20M QPSK_100RB_0Offset_Back_5mm_Ch21350

Communication System: UID 0, LTE-FDD (0); Frequency: 2560 MHz; Duty Cycle: 1:1

Medium: HSL_2600 Medium parameters used: $f = 2560$ MHz; $\sigma = 1.978$ S/m; $\epsilon_r = 37.943$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(4.58, 4.58, 4.58); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch21350/Area Scan (101x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 1.44 W/kg

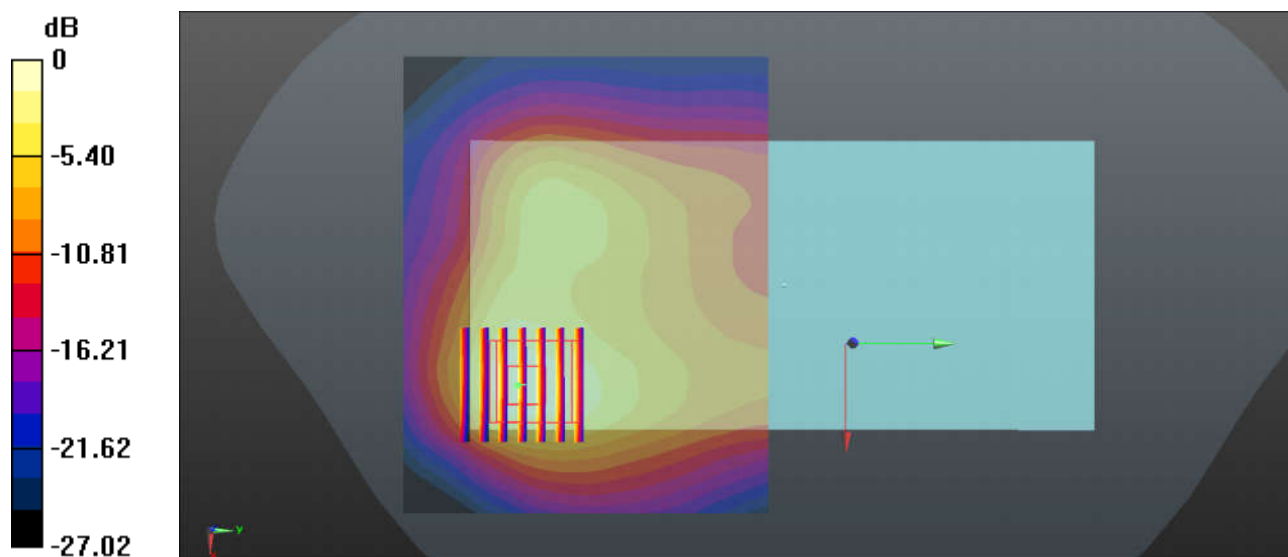
Ch21350/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.505 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 2.38 W/kg

SAR(1 g) = 1.03 W/kg; SAR(10 g) = 0.469 W/kg

Maximum value of SAR (measured) = 1.37 W/kg



0 dB = 1.37 W/kg = 1.37 dBW/kg

23_WLAN2.4GHz_802.11b 1Mbps_Back_5mm_Ch6

Communication System: UID 0, 802.11b (0); Frequency: 2437 MHz; Duty Cycle: 1:1.014

Medium: HSL_2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.843$ S/m; $\epsilon_r = 38.588$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(4.77, 4.77, 4.77); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch6/Area Scan (91x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

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

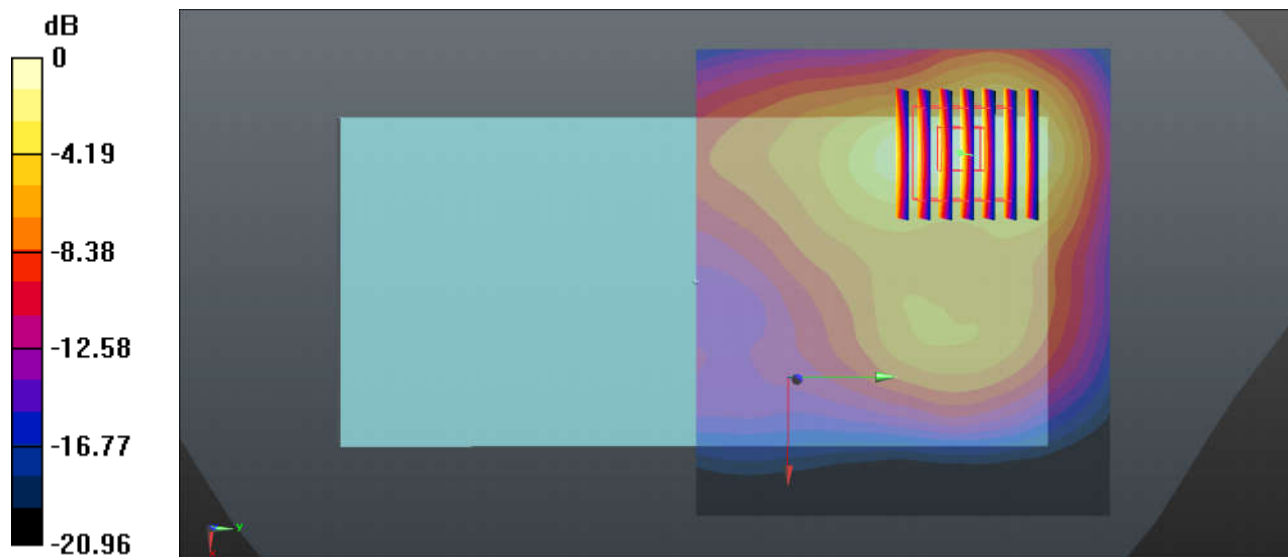
Ch6/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.776 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 1.74 W/kg

SAR(1 g) = 0.901 W/kg; SAR(10 g) = 0.428 W/kg

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



0 dB = 1.18 W/kg = 0.72 dBW/kg

24_Bluetooth_1Mbps_Top Side_5mm_Ch39

Communication System: UID 0, Bluetooth (0); Frequency: 2441 MHz; Duty Cycle: 1:1.293

Medium: HSL_2450 Medium parameters used: $f = 2441$ MHz; $\sigma = 1.848$ S/m; $\epsilon_r = 38.569$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(4.77, 4.77, 4.77); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch39/Area Scan (51x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.169 W/kg

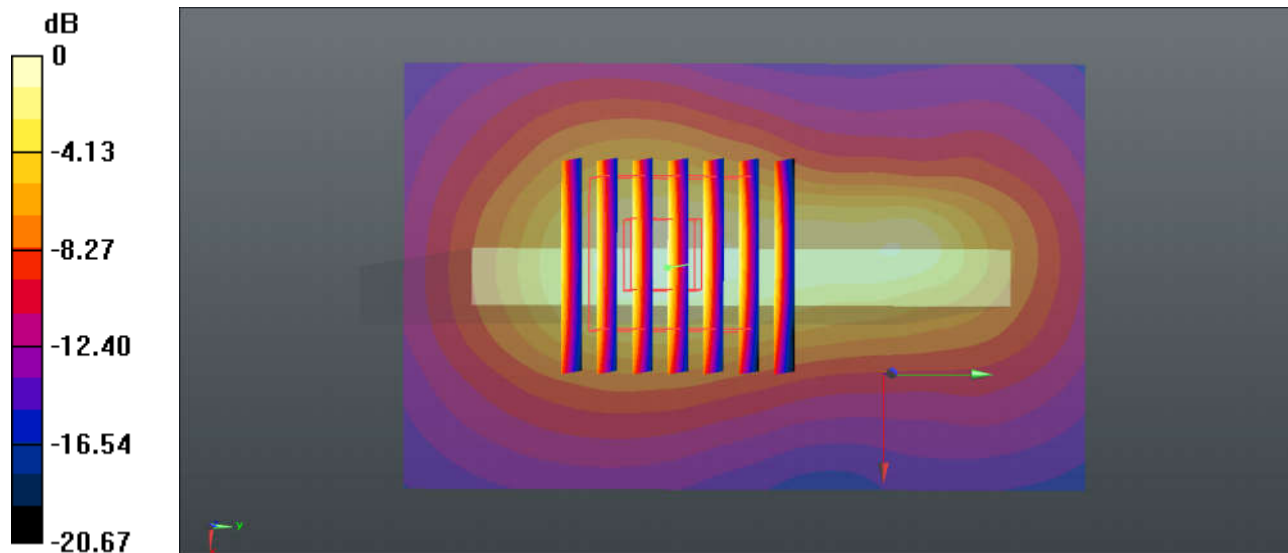
Ch39/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.785 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.285 W/kg

SAR(1 g) = 0.140 W/kg; SAR(10 g) = 0.067 W/kg

Maximum value of SAR (measured) = 0.179 W/kg



0 dB = 0.179 W/kg = -7.47 dBW/kg

25_GSM 850_GPRS 2 Tx slots_Back_5mm_Ch251

Communication System: UID 0, GSM850-2UP (0); Frequency: 848.8 MHz; Duty Cycle: 1:4.15
Medium: HSL_835 Medium parameters used: $f = 849$ MHz; $\sigma = 0.915$ S/m; $\epsilon_r = 41.074$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(6.38, 6.38, 6.38); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch251/Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

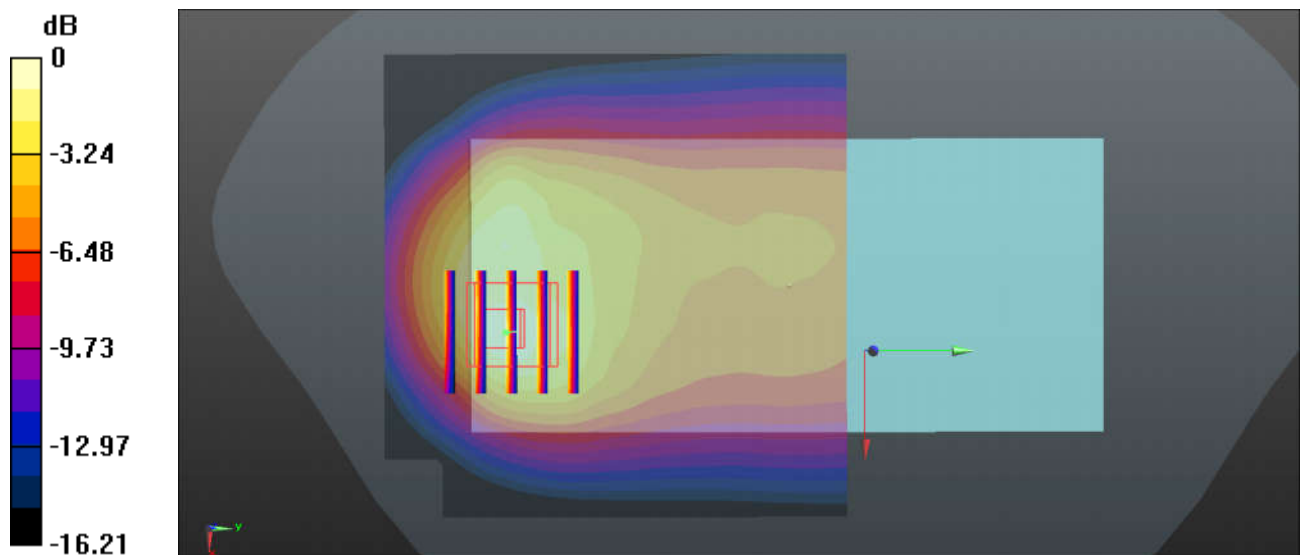
Ch251/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.49 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 1.94 W/kg

SAR(1 g) = 0.952 W/kg; SAR(10 g) = 0.516 W/kg

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



0 dB = 1.23 W/kg = 0.90 dBW/kg

26_GSM 1900_GPRS 2 Tx slots_Back_5mm_Headset_Ch661

Communication System: UID 0, PCS-2UP (0); Frequency: 1880 MHz; Duty Cycle: 1:4.15

Medium: HSL_1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.321$ S/m; $\epsilon_r = 41.443$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.9 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.35, 5.35, 5.35); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch661/Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

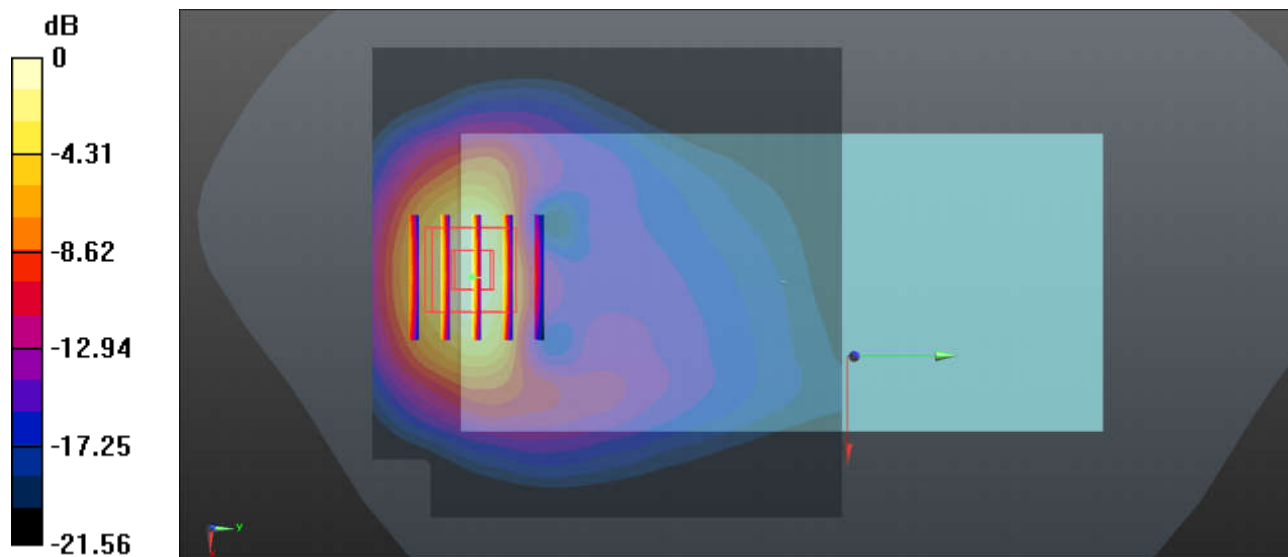
Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.825 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 1.99 W/kg

SAR(1 g) = 1.08 W/kg; SAR(10 g) = 0.542 W/kg

Maximum value of SAR (measured) = 1.36 W/kg



0 dB = 1.36 W/kg = 1.34 dBW/kg

27_WCDMA II_RMC 12.2Kbps_Back_5mm_Ch9262

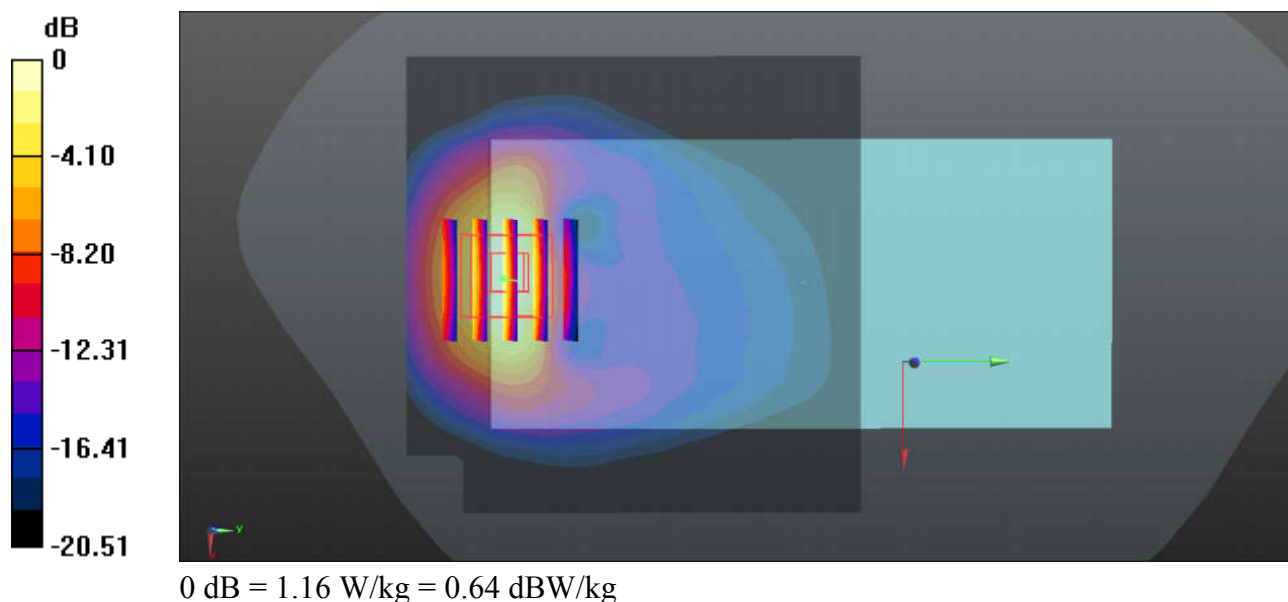
Communication System: UID 0, WCDMA (0); Frequency: 1852.4 MHz; Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: $f = 1852.4$ MHz; $\sigma = 1.29$ S/m; $\epsilon_r = 41.546$; $\rho = 1000$ kg/m³
Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.9 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.35, 5.35, 5.35); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch9262/Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.24 W/kg

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.336 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.72 W/kg
SAR(1 g) = 0.936 W/kg; SAR(10 g) = 0.467 W/kg
Maximum value of SAR (measured) = 1.16 W/kg



28_WCDMA IV_RMC 12.2Kbps_Back_5mm_Ch1513

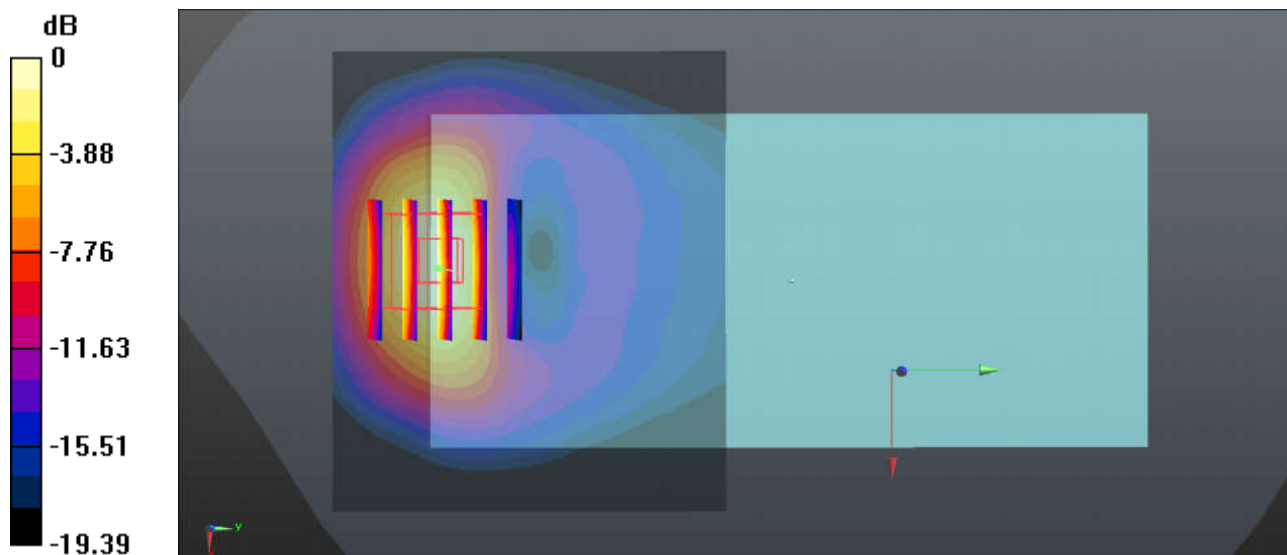
Communication System: UID 0, WCDMA (0); Frequency: 1752.6 MHz; Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: $f = 1753$ MHz; $\sigma = 1.385$ S/m; $\epsilon_r = 39.691$; $\rho = 1000$ kg/m³
Ambient Temperature : 23.3 °C ; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.59, 5.59, 5.59); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch1513/Area Scan (71x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.20 W/kg

Ch1513/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.534 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.47 W/kg
SAR(1 g) = 0.839 W/kg; SAR(10 g) = 0.432 W/kg
Maximum value of SAR (measured) = 1.03 W/kg



0 dB = 1.03 W/kg = 0.13 dBW/kg

29_WCDMA V_RMC 12.2Kbps_Back_5mm_Ch4233

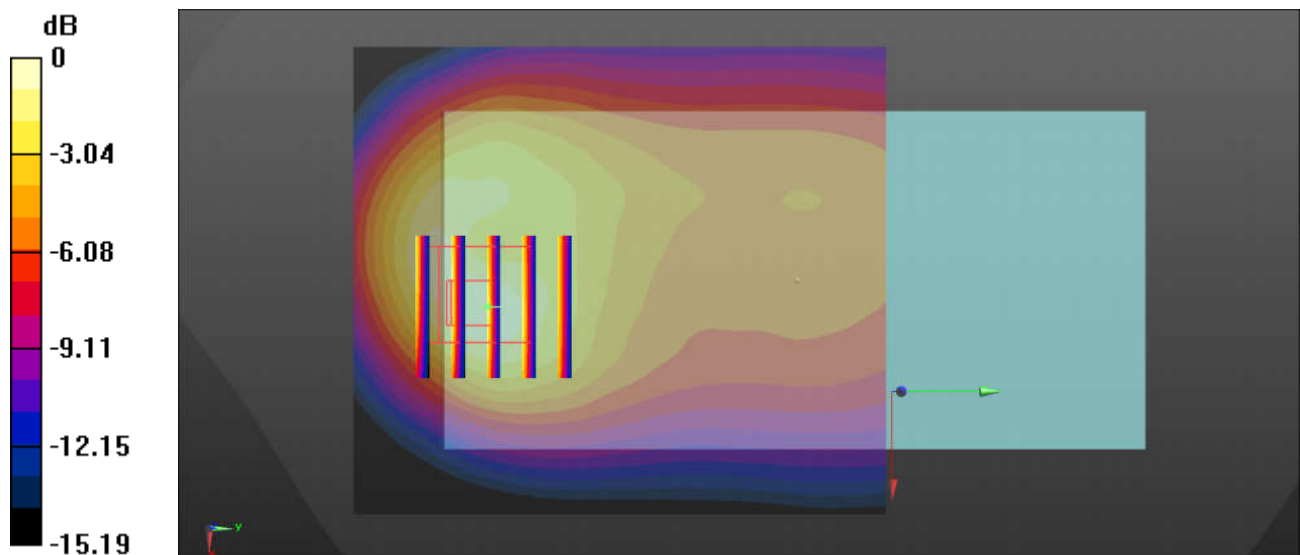
Communication System: UID 0, WCDMA (0); Frequency: 846.6 MHz; Duty Cycle: 1:1
Medium: HSL_835 Medium parameters used: $f = 847$ MHz; $\sigma = 0.913$ S/m; $\epsilon_r = 41.102$; $\rho = 1000$ kg/m³
Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(6.38, 6.38, 6.38); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch4233/Area Scan (71x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.32 W/kg

Ch4233/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.25 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 2.13 W/kg
SAR(1 g) = 1.05 W/kg; SAR(10 g) = 0.576 W/kg
Maximum value of SAR (measured) = 1.29 W/kg



0 dB = 1.29 W/kg = 1.11 dBW/kg

30_LTE Band 5_10M_1RB_25Offset_Back_5mm_Ch20525

Communication System: UID 0, LTE-FDD (0); Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: HSL_835 Medium parameters used: $f = 836.5$ MHz; $\sigma = 0.903$ S/m; $\epsilon_r = 41.224$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(6.38, 6.38, 6.38); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch20525/Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

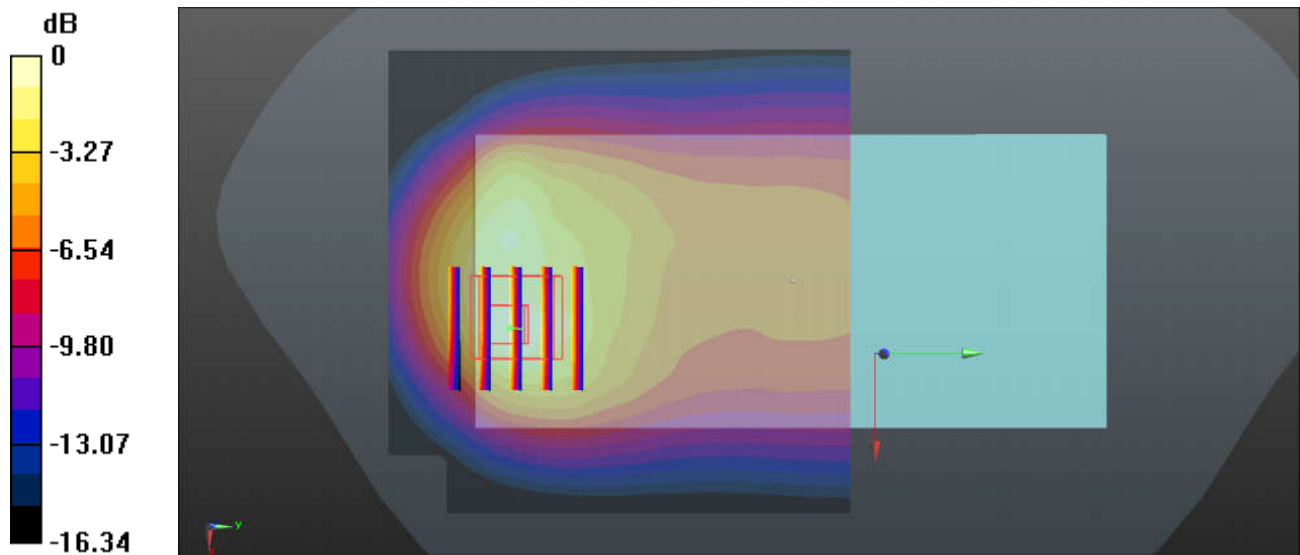
Ch20525/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.54 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 1.88 W/kg

SAR(1 g) = 0.896 W/kg; SAR(10 g) = 0.479 W/kg

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



0 dB = 1.18 W/kg = 0.72 dBW/kg

31_LTE Band 12_10M_1RB_25Offset_Back_5mm_Ch23095

Communication System: UID 0, LTE-FDD (0); Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium: HSL_750 Medium parameters used: $f = 707.5$ MHz; $\sigma = 0.852$ S/m; $\epsilon_r = 42.282$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.3 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(6.58, 6.58, 6.58); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch23095/Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.755 W/kg

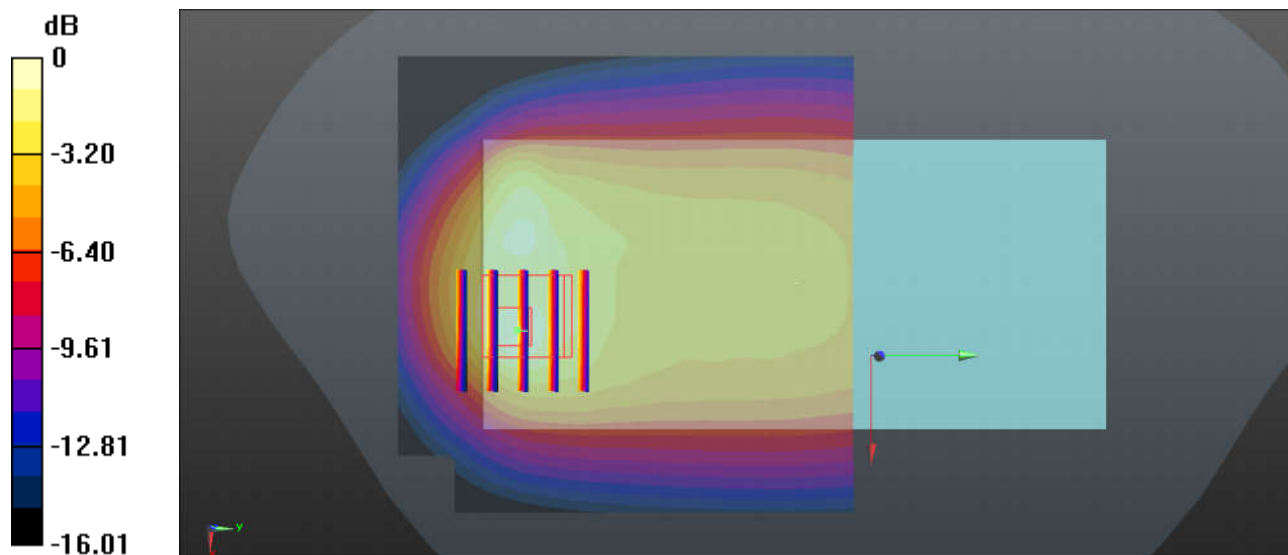
Ch23095/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.81 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.29 W/kg

SAR(1 g) = 0.561 W/kg; SAR(10 g) = 0.301 W/kg

Maximum value of SAR (measured) = 0.745 W/kg



0 dB = 0.745 W/kg = -1.28 dBW/kg

32_LTE Band 2_20M QPSK_100RB_0Offset_Back_5mm_Headset_Ch18700

Communication System: UID 0, LTE-FDD (0); Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: HSL_1900 Medium parameters used: $f = 1860$ MHz; $\sigma = 1.298$ S/m; $\epsilon_r = 41.517$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.9 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.35, 5.35, 5.35); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch18700/Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.38 W/kg

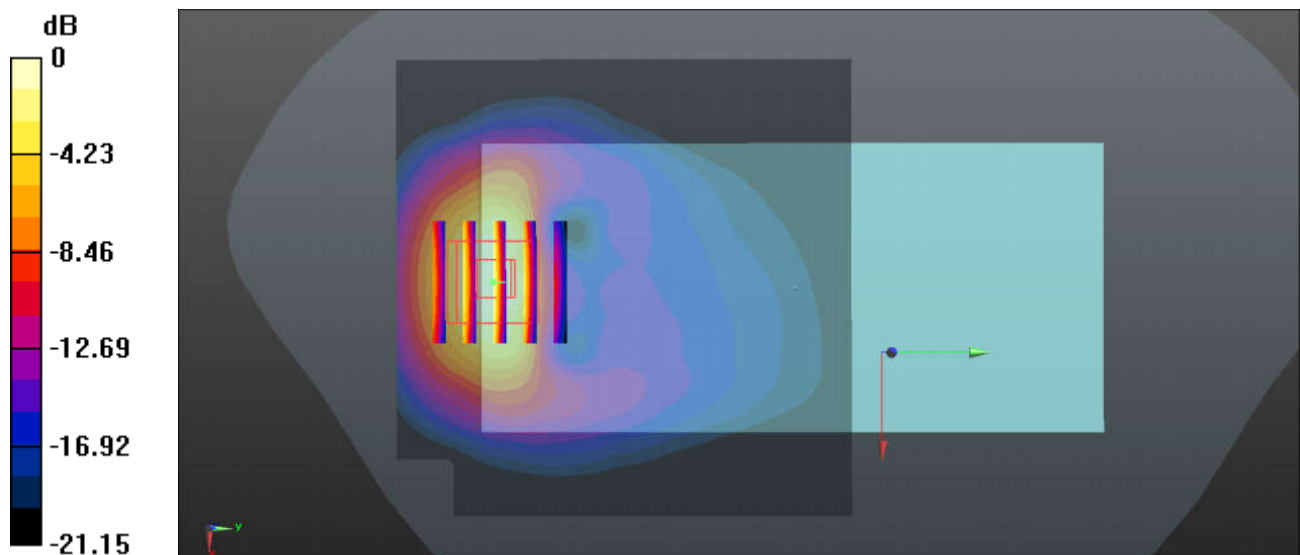
Ch18700/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.285 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 1.88 W/kg

SAR(1 g) = 1.01 W/kg; SAR(10 g) = 0.502 W/kg

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



0 dB = 1.28 W/kg = 1.07 dBW/kg

33_LTE Band 66_20M QPSK_100RB_0Offset_Back_5mm_Headset_Ch132072

Communication System: UID 0, LTE-FDD (0); Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: HSL_1750 Medium parameters used: $f = 1720$ MHz; $\sigma = 1.349$ S/m; $\epsilon_r = 39.854$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.3 °C ; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.59, 5.59, 5.59); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch132072/Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.31 W/kg

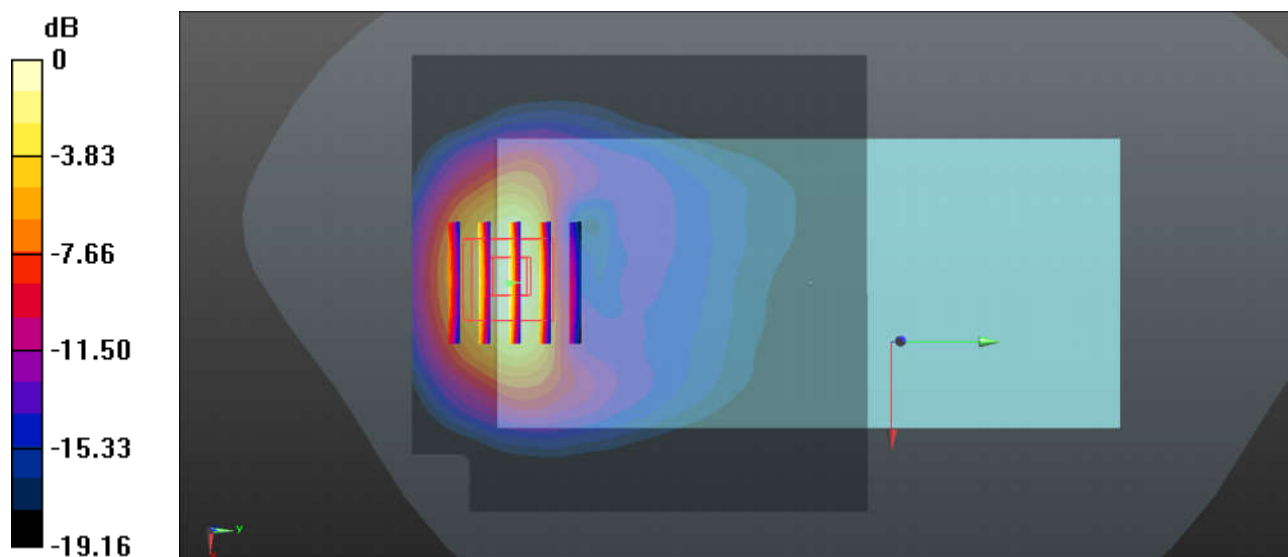
Ch132072/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.634 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 1.77 W/kg

SAR(1 g) = 1.01 W/kg; SAR(10 g) = 0.518 W/kg

Maximum value of SAR (measured) = 1.25 W/kg



0 dB = 1.25 W/kg = 0.97 dBW/kg

34_LTE Band 7_20M QPSK_100RB_0Offset_Back_5mm_Ch21350

Communication System: UID 0, LTE-FDD (0); Frequency: 2560 MHz; Duty Cycle: 1:1

Medium: HSL_2600 Medium parameters used: $f = 2560$ MHz; $\sigma = 1.978$ S/m; $\epsilon_r = 37.943$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(4.58, 4.58, 4.58); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch21350/Area Scan (101x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 1.44 W/kg

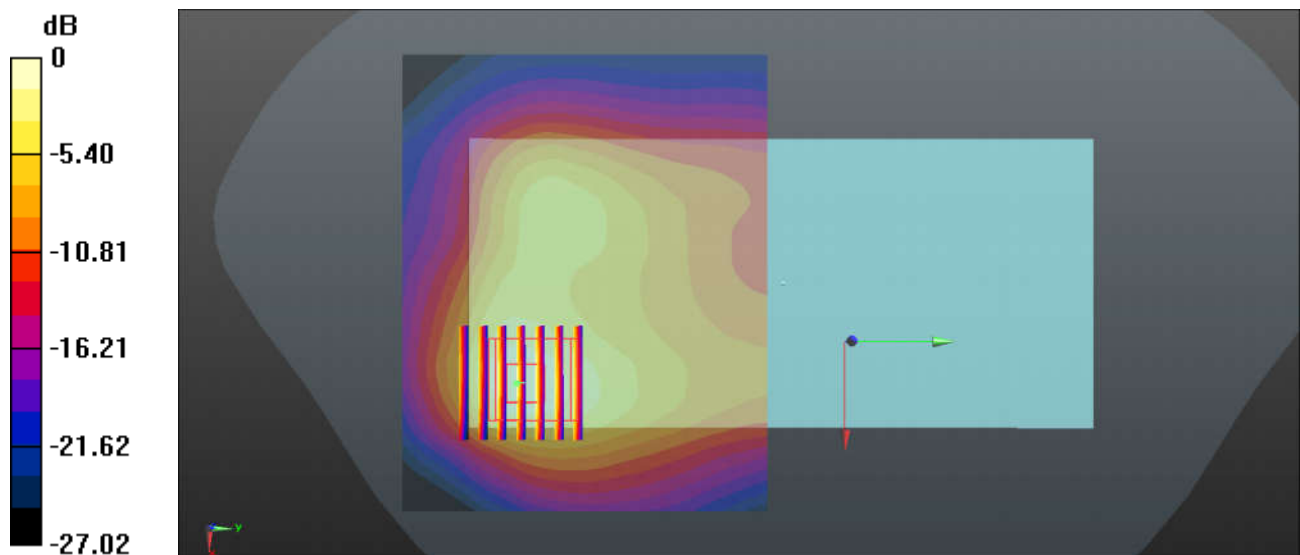
Ch21350/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.505 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 2.38 W/kg

SAR(1 g) = 1.03 W/kg; SAR(10 g) = 0.469 W/kg

Maximum value of SAR (measured) = 1.37 W/kg



0 dB = 1.37 W/kg = 1.37 dBW/kg

35_WLAN2.4GHz_802.11b 1Mbps_Back_5mm_Ch6

Communication System: UID 0, 802.11b (0); Frequency: 2437 MHz; Duty Cycle: 1:1.014

Medium: HSL_2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.843$ S/m; $\epsilon_r = 38.588$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(4.77, 4.77, 4.77); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch6/Area Scan (91x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

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

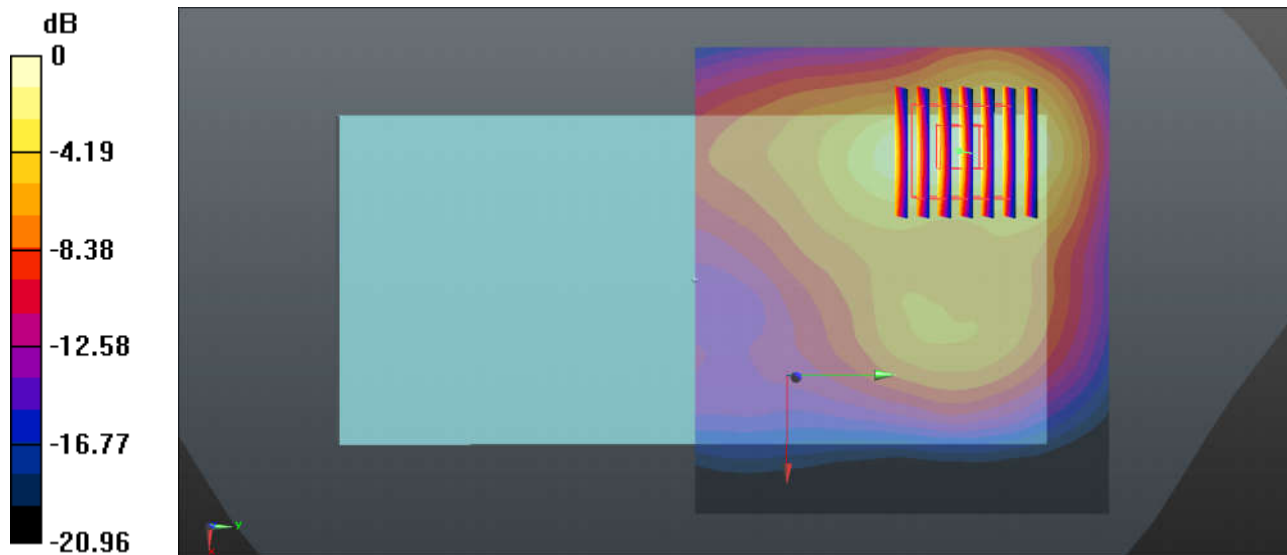
Ch6/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.776 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 1.74 W/kg

SAR(1 g) = 0.901 W/kg; SAR(10 g) = 0.428 W/kg

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



0 dB = 1.18 W/kg = 0.72 dBW/kg

36_Bluetooth_1Mbps_Back_5mm_Ch39

Communication System: UID 0, Bluetooth (0); Frequency: 2441 MHz; Duty Cycle: 1:1.293

Medium: HSL_2450 Medium parameters used: $f = 2441$ MHz; $\sigma = 1.848$ S/m; $\epsilon_r = 38.569$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(4.77, 4.77, 4.77); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch39/Area Scan (91x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.179 W/kg

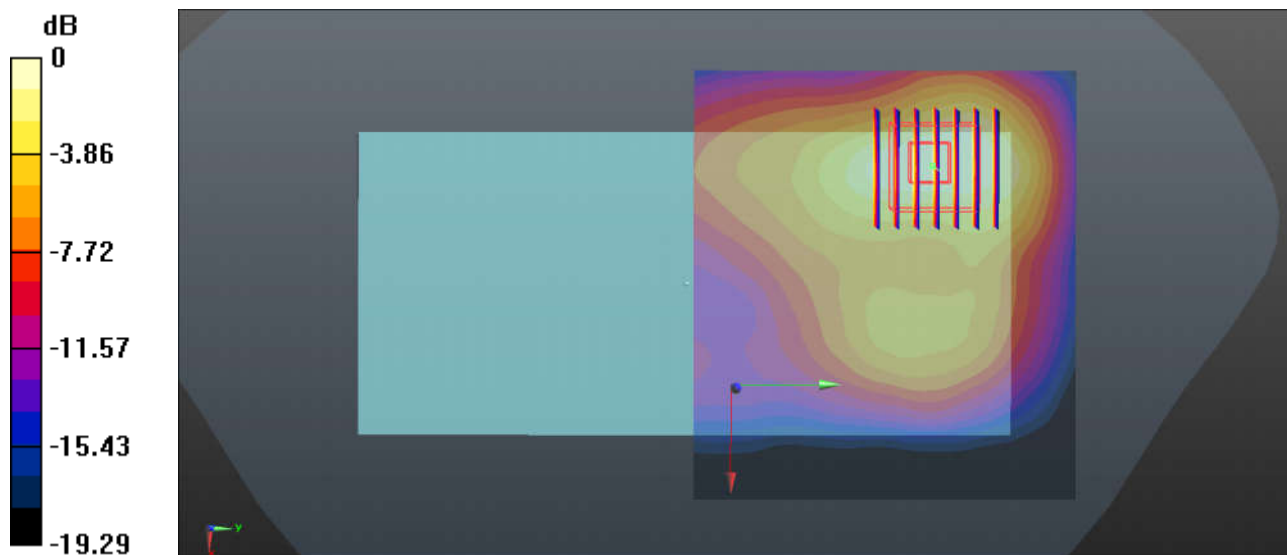
Ch39/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.281 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.223 W/kg

SAR(1 g) = 0.117 W/kg; SAR(10 g) = 0.057 W/kg

Maximum value of SAR (measured) = 0.152 W/kg



0 dB = 0.152 W/kg = -8.18 dBW/kg

37_GSM 1900_GPRS 2 Tx slots_Front_0mm_Ch810

Communication System: UID 0, PCS-2UP (0); Frequency: 1909.8 MHz; Duty Cycle: 1:4.15

Medium: HSL_1900 Medium parameters used: $f = 1910$ MHz; $\sigma = 1.36$ S/m; $\epsilon_r = 41.367$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.9 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.35, 5.35, 5.35); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch810/Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 5.94 W/kg

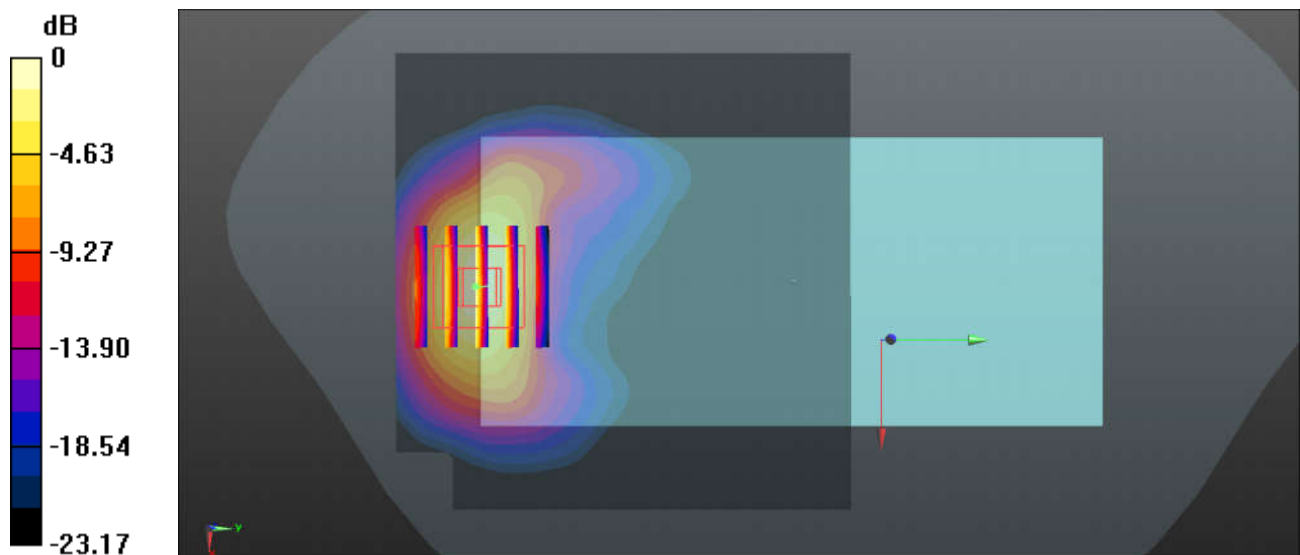
Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.169 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 11.7 W/kg

SAR(1 g) = 5.43 W/kg; SAR(10 g) = 2.45 W/kg

Maximum value of SAR (measured) = 7.13 W/kg



0 dB = 7.13 W/kg = 8.53 dBW/kg

38_WCDMA II_RMC 12.2Kbps_Back_0mm_Ch9262

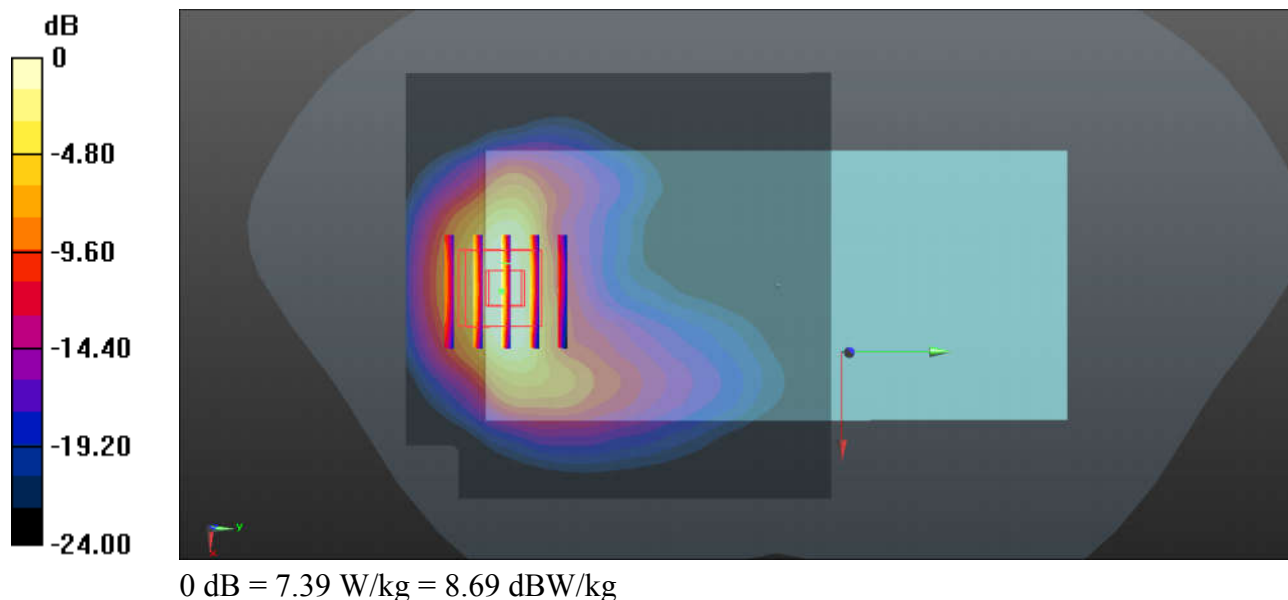
Communication System: UID 0, WCDMA (0); Frequency: 1852.4 MHz; Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: $f = 1852.4$ MHz; $\sigma = 1.29$ S/m; $\epsilon_r = 41.546$; $\rho = 1000$ kg/m³
Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.9 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.35, 5.35, 5.35); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch9262/Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 7.54 W/kg

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.530 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 11.4 W/kg
SAR(1 g) = 5.8 W/kg; SAR(10 g) = 2.76 W/kg
Maximum value of SAR (measured) = 7.39 W/kg



39_WCDMA IV_RMC 12.2Kbps_Back_0mm_Ch1513

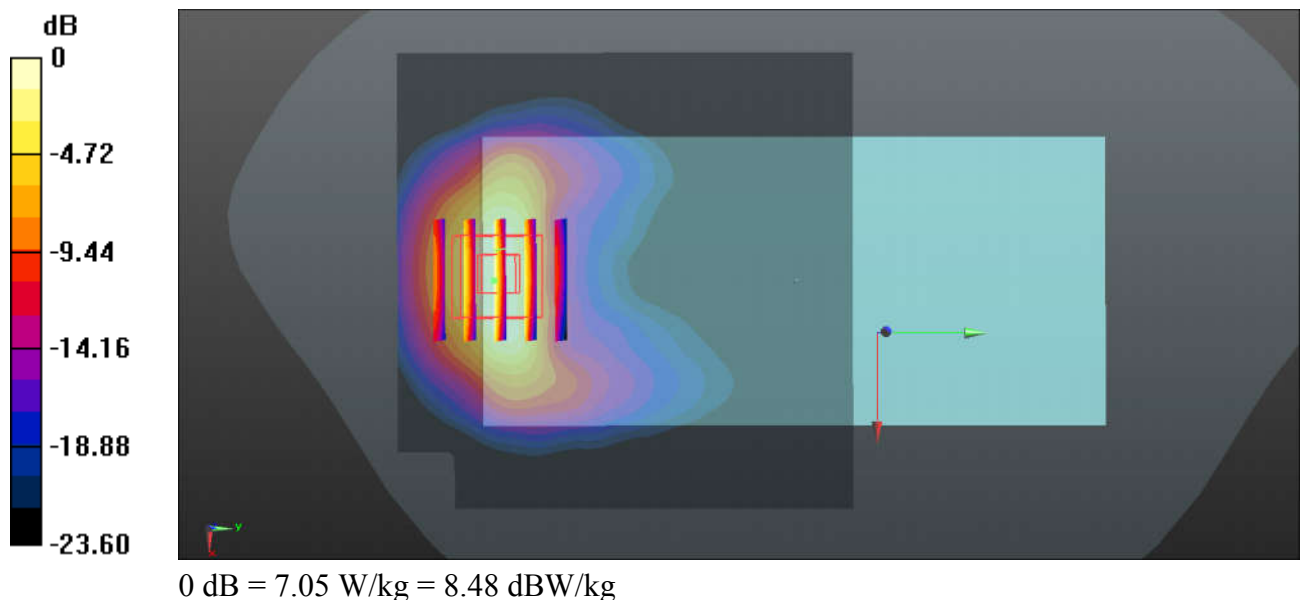
Communication System: UID 0, WCDMA (0); Frequency: 1752.6 MHz; Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: $f = 1753$ MHz; $\sigma = 1.385$ S/m; $\epsilon_r = 39.691$; $\rho = 1000$ kg/m³
Ambient Temperature : 23.3 °C ; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.59, 5.59, 5.59); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch1513/Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 7.18 W/kg

Ch1513/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.049 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 10.6 W/kg
SAR(1 g) = 5.56 W/kg; SAR(10 g) = 2.68 W/kg
Maximum value of SAR (measured) = 7.05 W/kg



40_LTE Band 2_20M QPSK_50RB_24Offset_Front_0mm_Ch19100

Communication System: UID 0, LTE-FDD (0); Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL_1900 Medium parameters used: $f = 1900$ MHz; $\sigma = 1.348$ S/m; $\epsilon_r = 41.396$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.9 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.35, 5.35, 5.35); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch19100/Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 7.17 W/kg

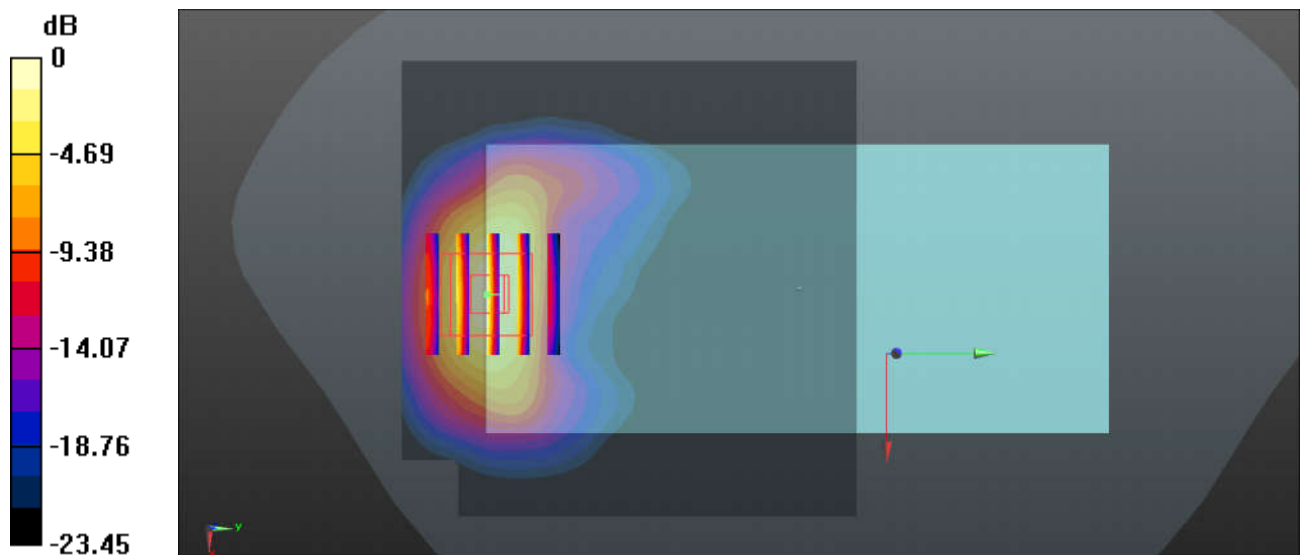
Ch19100/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.5660 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 13.5 W/kg

SAR(1 g) = 6.18 W/kg; SAR(10 g) = 2.76 W/kg

Maximum value of SAR (measured) = 8.49 W/kg



0 dB = 8.49 W/kg = 9.29 dBW/kg

41_LTE Band 66_20M QPSK_50RB_0Offset_Back_0mm_Ch132572

Communication System: UID 0, LTE-FDD (0); Frequency: 1770 MHz; Duty Cycle: 1:1

Medium: HSL_1750 Medium parameters used: $f = 1770$ MHz; $\sigma = 1.401$ S/m; $\epsilon_r = 39.629$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.3 °C ; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(5.59, 5.59, 5.59); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch132572/Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 6.53 W/kg

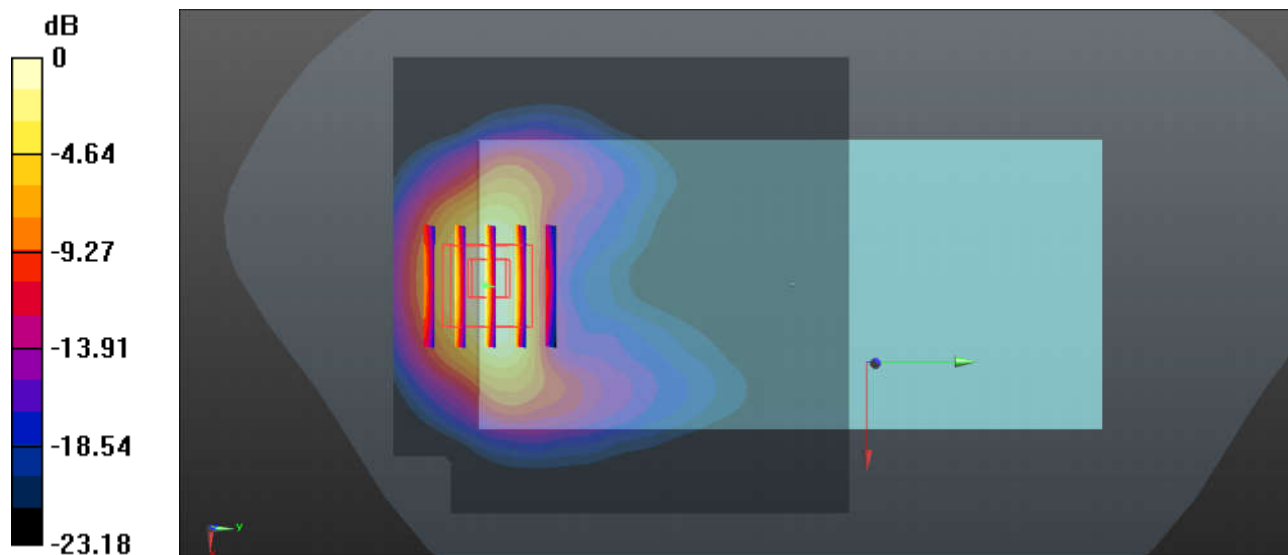
Ch132572/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.492 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 10.2 W/kg

SAR(1 g) = 5.1 W/kg; SAR(10 g) = 2.42 W/kg

Maximum value of SAR (measured) = 6.59 W/kg



0 dB = 6.59 W/kg = 8.19 dBW/kg

42_LTE Band 7_20M QPSK_1RB_99Offset_Back_0mm_Ch21350

Communication System: UID 0, LTE-FDD (0); Frequency: 2560 MHz; Duty Cycle: 1:1

Medium: HSL_2600 Medium parameters used: $f = 2560$ MHz; $\sigma = 1.978$ S/m; $\epsilon_r = 37.943$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3279; ConvF(4.58, 4.58, 4.58); Calibrated: 2019.3.4
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Ch21350/Area Scan (91x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 10.5 W/kg

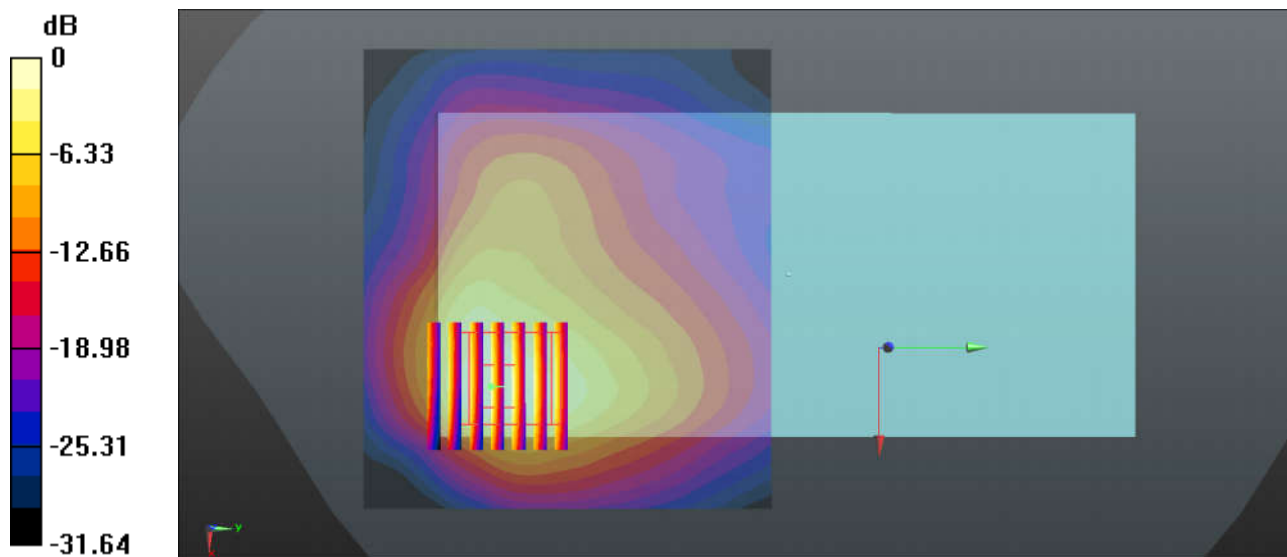
Ch21350/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.844 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 16.8 W/kg

SAR(1 g) = 6.3 W/kg; SAR(10 g) = 2.71 W/kg

Maximum value of SAR (measured) = 8.46 W/kg





Appendix C. Supplemental Tuner Head & Body SAR Results

The results are shown as follows.

Head SAR																														
Mode	Service/ Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	0	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105	112	119	126	133	140
WCDMA B2	RMC12.2K	9262	1852.4	N/A	N/A	Left Cheek	0mm	0.100	0.132	0.020	0.074	0.063	0.086	0.097	0.086	0.125	0.100	0.083	0.119	0.125	0.110	0.097	0.062	0.119	0.127	0.118	0.120	0.103	0.088	0.079
Mode	Service/ Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	1	8	15	22	29	36	43	50	57	64	71	78	85	92	99	106	113	120	127	134	141
WCDMA B4	RMC12.2K	1312	1712.4	N/A	N/A	Right Cheek	0mm	0.084	0.113	0.065	0.104	0.106	0.113	0.109	0.077	0.032	0.104	0.075	0.082	0.058	0.045	0.097	0.079	0.085	0.061	0.047	0.059	0.045	0.033	0.027
Mode	Service/ Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	2	9	16	23	30	37	44	51	58	65	72	79	86	93	100	107	114	121	128	135	142
WCDMA B5	RMC12.2K	4132	826.4	N/A	N/A	Right Cheek	0mm	0.273	0.306	0.062	0.164	0.197	0.239	0.296	0.170	0.064	0.185	0.147	0.061	0.096	0.114	0.174	0.172	0.169	0.009	0.007	0.126	0.083	0.078	0.072
Mode	Service/ Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	3	10	17	24	31	38	45	52	59	66	73	80	87	94	101	108	115	122	129	136	143
LTE B2	QPSK	19100	1900	1	49	Left Cheek	0mm	0.088	0.122	0.077	0.077	0.092	0.088	0.114	0.113	0.078	0.091	0.117	0.114	0.062	0.119	0.107	0.113	0.116	0.088	0.119	0.019	0.117	0.111	0.113
Mode	Service/ Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	4	11	18	25	32	39	46	53	60	67	74	81	88	95	102	109	116	123	130	137	
LTE B5	QPSK	20525	836.5	1	25	Right Cheek	0mm	0.277	0.318	0.068	0.208	0.181	0.049	0.268	0.255	0.089	0.037	0.163	0.261	0.036	0.015	0.037	0.175	0.230	0.102	0.064	0.023	0.107	0.004	
Mode	Service/ Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	5	12	19	26	33	40	47	54	61	68	75	82	89	96	103	110	117	124	131	138	
LTE B12	QPSK	23095	707.5	1	25	Right Cheek	0mm	0.182	0.203	0.181	0.009	0.077	0.001	0.019	0.011	0.074	0.006	0.029	0.055	0.001	0.164	0.003	0.034	0.026	0.016	0.019	0.006	0.000	0.000	
Mode	Service/ Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	6	13	20	27	34	41	48	55	62	69	76	83	90	97	104	111	118	125	132	139	
LTE B66	QPSK	132072	1720	1	0	Right Cheek	0mm	0.086	0.117	0.050	0.048	0.057	0.079	0.115	0.039	0.050	0.035	0.040	0.032	0.034	0.039	0.032	0.040	0.032	0.027	0.028	0.024	0.033	0.024	

Body SAR																														
Mode	Service/ Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	0	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105	112	119	126	133	140
WCDMA B2	RMC12.2K	9538	1907.6	N/A	N/A	Bottom Side	5mm	1.02	1.550	0.364	1.084	0.974	1.186	1.224	1.016	1.455	1.286	1.237	1.325	1.436	1.480	1.313	1.033	1.366	1.462	1.483	1.424	1.455	1.441	1.409
Mode	Service/ Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	1	8	15	22	29	36	43	50	57	64	71	78	85	92	99	106	113	120	127	134	141
WCDMA B4	RMC12.2K	1513	1752.6	N/A	N/A	Back	5mm	0.839	1.202	0.184	0.314	0.331	0.362	0.373	0.424	0.131	0.349	0.277	0.362	0.221	0.178	0.331	0.292	0.137	0.379	0.339	0.226	0.181	0.138	0.114
Mode	Service/ Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	2	9	16	23	30	37	44	51	58	65	72	79	86	93	100	107	114	121	128	135	142
WCDMA B5	RMC12.2K	4233	846.6	N/A	N/A	Back	5mm	1.05	1.317	0.096	0.645	0.519	0.910	1.304	1.303	0.094	0.959	0.527	0.415	0.837	0.870	0.798	0.704	0.706	0.126	0.027	1.034	0.543	0.576	0.545
Mode	Service/ Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	3	10	17	24	31	38	45	52	59	66	73	80	87	94	101	108	115	122	129	136	143
LTE B2	QPSK	19100	1900	100	0	Bottom Side	5mm	0.912	1.413	0.672	0.925	0.906	1.023	1.133	1.171	0.669	1.051	1.132	0.982	0.574	1.225	1.106	1.139	1.156	0.753	1.095	0.264	1.219	1.176	1.124
Mode	Service/ Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	4	11	18	25	32	39	46	53	60	67	74	81	88	95	102	109	116	123	130	137	
LTE B5	QPSK	20525	836.5	1	25	Back	5mm	0.896	1.213	0.245	0.768	0.626	0.209	0.982	0.963	0.321	0.103	0.605	0.855	0.168	0.052	0.957	0.658	0.819	0.422	0.244	0.067	0.458	0.028	
Mode	Service/ Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	5	12	19	26	33	40	47	54	61	68	75	82	89	96	103	110	117	124	131	138	
LTE B12	QPSK	23095	707.5	1	25	Back	5mm	0.561	0.755	0.577	0.035	0.256	0.008	0.067	0.042	0.227	0.031	0.097	0.133	0.013	0.541	0.019	0.113	0.088	0.056	0.065	0.034	0.004	0.003	
Mode	Service/ Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	6	13	20	27	34	41	48	55	62	69	76	83	90	97	104	111	118	125	132	139	
LTE B66	QPSK	132572	1770	50	0	Bottom Side	5mm	1.01	1.552	0.802	0.826	0.953	1.108	1.174	0.712	0.819	0.657	0.770	0.548	0.510	0.746	0.593	0.791	0.578	0.474	0.517	0.420	0.451	0.338	

Verified single SAR >1.2W/Kg																														
Mode	Service/ Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
WCDMA B2	RMC12.2K	9538	1907.6	N/A	N/A	Bottom Side	5mm	1.02	1.550	0.364	0.527	0.763	0.838	0.896	0.978	0.981	1.084	1.070	1.087	1.120	1.137	0.599	0.844	0.974	1.060	1.065	1.108	1.147	1.152	1.176
										21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
										1.186	1.190	1.203	1.228	0.551	0.748	0.901	1.224	1.307	1.315	1.344	1.354	1.377	0.649	1.016	1.129	1.324	1.394	1.404	1.426	1.437
										42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
										1.455	0.408	0.636	0.845	1.246	1.275	1.284	1.286	1.280	1.268	1.238	0.461	0.700	1.069	1.237	1.288	1.319	1.360	1.361	1.360	1.349
										63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
										1.325	0.581	0.849	1.216	1.417	1.448	1.452	1.436	1.425	1.415	0.672	0.951	1.296	1.464	1.480	1.472	1.454	1.445	0.402	0.969	1.247
										84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104
										1.313	1.317	1.321	1.316	1.286	0.446	0.674	1.033	1.305	1.377	1.383	1.391	1.390	1.387	1.366	0.553	1.173	1.422	1.473	1.477	1.471
										105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
										1.462	1.447	0.632	0.893	1.243	1.488	1.495	1.483	1.473	0.293	1.349	1.436	1.440	1.439	1.424	1.398	1.330	0.325	0.530	0.959	1.369
										126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143			
										1.455	1.465	1.456	1.433	1.380	0.392	1.060	1.441	1.431	1.409	1.373	0.456	0.710	1.374	1.409	1.390	1.385	1.342			
Mode	Service/ Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
WCDMA B4	RMC12.2K	1513	1752.6	N/A	N/A	Back	5mm	0.839	1.202	0.146	0.184	0.233	0.249	0.263	0.283	0.285	0.318	0.314	0.327	0.335	0.350	0.250	0.293	0.315	0.331	0.332	0.340	0.349	0.353	0.358
										21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
										0.361	0.362	0.366	0.375	0.498	0.471	0.447	0.391	0.373	0.368	0.361	0.357	0.345	0.541	0.458	0.424	0.355	0.329	0.324	0.310	0.305
										42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
										0.289	0.131	0.172	0.204	0.293	0.309	0.326	0.336	0.349	0.357	0.378	0.175	0.207	0.247	0.269	0.277	0.283	0.302	0.304	0.314	0.318
										63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
										0.330	0.362	0.324	0.281	0.246	0.232	0.230	0.223	0.221	0.212	0.459	0.361	0.270	0.210	0.190	0.178	0.174	0.163	0.136	0.231	0.293
										84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104
										0.325	0.331	0.348	0.356	0.381	0.182	0.214	0.254	0.292	0.309	0.313	0.318	0.321	0.326	0.339	0.137	0.231	0.292	0.324	0.341	0.347
										105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
										0.356	0.379	0.181	0.182	0.254	0.322	0.322	0.326	0.339	0.074	0.176	0.206	0.205	0.212	0.220	0.226	0.249	0.099	0.118	0.142	0.166
										126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143			
										0.181	0.181	0.188	0.191	0.201	0.234	0.175	0.143	0.138	0.136	0.131	0.367	0.267	0.138	0.121	0.114	0.111	0.105			
Mode	Service/ Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
WCDMA B5	RMC12.2K	4233	846.6	N/A	N/A	Back	5mm	1.05	1.317	0.067	0.062	0.096	0.172	0.249	0.319	0.344	0.524	0.544	0.645	0.718	1.020	0.176	0.292	0.398	0.489	0.519	0.590	0.676	0.743	0.807
										21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
										0.843	0.862	0.910	1.159	0.255	0.424	0.598	1.200	1.306	1.304	1.308	1.316	1.236	0.171	0.457	0.640	1.303	1.315	1.314	1.299	1.266
										42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
										1.145	0.061	0.094	0.135	0.397	0.482	0.593	0.740	0.863	0.959	1.282	0.111	0.162	0.290	0.414	0.472	0.527	0.754	0.839	0.977	1.045
										63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
										1.312	0.239	0.415	0.775	1.095	1.091	1.056	1.008	0.977	0.837	0.156	0.302	0.735	1.280	1.155	0.928	0.870	0.647	0.057	0.169	0.369
										84	85	86	87	88	89	90	91	92	93	94	95	96	97	99	100	101	102	103	104	
										0.545	0.639	0.798	0.884	1.306	0.106	0.156	0.273	0.525	0.704	0.793	0.868	0.925	0.991	1.279	0.198	0.706	1.104	1.128	1.081	1.060
										105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
										1.034	0.908	0.126	0.251	0.648	0.993	1.010	0.947	0.720	0.027	0.201	0.363	0.390	0.445	0.520	0.596	1.034	0.049	0.072	0.133	0.278
										126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143			
										0.429	0.453	0.543	0.590	0.814	0.089	0.375	0.644	0.595	0.576	0.483	0.057	0.122	0.890	0.705	0.594	0.545	0.379			

Mode	Service/ Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
LTE B2	QPSK	19100	1900	100	0	Bottom Side	5mm	0.912	1.413	0.298	0.425	0.620	0.672	0.724	0.793	0.795	0.886	0.876	0.905	0.925	0.946	0.483	0.679	0.792	0.869	0.870	0.906	0.942	0.946	0.979
										21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
										0.978	0.989	1.001	1.023	0.462	0.626	0.744	1.014	1.094	1.097	1.133	1.142	1.165	0.560	0.848	0.941	1.112	1.171	1.175	1.200	1.205
										42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
										1.234	0.325	0.505	0.669	1.021	1.045	1.071	1.071	1.074	1.051	0.370	0.561	0.849	0.998	1.045	1.073	1.132	1.128	1.141	1.137	
										63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
										1.130	0.482	0.694	0.982	1.175	1.204	1.217	1.218	1.212	1.209	0.574	0.782	1.058	1.205	1.236	1.241	1.231	1.225	0.319	0.771	1.003
										84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104
										1.087	1.079	1.089	1.106	1.086	0.359	0.540	0.826	1.059	1.124	1.139	1.162	1.167	1.168	1.162	0.460	0.958	1.156	1.217	1.232	1.233
										105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
										1.234	1.231	0.539	0.753	1.024	1.257	1.255	1.250	1.258	0.237	1.095	1.200	1.199	1.205	1.208	1.204	1.153	0.264	0.428	0.762	1.112
										126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143			
										1.216	1.218	1.227	1.219	1.196	0.334	0.854	1.192	1.199	1.186	1.176	0.388	0.587	1.118	1.151	1.151	1.141	1.124			
Mode	Service/ Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																					
									Auto-Tune	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
LTE B66	QPSK	132572	1770	50	0	Bottom Side	5mm	1.01	1.552	0.442	0.550	0.671	0.708	0.748	0.795	0.802	0.868	0.861	0.893	0.909	0.947	0.726	0.826	0.867	0.904	0.906	0.912	0.934	0.939	0.953
										21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
										0.961	0.962	0.965	0.974	1.212	1.162	1.108	0.951	0.903	0.886	0.874	0.859	0.825	1.174	1.086	1.005	0.839	0.777	0.767	0.735	0.712
										42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
										0.680	0.389	0.485	0.566	0.757	0.786	0.819	0.845	0.858	0.878	0.915	0.509	0.577	0.657	0.692	0.704	0.718	0.744	0.746	0.762	0.770
										63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
										0.787	0.954	0.834	0.701	0.596	0.555	0.548	0.531	0.522	0.496	1.119	0.903	0.674	0.510	0.456	0.430	0.412	0.389	0.390	0.615	0.746
										84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104
										0.814	0.833	0.856	0.877	0.917	0.518	0.593	0.670	0.735	0.763	0.770	0.780	0.789	0.791	0.807	0.994	0.755	0.649	0.601	0.583	0.578
										105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
										0.571	0.547	1.172	0.977	0.735	0.475	0.474	0.461	0.435	0.217	0.447	0.506	0.506	0.517	0.532	0.544	0.587	0.287	0.330	0.380	0.420
										126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143			
										0.445	0.446	0.455	0.459	0.472	0.644	0.451	0.345	0.326	0.319	0.307	0.924	0.705	0.338	0.293	0.274	0.264	0.247			



Appendix D. DASY Calibration Certificate

The DASY calibration certificates are shown as follows.



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中国认可
国际互认
校准
CALIBRATION
CNAS L0570

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Client

Sporton

Certificate No: **Z19-60081**

CALIBRATION CERTIFICATE

Object **D750V3 - SN: 1087**

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

Calibration date: **March 27, 2019**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106277	20-Aug-18 (CTTL, No.J18X06862)	Aug-19
Power sensor NRP8S	104291	20-Aug-18 (CTTL, No.J18X06862)	Aug-19
Reference Probe EX3DV4	SN 3617	31-Jan-19(SPEAG,No.EX3-3617_Jan19)	Jan-20
DAE4	SN 1331	06-Feb-19(SPEAG,No.DAE4-1331_Feb19)	Feb-20
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	23-Jan-19 (CTTL, No.J19X00336)	Jan-20
NetworkAnalyzer E5071C	MY46110673	24-Jan-19 (CTTL, No.J19X00547)	Jan-20

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

Issued: March 29, 2019

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



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Glossary:

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

Calibration is Performed According to the Following Standards:

- 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
- IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

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



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Measurement Conditions

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

DASY Version	DASY52	52.10.2.1495
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	43.0 $\pm$ 6 %	0.90 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.10 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	8.36 W/kg $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	1.42 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	5.65 W/kg $\pm$ 18.7 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	56.9 $\pm$ 6 %	0.94 mho/m $\pm$ 6 %
Body TSL temperature change during test	<1.0 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.09 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	8.58 W/kg $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	1.41 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	5.75 W/kg $\pm$ 18.7 % (k=2)



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.4Ω- 2.59jΩ
Return Loss	- 29.3dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	51.6Ω- 3.86jΩ
Return Loss	- 27.7dB

General Antenna Parameters and Design

Electrical Delay (one direction)	0.898 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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DASY5 Validation Report for Head TSL

Date: 03.26.2019

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1087

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 750$ MHz; $\sigma = 0.903$ S/m; $\epsilon_r = 43.01$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(10.03, 10.03, 10.03) @ 750 MHz; Calibrated: 1/31/2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1331; Calibrated: 2/6/2019
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

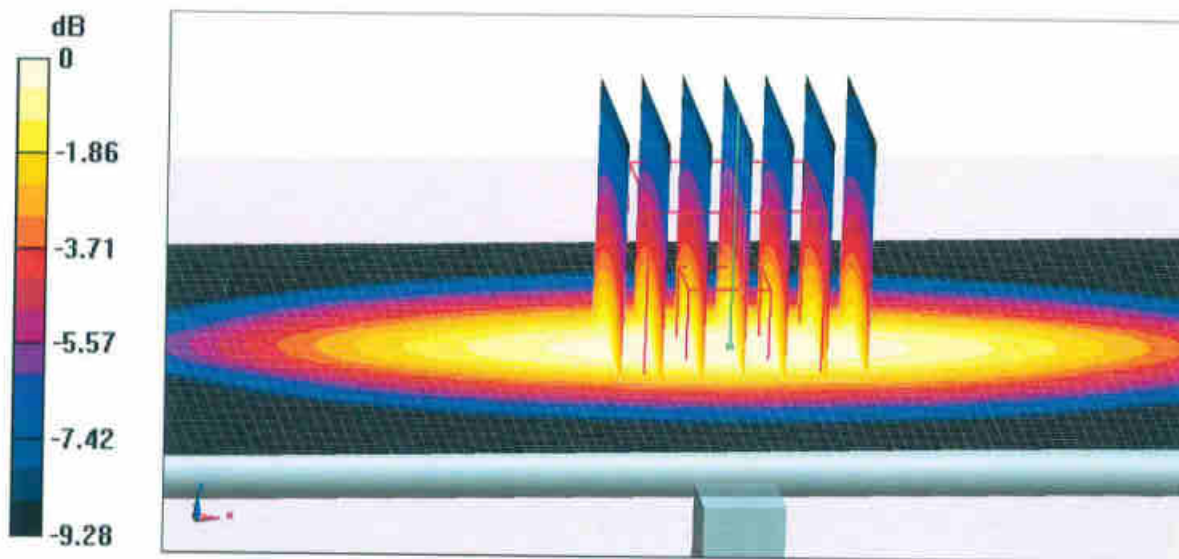
Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.05 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 3.00 W/kg

SAR(1 g) = 2.1 W/kg; SAR(10 g) = 1.42 W/kg

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



0 dB = 2.72 W/kg = 4.35 dBW/kg

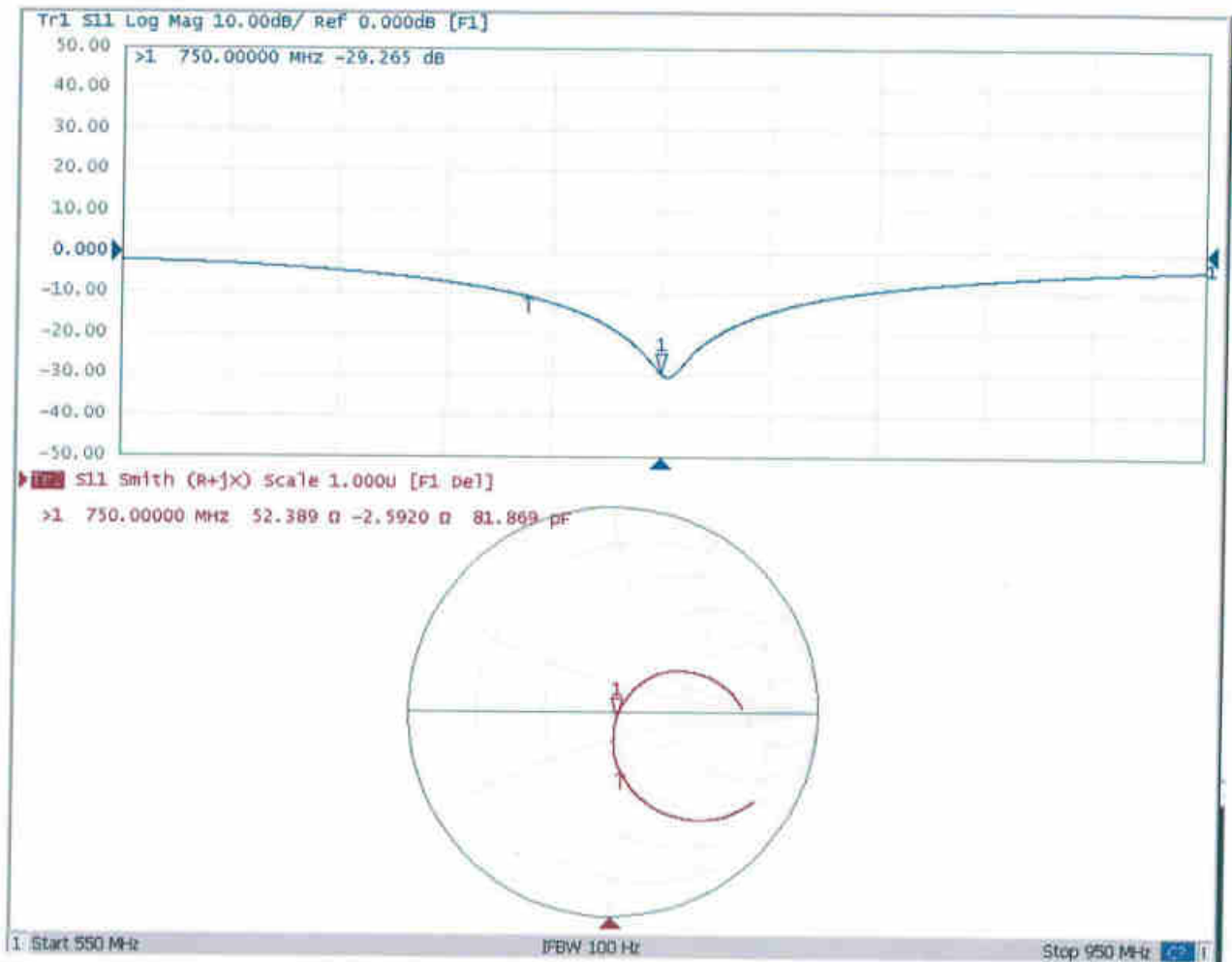


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Impedance Measurement Plot for Head TSL





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DASY5 Validation Report for Body TSL

Date: 03.26.2019

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1087

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 750$ MHz; $\sigma = 0.935$ S/m; $\epsilon_r = 56.85$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(9.85, 9.85, 9.85) @ 750 MHz; Calibrated: 1/31/2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1331; Calibrated: 2/6/2019
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

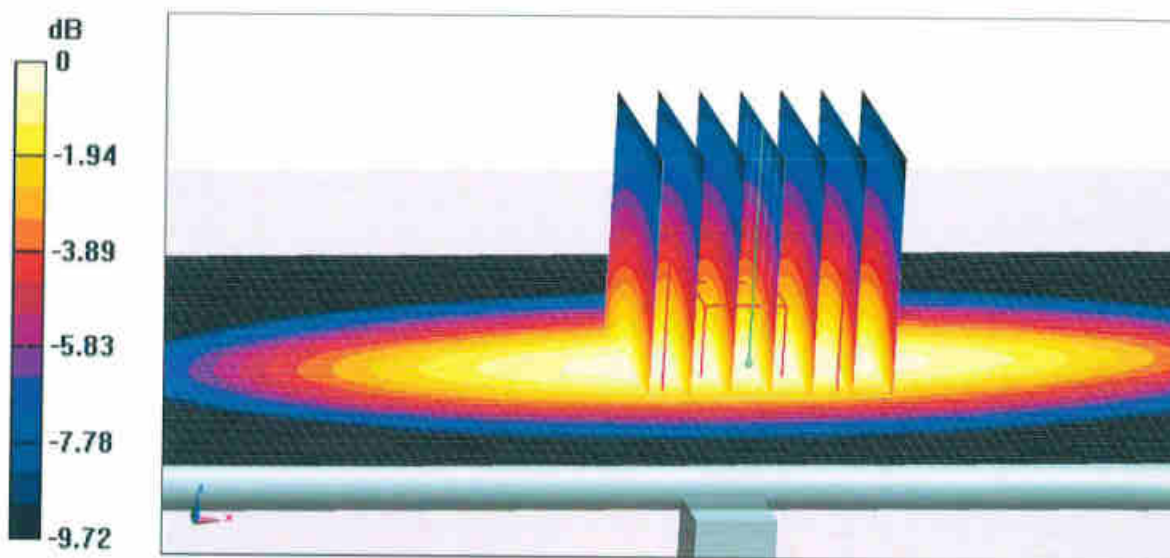
Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 53.71 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 3.08 W/kg

SAR(1 g) = 2.09 W/kg; SAR(10 g) = 1.41 W/kg

Maximum value of SAR (measured) = 2.75 W/kg



0 dB = 2.75 W/kg = 4.39 dBW/kg

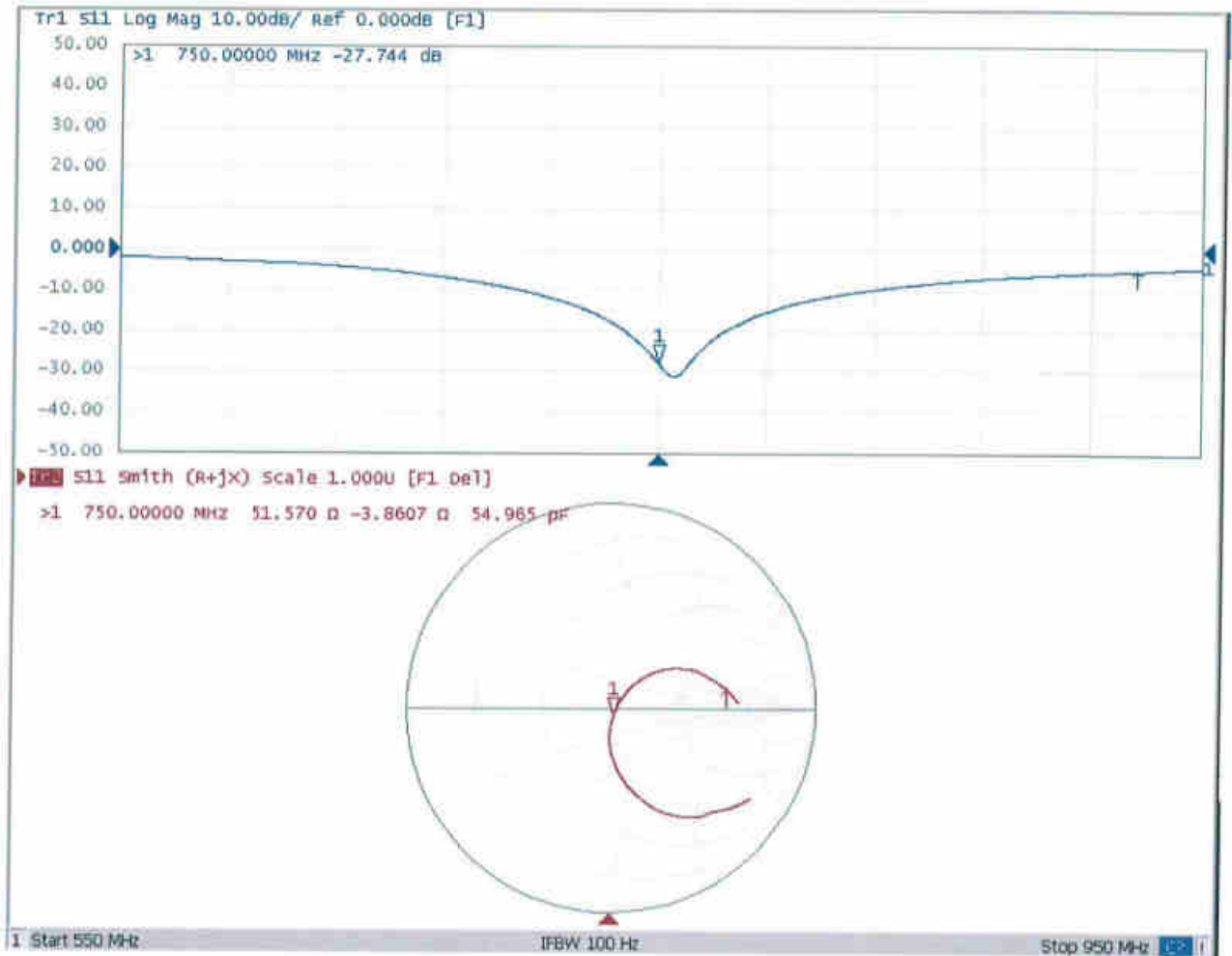


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Impedance Measurement Plot for Body TSL





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Client **Sporton**

Certificate No: **Z19-60082**

CALIBRATION CERTIFICATE

Object **D835V2 - SN: 4d151**

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

Calibration date: **March 27, 2019**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106277	20-Aug-18 (CTTL, No.J18X06862)	Aug-19
Power sensor NRP8S	104291	20-Aug-18 (CTTL, No.J18X06862)	Aug-19
Reference Probe EX3DV4	SN 3617	31-Jan-19(SPEAG,No.EX3-3617_Jan19)	Jan-20
DAE4	SN 1331	06-Feb-19(SPEAG,No.DAE4-1331_Feb19)	Feb-20
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	23-Jan-19 (CTTL, No.J19X00336)	Jan-20
NetworkAnalyzer E5071C	MY46110673	24-Jan-19 (CTTL, No.J19X00547)	Jan-20

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

Issued: March 30, 2019

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Glossary:

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

Calibration is Performed According to the Following Standards:

- 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
- IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

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



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Measurement Conditions

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

DASY Version	DASY52	52.10.2.1495
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	42.7 $\pm$ 6 %	0.93 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.36 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	9.30 W/kg $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	1.56 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	6.16 W/kg $\pm$ 18.7 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	56.7 $\pm$ 6 %	0.94 mho/m $\pm$ 6 %
Body TSL temperature change during test	<1.0 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.32 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	9.53 W /kg $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm^3 (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	1.52 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	6.20 W/kg $\pm$ 18.7 % (k=2)



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.8Ω- 3.28jΩ
Return Loss	- 29.5dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.7Ω- 3.98jΩ
Return Loss	- 25.5dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.253 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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DASY5 Validation Report for Head TSL

Date: 03.26.2019

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d151

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 835$ MHz; $\sigma = 0.925$ S/m; $\epsilon_r = 42.68$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(9.75, 9.75, 9.75) @ 835 MHz; Calibrated: 1/31/2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1331; Calibrated: 2/6/2019
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

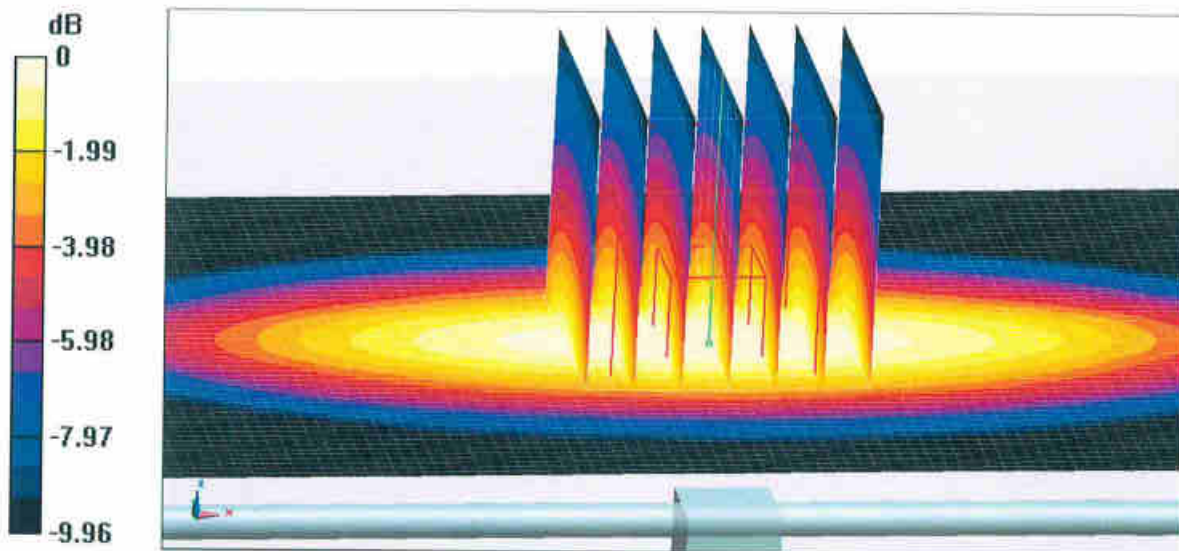
Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.34 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 3.55 W/kg

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

Maximum value of SAR (measured) = 3.14 W/kg



0 dB = 3.14 W/kg = 4.97 dBW/kg



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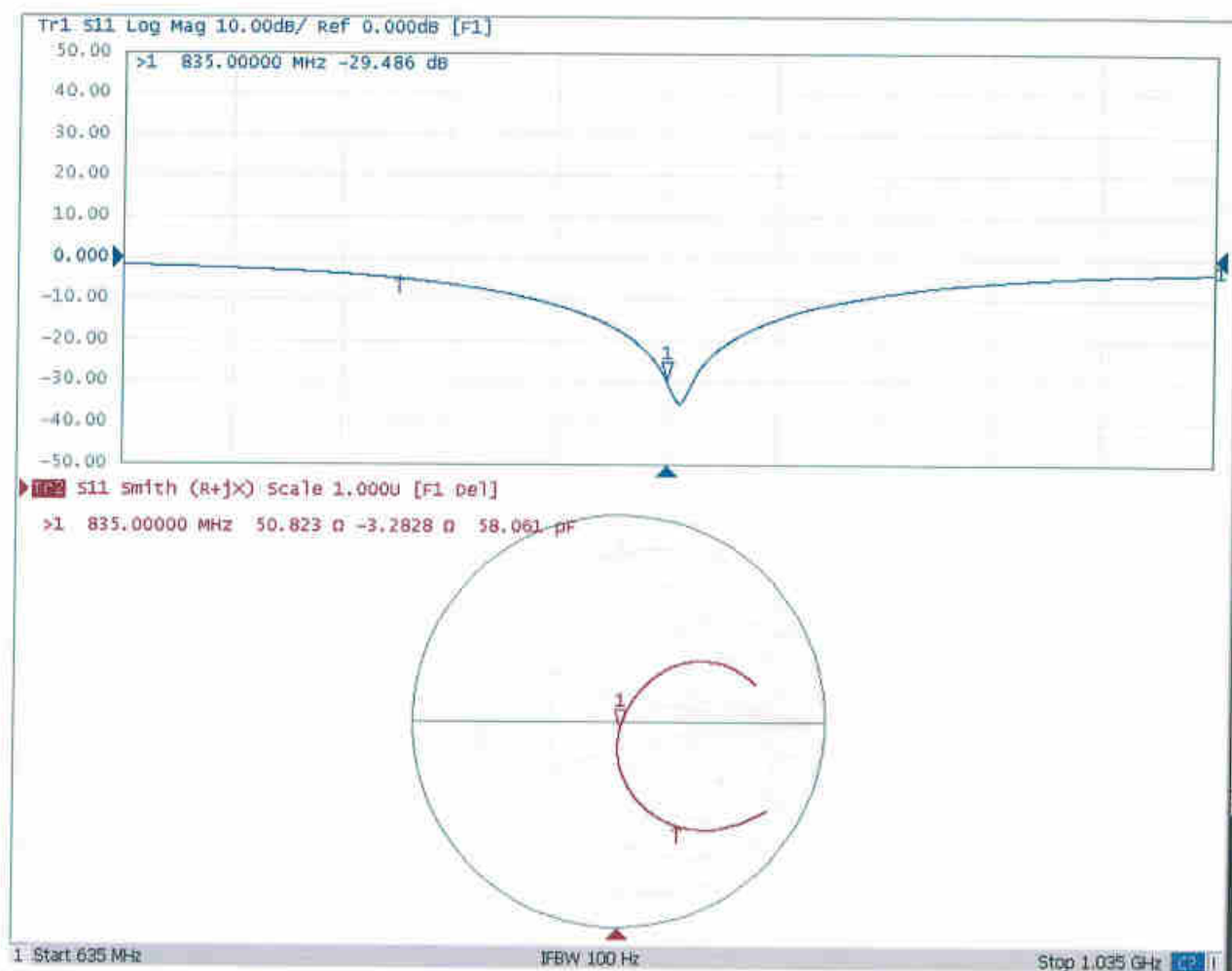
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Impedance Measurement Plot for Head TSL





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DASY5 Validation Report for Body TSL

Date: 03.26.2019

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d151

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 835$ MHz; $\sigma = 0.944$ S/m; $\epsilon_r = 56.66$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(9.61, 9.61, 9.61) @ 835 MHz; Calibrated: 1/31/2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1331; Calibrated: 2/6/2019
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

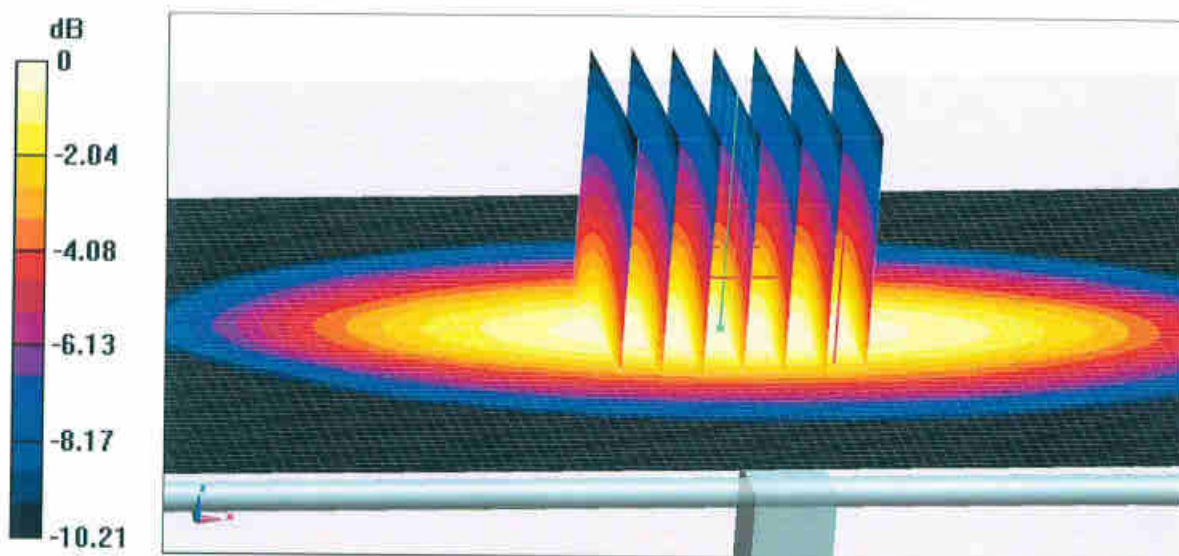
Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56.03 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 3.53 W/kg

SAR(1 g) = 2.32 W/kg; SAR(10 g) = 1.52 W/kg

Maximum value of SAR (measured) = 3.12 W/kg



0 dB = 3.12 W/kg = 4.94 dBW/kg

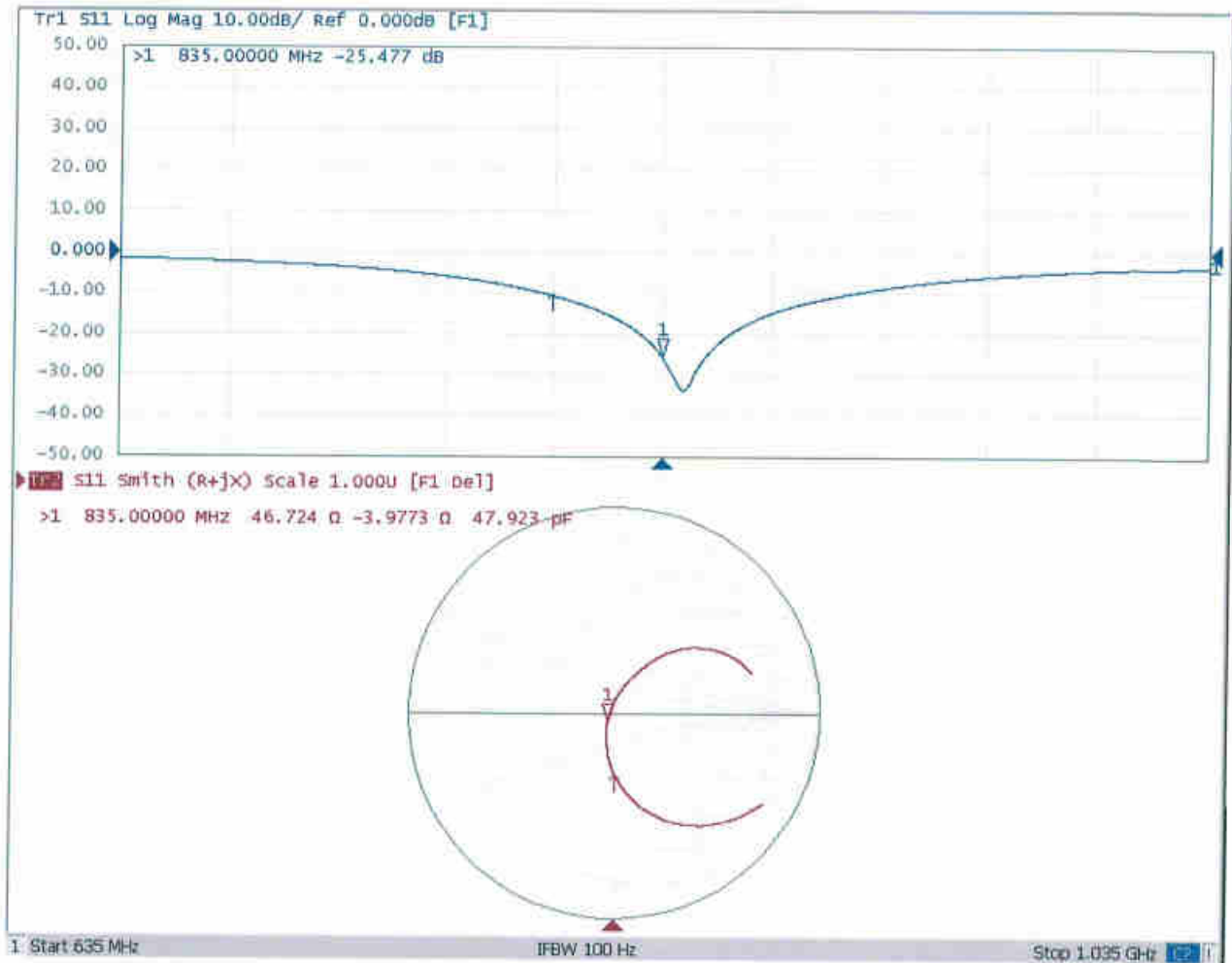


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Impedance Measurement Plot for Body TSL





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Client

Sporton

Certificate No:

Z19-60084

CALIBRATION CERTIFICATE

Object **D1750V2 - SN: 1090**

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

Calibration date: **March 27, 2019**

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	20-Aug-18 (CTTL, No.J18X06862)	Aug-19
Power sensor NRP8S	104291	20-Aug-18 (CTTL, No.J18X06862)	Aug-19
Reference Probe EX3DV4	SN 3617	31-Jan-19(SPEAG,No.EX3-3617_Jan19)	Jan-20
DAE4	SN 1331	06-Feb-19(SPEAG,No.DAE4-1331_Feb19)	Feb-20
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	23-Jan-19 (CTTL, No.J19X00336)	Jan-20
NetworkAnalyzer E5071C	MY46110673	24-Jan-19 (CTTL, No.J19X00547)	Jan-20

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

Issued: March 29, 2019

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