

WCDMA1900-BII_CH9262 Rear

Date: 12/28/2017

Electronics: DAE4 Sn1331

Medium: Head 1900 MHz

Medium parameters used: $f = 1852.4$ MHz; $\sigma = 1.446$ mho/m; $\epsilon_r = 52.59$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA1900-BII 1852.4 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(7.57,7.57,7.57)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.746 W/kg

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

Reference Value = 12.6 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 1.07 W/kg

SAR(1 g) = 0.625 W/kg; SAR(10 g) = 0.391 W/kg

Maximum value of SAR (measured) = 0.734 W/kg

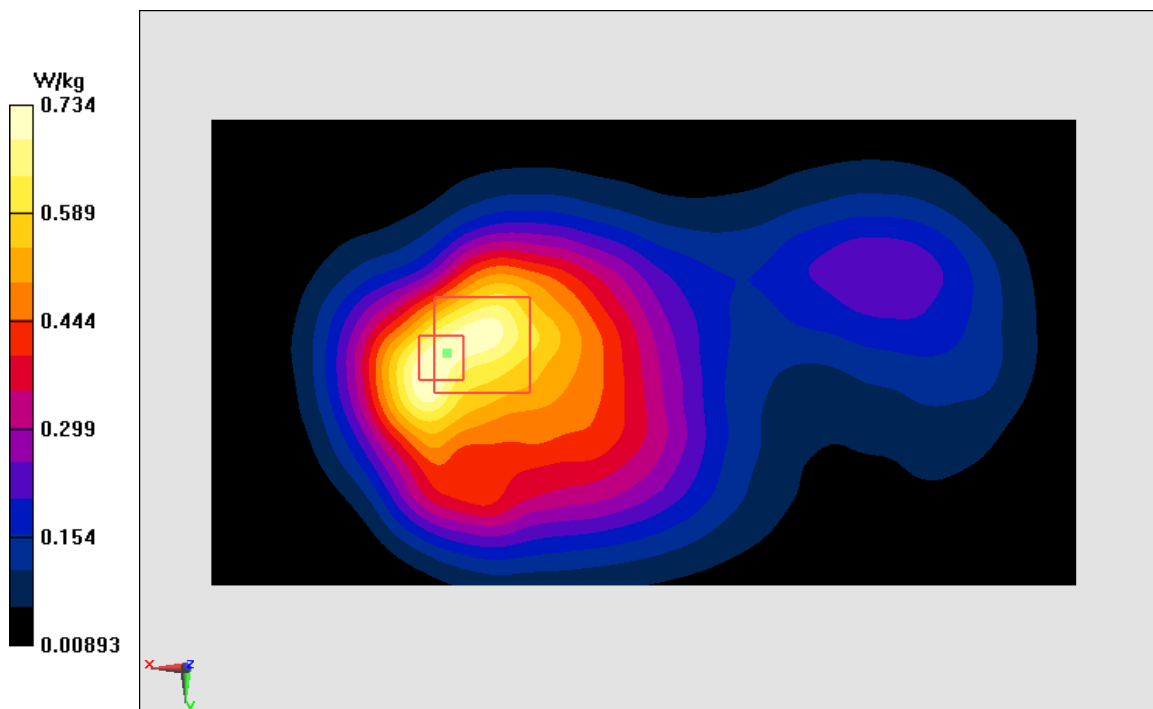


Fig A.6

WCDMA1700-BIV_CH1513 Left Cheek

Date: 12/27/2017

Electronics: DAE4 Sn1331

Medium: Head 1750 MHz

Medium parameters used: $f = 1752.6$ MHz; $\sigma = 1.391$ mho/m; $\epsilon_r = 40.25$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA1700-BIV 1752.6 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(8.16,8.16,8.16)

Area Scan (71x121x1): Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm

Maximum value of SAR (interpolated) = 0.459 W/kg

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

Reference Value = 6.962 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.574 W/kg

SAR(1 g) = 0.382 W/kg; SAR(10 g) = 0.243 W/kg

Maximum value of SAR (measured) = 0.435 W/kg

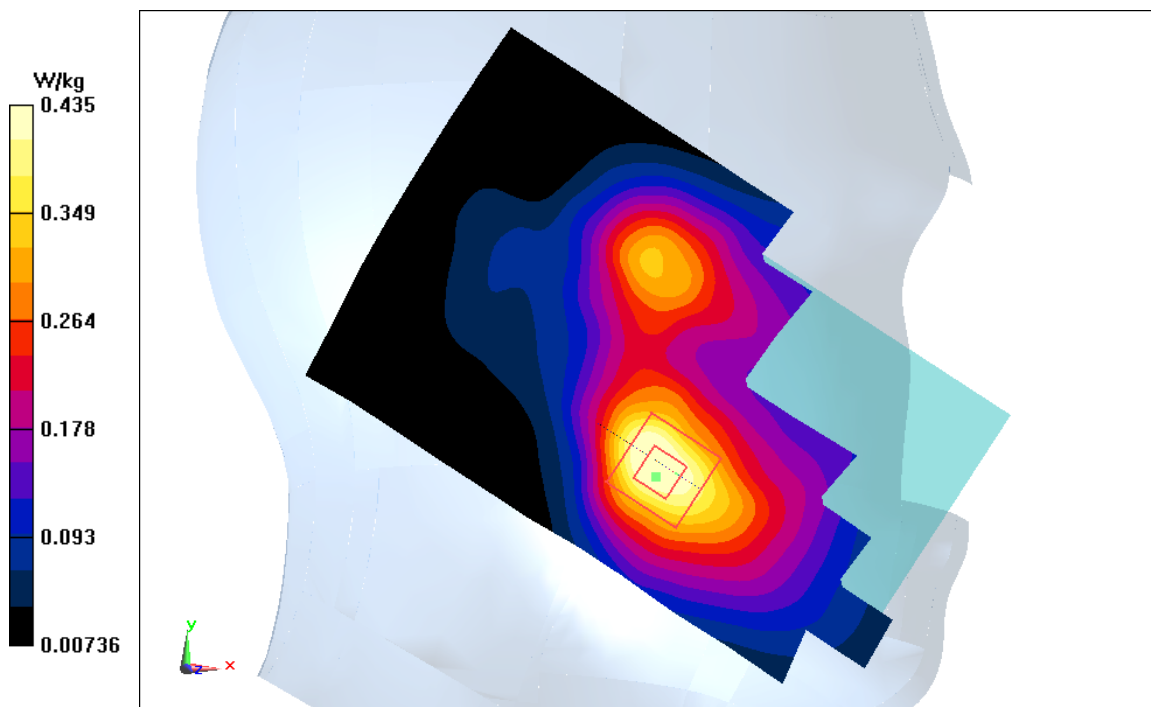


Fig A.7

WCDMA1700-BIV_CH1513 Rear

Date: 12/27/2017

Electronics: DAE4 Sn1331

Medium: Head 1750 MHz

Medium parameters used: $f = 1752.6$ MHz; $\sigma = 1.496$ mho/m; $\epsilon_r = 52.74$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA1700-BIV 1752.6 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(7.9,7.9,7.9)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

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

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

Reference Value = 13.93 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 1.34 W/kg

SAR(1 g) = 0.847 W/kg; SAR(10 g) = 0.546 W/kg

Maximum value of SAR (measured) = 0.99 W/kg

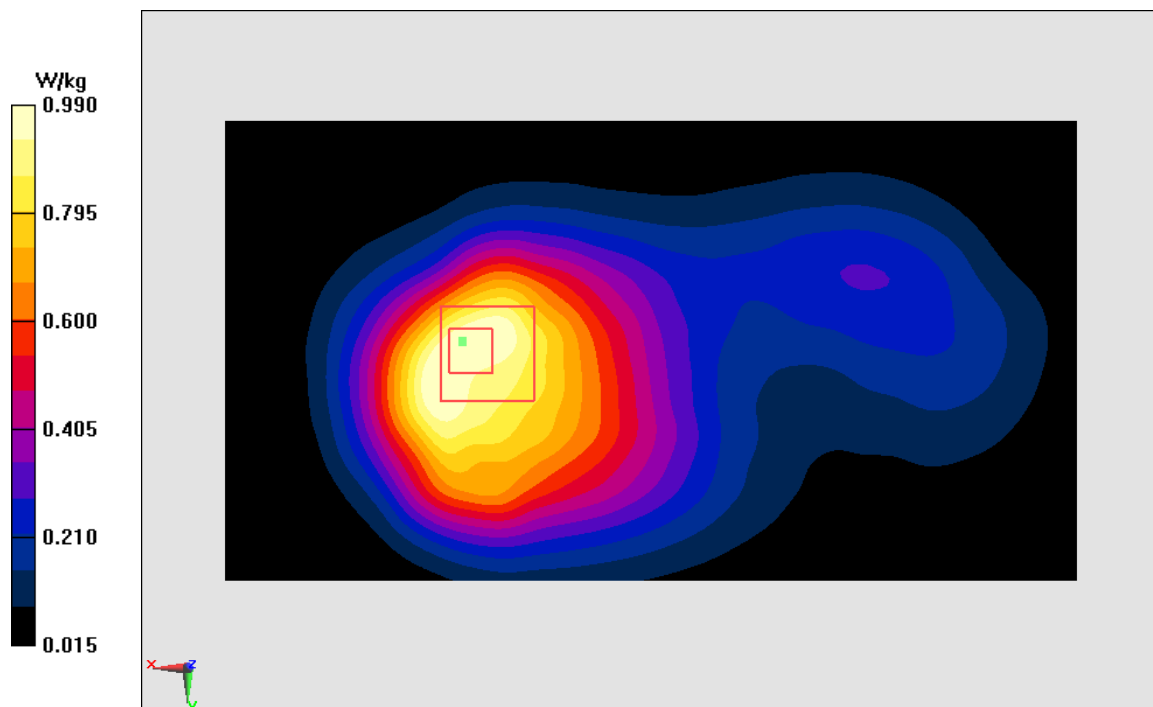


Fig A.8

WCDMA850-BV_CH4233 Right Cheek

Date: 12/26/2017

Electronics: DAE4 Sn1331

Medium: Head 835 MHz

Medium parameters used: $f = 846.6$ MHz; $\sigma = 0.903$ mho/m; $\epsilon_r = 42.29$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA850-BV 846.6 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(9.33,9.33,9.33)

Area Scan (71x121x1): Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm

Maximum value of SAR (interpolated) = 0.374 W/kg

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

Reference Value = 6.678 V/m; Power Drift = 0.19 dB

Peak SAR (extrapolated) = 0.445 W/kg

SAR(1 g) = 0.339 W/kg; SAR(10 g) = 0.253 W/kg

Maximum value of SAR (measured) = 0.373 W/kg

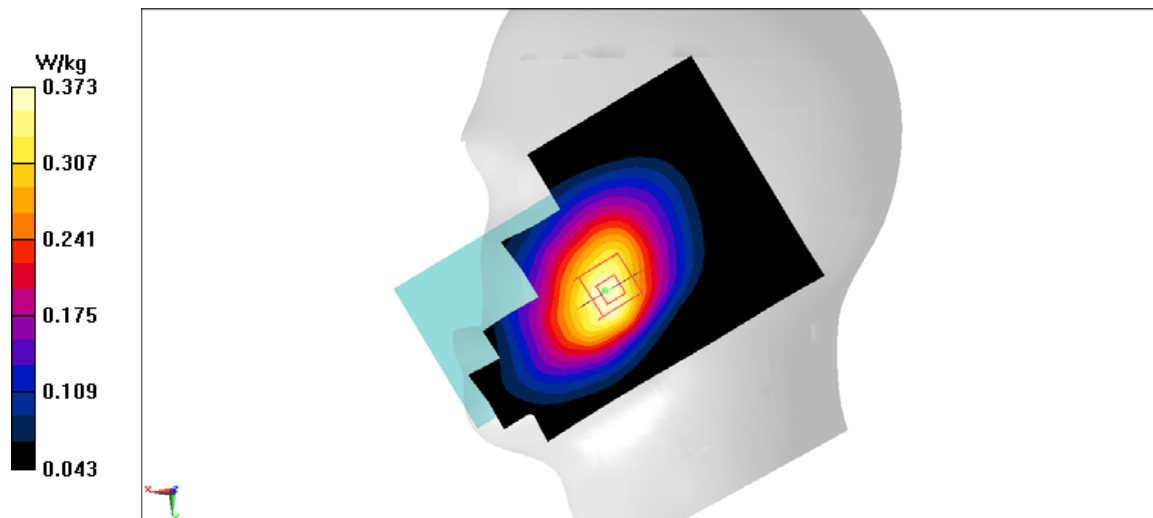


Fig A.9

WCDMA850-BV_CH4233 Rear

Date: 12/26/2017

Electronics: DAE4 Sn1331

Medium: Head 835 MHz

Medium parameters used: $f = 846.6$ MHz; $\sigma = 0.965$ mho/m; $\epsilon_r = 54.71$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA850-BV 846.6 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(9.52,9.52,9.52)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

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

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

Reference Value = 16.93 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.748 W/kg

SAR(1 g) = 0.415 W/kg; SAR(10 g) = 0.233 W/kg

Maximum value of SAR (measured) = 0.508 W/kg

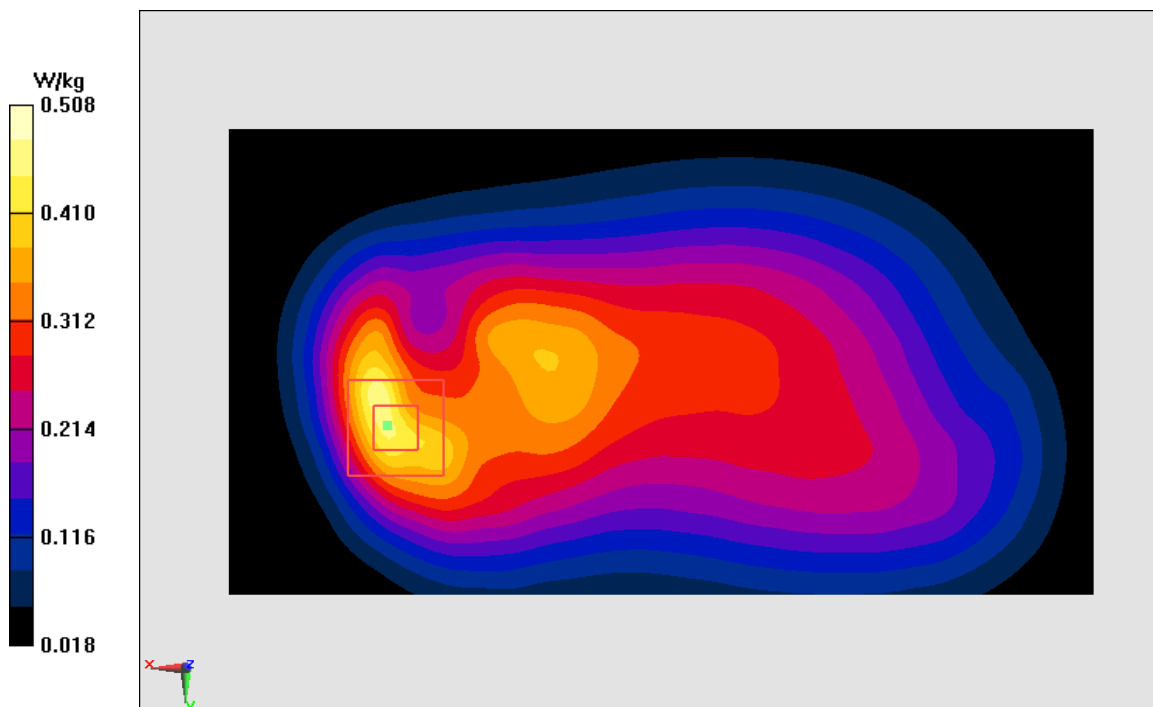


Fig A.10

LTE1900-FDD2_CH18700 Left Cheek

Date: 12/28/2017

Electronics: DAE4 Sn1331

Medium: Head 1900 MHz

Medium parameters used: $f = 1860$ MHz; $\sigma = 1.36$ mho/m; $\epsilon_r = 39.85$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE1900-FDD2 1860 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(7.89,7.89,7.89)

Area Scan (71x121x1): Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm

Maximum value of SAR (interpolated) = 0.394 W/kg

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

Reference Value = 2.463 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.489 W/kg

SAR(1 g) = 0.314 W/kg; SAR(10 g) = 0.194 W/kg

Maximum value of SAR (measured) = 0.368 W/kg

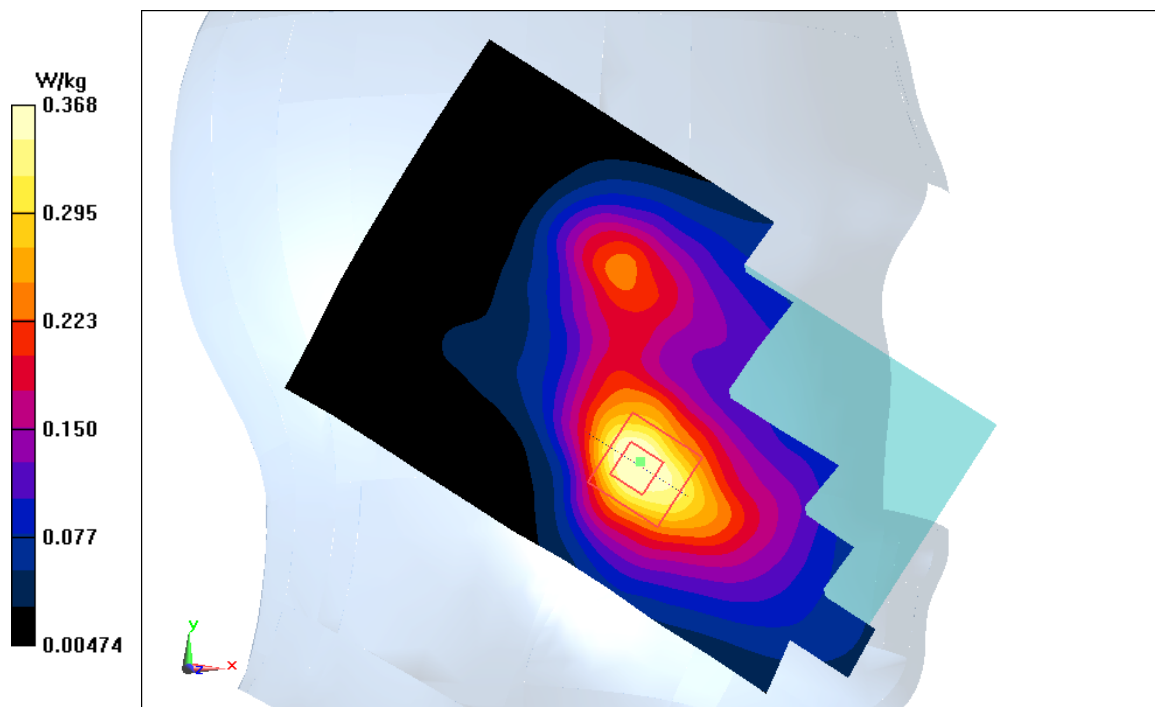


Fig A.11

LTE1900-FDD2_CH18700 Rear

Date: 12/28/2017

Electronics: DAE4 Sn1331

Medium: Head 1900 MHz

Medium parameters used: $f = 1860$ MHz; $\sigma = 1.454$ mho/m; $\epsilon_r = 52.58$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE1900-FDD2 1860 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(7.57,7.57,7.57)

Area Scan (71x121x1): Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm

Maximum value of SAR (interpolated) = 0.648 W/kg

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

Reference Value = 12.48 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.915 W/kg

SAR(1 g) = 0.546 W/kg; SAR(10 g) = 0.346 W/kg

Maximum value of SAR (measured) = 0.643 W/kg

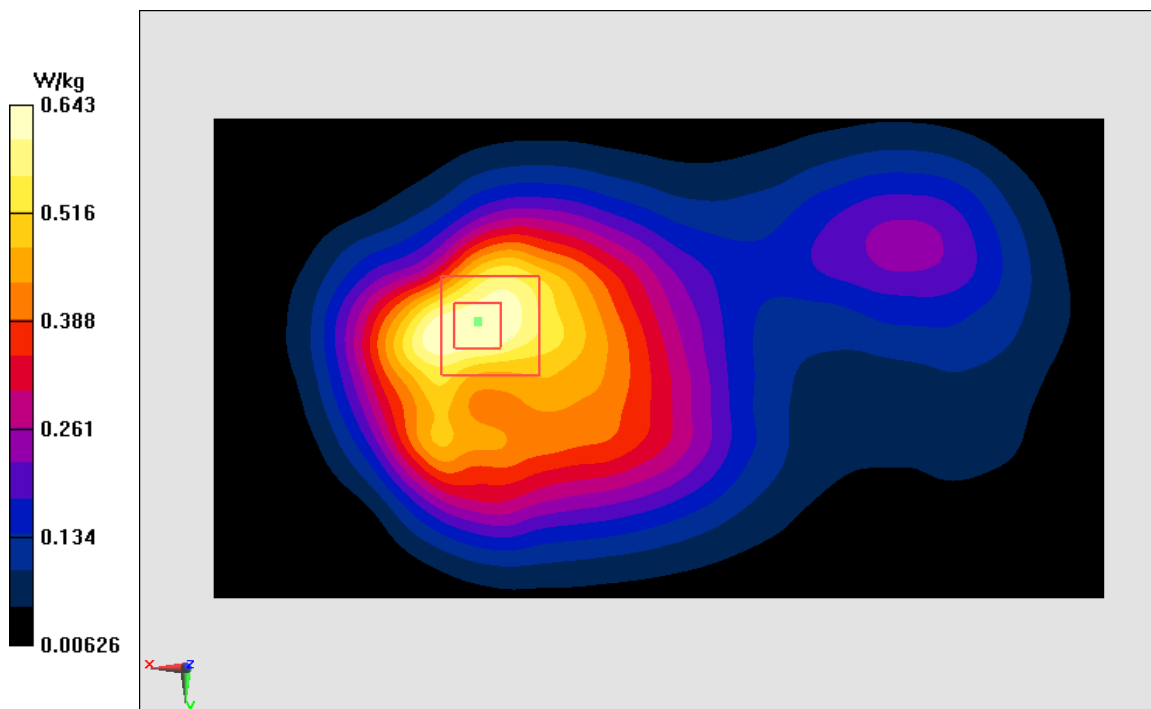


Fig A.12

LTE1700-FDD4_CH20300 Left Cheek

Date: 12/27/2017

Electronics: DAE4 Sn1331

Medium: Head 1750 MHz

Medium parameters used: $f = 1745$ MHz; $\sigma = 1.383$ mho/m; $\epsilon_r = 40.26$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE1700-FDD4 1745 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(8.16,8.16,8.16)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.42 W/kg

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

Reference Value = 5.721 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.509 W/kg

SAR(1 g) = 0.349 W/kg; SAR(10 g) = 0.227 W/kg

Maximum value of SAR (measured) = 0.392 W/kg

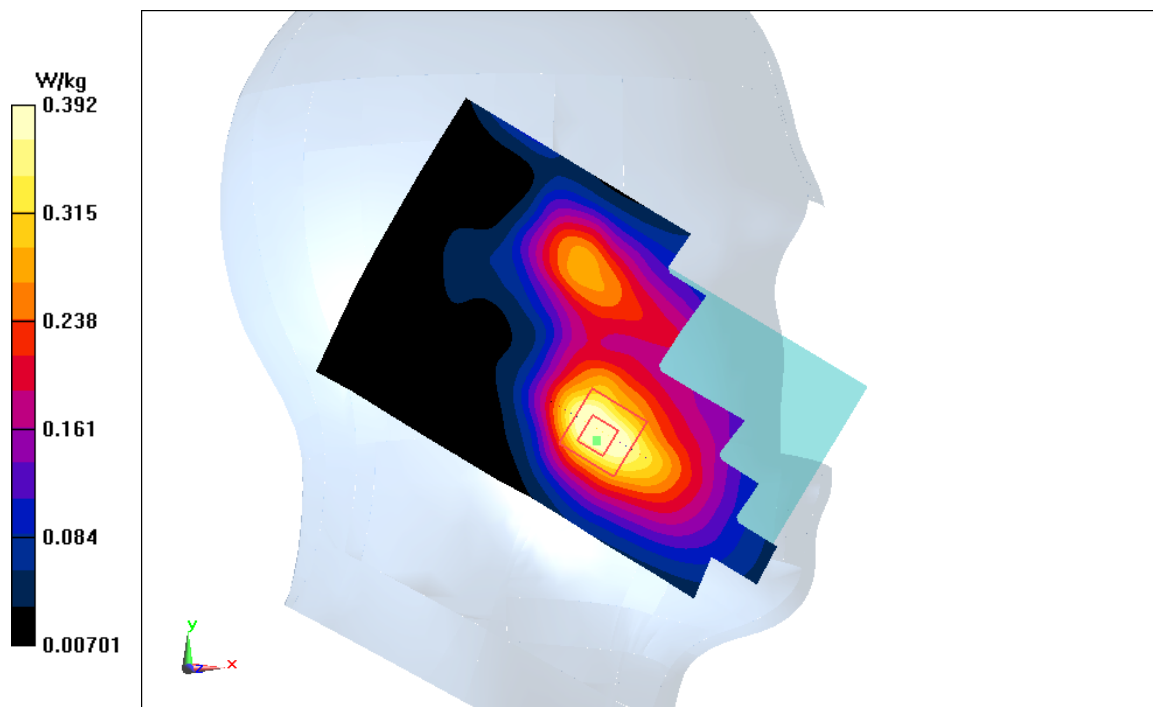


Fig A.13

LTE1700-FDD4_CH20300 Rear

Date: 12/27/2017

Electronics: DAE4 Sn1331

Medium: Head 1750 MHz

Medium parameters used: $f = 1745$ MHz; $\sigma = 1.488$ mho/m; $\epsilon_r = 52.75$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE1700-FDD4 1745 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(7.9,7.9,7.9)

Area Scan (71x121x1): Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm

Maximum value of SAR (interpolated) = 0.666 W/kg

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

Reference Value = 7.501 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.765 W/kg

SAR(1 g) = 0.546 W/kg; SAR(10 g) = 0.346 W/kg

Maximum value of SAR (measured) = 0.618 W/kg

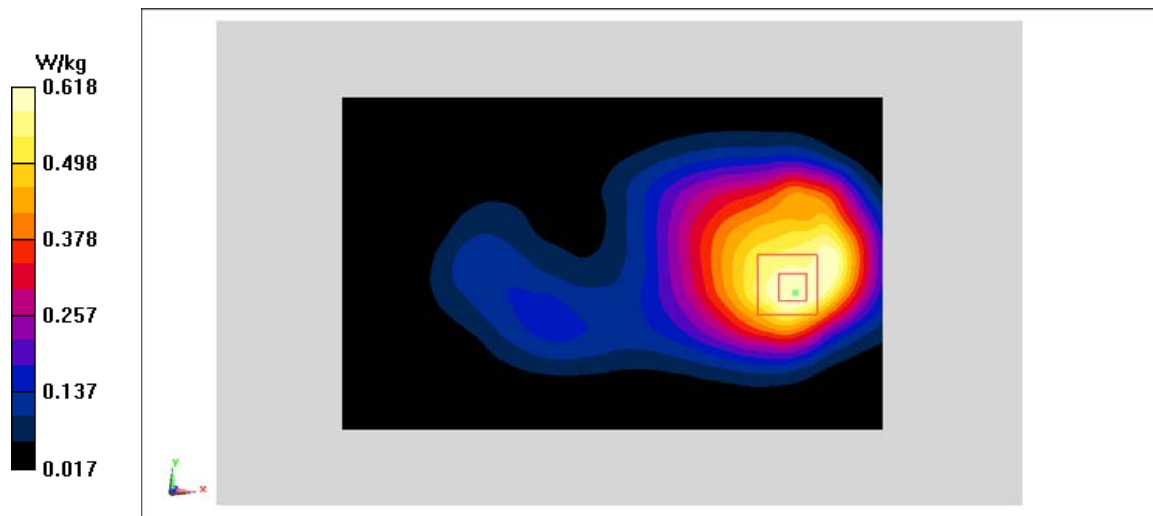


Fig A.14

LTE850-FDD5_CH20450 Right Cheek

Date: 12/26/2017

Electronics: DAE4 Sn1331

Medium: Head 835 MHz

Medium parameters used: $f = 829$ MHz; $\sigma = 0.886$ mho/m; $\epsilon_r = 42.31$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE850-FDD5 829 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(9.33,9.33,9.33)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.231 W/kg

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

Reference Value = 7.228 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.268 W/kg

SAR(1 g) = 0.207 W/kg; SAR(10 g) = 0.157 W/kg

Maximum value of SAR (measured) = 0.227 W/kg

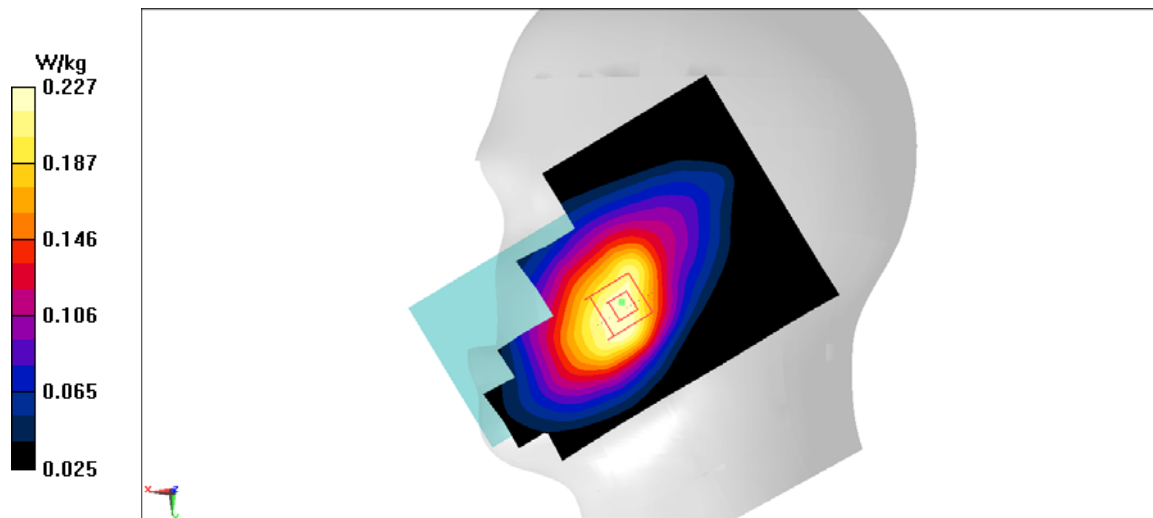


Fig A.15

LTE850-FDD5_CH20450 Rear

Date: 12/26/2017

Electronics: DAE4 Sn1331

Medium: Head 835 MHz

Medium parameters used: $f = 829$ MHz; $\sigma = 0.948$ mho/m; $\epsilon_r = 54.73$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE850-FDD5 829 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(9.52,9.52,9.52)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.301 W/kg

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

Reference Value = 16.05 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.445 W/kg

SAR(1 g) = 0.254 W/kg; SAR(10 g) = 0.144 W/kg

Maximum value of SAR (measured) = 0.309 W/kg

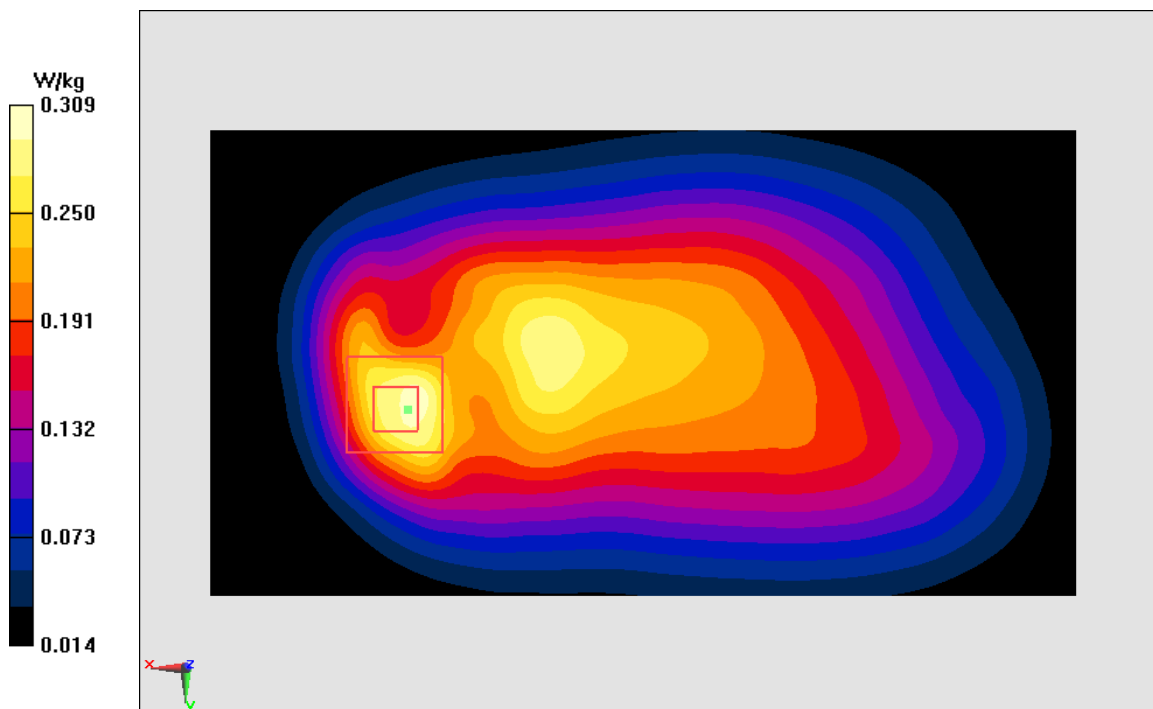


Fig A.16

LTE2500-FDD7_CH20850 Left Cheek

Date: 12/30/2017

Electronics: DAE4 Sn1331

Medium: Head 2600 MHz

Medium parameters used: $f = 2510$ MHz; $\sigma = 1.864$ mho/m; $\epsilon_r = 38.67$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE2500-FDD7 2510 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(7.12,7.12,7.12)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.201 W/kg

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

Reference Value = 2.139 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.29 W/kg

SAR(1 g) = 0.157 W/kg; SAR(10 g) = 0.084 W/kg

Maximum value of SAR (measured) = 0.195 W/kg

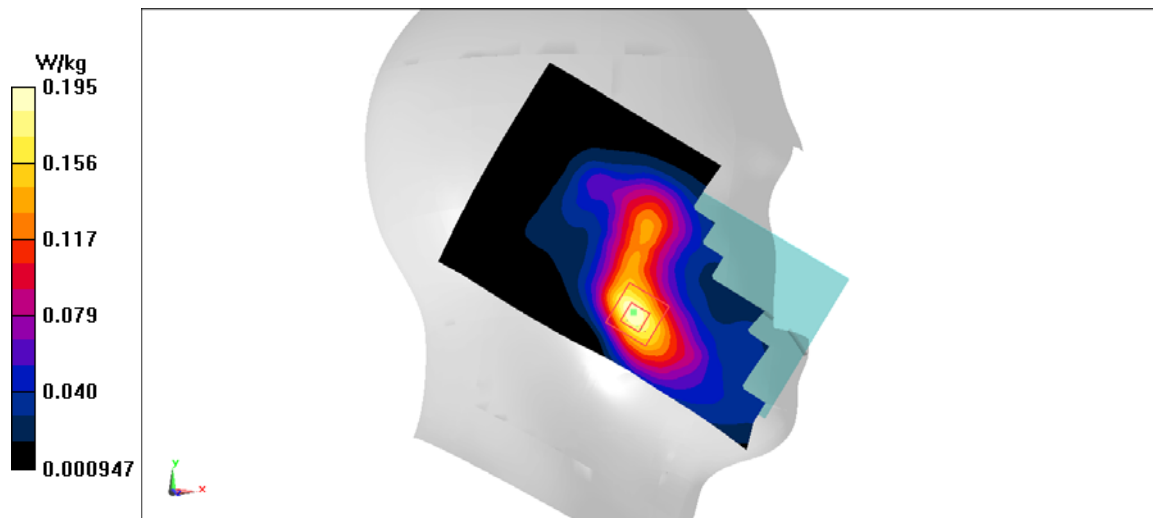


Fig A.17

LTE2500-FDD7_CH20850 Rear

Date: 12/30/2017

Electronics: DAE4 Sn1331

Medium: Head 2600 MHz

Medium parameters used: $f = 2510$ MHz; $\sigma = 2.06$ mho/m; $\epsilon_r = 52.01$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE2500-FDD7 2510 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(7.25,7.25,7.25)

Area Scan (71x121x1): Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm

Maximum value of SAR (interpolated) = 0.587 W/kg

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

Reference Value = 7.229 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.17 W/kg

SAR(1 g) = 0.576 W/kg; SAR(10 g) = 0.282 W/kg

Maximum value of SAR (measured) = 0.743 W/kg

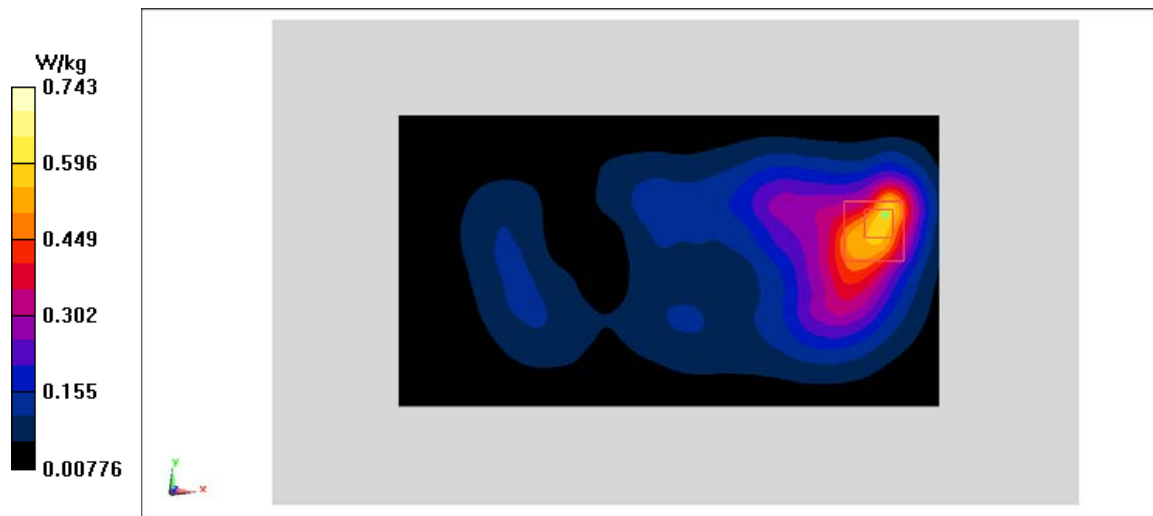


Fig A.18

LTE700-FDD12_CH23095 Right Cheek

Date: 12/25/2017

Electronics: DAE4 Sn1331

Medium: Head 750 MHz

Medium parameters used: $f = 707.5$ MHz; $\sigma = 0.839$ mho/m; $\epsilon_r = 42.78$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE700-FDD12 707.5 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(9.65,9.65,9.65)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.273 W/kg

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

Reference Value = 8.746 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 0.309 W/kg

SAR(1 g) = 0.254 W/kg; SAR(10 g) = 0.201 W/kg

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

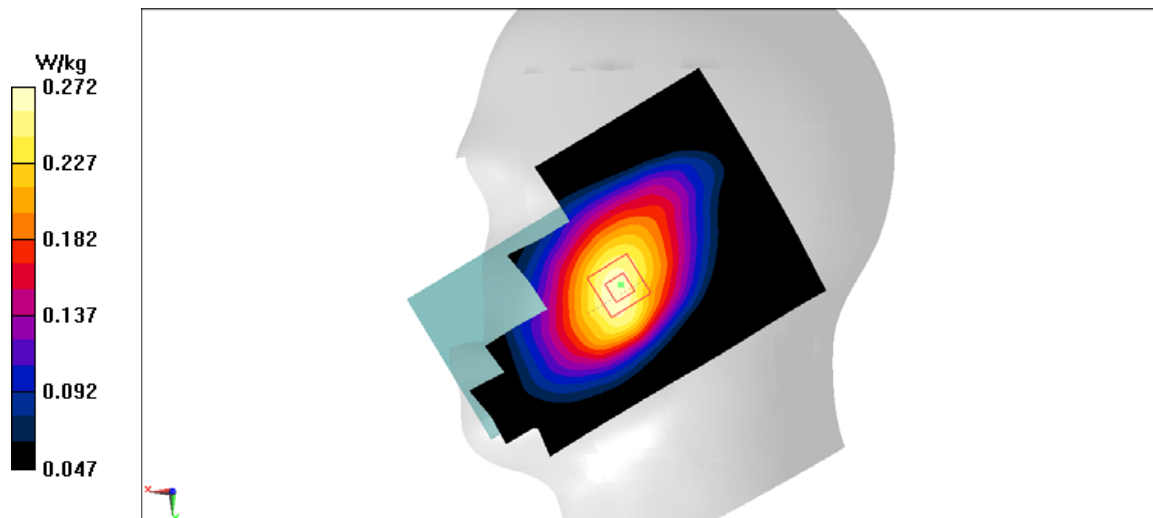


Fig A.19

LTE700-FDD12_CH23095 Rear

Date: 12/25/2017

Electronics: DAE4 Sn1331

Medium: Head 750 MHz

Medium parameters used: $f = 707.5$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 56.15$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE700-FDD12 707.5 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(9.96,9.96,9.96)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.338 W/kg

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

Reference Value = 15.97 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.418 W/kg

SAR(1 g) = 0.312 W/kg; SAR(10 g) = 0.233 W/kg

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

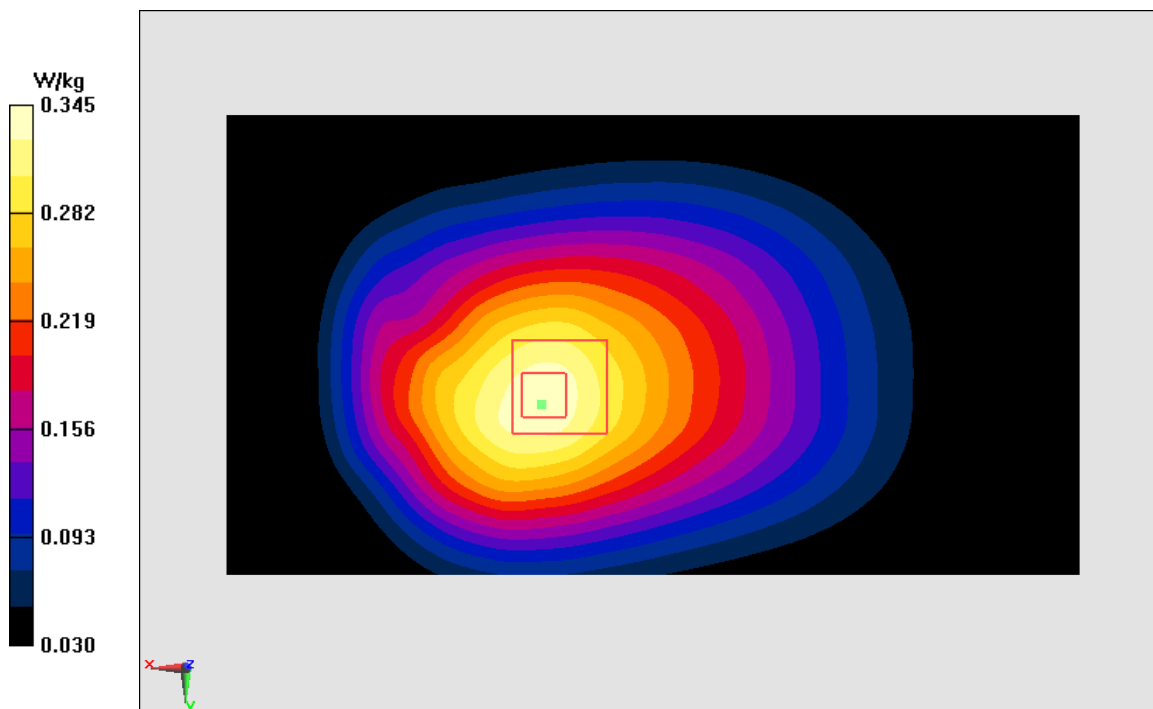


Fig A.20

LTE750-FDD13_CH23230 Right Cheek

Date: 12/25/2017

Electronics: DAE4 Sn1331

Medium: Head 750 MHz

Medium parameters used: $f = 782$ MHz; $\sigma = 0.909$ mho/m; $\epsilon_r = 42.69$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE750-FDD13 782 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(9.65,9.65,9.65)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.219 W/kg

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

Reference Value = 6.243 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.25 W/kg

SAR(1 g) = 0.199 W/kg; SAR(10 g) = 0.154 W/kg

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

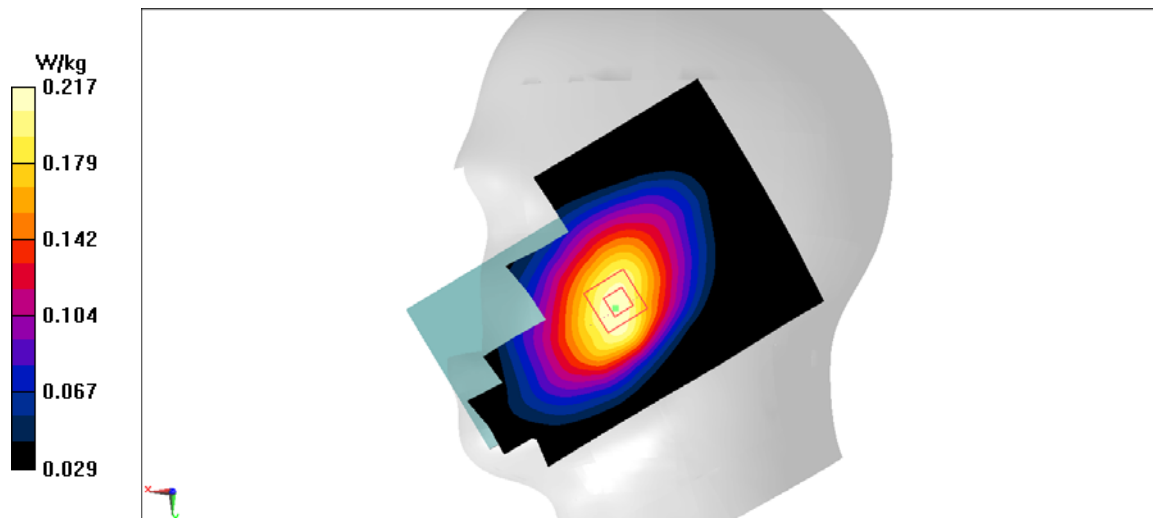


Fig A.21

LTE750-FDD13_CH23230 Rear

Date: 12/25/2017

Electronics: DAE4 Sn1331

Medium: Head 750 MHz

Medium parameters used: $f = 782$ MHz; $\sigma = 0.99$ mho/m; $\epsilon_r = 56.06$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE750-FDD13 782 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(9.96,9.96,9.96)

Area Scan (71x121x1): Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm

Maximum value of SAR (interpolated) = 0.349 W/kg

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

Reference Value = 18.76 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.396 W/kg

SAR(1 g) = 0.318 W/kg; SAR(10 g) = 0.248 W/kg

Maximum value of SAR (measured) = 0.347 W/kg

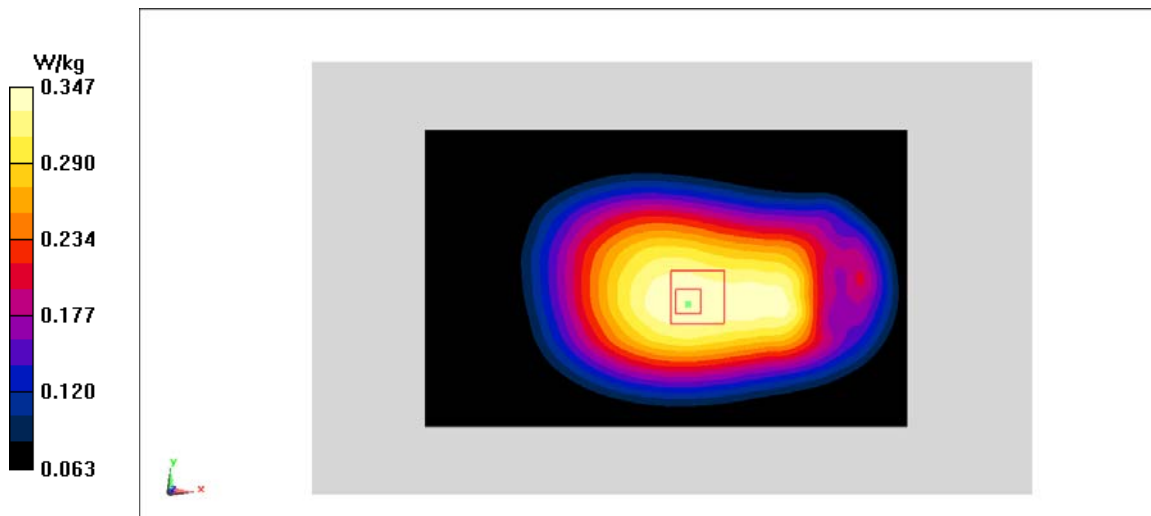


Fig A.22

WLAN2450_CH6 Left Cheek

Date: 12/29/2017

Electronics: DAE4 Sn1331

Medium: Head 2450 MHz

Medium parameters used: $f = 2437$; $\sigma = 1.811$ mho/m; $\epsilon_r = 39.17$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WLAN2450 2437 Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(7.22,7.22,7.22)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.479 W/kg

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

Reference Value = 5.183 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.702 W/kg

SAR(1 g) = 0.316 W/kg; SAR(10 g) = 0.142 W/kg

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

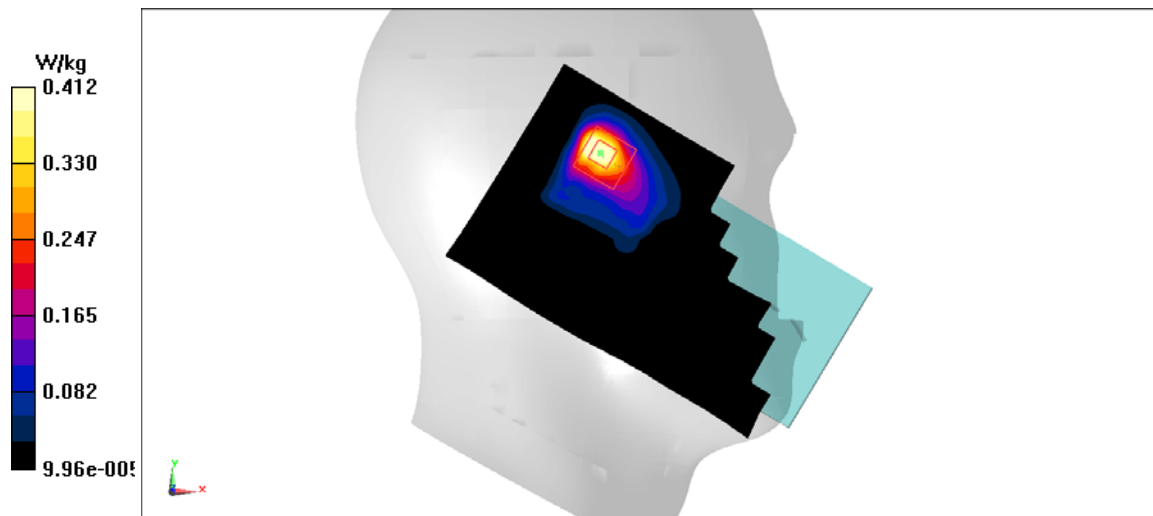


Fig A.23

WLAN2450_CH6 Rear

Date: 12/29/2017

Electronics: DAE4 Sn1331

Medium: Head 2450 MHz

Medium parameters used: $f = 2437$; $\sigma = 1.915$ mho/m; $\epsilon_r = 53.5$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WLAN2450 2437 Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(7.31,7.31,7.31)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.106 W/kg

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

Reference Value = 3.749 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.165 W/kg

SAR(1 g) = 0.084 W/kg; SAR(10 g) = 0.045 W/kg

Maximum value of SAR (measured) = 0.107 W/kg

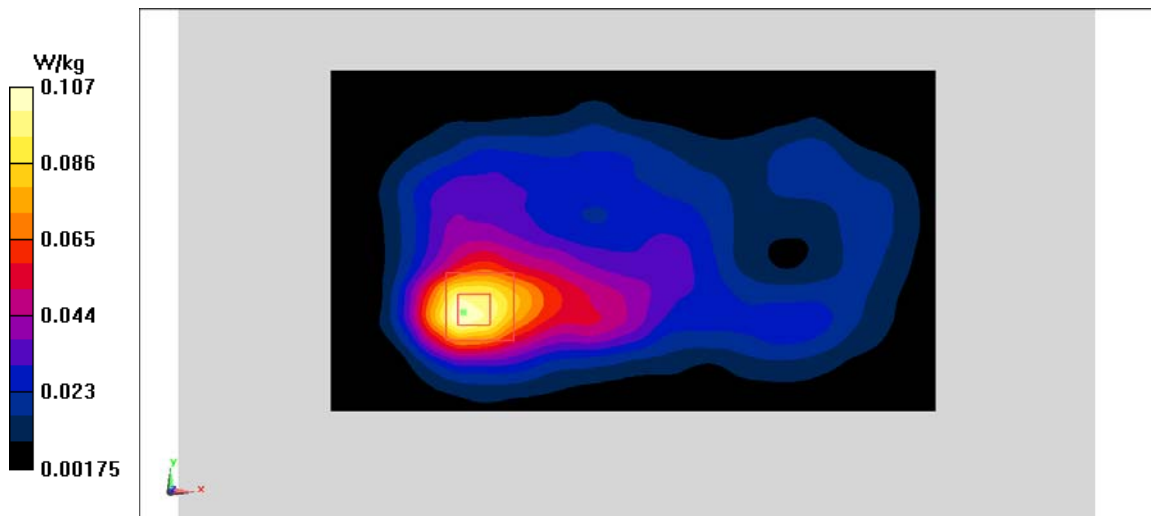


Fig A.24

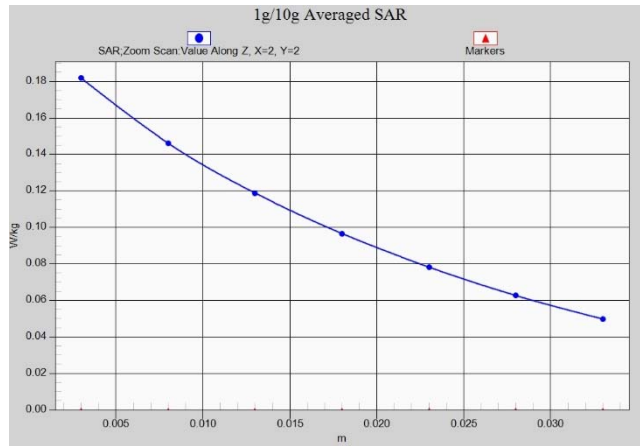


Fig.A.1- 1 Z-Scan at power reference point (GSM850)

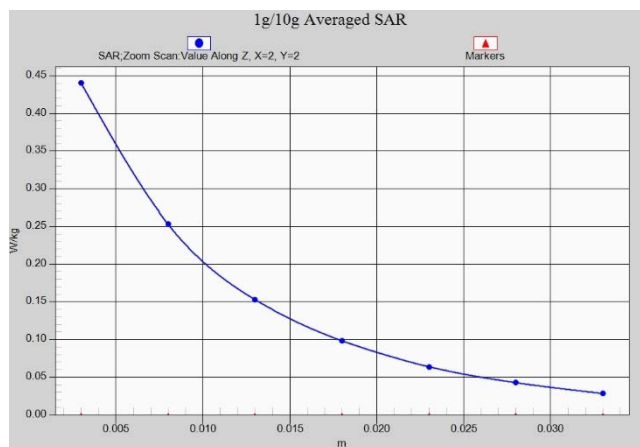


Fig.A.1- 2 Z-Scan at power reference point (GSM850)

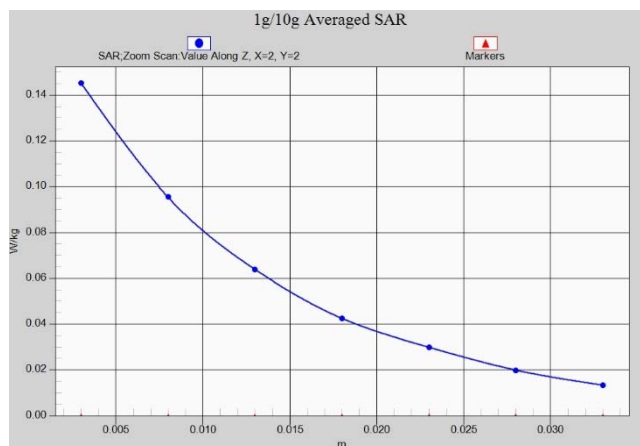


Fig.A.1- 3 Z-Scan at power reference point (PCS1900)

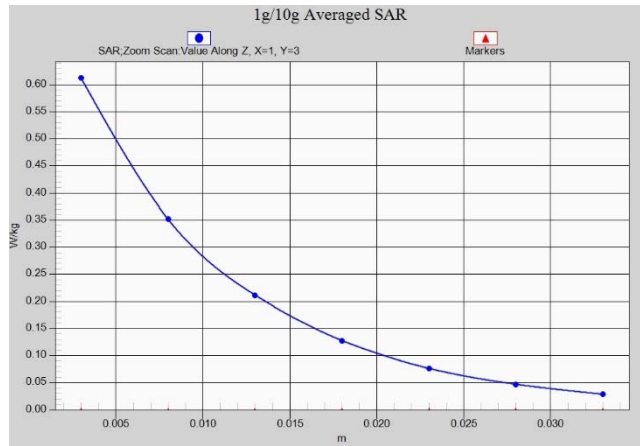


Fig.A.1- 4 Z-Scan at power reference point (PCS1900)

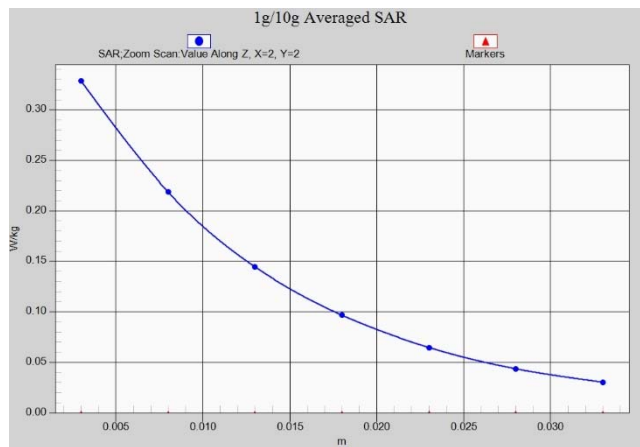


Fig.A.1- 5 Z-Scan at power reference point (W1900)

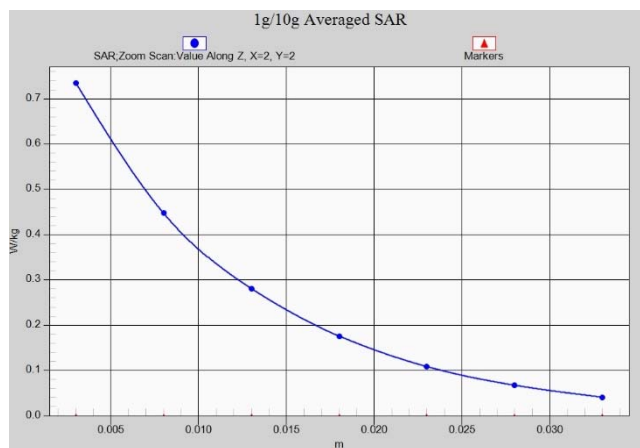


Fig.A.1- 6 Z-Scan at power reference point (W1900)

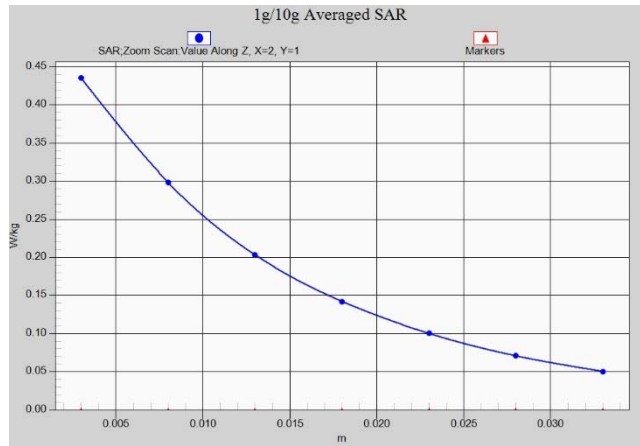


Fig.A.1- 7 Z-Scan at power reference point (W1700)

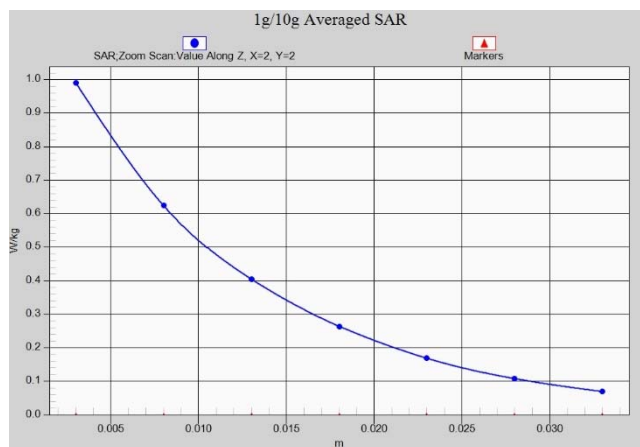


Fig.A.1- 8 Z-Scan at power reference point (W1700)

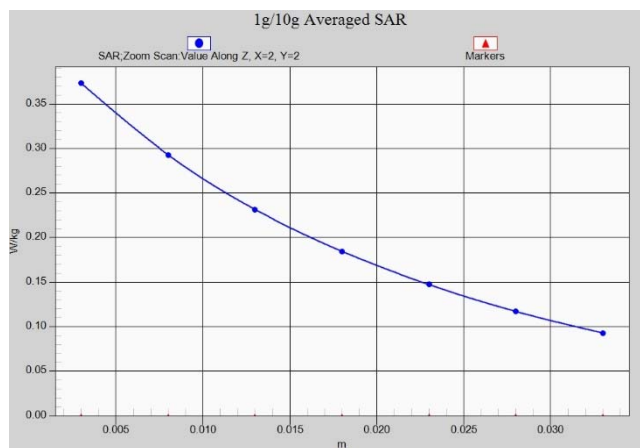


Fig.A.1- 9 Z-Scan at power reference point (W850)

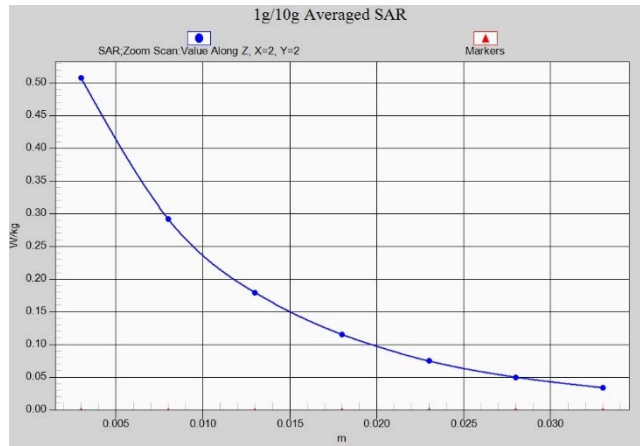


Fig.A.1- 10 Z-Scan at power reference point (W850)

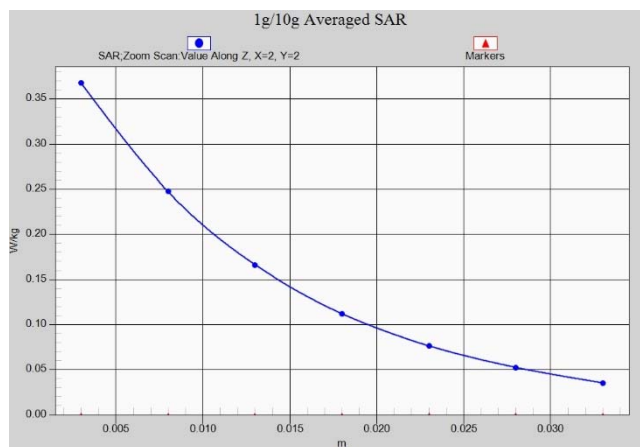


Fig.A.1- 11 Z-Scan at power reference point (LTE band2)

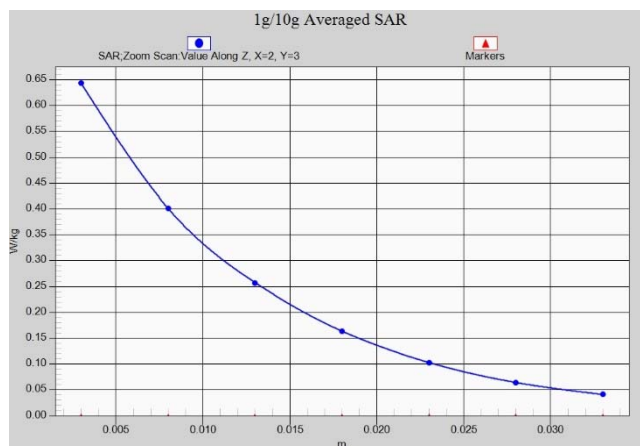


Fig.A.1- 12 Z-Scan at power reference point (LTE band2)

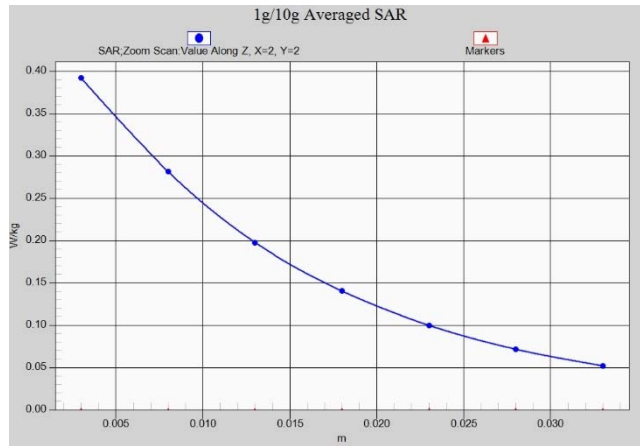


Fig.A.1- 13 Z-Scan at power reference point (LTE band4)

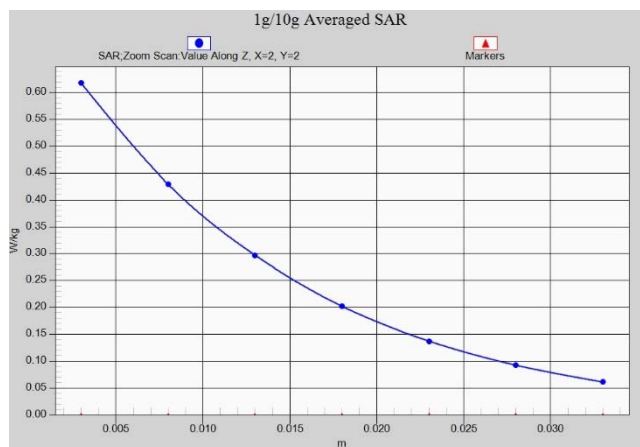


Fig.A.1- 14 Z-Scan at power reference point (LTE band4)

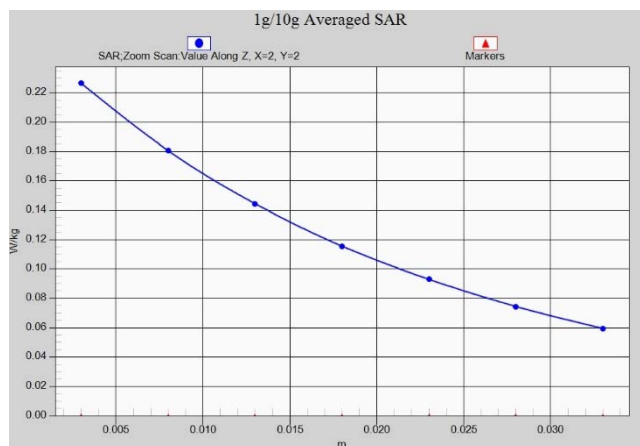


Fig.A.1- 15 Z-Scan at power reference point (LTE band5)

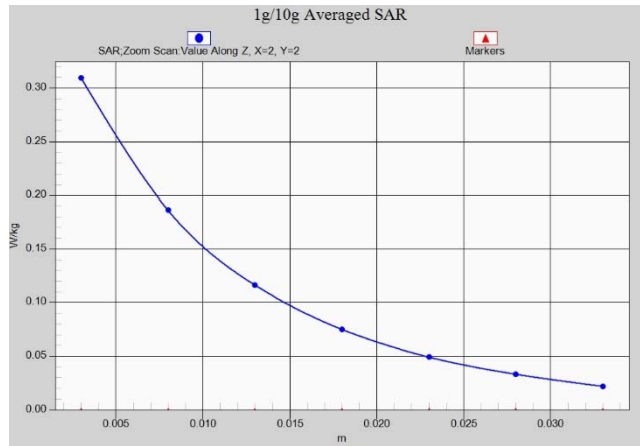


Fig.A.1- 16 Z-Scan at power reference point (LTE band5)

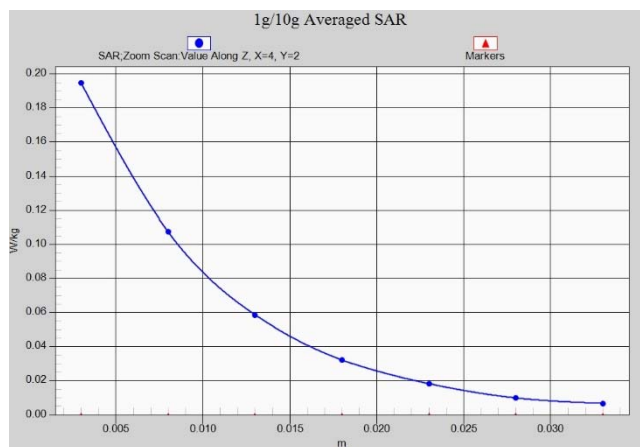


Fig.A.1- 17 Z-Scan at power reference point (LTE band7)

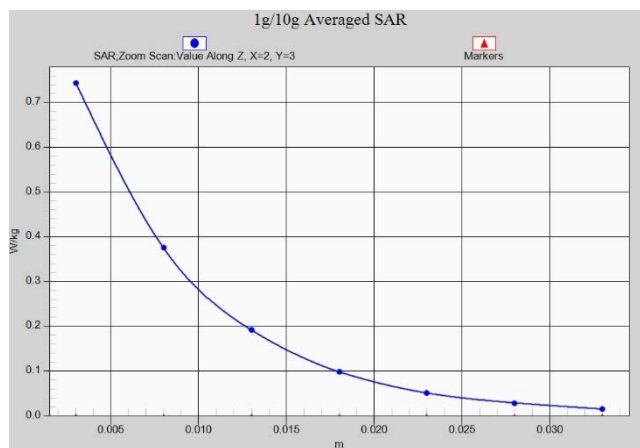


Fig.A.1- 18 Z-Scan at power reference point (LTE band7)

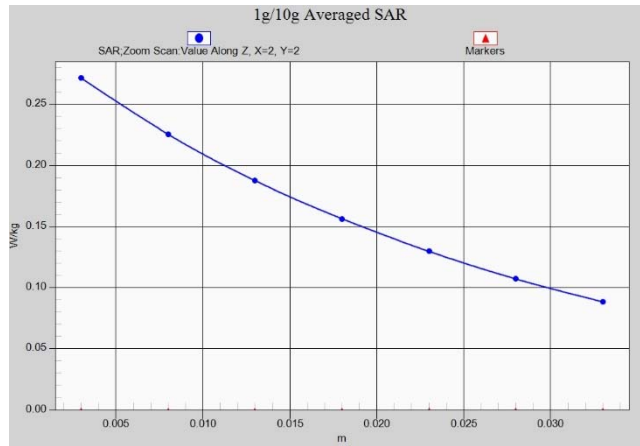


Fig.A.1- 19 Z-Scan at power reference point (LTE band12)

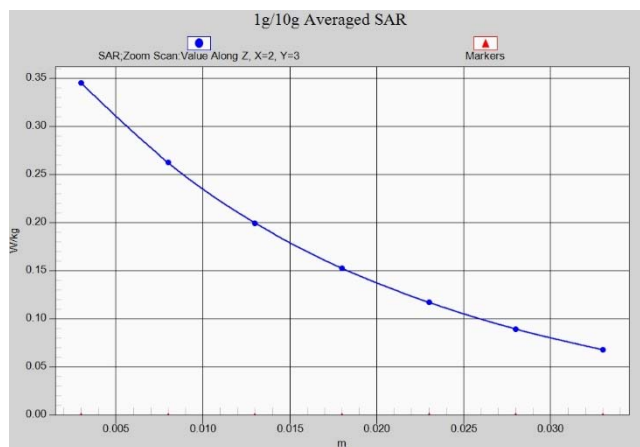


Fig.A.1- 20 Z-Scan at power reference point (LTE band12)



Fig.A.1- 21 Z-Scan at power reference point (LTE band13)

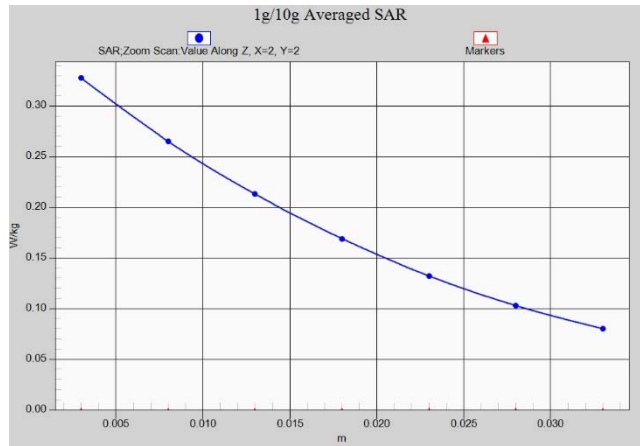


Fig.A.1- 22 Z-Scan at power reference point (LTE band13)

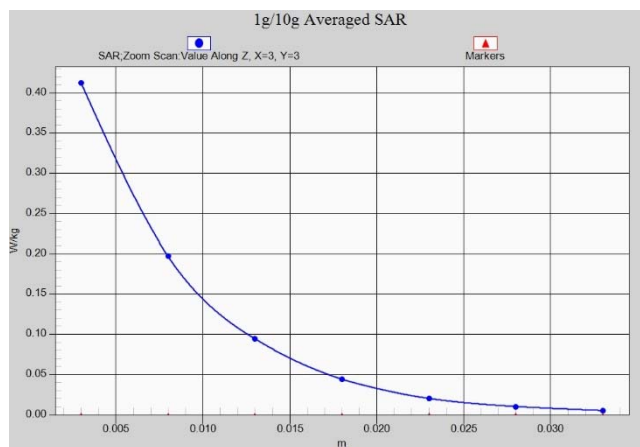


Fig.A.1- 23 Z-Scan at power reference point (Wifi2450)

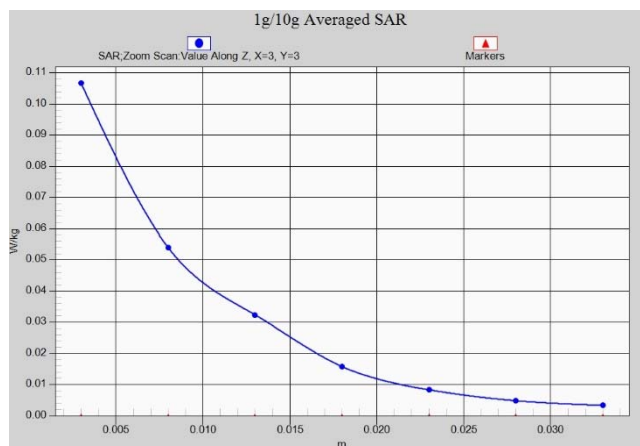


Fig.A.1- 24 Z-Scan at power reference point (Wifi2450)

ANNEX B System Verification Results

750 MHz

Date: 12/25/2017

Electronics: DAE4 Sn1331

Medium: Head 750 MHz

Medium parameters used: $f = 750$ MHz; $\sigma = 0.879$ mho/m; $\epsilon_r = 42.73$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

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

Probe: EX3DV4 – SN3846 ConvF(9.65,9.65,9.65)

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

Reference Value = 58.57 V/m; Power Drift = 0.01

Fast SAR: SAR(1 g) = 2.11 W/kg; SAR(10 g) = 1.33 W/kg

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

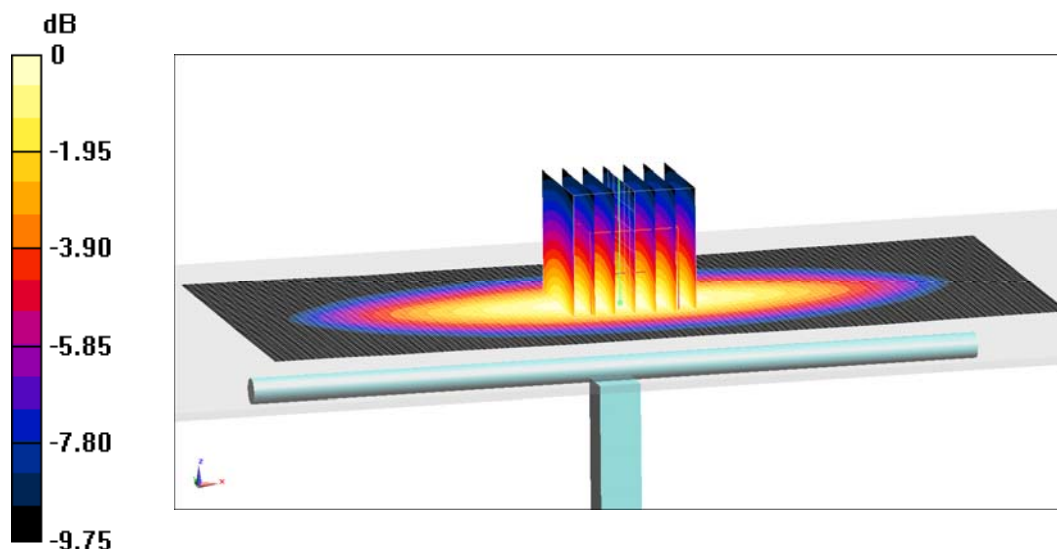
System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 58.57 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 3.16 W/kg

SAR(1 g) = 2.1 W/kg; SAR(10 g) = 1.35 W/kg

Maximum value of SAR (measured) = 2.82 W/kg



0 dB = 2.82 W/kg = 4.5 dB W/kg

Fig.B.1 validation 750 MHz 250mW

750 MHz

Date: 12/25/2017

Electronics: DAE4 Sn1331

Medium: Body 750 MHz

Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.96 \text{ mho/m}$; $\epsilon_r = 56.1$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

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

Probe: EX3DV4 – SN3846 ConvF(9.96,9.96,9.96)

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

Reference Value = 57.63 V/m ; Power Drift = 0.03

Fast SAR: SAR(1 g) = 2.15 W/kg ; SAR(10 g) = 1.42 W/kg

Maximum value of SAR (interpolated) = 3.24 W/kg

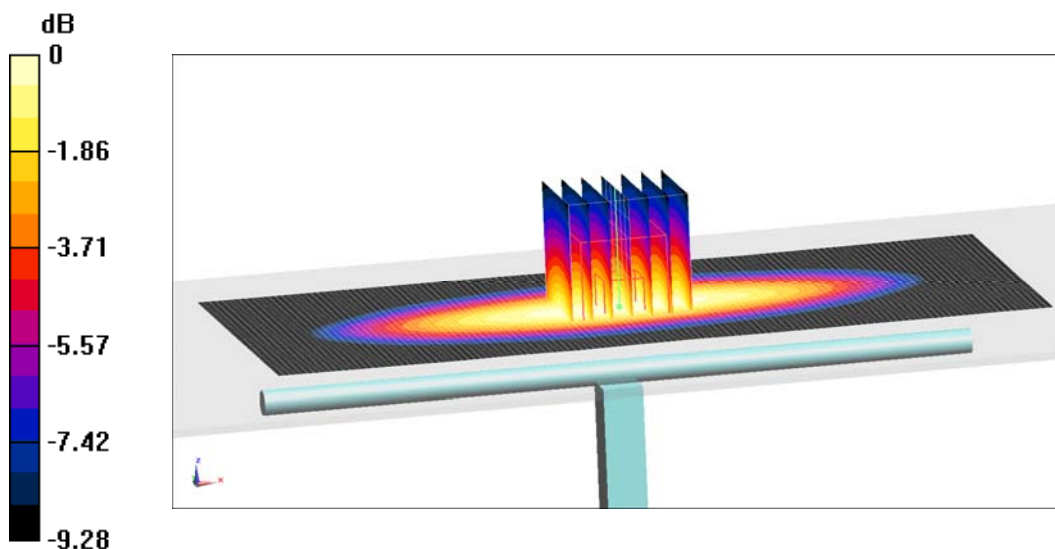
System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 57.63 V/m ; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 3.36 W/kg

SAR(1 g) = 2.15 W/kg ; SAR(10 g) = 1.43 W/kg

Maximum value of SAR (measured) = 2.96 W/kg



0 dB = 2.96 W/kg = 4.71 dB W/kg

Fig.B.2 validation 750 MHz 250mW

835 MHz

Date: 12/26/2017

Electronics: DAE4 Sn1331

Medium: Head 835 MHz

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.892 \text{ mho/m}$; $\epsilon_r = 42.3$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(9.33,9.33,9.33)

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

Reference Value = 62.37 V/m ; Power Drift = 0.07

Fast SAR: SAR(1 g) = 2.32 W/kg ; SAR(10 g) = 1.51 W/kg

Maximum value of SAR (interpolated) = 3.21 W/kg

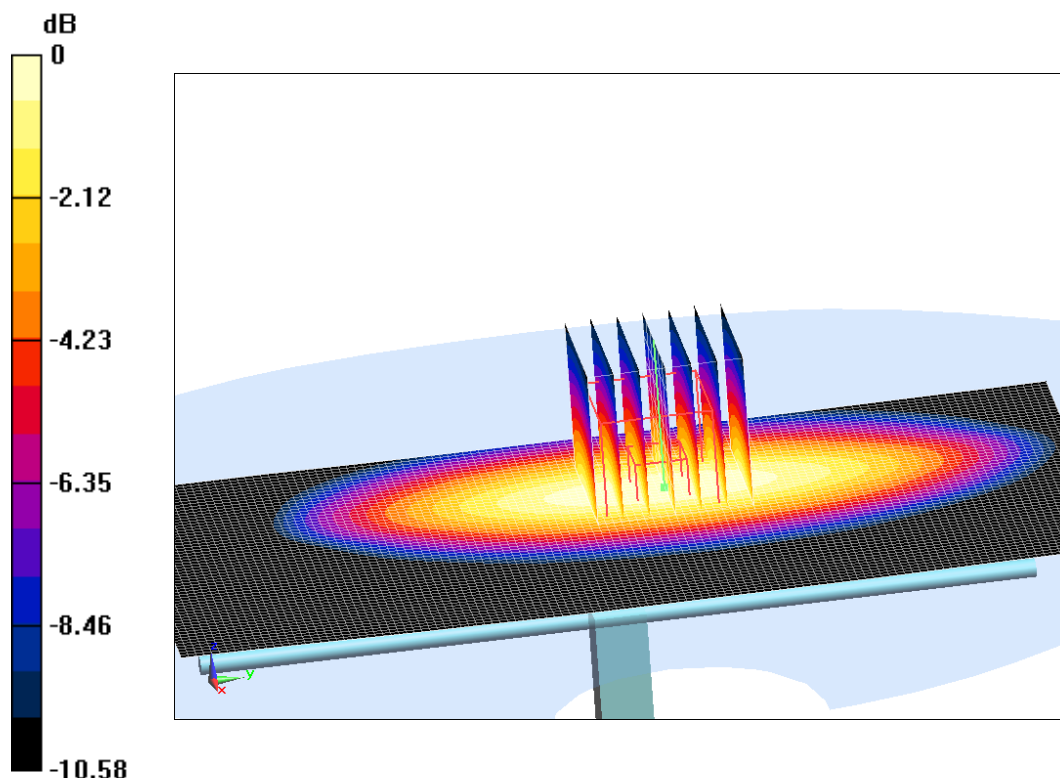
System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 62.37 V/m ; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 3.69 W/kg

SAR(1 g) = 2.35 W/kg ; SAR(10 g) = 1.5 W/kg

Maximum value of SAR (measured) = 3.19 W/kg



$0 \text{ dB} = 3.19 \text{ W/kg} = 5.04 \text{ dB W/kg}$

Fig.B.3 validation 835 MHz 250mW

835 MHz

Date: 12/26/2017

Electronics: DAE4 Sn1331

Medium: Body 835 MHz

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.954 \text{ mho/m}$; $\epsilon_r = 54.72$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(9.52,9.52,9.52)

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

Reference Value = 58.89 V/m; Power Drift = -0.04

Fast SAR: SAR(1 g) = 2.31 W/kg; SAR(10 g) = 1.53 W/kg

Maximum value of SAR (interpolated) = 3.61 W/kg

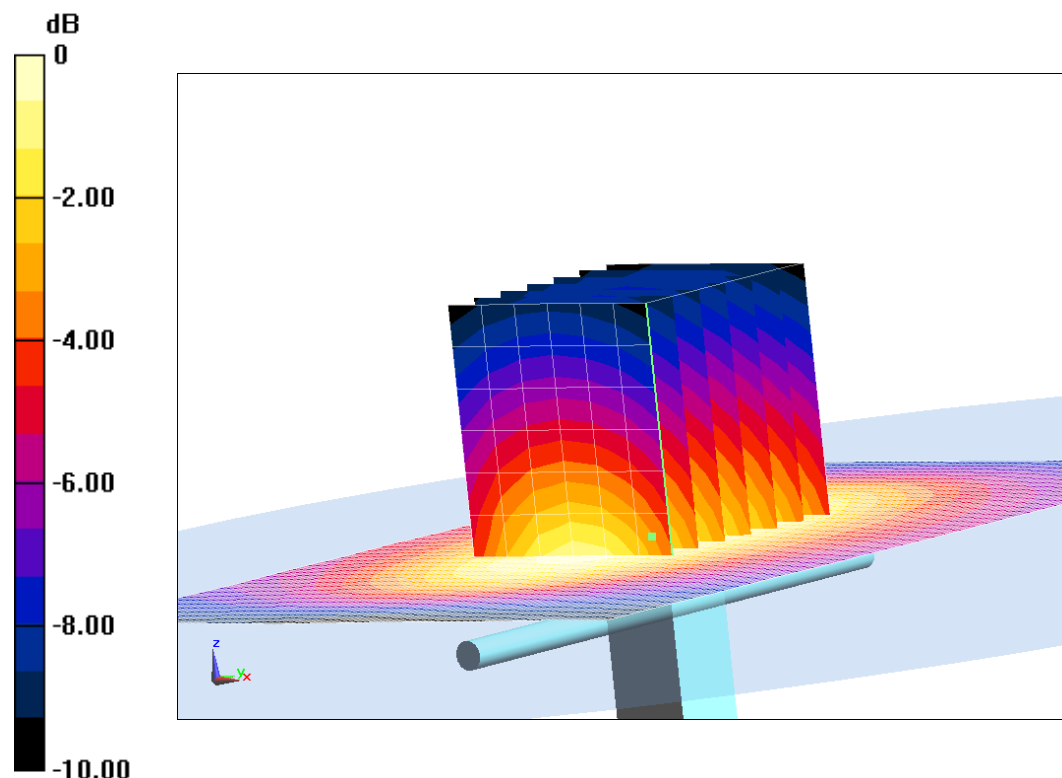
System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 58.89 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 3.62 W/kg

SAR(1 g) = 2.31 W/kg; SAR(10 g) = 1.51 W/kg

Maximum value of SAR (measured) = 3.25 W/kg



0 dB = 3.25 W/kg = 5.12 dB W/kg

Fig.B.4 validation 835 MHz 250mW

1750 MHz

Date: 12/27/2017

Electronics: DAE4 Sn1331

Medium: Head 1750 MHz

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.388$ mho/m; $\epsilon_r = 40.25$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

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

Probe: EX3DV4 – SN3846 ConvF(8.16,8.16,8.16)

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

Reference Value = 107.81 V/m; Power Drift = 0.02

Fast SAR: SAR(1 g) = 9.24 W/kg; SAR(10 g) = 4.8 W/kg

Maximum value of SAR (interpolated) = 14.68 W/kg

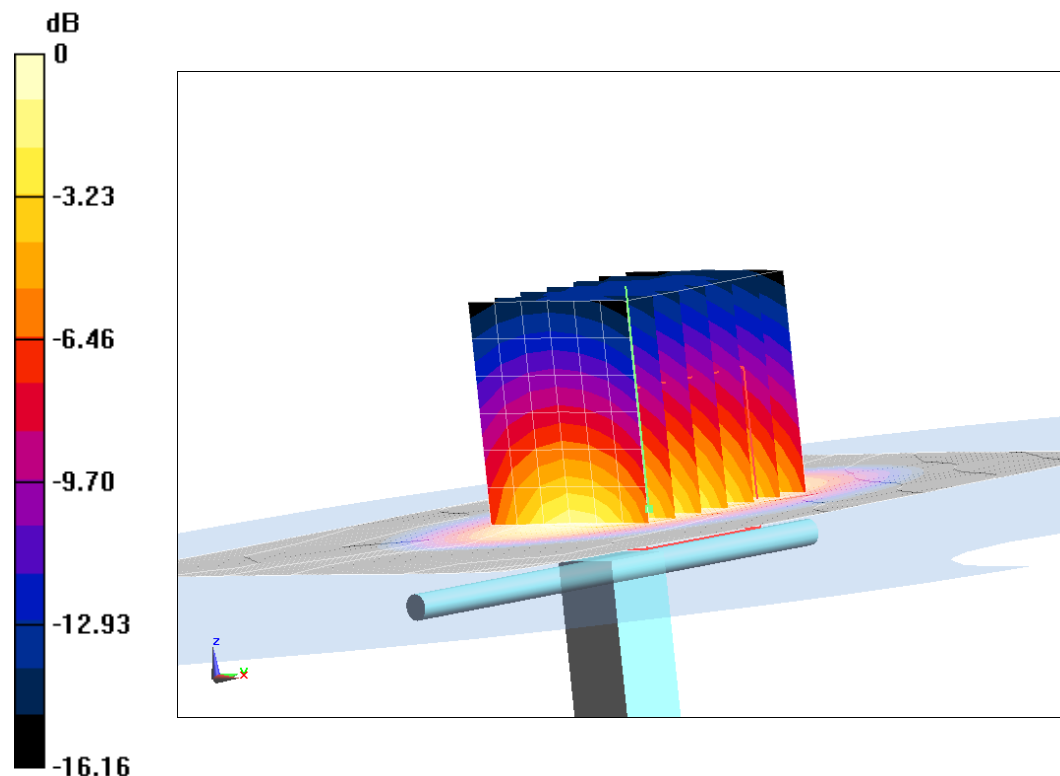
System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value =107.81 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 18.19 W/kg

SAR(1 g) = 9.18 W/kg; SAR(10 g) = 4.81 W/kg

Maximum value of SAR (measured) = 14.41 W/kg



0 dB = 14.41 W/kg = 11.59 dB W/kg

Fig.B.5 validation 1750 MHz 250mW

1750 MHz

Date: 12/27/2017

Electronics: DAE4 Sn1331

Medium: Body 1750 MHz

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.493$ mho/m; $\epsilon_r = 52.74$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

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

Probe: EX3DV4 – SN3846 ConvF(7.9,7.9,7.9)

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

Reference Value = 98.62 V/m; Power Drift = 0.02

Fast SAR: SAR(1 g) = 9.37 W/kg; SAR(10 g) = 4.96 W/kg

Maximum value of SAR (interpolated) = 16.36 W/kg

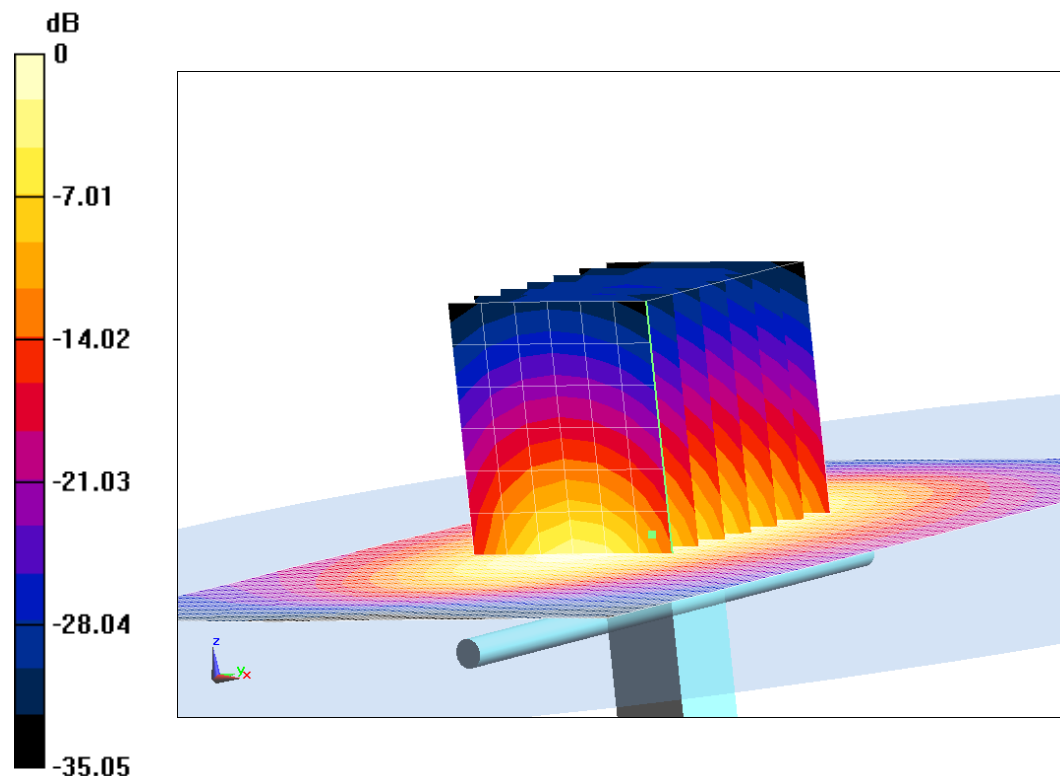
System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value =98.62 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 16.54 W/kg

SAR(1 g) = 9.3 W/kg; SAR(10 g) = 4.93 W/kg

Maximum value of SAR (measured) = 13.65 W/kg



0 dB = 13.65 W/kg = 11.35 dB W/kg

Fig.B.6 validation 1750 MHz 250mW

1900 MHz

Date: 12/28/2017

Electronics: DAE4 Sn1331

Medium: Head 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.398$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

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

Probe: EX3DV4 – SN3846 ConvF(7.89,7.89,7.89)

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

Reference Value = 106.96 V/m; Power Drift = -0.06

Fast SAR: SAR(1 g) = 10.08 W/kg; SAR(10 g) = 5.23 W/kg

Maximum value of SAR (interpolated) = 14.95 W/kg

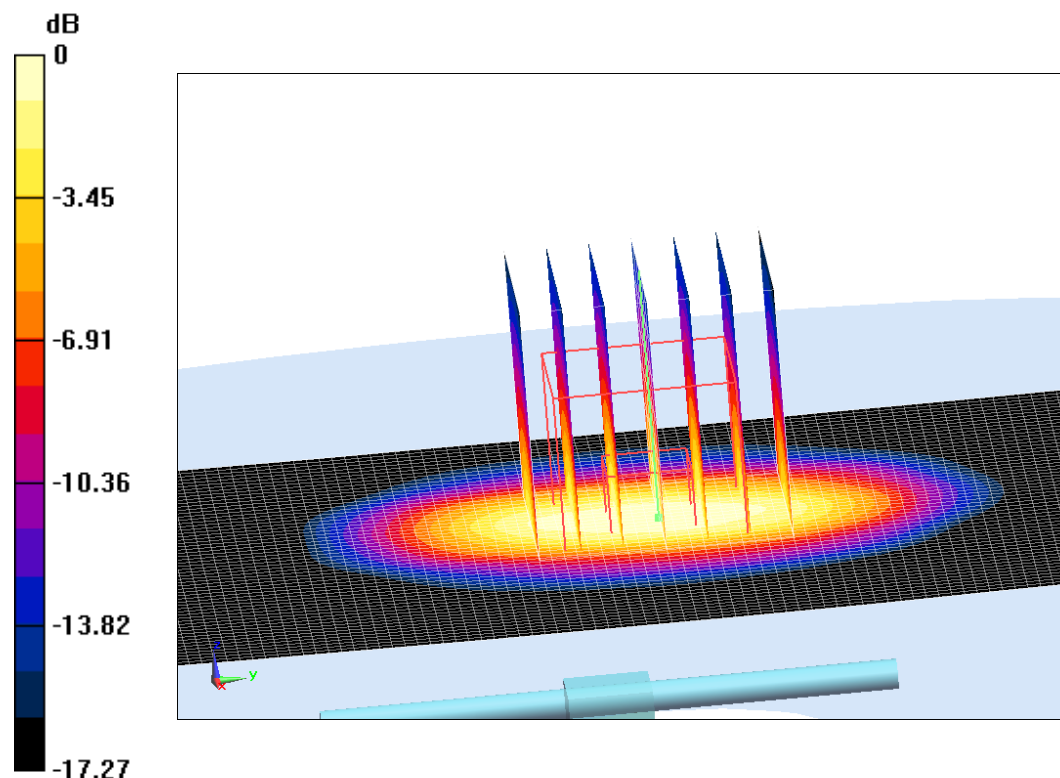
System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 106.96 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 18.1 W/kg

SAR(1 g) = 10.08 W/kg; SAR(10 g) = 5.15 W/kg

Maximum value of SAR (measured) = 14.63 W/kg



0 dB = 14.63 W/kg = 11.65 dB W/kg

Fig.B.7 validation 1900 MHz 250mW

1900 MHz

Date: 12/28/2017

Electronics: DAE4 Sn1331

Medium: Body 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.492$ mho/m; $\epsilon_r = 52.53$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

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

Probe: EX3DV4 – SN3846 ConvF(7.57,7.57,7.57)

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

Reference Value = 100.39 V/m; Power Drift = -0.02

Fast SAR: SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.34 W/kg

Maximum value of SAR (interpolated) = 17.72 W/kg

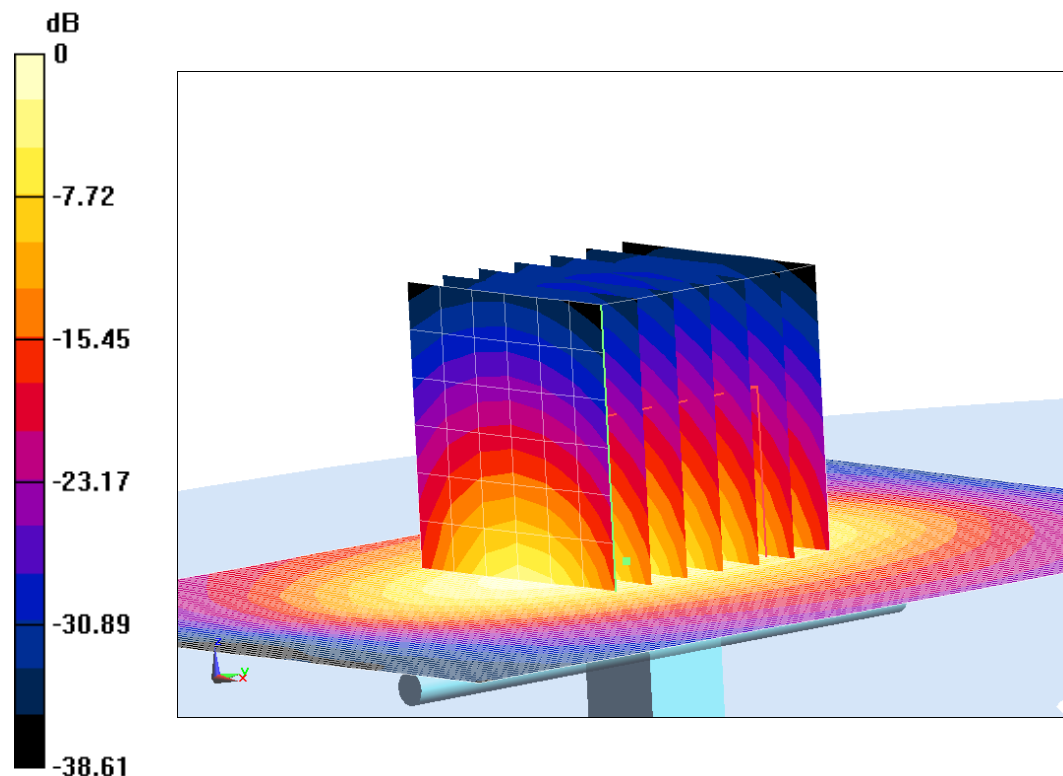
System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 100.39 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 17.68 W/kg

SAR(1 g) = 10.01 W/kg; SAR(10 g) = 5.46 W/kg

Maximum value of SAR (measured) = 14.38 W/kg



0 dB = 14.38 W/kg = 11.58 dB W/kg

Fig.B.8 validation 1900 MHz 250mW

2450 MHz

Date: 12/29/2017

Electronics: DAE4 Sn1331

Medium: Head 2450 MHz

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.823$ mho/m; $\epsilon_r = 39.15$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

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

Probe: EX3DV4 – SN3846 ConvF(7.22,7.22,7.22)

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

Reference Value = 114.18 V/m; Power Drift = -0.01

Fast SAR: SAR(1 g) = 13.07 W/kg; SAR(10 g) = 6.21 W/kg

Maximum value of SAR (interpolated) = 21.45 W/kg

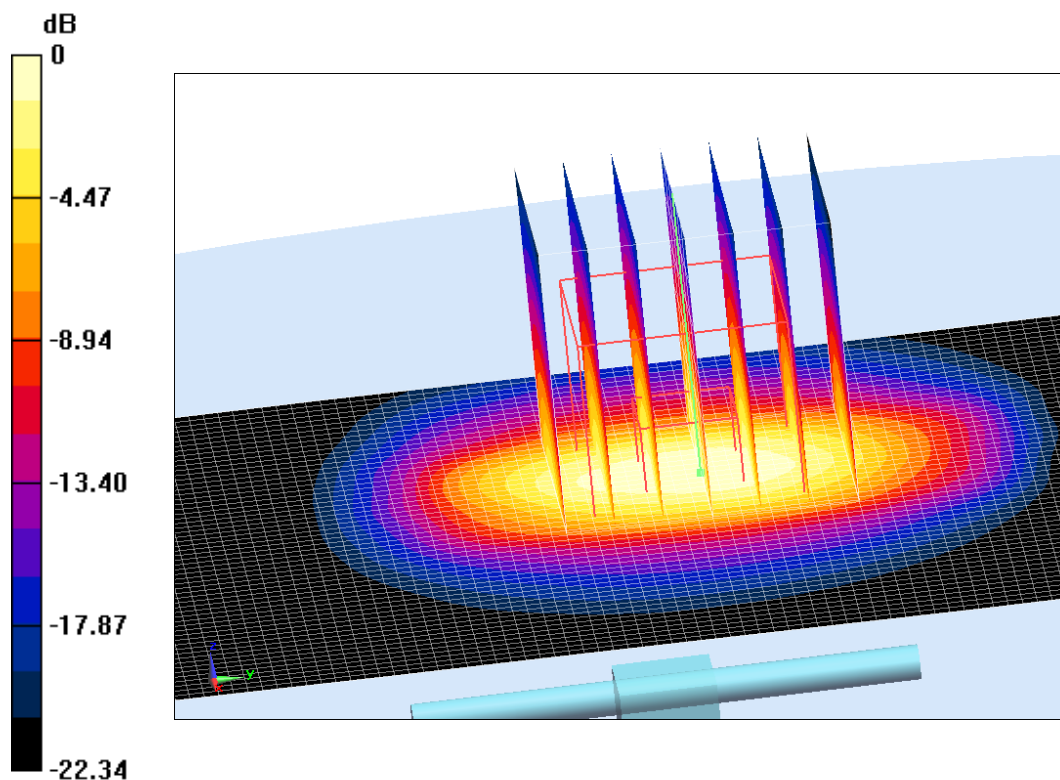
System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 114.18 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 26.73 W/kg

SAR(1 g) = 13.16 W/kg; SAR(10 g) = 6.07 W/kg

Maximum value of SAR (measured) = 21.9 W/kg



0 dB = 21.9 W/kg = 13.4 dB W/kg

Fig.B.9 validation 2450 MHz 250mW

2450 MHz

Date: 12/29/2017

Electronics: DAE4 Sn1331

Medium: Body 2450 MHz

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.927$ mho/m; $\epsilon_r = 53.48$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

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

Probe: EX3DV4 – SN3846 ConvF(7.31,7.31,7.31)

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

Reference Value = 103.73 V/m; Power Drift = -0.03

Fast SAR: SAR(1 g) = 12.62 W/kg; SAR(10 g) = 5.85 W/kg

Maximum value of SAR (interpolated) = 25.33 W/kg

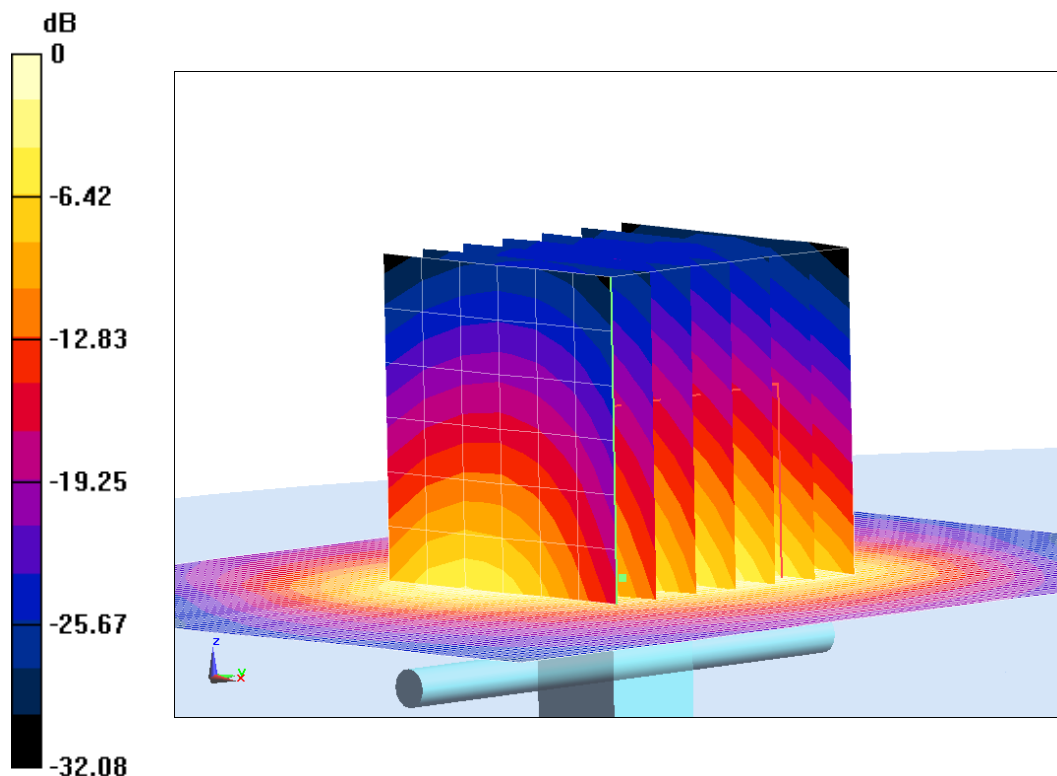
System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value =103.73 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 25.81 W/kg

SAR(1 g) = 12.48 W/kg; SAR(10 g) = 5.9 W/kg

Maximum value of SAR (measured) = 19.86 W/kg



0 dB = 19.86 W/kg = 12.98 dB W/kg

Fig.B.10 validation 2450 MHz 250mW

2600 MHz

Date: 12/30/2017

Electronics: DAE4 Sn1331

Medium: Head 2600 MHz

Medium parameters used: $f = 2600$ MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 38.56$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

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

Probe: EX3DV4 – SN3846 ConvF(7.12,7.12,7.12)

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

Reference Value = 113.25 V/m; Power Drift = -0.05

Fast SAR: SAR(1 g) = 14.23 W/kg; SAR(10 g) = 6.36 W/kg

Maximum value of SAR (interpolated) = 24.69 W/kg

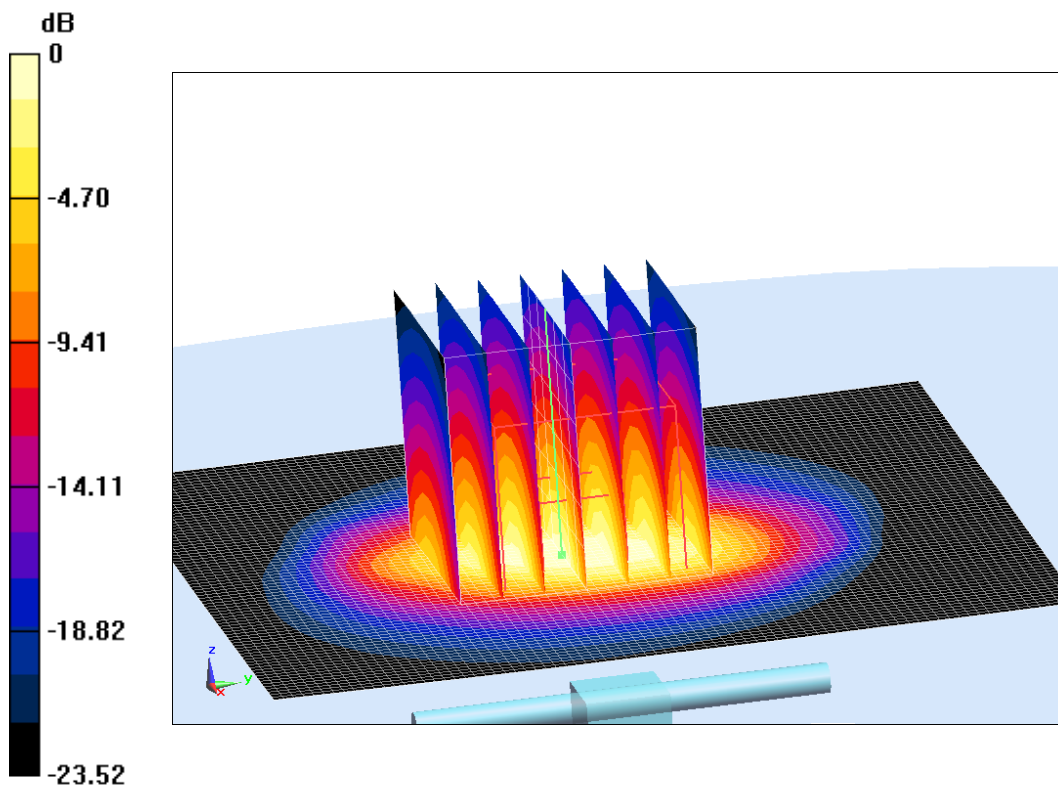
System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 113.25 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 32.42 W/kg

SAR(1 g) = 14.42 W/kg; SAR(10 g) = 6.4 W/kg

Maximum value of SAR (measured) = 25.4 W/kg



0 dB = 25.4 W/kg = 14.05 dB W/kg

Fig.B.11 validation 2600 MHz 250mW

2600 MHz

Date: 12/30/2017

Electronics: DAE4 Sn1331

Medium: Body 2600 MHz

Medium parameters used: $f = 2600$ MHz; $\sigma = 2.145$ mho/m; $\epsilon_r = 51.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

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

Probe: EX3DV4 – SN3846 ConvF(7.25,7.25,7.25)

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

Reference Value = 107.1 V/m; Power Drift = 0.04

Fast SAR: SAR(1 g) = 13.62 W/kg; SAR(10 g) = 6.14 W/kg

Maximum value of SAR (interpolated) = 29.32 W/kg

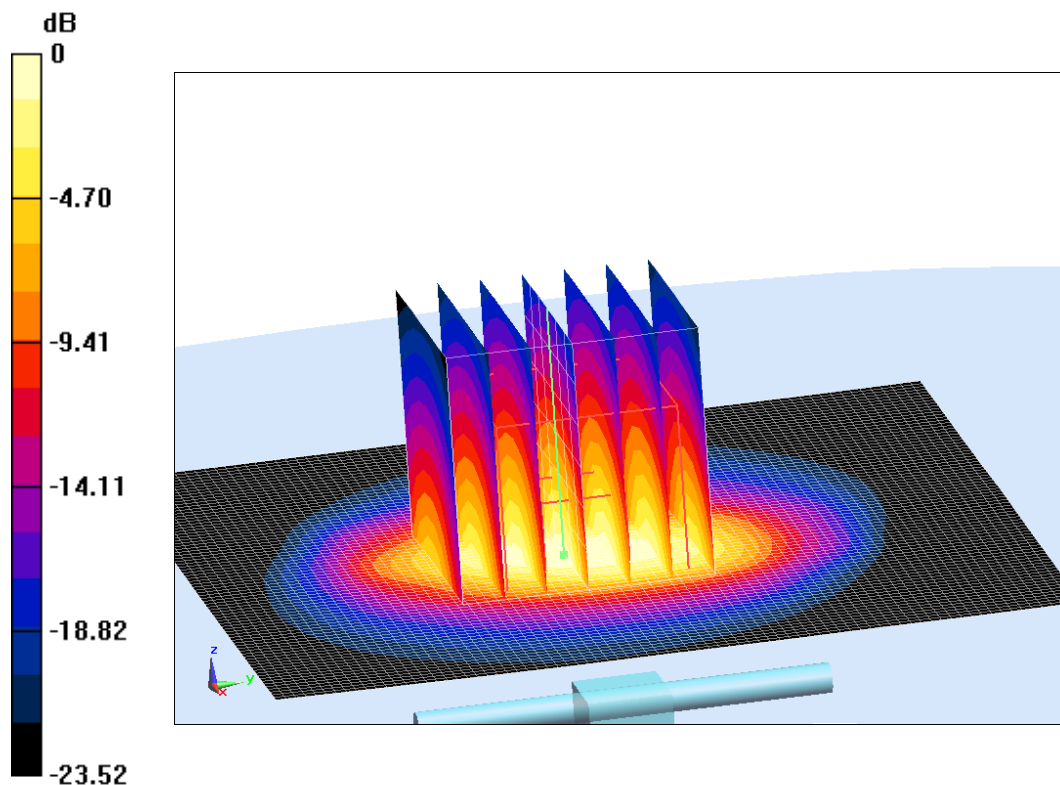
System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value =107.1 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 30.22 W/kg

SAR(1 g) = 13.92 W/kg; SAR(10 g) = 6.28 W/kg

Maximum value of SAR (measured) = 23.42 W/kg



0 dB = 23.42 W/kg = 13.7 dB W/kg

Fig.B.12 validation 2600 MHz 250mW

The SAR system verification must be required that the area scan estimated 1-g SAR is within 3% of the zoom scan 1-g SAR.

Table B.1 Comparison between area scan and zoom scan for system verification

Date	Band	Position	Area scan (1g)	Zoom scan (1g)	Drift (%)
2017-12-25	750	Head	2.11	2.1	0.48
	750	Body	2.15	2.15	0.00
2017-12-26	835	Head	2.32	2.35	-1.28
	835	Body	2.31	2.31	0.00
2017-12-27	1750	Head	9.24	9.18	0.65
	1750	Body	9.37	9.3	0.75
2017-12-28	1900	Head	10.08	10.08	0.00
	1900	Body	10.1	10.01	0.90
2017-12-29	2450	Head	13.07	13.16	-0.68
	2450	Body	12.62	12.48	1.12
2017-12-30	2600	Head	14.23	14.42	-1.32
	2600	Body	13.62	13.92	-2.16