



In Collaboration with

s p e a g
CALIBRATION LABORATORY

Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

Glossary:

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

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) For hand-held devices used in close proximity to the ear (frequency range of 300MHz to 3GHz)", February 2005
- c) KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

Additional Documentation:

- d) 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	52.8.8.1222
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	40.1 $\pm$ 6 %	1.82 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	13.1 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	52.5 mW / g $\pm$ 20.8 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	6.01 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	24.1 mW / g $\pm$ 20.4 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	53.1 $\pm$ 6 %	1.94 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	13.0 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	52.3 mW / g $\pm$ 20.8 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	6.07 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	24.4 mW / g $\pm$ 20.4 % (k=2)



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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.4Ω+ 3.42jΩ
Return Loss	- 26.6dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	50.5Ω+ 6.53jΩ
Return Loss	- 23.7dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.265 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: 10.30.2015

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 873

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.816$ S/m; $\epsilon_r = 40.14$; $\rho = 1000$ kg/m³

Phantom section: Left Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(7.24, 7.24, 7.24); Calibrated: 8/26/2015;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn777; Calibrated: 8/26/2015
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: 1161/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

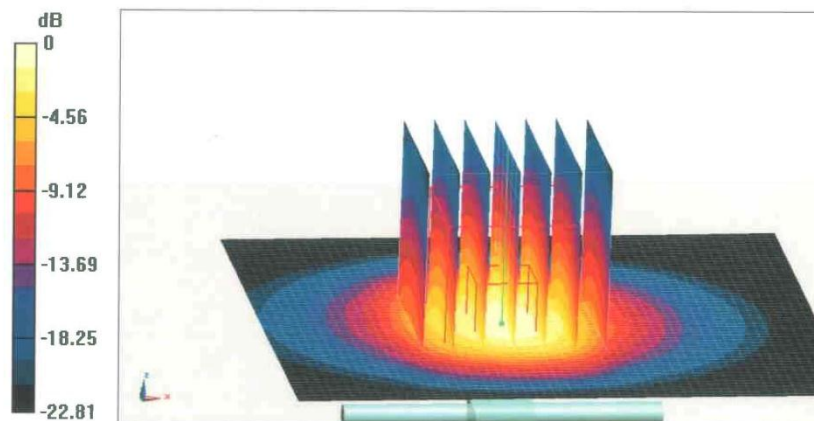
Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 106.1 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 27.3 W/kg

SAR(1 g) = 13.1 W/kg; SAR(10 g) = 6.01 W/kg

Maximum value of SAR (measured) = 20.1 W/kg

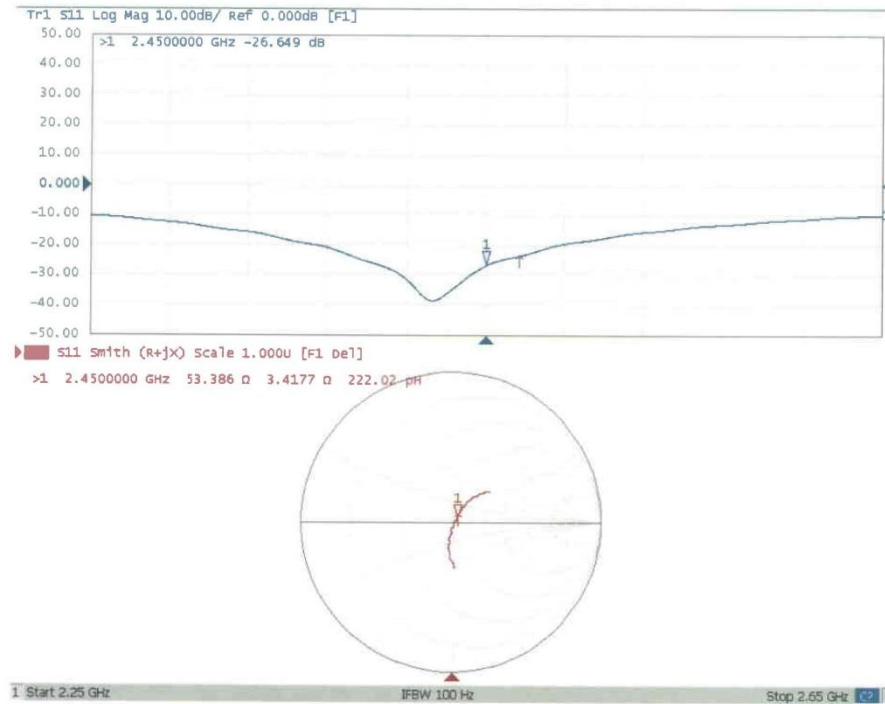




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Impedance Measurement Plot for Head TSL





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DASY5 Validation Report for Body TSL

Date: 10.30.2015

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 873

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.936$ S/m; $\epsilon_r = 53.11$; $\rho = 1000$ kg/m³

Phantom section: Center Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(7.35, 7.35, 7.35); Calibrated: 8/26/2015;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn777; Calibrated: 8/26/2015
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: 1161/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

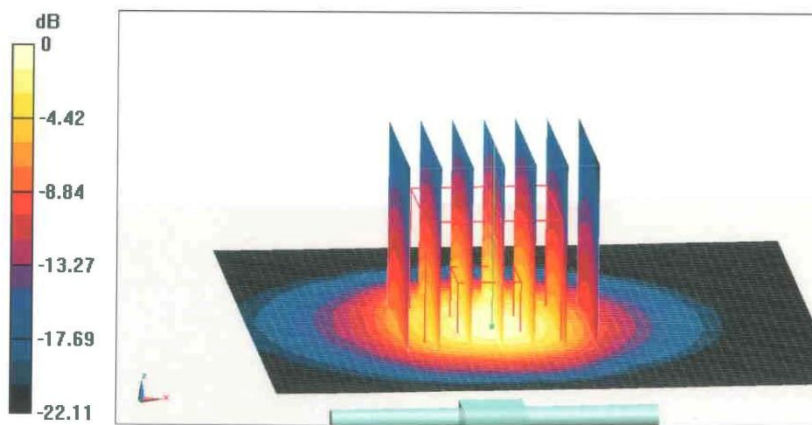
Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 100.0 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 26.3 W/kg

SAR(1 g) = 13 W/kg; SAR(10 g) = 6.07 W/kg

Maximum value of SAR (measured) = 19.5 W/kg



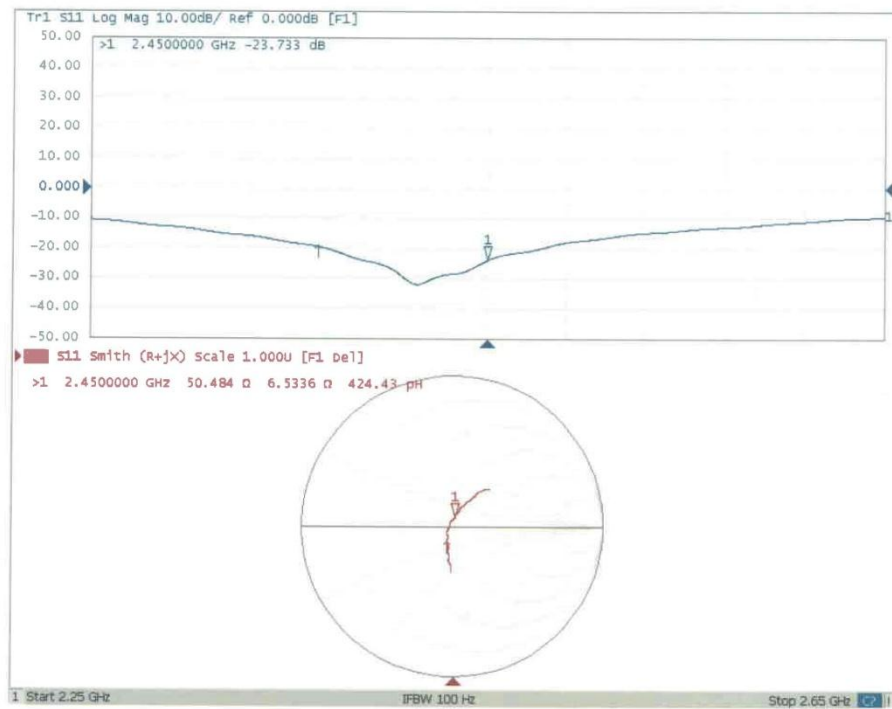
0 dB = 19.5 W/kg = 12.90 dBW/kg



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Impedance Measurement Plot for Body TSL



ANNEX J SPOT CHECK TEST

As the test lab for Coolpad 3632A from Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd, we, Shenzhen Academy of Information and Communications Technology, declare on our sole responsibility that, according to “Justification Letter” provided by applicant, only the Spot check test should be performed. The test results are as below.

J.1 Internal Identification of EUT used during the spot check test

EUT ID*	IMEI	HW Version	SW Version
EUT3	862429037562392	P2	7.0.013.00.P0.161201.3632A.tmo

J.2 Measurement results

SAR Values (GSM 850 - Head)

Frequency		Side	Test Position	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
848.8	251	Left	Touch	B1	0.39	0.26

SAR Values (GSM 850 - Body)

Frequency		Test Position	Spacing (mm)	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
836.6	190	Rear	10	B1	0.44	0.34

SAR Values (GSM 1900 - Head)

Frequency		Side	Test Position	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
1909.8	810	Right	Touch	B1	0.03	0.02

SAR Values (GSM 1900 - Body)

Frequency		Test Position	Spacing (mm)	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
1880	661	Rear	10	B1	0.83	0.36

SAR Values (WCDMA 850 - Head)

Frequency		Side	Test Position	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
826.4	4132	Left	Touch	B1	0.53	0.41

SAR Values (WCDMA 850 - Body)

Frequency		Test Position	Spacing (mm)	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
846.6	4233	Rear	10	B1	0.70	0.43

SAR Values (WCDMA 1900 - Head)

Frequency		Side	Test Position	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
1852.4	9262	Right	Touch	B1	0.46	0.54

SAR Values (WCDMA 1900 - Body)

Frequency		Test Position	Spacing (mm)	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
1880	9400	Bottom	10	B1	1.33	1.32

SAR Values (WCDMA 1700 - Head)

Frequency		Side	Test Position	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
1752.6	1513	Right	Touch	B1	0.59	0.62

SAR Values (WCDMA 1700 - Body)

Frequency		Test Position	Spacing (mm)	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
1732.6	1413	Front	10	B1	1.20	0.91

SAR Values (LTE Band 2 - Head)

Frequency		Side	Test Position	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
1860	18700	Left	Touch	B1	0.28	0.61

SAR Values (LTE Band 2 - Body)

Frequency		Test Position	Spacing (mm)	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
1880	18900	Bottom	10	B1	1.26	1.24

SAR Values (LTE Band 4 - Head)

Frequency		Side	Test Position	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
1720	20050	Right	Touch	B1	0.38	0.41

SAR Values (LTE Band 4 - Body)

Frequency		Test Position	Spacing (mm)	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
1745	20300	Bottom	10	B1	1.22	1.29

SAR Values (LTE Band 5 - Head)

Frequency		Side	Test Position	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
844	20600	Right	Touch	B1	0.42	0.40

SAR Values (LTE Band 5 - Body)

Frequency		Test Position	Spacing (mm)	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
844	20600	Rear	10	B1	0.67	0.36

SAR Values (LTE Band 12 - Head)

Frequency		Side	Test Position	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
707.5	23095	Left	Touch	B1	0.29	0.25

SAR Values (LTE Band 12 - Body)

Frequency		Test Position	Spacing (mm)	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
707.5	23095	Rear	10	B1	0.54	0.36

SAR Values (WLAN 2.4G - Head)

Frequency		Side	Test Position	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
2462	11	Left	Touch	B1	0.94	0.92

SAR Values (WLAN 2.4G - Body)

Frequency		Test Position	Spacing (mm)	Battery SN	Reported SAR(10g) (W/kg)	
MHz	Ch.				Original data	Spot check data
2462	11	Rear	10	B1	0.25	0.23

Note:

B1: CPLD-417 by Tianjin Lishen Battery Joint-stock Co., Ltd.

GSM850 Left Cheek High

Date: 2017-11-8

Electronics: DAE4 Sn786

Medium: Head 835 MHz

Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.908$ S/m; $\epsilon_r = 43.091$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.6°C Liquid Temperature: 22.1°C

Communication System: UID 0, 2G_GSM (0) Frequency: 848.8 MHz Duty Cycle: 1:8.3

Probe: ES3DV3 - SN3151 ConvF (6.08, 6.08, 6.08);

Left Cheek High/Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

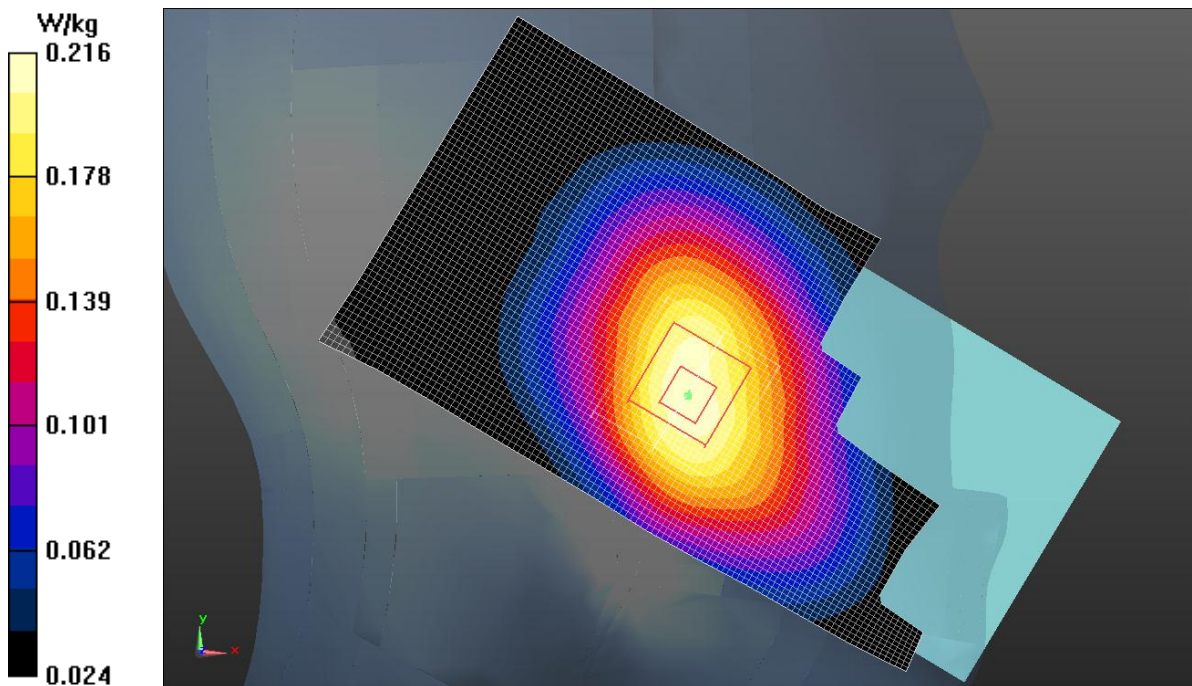
Left Cheek High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.349 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.267 W/kg

SAR(1 g) = 0.205 W/kg; SAR(10 g) = 0.153 W/kg

Maximum value of SAR (measured) = 0.216 W/kg



GSM850 Body Rear Middle

Date: 2017-11-8

Electronics: DAE4 Sn786

Medium: Body 835 MHz

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.99$ S/m; $\epsilon_r = 53.671$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.6°C Liquid Temperature: 22.1°C

Communication System: UID 0, GPRS 1 Txslot (0) Frequency: 836.6 MHz Duty Cycle: 1:8.3

Probe: ES3DV3 - SN3151 ConvF (6.13, 6.13, 6.13);

Rear side Middle /Area Scan (91x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.283 W/kg

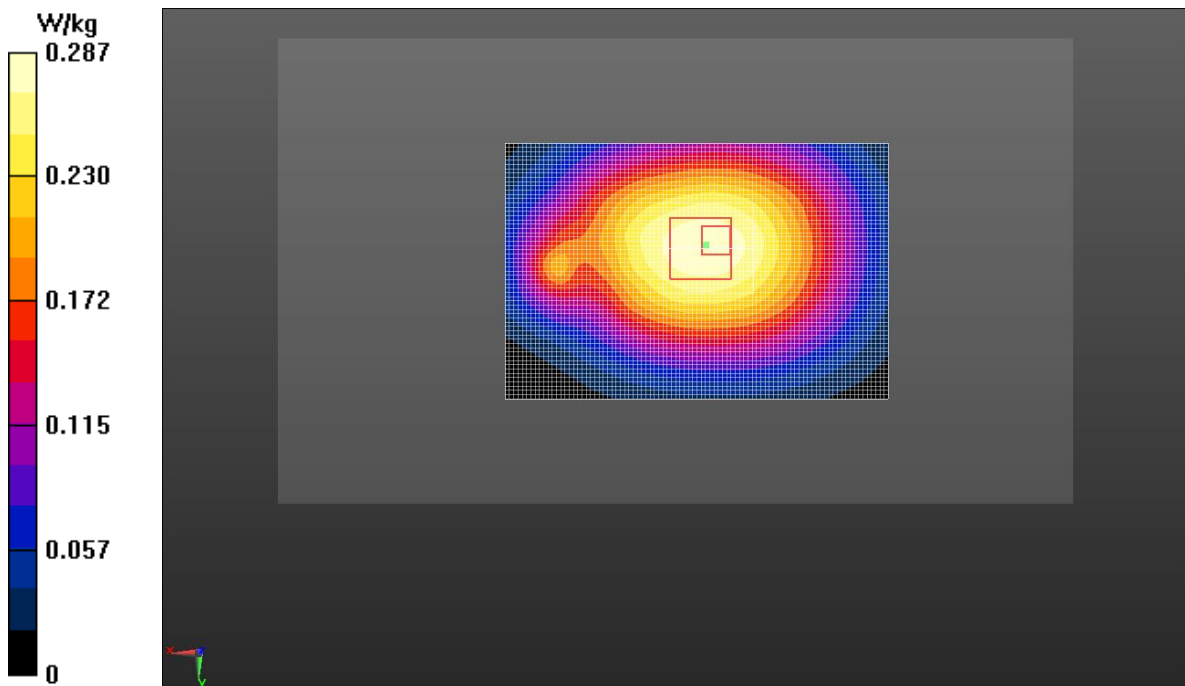
Rear side Middle /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 16.36 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.519 W/kg

SAR(1 g) = 0.298 W/kg; SAR(10 g) = 0.215 W/kg

Maximum value of SAR (measured) = 0.287 W/kg



GSM1900 Right Cheek Low

Date: 2017-11-8

Electronics: DAE4 Sn786

Medium: Head 1900 MHz

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.423$ S/m; $\epsilon_r = 38.681$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.2°C Liquid Temperature: 21.7°C

Communication System: UID 0, 2G_GSM (0) Frequency: 1909.8 MHz Duty Cycle: 1:8.3

Probe: ES3DV3 - SN3151 ConvF (4.88, 4.88, 4.88);

Right cheek Low/Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.271 W/kg

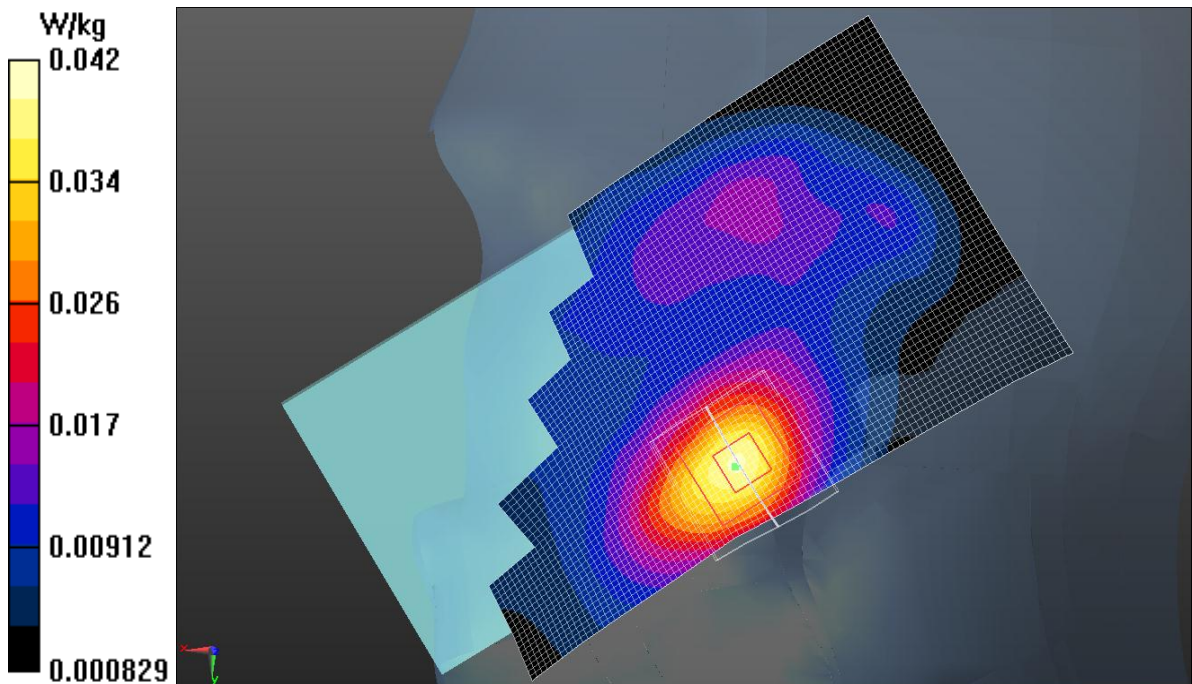
Right cheek Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.207 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.403 W/kg

SAR(1 g) = 0.017 W/kg; SAR(10 g) = 0.010 W/kg

Maximum value of SAR (measured) = 0.286 W/kg



GSM1900 Body Rear Middle

Date: 2017-11-8

Electronics: DAE4 Sn786

Medium: Body 1900 MHz

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.547$ S/m; $\epsilon_r = 52.702$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.2°C Liquid Temperature: 21.7°C

Communication System: UID 0, GPRS 4 Txslot (0) Frequency: 1880 MHz Duty Cycle: 1:2

Probe: ES3DV3 - SN3151 ConvF (4.49, 4.49, 4.49);

Rear side Middle/Area Scan (91x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.320 W/kg

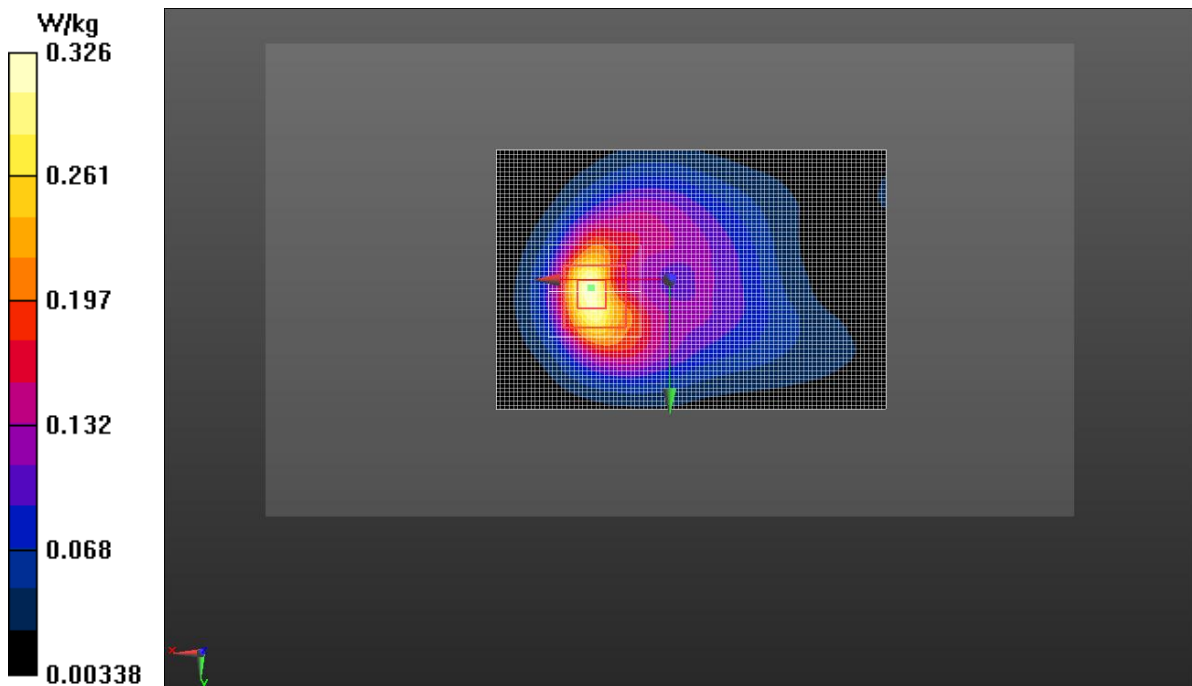
Rear side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.474 W/kg

SAR(1 g) = 0.290 W/kg; SAR(10 g) = 0.161 W/kg

Maximum value of SAR (measured) = 0.326 W/kg



WCDMA 850 Left Cheek Low

Date: 2017-11-8

Electronics: DAE4 Sn786

Medium: Head 835 MHz

Medium parameters used (interpolated): $f = 826.4$ MHz; $\sigma = 0.898$ S/m; $\epsilon_r = 43.207$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: UID 0, 3G_WCDMA (0) Frequency: 826.4 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF (6.08, 6.08, 6.08);

Left Cheek Low/Area Scan (61x111x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 0.409 W/kg

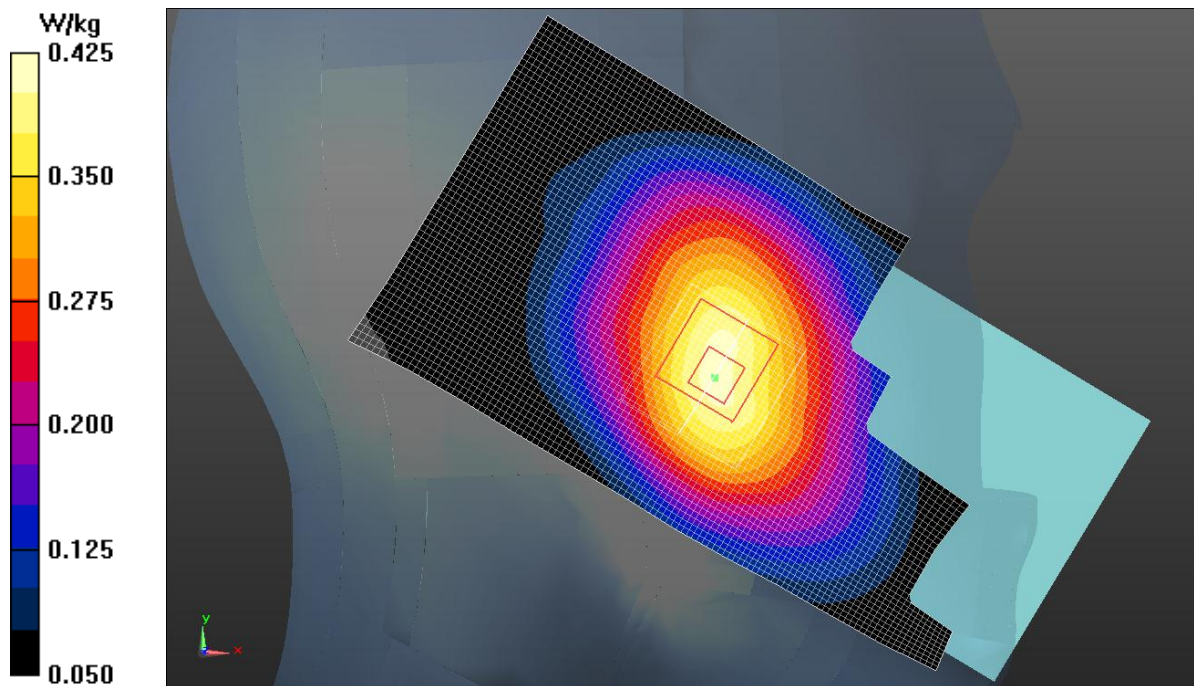
Left Cheek Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 8.791 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.527 W/kg

SAR(1 g) = 0.403 W/kg; SAR(10 g) = 0.303 W/kg

Maximum value of SAR (measured) = 0.425 W/kg



WCDMA 850 Body Rear High

Date: 2017-11-8

Electronics: DAE4 Sn786

Medium: Body 835 MHz

Medium parameters used (interpolated): $f = 846.6$ MHz; $\sigma = 1.001$ S/m; $\epsilon_r = 53.576$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: UID 0, 3G_WCDMA (0) Frequency: 846.6 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF (6.13, 6.13, 6.13);

Rear side High/Area Scan (91x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.432 W/kg

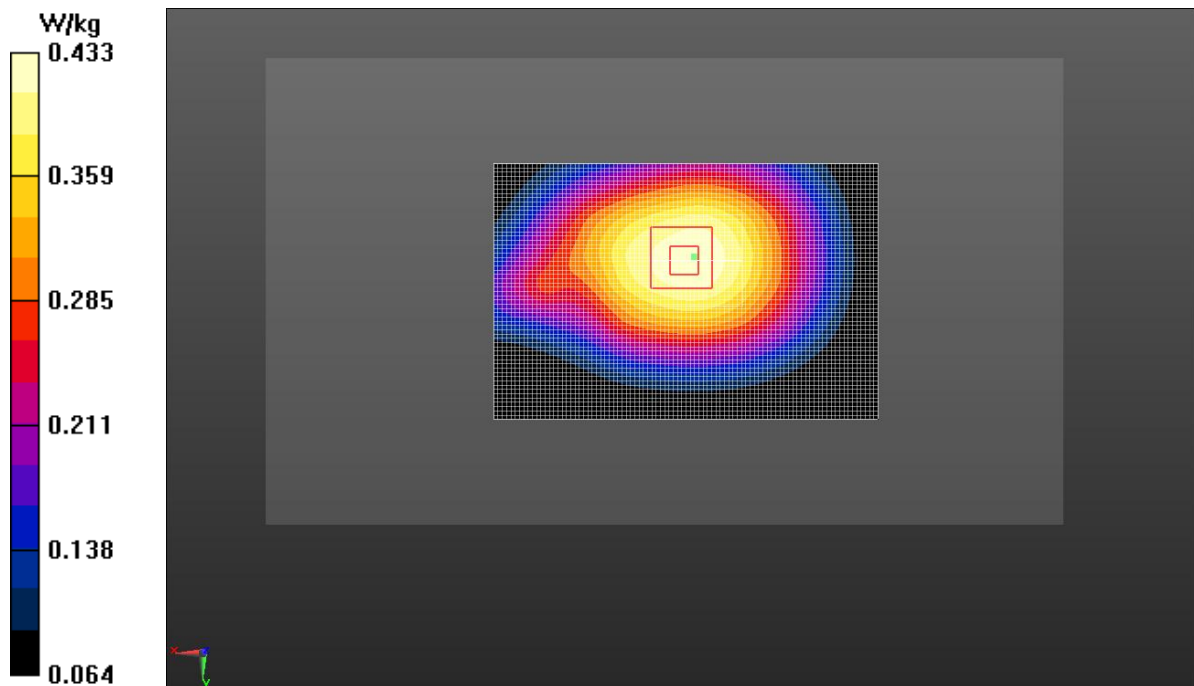
Rear side High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.91 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.522 W/kg

SAR(1 g) = 0.414 W/kg; SAR(10 g) = 0.314 W/kg

Maximum value of SAR (measured) = 0.433 W/kg



WCDMA 1900 Right Cheek Low

Date: 2017-11-8

Electronics: DAE4 Sn786

Medium: Head 1900 MHz

Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.371$ S/m; $\epsilon_r = 38.909$; $\rho = 1000$ kg/m³

Ambient Temperature: 21.8°C Liquid Temperature: 21.3°C

Communication System: UID 0, 3G_WCDMA (0) Frequency: 1852.4 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF (4.88, 4.88, 4.88);

Right cheek Low/Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.520 W/kg

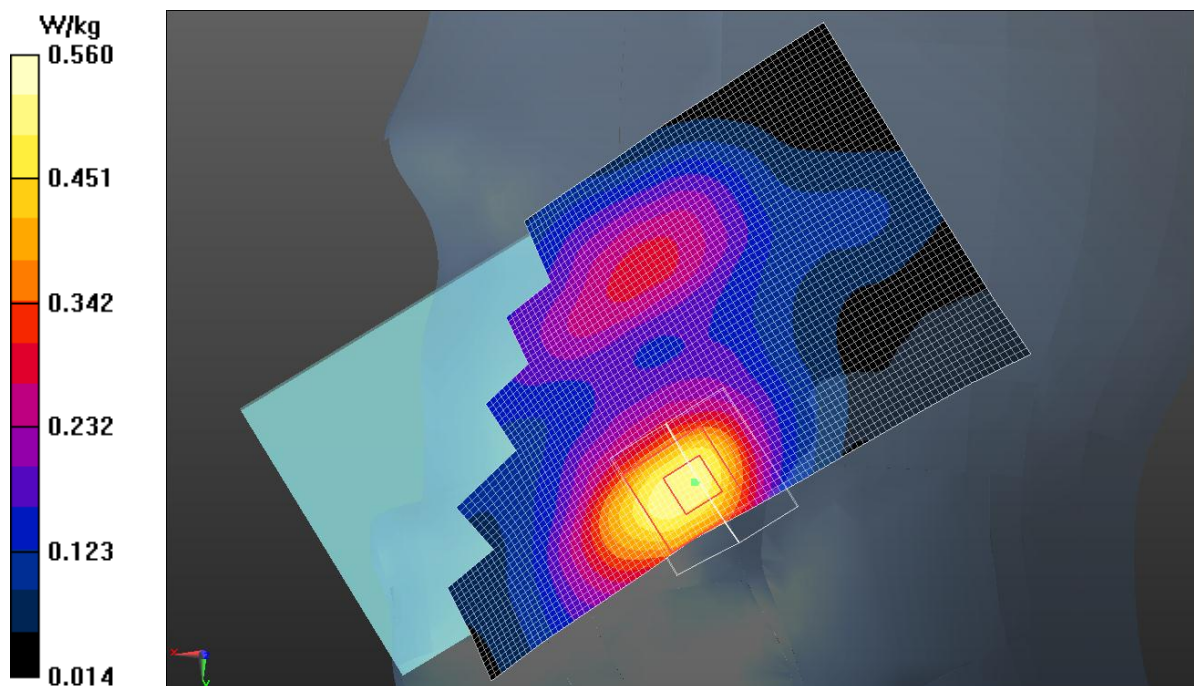
Right cheek Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.550 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.760 W/kg

SAR(1 g) = 0.486 W/kg; SAR(10 g) = 0.292 W/kg

Maximum value of SAR (measured) = 0.560 W/kg



WCDMA 1900 Body Bottom Middle

Date: 2017-11-8

Electronics: DAE4 Sn786

Medium: Body 1900 MHz

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.547$ S/m; $\epsilon_r = 52.702$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C

Communication System: UID 0, 3G_WCDMA (0) Frequency: 1880 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF (4.49, 4.49, 4.49);

Bottom side Mid/Area Scan (61x61x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 1.17 W/kg

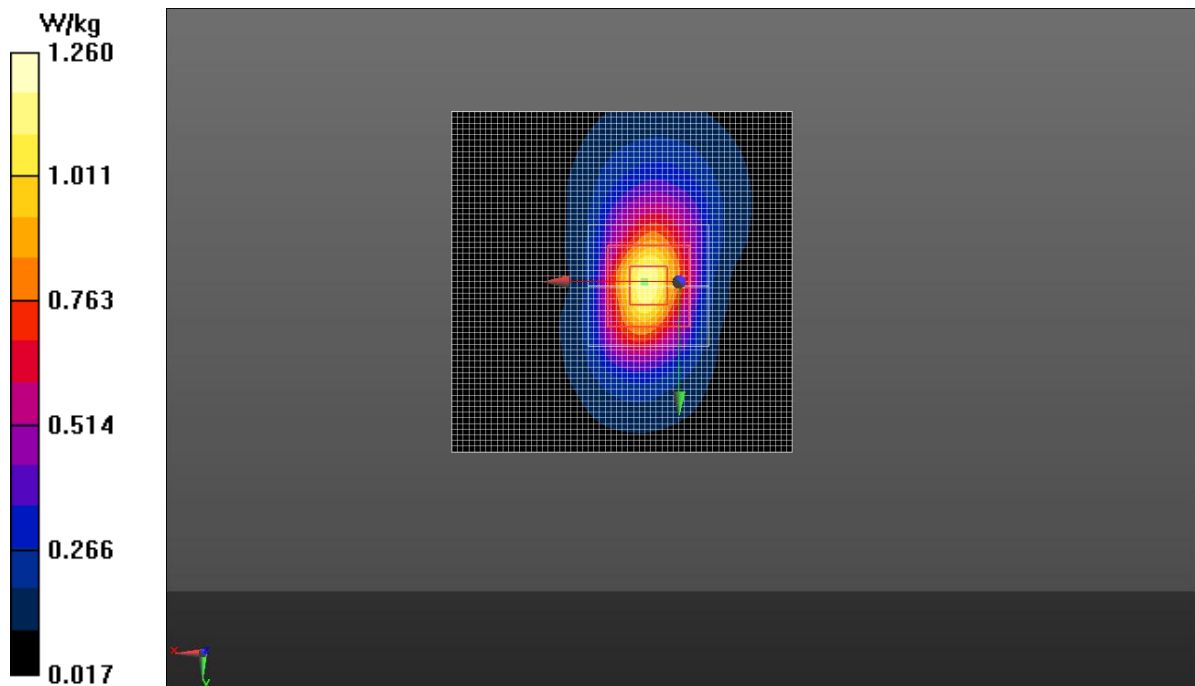
Bottom side Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 22.73 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.94 W/kg

SAR(1 g) = 1.10 W/kg; SAR(10 g) = 0.568 W/kg

Maximum value of SAR (measured) = 1.26 W/kg



WCDMA 1700 Right Cheek High

Date: 2017-11-8

Electronics: DAE4 Sn786

Medium: Head 1800 MHz

Medium parameters used (interpolated): $f = 1752.6$ MHz; $\sigma = 1.328$ S/m; $\epsilon_r = 39.411$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.7°C Liquid Temperature: 22.2°C

Communication System: UID 0, 3G_WCDMA (0) Frequency: 1752.6 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF (5.10, 5.10, 5.10);

Right cheek High/Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.633 W/kg

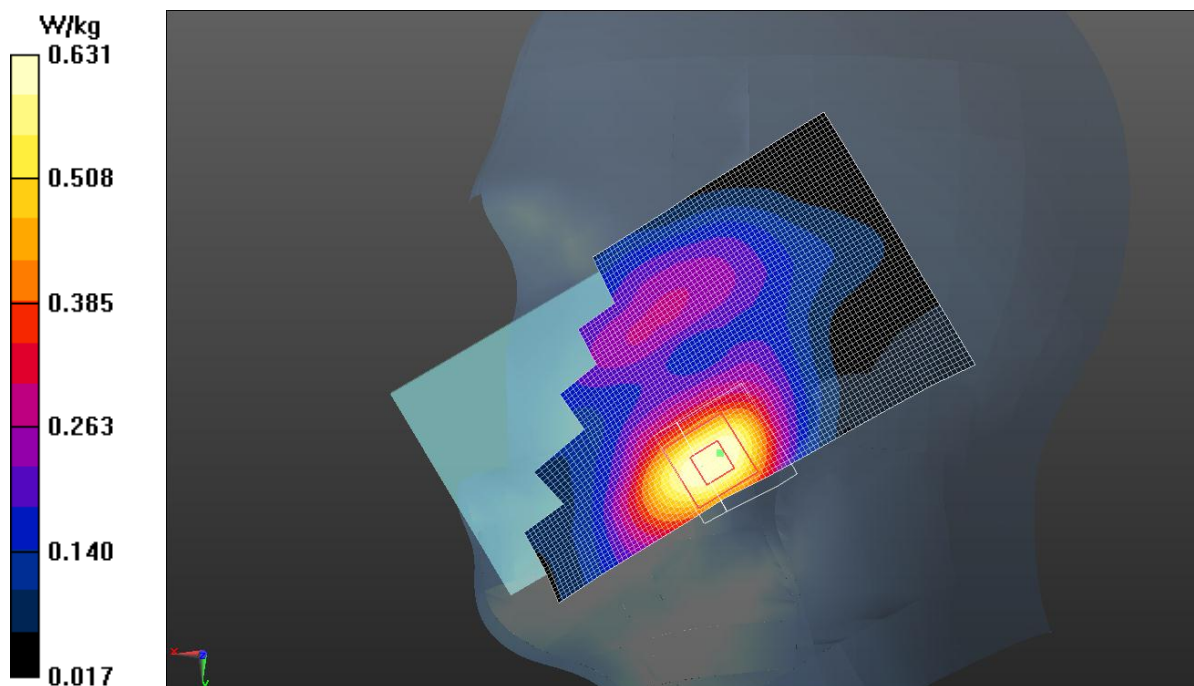
Right cheek High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.987 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.858 W/kg

SAR(1 g) = 0.576 W/kg; SAR(10 g) = 0.365 W/kg

Maximum value of SAR (measured) = 0.631 W/kg



WCDMA 1700 Body Front Middle

Date: 2017-11-8

Electronics: DAE4 Sn786

Medium: Body 1800 MHz

Medium parameters used (interpolated): $f = 1732.6$ MHz; $\sigma = 1.421$ S/m; $\epsilon_r = 53.377$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.6°C Liquid Temperature: 22.1°C

Communication System: UID 0, 3G_WCDMA (0) Frequency: 1732.6 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF (4.95, 4.95, 4.95);

Front side Middle/Area Scan (111x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.871 W/kg

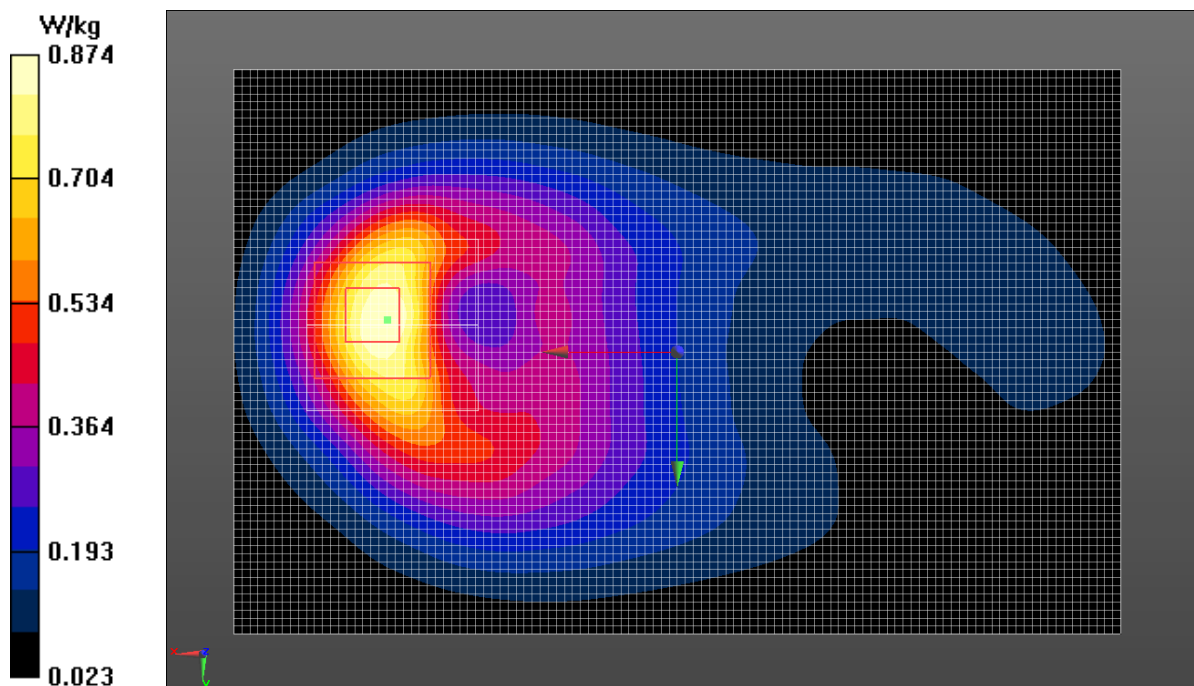
Front side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.91 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 1.34 W/kg

SAR(1 g) = 0.832 W/kg; SAR(10 g) = 0.464 W/kg

Maximum value of SAR (measured) = 0.874 W/kg



LTE Band 2 Left Cheek Low with QPSK_20MHz_1RB_Mid

Date: 2017-11-8

Electronics: DAE4 Sn786

Medium: Head 1900 MHz

Medium parameters used: $f = 1860$ MHz; $\sigma = 1.378$ S/m; $\epsilon_r = 38.874$; $\rho = 1000$ kg/m³

Ambient Temperature: 21.5°C Liquid Temperature: 21.0°C

Communication System: UID 0, 4G_LTE_FDD (0) Frequency: 1860 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF (4.88, 4.88, 4.88);

Left Cheek Low 1RB_Mid/Area Scan (61x111x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 0.720 W/kg

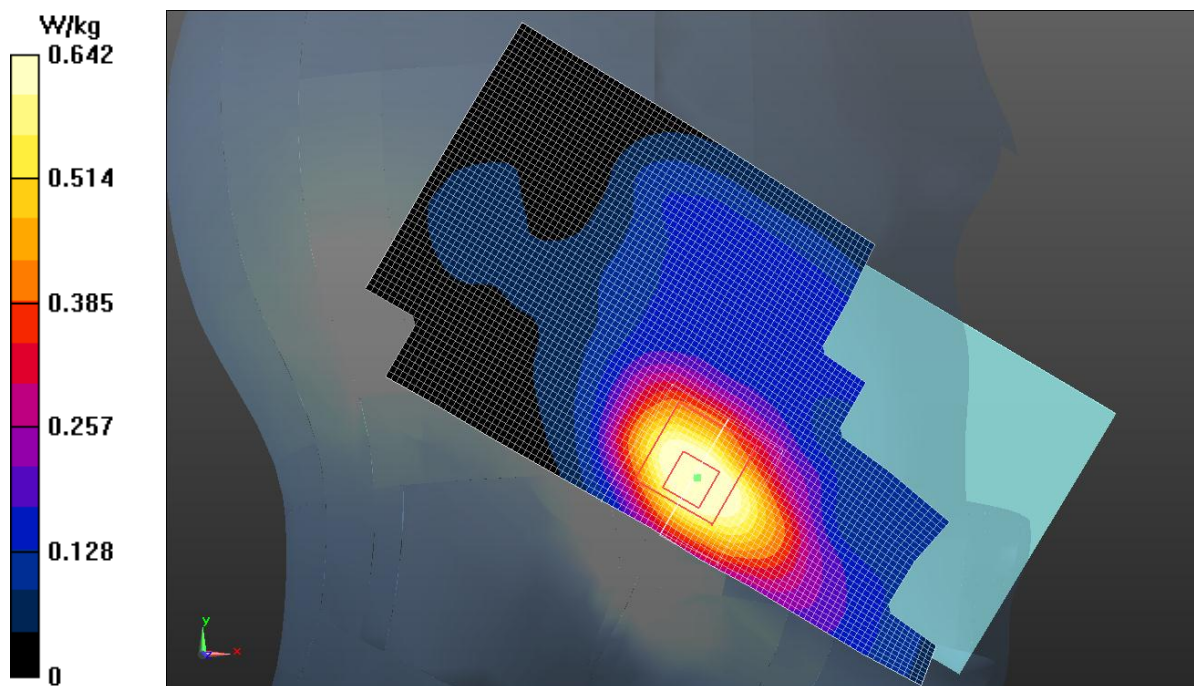
Left Cheek Low 1RB_Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 6.171 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.980 W/kg

SAR(1 g) = 0.572 W/kg; SAR(10 g) = 0.348 W/kg

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



LTE Band 2 Body Bottom Mid with QPSK_20MHz_1RB_Mid

Date: 2017-11-8

Electronics: DAE4 Sn786

Medium: Body 1900 MHz

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.547$ S/m; $\epsilon_r = 52.702$; $\rho = 1000$ kg/m³

Ambient Temperature: 21.8°C Liquid Temperature: 21.3°C

Communication System: UID 0, 4G_LTE_FDD (0) Frequency: 1880 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF (4.49, 4.49, 4.49);

Bottom side Mid 1RB_Mid/Area Scan (61x91x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.22 W/kg

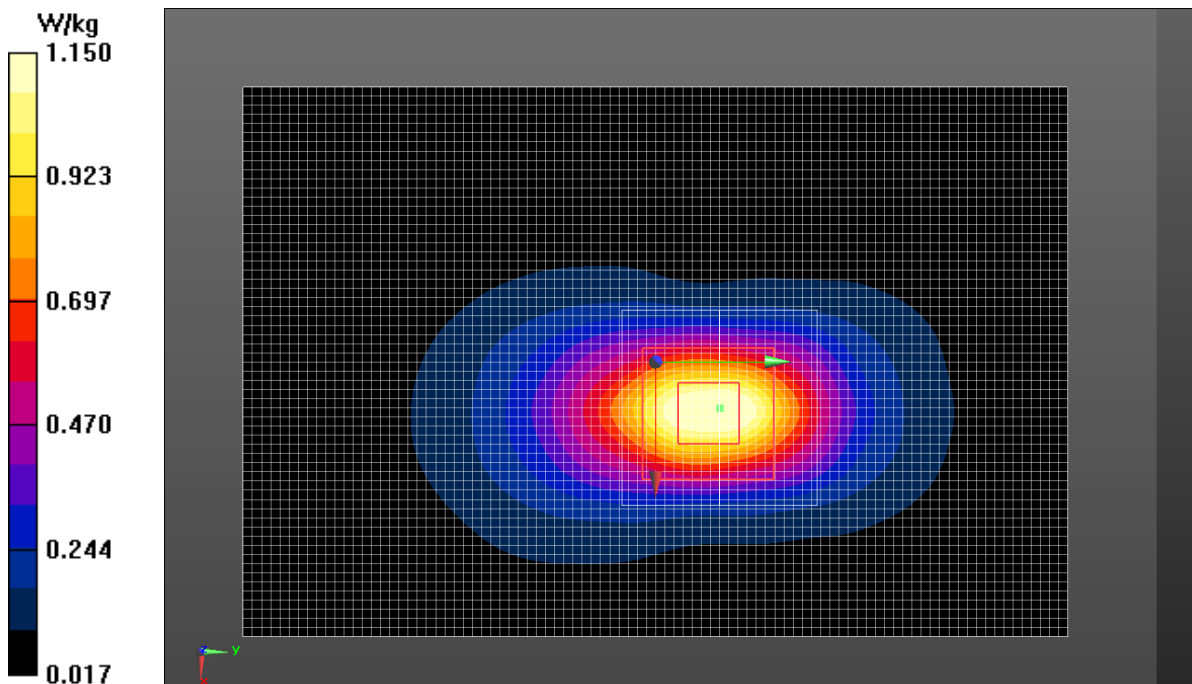
Bottom side Mid 1RB_Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.77 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.76 W/kg

SAR(1 g) = 1.02 W/kg; SAR(10 g) = 0.525 W/kg

Maximum value of SAR (measured) = 1.15 W/kg



LTE Band 4 Right Cheek Low with QPSK_20MHz_1RB_Low

Date: 2017-11-8

Electronics: DAE4 Sn786

Medium: Head 1800 MHz

Medium parameters used: $f = 1720$ MHz; $\sigma = 1.291$ S/m; $\epsilon_r = 39.524$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.2°C Liquid Temperature: 21.7°C

Communication System: UID 0, 4G_LTE_FDD (0) Frequency: 1720 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF (5.10, 5.10, 5.10);

Right cheek Low 1RB_Low/Area Scan (61x111x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 0.412 W/kg

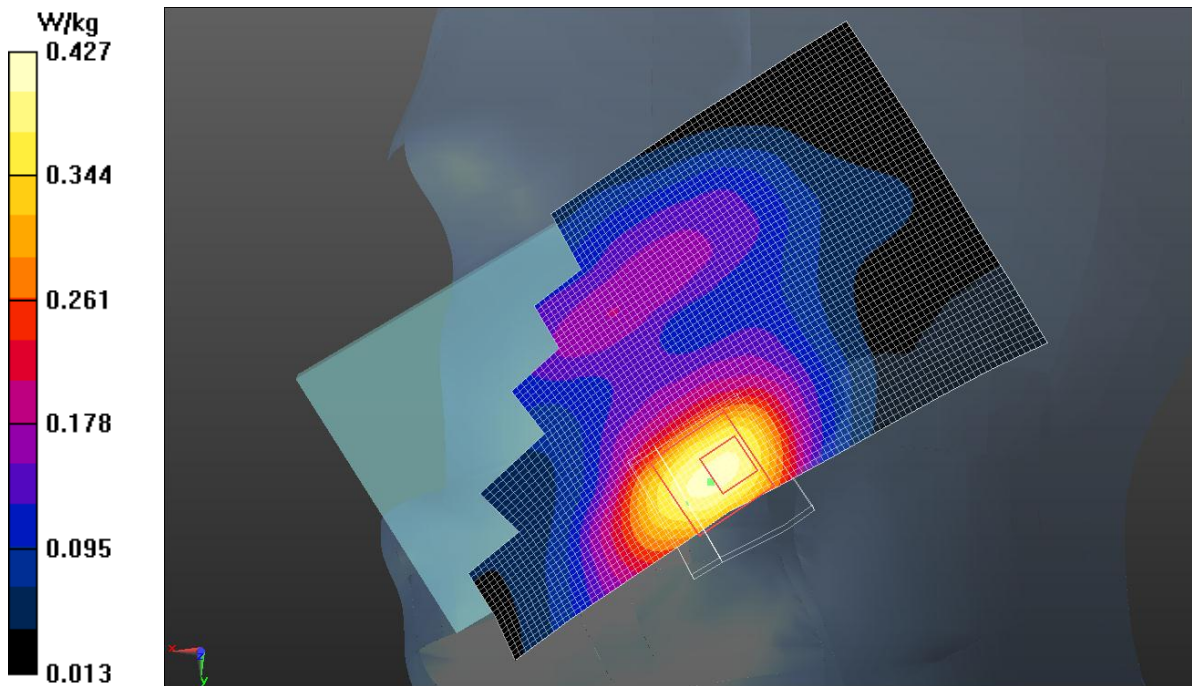
Right cheek Low 1RB_Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 6.447 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.560 W/kg

SAR(1 g) = 0.375 W/kg; SAR(10 g) = 0.240 W/kg

Maximum value of SAR (measured) = 0.427 W/kg



LTE Band 4 Body Bottom High with QPSK_20MHz_1RB_Middle

Date: 2017-11-8

Electronics: DAE4 Sn786

Medium: Body 1800 MHz

Medium parameters used: $f = 1745$ MHz; $\sigma = 1.433$ S/m; $\epsilon_r = 53.252$; $\rho = 1000$ kg/m³

Ambient Temperature: 21.8°C Liquid Temperature: 21.3°C

Communication System: UID 0, 4G_LTE_FDD (0) Frequency: 1745 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF (4.95, 4.95, 4.95);

Bottom side Mid 1RB_Mid/Area Scan (61x91x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

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

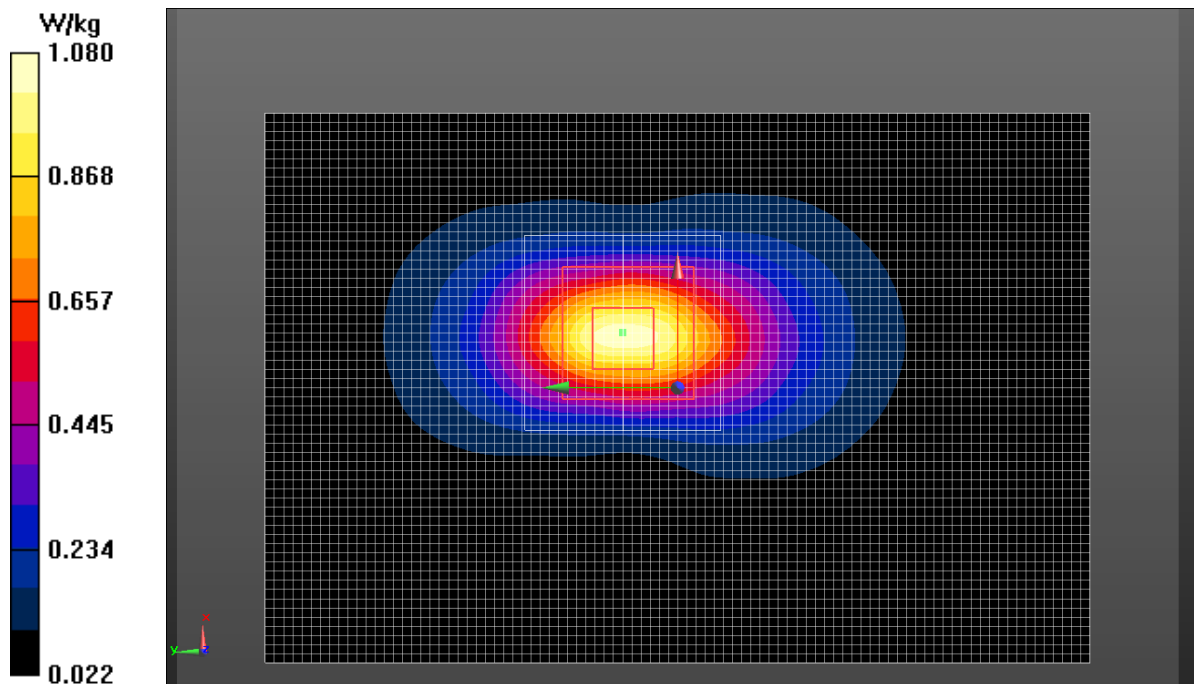
Bottom side Mid 1RB_Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 19.51 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 1.63 W/kg

SAR(1 g) = 0.943 W/kg; SAR(10 g) = 0.496 W/kg

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



LTE Band 5 Right Cheek High with QPSK_10MHz_1RB_Mid

Date: 2017-11-8

Electronics: DAE4 Sn786

Medium: Head 835 MHz

Medium parameters used: $f = 844$ MHz; $\sigma = 0.915$ S/m; $\epsilon_r = 43.009$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.0°C Liquid Temperature: 21.5°C

Communication System: UID 0, 4G_LTE_FDD (0) Frequency: 844 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF (6.08, 6.08, 6.08);

Right Cheek High 1RB_Mid/Area Scan (61x111x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 0.360 W/kg

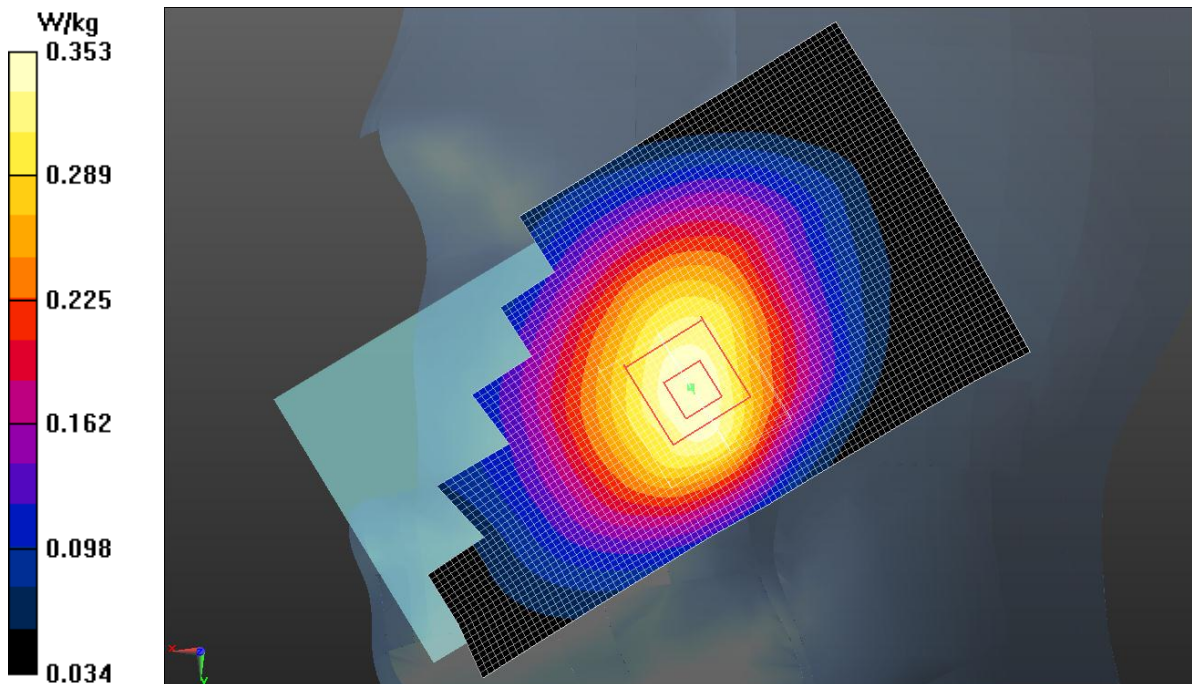
Right Cheek High 1RB_Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 7.685 V/m; Power Drift = 0.28 dB

Peak SAR (extrapolated) = 0.438 W/kg

SAR(1 g) = 0.335 W/kg; SAR(10 g) = 0.250 W/kg

Maximum value of SAR (measured) = 0.353 W/kg



LTE Band 5 Body Rear High with QPSK_10MHz_1RB_Mid

Date: 2017-11-8

Electronics: DAE4 Sn786

Medium: Body 835 MHz

Medium parameters used: $f = 844$ MHz; $\sigma = 0.998$ S/m; $\epsilon_r = 53.603$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C

Communication System: UID 0, 4G_LTE_FDD (0) Frequency: 844 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF (6.13, 6.13, 6.13);

Rear side Mid 1RB_Mid/Area Scan (91x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.320 W/kg

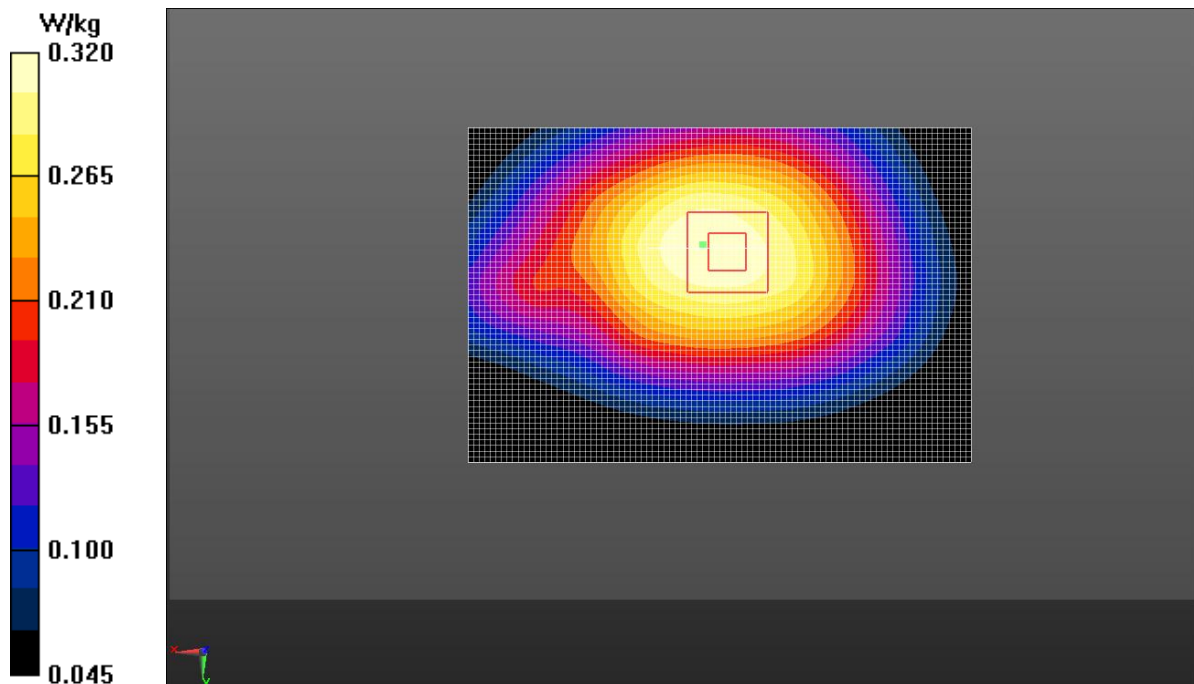
Rear side Mid 1RB_Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.13 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.387 W/kg

SAR(1 g) = 0.306 W/kg; SAR(10 g) = 0.232 W/kg

Maximum value of SAR (measured) = 0.320 W/kg



LTE Band 12 Left Cheek Middle with QPSK_10MHz_1RB_Middle

Date: 2017-11-9

Electronics: DAE4 Sn786

Medium: Head 750 MHz

Medium parameters used (interpolated): $f = 707.5$ MHz; $\sigma = 0.852$ S/m; $\epsilon_r = 43.244$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C

Communication System: UID 0, 4G_LTE_FDD (0) Frequency: 707.5 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF (6.34, 6.34, 6.34);

Left Cheek Mid 1RB_Mid/Area Scan (61x111x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 0.224 W/kg

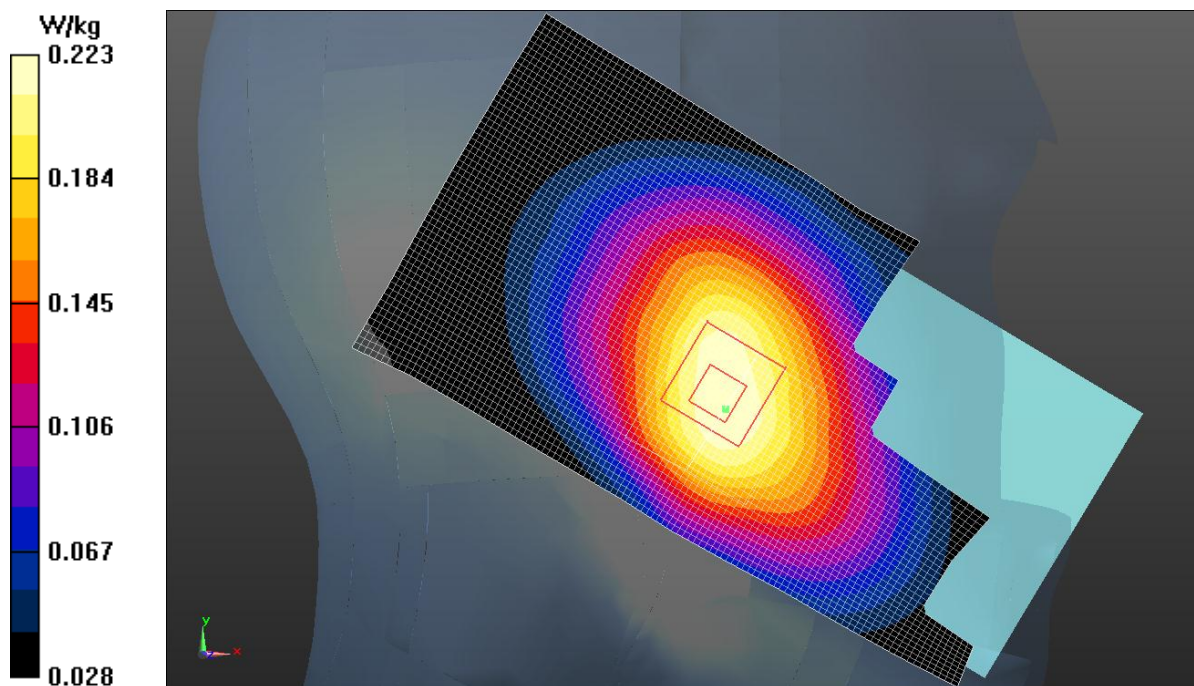
Left Cheek Mid 1RB_Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 7.508 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.265 W/kg

SAR(1 g) = 0.213 W/kg; SAR(10 g) = 0.165 W/kg

Maximum value of SAR (measured) = 0.223 W/kg



LTE Band 12 Body Rear Middle with QPSK_10MHz_1RB_Middle

Date: 2017-11-9

Electronics: DAE4 Sn786

Medium: Body 750 MHz

Medium parameters used (interpolated): $f = 707.5$ MHz; $\sigma = 0.931$ S/m; $\epsilon_r = 53.911$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.7°C Liquid Temperature: 22.2°C

Communication System: UID 0, 4G_LTE_FDD (0) Frequency: 707.5 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF (6.12, 6.12, 6.12);

Rear side Mid 1RB Mid/Area Scan (111x61x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 0.345 W/kg

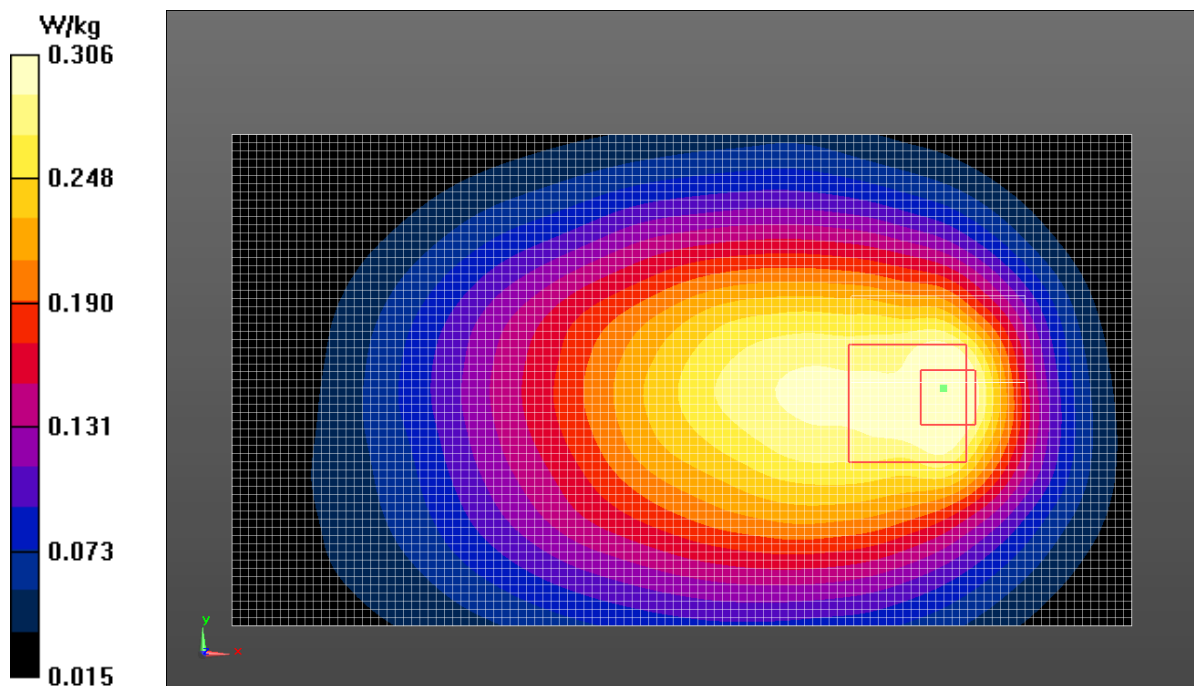
Rear side Mid 1RB Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 16.76 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.441 W/kg

SAR(1 g) = 0.293 W/kg; SAR(10 g) = 0.206 W/kg

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



Wi-Fi 802.11b Left Cheek Channel 11

Date: 2017-11-9

Electronics: DAE4 Sn786

Medium: Head 2450 MHz

Medium parameters used: $f = 2462$ MHz; $\sigma = 1.876$ S/m; $\epsilon_r = 38.693$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.2°C Liquid Temperature: 21.7°C

Communication System: UID 0, WiFi (0) Frequency: 2462 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF (4.44, 4.44, 4.44);

Left Cheek High /Area Scan (61x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

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

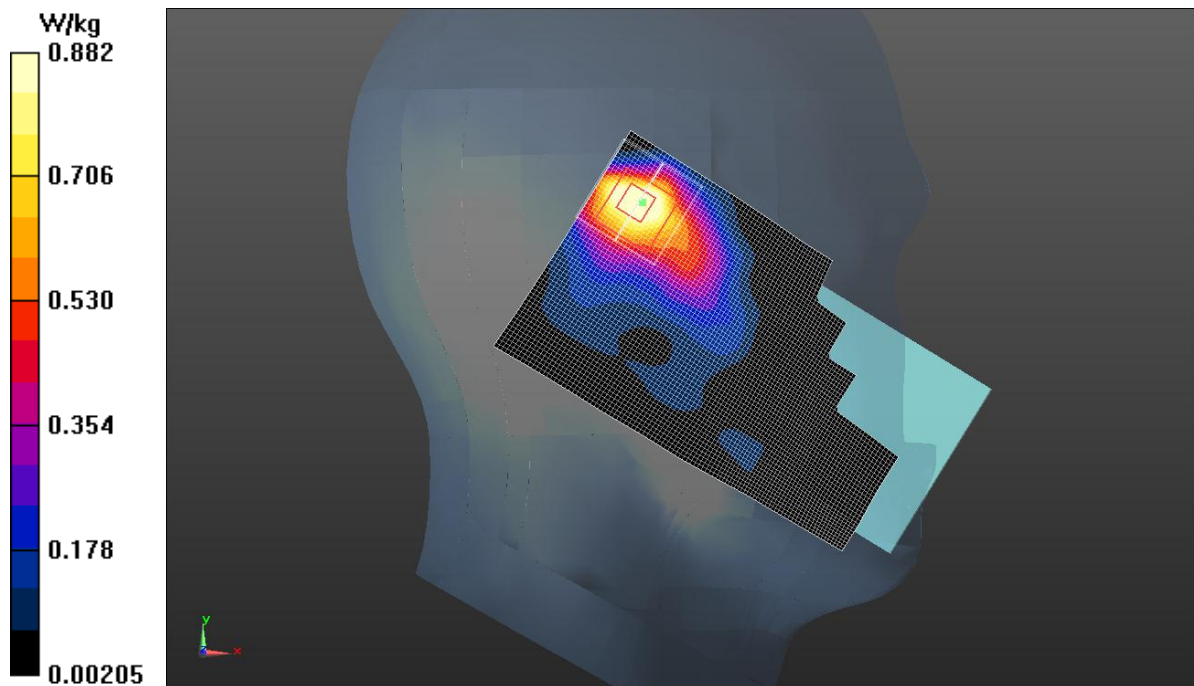
Left Cheek High /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.29 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 1.77 W/kg

SAR(1 g) = 0.820 W/kg; SAR(10 g) = 0.419 W/kg

Maximum value of SAR (measured) = 0.882 W/kg



Wi-Fi 802.11b Body Rear Channel 11

Date: 2017-11-9

Electronics: DAE4 Sn786

Medium: Body 2450 MHz

Medium parameters used: $f = 2462$ MHz; $\sigma = 1.939$ S/m; $\epsilon_r = 51.624$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C

Communication System: UID 0, WiFi (0) Frequency: 2462 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF (4.23, 4.23, 4.23);

Rear side High/Area Scan (111x61x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 0.247 W/kg

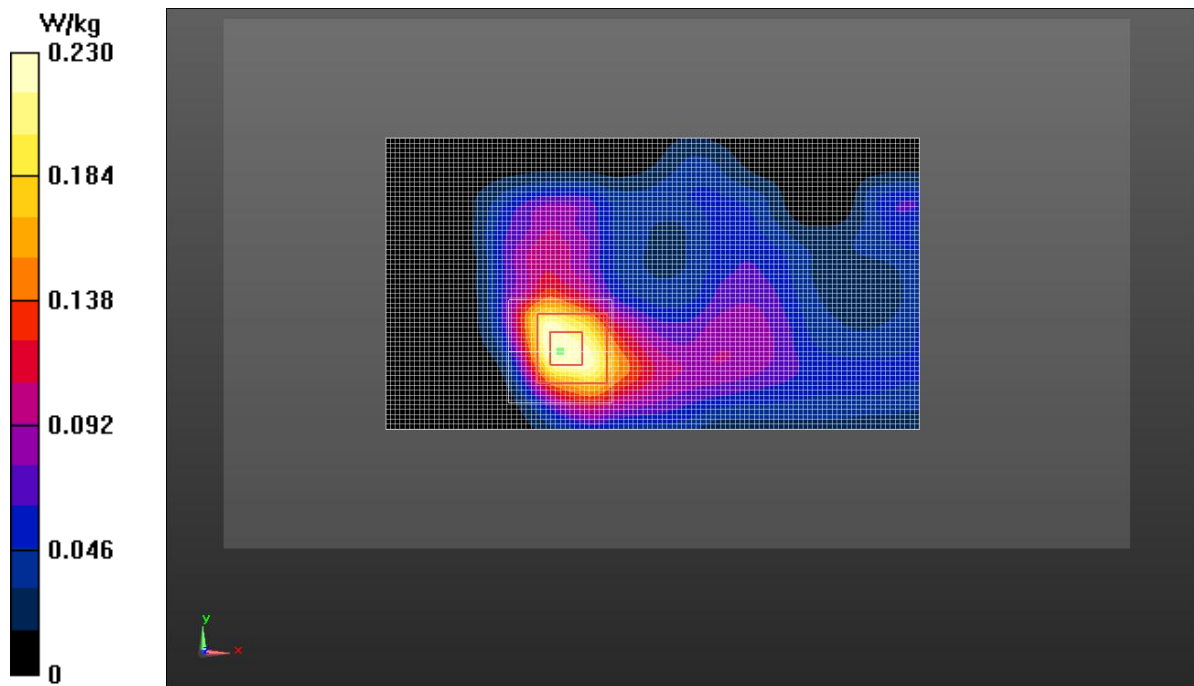
Rear side High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 4.701 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.391 W/kg

SAR(1 g) = 0.207 W/kg; SAR(10 g) = 0.106 W/kg

Maximum value of SAR (measured) = 0.230 W/kg



ANNEX K SYSTEM VALIDATION RESULTS FOR SPOT CHECK TEST

750MHz

Date: 2017-11-9

Electronics: DAE4 Sn786

Medium: Head 750 MHz

Medium parameters used: $f = 750$ MHz; $\sigma = 0.901$ S/m; $\epsilon_r = 42.663$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

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

Probe: ES3DV3 - SN3151 ConvF (6.34, 6.34, 6.34)

System Validation /Area Scan (81x191x1): Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm

Reference Value = 56.663 V/m; Power Drift = -0.06 dB

Fast SAR: SAR(1 g) = 2.20 W/kg; SAR(10 g) = 1.43 W/kg

Maximum value of SAR (interpolated) = 2.39 W/kg

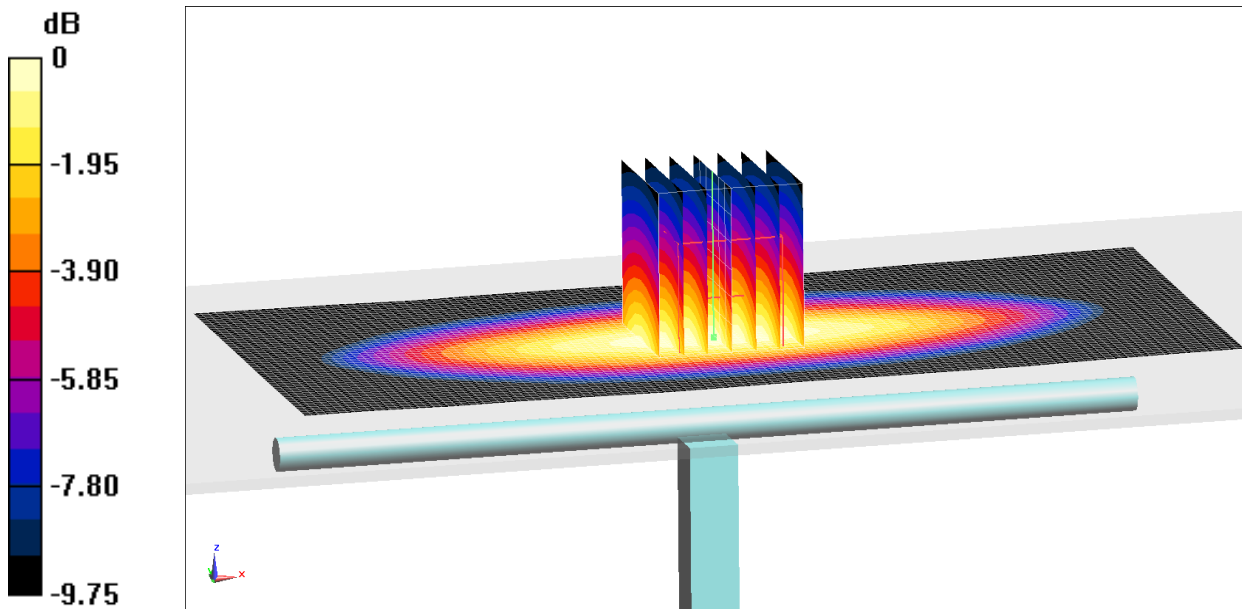
System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 56.663 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 3.05 W/kg

SAR(1 g) = 2.16 W/kg; SAR(10 g) = 1.40 W/kg

Maximum value of SAR (measured) = 2.33 W/kg



0 dB = 2.33 W/kg = 3.67 dB W/kg