DASY5 Validation Report for Head TSL

Date: 21.07.2020

Test Laboratory: SPEAG, Zurich, Switzerland

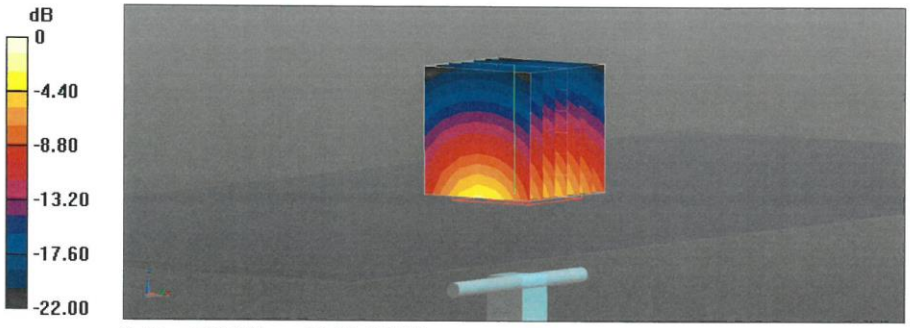
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:853

Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.84 S/m; ε_r = 38.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

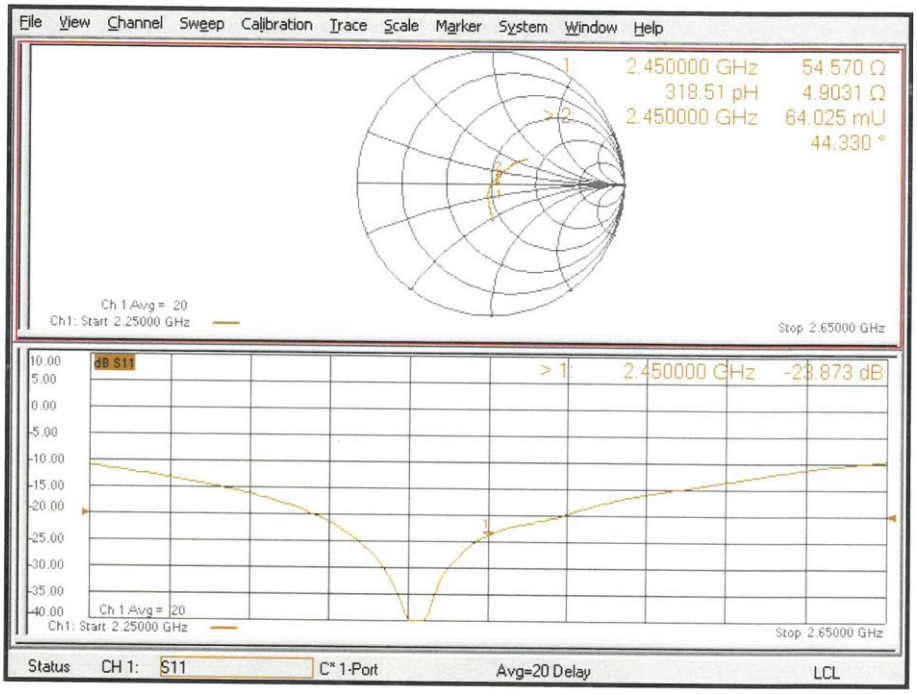
- Probe: EX3DV4 - SN7349; ConvF(7.74, 7.74, 7.74) @ 2450 MHz; Calibrated: 29.06.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.12.2019
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 118.2 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 26.2 W/kg
SAR(1 g) = 13.3 W/kg; SAR(10 g) = 6.17 W/kg
Smallest distance from peaks to all points 3 dB below = 9 mm
Ratio of SAR at M2 to SAR at M1 = 51.1%
Maximum value of SAR (measured) = 21.8 W/kg



0 dB = 21.8 W/kg = 13.38 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 21.07.2020

Test Laboratory: SPEAG, Zurich, Switzerland

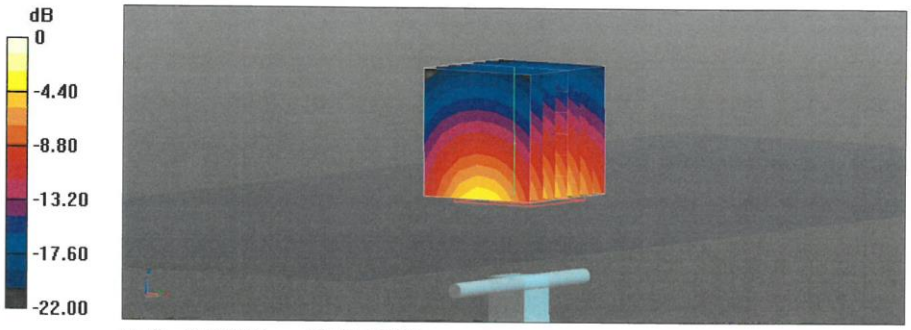
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:853

Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 2.02 S/m; ε_r = 51.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

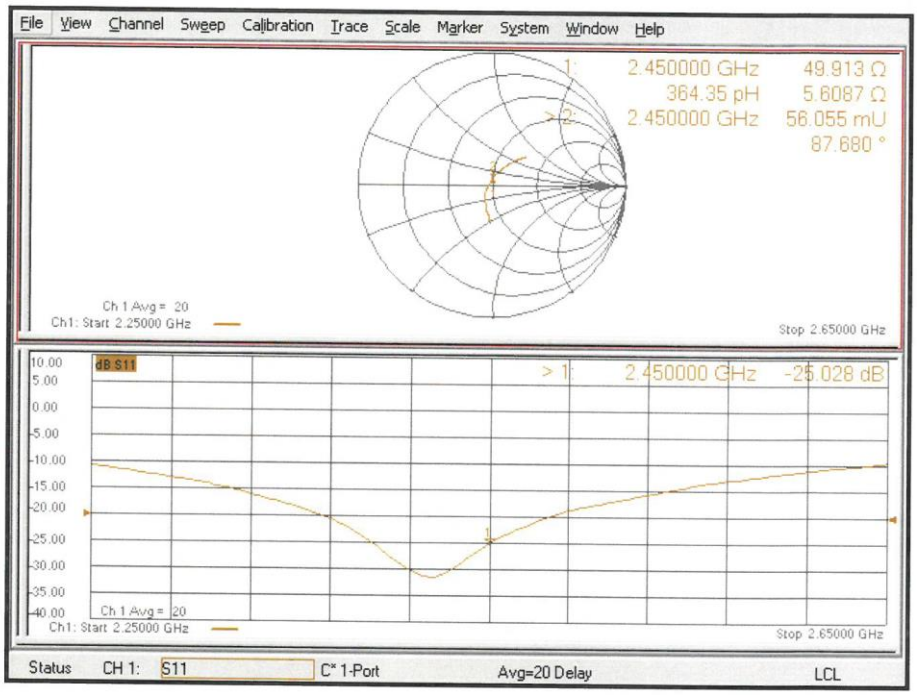
- Probe: EX3DV4 - SN7349; ConvF(7.82, 7.82, 7.82) @ 2450 MHz; Calibrated: 29.06.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.12.2019
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 111.1 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 25.7 W/kg
SAR(1 g) = 13.4 W/kg; SAR(10 g) = 6.22 W/kg
Smallest distance from peaks to all points 3 dB below = 9 mm
Ratio of SAR at M2 to SAR at M1 = 52.9%
Maximum value of SAR (measured) = 21.6 W/kg



0 dB = 21.6 W/kg = 13.34 dBW/kg

Impedance Measurement Plot for Body TSL



2600 MHz Dipole Calibration Certificate

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client CTTL-BJ (Auden)

Certificate No: D2600V2-1012_Jul20

CALIBRATION CERTIFICATE

Object	D2600V2 - SN:1012
Calibration procedure(s)	QA CAL-05.v11 Calibration Procedure for SAR Validation Sources between 0.7-3 GHz
Calibration date:	July 21, 2020

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	01-Apr-20 (No. 217-03100/03101)	Apr-21
Power sensor NRP-Z91	SN: 103244	01-Apr-20 (No. 217-03100)	Apr-21
Power sensor NRP-Z91	SN: 103245	01-Apr-20 (No. 217-03101)	Apr-21
Reference 20 dB Attenuator	SN: BH9394 (20k)	31-Mar-20 (No. 217-03106)	Apr-21
Type-N mismatch combination	SN: 310982 / 06327	31-Mar-20 (No. 217-03104)	Apr-21
Reference Probe EX3DV4	SN: 7349	29-Jun-20 (No. EX3-7349_Jun20)	Jun-21
DAE4	SN: 601	27-Dec-19 (No. DAE4-601_Dec19)	Dec-20

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Feb-19)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-19)	In house check: Oct-20

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

Issued: July 23, 2020

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

Certificate No: D2600V2-1012_Jul20 Page 1 of 8

Calibration Laboratory of
Schmid & Partner
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Accreditation No.: SCS 0108

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, "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
c) 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
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) 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	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2600 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.0	1.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	37.9 ± 6 %	2.01 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.5 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**57.0 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.40 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**25.3 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.5	2.16 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.0 ± 6 %	2.20 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	14.0 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**55.1 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.20 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**24.6 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	47.0 Ω - 5.6 jΩ
Return Loss	- 23.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	44.6 Ω - 4.4 jΩ
Return Loss	- 22.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.152 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: 21.07.2020

Test Laboratory: SPEAG, Zurich, Switzerland

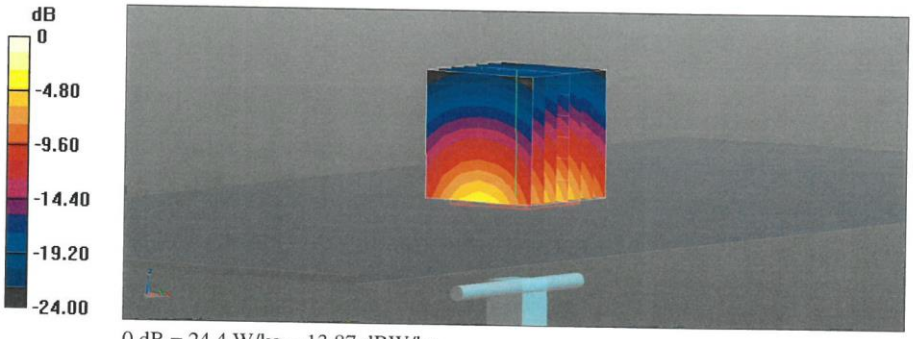
DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1012

Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.01 S/m; ε_r = 37.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

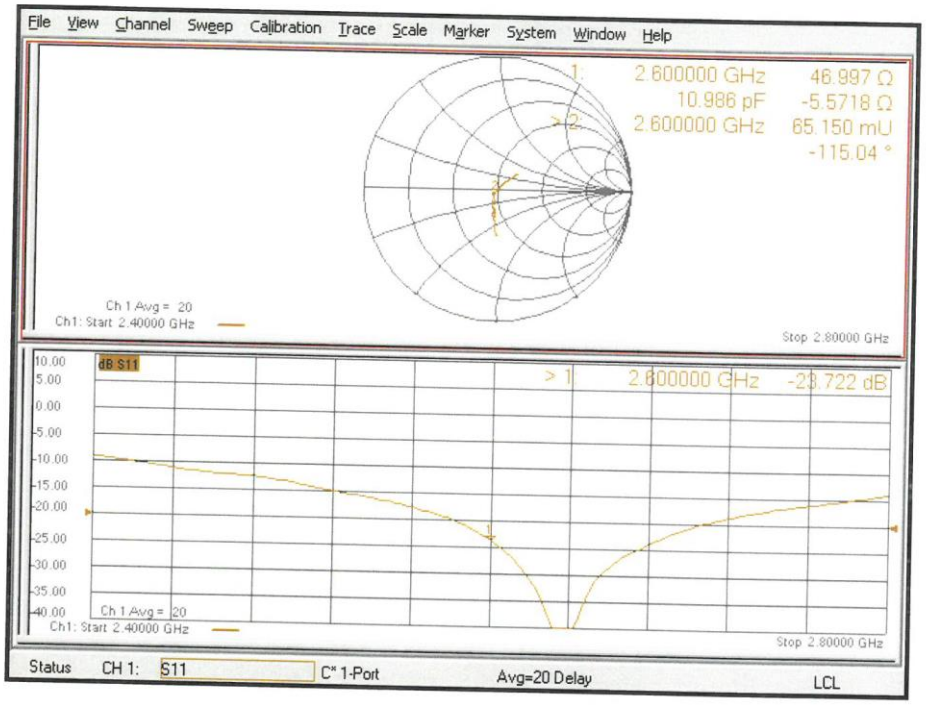
- Probe: EX3DV4 - SN7349; ConvF(7.54, 7.54, 7.54) @ 2600 MHz; Calibrated: 29.06.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.12.2019
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 121.2 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 29.3 W/kg
SAR(1 g) = 14.5 W/kg; SAR(10 g) = 6.40 W/kg
Smallest distance from peaks to all points 3 dB below = 8.9 mm
Ratio of SAR at M2 to SAR at M1 = 49.4%
Maximum value of SAR (measured) = 24.4 W/kg



0 dB = 24.4 W/kg = 13.87 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 21.07.2020

Test Laboratory: SPEAG, Zurich, Switzerland

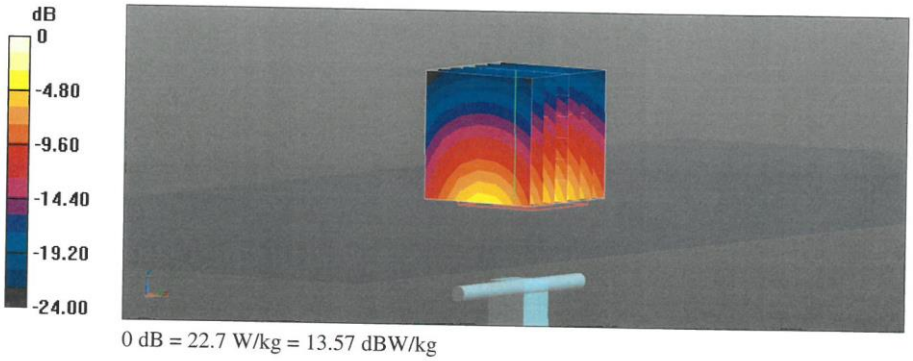
DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1012

Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.20 S/m; ε_r = 51.0; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

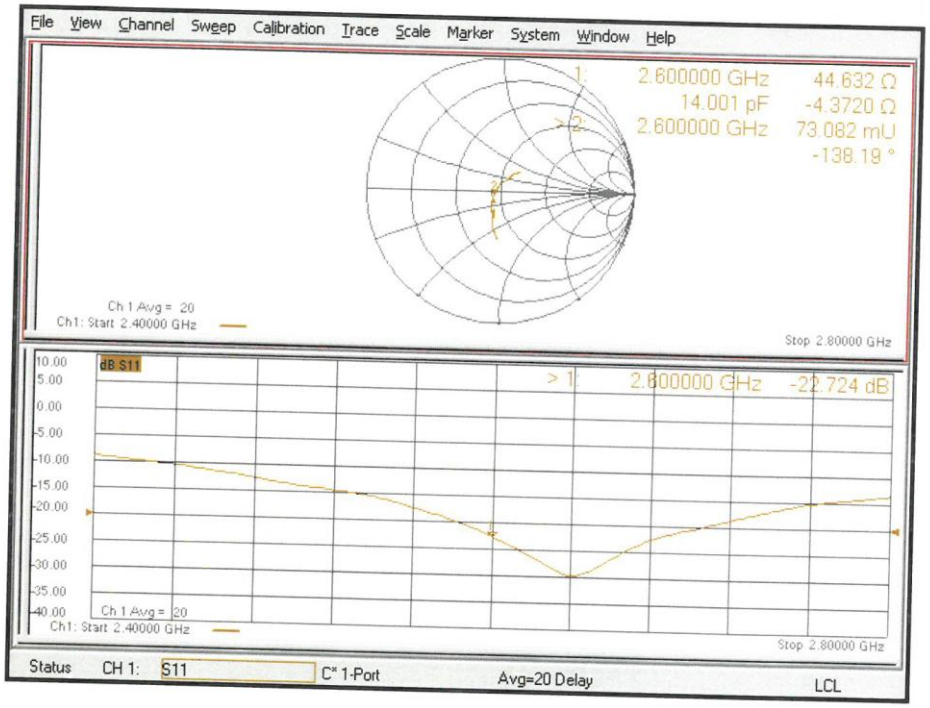
- Probe: EX3DV4 - SN7349; ConvF(7.68, 7.68, 7.68) @ 2600 MHz; Calibrated: 29.06.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.12.2019
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 110.5 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 28.0 W/kg
SAR(1 g) = 14.0 W/kg; SAR(10 g) = 6.20 W/kg
Smallest distance from peaks to all points 3 dB below = 8 mm
Ratio of SAR at M2 to SAR at M1 = 50.8%
Maximum value of SAR (measured) = 22.7 W/kg



0 dB = 22.7 W/kg = 13.57 dBW/kg

Impedance Measurement Plot for Body TSL



ANNEX I SPOT CHECK

I.1 Dielectric Performance and System Validation

Table I.1-1: Dielectric Performance of Head Tissue Simulating Liquid

Measurement Date (yyyy-mm-dd)	Type	Frequency	Permittivity ε	Drift (%)	Conductivity σ (S/m)	Drift (%)
2021/1/18	Head	750 MHz	42.07	0.31	0.897	0.79
2021/1/19	Head	835 MHz	41.45	-0.12	0.884	-1.78
2021/1/20	Head	1750 MHz	39.44	-1.60	1.374	0.29
2021/1/21	Head	1900 MHz	39.33	-1.68	1.382	-1.29
2021/1/22	Head	2450 MHz	39.22	0.05	1.813	0.72
2021/1/23	Head	2600 MHz	38.4	-1.56	1.96	0.00

Table I.1-2: System Validation of Head

Measurement Date (yyyy-mm-dd)	Frequency	Target value (W/kg)		Measured value(W/kg)		Deviation	
		10 g Average	1 g Average	10 g Average	1 g Average	10 g Average	1 g Average
2021/1/18	750 MHz	5.53	8.47	5.6	8.44	1.27%	-0.35%
2021/1/19	835 MHz	6.25	9.60	6.2	9.68	-0.80%	0.83%
2021/1/20	1750 MHz	19.1	36.5	19.04	36	-0.31%	-1.37%
2021/1/21	1900 MHz	20.6	39.6	20.96	39.68	1.75%	0.20%
2021/1/22	2450 MHz	24.5	52.5	24.28	51.76	-0.90%	-1.41%
2021/1/23	2600 MHz	25.3	57.0	25.44	55.88	0.55%	-1.96%

I.2 Conducted power of selected case

Table I.2-1: The conducted power results for 2G- Low Power

GSM1900MHZ	Measured Power (dBm)		
	810	661	512
GPRS(4Tx)	/	22.21	/

Table I.2-2: The conducted power results for 2G- Normal Power

GSM 850MHZ	Measured Power (dBm)		
	251	190	128
Speech	33.05	/	/
GPRS(1Tx)	33.01	/	/
GSM1900MHZ	Measured Power (dBm)		
	810	661	512
Speech	29.71	/	/
GPRS(4Tx)	/		/

Table I.2-2: The conducted Power for WCDMA- Low Power

Item	band	FDDIV result		
	ARFCN	1312 (1712.4MHz)	1412 (1732.4MHz)	1513 (1752.6MHz)
WCDMA	\	/	/	18.6
Item	band	FDDII result		
	ARFCN	9262 (1852.4MHz)	9400 (1880MHz)	9538 (1907.6MHz)
WCDMA	\	20.25	19.81	19.74

Table I.2-3: The conducted Power for WCDMA- Normal Power

Item	band	FDDV result		
	ARFCN	4132 (826.4MHz)	4182 (836.4MHz)	4233 (846.6MHz)
WCDMA	\	/	23.03	22.98
Item	band	FDDIV result		
	ARFCN	1312 (1712.4MHz)	1412 (1732.4MHz)	1513 (1752.6MHz)
WCDMA	\	/	/	23.03
Item	band	FDDII result		
	ARFCN	9262 (1852.4MHz)	9400 (1880MHz)	9538 (1907.6MHz)
WCDMA	\	/	/	23.2

Table I.2-4: The conducted Power for LTE-Low Power

LTE Band2	1RB-Middle	1860 (18700)	19.78
LTE Band7	1RB-Middle	2560 (21350)	21.51
LTE Band7	1RB-Middle	2535 (21100)	21.46
LTE Band7	1RB-Middle	2510 (20850)	21.46
LTE Band66	1RB-Middle	1745 (132322)	18.09

Table I.2-5: The conducted Power for LTE-Normal Power

LTE Band2	1RB-Middle	1860 (18700)	23.38
LTE Band5	1RB-Middle	829 (20450)	22.24
LTE Band7	1RB-Middle	2535 (21100)	23.02
LTE Band12	1RB-Middle	704 (23060)	22.77
LTE Band13	1RB-Middle	782 (23230)	22.75
LTE Band26	1RB-Middle	822.5 (26775)	22.81
LTE Band66	1RB-Middle	1770(132572)	22.93

Table I.2-6: The conducted Power for WLAN

Mode / data rate	Channel	Measured Power (dBm)
2.4G-11b	6	18.24

I.3 SAR test results for spot check

Frequency Band	Channel Number	Frequency (MHz)	Test setup	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
GSM850	251	848.8	Right Cheek	33.05	33.5	0.173	**0.19**	0.131	**0.15**	-0.07
GSM850	251	848.8	Rear 10mm	33.01	33.5	0.246	**0.28**	0.141	**0.16**	0.01
GSM1900	810	1909.8	Right Cheek	29.71	30.5	0.097	**0.12**	0.0608	**0.07**	0.07
GSM1900	661	1880	Bottom 10mm	22.21	22.5	0.674	**0.72**	0.363	**0.39**	0.15
WCDMA 850	4183	836.6	Left Cheek	23.03	24.5	0.213	**0.30**	0.165	**0.23**	-0.17
WCDMA 850	4233	846.6	Rear 10mm	22.98	24.5	0.381	**0.54**	0.219	**0.31**	-0.13
WCDMA1700	1513	1752.6	Right Tilt	23.03	24.5	0.0602	**0.08**	0.0336	**0.05**	0.08
WCDMA1700	1513	1752.6	Rear 10mm	18.6	19.5	0.954	**1.17**	0.492	**0.61**	-0.19
WCDMA1900	9538	1907.6	Right Cheek	23.2	24.5	0.117	**0.16**	0.073	**0.10**	0.06
WCDMA1900	9538	1907.6	Bottom 10mm	19.74	21.0	0.835	**1.12**	0.523	**0.70**	-0.07
WCDMA1900	9400	1880	Bottom 10mm	19.81	21.0	0.856	**1.13**	0.537	**0.71**	-0.12
WCDMA1900	9262	1852.4	Bottom 10mm	20.25	21.0	1.07	**1.27**	0.577	**0.69**	0.09
LTE Band2	18700	1860	Right Cheek	23.38	24.0	0.0716	**0.08**	0.0459	**0.05**	0.08
LTE Band2	18700	1860	Bottom 10mm	19.78	20.5	0.807	**0.95**	0.438	**0.52**	0.02
LTE Band5	20450	829	Right Cheek	22.24	24.0	0.233	**0.35**	0.181	**0.27**	0.03
LTE Band5	20450	829	Rear 10mm	22.24	24.0	0.265	**0.40**	0.156	**0.23**	-0.04
LTE Band7	21100	2535	Left Tilt	23.02	24.0	0.07	**0.09**	0.0337	**0.04**	0.01
LTE Band7	21350	2560	Bottom 10mm	21.51	22.5	0.751	**0.94**	0.327	**0.41**	0
LTE Band7	21100	2535	Bottom 10mm	21.46	22.5	0.714	**0.91**	0.301	**0.38**	0.04
LTE Band7	20850	2510	Bottom 10mm	21.46	22.5	0.632	**0.80**	0.213	**0.27**	-0.03
LTE Band12	23060	704	Right Cheek	22.77	24.0	0.152	**0.20**	0.124	**0.16**	0.2
LTE Band12	23060	704	Rear 10mm	22.77	24.0	0.307	**0.41**	0.24	**0.32**	0.02
LTE Band13	23230	782	Right Cheek	22.75	24.0	0.311	**0.41**	0.245	**0.33**	0.15
LTE Band13	23230	782	Rear 10mm	22.75	24.0	0.433	**0.58**	0.336	**0.45**	-0.15
LTE Band26	26775	822.5	Right Cheek	22.81	24.0	0.238	**0.31**	0.186	**0.24**	0.03
LTE Band26	26775	822.5	Rear 10mm	22.81	24.0	0.31	**0.41**	0.24	**0.32**	0.03
LTE Band66	132572	1770	Left Tilt	22.93	24.0	0.0354	**0.05**	0.0201	**0.03**	0.08
LTE Band66	132322	1745	Rear 10mm	18.09	18.5	0.78	**0.86**	0.402	**0.44**	0.08
WLAN	6	2437	Left Tilt	18.24	19.0	0.862	**1.03**	0.375	**0.45**	0.03
WLAN	6	2437	Top 10mm	18.24	19.0	0.327	**0.39**	0.153	**0.18**	0.05
WCDMA1700	1412	1732.5	Bottom 0mm	20.24	21.5	3.020	**4.04**	1.370	**1.83**	0.02
WCDMA1900	9262	1852.4	Rear 0mm	21.98	22.5	4.390	**4.95**	1.840	**2.07**	-0.12
LTE Band2	18700	1860	Rear 0mm	21.43	22.5	6.470	**8.28**	2.430	**3.11**	0.05
LTE Band66	132322	1745	Rear 0mm	19.99	21.0	4.860	**6.13**	2.060	**2.60**	-0.18
WLAN	6	2437	Rear 0mm	18.26	19.0	2.580	**3.06**	1.030	**1.22**	0.04

I.4 Reported SAR Comparison

Table I.4-1: Highest Reported SAR

Exposure Configuration	Technology Band	Highest Reported SAR 1g(W/kg) original	Highest Reported SAR 1g(W/kg) spot check	Equipment Class
Head	GSM850	**0.23**	**0.19**	PCE
	GSM1900	**0.11**	**0.12**	
	WCDMA1900	**0.22**	**0.16**	
	WCDMA1700	**0.05**	**0.08**	
	WCDMA 850	**0.32**	**0.30**	
	LTE Band2	**0.10**	**0.08**	
	LTE Band5	**0.30**	**0.35**	
	LTE Band7	**0.05**	**0.09**	
	LTE Band12	**0.18**	**0.20**	
	LTE Band13	**0.30**	**0.41**	
	LTE Band26	**0.29**	**0.31**	
	LTE Band66	**0.05**	**0.05**	
	WLAN 2.4 GHz	**1.10**	**1.03**	DTS
Hotspot (Separation Distance 10mm)	GSM850	**0.38**	**0.28**	PCE
	GSM1900	**0.82**	**0.72**	
	WCDMA1900	**1.19**	**1.27**	
	WCDMA1700	**1.18**	**1.17**	
	WCDMA 850	**0.38**	**0.54**	
	LTE Band2	**1.11**	**0.95**	
	LTE Band5	**0.36**	**0.40**	
	LTE Band7	**0.87**	**0.94**	
	LTE Band12	**0.37**	**0.41**	
	LTE Band13	**0.46**	**0.58**	
	LTE Band26	**0.35**	**0.41**	
	LTE Band66	**1.16**	**0.86**	
	WLAN 2.4 GHz	**0.43**	**0.39**	DTS
Exposure Configuration	Technology Band	Highest Reported SAR 10g(W/kg) original	Highest Reported SAR 10g(W/kg) spot check	Equipment Class
10-g extremity SAR (Separation Distance 0mm)	WCDMA1700	**2.59**	**1.83**	PCE
	WCDMA1900	**3.37**	**2.07**	
	LTE Band2	**3.38**	**3.11**	
	LTE Band66	**3.55**	**2.60**	
	WLAN 2.4 GHz	**1.05**	**1.22**	DTS

Note: The spot check results marked by blue are larger than the original result. So they replace the original result and others are shared.

I.5 MAIN TEST INSTRUMENTS

Table I.5-1: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	N5239A	MY46110673	January 24, 2020	One year
02	Power meter	NRP2	101919	May 12, 2020	One year
03	Power sensor	NRP-Z91	101547		
04	Signal Generator	E4438C	MY49071430	February 25, 2020	One Year
05	Amplifier	60S1G4	0331848	No Calibration Requested	
06	BTS	CMW500	129942	February 10, 2020	One year
07	E-field Probe	SPEAG EX3DV4	3617	Jan 30, 2020	One year
08	DAE	SPEAG DAE4	536	November 6, 2020	One year
09	Dipole Validation Kit	SPEAG D750V3	1017	July 24,2020	One year
10	Dipole Validation Kit	SPEAG D835V2	4d069	July 24,,2020	One year
11	Dipole Validation Kit	SPEAG D1750V2	1003	July 24, 2020	One year
12	Dipole Validation Kit	SPEAG D1900V2	5d101	July 28,2020	One year
13	Dipole Validation Kit	SPEAG D2450V2	853	July 21,2020	One year
14	Dipole Validation Kit	SPEAG D2600V2	1012	July 21,2020	One year

I.6 GRAPH RESULTS

GSM850_CH251 Right Cheek
Date: 1/19/2021
Electronics: DAE4 Sn536
Medium: head 835 MHz
Medium parameters used: f = 848.8 MHz; σ = 0.897 mho/m; εr = 41.43; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: GSM850 848.8 MHz Duty Cycle: 1:8.3
Probe: EX3DV4 – SN3617 ConvF(9.66,9.66,9.66)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.205 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.378 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.231 W/kg
SAR(1 g) = 0.173 W/kg; SAR(10 g) = 0.131 W/kg
Maximum value of SAR (measured) = 0.209 W/kg

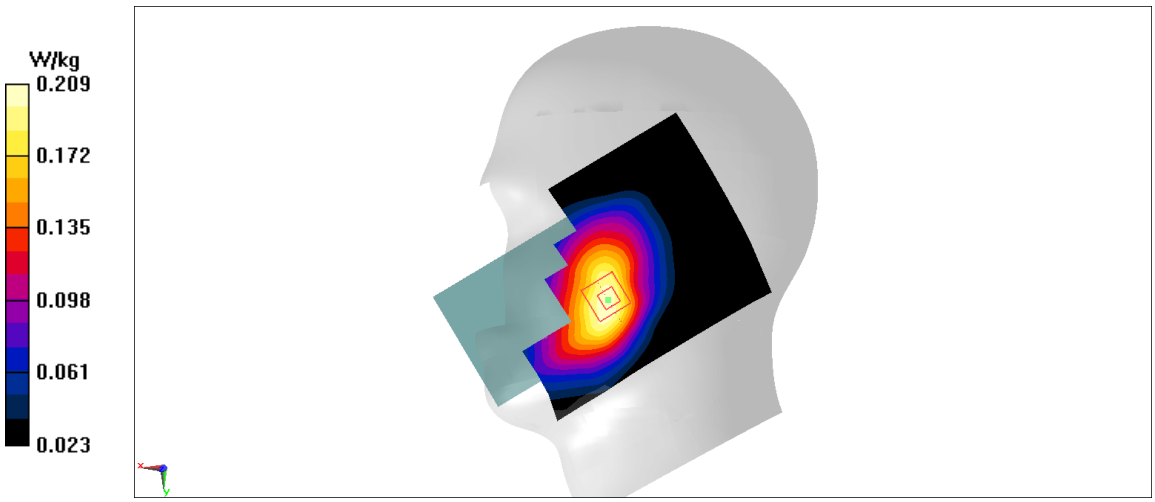


Fig I.6.1

GSM850_CH251 Rear 10mm
Date: 1/19/2021
Electronics: DAE4 Sn536
Medium: head 835 MHz
Medium parameters used: f = 848.8 MHz; σ = 0.897 mho/m; εr = 41.43; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: GSM850 848.8 MHz Duty Cycle: 1:8.3
Probe: EX3DV4 – SN3617 ConvF(9.66,9.66,9.66)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.361 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.5 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.453 W/kg
SAR(1 g) = 0.246 W/kg; SAR(10 g) = 0.141 W/kg
Maximum value of SAR (measured) = 0.365 W/kg

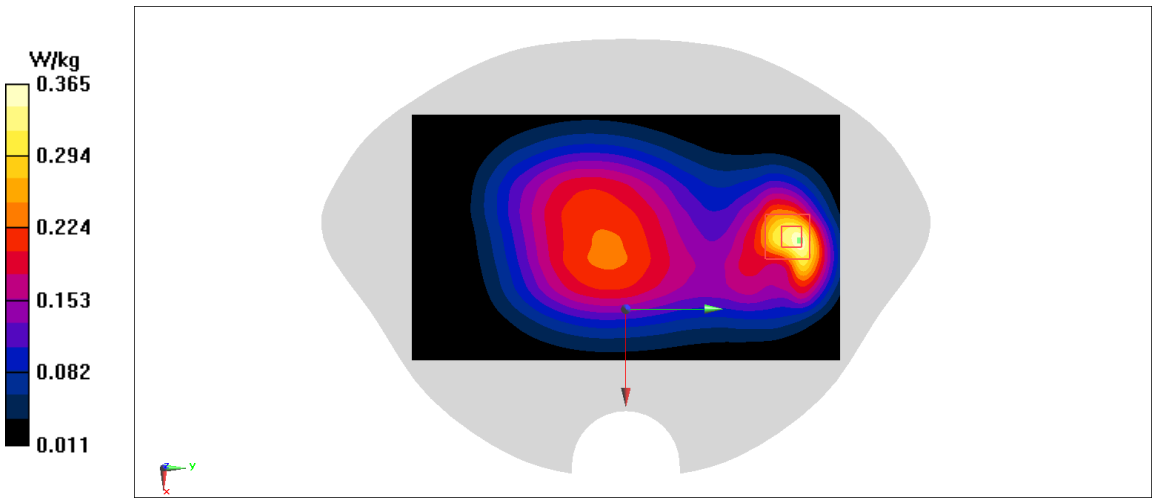


Fig I.6.2

PCS1900_CH810 Right Cheek
Date: 1/21/2021
Electronics: DAE4 Sn536
Medium: head 1900 MHz
Medium parameters used: f = 1909.8 MHz; σ = 1.392 mho/m; εr = 39.32; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: PCS1900 1909.8 MHz Duty Cycle: 1:8.3
Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.132 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.404 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.146 W/kg
SAR(1 g) = 0.097 W/kg; SAR(10 g) = 0.0608 W/kg
Maximum value of SAR (measured) = 0.128 W/kg

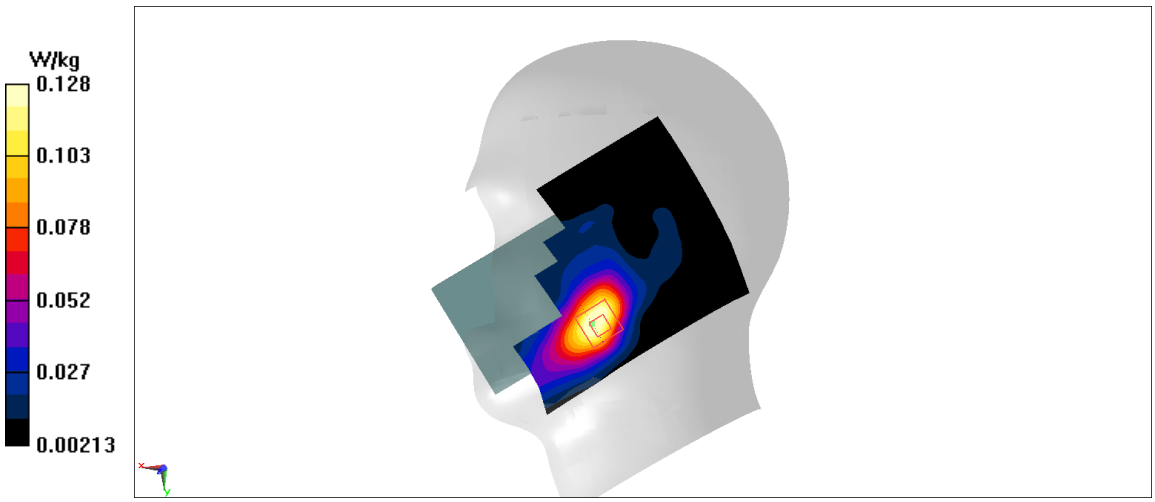


Fig I.6.3

PCS1900_CH661 Bottom 10mm
Date: 1/21/2021
Electronics: DAE4 Sn536
Medium: head 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.363 mho/m; εr = 39.35; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: PCS1900 1880 MHz Duty Cycle: 1:2
Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.06 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.94 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 1.22 W/kg
SAR(1 g) = 0.674 W/kg; SAR(10 g) = 0.363 W/kg
Maximum value of SAR (measured) = 1.03 W/kg

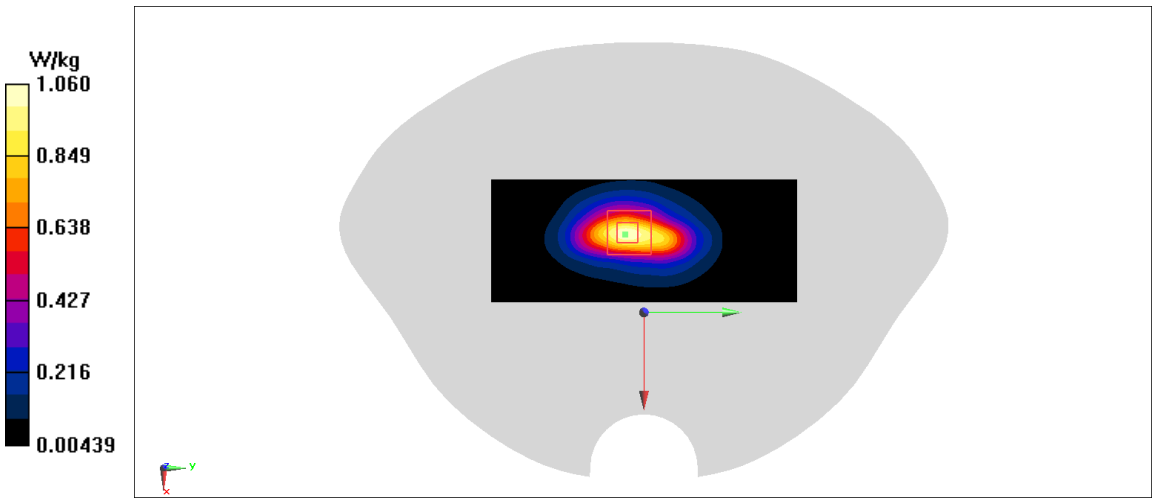


Fig I.6.4

WCDMA1900-BII_CH9538 Right Cheek
Date: 1/21/2021
Electronics: DAE4 Sn536
Medium: head 1900 MHz
Medium parameters used: f = 1907.6 MHz; σ = 1.39 mho/m; εr = 39.32; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA1900-BII 1907.6 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.163 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.231 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.178 W/kg
SAR(1 g) = 0.117 W/kg; SAR(10 g) = 0.073 W/kg
Maximum value of SAR (measured) = 0.157 W/kg

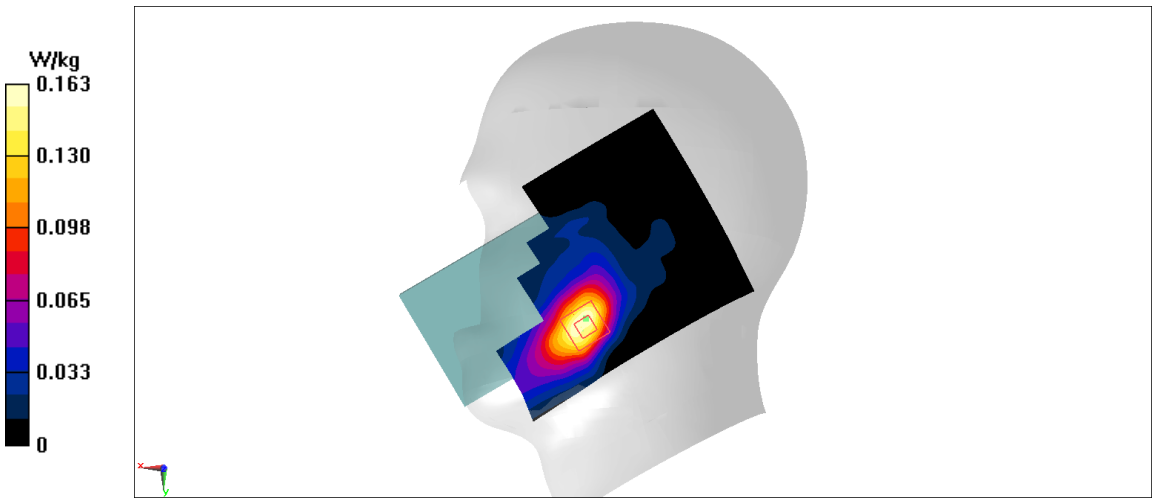


Fig I.6.5

WCDMA1900-BII_CH9262 Bottom 10mm
Date: 1/21/2021
Electronics: DAE4 Sn536
Medium: head1900 MHz
Medium parameters used: f = 1852.4 MHz; σ = 1.336 mho/m; εr = 39.39; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA1900-BII 1852.4 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.66 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.58 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.91 W/kg
SAR(1 g) = 1.07 W/kg; SAR(10 g) = 0.577 W/kg
Maximum value of SAR (measured) = 1.61 W/kg

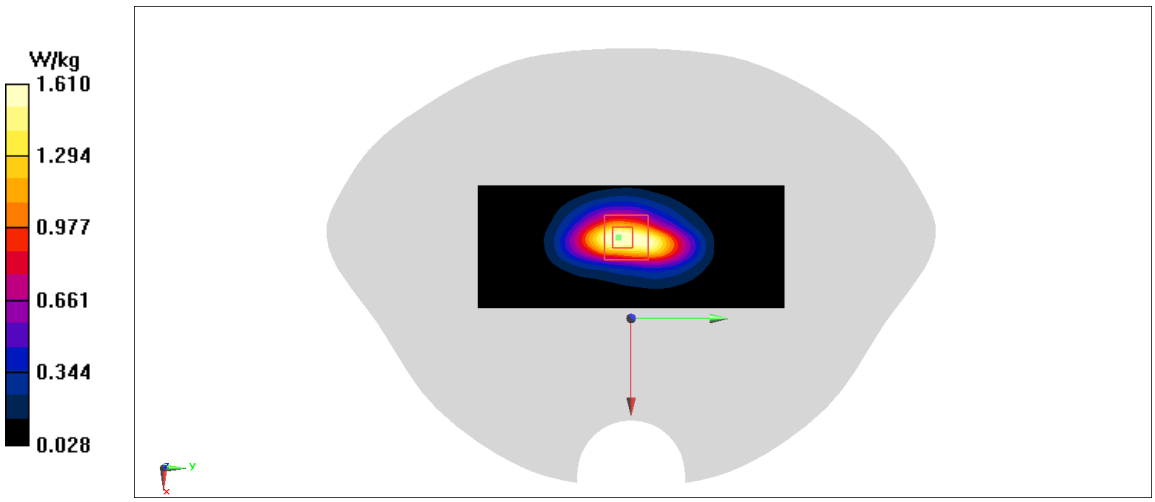


Fig I.6.6

WCDMA1700-BIV_CH1513 Right Tilt
Date: 1/20/2021
Electronics: DAE4 Sn536
Medium: head 1750 MHz
Medium parameters used: f = 1752.6 MHz; σ = 1.377 mho/m; εr = 39.44; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA1700-BIV 1752.6 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(8.41,8.41,8.41)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.108 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.77 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.095 W/kg
SAR(1 g) = 0.0602 W/kg; SAR(10 g) = 0.0336 W/kg
Maximum value of SAR (measured) = 0.0814 W/kg

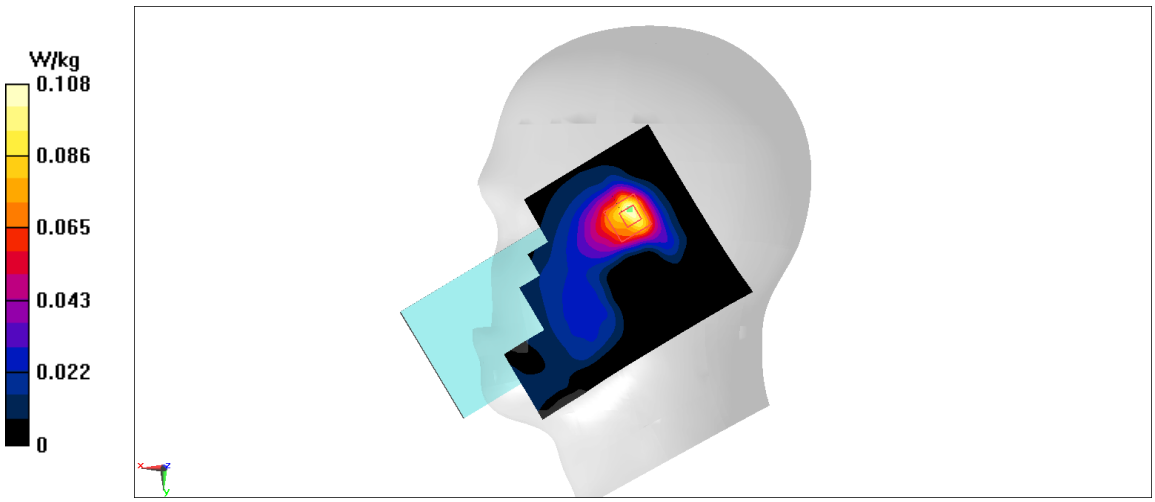


Fig I.6.7

WCDMA1700-BIV_CH1513 Rear 10mm
Date: 1/20/2021
Electronics: DAE4 Sn536
Medium: head1750 MHz
Medium parameters used: f = 1752.6 MHz; σ = 1.377 mho/m; εr = 39.44; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA1700-BIV 1752.6 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(8.41,8.41,8.41)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.35 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.078 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 1.75 W/kg
SAR(1 g) = 0.954 W/kg; SAR(10 g) = 0.492 W/kg
Maximum value of SAR (measured) = 1.43 W/kg

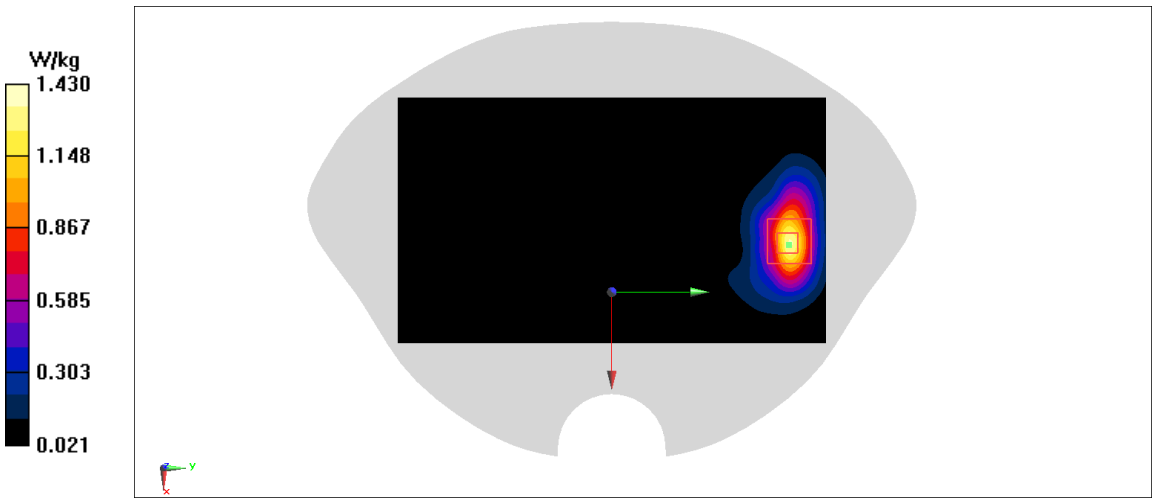


Fig I.6.8

WCDMA850-BV_CH4183 Left Cheek
Date: 1/19/2021
Electronics: DAE4 Sn536
Medium: head 835 MHz
Medium parameters used: f = 836.6 MHz; σ = 0.886 mho/m; εr = 41.45; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA850-BV 836.6 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(9.66,9.66,9.66)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.254 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.412 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 0.28 W/kg
SAR(1 g) = 0.213 W/kg; SAR(10 g) = 0.165 W/kg
Maximum value of SAR (measured) = 0.256 W/kg

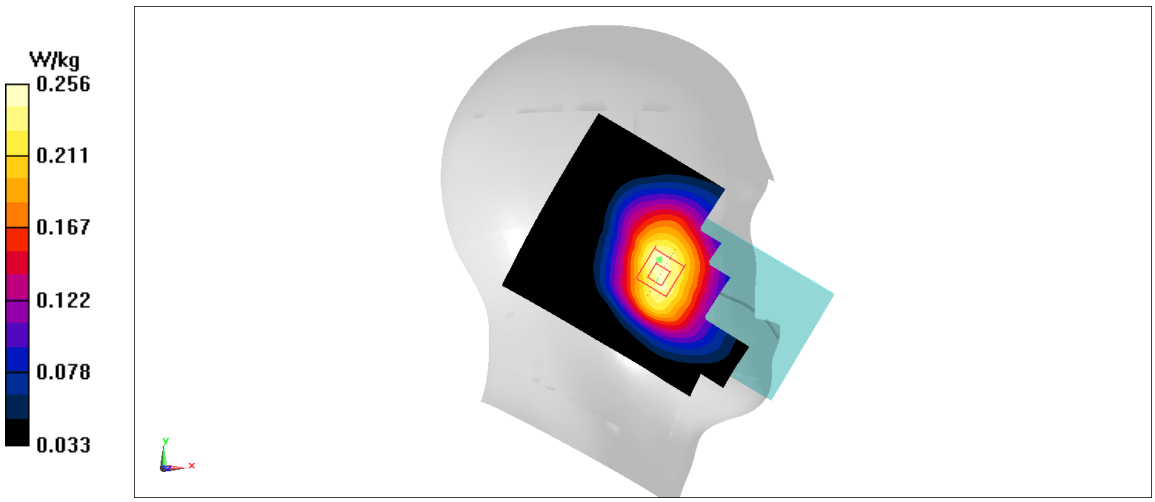


Fig I.6.9

WCDMA850-BV_CH4233 Rear 10mm
Date: 1/19/2021
Electronics: DAE4 Sn536
Medium: head 835 MHz
Medium parameters used: f = 846.6 MHz; σ = 0.895 mho/m; εr = 41.44; ρ = 1000 kg/m^3
Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C
Communication System: WCDMA850-BV 846.6 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(9.66,9.66,9.66)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.542 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.18 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.706 W/kg
SAR(1 g) = 0.381 W/kg; SAR(10 g) = 0.219 W/kg
Maximum value of SAR (measured) = 0.578 W/kg

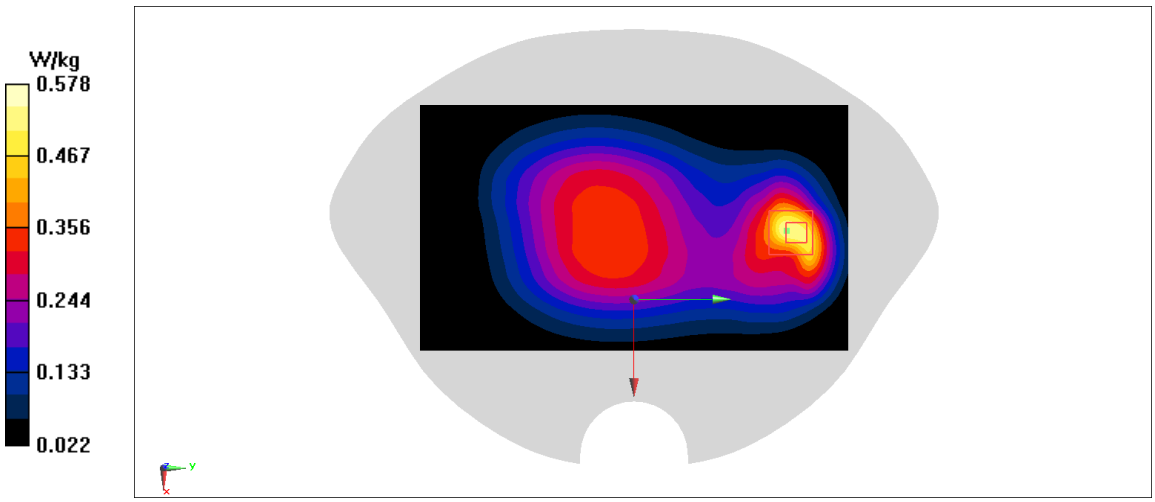


Fig I.6.10

LTE1900-FDD2_CH18700 Right Cheek
Date: 1/21/2021
Electronics: DAE4 Sn536
Medium: head 1900 MHz
Medium parameters used: f = 1860 MHz; σ = 1.344 mho/m; εr = 39.38; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE1900-FDD2 1860 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.0965 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.929 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.104 W/kg
SAR(1 g) = 0.0716 W/kg; SAR(10 g) = 0.0459 W/kg
Maximum value of SAR (measured) = 0.0929 W/kg

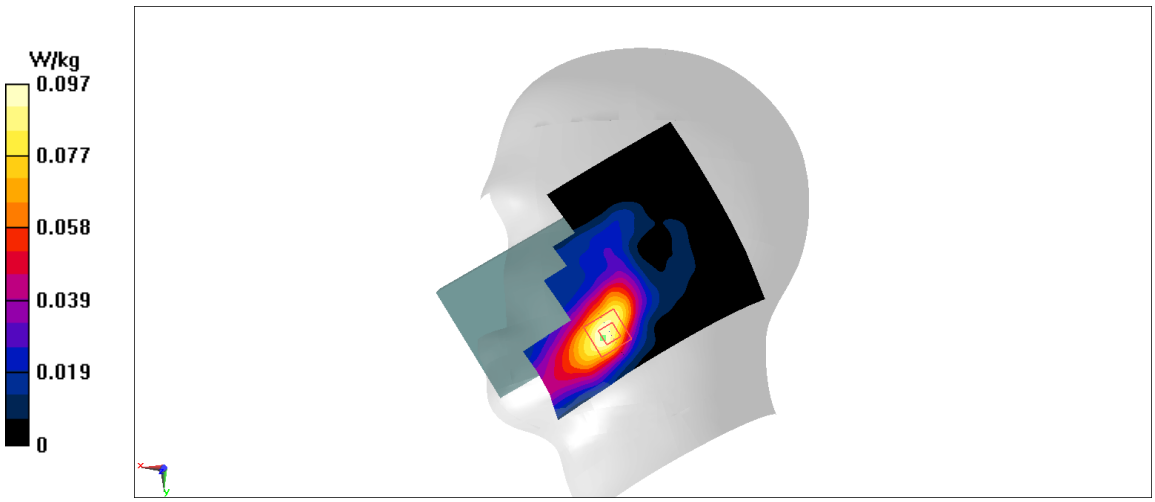


Fig I.6.11

LTE1900-FDD2_CH18700 Bottom 10mm
Date: 1/21/2021
Electronics: DAE4 Sn536
Medium: head1900 MHz
Medium parameters used: f = 1860 MHz; σ = 1.344 mho/m; εr = 39.38; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE1900-FDD2 1860 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.27 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.485 V/m; Power Drift = 0.2 dB
Peak SAR (extrapolated) = 1.42 W/kg
SAR(1 g) = 0.807 W/kg; SAR(10 g) = 0.438 W/kg
Maximum value of SAR (measured) = 1.2 W/kg

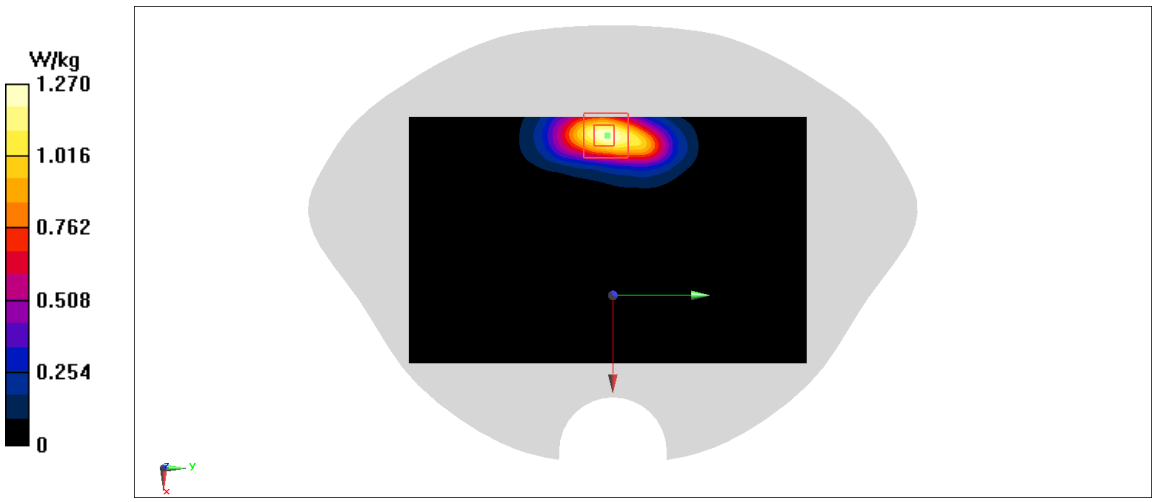


Fig I.6.12

LTE850-FDD5_CH20450 Right Cheek
Date: 1/19/2021
Electronics: DAE4 Sn536
Medium: head 835 MHz
Medium parameters used: f = 829 MHz; σ = 0.878 mho/m; εr = 41.46; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE850-FDD5 829 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(9.66,9.66,9.66)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.272 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.854 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.304 W/kg
SAR(1 g) = 0.233 W/kg; SAR(10 g) = 0.181 W/kg
Maximum value of SAR (measured) = 0.278 W/kg

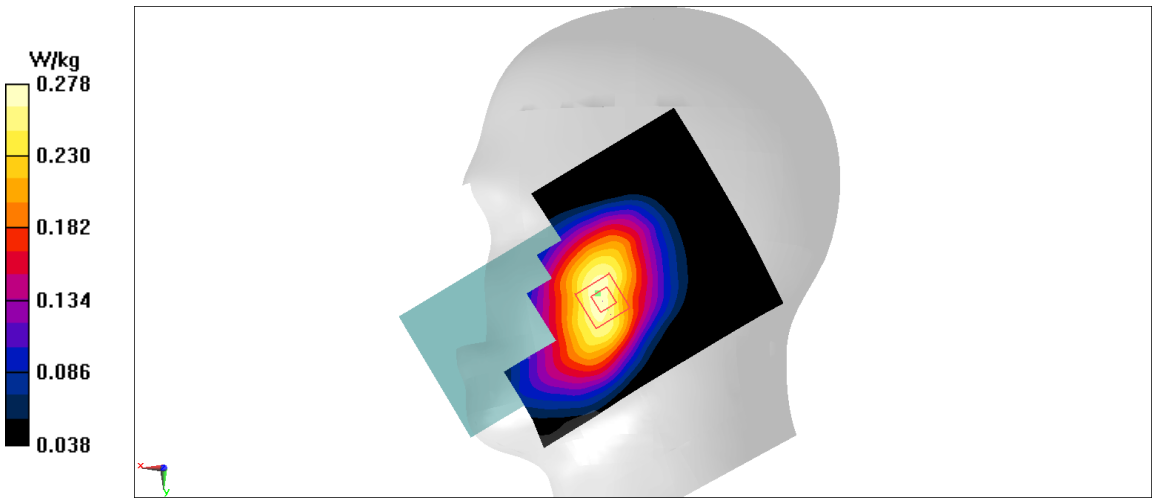


Fig I.6.13

LTE850-FDD5_CH20450 Rear 10mm
Date: 1/19/2021
Electronics: DAE4 Sn536
Medium: head 835 MHz
Medium parameters used: f = 829 MHz; σ = 0.878 mho/m; εr = 41.46; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE850-FDD5 829 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(9.66,9.66,9.66)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.388 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.486 W/kg
SAR(1 g) = 0.265 W/kg; SAR(10 g) = 0.156 W/kg
Maximum value of SAR (measured) = 0.399 W/kg

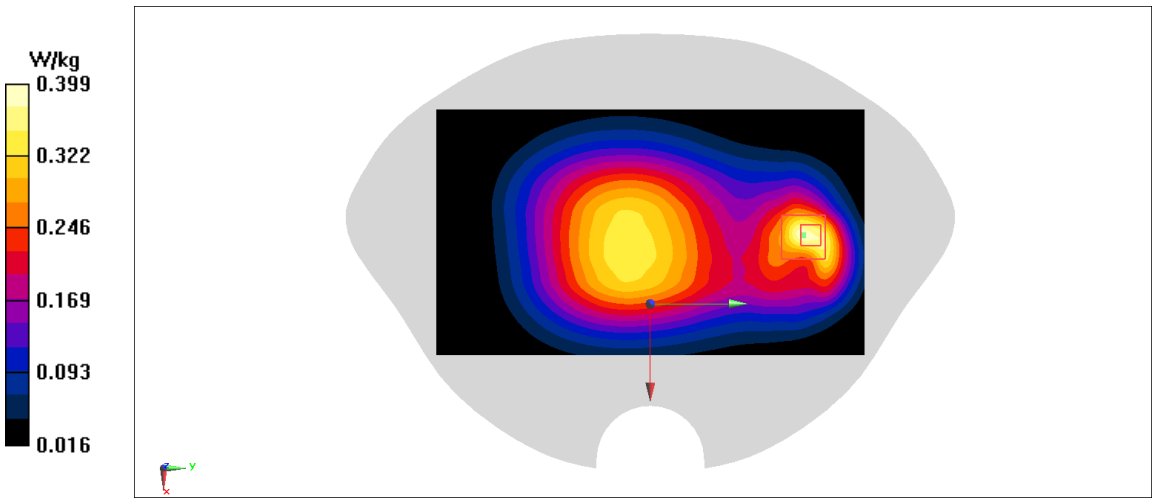


Fig I.6.14

LTE2500-FDD7_CH21100 Left Tilt
Date: 1/23/2021
Electronics: DAE4 Sn536
Medium: head 2600 MHz
Medium parameters used: f = 2535 MHz; σ = 1.898 mho/m; εr = 38.48; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE2500-FDD7 2535 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(7.52,7.52,7.52)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.122 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.778 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.132 W/kg
SAR(1 g) = 0.07 W/kg; SAR(10 g) = 0.0337 W/kg
Maximum value of SAR (measured) = 0.108 W/kg

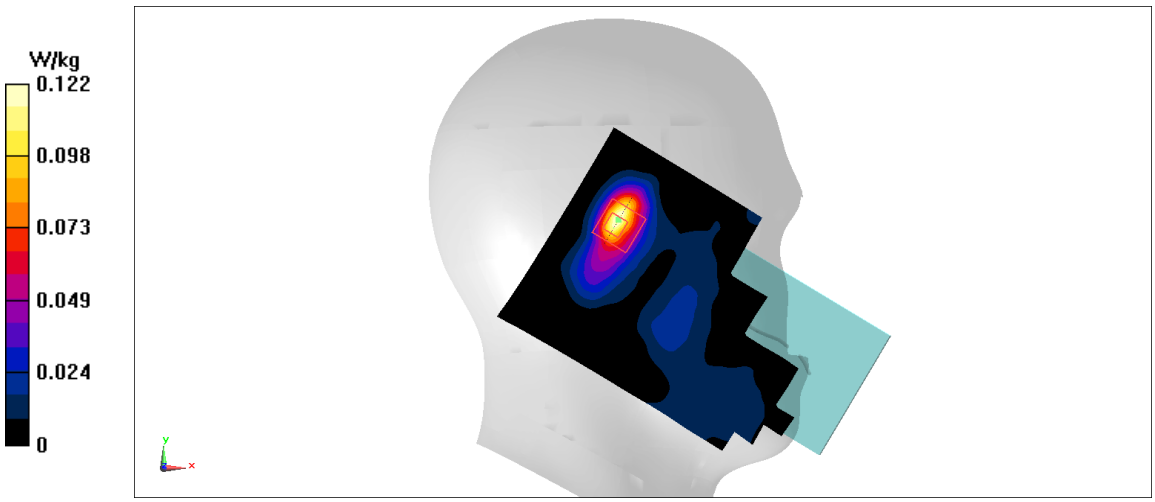


Fig I.6.15

LTE2500-FDD7_CH21350 Bottom 10mm
Date: 1/23/2021
Electronics: DAE4 Sn536
Medium: head 2600 MHz
Medium parameters used: f = 2560 MHz; σ = 1.922 mho/m; εr = 38.45; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE2500-FDD7 2560 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(7.65,7.65,7.65)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.34 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0 dB
Peak SAR (extrapolated) = 1.65 W/kg
SAR(1 g) = 0.751 W/kg; SAR(10 g) = 0.327 W/kg
Maximum value of SAR (measured) = 1.32 W/kg

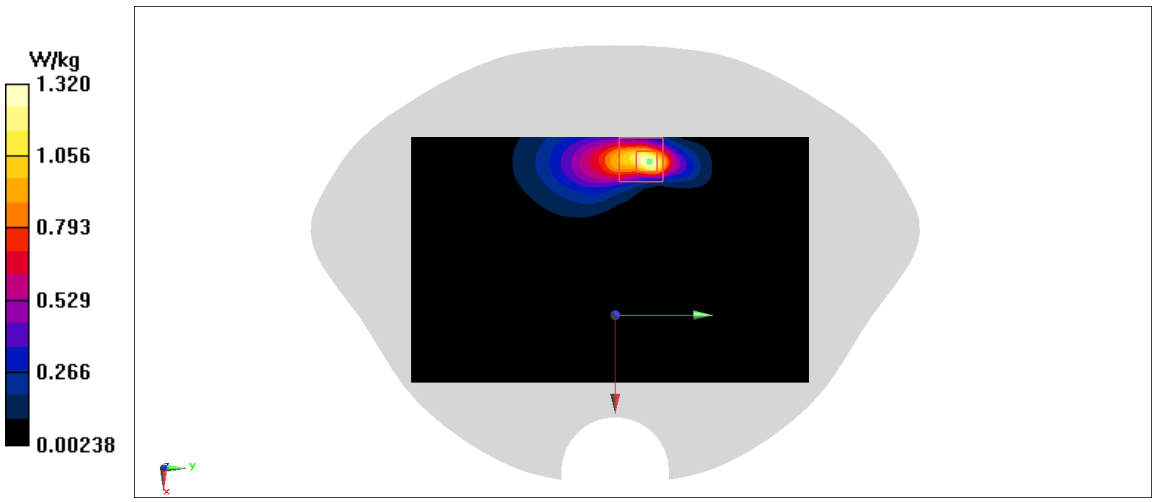


Fig I.6.16

LTE700-FDD12_CH23060 Right Cheek
Date: 1/18/2021
Electronics: DAE4 Sn536
Medium: head 750 MHz
Medium parameters used: f = 704 MHz; σ = 0.853 mho/m; εr = 42.13; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE700-FDD12 704 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(10.07,10.07,10.07)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.171 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.372 V/m; Power Drift = 0.2 dB
Peak SAR (extrapolated) = 0.186 W/kg
SAR(1 g) = 0.152 W/kg; SAR(10 g) = 0.124 W/kg
Maximum value of SAR (measured) = 0.174 W/kg

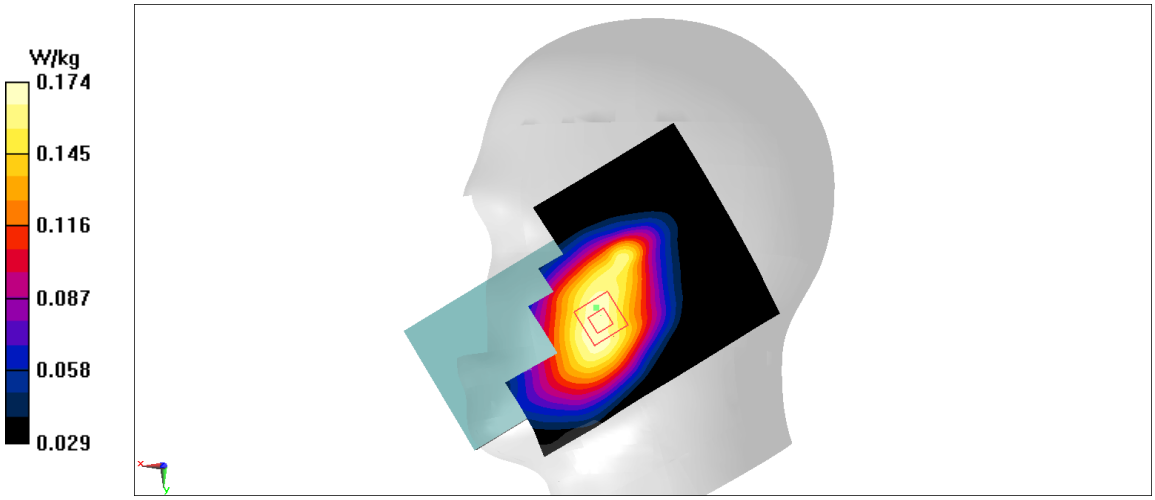


Fig I.6.17

LTE700-FDD12_CH23060 Rear 10mm
Date: 1/18/2021
Electronics: DAE4 Sn536
Medium: head 750 MHz
Medium parameters used: f = 704 MHz; σ = 0.853 mho/m; εr = 42.13; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE700-FDD12 704 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(10.07,10.07,10.07)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.365 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.3 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.403 W/kg
SAR(1 g) = 0.307 W/kg; SAR(10 g) = 0.24 W/kg
Maximum value of SAR (measured) = 0.369 W/kg

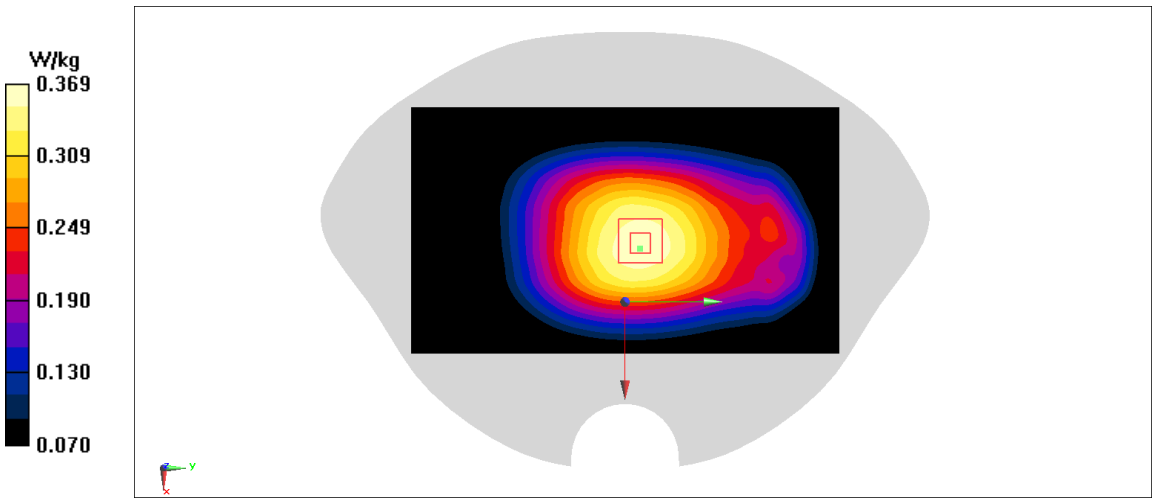


Fig I.6.18

LTE750-FDD13_CH23230 Right Cheek
Date: 1/18/2021
Electronics: DAE4 Sn536
Medium: head 750 MHz
Medium parameters used: f = 782 MHz; σ = 0.927 mho/m; εr = 42.03; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE750-FDD13 782 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(10.07,10.07,10.07)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.359 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.683 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.398 W/kg
SAR(1 g) = 0.311 W/kg; SAR(10 g) = 0.245 W/kg
Maximum value of SAR (measured) = 0.368 W/kg

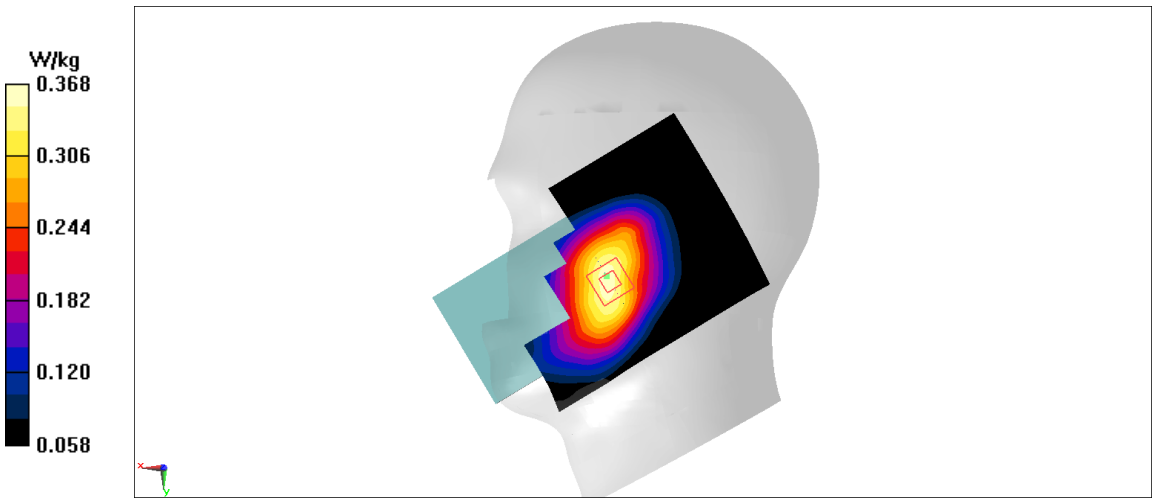


Fig I.6.19

LTE750-FDD13_CH23230 Rear 10mm
Date: 1/18/2021
Electronics: DAE4 Sn536
Medium: head 750 MHz
Medium parameters used: f = 782 MHz; σ = 0.927 mho/m; εr = 42.03; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE750-FDD13 782 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(10.07,10.07,10.07)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.522 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 25 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.57 W/kg
SAR(1 g) = 0.433 W/kg; SAR(10 g) = 0.336 W/kg
Maximum value of SAR (measured) = 0.52 W/kg

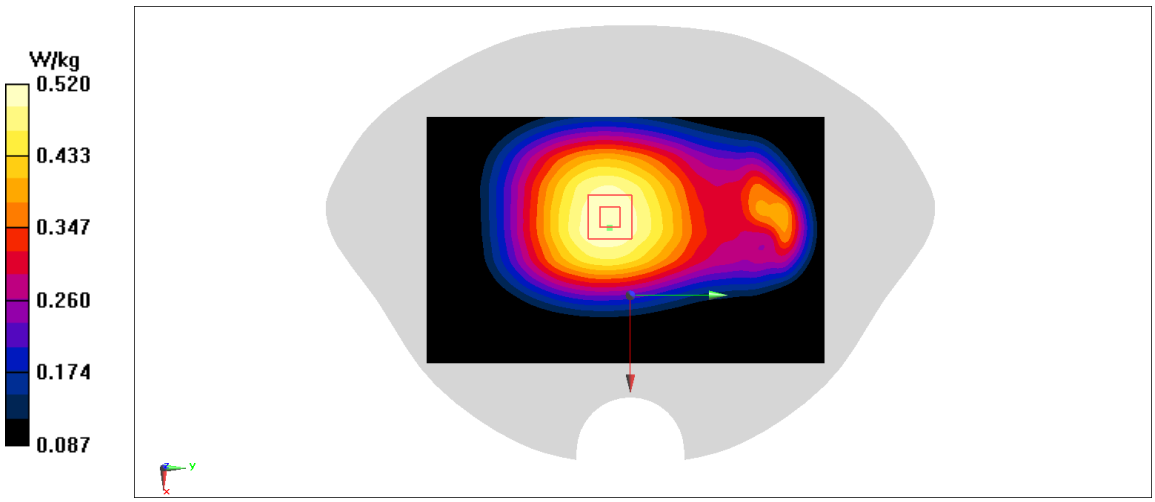


Fig I.6.20

LTE850-FDD26_CH26775 Right Cheek
Date: 1/19/2021
Electronics: DAE4 Sn536
Medium: head 835 MHz
Medium parameters used: f = 822.5 MHz; σ = 0.872 mho/m; εr = 41.47; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE850-FDD26 822.5 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(9.66,9.66,9.66)

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 = 5.782 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.308 W/kg
SAR(1 g) = 0.238 W/kg; SAR(10 g) = 0.186 W/kg
Maximum value of SAR (measured) = 0.284 W/kg

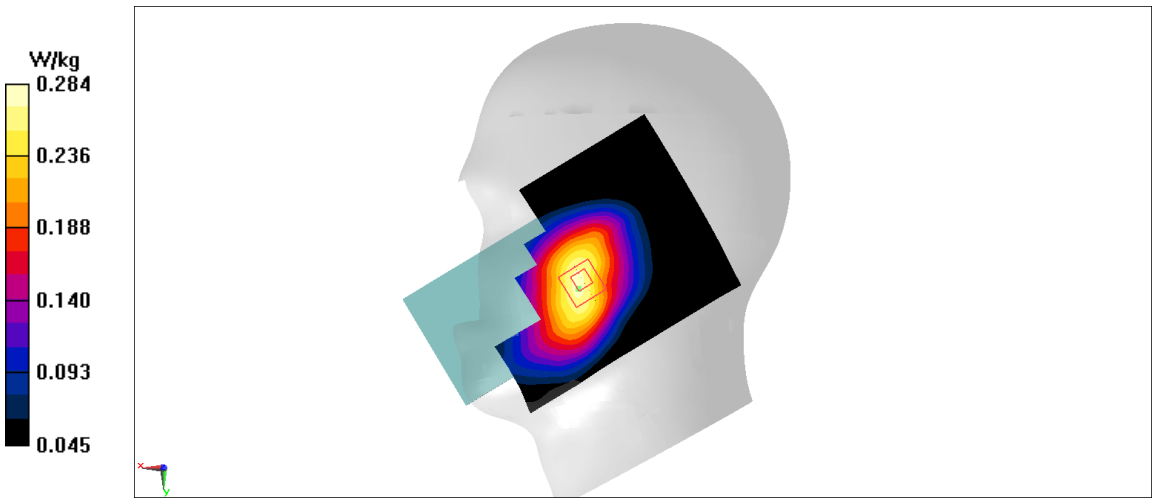


Fig I.6.21

LTE850-FDD26_CH26775 Rear 10mm
Date: 1/19/2021
Electronics: DAE4 Sn536
Medium: head 835 MHz
Medium parameters used: f = 822.5 MHz; σ = 0.872 mho/m; εr = 41.47; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE850-FDD26 822.5 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(9.66,9.66,9.66)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.371 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.43 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.411 W/kg
SAR(1 g) = 0.31 W/kg; SAR(10 g) = 0.24 W/kg
Maximum value of SAR (measured) = 0.374 W/kg

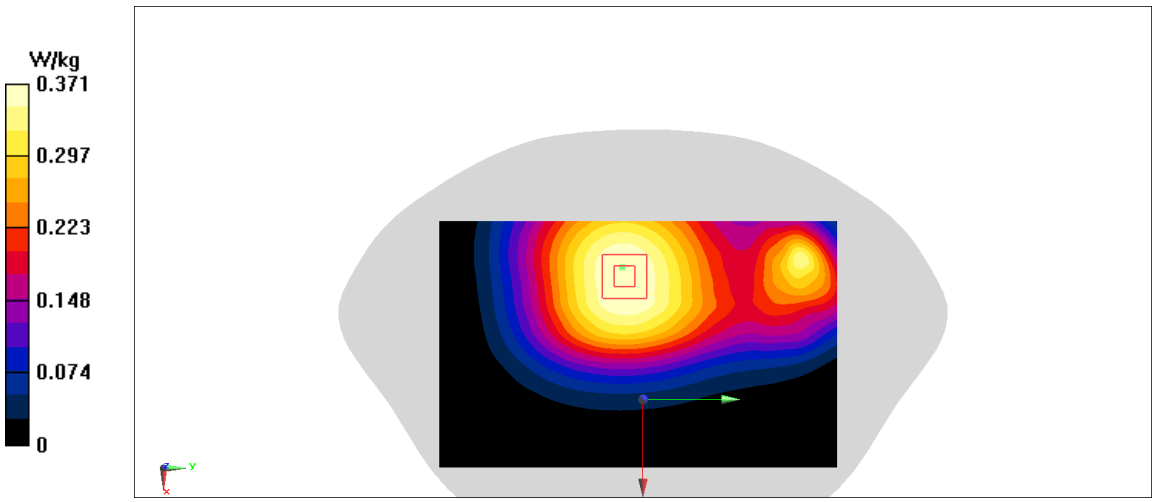


Fig I.6.22

LTE1700-FDD66_CH132572 Left Tilt
Date: 1/20/2021
Electronics: DAE4 Sn536
Medium: head 1750 MHz
Medium parameters used: f = 822.5 MHz; σ = 0.492 mho/m; εr = 40.55; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE1700-FDD66 822.5 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(8.41,8.41,8.41)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.0562 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.694 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.062 W/kg
SAR(1 g) = 0.0354 W/kg; SAR(10 g) = 0.0201 W/kg
Maximum value of SAR (measured) = 0.0527 W/kg

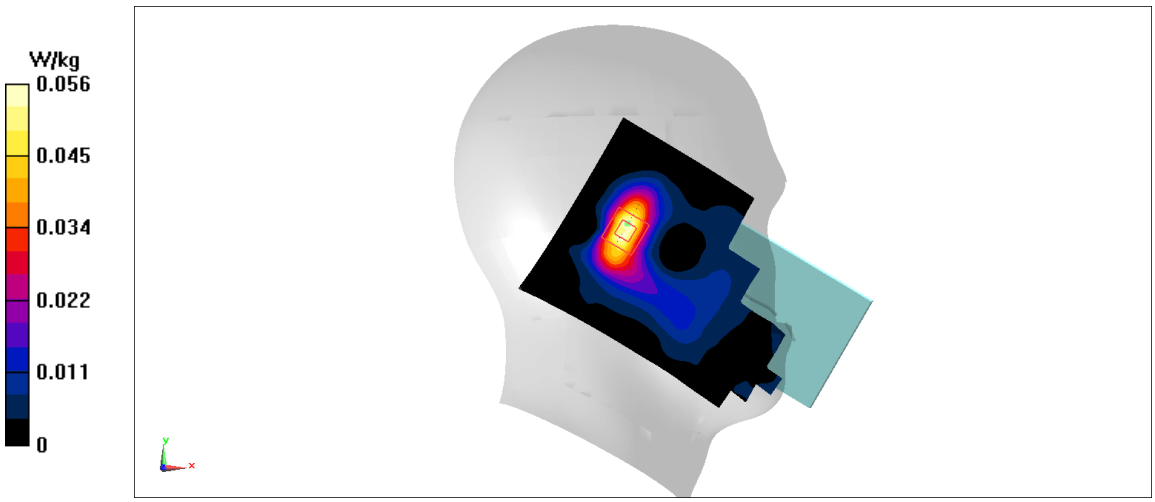


Fig I.6.23

LTE1700-FDD66_CH132322 Rear 10mm
Date: 1/20/2021
Electronics: DAE4 Sn536
Medium: head 1750 MHz
Medium parameters used: f = 822.5 MHz; σ = 0.492 mho/m; εr = 40.55; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE1700-FDD66 822.5 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(8.41,8.41,8.41)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.2 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.408 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.44 W/kg
SAR(1 g) = 0.78 W/kg; SAR(10 g) = 0.402 W/kg
Maximum value of SAR (measured) = 1.17 W/kg

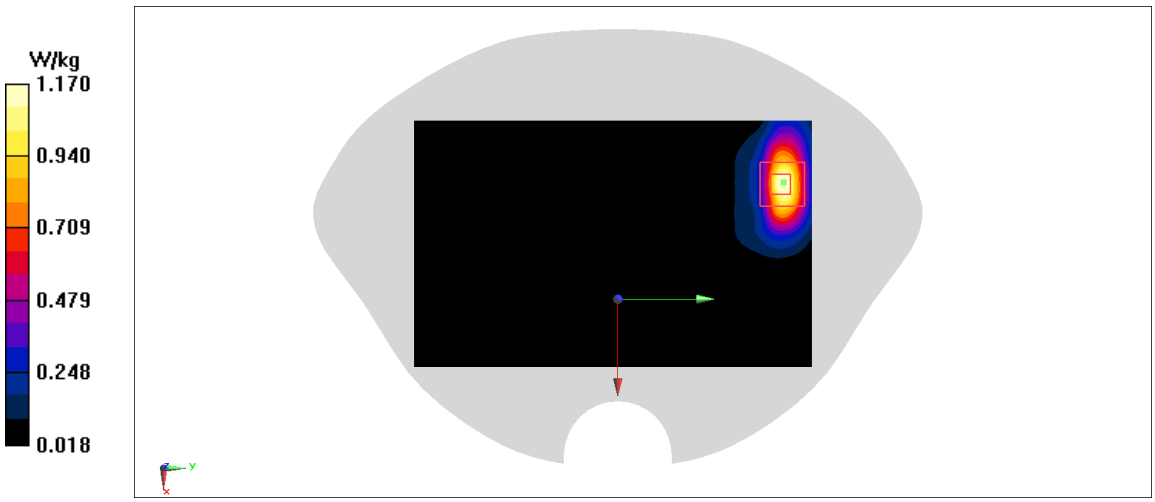


Fig I.6.24

WLAN2450_CH6 Left Tilt
Date: 1/22/2021
Electronics: DAE4 Sn536
Medium: head 2450 MHz
Medium parameters used: f = 2437 MHz; σ = 1.801 mho/m; εr = 39.24; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WLAN2450 2437 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(7.65,7.65,7.65)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.39 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.4 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 2.04 W/kg
SAR(1 g) = 0.862 W/kg; SAR(10 g) = 0.375 W/kg
Maximum value of SAR (measured) = 1.56 W/kg

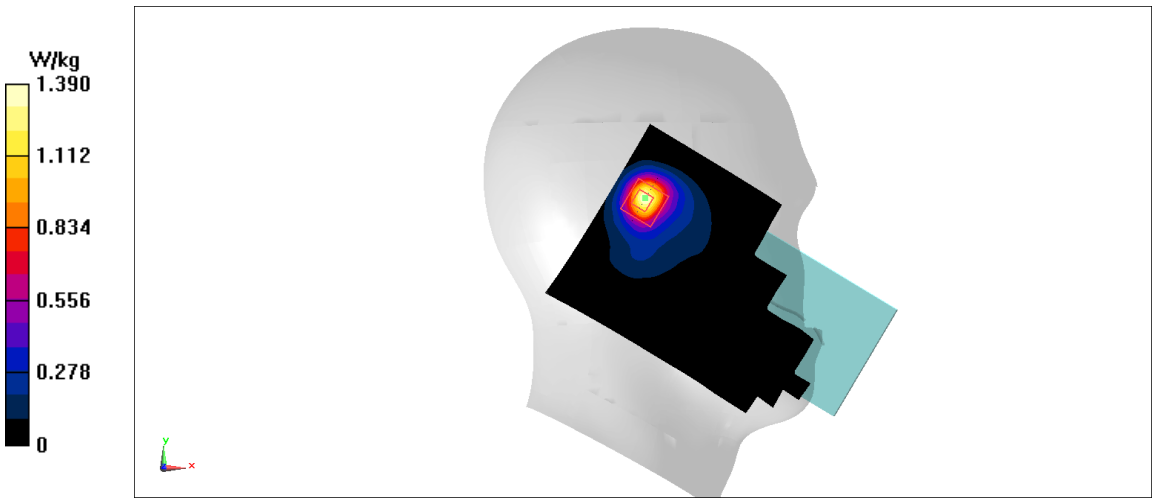


Fig I.6.25

WLAN2450_CH6 Top 10mm
Date: 1/22/2021
Electronics: DAE4 Sn536
Medium: head 2450 MHz
Medium parameters used: f = 2437 MHz; σ = 1.801 mho/m; εr = 39.24; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WLAN2450 2437 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(7.65,7.65,7.65)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.555 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.581 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.679 W/kg
SAR(1 g) = 0.327 W/kg; SAR(10 g) = 0.153 W/kg
Maximum value of SAR (measured) = 0.544 W/kg

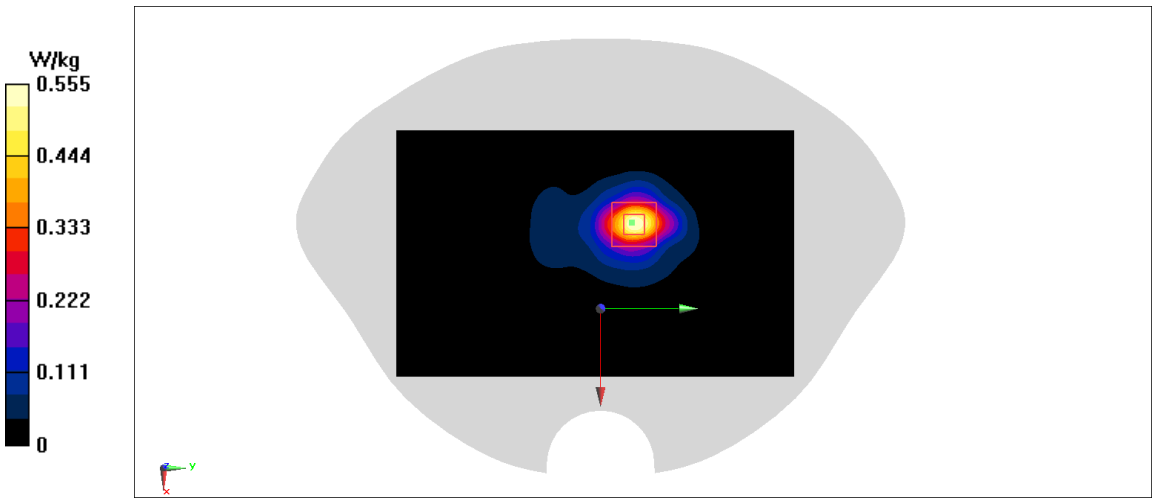


Fig I.6.26

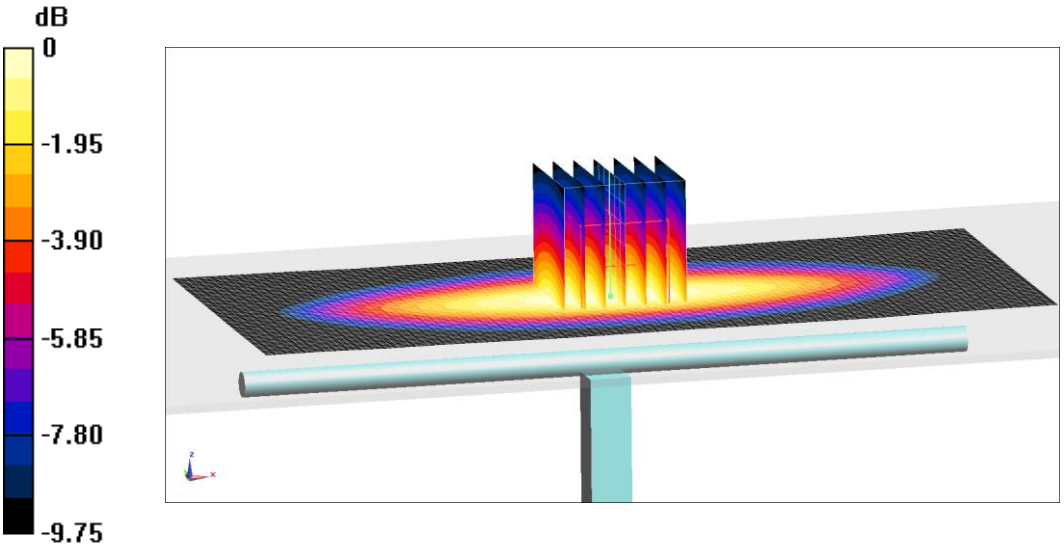
I.7 SYSTEM VALIDATION RESULTS

750 MHz

Date: 1/18/2021
Electronics: DAE4 Sn536
Medium: Head 750 MHz
Medium parameters used: f = 750 MHz; σ =0.897 mho/m; ε_r = 42.07; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC Liquid Temperature: 22.3ºC
Communication System: CW Frequency: 750 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(10.07,10.07,10.07)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 58.99 V/m; Power Drift = -0.1
Fast SAR: SAR(1 g) = 2.08 W/kg; SAR(10 g) = 1.4 W/kg
Maximum value of SAR (interpolated) = 2.81 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =58.99 V/m; Power Drift = -0.1 dB
Peak SAR (extrapolated) = 3.3 W/kg
SAR(1 g) = 2.11 W/kg; SAR(10 g) = 1.4 W/kg
Maximum value of SAR (measured) = 2.92 W/kg



0 dB = 2.92 W/kg = 4.65 dB W/kg

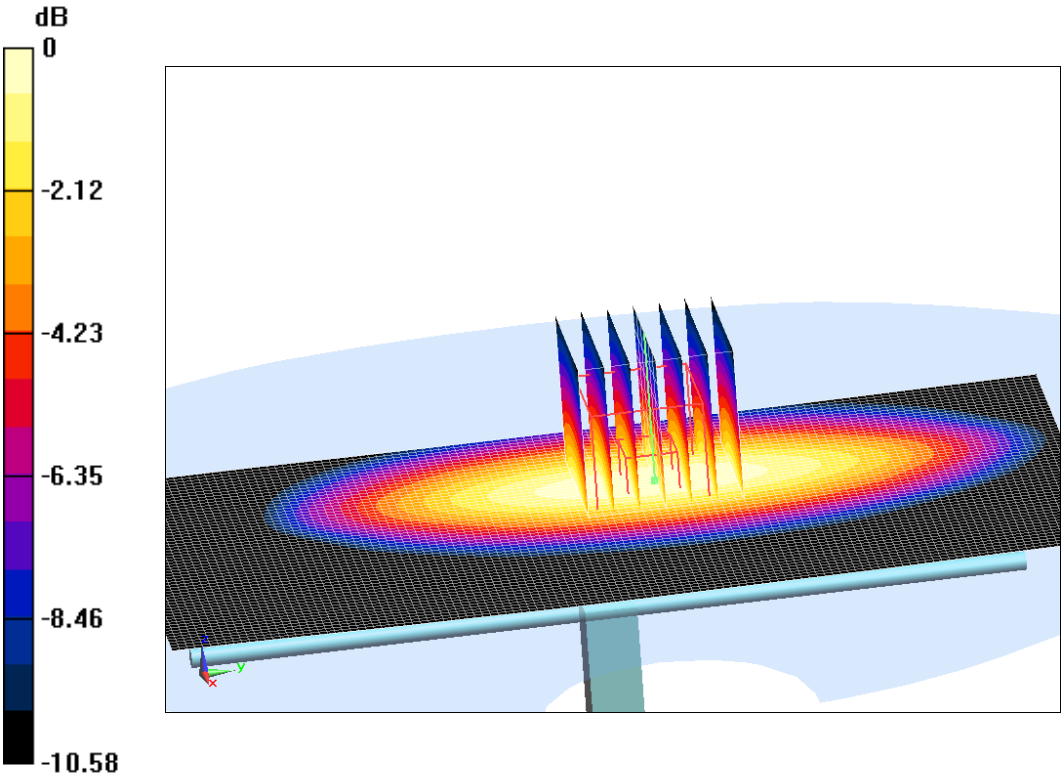
Fig.B.1 validation 750 MHz 250mW

835 MHz

Date: 1/19/2021
Electronics: DAE4 Sn536
Medium: Head 835 MHz
Medium parameters used: f = 835 MHz; σ =0.884 mho/m; ε_r = 41.45; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC Liquid Temperature: 22.3ºC
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(9.66,9.66,9.66)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 63.45 V/m; Power Drift = -0.05
Fast SAR: SAR(1 g) = 2.41 W/kg; SAR(10 g) = 1.59 W/kg
Maximum value of SAR (interpolated) = 3.2 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =63.45 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 3.7 W/kg
SAR(1 g) = 2.42 W/kg; SAR(10 g) = 1.55 W/kg
Maximum value of SAR (measured) = 3.21 W/kg



0 dB = 3.21 W/kg = 5.07 dB W/kg

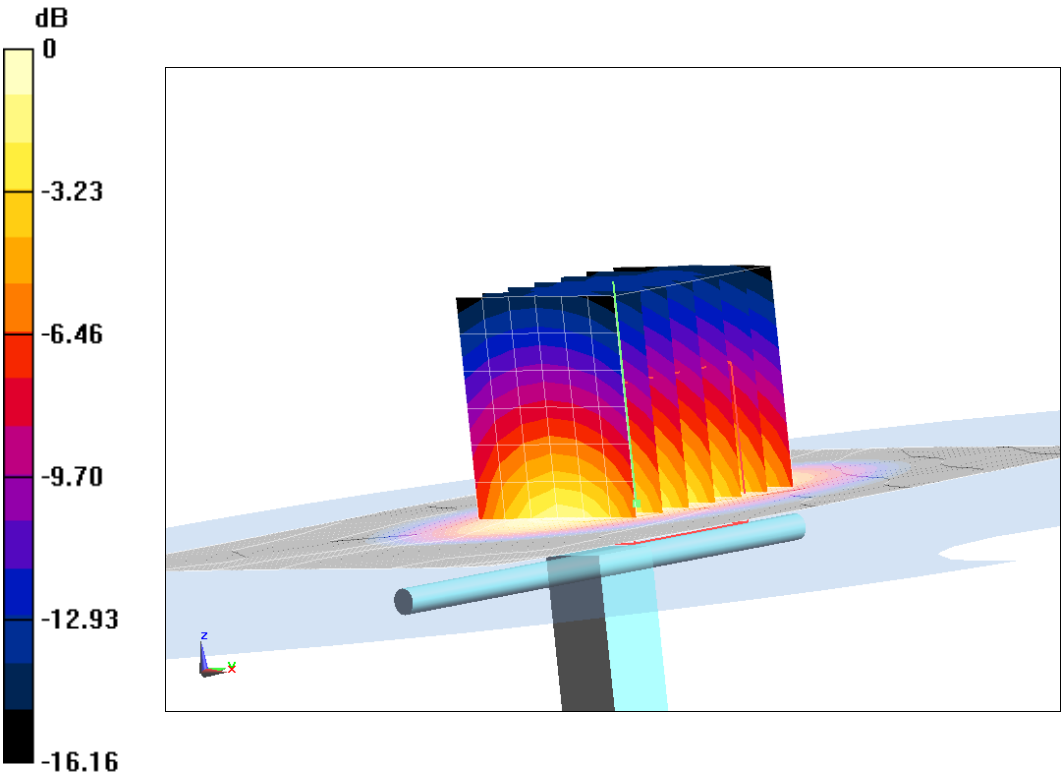
Fig.B.2 validation 835 MHz 250mW

1750 MHz

Date: 1/20/2021
Electronics: DAE4 Sn536
Medium: Head 1750 MHz
Medium parameters used: f = 1750 MHz; σ =1.374 mho/m; ε_r = 39.44; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC Liquid Temperature: 22.3ºC
Communication System: CW Frequency: 1750 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(8.41,8.41,8.41)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 105.19 V/m; Power Drift = -0.04
Fast SAR: SAR(1 g) = 9.3 W/kg; SAR(10 g) = 4.73 W/kg
Maximum value of SAR (interpolated) = 14.12 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =105.19 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 16.67 W/kg
SAR(1 g) = 9 W/kg; SAR(10 g) = 4.76 W/kg
Maximum value of SAR (measured) = 14.22 W/kg



0 dB = 14.22 W/kg = 11.53 dB W/kg

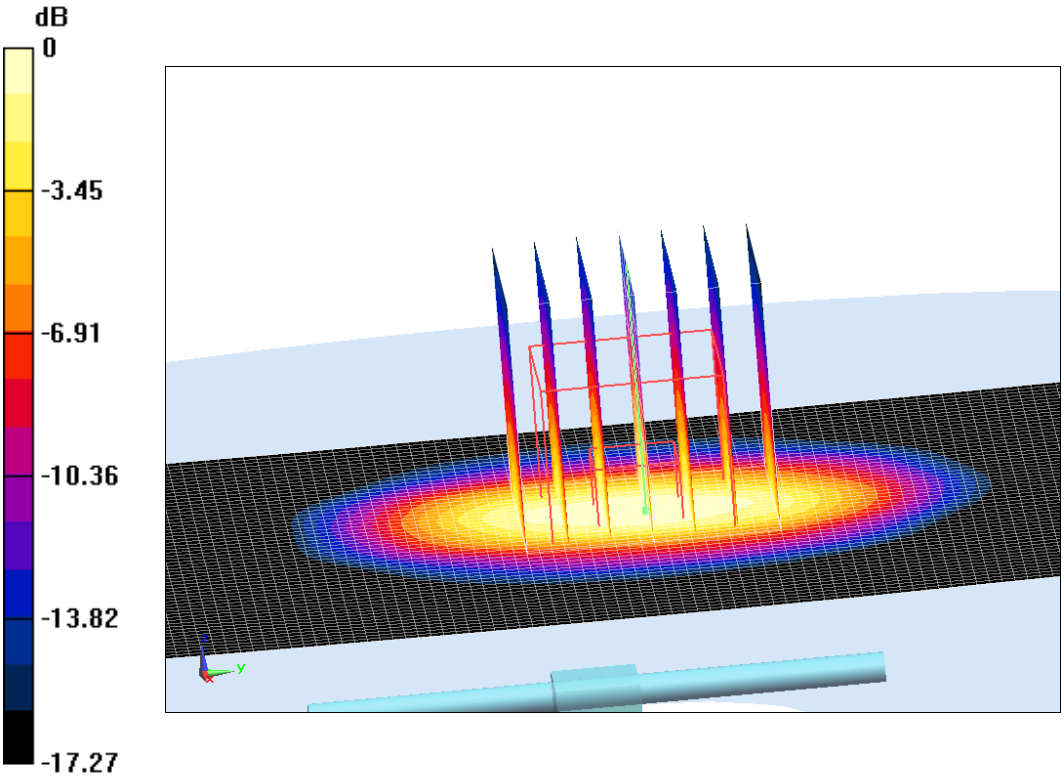
Fig.B.3 validation 1750 MHz 250mW

1900 MHz

Date: 1/21/2021
Electronics: DAE4 Sn536
Medium: Head 1900 MHz
Medium parameters used: f = 1900 MHz; σ =1.382 mho/m; ε_r = 39.33; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC Liquid Temperature: 22.3ºC
Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 110.67 V/m; Power Drift = 0.06
Fast SAR: SAR(1 g) = 9.95 W/kg; SAR(10 g) = 5.14 W/kg
Maximum value of SAR (interpolated) = 15.41 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =110.67 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 18.05 W/kg
SAR(1 g) = 9.92 W/kg; SAR(10 g) = 5.24 W/kg
Maximum value of SAR (measured) = 14.91 W/kg



0 dB = 14.91 W/kg = 11.73 dB W/kg

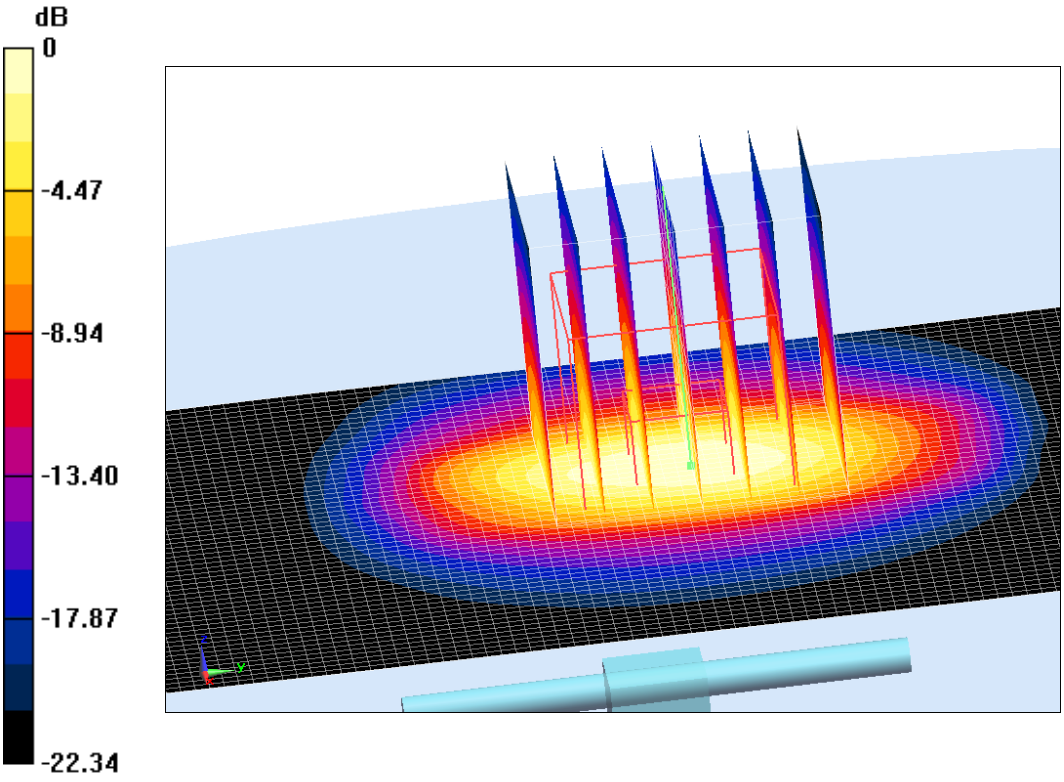
Fig.B.4 validation 1900 MHz 250mW

2450 MHz

Date: 1/22/2021
Electronics: DAE4 Sn536
Medium: Head 2450 MHz
Medium parameters used: f = 2450 MHz; σ =1.813 mho/m; ε_r = 39.22; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC Liquid Temperature: 22.3ºC
Communication System: CW Frequency: 2450 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(7.65,7.65,7.65)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 117.51 V/m; Power Drift = -0.05
Fast SAR: SAR(1 g) = 12.89 W/kg; SAR(10 g) = 6.09 W/kg
Maximum value of SAR (interpolated) = 22.09 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =117.51 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 25.93 W/kg
SAR(1 g) = 12.94 W/kg; SAR(10 g) = 6.07 W/kg
Maximum value of SAR (measured) = 21.84 W/kg



0 dB = 21.84 W/kg = 13.39 dB W/kg

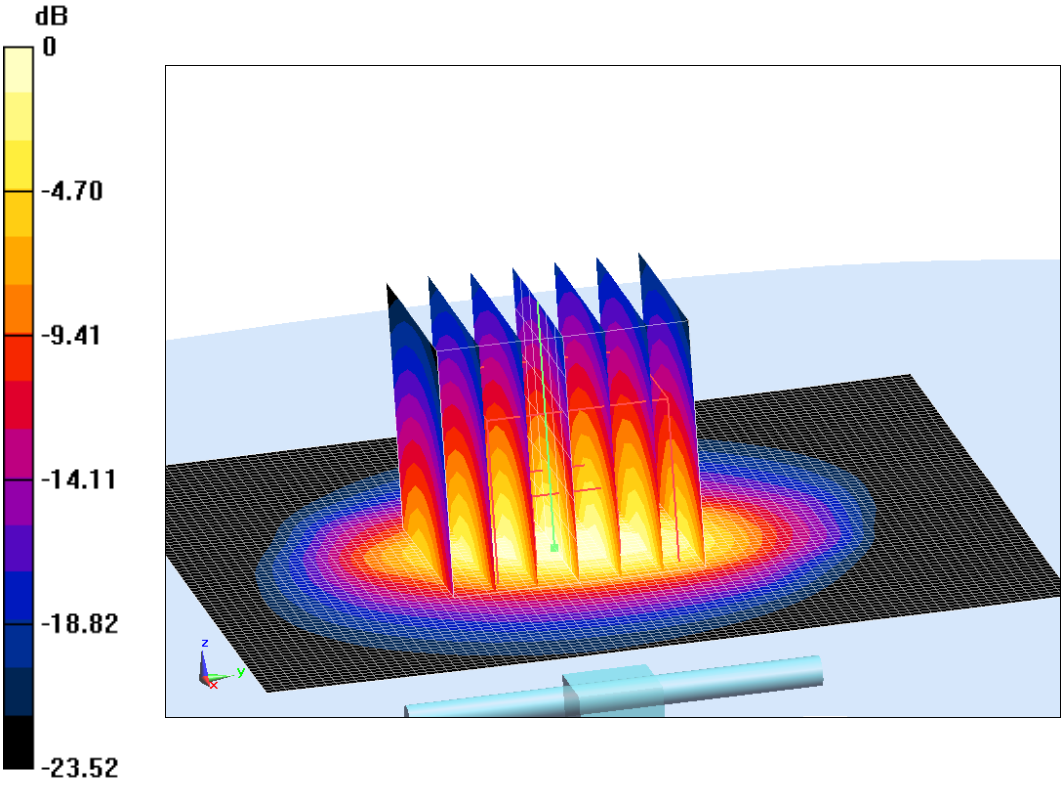
Fig.B.5 validation 2450 MHz 250mW

2600 MHz

Date: 1/23/2021
Electronics: DAE4 Sn536
Medium: Head 2600 MHz
Medium parameters used: f = 2600 MHz; σ =1.96 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC Liquid Temperature: 22.3ºC
Communication System: CW Frequency: 2600 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(7.52,7.52,7.52)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 121 V/m; Power Drift = 0.02
Fast SAR: SAR(1 g) = 14.01 W/kg; SAR(10 g) = 6.28 W/kg
Maximum value of SAR (interpolated) = 24.01 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =121 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 28.74 W/kg
SAR(1 g) = 13.97 W/kg; SAR(10 g) = 6.36 W/kg
Maximum value of SAR (measured) = 24.72 W/kg



0 dB = 24.72 W/kg = 13.93 dB W/kg

Fig.B.6 validation 2600 MHz 250mW

ANNEX J Accreditation Certificate

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 600118-0

Telecommunication Technology Labs, CAICT
Beijing
China

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Electromagnetic Compatibility & Telecommunications

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2020-09-29 through 2021-09-30
Effective Dates

For the National Voluntary Laboratory Accreditation Program