

**P30 WLAN5G\_802.11n20\_Rear Face\_1.5cm\_Ch120**

Communication System: 802.11n\_HT20; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: HSL5G\_0901 Medium parameters used:  $f = 5600$  MHz;  $\sigma = 5.211$  S/m;  $\epsilon_r = 36.228$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.6°C; Liquid Temperature : 22.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(4.85, 4.85, 4.85); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

- **Area Scan (101x181x1)**: Interpolated grid:  $dx=1.000$  mm,  $dy=1.000$  mm

Maximum value of SAR (interpolated) = 0.468 W/kg

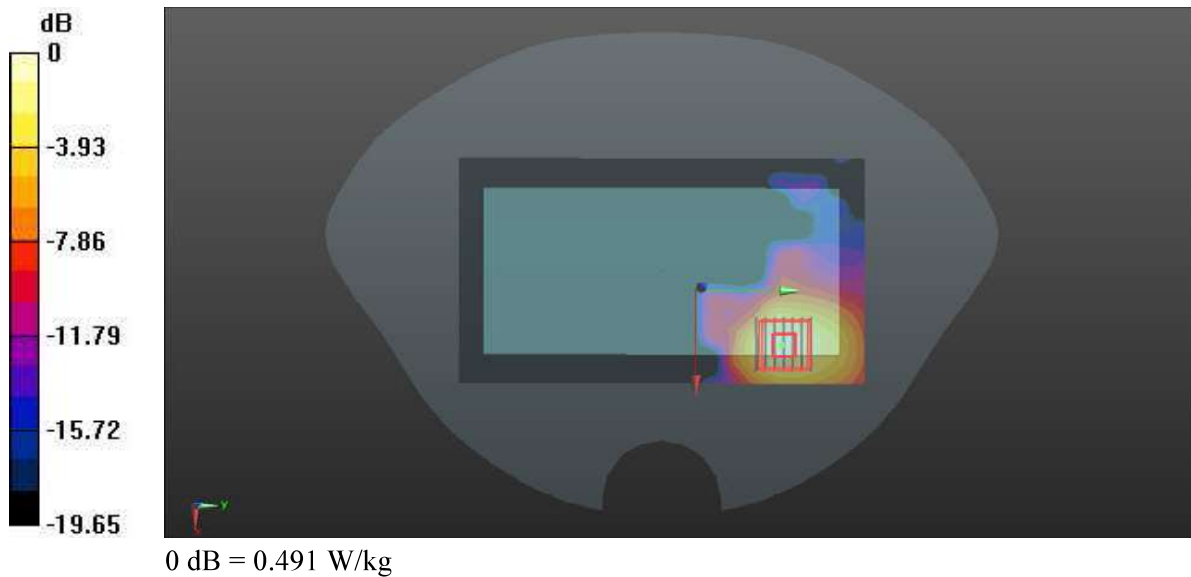
- **Zoom Scan (7x7x12)/Cube 0**: Measurement grid:  $dx=4$ mm,  $dy=4$ mm,  $dz=2$ mm

Reference Value = 0.851 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.763 W/kg

**SAR(1 g) = 0.213 W/kg; SAR(10 g) = 0.077 W/kg**

Maximum value of SAR (measured) = 0.491 W/kg



**P31 WLAN5G\_802.11n20\_Rear Face\_1.5cm\_Ch157**

Communication System: 802.11n\_HT20; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: HSL5G\_0902 Medium parameters used:  $f = 5785$  MHz;  $\sigma = 5.417$  S/m;  $\epsilon_r = 35.84$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.2°C; Liquid Temperature : 22.5°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(4.86, 4.86, 4.86); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**- Area Scan (101x181x1):** Interpolated grid:  $dx=1.000$  mm,  $dy=1.000$  mm

Maximum value of SAR (interpolated) = 0.485 W/kg

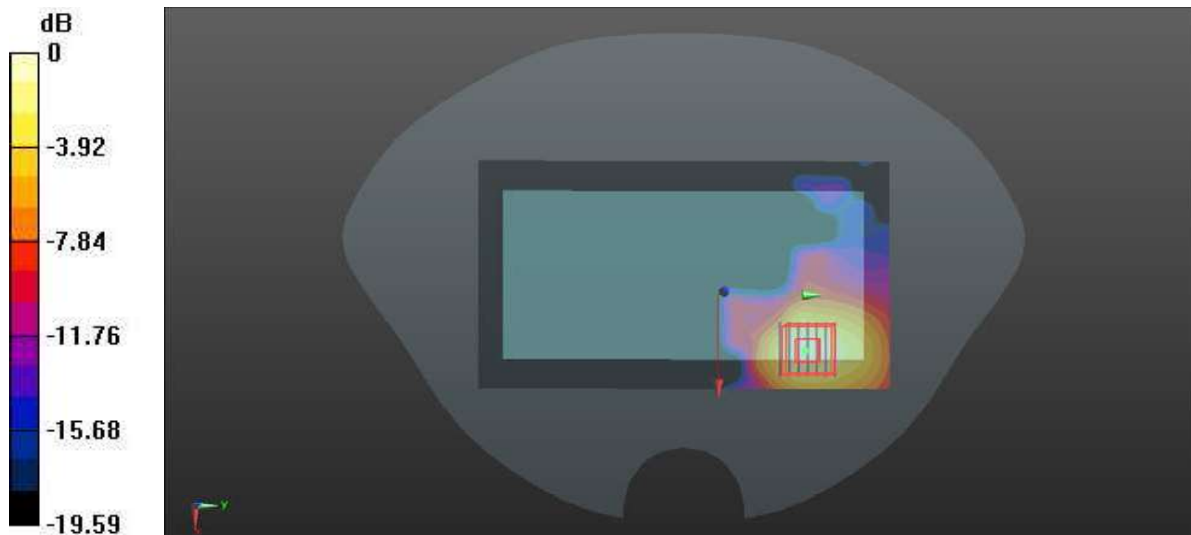
**- Zoom Scan (7x7x12)/Cube 0:** Measurement grid:  $dx=4$ mm,  $dy=4$ mm,  $dz=2$ mm

Reference Value = 0.855 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.784 W/kg

**SAR(1 g) = 0.221 W/kg; SAR(10 g) = 0.080 W/kg**

Maximum value of SAR (measured) = 0.509 W/kg



**P32 GSM850\_GPRS11\_Rear Face\_1cm\_Ch251**

Communication System: GPRS11; Frequency: 848.8 MHz; Duty Cycle: 1:2.77

Medium: HSL835\_0827 Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.935$  S/m;  $\epsilon_r = 42.933$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.7°C; Liquid Temperature : 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(9.74, 9.74, 9.74); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**- Area Scan (71x121x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.167 W/kg

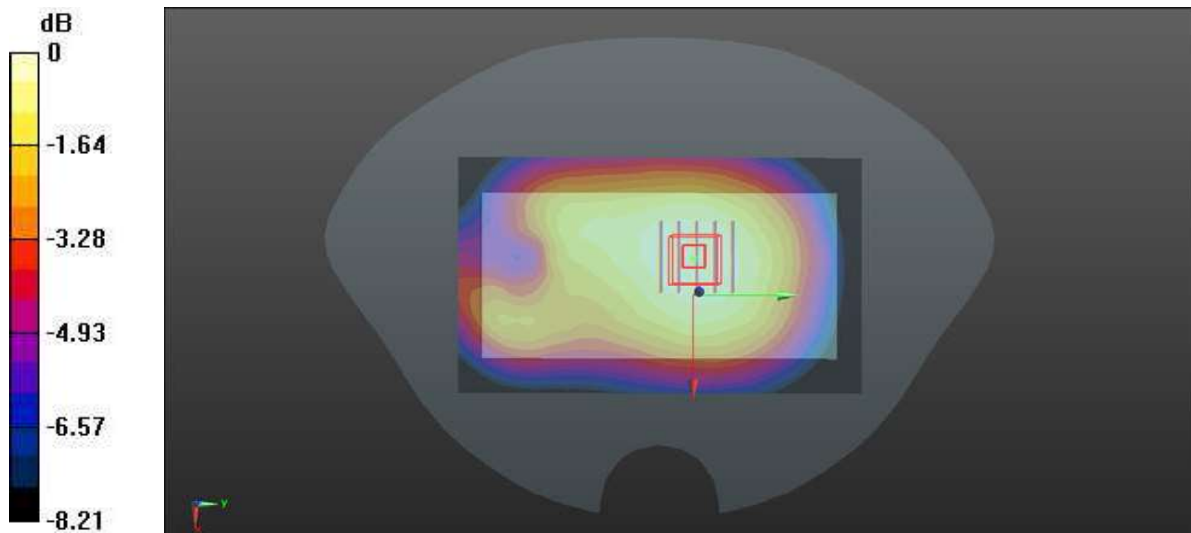
**- Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.477 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.186 W/kg

**SAR(1 g) = 0.131 W/kg; SAR(10 g) = 0.098 W/kg**

Maximum value of SAR (measured) = 0.165 W/kg



0 dB = 0.165 W/kg

**P33 GSM1900\_GPRS10\_Bottom Side\_1cm\_Ch661**

Communication System: GPRS10; Frequency: 1880 MHz; Duty Cycle: 1:4.15

Medium: HSL1900\_0829 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.408$  S/m;  $\epsilon_r = 40.358$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.5°C; Liquid Temperature : 22.2°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(8.13, 8.13, 8.13); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**- Area Scan (41x71x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.941 W/kg

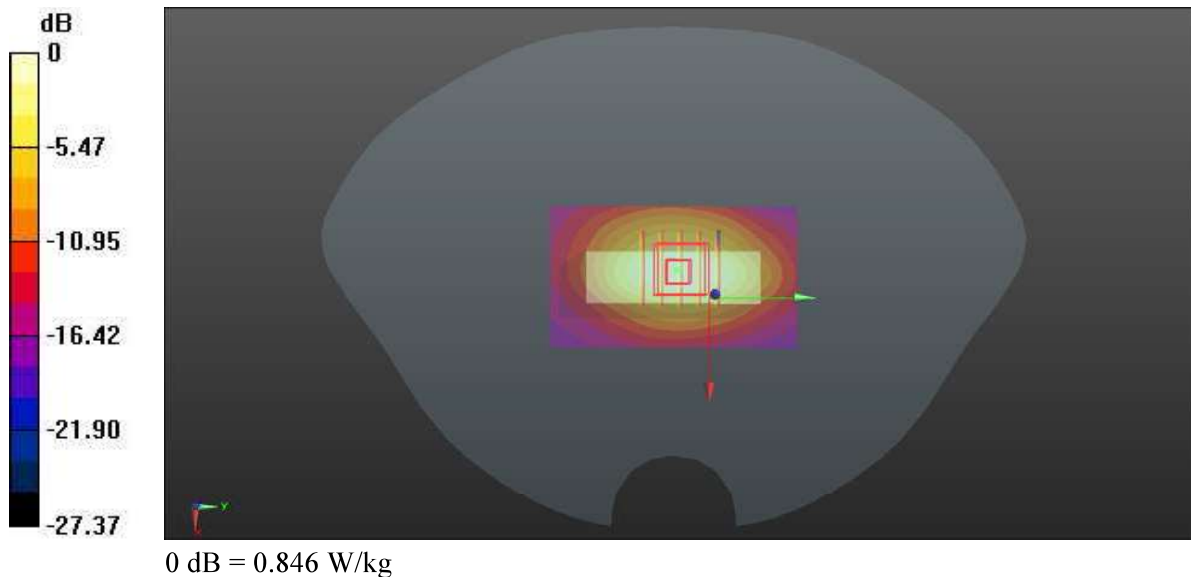
**- Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.342 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.988 W/kg

**SAR(1 g) = 0.565 W/kg; SAR(10 g) = 0.307 W/kg**

Maximum value of SAR (measured) = 0.846 W/kg



**P34 WCDMA V\_RMC12.2K\_Rear Face\_1cm\_Ch4183**

Communication System: WCDMA; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: HSL835\_0827 Medium parameters used:  $f = 837$  MHz;  $\sigma = 0.923$  S/m;  $\epsilon_r = 43.085$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.7°C; Liquid Temperature : 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(9.74, 9.74, 9.74); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**- Area Scan (71x121x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 0.210 W/kg

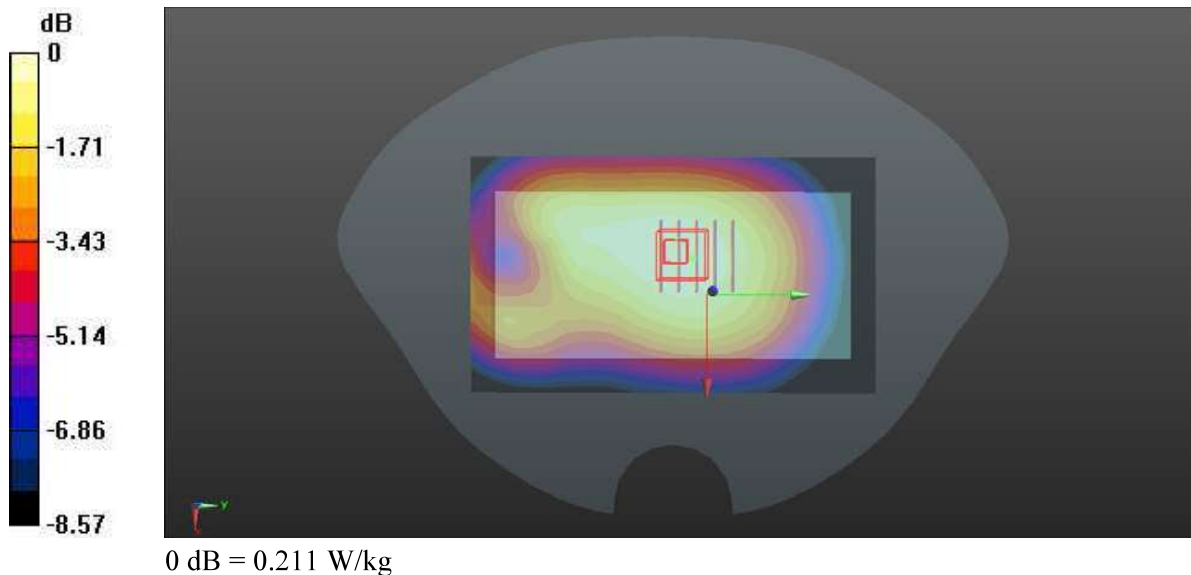
**- Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8$ mm,  $dy=8$ mm,  $dz=5$ mm

Reference Value = 13.334 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.240 W/kg

**SAR(1 g) = 0.168 W/kg; SAR(10 g) = 0.125 W/kg**

Maximum value of SAR (measured) = 0.211 W/kg



**P35 WCDMA IV\_RMC12.2K\_Bottom Side\_1cm\_Ch1412**

Communication System: WCDMA; Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: HSL1750\_0828 Medium parameters used:  $f = 1732.4$  MHz;  $\sigma = 1.334$  S/m;  $\epsilon_r = 41.91$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.1°C; Liquid Temperature : 22.7°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(8.53, 8.53, 8.53); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

- **Area Scan (41x71x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.927 W/kg

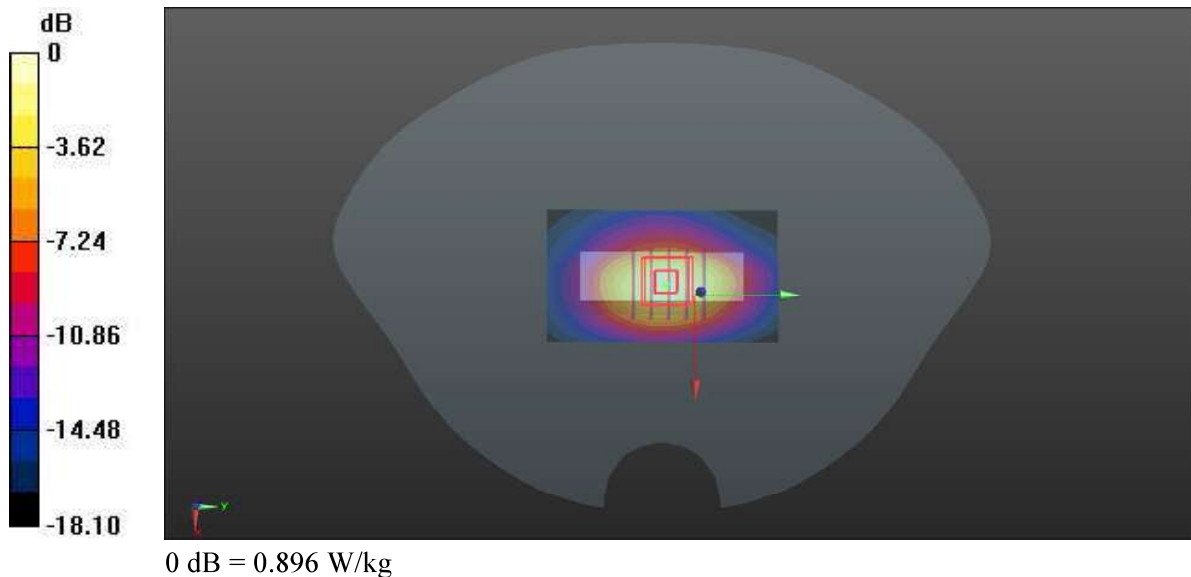
- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.793 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 1.08 W/kg

**SAR(1 g) = 0.603 W/kg; SAR(10 g) = 0.321 W/kg**

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



**P36 WCDMA II\_RMC12.2K\_Bottom Side\_1cm\_Ch9400**

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

Medium: HSL1900\_0829 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.408$  S/m;  $\epsilon_r = 40.358$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.5°C; Liquid Temperature : 22.2°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(8.13, 8.13, 8.13); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**- Area Scan (41x71x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.09 W/kg

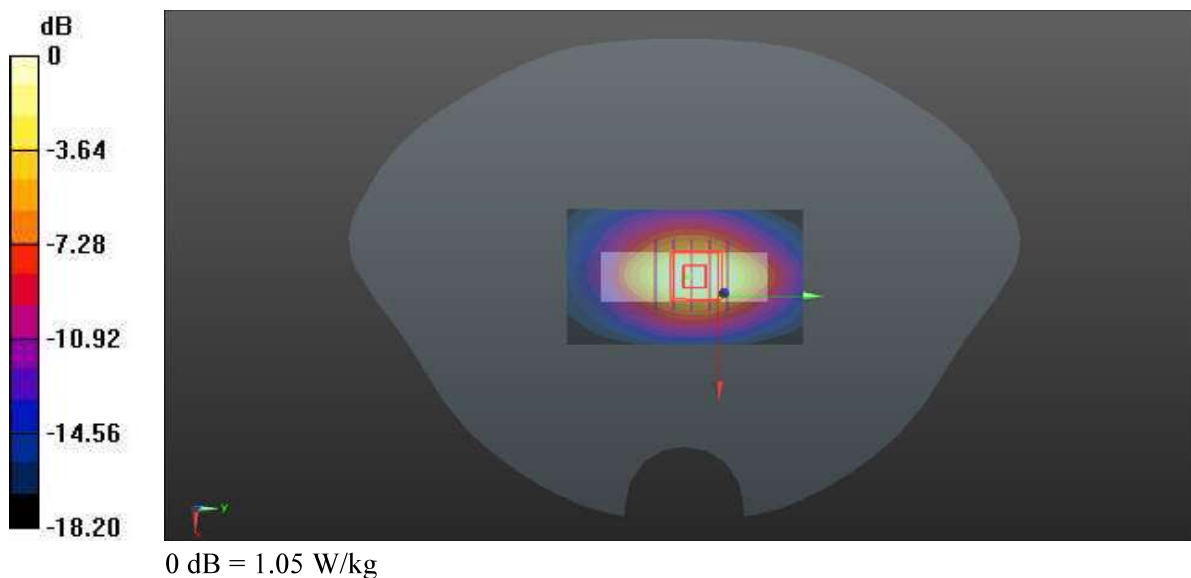
**- Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.151 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.26 W/kg

**SAR(1 g) = 0.706 W/kg; SAR(10 g) = 0.375 W/kg**

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



**P37 LTE2\_QPSK20M\_Bottom Side\_1cm\_Ch18700\_50RB\_OS49**

Communication System: LTE; Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: HSL1900\_0829 Medium parameters used:  $f = 1860$  MHz;  $\sigma = 1.396$  S/m;  $\epsilon_r = 40.394$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.5°C; Liquid Temperature : 22.2°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(8.13, 8.13, 8.13); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

- **Area Scan (41x71x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

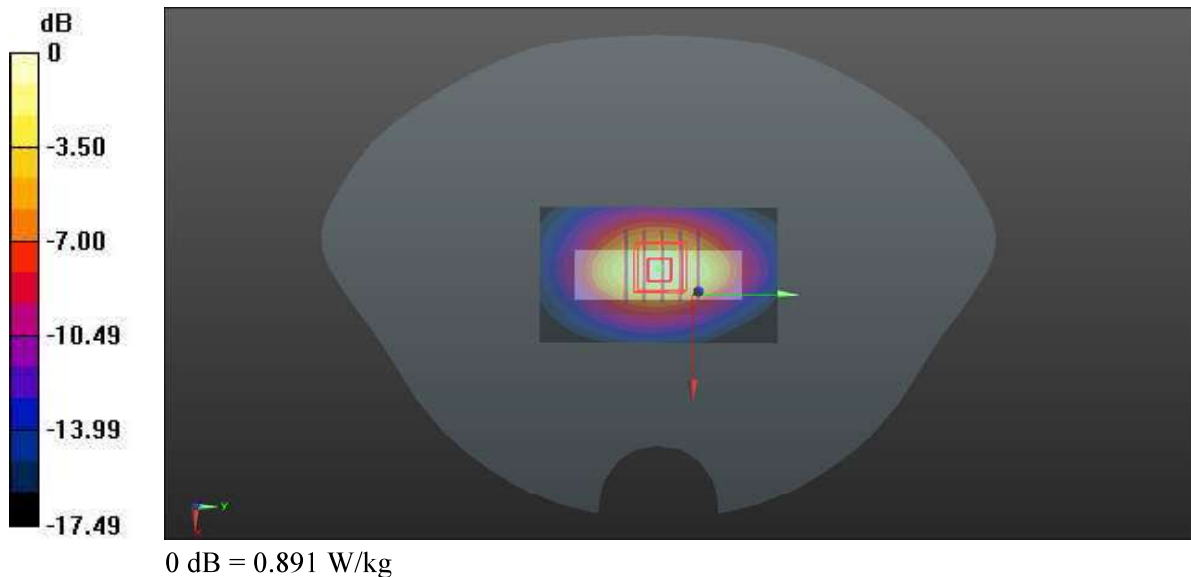
- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.288 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 1.05 W/kg

**SAR(1 g) = 0.598 W/kg; SAR(10 g) = 0.321 W/kg**

Maximum value of SAR (measured) = 0.891 W/kg





**P38 LTE12\_QPSK10M\_Rear Face\_1cm\_Ch23095\_1RB\_OS0**

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

Medium: HSL750\_0827 Medium parameters used:  $f = 707.5$  MHz;  $\sigma = 0.869$  S/m;  $\epsilon_r = 40.835$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(10.09, 10.09, 10.09); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**- Area Scan (71x121x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

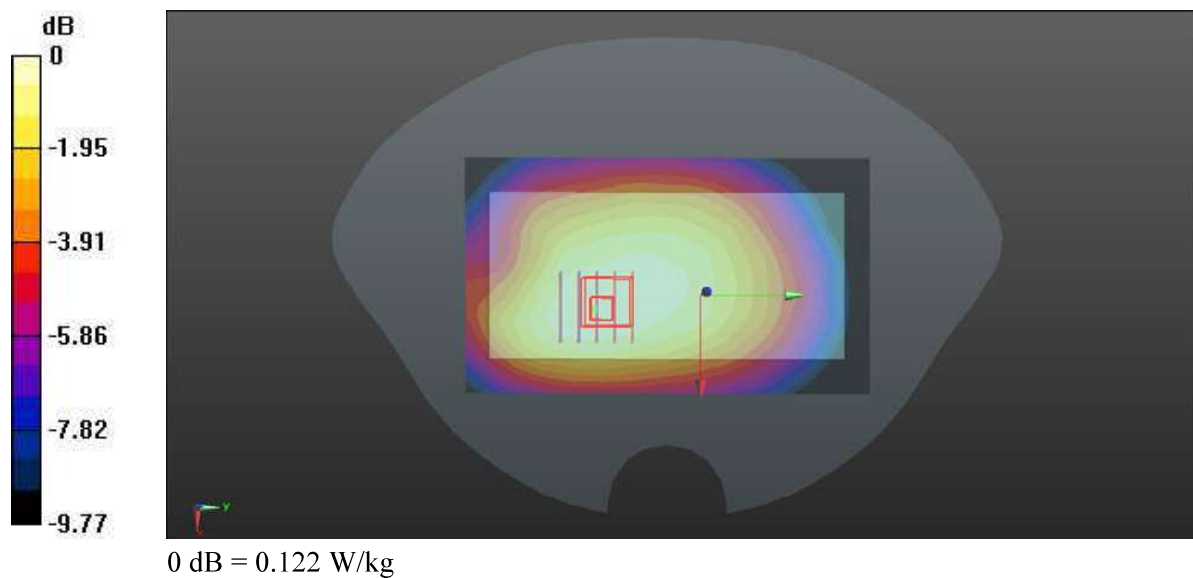
**- Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.154 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 0.137 W/kg

**SAR(1 g) = 0.097 W/kg; SAR(10 g) = 0.072 W/kg**

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



**P39 LTE13\_QPSK10M\_Rear Face\_1cm\_Ch23230\_1RB\_OS0**

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

Medium: HSL750\_0827 Medium parameters used:  $f = 782$  MHz;  $\sigma = 0.929$  S/m;  $\epsilon_r = 40.132$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(10.09, 10.09, 10.09); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**- Area Scan (71x121x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 0.220 W/kg

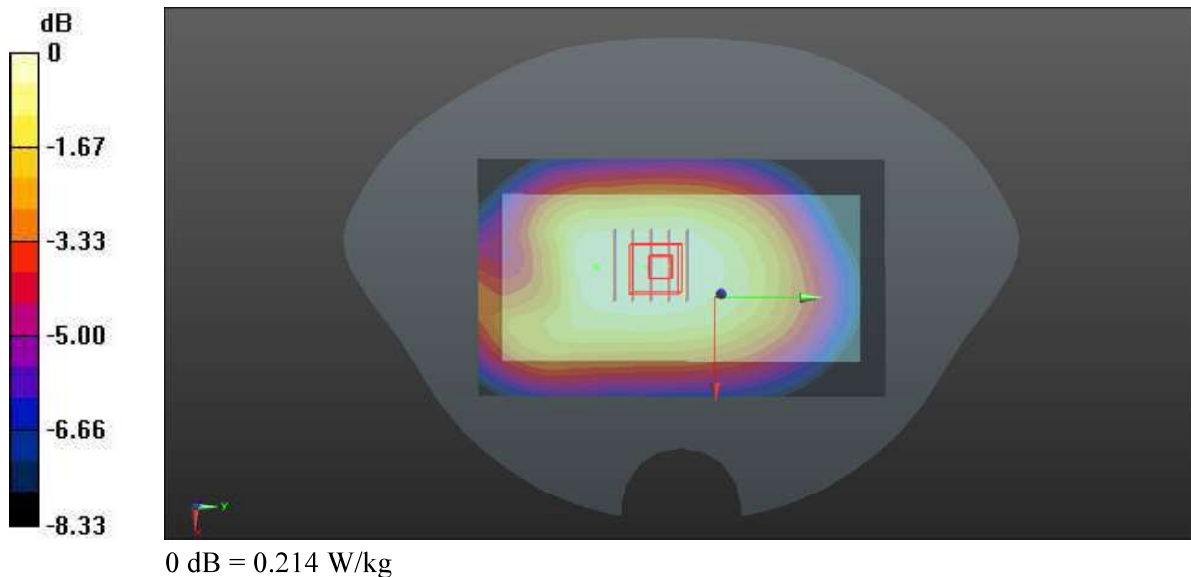
**- Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8$ mm,  $dy=8$ mm,  $dz=5$ mm

Reference Value = 14.025 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.239 W/kg

**SAR(1 g) = 0.172 W/kg; SAR(10 g) = 0.130 W/kg**

Maximum value of SAR (measured) = 0.214 W/kg



**P40 LTE26\_QPSK15M\_Rear Face\_1cm\_Ch26965\_1RB\_OS36**

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

Medium: HSL835\_0827 Medium parameters used:  $f = 841.5$  MHz;  $\sigma = 0.927$  S/m;  $\epsilon_r = 43.026$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.7°C; Liquid Temperature : 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(9.74, 9.74, 9.74); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**- Area Scan (71x121x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.217 W/kg

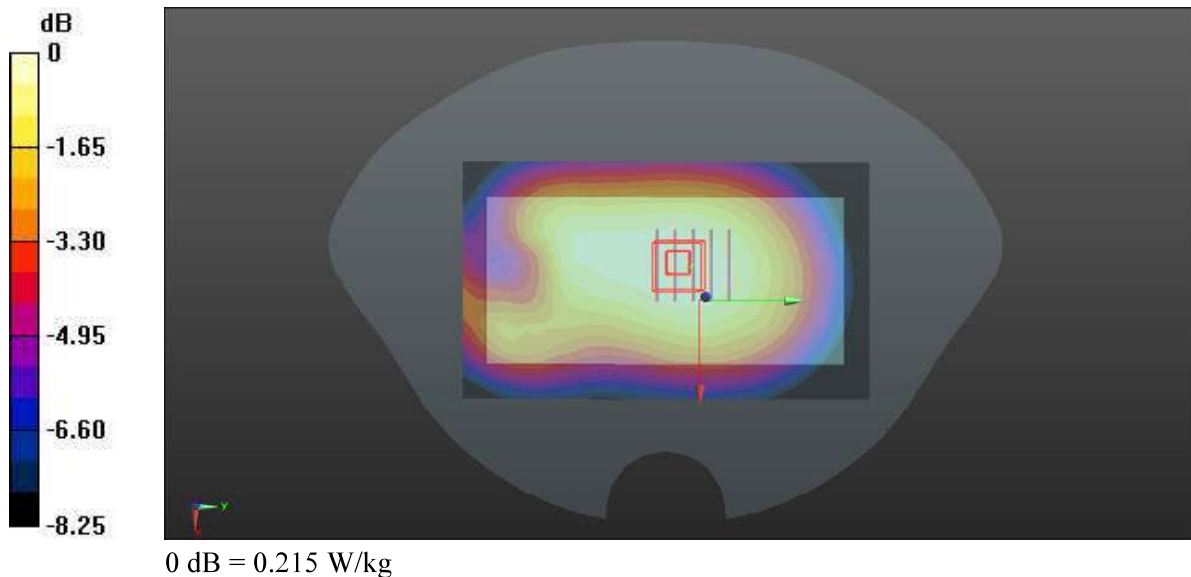
**- Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.448 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.244 W/kg

**SAR(1 g) = 0.172 W/kg; SAR(10 g) = 0.129 W/kg**

Maximum value of SAR (measured) = 0.215 W/kg



**P41 LTE41\_QPSK20M\_Rear Face\_1cm\_Ch40620\_1RB\_OS49**

Communication System: LTE TDD; Frequency: 2593 MHz; Duty Cycle: 1:1.59

Medium: HSL2600\_0830 Medium parameters used:  $f = 2593$  MHz;  $\sigma = 1.982$  S/m;  $\epsilon_r = 38.347$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.8°C; Liquid Temperature : 22.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(7.3, 7.3, 7.3); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**- Area Scan (81x151x1):** Interpolated grid:  $dx=1.200$  mm,  $dy=1.200$  mm

Maximum value of SAR (interpolated) = 0.159 W/kg

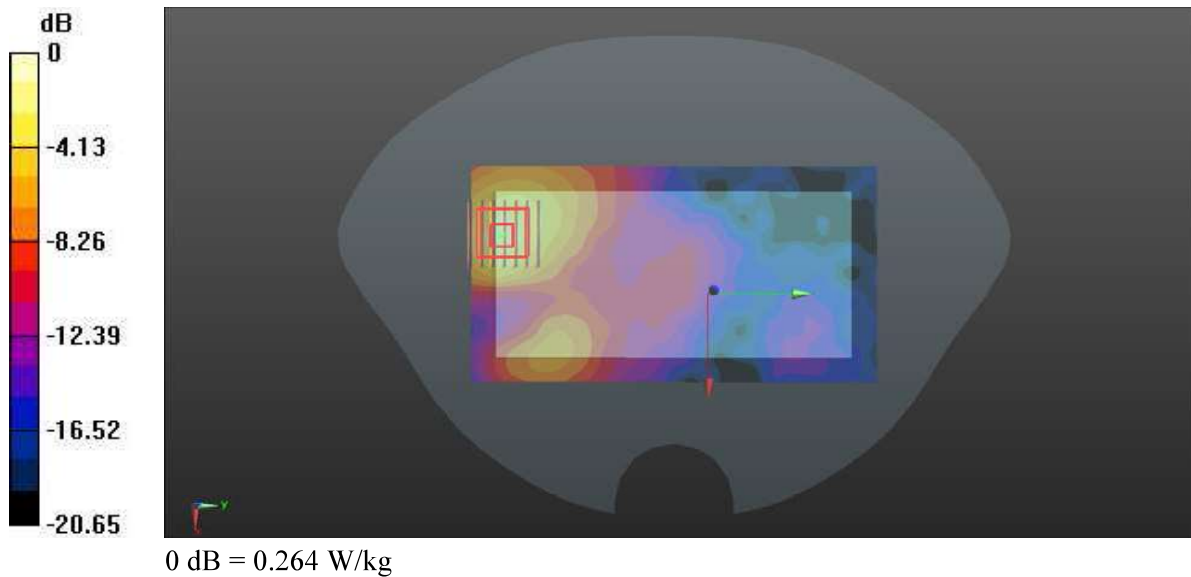
**- Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 3.230 V/m; Power Drift = 0.04dB

Peak SAR (extrapolated) = 0.311 W/kg

**SAR(1 g) = 0.173 W/kg; SAR(10 g) = 0.095 W/kg**

Maximum value of SAR (measured) = 0.264 W/kg



**P42 LTE66\_QPSK20M\_Bottom Side\_1cm\_Ch132572\_50RB\_OS25**

Communication System: LTE; Frequency: 1770 MHz; Duty Cycle: 1:1

Medium: HSL1750\_0828 Medium parameters used:  $f = 1770$  MHz;  $\sigma = 1.367$  S/m;  $\epsilon_r = 41.782$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.1°C; Liquid Temperature : 22.7°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(8.53, 8.53, 8.53); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**- Area Scan (41x71x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

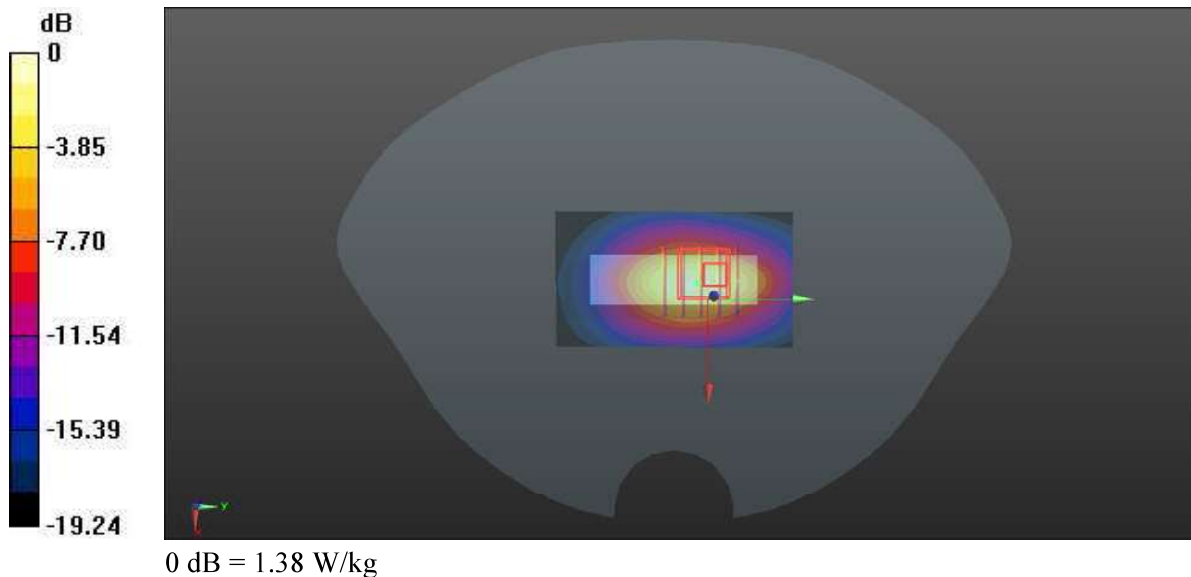
**- Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.488 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 1.62 W/kg

**SAR(1 g) = 0.979 W/kg; SAR(10 g) = 0.549 W/kg**

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



**P43 WLAN2.4G\_802.11n20\_Left Side\_1cm\_Ch11**

Communication System: 802.11n\_HT20; Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: HSL2450\_0830 Medium parameters used:  $f = 2462$  MHz;  $\sigma = 1.846$  S/m;  $\epsilon_r = 38.669$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(7.34, 7.34, 7.34); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**- Area Scan (51x161x1):** Interpolated grid:  $dx=1.200$  mm,  $dy=1.200$  mm

Maximum value of SAR (interpolated) = 0.0145 W/kg

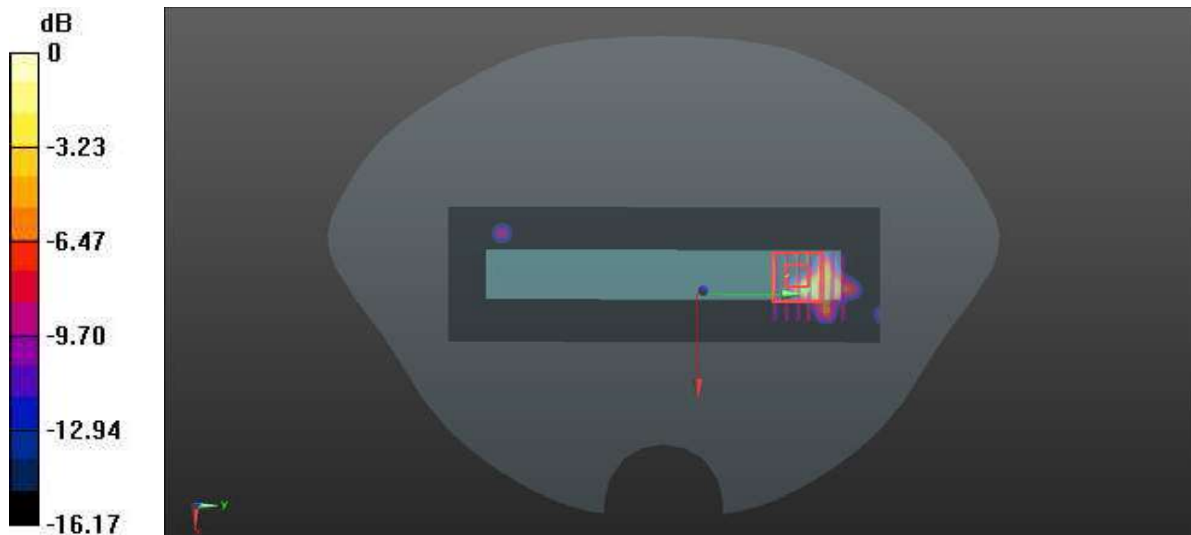
**- Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 0.965 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.0600 W/kg

**SAR(1 g) = 0.00889 W/kg; SAR(10 g) = 0.00248 W/kg**

Maximum value of SAR (measured) = 0.0201 W/kg



0 dB = 0.0201 W/kg

**P44 WLAN5G\_802.11n20\_Rear Face\_1cm\_Ch157**

Communication System: 802.11n\_HT20; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: HSL5G\_0902 Medium parameters used:  $f = 5785$  MHz;  $\sigma = 5.417$  S/m;  $\epsilon_r = 35.84$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.2°C; Liquid Temperature : 22.5°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(4.86, 4.86, 4.86); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

- **Area Scan (101x181x1):** Interpolated grid:  $dx=1.000$  mm,  $dy=1.000$  mm

Maximum value of SAR (interpolated) = 0.578 W/kg

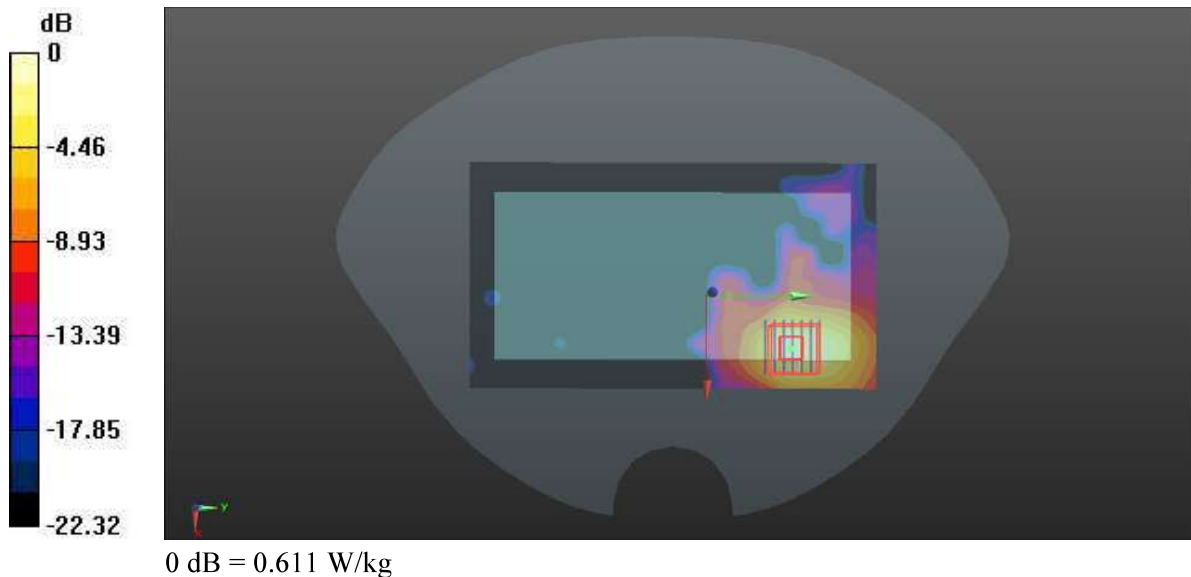
- **Zoom Scan (7x7x12)/Cube 0:** Measurement grid:  $dx=4$ mm,  $dy=4$ mm,  $dz=2$ mm

Reference Value = 1.253 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.941 W/kg

**SAR(1 g) = 0.253 W/kg; SAR(10 g) = 0.085 W/kg**

Maximum value of SAR (measured) = 0.611 W/kg



**P45 WCDMA IV\_RMC12.2K\_Bottom Side\_0cm\_Ch1312**

Communication System: WCDMA; Frequency: 1712.4 MHz; Duty Cycle: 1:1

Medium: HSL1750\_0828 Medium parameters used:  $f = 1712.4$  MHz;  $\sigma = 1.313$  S/m;  $\epsilon_r = 41.97$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.1°C; Liquid Temperature : 22.7°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(8.53, 8.53, 8.53); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**- Area Scan (41x71x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 7.94 W/kg

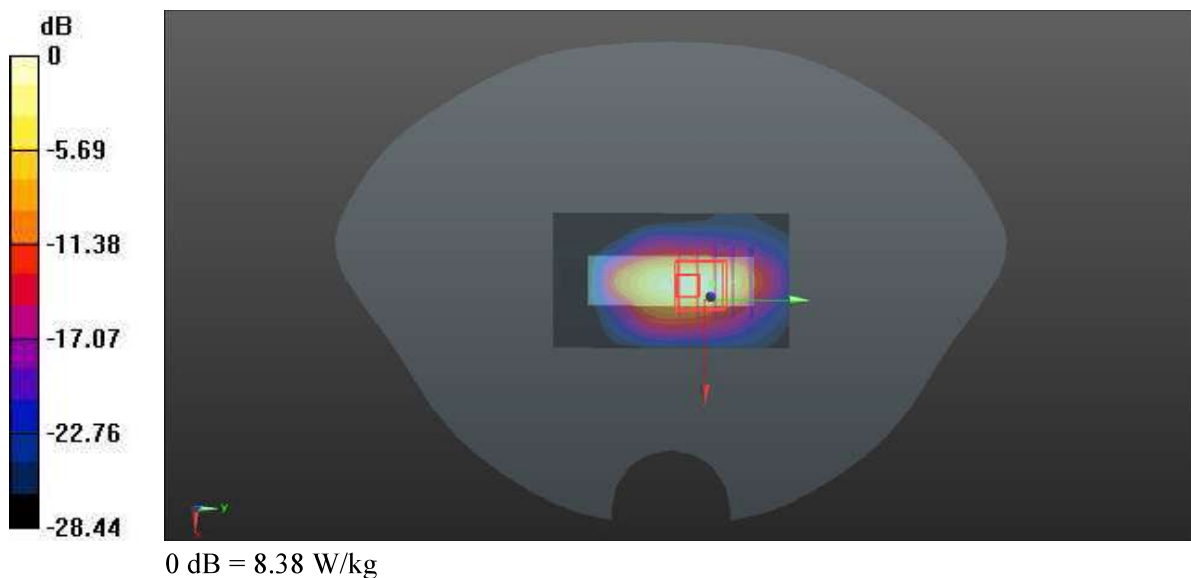
**- Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 54.138 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 11.9 W/kg

**SAR(1 g) = 3.69 W/kg; SAR(10 g) = 1.57 W/kg**

Maximum value of SAR (measured) = 8.38 W/kg





**P46 WCDMA IV\_RMC12.2K\_Bottom Side\_0cm\_Ch1412**

Communication System: WCDMA; Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: HSL1750\_0828 Medium parameters used:  $f = 1732.4$  MHz;  $\sigma = 1.334$  S/m;  $\epsilon_r = 41.91$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.1°C; Liquid Temperature : 22.7°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(8.53, 8.53, 8.53); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**- Area Scan (41x71x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 10.4 W/kg

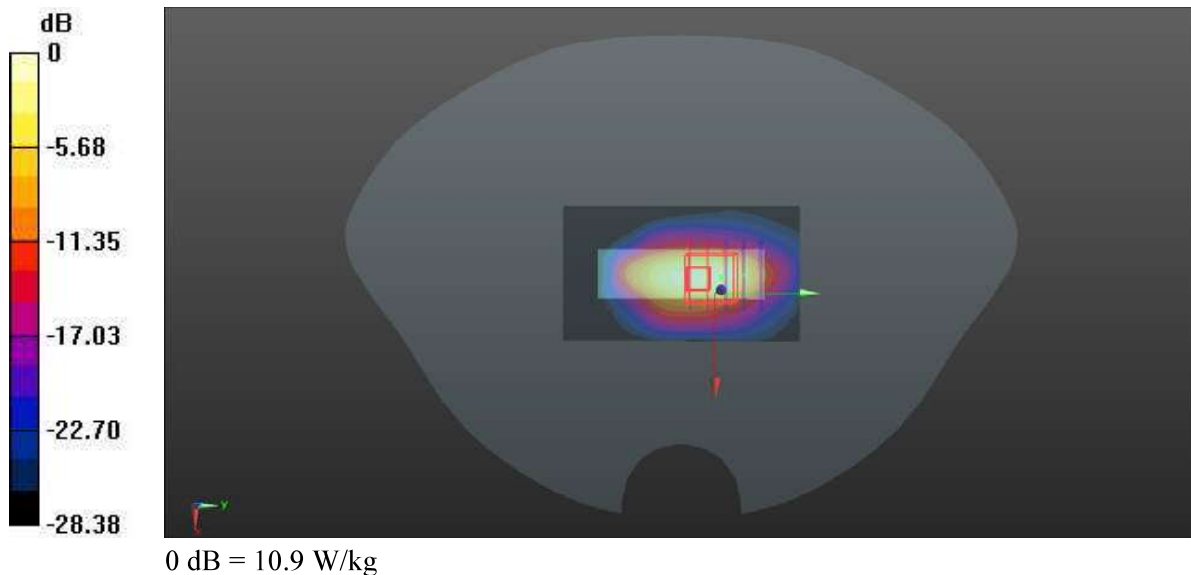
**- Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 62.176 V/m; Power Drift = -0.00 dB

Peak SAR (extrapolated) = 15.6 W/kg

**SAR(1 g) = 4.88 W/kg; SAR(10 g) = 2.06 W/kg**

Maximum value of SAR (measured) = 10.9 W/kg



**P47 WCDMA II\_RMC12.2K\_Front Face\_0cm\_Ch9400**

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

Medium: HSL1900\_0829 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.408$  S/m;  $\epsilon_r = 40.358$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.5°C; Liquid Temperature : 22.2°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(8.13, 8.13, 8.13); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**- Area Scan (71x121x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 6.55 W/kg

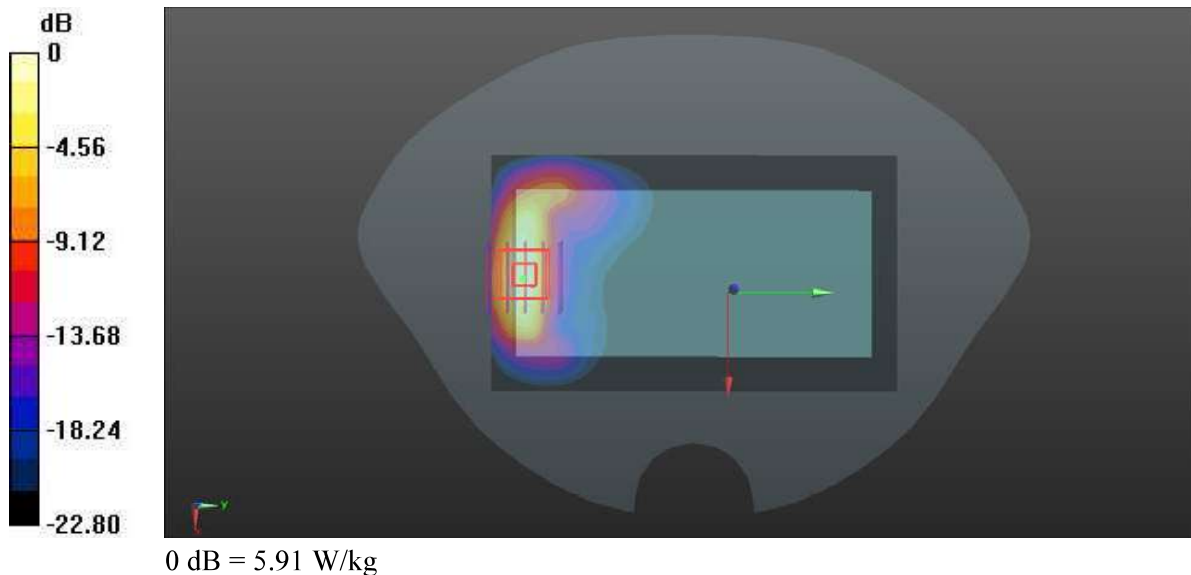
**- Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8$ mm,  $dy=8$ mm,  $dz=5$ mm

Reference Value = 1.873 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 7.02 W/kg

**SAR(1 g) = 3.37 W/kg; SAR(10 g) = 1.51 W/kg**

Maximum value of SAR (measured) = 5.91 W/kg



**P48 LTE2\_QPSK20M\_Bottom Side\_0cm\_Ch19100\_100RB\_OS0**

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

Medium: HSL1900\_0829 Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.43$  S/m;  $\epsilon_r = 40.323$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.5°C; Liquid Temperature : 22.2°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(8.13, 8.13, 8.13); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**- Area Scan (41x71x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 6.70 W/kg

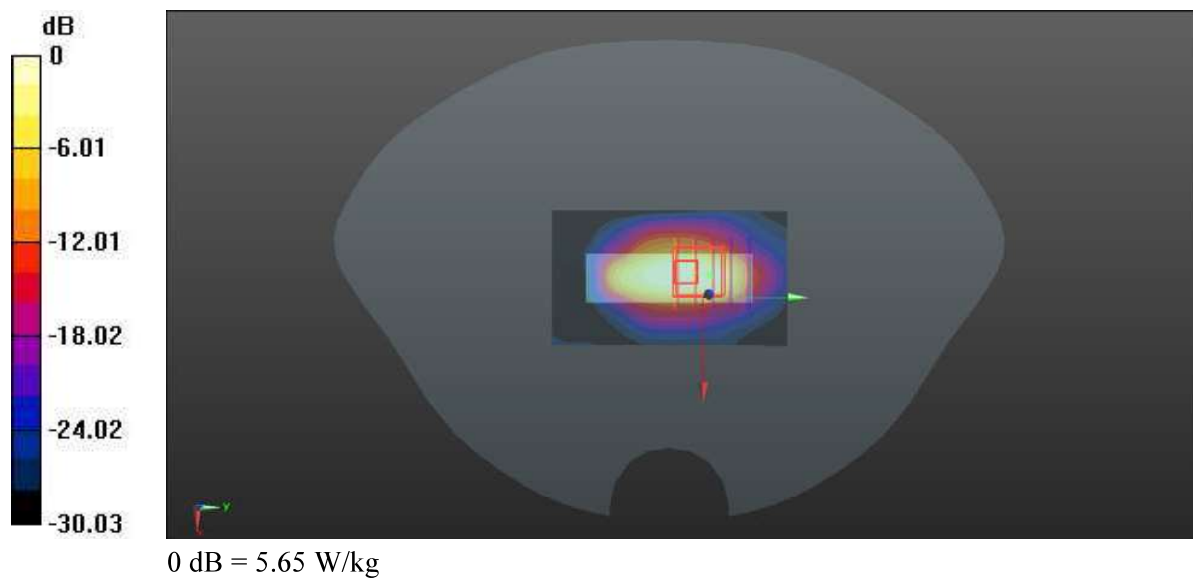
**- Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 48.661 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 8.01 W/kg

**SAR(1 g) = 2.98 W/kg; SAR(10 g) = 1.21 W/kg**

Maximum value of SAR (measured) = 5.65 W/kg



**P49 LTE41\_QPSK20M\_Bottom Side\_0cm\_Ch40620\_50RB\_OS0**

Communication System: LTE TDD; Frequency: 2593 MHz; Duty Cycle: 1:1.59

Medium: HSL2600\_0830 Medium parameters used:  $f = 2593$  MHz;  $\sigma = 1.982$  S/m;  $\epsilon_r = 38.347$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.8°C; Liquid Temperature : 22.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(7.3, 7.3, 7.3); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**- Area Scan (51x81x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm

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

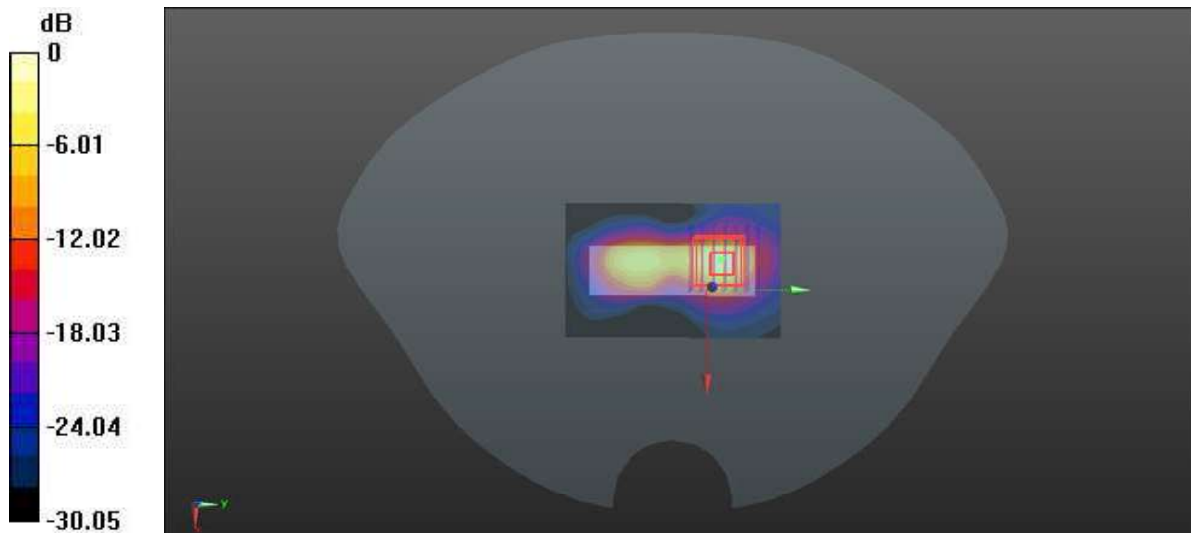
**- Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 28.759 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 25.6 W/kg

**SAR(1 g) = 7.09 W/kg; SAR(10 g) = 2.19 W/kg**

Maximum value of SAR (measured) = 15.7 W/kg



0 dB = 15.7 W/kg

**P50 WLAN5G\_802.11n20\_Rear Face\_0cm\_Ch52**

Communication System: 802.11n\_HT20; Frequency: 5260 MHz; Duty Cycle: 1:1

Medium: HSL5G\_0831 Medium parameters used:  $f = 5260$  MHz;  $\sigma = 4.783$  S/m;  $\epsilon_r = 36.956$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(5.54, 5.54, 5.54); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**- Area Scan (101x181x1):** Interpolated grid:  $dx=1.000$  mm,  $dy=1.000$  mm

Maximum value of SAR (interpolated) = 0.431 W/kg

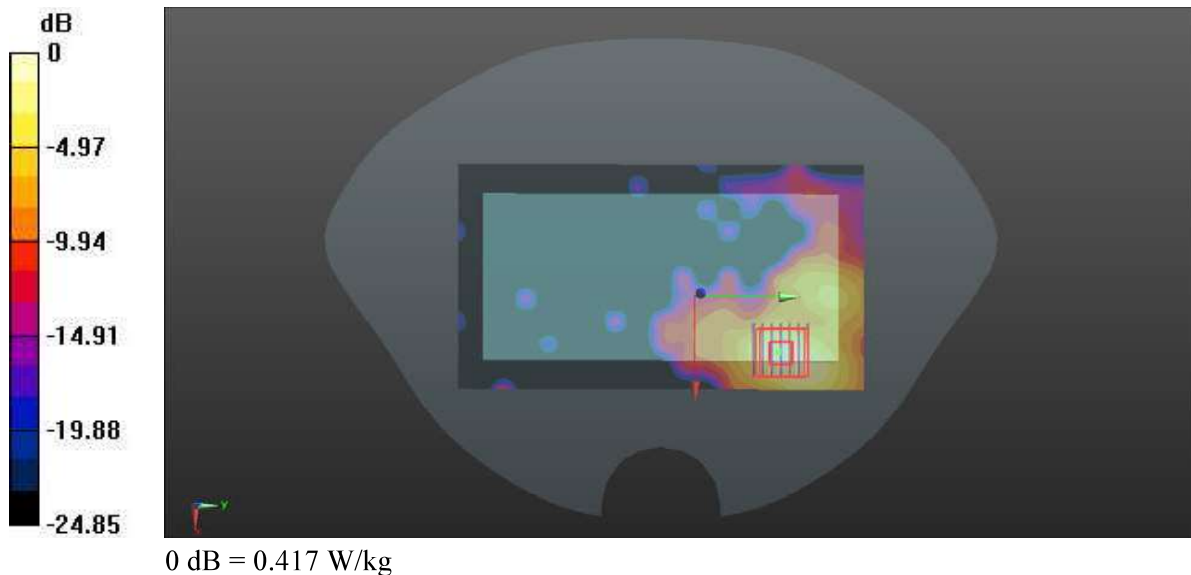
**- Zoom Scan (7x7x12)/Cube 0:** Measurement grid:  $dx=4$ mm,  $dy=4$ mm,  $dz=2$ mm

Reference Value = 0.867 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.639 W/kg

**SAR(1 g) = 0.188 W/kg; SAR(10 g) = 0.064 W/kg**

Maximum value of SAR (measured) = 0.417 W/kg



**P51 WLAN5G\_802.11n20\_Rear Face\_0cm\_Ch120**

Communication System: 802.11n\_HT20; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: HSL5G\_0901 Medium parameters used:  $f = 5600$  MHz;  $\sigma = 5.211$  S/m;  $\epsilon_r = 36.228$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.6°C; Liquid Temperature : 22.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7515; ConvF(4.85, 4.85, 4.85); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

- **Area Scan (101x181x1)**: Interpolated grid:  $dx=1.000$  mm,  $dy=1.000$  mm

Maximum value of SAR (interpolated) = 0.735 W/kg

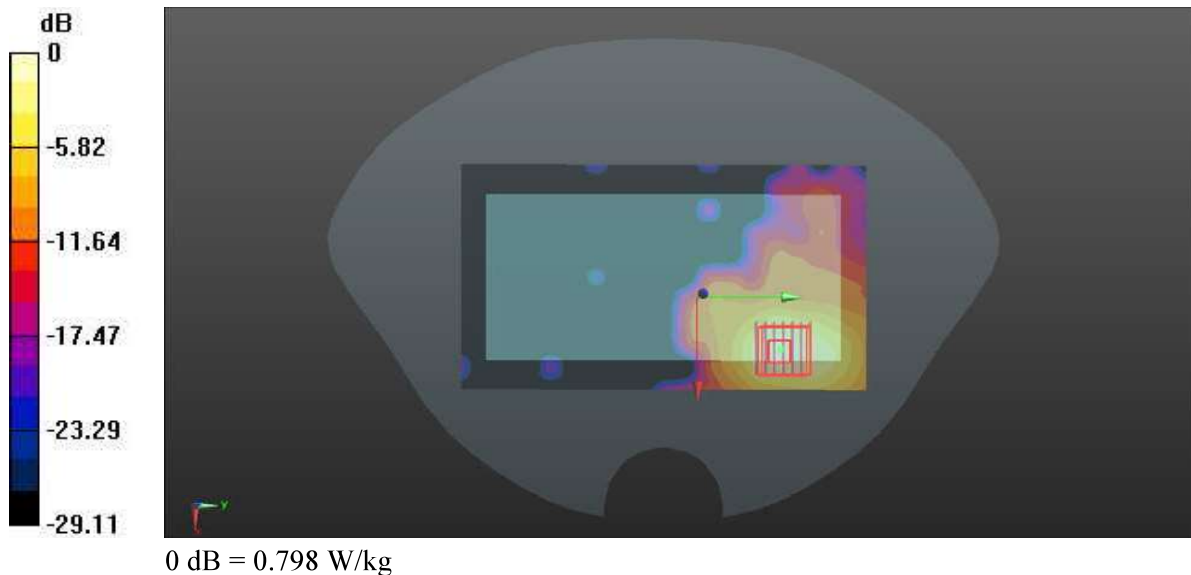
- **Zoom Scan (7x7x12)/Cube 0**: Measurement grid:  $dx=4$ mm,  $dy=4$ mm,  $dz=2$ mm

Reference Value = 1.162 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.23 W/kg

**SAR(1 g) = 0.343 W/kg; SAR(10 g) = 0.116 W/kg**

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





## **Appendix C. Calibration Certificate for Probe and Dipole**

The SPEAG calibration certificates are shown as follows.



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

The Swiss Accreditation Service is one of the signatories to the EA  
 Multilateral Agreement for the recognition of calibration certificates

Client **Auden**

Certificate No: **D750V3-1078\_Jun21**

## CALIBRATION CERTIFICATE

Object **D750V3 - SN:1078**

Calibration procedure(s) **QA CAL-05.v11**  
**Calibration Procedure for SAR Validation Sources between 0.7-3 GHz**

Calibration date: **June 21, 2021**

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  $(22 \pm 3)^{\circ}\text{C}$  and humidity  $< 70\%$ .

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards               | ID #               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|---------------------------------|--------------------|-----------------------------------|------------------------|
| Power meter NRP                 | SN: 104778         | 09-Apr-21 (No. 217-03291/03292)   | Apr-22                 |
| Power sensor NRP-Z91            | SN: 103244         | 09-Apr-21 (No. 217-03291)         | Apr-22                 |
| Power sensor NRP-Z91            | SN: 103245         | 09-Apr-21 (No. 217-03292)         | Apr-22                 |
| Reference 20 dB Attenuator      | SN: BH9394 (20k)   | 09-Apr-21 (No. 217-03343)         | Apr-22                 |
| Type-N mismatch combination     | SN: 310982 / 06327 | 09-Apr-21 (No. 217-03344)         | Apr-22                 |
| Reference Probe EX3DV4          | SN: 7349           | 28-Dec-20 (No. EX3-7349_Dec20)    | Dec-21                 |
| DAE4                            | SN: 601            | 02-Nov-20 (No. DAE4-601_Nov20)    | Nov-21                 |
| Secondary Standards             | ID #               | Check Date (in house)             | Scheduled Check        |
| Power meter E4419B              | SN: GB39512475     | 30-Oct-14 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A           | SN: US37292783     | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A           | SN: MY41092317     | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| RF generator R&S SMT-06         | SN: 100972         | 15-Jun-15 (in house check Oct-20) | In house check: Oct-22 |
| Network Analyzer Agilent E8358A | SN: US41080477     | 31-Mar-14 (in house check Oct-20) | In house check: Oct-21 |

|                |                 |                       |           |
|----------------|-----------------|-----------------------|-----------|
|                | Name            | Function              | Signature |
| Calibrated by: | Jeffrey Katzman | Laboratory Technician |           |
| Approved by:   | Katja Pokovic   | Technical Manager     |           |

Issued: June 21, 2021

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





Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

### 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 the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "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%.

## Measurement Conditions

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

|                              |                        |             |
|------------------------------|------------------------|-------------|
| DASY Version                 | DASY5                  | V52.10.4    |
| Extrapolation                | Advanced Extrapolation |             |
| Phantom                      | Modular Flat Phantom   |             |
| 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 | 42.7 $\pm$ 6 % | 0.91 mho/m $\pm$ 6 % |
| Head TSL temperature change during test | < 0.5 °C            | ----           | ----                 |

## SAR result with Head TSL

|                                                             |                    |                                                |
|-------------------------------------------------------------|--------------------|------------------------------------------------|
| <b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b> | Condition          |                                                |
| SAR measured                                                | 250 mW input power | 2.17 W/kg                                      |
| SAR for nominal Head TSL parameters                         | normalized to 1W   | <b>8.58 W/kg <math>\pm</math> 17.0 % (k=2)</b> |

|                                                               |                    |                                                |
|---------------------------------------------------------------|--------------------|------------------------------------------------|
| <b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b> | condition          |                                                |
| SAR measured                                                  | 250 mW input power | 1.41 W/kg                                      |
| SAR for nominal Head TSL parameters                           | normalized to 1W   | <b>5.59 W/kg <math>\pm</math> 16.5 % (k=2)</b> |

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 53.6 $\Omega$ - 0.7 j $\Omega$ |
| Return Loss                          | - 29.0 dB                      |

### General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.037 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 |
|-----------------|-------|

## DASY5 Validation Report for Head TSL

Date: 21.06.2021

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1078**

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

Medium parameters used:  $f = 750$  MHz;  $\sigma = 0.91$  S/m;  $\epsilon_r = 42.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.11, 10.11, 10.11) @ 750 MHz; Calibrated: 28.12.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.11.2020
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

### Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

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

Reference Value = 60.51 V/m; Power Drift = -0.01 dB

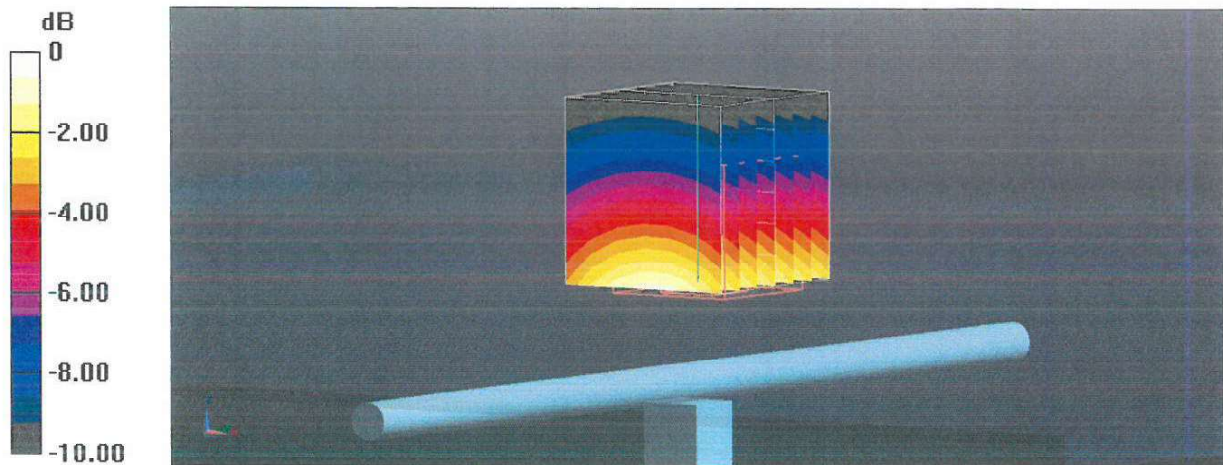
Peak SAR (extrapolated) = 3.34 W/kg

**SAR(1 g) = 2.17 W/kg; SAR(10 g) = 1.41 W/kg**

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

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

Maximum value of SAR (measured) = 2.92 W/kg



0 dB = 2.92 W/kg = 4.66 dBW/kg



Impedance Measurement Plot for Head TSL

