

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2117  
E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>

**Glossary:**

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORMx,y,z
N/A	not applicable or not measured

**Calibration is Performed According to the Following Standards:**

- IEC/IEEE 62209-1528, "Measurement Procedure for The Assessment of Specific Absorption Rate of Human Exposure to Radio Frequency Fields from Hand-held and Body-mounted Wireless Communication Devices- Part 1528: Human Models, Instrumentation and Procedures (Frequency range of 4 MHz to 10 GHz)", October 2020
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

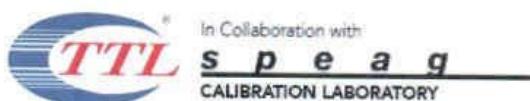
**Additional Documentation:**

- DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

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

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



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2117  
E-mail: emff@caict.ac.cn <http://www.caict.ac.cn>

### Measurement Conditions

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

DASY Version	DASY52	52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1750 MHz $\pm$ 1 MHz	

### Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	41.3 $\pm$ 6 %	1.41 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	---	---

### SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.18 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	36.3 W/kg $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	4.94 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	19.6 W/kg $\pm$ 18.7 % (k=2)



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2117  
E-mail: emf@caict.ac.cn http://www.caict.ac.cn



#### Appendix (Additional assessments outside the scope of CNAS L0570)

##### Antenna Parameters with Head TSL

Impedance, transformed to feed point	47.9Ω- 0.71jΩ
Return Loss	- 32.8dB

##### General Antenna Parameters and Design

Electrical Delay (one direction)	1.120 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point 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 feed-point may be damaged.

##### Additional EUT Data

Manufactured by	SPEAG
-----------------	-------

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2117  
E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>

**DASY5 Validation Report for Head TSL**

Date: 2022-08-22

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1152**

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1750$  MHz;  $\sigma = 1.408$  S/m;  $\epsilon_r = 41.28$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7464; ConvF(8.52, 8.52, 8.52) @ 1750 MHz; Calibrated: 2022-01-26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2022-01-12
- Phantom: MFP\_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

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

Reference Value = 91.44 V/m; Power Drift = -0.05 dB

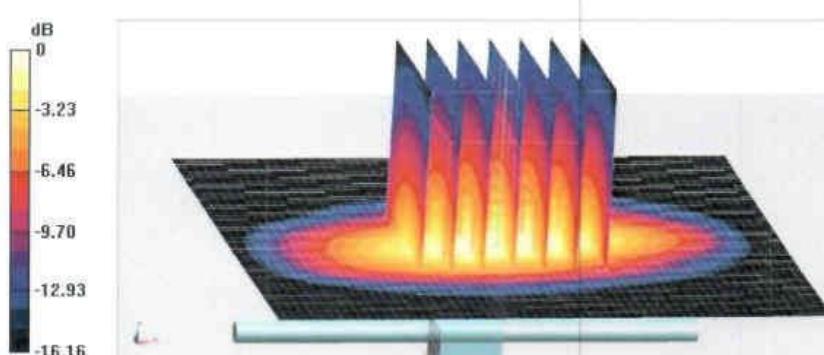
Peak SAR (extrapolated) = 16.5 W/kg

**SAR(1 g) = 9.18 W/kg; SAR(10 g) = 4.94 W/kg**

Smallest distance from peaks to all points 3 dB below = 10 mm

Ratio of SAR at M2 to SAR at M1 = 56.3%

Maximum value of SAR (measured) = 14.0 W/kg

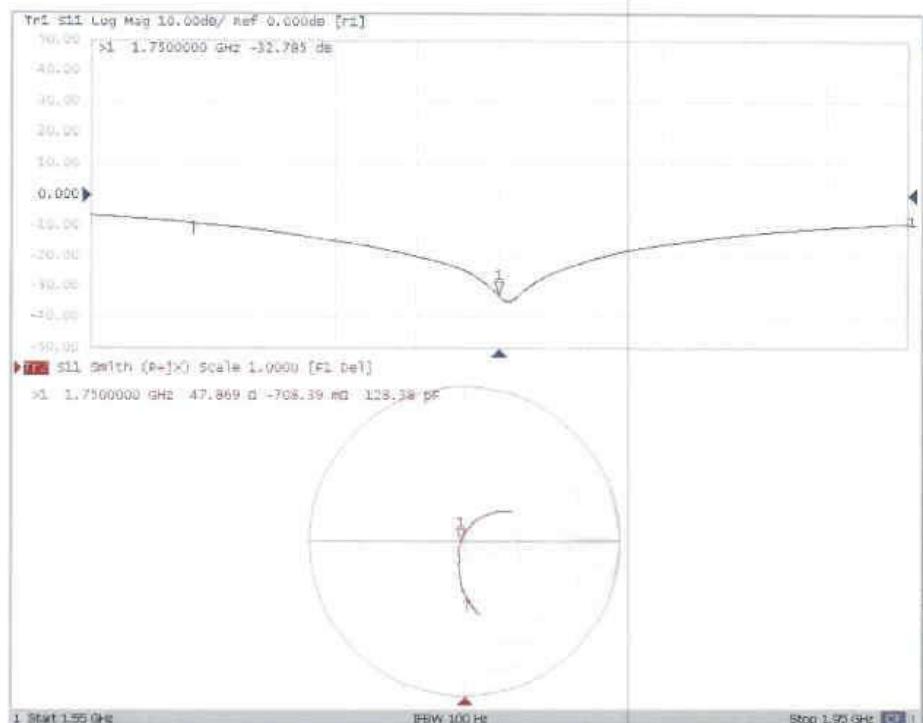
**0 dB = 14.0 W/kg = 11.46 dBW/kg**

Certificate No: Z22-60335

Page 5 of 6

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2117  
E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>

### Impedance Measurement Plot for Head TSL





No.I22N01613-SAR

## 1900MHz Dipole

In Collaboration with  
**s p e a g**  
CALIBRATION LABORATORYAdd: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504  
E-mail: ctll@chinattl.com http://www.chinattl.cn中国认可  
国际互认  
校准  
CALIBRATION  
CNAS L0570

Client      SAICT

Certificate No: Z21-60357

## CALIBRATION CERTIFICATE

Object      D1900V2 - SN: 5d088

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

Calibration date:      October 18, 2021

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

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

## Calibration Equipment used (M&amp;TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106277	24-Sep-21 (CTTL, No.J21X08326)	Sep-22
Power sensor NRP8S	104291	24-Sep-21 (CTTL, No.J21X08326)	Sep-22
Reference Probe EX3DV4	SN 7517	03-Feb-21(CTTL-SPEAG, No.Z21-60001)	Feb-22
DAE4	SN 1556	15-Jan-21(SPEAG, No.DAE4-1556_Jan21)	Jan-22
Secondary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	01-Feb-21 (CTTL, No.J21X00593)	Jan-22
NetworkAnalyzer E5071C	MY46110673	14-Jan-21 (CTTL, No.J21X00232)	Jan-22

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

Issued: October 24, 2021

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

Certificate No: Z21-60357

Page 1 of 6



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504  
E-mail: [cttl@chinattl.com](mailto:cttl@chinattl.com) <http://www.chinattl.com>

**lossary:**

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORMx,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 assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- c) IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- d) KDB865664, 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%.



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504  
E-mail: ctll@chinatll.com http://www.chinatll.cn

#### Measurement Conditions

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

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

#### Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.9 ± 6 %	1.39 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	---	---

#### SAR result with Head TSL

SAR averaged over 1 $cm^3$ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	10.0 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	40.2 W/kg ± 18.8 % (k=2)
SAR averaged over 10 $cm^3$ (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	5.10 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	20.5 W/kg ± 18.7 % (k=2)



No.I22N01613-SAR



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504  
E-mail: ttl@chinattl.com http://www.chinattl.cn

#### Appendix (Additional assessments outside the scope of CNAS L0570)

##### Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.7Ω+ 6.80jΩ
Return Loss	- 22.6dB

##### General Antenna Parameters and Design

Electrical Delay (one direction)	1.110 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
-----------------	-------

Certificate No: Z21-60357

Page 4 of 6



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504  
E-mail: ctll@chinattl.com http://www.chinattl.cn

**DASY5 Validation Report for Head TSL**

Date: 10.18.2021

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d088**

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.387$  S/m;  $c_r = 39.88$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7517; ConvF(7.81, 7.81, 7.81) @ 1900 MHz; Calibrated: 2021-02-03
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2021-01-15
- Phantom: MFP\_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

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

Reference Value = 103.6 V/m; Power Drift = 0.00 dB

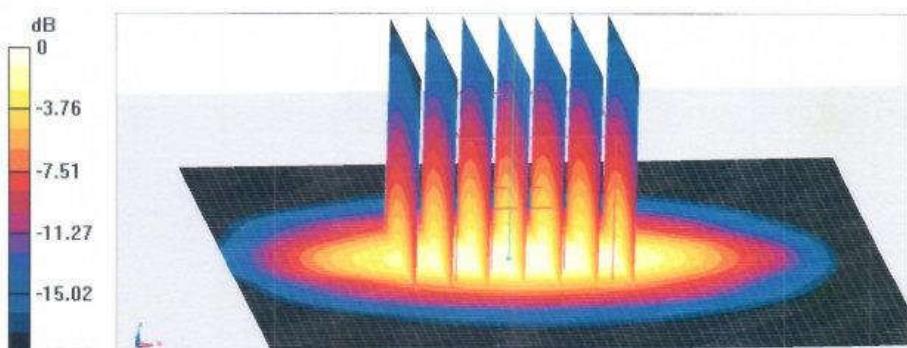
Peak SAR (extrapolated) = 19.2 W/kg

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

Smallest distance from peaks to all points 3 dB below = 10 mm

Ratio of SAR at M2 to SAR at M1 = 52.1%

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



0 dB = 15.8 W/kg = 11.99 dBW/kg

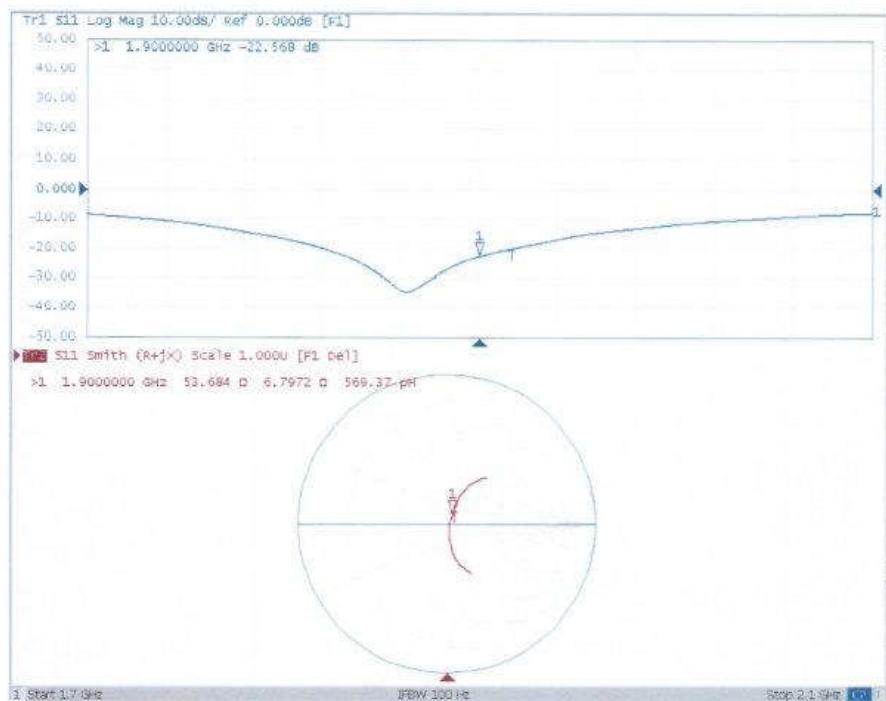
Certificate No: Z21-60357

Page 5 of 6



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504  
E-mail: [cttl@chinattl.com](mailto:cttl@chinattl.com) <http://www.chinattl.cn>

### Impedance Measurement Plot for Head TSL





No.I22N01613-SAR

## 2450MHz Dipole

In Collaboration with  
**s p e a g**  
CALIBRATION LABORATORYAdd: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, Chi  
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504  
E-mail: ctll@chinattl.com http://www.chinattl.cn中国认可  
国际互认  
校准  
CALIBRATION  
CNAS L0570

Client

SAICT

Certificate No: Z21-60358

## CALIBRATION CERTIFICATE

Object D2450V2 - SN: 873

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

Calibration date: October 21, 2021

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

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

Calibration Equipment used (M&amp;TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106277	24-Sep-21 (CTTL, No.J21X08326)	Sep-22
Power sensor NRP8S	104291	24-Sep-21 (CTTL, No.J21X08326)	Sep-22
Reference Probe EX3DV4	SN 7517	03-Feb-21(CTTL-SPEAG, No.Z21-60001)	Feb-22
DAE4	SN 1556	15-Jan-21(SPEAG, No.DAE4-1556_Jan21)	Jan-22
Secondary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	01-Feb-21 (CTTL, No.J21X00593)	Jan-22
NetworkAnalyzer E5071C	MY46110673	14-Jan-21 (CTTL, No.J21X00232)	Jan-22

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

Issued: October 27, 2021

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

Certificate No: Z21-60358

Page 1 of 6



In Collaboration with  
**s p e a g**  
CALIBRATION LABORATORY

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504  
E-mail: [cttl@chinattl.com](mailto:cttl@chinattl.com) <http://www.chinattl.cn>

**Glossary:**

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORMx,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 assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- c) IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- d) KDB865664, 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%.



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504  
E-mail: [cttl@chinattl.com](mailto:cttl@chinattl.com) <http://www.chinattl.cn>

#### Measurement Conditions

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

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz $\pm$ 1 MHz	

#### Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	39.5 $\pm$ 6 %	1.81 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	---	---

#### SAR result with Head TSL

SAR averaged over 1 $cm^3$ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.3 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	53.2 W/kg $\pm$ 18.8 % (k=2)
SAR averaged over 10 $cm^3$ (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	8.05 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.2 W/kg $\pm$ 18.7 % (k=2)



No.I22N01613-SAR



In Collaboration with  
**s p e a g**  
CALIBRATION LABORATORY

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504  
E-mail: [cttl@chinattl.com](mailto:cttl@chinattl.com) http://www.chinattl.cn

#### Appendix (Additional assessments outside the scope of CNAS L0570)

##### Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.6Ω+ 1.26jΩ
Return Loss	- 28.8dB

##### General Antenna Parameters and Design

Electrical Delay (one direction)	1.066 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
-----------------	-------



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504  
E-mail: ctll@chinattl.com http://www.chinattl.cn

**DASY5 Validation Report for Head TSL**

Date: 10.21.2021

Test Laboratory: CTTL, Beijing, China

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

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

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.809$  S/m;  $\epsilon_r = 39.51$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7517; ConvF(7.34, 7.34, 7.34) @ 2450 MHz; Calibrated: 2021-02-03
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2021-01-15
- Phantom: MFP\_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

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

Reference Value = 108.0 V/m; Power Drift = -0.03 dB

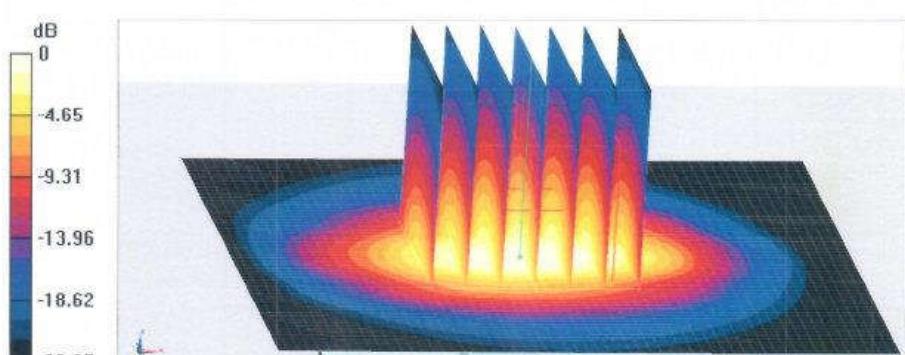
Peak SAR (extrapolated) = 28.0 W/kg

**SAR(1 g) = 13.3 W/kg; SAR(10 g) = 6.05 W/kg**

Smallest distance from peaks to all points 3 dB below = 9.2 mm

Ratio of SAR at M2 to SAR at M1 = 46.9%

Maximum value of SAR (measured) = 22.6 W/kg



0 dB = 22.6 W/kg = 13.54 dBW/kg

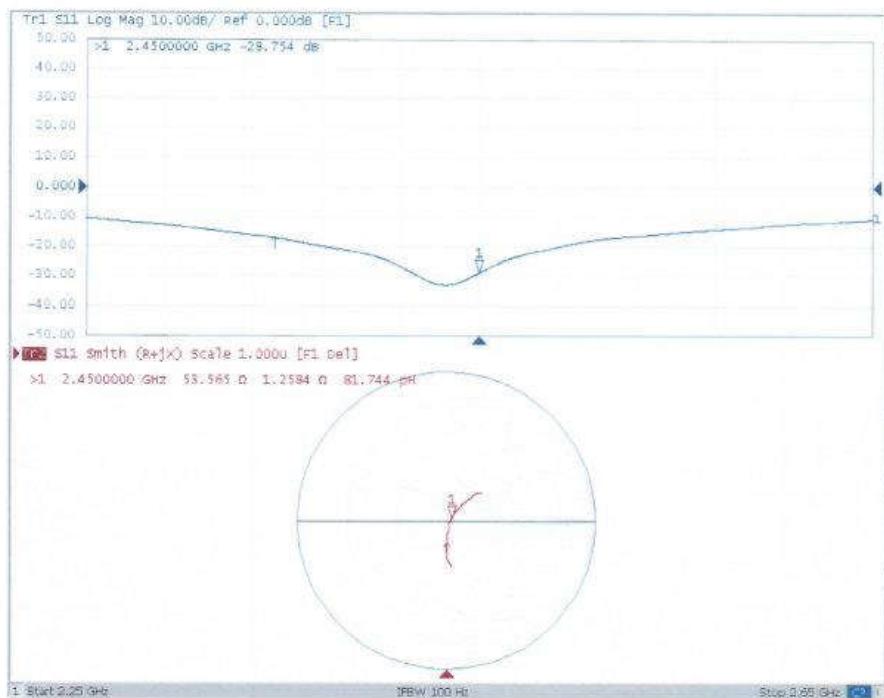
Certificate No: Z21-60358

Page 5 of 6



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504  
E-mail: ctll@chinattl.com http://www.chinattl.cn

### Impedance Measurement Plot for Head TSL



Certificate No: Z21-60358

Page 6 of 6

## 2550MHz Dipole

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 TMC-SZ (Auden)

Certificate No: D2550V2-1010\_May21

## CALIBRATION CERTIFICATE

Object	D2550V2 - SN:1010		
Calibration procedure(s)	QA CAL-05.v11 Calibration Procedure for SAR Validation Sources between 0.7-3 GHz		
Calibration date:	May 21, 2021		
This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.			
All calibrations have been conducted in the closed laboratory facility: environment temperature $(22 \pm 3)^\circ\text{C}$ and humidity $< 70\%$ .			
Calibration Equipment used (M&TE critical for calibration)			
Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	09-Apr-21 (No. 217-03291/03292)	Apr-22
Power sensor NRP-Z91	SN: 103244	09-Apr-21 (No. 217-03291)	Apr-22
Power sensor NRP-Z91	SN: 103245	09-Apr-21 (No. 217-03292)	Apr-22
Reference 20 dB Attenuator	SN: BH9394 (20k)	09-Apr-21 (No. 217-03343)	Apr-22
Type-N mismatch combination	SN: 310982 / 06327	09-Apr-21 (No. 217-03344)	Apr-22
Reference Probe EX3DV4	SN: 7349	28-Dec-20 (No. EX3-7349, Dec20)	Dec-21
DAE4	SN: 601	02-Nov-20 (No. DAE4-601, Nov20)	Nov-21
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Oct-20)	In house check: Oct-22
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-20)	In house check: Oct-22
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-20)	In house check: Oct-22
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-20)	In house check: Oct-22
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-20)	In house check: Oct-21
Calibrated by:	Name Jeffrey Katzman	Function Laboratory Technician	Signature 
Approved by:	Katja Pokovic	Technical Manager	
Issued: May 21, 2021			
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			

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



**S** Schweizerischer Kalibrierdienst  
**S** Service suisse d'étalonnage  
**C** 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

#### 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	2550 MHz $\pm$ 1 MHz	

### Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.1	1.91 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	37.4 $\pm$ 6 %	1.99 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	---	---

### SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.4 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	55.9 W/kg $\pm$ 17.0 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.42 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	25.2 W/kg $\pm$ 16.5 % (k=2)

### Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.6	2.09 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	50.8 $\pm$ 6 %	2.16 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	---	---

### SAR result with Body TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL	Condition	
SAR measured	250 mW Input power	13.4 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	52.4 W/kg $\pm$ 17.0 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	condition	
SAR measured	250 mW Input power	6.04 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	23.8 W/kg $\pm$ 16.5 % (k=2)

**Appendix (Additional assessments outside the scope of SCS 0108)****Antenna Parameters with Head TSL**

Impedance, transformed to feed point	52.6 $\Omega$ - 3.8 $j\Omega$
Return Loss	- 26.8 dB

**Antenna Parameters with Body TSL**

Impedance, transformed to feed point	49.3 $\Omega$ - 1.8 $j\Omega$
Return Loss	- 34.3 dB

**General Antenna Parameters and Design**

Electrical Delay (one direction)	1.153 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: 21.05.2021

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 2550 MHz; Type: D2550V2; Serial: D2550V2 - SN:1010**

Communication System: UID 0 - CW; Frequency: 2550 MHz

Medium parameters used:  $f = 2550$  MHz;  $\sigma = 1.99$  S/m;  $\epsilon_r = 37.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.85, 7.85, 7.85) @ 2550 MHz; Calibrated: 28.12.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.11.2020
- 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 = 119.0 V/m; Power Drift = 0.05 dB

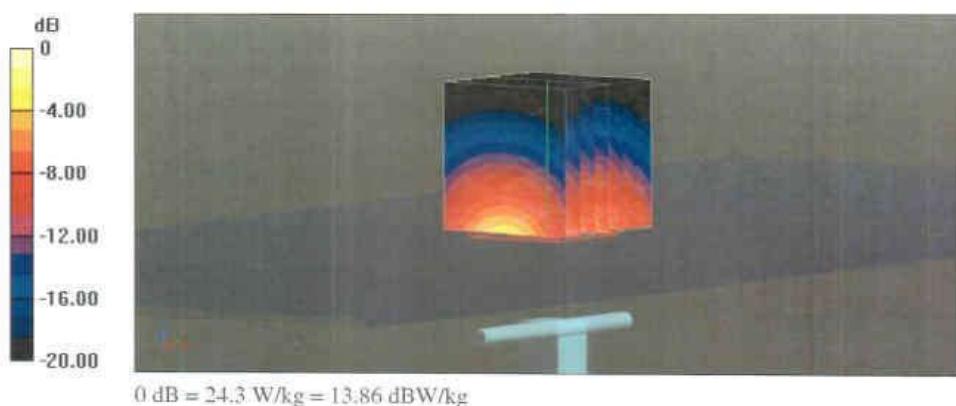
Peak SAR (extrapolated) = 29.6 W/kg

**SAR(1 g) = 14.4 W/kg; SAR(10 g) = 6.42 W/kg**

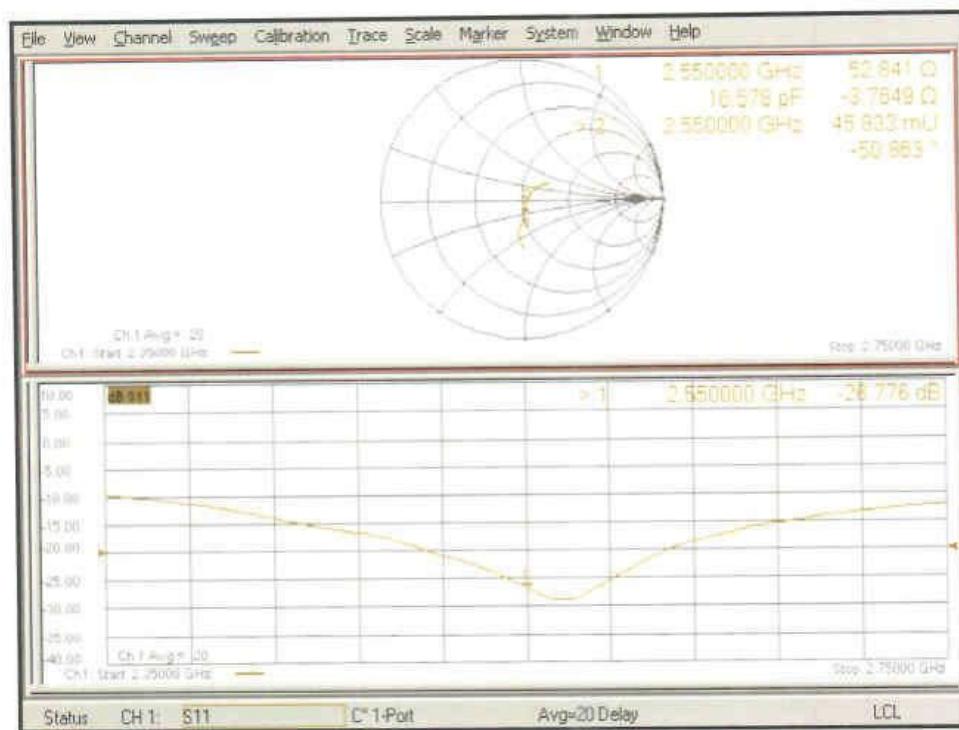
Smallest distance from peaks to all points 3 dB below = 8.9 mm

Ratio of SAR at M2 to SAR at M1 = 48.2%

Maximum value of SAR (measured) = 24.3 W/kg



## Impedance Measurement Plot for Head TSL



**DASY5 Validation Report for Body TSL**

Date: 21.05.2021

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 2550 MHz; Type: D2550V2; Serial: D2550V2 - SN:1010**

Communication System: UID 0 - CW; Frequency: 2550 MHz

Medium parameters used:  $f = 2550$  MHz;  $\sigma = 2.16$  S/m;  $\epsilon_r = 50.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.98, 7.98, 7.98) @ 2550 MHz; Calibrated: 28.12.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.11.2020
- 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 = 110.2 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 26.1 W/kg

SAR(1 g) = 13.4 W/kg; SAR(10 g) = 6.04 W/kg

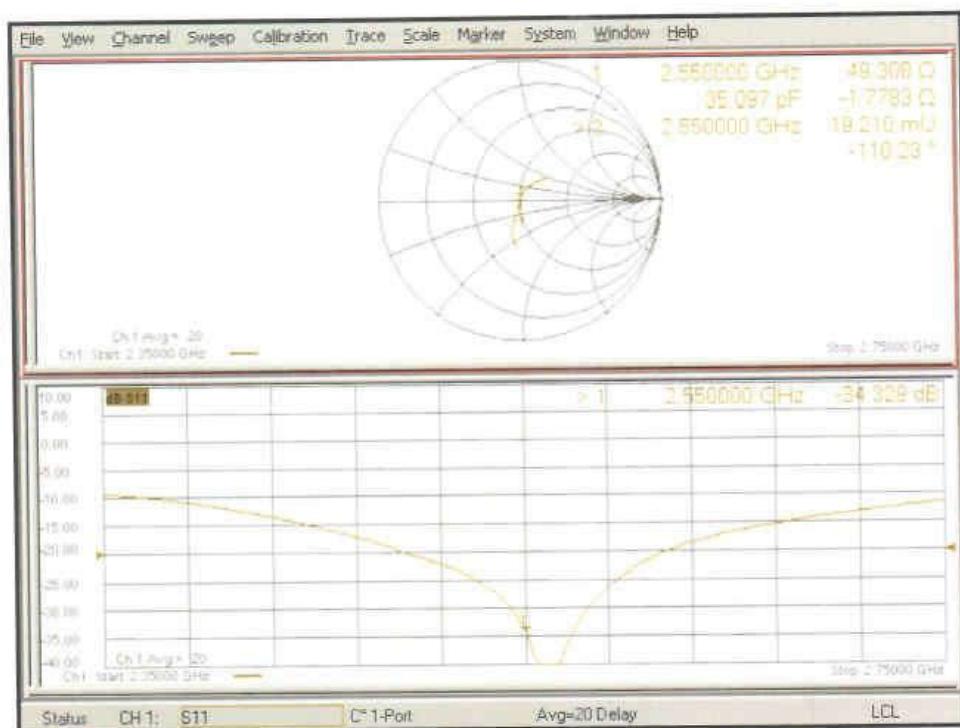
Smallest distance from peaks to all points 3 dB below = 8 mm

Ratio of SAR at M2 to SAR at M1 = 51.9%

Maximum value of SAR (measured) = 22.1 W/kg



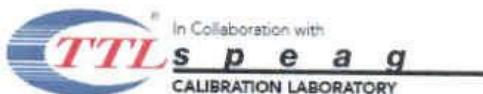
## Impedance Measurement Plot for Body TSL





No.I22N01613-SAR

## 5GHz Dipole



Add: No.52 HuYuanBei Road, Haidian District, Beijing, 100191  
Tel: +86-10-62304633-2117  
E-mail: emif@caict.ac.cn http://www.caict.ac.cn



中国认可  
国际互认  
校准  
CALIBRATION  
CNAS L0570

Client SAICT

Certificate No: Z22-60336

## CALIBRATION CERTIFICATE

Object D5GHzV2 - SN: 1238

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

Calibration date: August 17, 2022

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&amp;TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106277	24-Sep-21 (CTTL, No.J21X08326)	Sep-22
Power sensor NRP8S	104291	24-Sep-21 (CTTL, No.J21X08326)	Sep-22
Reference Probe EX3DV4	SN 7464	26-Jan-22(SPEAG, No.EX3-7464_Jan22)	Jan-23
DAE4	SN 1556	12-Jan-22(CTTL-SPEAG, No.Z22-60007)	Jan-23
Secondary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	13-Jan-22 (CTTL, No. J22X00409)	Jan-23
Network Analyzer E5071C	MY46110673	14-Jan-22 (CTTL, No.J22X00406)	Jan-23

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

Issued: August 23, 2022

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

Certificate No: Z22-60336

Page 1 of 8



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2117  
E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>

**Glossary:**

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORMx,y,z
N/A	not applicable or not measured

**Calibration is Performed According to the Following Standards:**

- IEC/IEEE 62209-1528, "Measurement Procedure for The Assessment of Specific Absorption Rate of Human Exposure to Radio Frequency Fields from Hand-held and Body-mounted Wireless Communication Devices- Part 1528: Human Models, Instrumentation and Procedures (Frequency range of 4 MHz to 10 GHz)", October 2020
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

- DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

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

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

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2117  
E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>

### Measurement Conditions

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

DASY Version	DASY52	
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	$dx, dy = 4 \text{ mm}, dz = 1.4 \text{ mm}$	Graded Ratio = 1.4 (Z direction)
Frequency	5250 MHz $\pm 1 \text{ MHz}$ 5600 MHz $\pm 1 \text{ MHz}$ 5750 MHz $\pm 1 \text{ MHz}$	

### Head TSL parameters at 5250MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.9	4.71 mho/m
Measured Head TSL parameters	(22.0 $\pm 0.2$ ) °C	36.3 $\pm 6$ %	4.64 mho/m $\pm 6$ %
Head TSL temperature change during test	<1.0 °C	---	---

### SAR result with Head TSL at 5250MHz

SAR averaged over 1 $\text{cm}^3$ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.95 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	79.7 W/kg $\pm 24.4$ % (k=2)
SAR averaged over 10 $\text{cm}^3$ (10 g) of Head TSL	Condition	
SAR measured	100 mW input power	2.27 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	22.8 W/kg $\pm 24.2$ % (k=2)

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2117  
E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>

### Head TSL parameters at 5600MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Head TSL parameters</b>	22.0 °C	35.5	5.07 mho/m
<b>Measured Head TSL parameters</b>	(22.0 ± 0.2) °C	35.2 ± 6 %	5.01 mho/m ± 6 %
<b>Head TSL temperature change during test</b>	<1.0 °C	—	—

### SAR result with Head TSL at 5600MHz

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.28 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	82.6 W/kg ± 24.4 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	Condition	
SAR measured	100 mW input power	2.37 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.6 W/kg ± 24.2 % (k=2)

### Head TSL parameters at 5750MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Head TSL parameters</b>	22.0 °C	35.4	5.22 mho/m
<b>Measured Head TSL parameters</b>	(22.0 ± 0.2) °C	35.0 ± 6 %	5.18 mho/m ± 6 %
<b>Head TSL temperature change during test</b>	<1.0 °C	—	—

### SAR result with Head TSL at 5750MHz

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.87 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	78.5 W/kg ± 24.4 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	Condition	
SAR measured	100 mW input power	2.22 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	22.1 W/kg ± 24.2 % (k=2)



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2117  
E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>



#### Appendix (Additional assessments outside the scope of CNAS L0570)

##### Antenna Parameters with Head TSL at 5250MHz

Impedance, transformed to feed point	48.4Ω- 3.36jΩ
Return Loss	- 28.5dB

##### Antenna Parameters with Head TSL at 5600MHz

Impedance, transformed to feed point	50.8Ω+ 2.69jΩ
Return Loss	- 31.1dB

##### Antenna Parameters with Head TSL at 5750MHz

Impedance, transformed to feed point	53.5Ω+ 2.34jΩ
Return Loss	- 27.9dB

##### General Antenna Parameters and Design

Electrical Delay (one direction)	1.098 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point 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 feed-point may be damaged.

##### Additional EUT Data

Manufactured by	SPEAG
-----------------	-------

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2117  
E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>

**DASY5 Validation Report for Head TSL**

Date: 2022-08-17

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1238**

Communication System: CW; Frequency: 5250 MHz, Frequency: 5600 MHz,

Frequency: 5750 MHz Duty Cycle: 1:1

Medium parameters used:  $f = 5250$  MHz;  $\sigma = 4.643$  S/m;  $\epsilon_r = 36.34$ ;  $\rho = 1000$  kg/m<sup>3</sup>Medium parameters used:  $f = 5600$  MHz;  $\sigma = 5.006$  S/m;  $\epsilon_r = 35.17$ ;  $\rho = 1000$  kg/m<sup>3</sup>Medium parameters used:  $f = 5750$  MHz;  $\sigma = 5.18$  S/m;  $\epsilon_r = 34.96$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

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

DASY5 Configuration:

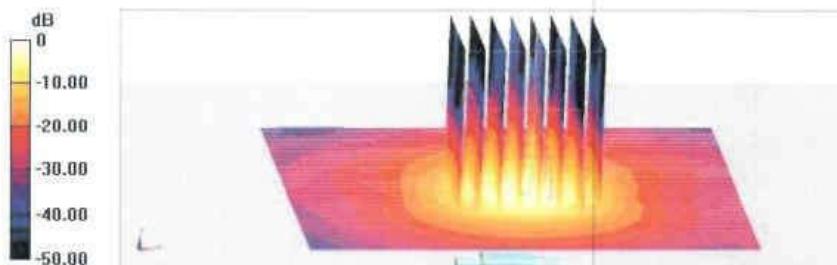
- Probe: EX3DV4 - SN7464; ConvF(5.43, 5.43, 5.43) @ 5250 MHz;  
ConvF(4.91, 4.91, 4.91) @ 5600 MHz; ConvF(4.85, 4.85, 4.85) @ 5750  
MHz; Calibrated: 2022-01-26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2022-01-12
- Phantom: MFP\_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial:  
1062
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

**Dipole Calibration /Pin=100mW, d=10mm, f=5250 MHz/Zoom Scan,  
dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
Reference Value = 67.66 V/m; Power Drift = -0.08 dB  
Peak SAR (extrapolated) = 31.9 W/kg  
**SAR(1 g) = 7.95 W/kg; SAR(10 g) = 2.27 W/kg**  
Smallest distance from peaks to all points 3 dB below = 7.2 mm  
Ratio of SAR at M2 to SAR at M1 = 65.1%  
Maximum value of SAR (measured) = 18.8 W/kg

**Dipole Calibration /Pin=100mW, d=10mm, f=5600 MHz/Zoom Scan,  
dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
Reference Value = 68.44 V/m; Power Drift = -0.08 dB  
Peak SAR (extrapolated) = 35.2 W/kg  
**SAR(1 g) = 8.28 W/kg; SAR(10 g) = 2.37 W/kg**  
Smallest distance from peaks to all points 3 dB below = 7.2 mm  
Ratio of SAR at M2 to SAR at M1 = 63.5%  
Maximum value of SAR (measured) = 20.1 W/kg

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2117  
E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>

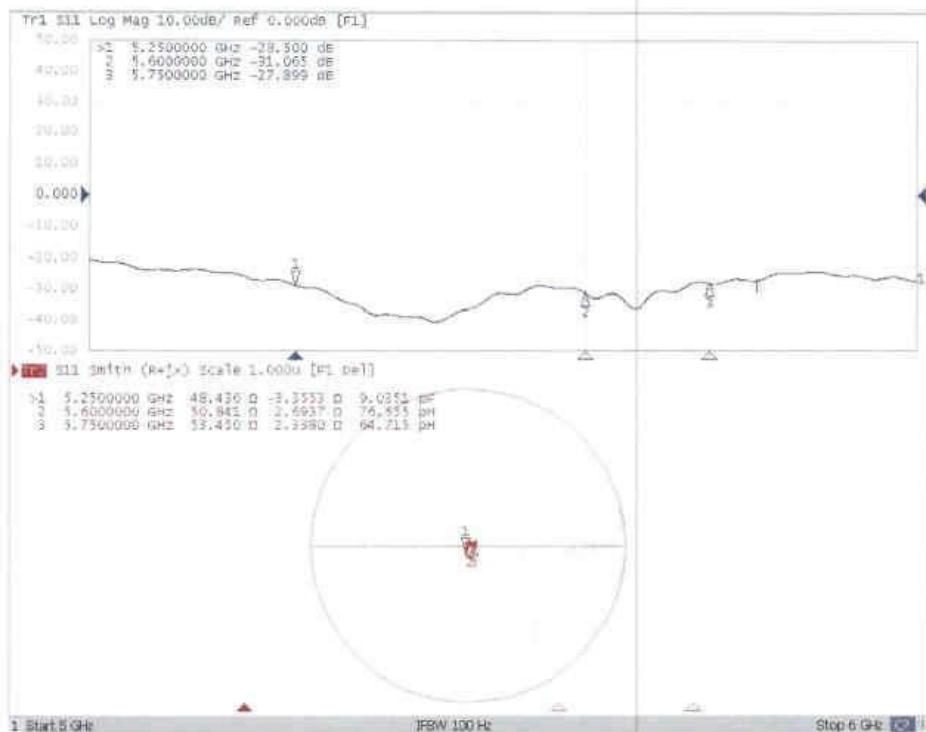
**Dipole Calibration /Pin=100mW, d=10mm, f=5750 MHz/Zoom Scan,  
dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
Reference Value = 65.17 V/m; Power Drift = -0.09 dB  
Peak SAR (extrapolated) = 35.8 W/kg  
**SAR(1 g) = 7.87 W/kg; SAR(10 g) = 2.22 W/kg**  
Smallest distance from peaks to all points 3 dB below = 7.4 mm  
Ratio of SAR at M2 to SAR at M1 = 61.3%  
Maximum value of SAR (measured) = 19.4 W/kg



0 dB = 19.4 W/kg = 12.88 dBW/kg

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2117  
E-mail: emf@caict.ac.cn <http://www.caict.ac.cn>

### Impedance Measurement Plot for Head TSL



## ANNEX J: Extended Calibration SAR Dipole

Referring to KDB865664 D01, if dipoles are verified in return loss (<-20dBm, within 20% of prior calibration), and in impedance (within 5 ohm of prior calibration), the annual calibration is not necessary and the calibration interval can be extended.

Justification of Extended Calibration SAR Dipole D2550V2– serial no.1010

Head						
Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (johm)	Delta (johm)
2021-05-21	-26.8	/	52.8	/	-3.80	/
2022-05-20	-26.3	1.9	53.6	0.8	-3.64	0.16

The Return-Loss is <-20dB, and within 20% of prior calibration; the impedance is within 5 ohm of prior calibration. Therefore the value result should support extended calibration.

## ANNEX K: Spot Check Test

As the test lab for T507A from TCL Communication Ltd., we, Shenzhen Academy of Information and Communications Technology, declare on our sole responsibility that, according to "Justification Letter" provided by applicant, only the Spot check test should be performed. The test results are as below.

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

EUT ID*	IMEI	HW Version	SW Version	Receipt Date
UT06aa	353756620004036	V01	vVK52	2022-08-31

### K.2. Measurement results

#### GSM850 SAR Values

Frequency		Test Position		Conducted Power (dBm)	Max. tune-up Power (dBm)	SAR(1g) (W/kg)						
Ch.	MHz					Spot check data		Original data				
						Measured SAR	Reported SAR					
251	848.8	Head	Right Cheek	32.45	34.0	0.574	<b>0.82</b>	<b>1.23</b>				
128	824.2	Body	Rear	28.70	29.5	0.225	<b>0.27</b>	<b>0.16</b>				

#### GSM1900 SAR Values

Frequency		Test Position		Conducted Power (dBm)	Max. tune-up Power (dBm)	SAR(1g) (W/kg)						
Ch.	MHz					Spot check data		Original data				
						Measured SAR	Reported SAR					
661	1880.0	Head	Right Cheek	29.79	31.0	0.072	<b>0.10</b>	<b>0.13</b>				
810	1909.8	Body	Bottom	30.27	31.5	0.565	<b>0.75</b>	<b>0.98</b>				

#### WCDMA Band 2 SAR Values

Frequency		Test Position		Conducted Power (dBm)	Max. tune-up Power (dBm)	SAR(1g) (W/kg)						
Ch.	MHz					Spot check data		Original data				
						Measured SAR	Reported SAR					
9400	1880.0	Head	Right Cheek	23.00	23.5	0.169	<b>0.19</b>	<b>0.18</b>				
9262	1852.4	Body	Bottom	22.20	22.5	1.080	<b>1.16</b>	<b>1.19</b>				

#### WCDMA Band 4 SAR Values

Frequency		Test Position		Conducted Power (dBm)	Max. tune-up Power (dBm)	SAR(1g) (W/kg)						
Ch.	MHz					Spot check data		Original data				
						Measured SAR	Reported SAR					
1413	1732.6	Head	Right Cheek	23.10	23.5	0.137	<b>0.15</b>	<b>0.15</b>				
1513	1752.6	Body	Bottom	21.40	22.0	0.962	<b>1.10</b>	<b>1.18</b>				

**WCDMA Band 5 SAR Values**

Frequency		Test Position		Conducted Power (dBm)	Max. tune-up Power (dBm)	SAR(1g) (W/kg)						
Ch.	MHz					Spot check data		Original data				
						Measured SAR	Reported SAR					
4132	826.4	Head	Right Cheek	23.30	24.0	0.479	<b>0.56</b>	<b>1.08</b>				
4183	836.6	Body	Rear	23.30	24.0	0.231	<b>0.27</b>	<b>0.32</b>				

**LTE Band 2 SAR Values**

Frequency		Test Position		Conducted Power (dBm)	Max. tune-up Power (dBm)	SAR(1g) (W/kg)						
Ch.	MHz					Spot check data		Original data				
						Measured SAR	Reported SAR					
19100	1900.0	Head	Right Cheek	22.75	23.5	0.167	<b>0.20</b>	<b>0.20</b>				
18900	1880.0	Body	Bottom	20.74	21.5	0.881	<b>1.05</b>	<b>1.10</b>				

**LTE Band 5 SAR Values**

Frequency		Test Position		Conducted Power (dBm)	Max. tune-up Power (dBm)	SAR(1g) (W/kg)						
Ch.	MHz					Spot check data		Original data				
						Measured SAR	Reported SAR					
20450	829.0	Head	Right Cheek	23.52	24.5	0.888	<b>1.11</b>	<b>1.14</b>				
20525	836.5	Body	Rear	23.61	24.5	0.287	<b>0.35</b>	<b>0.35</b>				

**LTE Band 7 SAR Values**

Frequency		Test Position		Conducted Power (dBm)	Max. tune-up Power (dBm)	SAR(1g) (W/kg)						
Ch.	MHz					Spot check data		Original data				
						Measured SAR	Reported SAR					
21350	2560.0	Head	Left Cheek	22.26	23.5	0.234	<b>0.31</b>	<b>0.32</b>				
21100	2535.0	Body	Bottom	22.09	23.5	0.787	<b>1.09</b>	<b>1.17</b>				

**LTE Band 13 SAR Values**

Frequency		Test Position		Conducted Power (dBm)	Max. tune-up Power (dBm)	SAR(1g) (W/kg)						
Ch.	MHz					Spot check data		Original data				
						Measured SAR	Reported SAR					
23230	782.0	Head	Right Cheek	23.38	24.5	0.751	<b>0.97</b>	<b>1.17</b>				
23230	782.0	Body	Rear	23.38	24.5	0.197	<b>0.25</b>	<b>0.46</b>				

## LTE Band 66 SAR Values

Frequency		Test Position		Conducted Power (dBm)	Max. tune-up Power (dBm)	SAR(1g) (W/kg)		Original data					
Ch.	MHz					Spot check data							
						Measured SAR	Reported SAR						
132572	1770.0	Head	Right Cheek	23.04	25.0	0.146	<b>0.23</b>	<b>0.28</b>					
132572	1770.0	Body	Bottom	20.48	21.5	0.992	<b>1.25</b>	<b>1.32</b>					

## Bluetooth SAR Values

Frequency		Test Position		Conducted Power (dBm)	Max. tune-up Power (dBm)	SAR(1g) (W/kg)		Original data					
Ch.	MHz					Spot check data							
						Measured SAR	Reported SAR						
0	2402.0	Head	Left Cheek	10.08	11.0	0.076	<b>0.09</b>	<b>0.10</b>					
0	2402.0	Body	Rear	10.08	11.0	0.030	<b>0.04</b>	<b>0.04</b>					

## WLAN 2.4GHz SAR Values

Frequency		Test Position		Conducted Power (dBm)	Max. tune-up Power (dBm)	SAR(1g) (W/kg)		Original data					
Ch.	MHz					Spot check data							
						Measured SAR	Reported SAR						
6	2437.0	Head	Left Cheek	15.92	17.0	0.245	<b>0.31</b>	<b>0.48</b>					
6	2437.0	Body	Rear	15.92	17.0	0.132	<b>0.17</b>	<b>0.17</b>					

## WLAN 5GHz SAR Values

Frequency		Test Position		Conducted Power (dBm)	Max. tune-up Power (dBm)	SAR(1g) (W/kg)		Original data					
Ch.	MHz					Spot check data							
						Measured SAR	Reported SAR						
165	5825.0	Head	Left Cheek	14.72	15.5	0.303	<b>0.36</b>	<b>0.35</b>					
48	5280.0	Body	Rear	14.42	15.5	0.117	<b>0.15</b>	<b>0.17</b>					

## LTE Band 66 SAR Values (Extremity)

Frequency		Test Position		Conducted Power (dBm)	Max. tune-up Power (dBm)	SAR(10g) (W/kg)		Original data					
Ch.	MHz					Spot check data							
						Measured SAR	Reported SAR						
132572	1770.0	Extremity	Bottom	20.40	21.5	1.740	<b>2.24</b>	<b>2.25</b>					

## WLAN 5GHz SAR Values (Extremity)

Frequency		Test Position		Conducted Power (dBm)	Max. tune-up Power (dBm)	SAR(10g) (W/kg)		Original data					
Ch.	MHz					Spot check data							
						Measured SAR	Reported SAR						
116	5580.0	Extremity	Top	14.73	15.5	0.346	<b>0.41</b>	<b>0.35</b>					

### K.3. Graph Results for Spot Check

#### GSM850 Head

Date: 2022-9-10

Electronics: DAE4 Sn1527

Medium: Head 835MHz

Medium parameters used (interpolated):  $f = 848.8$  MHz;  $\sigma = 0.93$  S/m;  $\epsilon_r = 40.985$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

Probe: EX3DV4 - SN7621 ConvF (11.12, 11.12, 11.12)

**Right Cheek Middle/Area Scan (61x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.808 W/kg

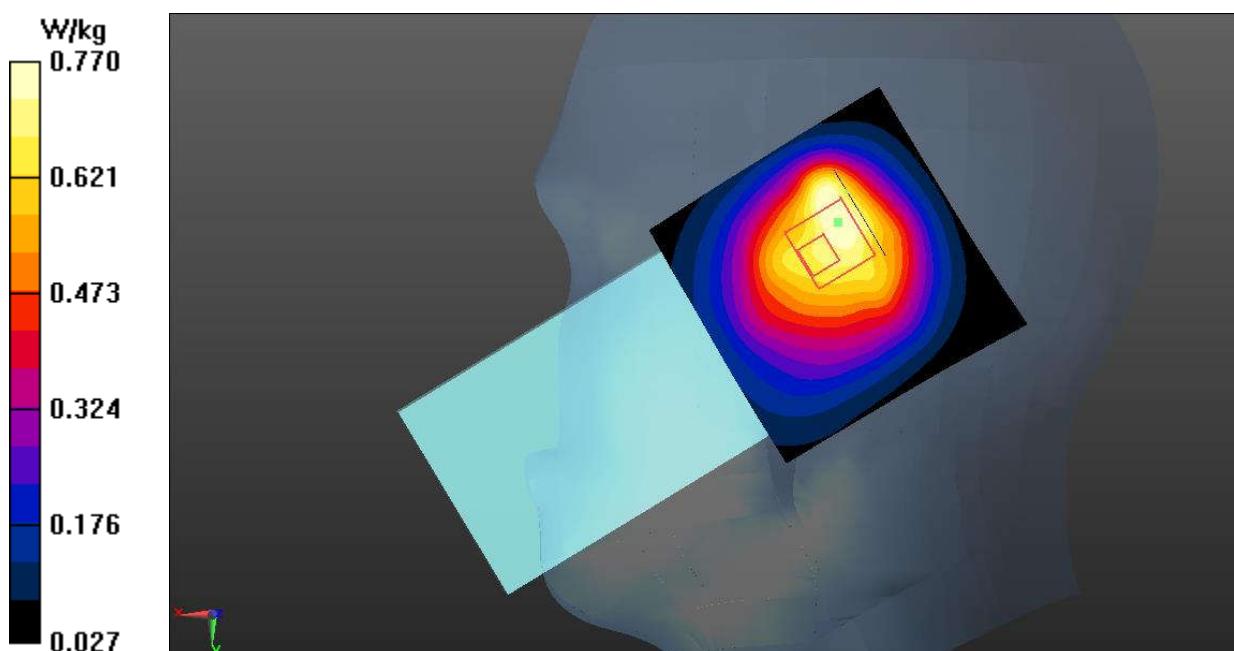
**Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.68 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 1.11 W/kg

**SAR(1 g) = 0.574 W/kg; SAR(10 g) = 0.392 W/kg**

Maximum value of SAR (measured) = 0.770 W/kg



**GSM850 Body**

Date: 2022-9-10

Electronics: DAE4 Sn1527

Medium: Head 835MHz

Medium parameters used (interpolated):  $f = 824.2$  MHz;  $\sigma = 0.907$  S/m;  $\epsilon_r = 41.261$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, 4 slot GPRS (0) Frequency: 824.2 MHz Duty Cycle: 1:2

Probe: EX3DV4 - SN7621 ConvF (11.12, 11.12, 11.12)

**Rear Side Low/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.331 W/kg

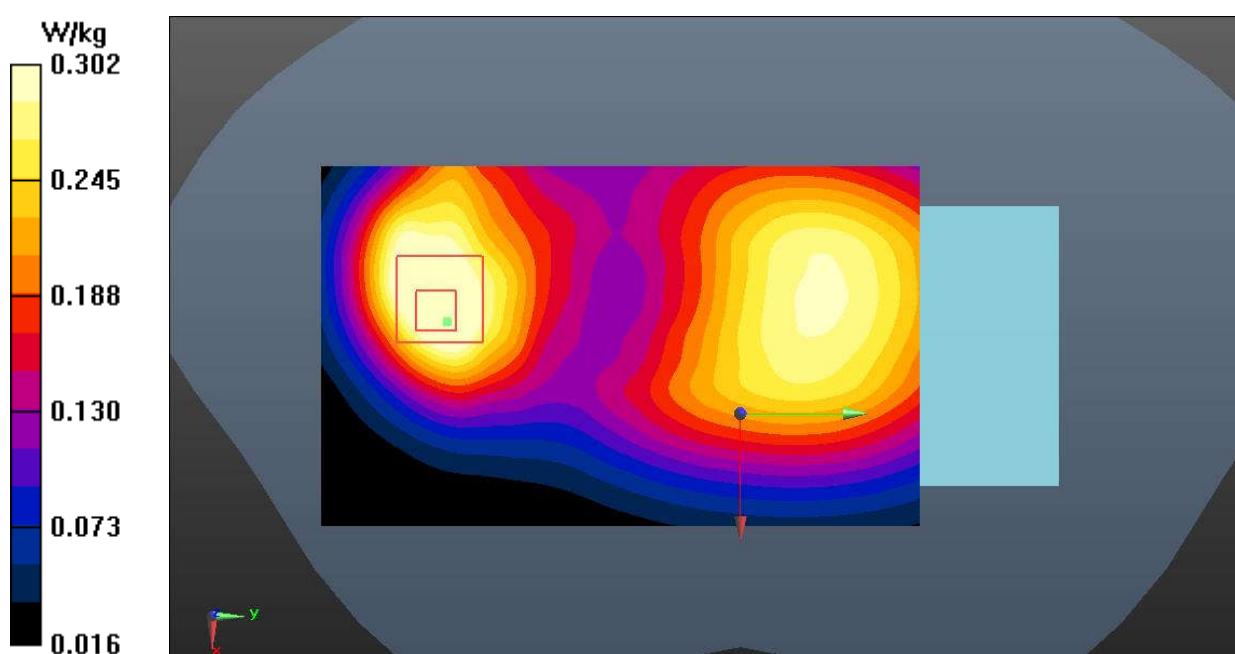
**Rear Side Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.31 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.399 W/kg

**SAR(1 g) = 0.225 W/kg; SAR(10 g) = 0.139 W/kg**

Maximum value of SAR (measured) = 0.302 W/kg



**GSM1900 Head**

Date: 2022-9-15

Electronics: DAE4 Sn1527

Medium: Head 1900MHz

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.396$  S/m;  $\epsilon_r = 39.136$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, GSM (0) Frequency: 1880 MHz Duty Cycle: 1:8.3

Probe: EX3DV4 - SN7621 ConvF (8.90, 8.90, 8.90)

**Right Cheek Middle/Area Scan (61x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.0958 W/kg

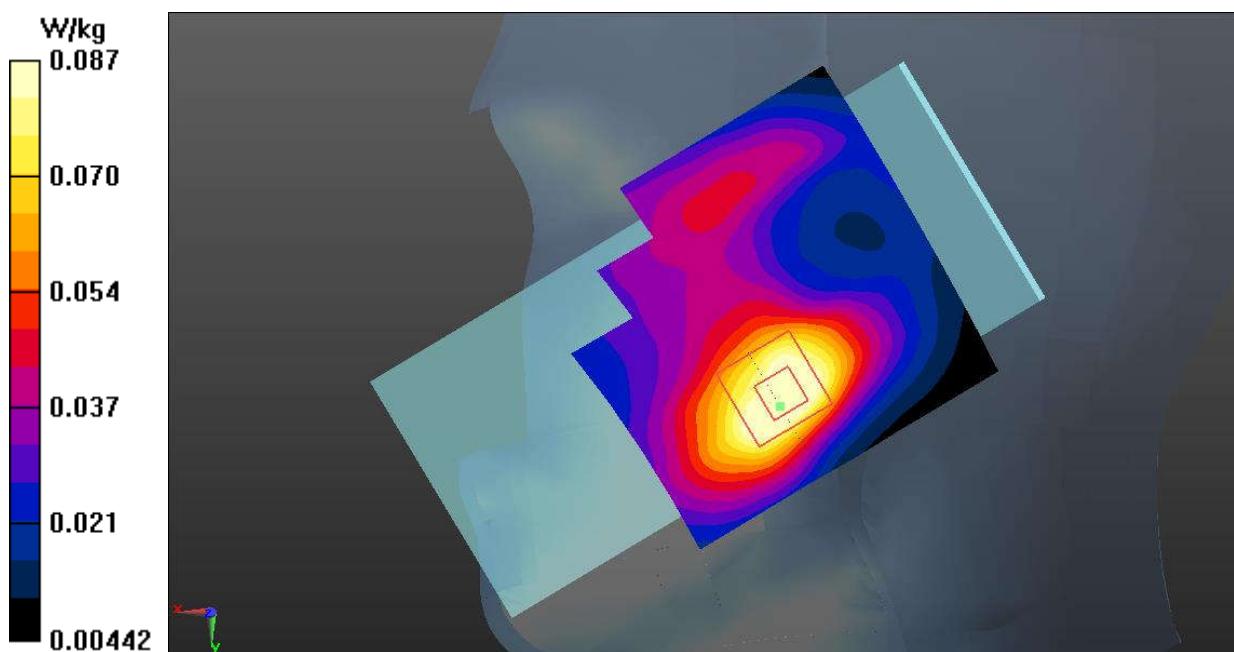
**Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.626 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.106 W/kg

**SAR(1 g) = 0.072 W/kg; SAR(10 g) = 0.047 W/kg**

Maximum value of SAR (measured) = 0.0868 W/kg



**GSM1900 Body**

Date: 2022-9-15

Electronics: DAE4 Sn1527

Medium: Head 1900MHz

Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.423$  S/m;  $\epsilon_r = 39.019$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, 1 slot GPRS (0) Frequency: 1909.8 MHz Duty Cycle: 1:8.3

Probe: EX3DV4 - SN7621 ConvF (8.90, 8.90, 8.90)

**Bottom Side High/Area Scan (41x71x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.792 W/kg

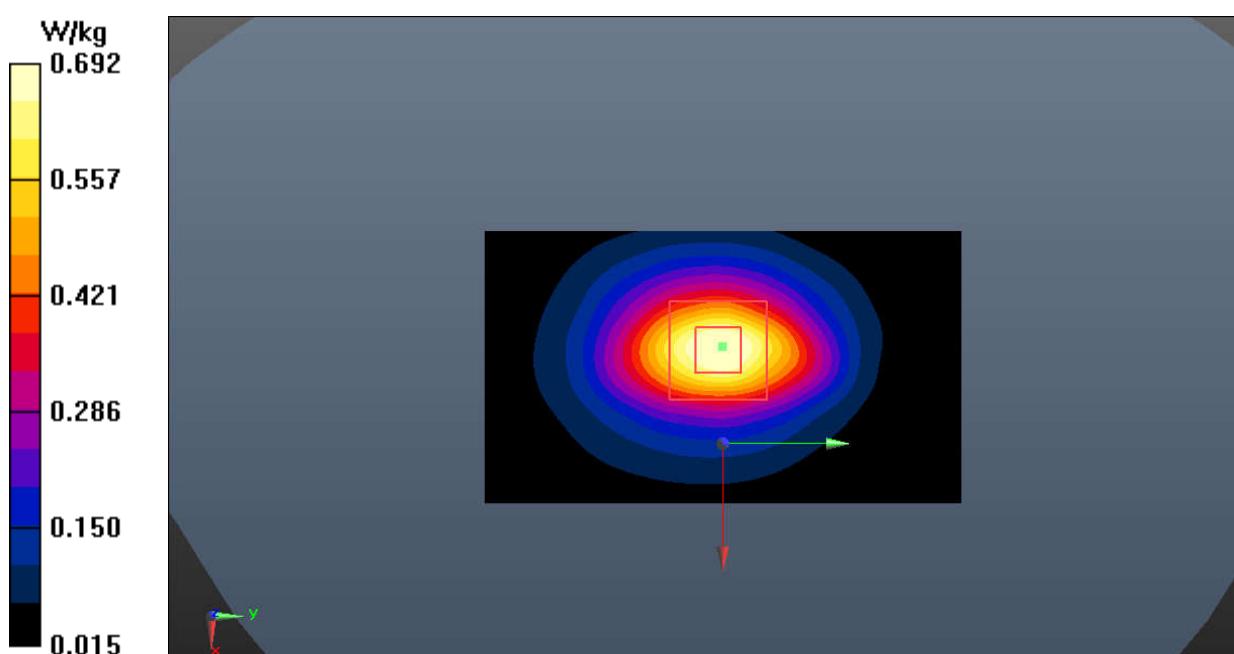
**Bottom Side High/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.95 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.962 W/kg

**SAR(1 g) = 0.565 W/kg; SAR(10 g) = 0.314 W/kg**

Maximum value of SAR (measured) = 0.692 W/kg



**WCDMA Band 2 Head**

Date: 2022-9-15

Electronics: DAE4 Sn1527

Medium: Head 1900MHz

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.396$  S/m;  $\epsilon_r = 39.136$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

Probe: EX3DV4 - SN7621 ConvF (8.90, 8.90, 8.90)

**Right Cheek Middle/Area Scan (61x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.225 W/kg

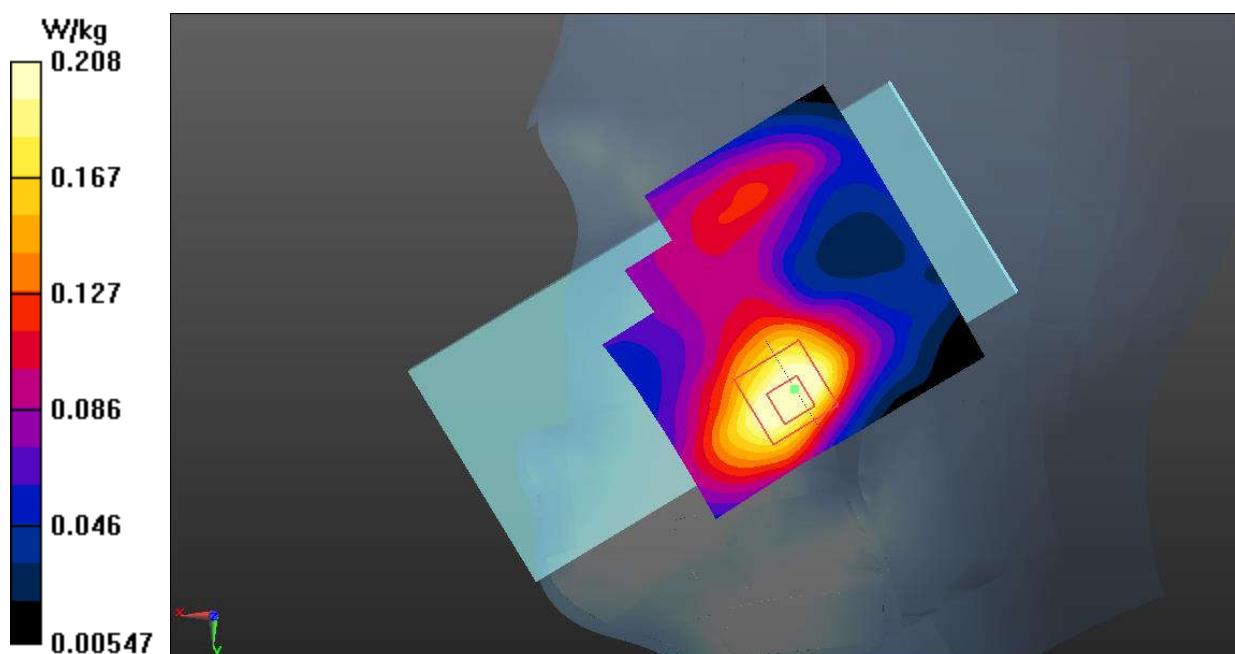
**Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.500 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.251 W/kg

**SAR(1 g) = 0.169 W/kg; SAR(10 g) = 0.109 W/kg**

Maximum value of SAR (measured) = 0.208 W/kg



**WCDMA Band 2 Body**

Date: 2022-9-15

Electronics: DAE4 Sn1527

Medium: Head 1900MHz

Medium parameters used (interpolated):  $f = 1852.4$  MHz;  $\sigma = 1.372$  S/m;  $\epsilon_r = 39.244$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

Probe: EX3DV4 - SN7621 ConvF (8.90, 8.90, 8.90)

**Bottom Side Low/Area Scan (51x71x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.52 W/kg

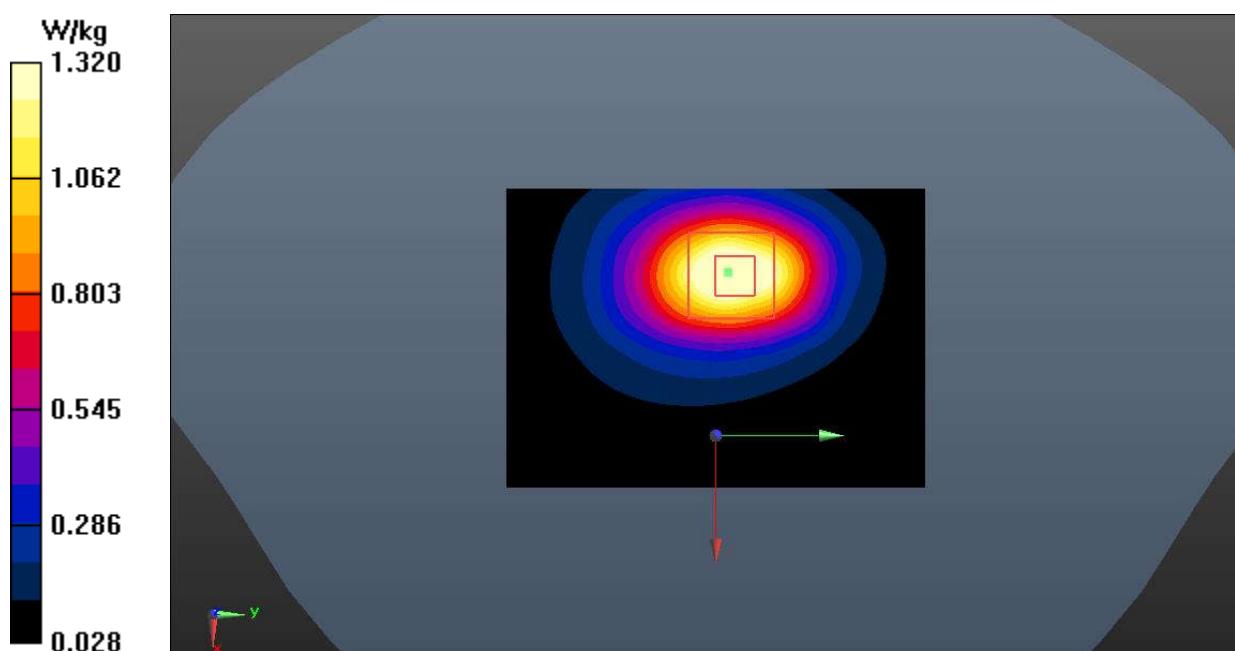
**Bottom Side Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.84 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 1.84 W/kg

**SAR(1 g) = 1.08 W/kg; SAR(10 g) = 0.601 W/kg**

Maximum value of SAR (measured) = 1.32 W/kg



**WCDMA Band 4 Head**

Date: 2022-9-15

Electronics: DAE4 Sn1527

Medium: Head 1750MHz

Medium parameters used:  $f = 1733$  MHz;  $\sigma = 1.373$  S/m;  $\epsilon_r = 39.49$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

Probe: EX3DV4 - SN7621 ConvF (9.22, 9.22, 9.22)

**Right Cheek Middle/Area Scan (61x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.178 W/kg

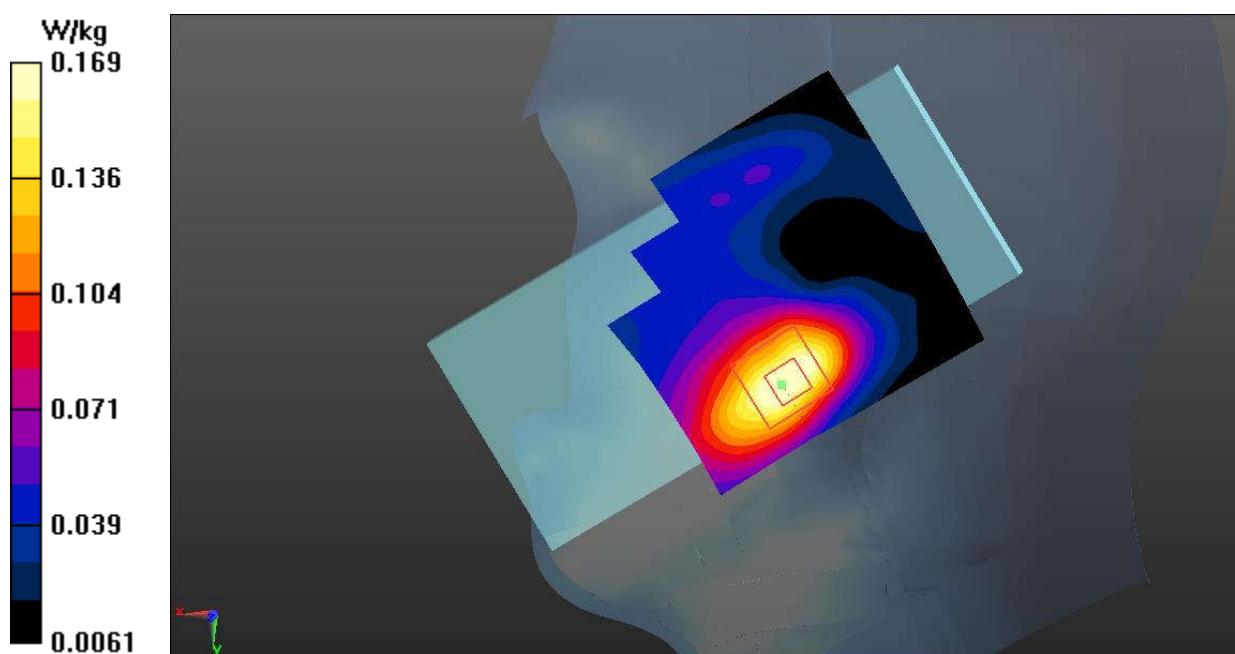
**Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.203 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.203 W/kg

**SAR(1 g) = 0.137 W/kg; SAR(10 g) = 0.088 W/kg**

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



**WCDMA Band 4 Body**

Date: 2022-9-15

Electronics: DAE4 Sn1527

Medium: Head 1750MHz

Medium parameters used:  $f = 1753$  MHz;  $\sigma = 1.391$  S/m;  $\epsilon_r = 39.412$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

Probe: EX3DV4 - SN7621 ConvF (9.22, 9.22, 9.22)

**Bottom Side High/Area Scan (51x71x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.33 W/kg

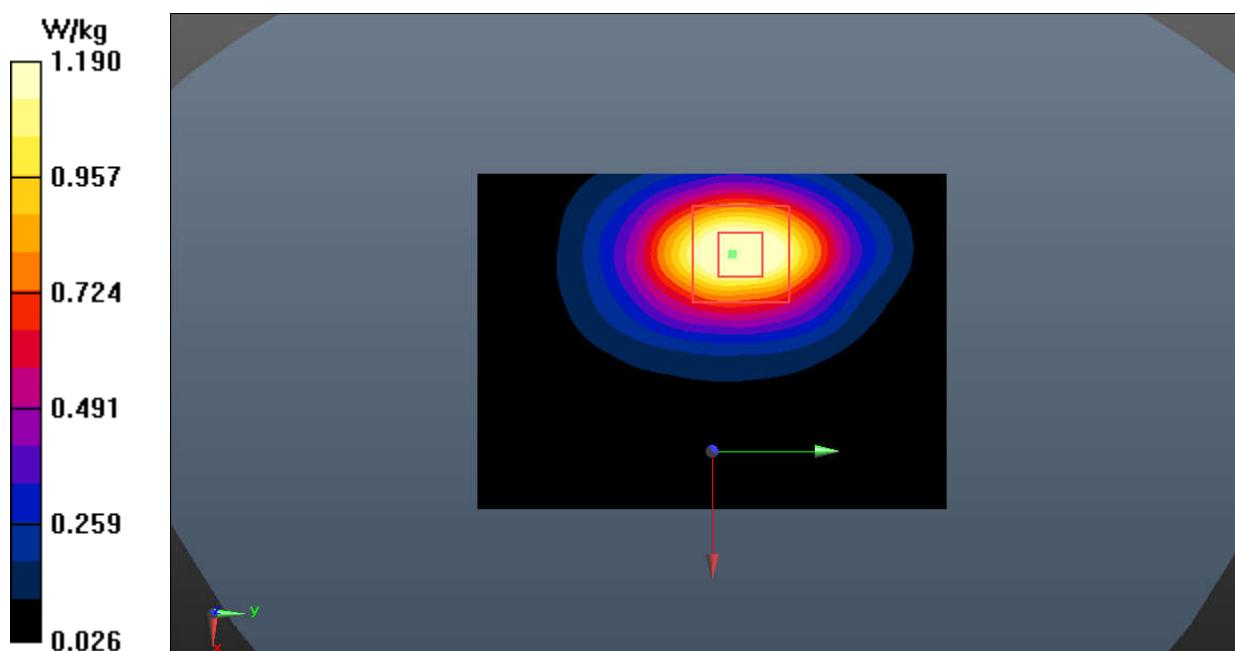
**Bottom Side High/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.604 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 1.63 W/kg

**SAR(1 g) = 0.962 W/kg; SAR(10 g) = 0.532 W/kg**

Maximum value of SAR (measured) = 1.19 W/kg



**WCDMA Band 5 Head**

Date: 2022-9-10

Electronics: DAE4 Sn1527

Medium: Head 835MHz

Medium parameters used (interpolated):  $f = 826.4$  MHz;  $\sigma = 0.909$  S/m;  $\epsilon_r = 41.254$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

Probe: EX3DV4 - SN7621 ConvF (11.12, 11.12, 11.12)

**Right Cheek Low/Area Scan (61x71x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.771 W/kg

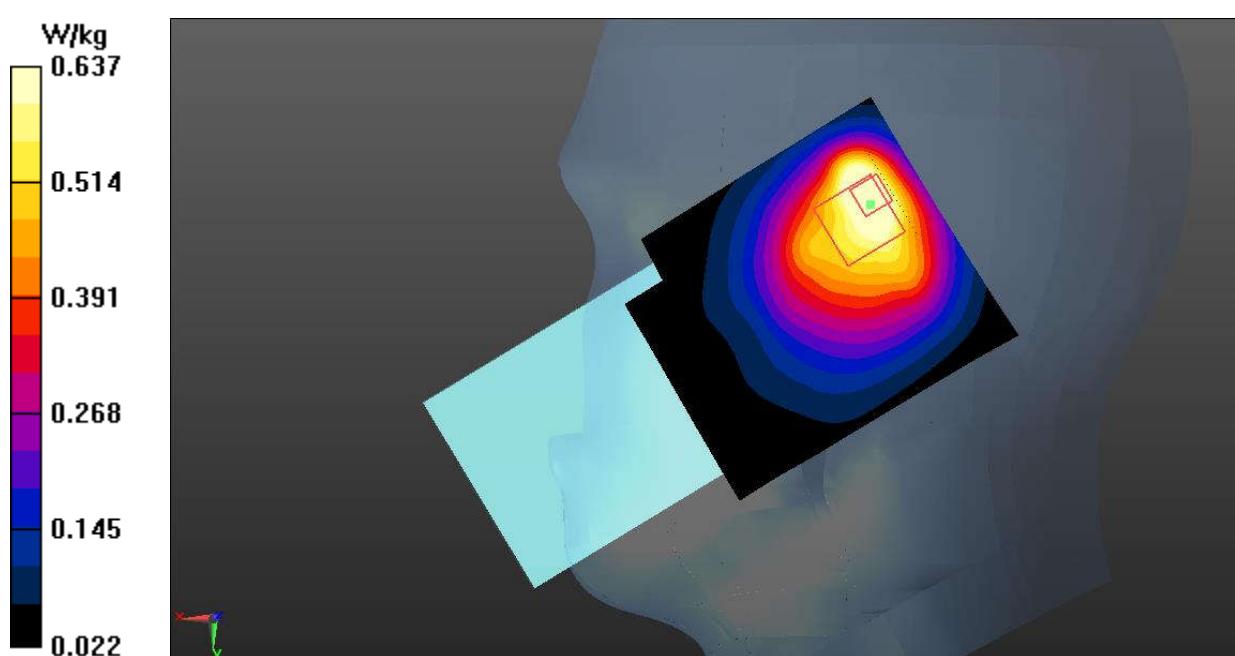
**Right Cheek Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.02 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.966 W/kg

**SAR(1 g) = 0.479 W/kg; SAR(10 g) = 0.313 W/kg**

Maximum value of SAR (measured) = 0.637 W/kg



**WCDMA Band 5 Body**

Date: 2022-9-10

Electronics: DAE4 Sn1527

Medium: Head 835MHz

Medium parameters used (interpolated):  $f = 836.6$  MHz;  $\sigma = 0.918$  S/m;  $\epsilon_r = 41.132$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, WCDMA (0) Frequency: 836.6 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (11.12, 11.12, 11.12)

**Rear Side Middle/Area Scan (61x111x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

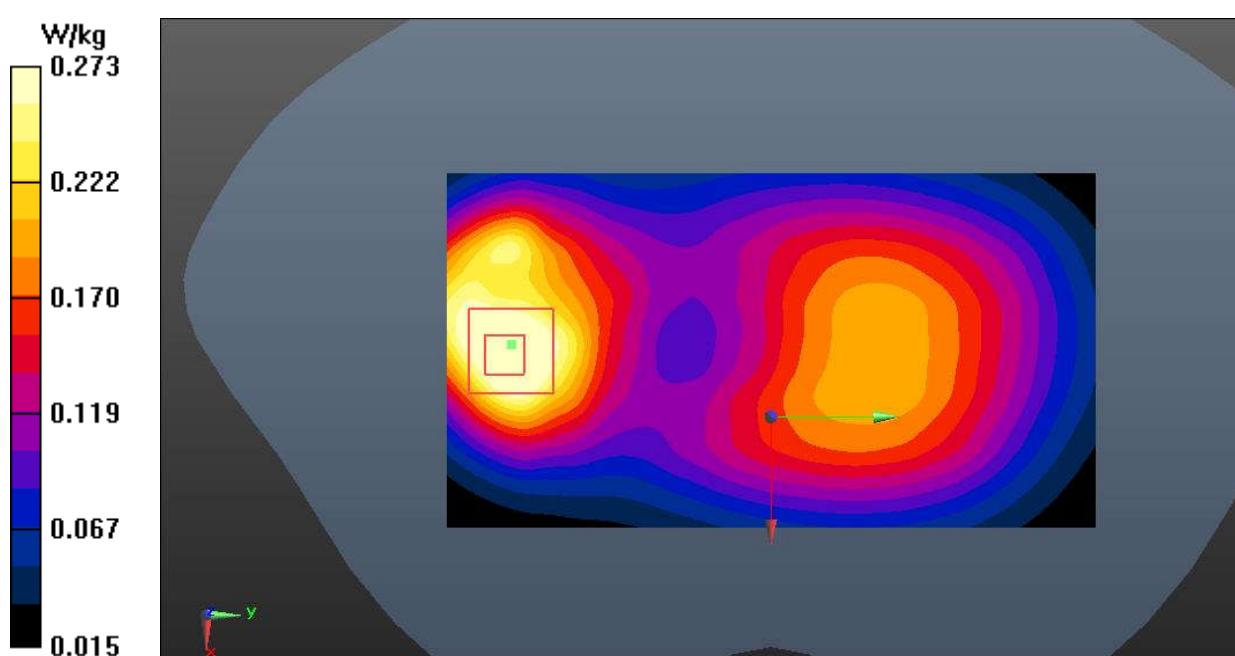
**Rear Side Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.84 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.403 W/kg

**SAR(1 g) = 0.231 W/kg; SAR(10 g) = 0.137 W/kg**

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



**LTE Band 2 Head**

Date: 2022-9-15

Electronics: DAE4 Sn1527

Medium: Head 1900MHz

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.414$  S/m;  $\epsilon_r = 39.058$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, LTE\_FDD (0) Frequency: 1900 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (8.90, 8.90, 8.90)

**Right Cheek Middle 1RB50/Area Scan (61x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm  
Maximum value of SAR (interpolated) = 0.227 W/kg

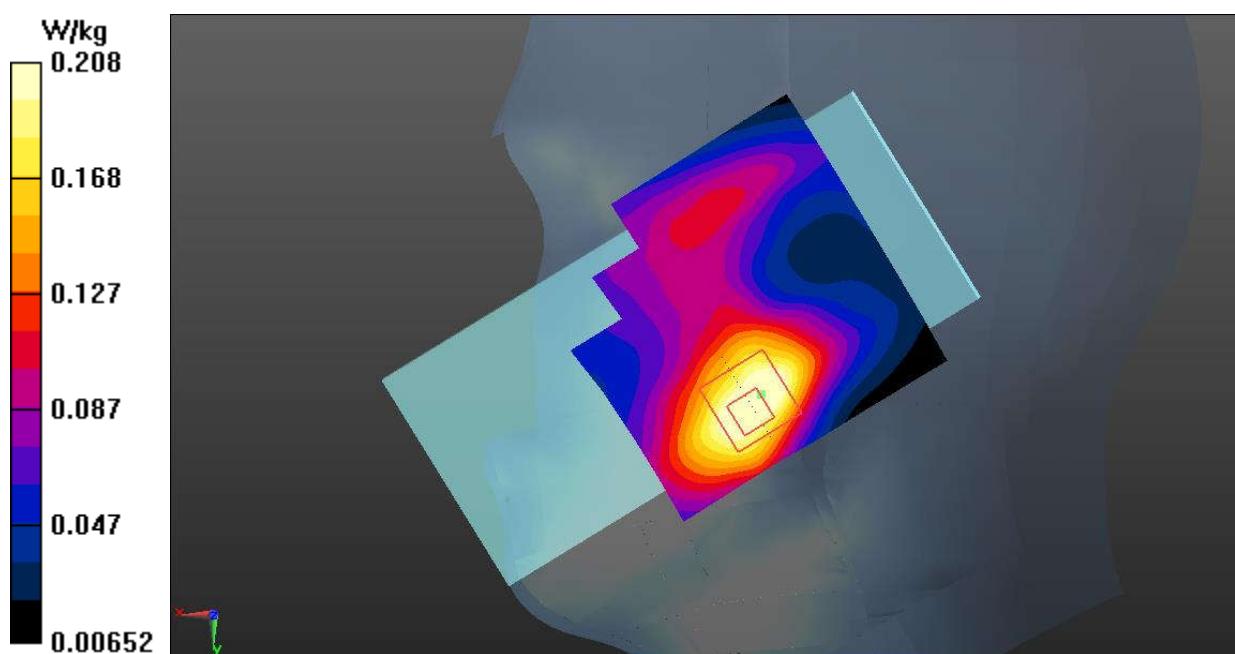
**Right Cheek Middle 1RB50/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.075 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.247 W/kg

**SAR(1 g) = 0.167 W/kg; SAR(10 g) = 0.109 W/kg**

Maximum value of SAR (measured) = 0.208 W/kg



**LTE Band 2 Body**

Date: 2022-9-15

Electronics: DAE4 Sn1527

Medium: Head 1900MHz

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.396$  S/m;  $\epsilon_r = 39.136$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, LTE\_FDD (0) Frequency: 1880 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (8.90, 8.90, 8.90)

**Bottom Side Middle 1RB50/Area Scan (41x71x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm  
Maximum value of SAR (interpolated) = 1.25 W/kg

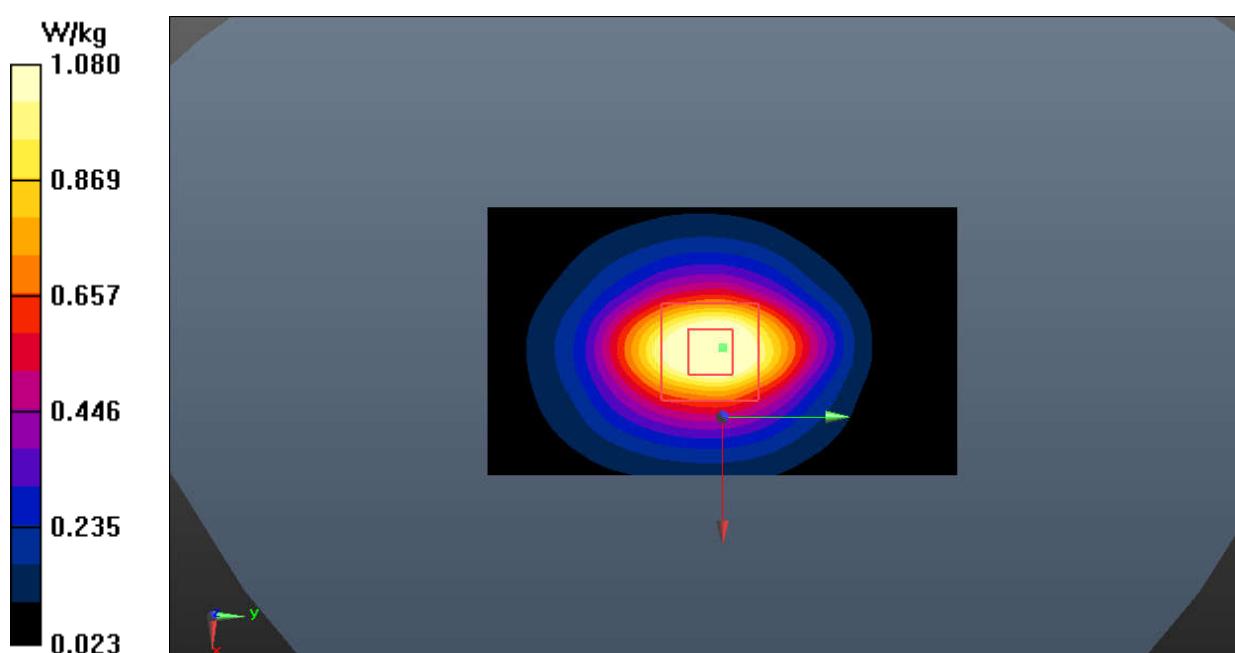
**Bottom Side Middle 1RB50/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 16.26 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 1.51 W/kg

**SAR(1 g) = 0.881 W/kg; SAR(10 g) = 0.491 W/kg**

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



**LTE Band 5 Head**

Date: 2022-9-10

Electronics: DAE4 Sn1527

Medium: Head 835MHz

Medium parameters used (interpolated):  $f = 829$  MHz;  $\sigma = 0.912$  S/m;  $\epsilon_r = 41.223$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, LTE\_FDD (0) Frequency: 829 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (11.12, 11.12, 11.12)

**Right Cheek Low 1RB24/Area Scan (61x81x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

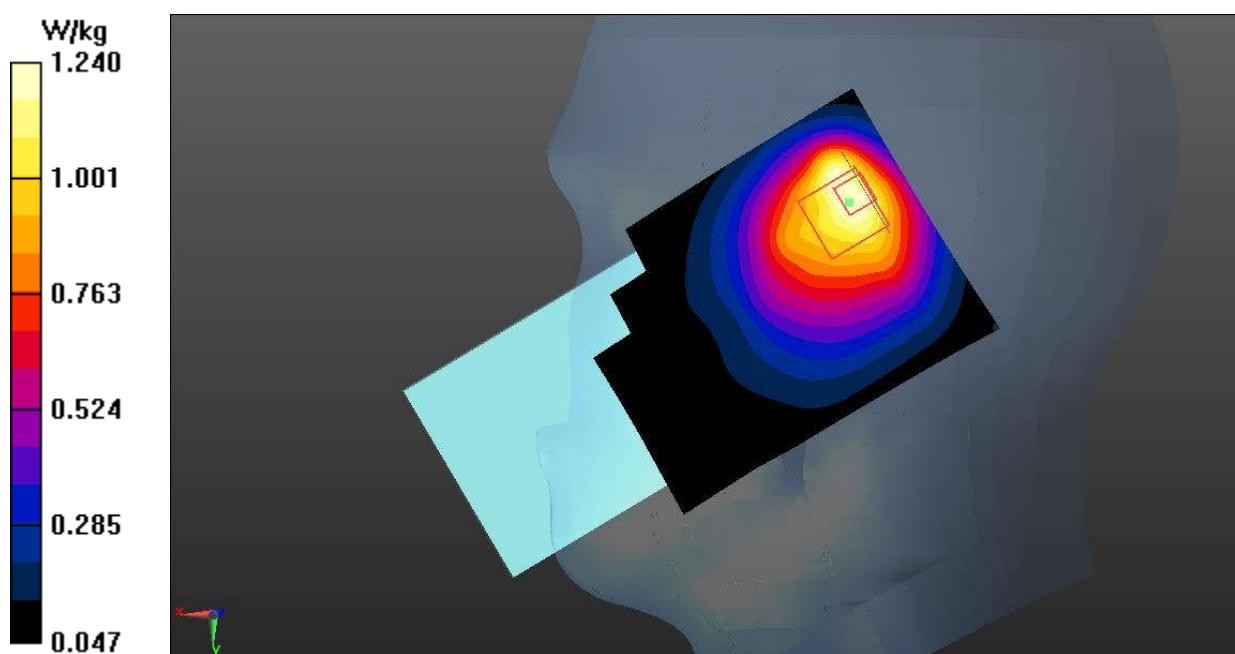
**Right Cheek Low 1RB24/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 27.88 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 1.68 W/kg

**SAR(1 g) = 0.888 W/kg; SAR(10 g) = 0.614 W/kg**

Maximum value of SAR (measured) = 1.24 W/kg



**LTE Band 5 Body**

Date: 2022-9-10

Electronics: DAE4 Sn1527

Medium: Head 835MHz

Medium parameters used (interpolated):  $f = 836.5$  MHz;  $\sigma = 0.918$  S/m;  $\epsilon_r = 41.133$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, LTE\_FDD (0) Frequency: 836.5 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (11.12, 11.12, 11.12)

**Rear Side Middle 1RB24/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.384 W/kg

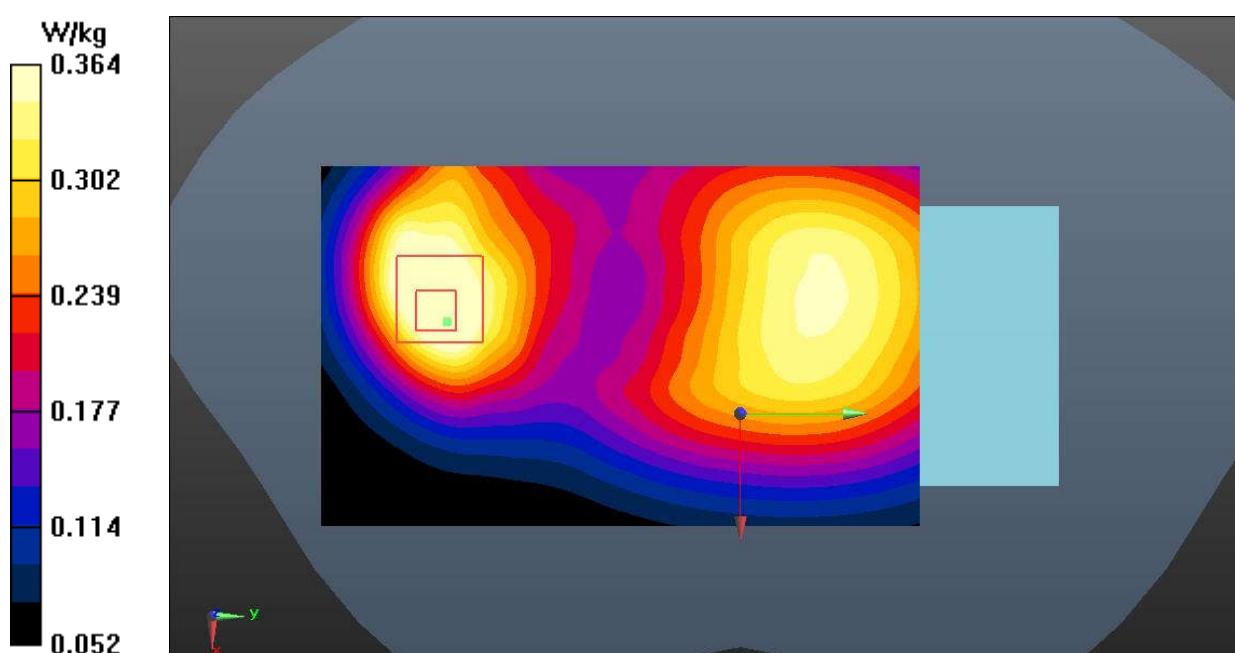
**Rear Side Middle 1RB24/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.40 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.421 W/kg

**SAR(1 g) = 0.287 W/kg; SAR(10 g) = 0.176 W/kg**

Maximum value of SAR (measured) = 0.364 W/kg



**LTE Band 7 Head**

Date: 2022-9-15

Electronics: DAE4 Sn1527

Medium: Head 2550MHz

Medium parameters used:  $f = 2560$  MHz;  $\sigma = 1.949$  S/m;  $\epsilon_r = 38.116$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, LTE\_FDD (0) Frequency: 2560 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (7.93, 7.93, 7.93)

**Left Cheek High 1RB50/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.363 W/kg

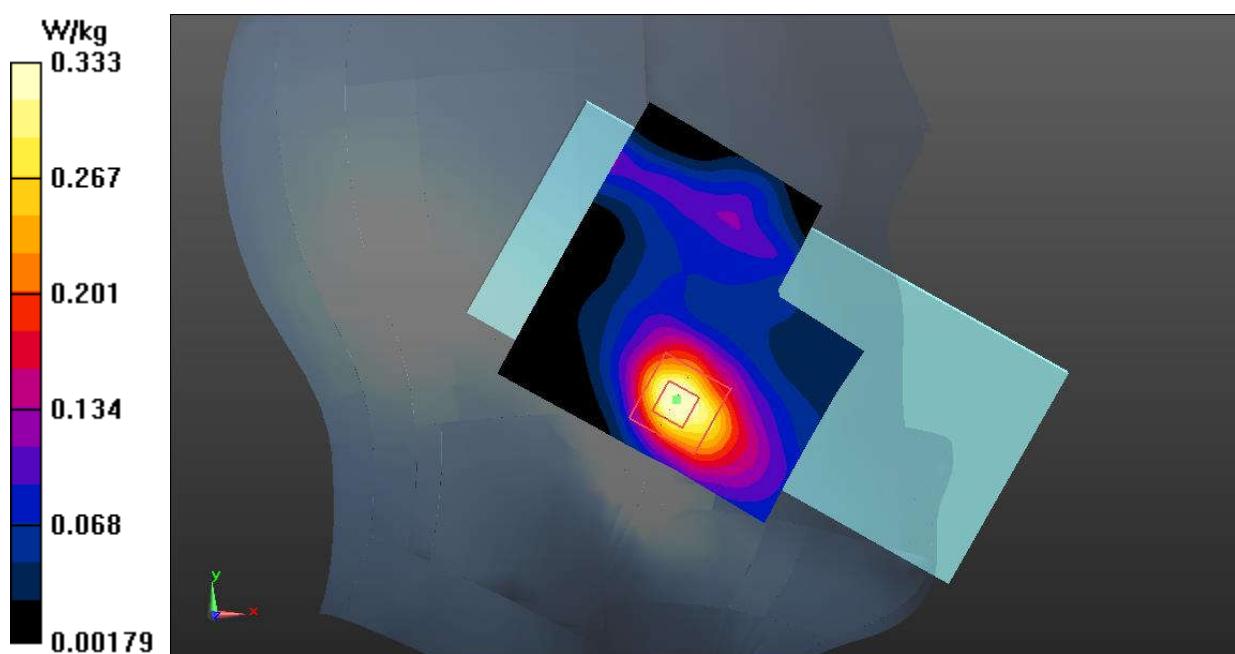
**Left Cheek High 1RB50/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.651 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.441 W/kg

**SAR(1 g) = 0.234 W/kg; SAR(10 g) = 0.123 W/kg**

Maximum value of SAR (measured) = 0.333 W/kg



**LTE Band 7 Body**

Date: 2022-9-15

Electronics: DAE4 Sn1527

Medium: Head 2550MHz

Medium parameters used (interpolated):  $f = 2535$  MHz;  $\sigma = 1.919$  S/m;  $\epsilon_r = 38.199$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, LTE\_FDD (0) Frequency: 2535 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (8.17, 8.17, 8.17)

**Bottom Side Middle 1RB50/Area Scan (91x111x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

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

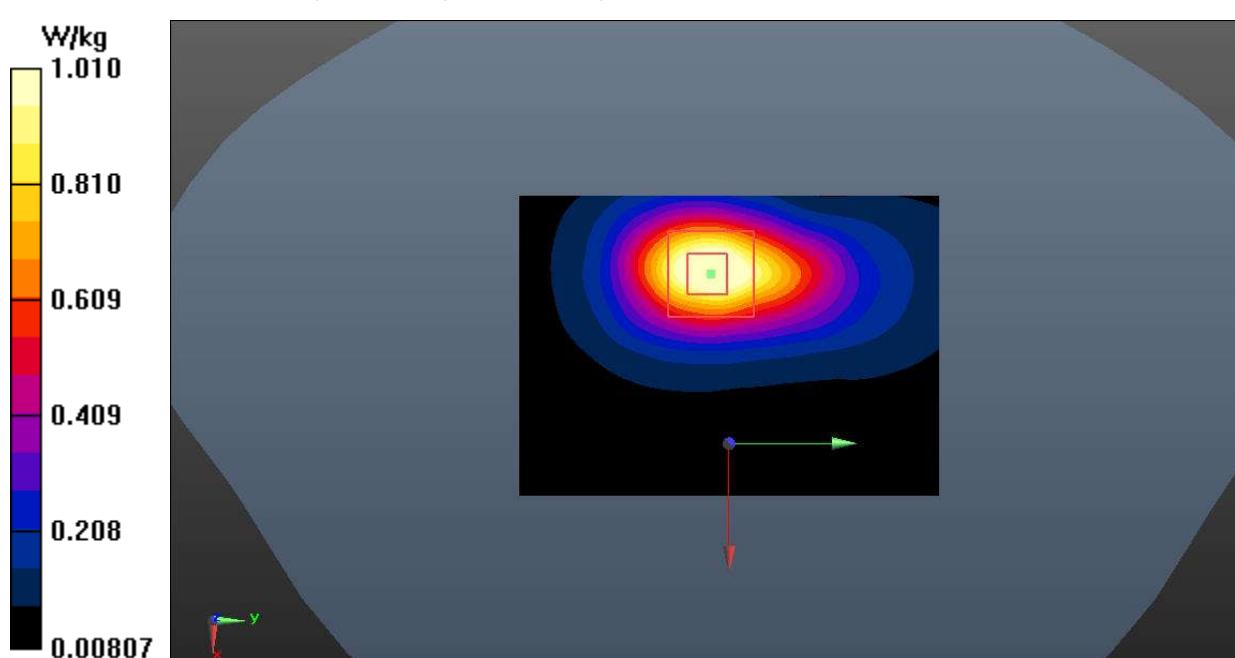
**Bottom Side Middle 1RB50/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.711 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 1.56 W/kg

**SAR(1 g) = 0.787 W/kg; SAR(10 g) = 0.389 W/kg**

Maximum value of SAR (measured) = 1.01 W/kg



**LTE Band 13 Head**

Date: 2022-9-10

Electronics: DAE4 Sn1527

Medium: Head 750MHz

Medium parameters used:  $f = 782$  MHz;  $\sigma = 0.899$  S/m;  $\epsilon_r = 42.498$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, LTE\_FDD (0) Frequency: 782 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (11.12, 11.12, 11.12)

**Right Cheek Low 1RB24/Area Scan (61x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.11 W/kg

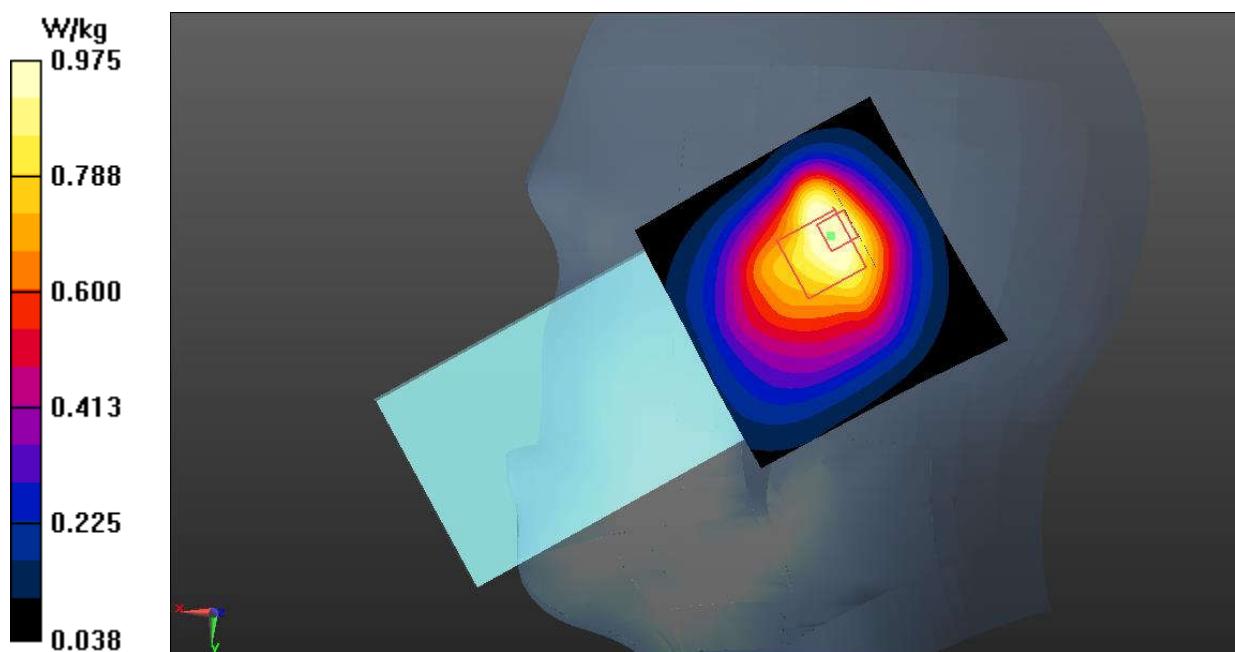
**Right Cheek Low 1RB24/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 27.71 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.33 W/kg

**SAR(1 g) = 0.751 W/kg; SAR(10 g) = 0.511 W/kg**

Maximum value of SAR (measured) = 0.975 W/kg



**LTE Band 13 Body**

Date: 2022-9-10

Electronics: DAE4 Sn1527

Medium: Head 750MHz

Medium parameters used:  $f = 782$  MHz;  $\sigma = 0.899$  S/m;  $\epsilon_r = 42.498$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, LTE\_FDD (0) Frequency: 782 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (11.12, 11.12, 11.12)

**Rear Side Low 1RB24/Area Scan (61x111x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

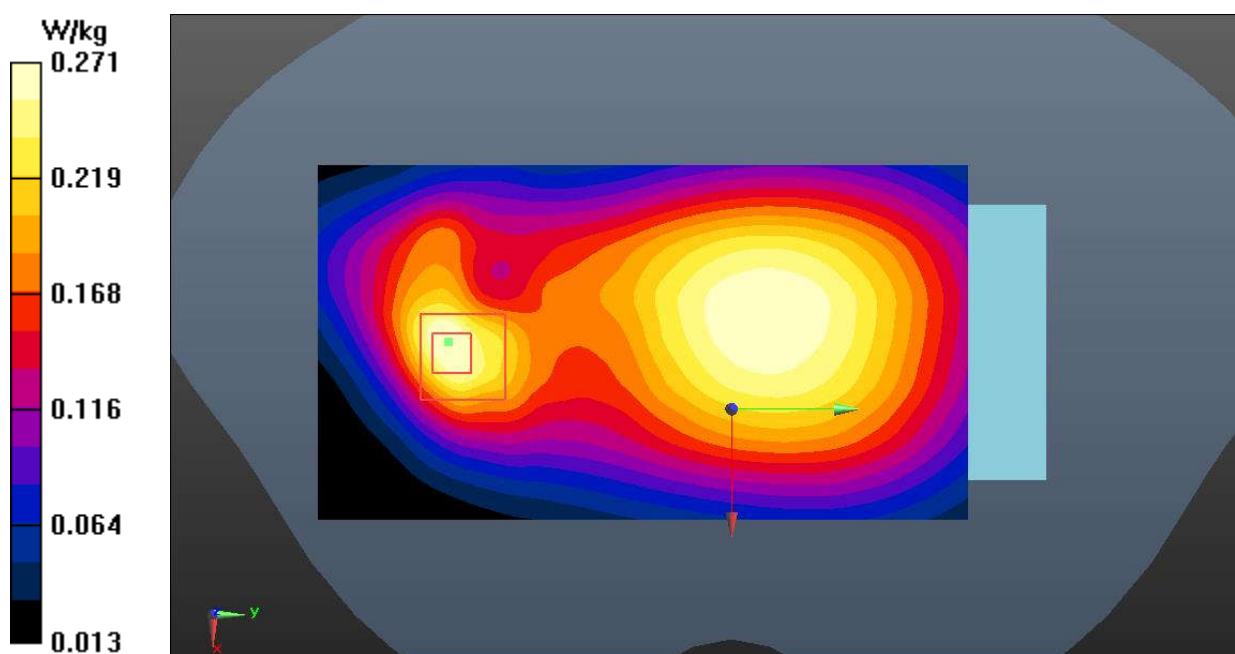
**Rear Side Low 1RB24/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.85 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.355 W/kg

**SAR(1 g) = 0.197 W/kg; SAR(10 g) = 0.117 W/kg**

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



**LTE Band 66 Head**

Date: 2022-9-15

Electronics: DAE4 Sn1527

Medium: Head 1750MHz

Medium parameters used:  $f = 1770$  MHz;  $\sigma = 1.406$  S/m;  $\epsilon_r = 39.346$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, LTE\_FDD (0) Frequency: 1770 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (9.22, 9.22, 9.22)

**Right Cheek High 1RB50/Area Scan (61x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm  
Maximum value of SAR (interpolated) = 0.264 W/kg

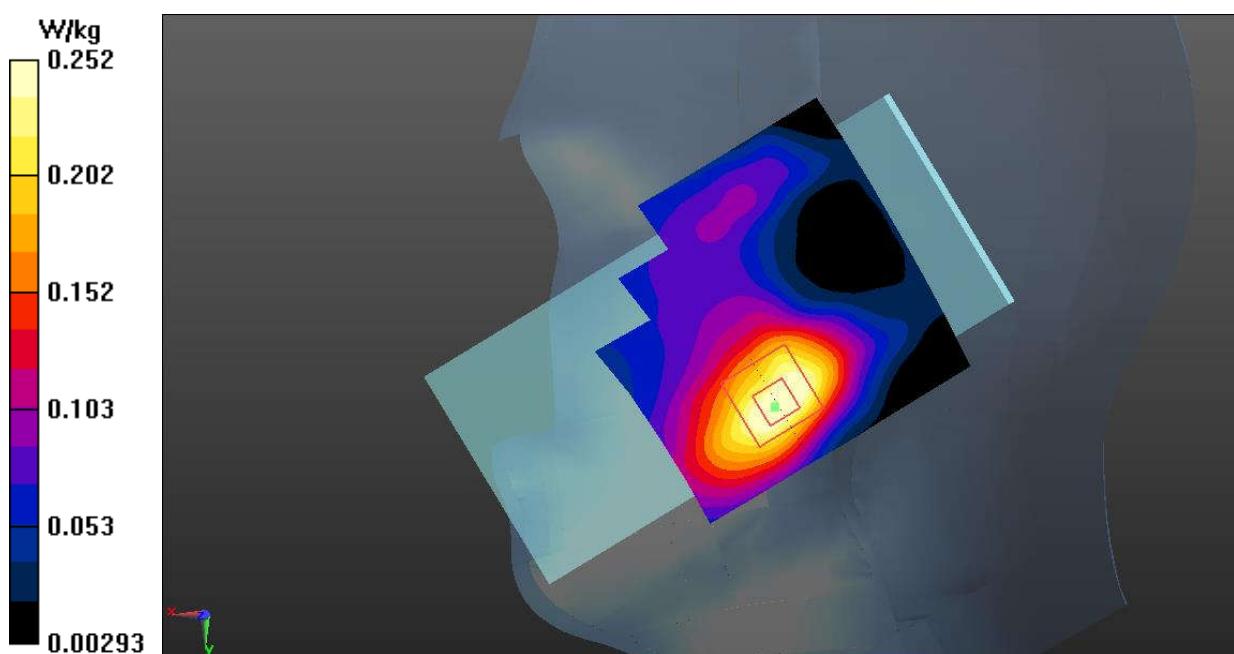
**Right Cheek High 1RB50/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.371 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.173 W/kg

**SAR(1 g) = 0.146 W/kg; SAR(10 g) = 0.095 W/kg**

Maximum value of SAR (measured) = 0.252 W/kg



**LTE Band 66 Body**

Date: 2022-9-15

Electronics: DAE4 Sn1527

Medium: Head 1750MHz

Medium parameters used:  $f = 1770$  MHz;  $\sigma = 1.406$  S/m;  $\epsilon_r = 39.346$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, LTE\_FDD (0) Frequency: 1770 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (9.22, 9.22, 9.22)

**Bottom Side High 1RB50/Area Scan (51x71x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.42 W/kg

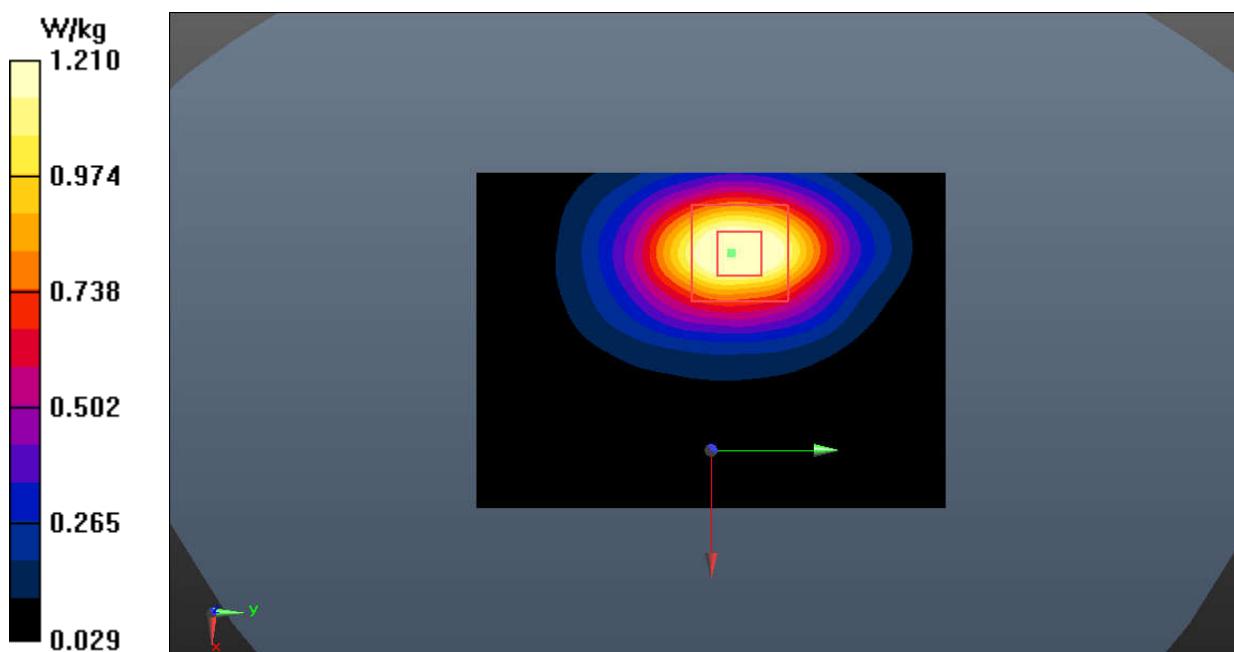
**Bottom Side High 1RB50/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 14.41 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 1.67 W/kg

**SAR(1 g) = 0.992 W/kg; SAR(10 g) = 0.553 W/kg**

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



**Bluetooth Head**

Date: 2022-9-13

Electronics: DAE4 Sn1527

Medium: Head 2450MHz

Medium parameters used:  $f = 2402$  MHz;  $\sigma = 1.782$  S/m;  $\epsilon_r = 38.601$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, BT (0) Frequency: 2402 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (8.17, 8.17, 8.17)

**Left Cheek Ch.0/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.100 W/kg

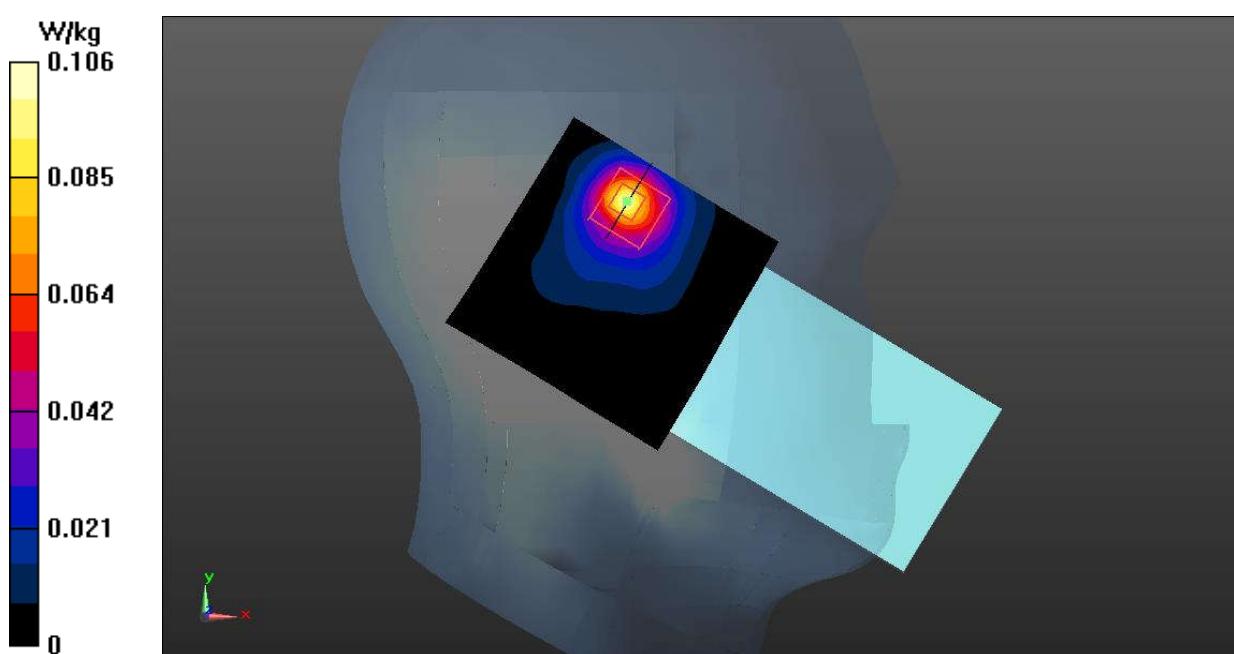
**Left Cheek Ch.0/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.776 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.149 W/kg

**SAR(1 g) = 0.076 W/kg; SAR(10 g) = 0.037 W/kg**

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



**Bluetooth Body**

Date: 2022-9-13

Electronics: DAE4 Sn1527

Medium: Head 2450MHz

Medium parameters used:  $f = 2402$  MHz;  $\sigma = 1.782$  S/m;  $\epsilon_r = 38.601$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, BT (0) Frequency: 2402 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (8.17, 8.17, 8.17)

**Rear Side Ch.0/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.0313 W/kg

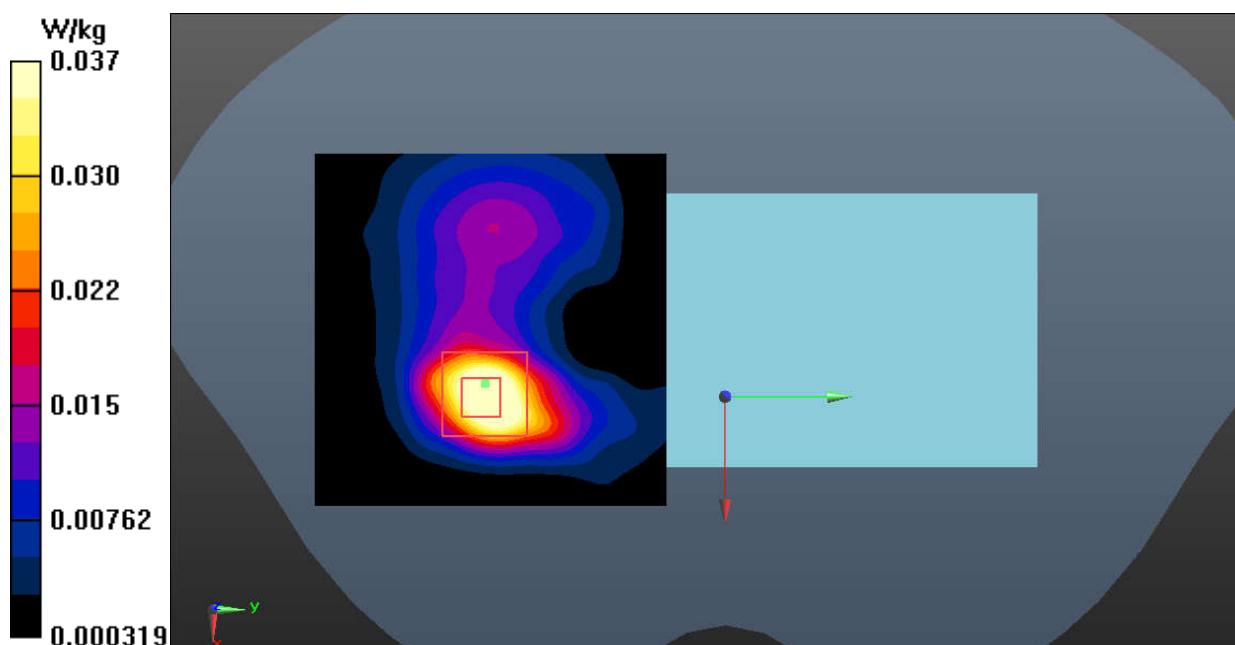
**Rear Side Ch.0/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 0.6220 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.0690 W/kg

**SAR(1 g) = 0.030 W/kg; SAR(10 g) = 0.014 W/kg**

Maximum value of SAR (measured) = 0.0370 W/kg



**WLAN 2.4GHz Head**

Date: 2022-9-13

Electronics: DAE4 Sn1527

Medium: Head 2450MHz

Medium parameters used (interpolated):  $f = 2437$  MHz;  $\sigma = 1.824$  S/m;  $\epsilon_r = 38.485$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, WLAN (0) Frequency: 2437 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (8.17, 8.17, 8.17)

**Left Cheek Ch.6/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.350 W/kg

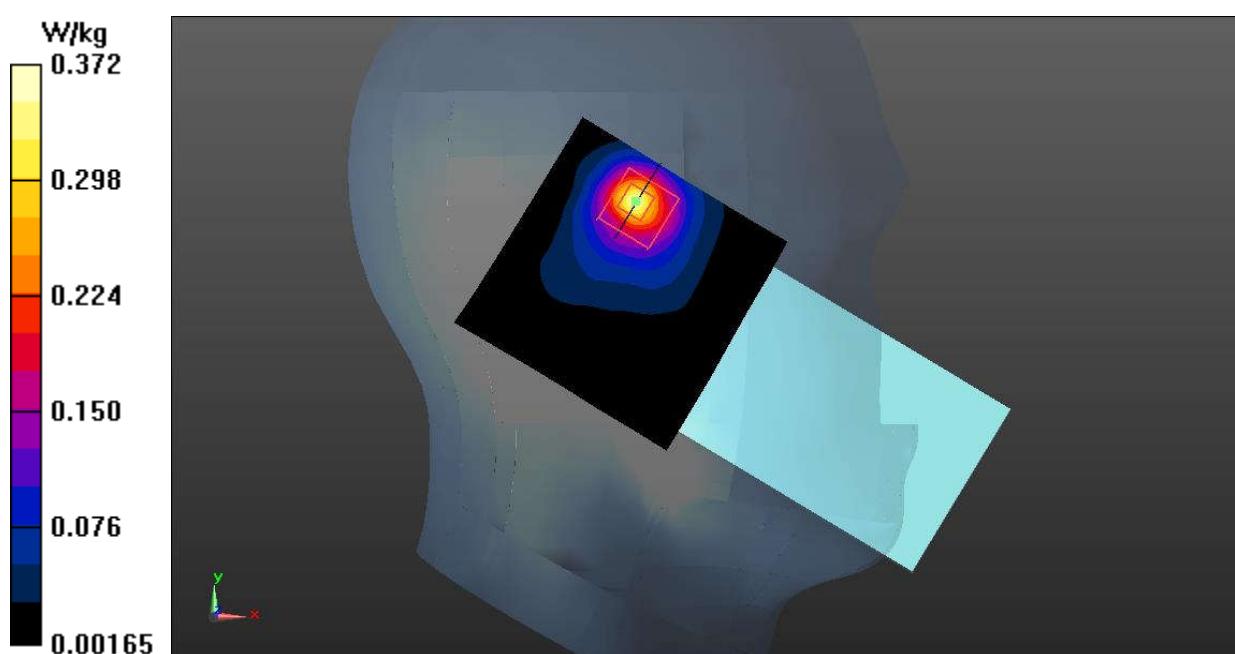
**Left Cheek Ch.6/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.841 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.503 W/kg

**SAR(1 g) = 0.245 W/kg; SAR(10 g) = 0.115 W/kg**

Maximum value of SAR (measured) = 0.372 W/kg



**WLAN 2.4GHz Body**

Date: 2022-9-13

Electronics: DAE4 Sn1527

Medium: Head 2450MHz

Medium parameters used (interpolated):  $f = 2437$  MHz;  $\sigma = 1.824$  S/m;  $\epsilon_r = 38.485$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, WLAN (0) Frequency: 2437 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (8.17, 8.17, 8.17)

**Rear Side Ch.6/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.206 W/kg

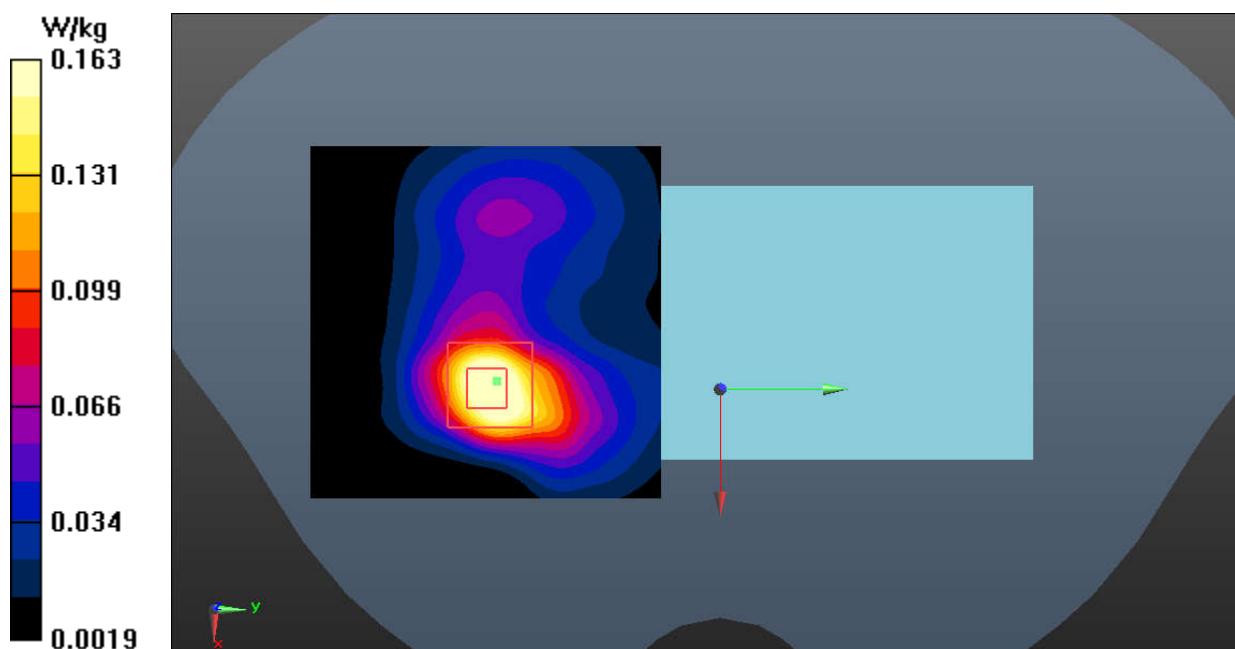
**Rear Side Ch.6/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.773 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.280 W/kg

**SAR(1 g) = 0.132 W/kg; SAR(10 g) = 0.065 W/kg**

Maximum value of SAR (measured) = 0.163 W/kg



**WLAN 5GHz Head**

Date: 2022-9-13

Electronics: DAE4 Sn1527

Medium: Head 5750MHz

Medium parameters used (interpolated):  $f = 5825$  MHz;  $\sigma = 5.446$  S/m;  $\epsilon_r = 34.209$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, WLAN 5G (0) Frequency: 5825 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (5.40, 5.40, 5.40)

**Left Cheek Ch.165/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.548 W/kg

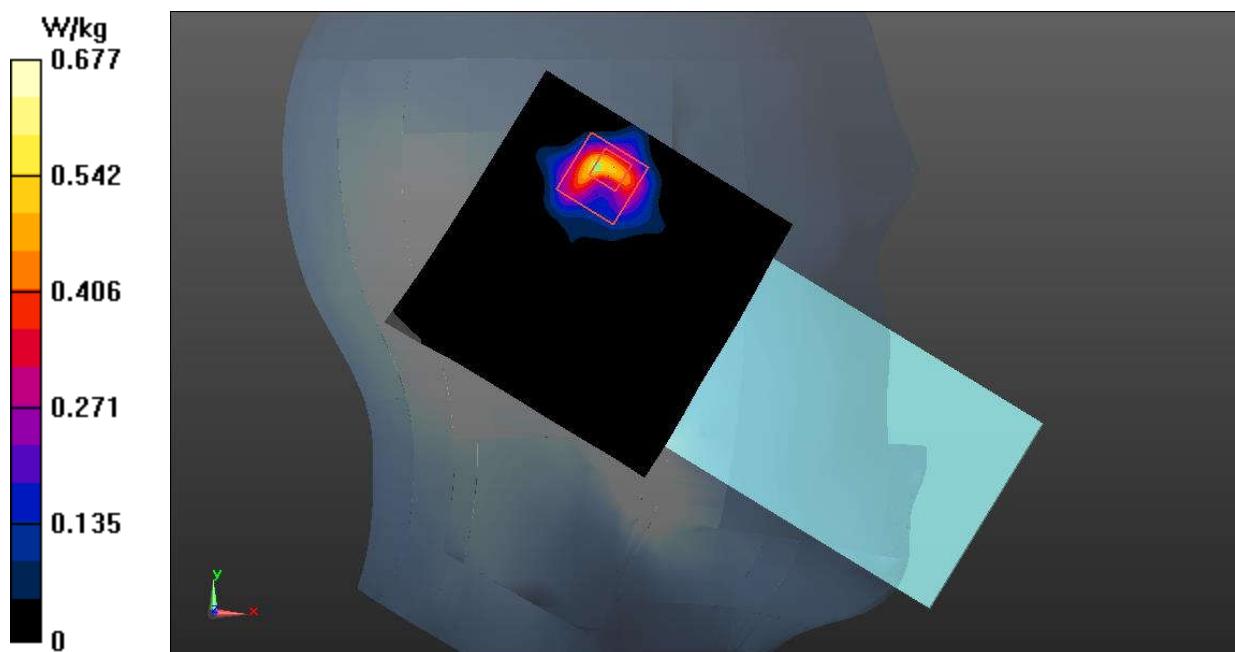
**Left Cheek Ch.165/Zoom Scan (8x8x21)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 2.221 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 1.22 W/kg

**SAR(1 g) = 0.303 W/kg; SAR(10 g) = 0.097 W/kg**

Maximum value of SAR (measured) = 0.677 W/kg



**WLAN 5GHz Body**

Date: 2022-9-13

Electronics: DAE4 Sn1527

Medium: Head 5250MHz

Medium parameters used:  $f = 5240$  MHz;  $\sigma = 4.633$  S/m;  $\epsilon_r = 36.509$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, WLAN 5G (0) Frequency: 5240 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (5.98, 5.98, 5.98)

**Rear Side Ch.48/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.279 W/kg

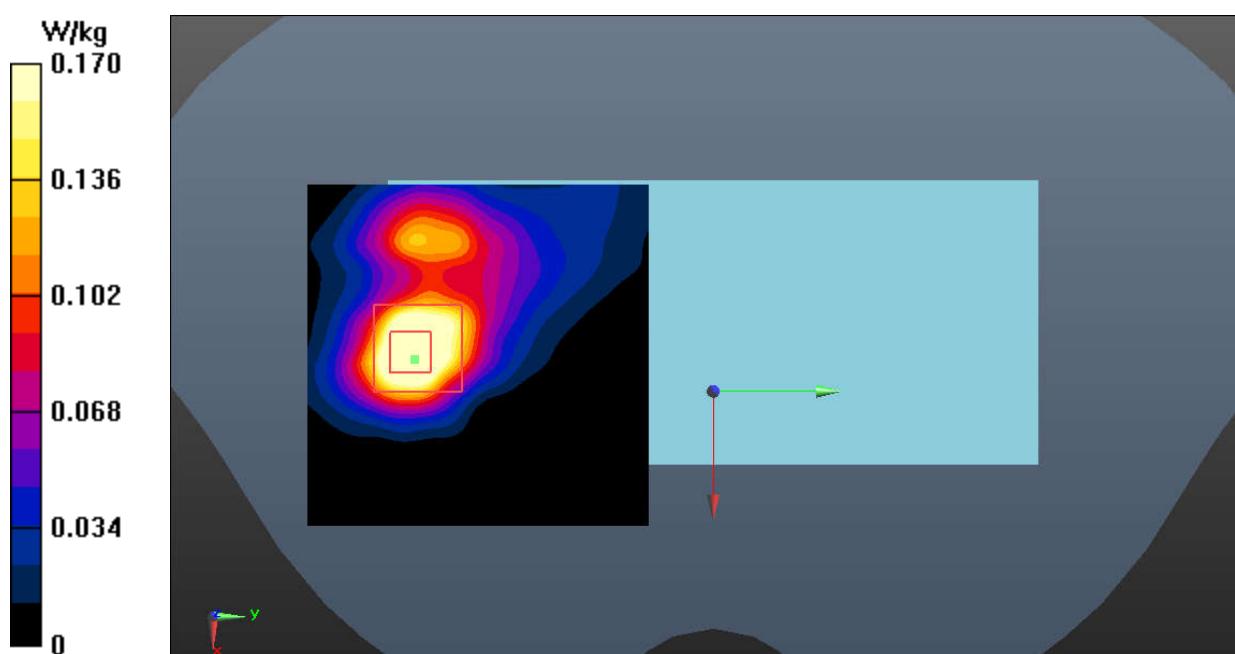
**Rear Side Ch.48/Zoom Scan (8x8x21)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 0.8840 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.329 W/kg

**SAR(1 g) = 0.117 W/kg; SAR(10 g) = 0.042 W/kg**

Maximum value of SAR (measured) = 0.170 W/kg



**LTE Band 66 Extremity**

Date: 2022-9-15

Electronics: DAE4 Sn1527

Medium: Head 1750MHz

Medium parameters used:  $f = 1770$  MHz;  $\sigma = 1.406$  S/m;  $\epsilon_r = 39.346$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, LTE\_FDD (0) Frequency: 1770 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (9.22, 9.22, 9.22)

**Bottom Side High 100RB/Area Scan (51x71x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

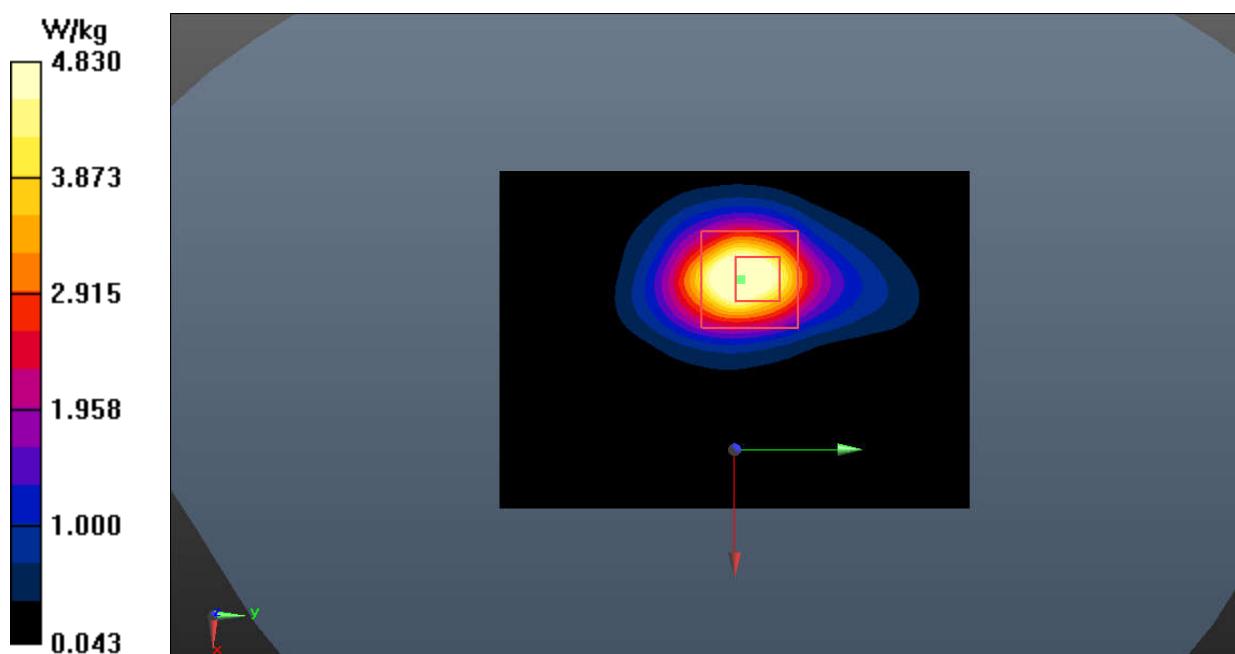
**Bottom Side High 100RB/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.39 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 7.43 W/kg

**SAR(1 g) = 3.53 W/kg; SAR(10 g) = 1.74 W/kg**

Maximum value of SAR (measured) = 4.83 W/kg



**WLAN 5GHz Extremity**

Date: 2022-9-13

Electronics: DAE4 Sn1527

Medium: Head 5600MHz

Medium parameters used:  $f = 5580$  MHz;  $\sigma = 5.126$  S/m;  $\epsilon_r = 34.919$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: UID 0, WLAN 5G (0) Frequency: 5580 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (5.47, 5.47, 5.47)

**Top Side Ch.116/Area Scan (61x111x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 3.58 W/kg

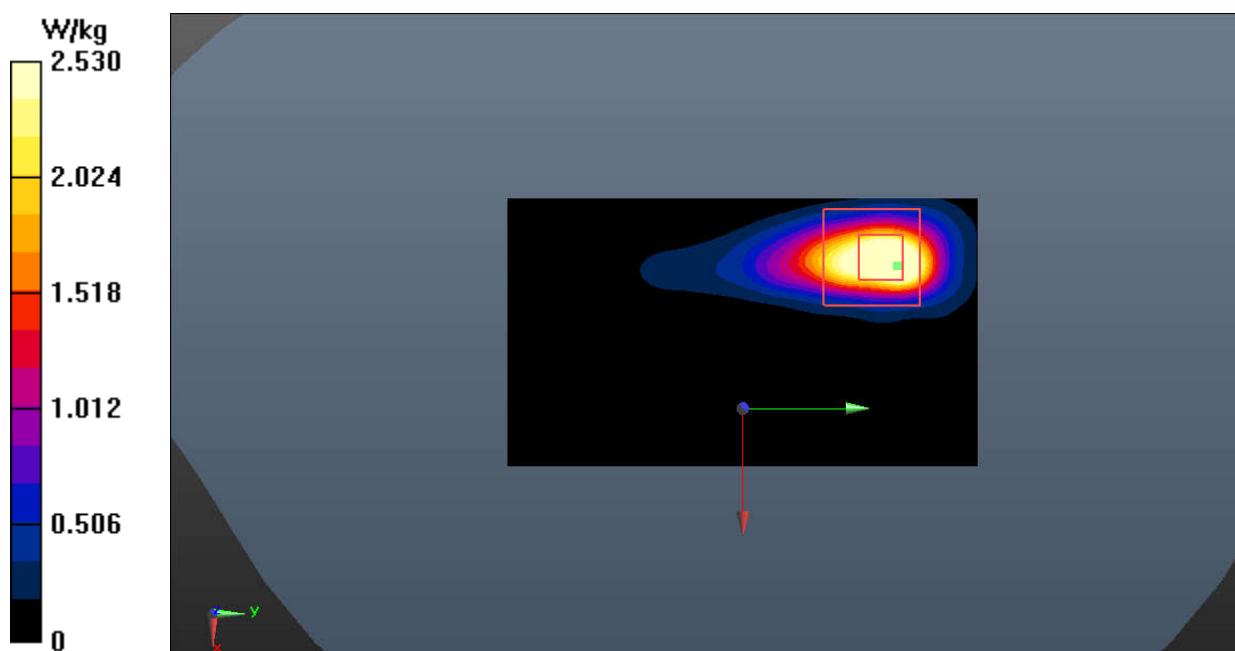
**Top Side Ch.116/Zoom Scan (8x8x21)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 2.011 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 11.3 W/kg

**SAR(1 g) = 1.30 W/kg; SAR(10 g) = 0.346 W/kg**

Maximum value of SAR (measured) = 2.53 W/kg



#### K.4. System Verification Results for Spot Check

##### 750MHz

Date: 2022-9-10

Electronics: DAE4 Sn1527

Medium: Head 750MHz

Medium parameters used:  $f = 750$  MHz;  $\sigma = 0.879$  S/m;  $\epsilon_r = 42.682$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

Probe: EX3DV4 - SN7621 ConvF (11.12, 11.12, 11.12)

**System Validation/Area Scan (81x161x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Reference Value = 59.123 V/m; Power Drift = -0.07 dB

**SAR(1 g) = 2.07 W/kg; SAR(10 g) = 1.39 W/kg**

Maximum value of SAR (interpolated) = 2.66 W/kg

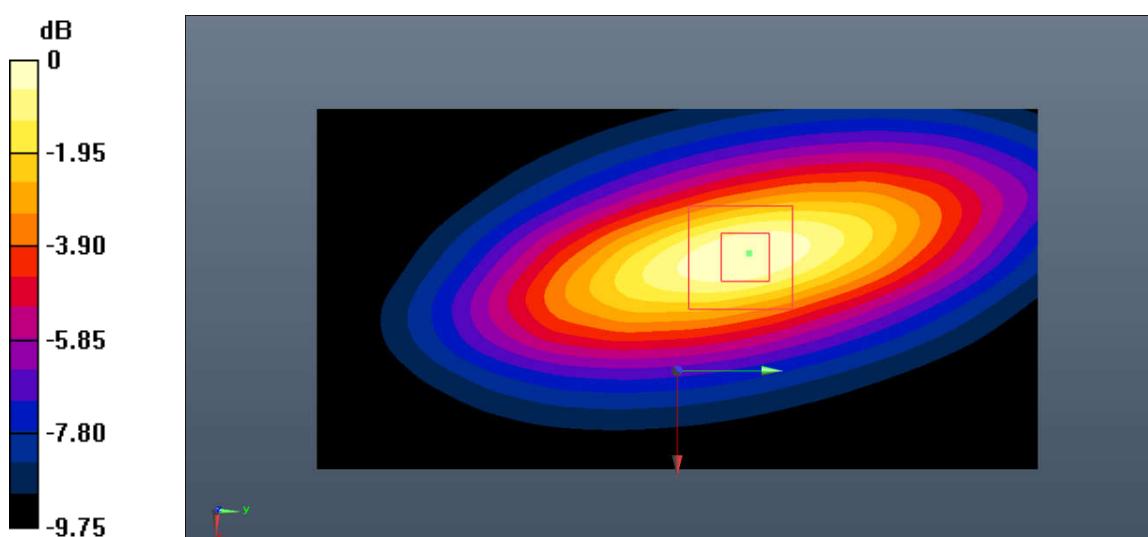
**System Validation/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 59.123 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 3.08 W/kg

**SAR(1 g) = 2.02 W/kg; SAR(10 g) = 1.36 W/kg**

Maximum value of SAR (measured) = 2.62 W/kg



0 dB = 2.62 W/kg = 4.18 dB W/kg

**835MHz**

Date: 2022-9-10

Electronics: DAE4 Sn1527

Medium: Head 835MHz

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.917$  S/m;  $\epsilon_r = 41.151$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

Probe: EX3DV4 - SN7621 ConvF (11.12, 11.12, 11.12)

**System Validation/Area Scan (91x161x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Reference Value = 63.837 V/m; Power Drift = 0.05 dB

**SAR(1 g) = 2.42 W/kg; SAR(10 g) = 1.57 W/kg**

Maximum value of SAR (interpolated) = 3.63 W/kg

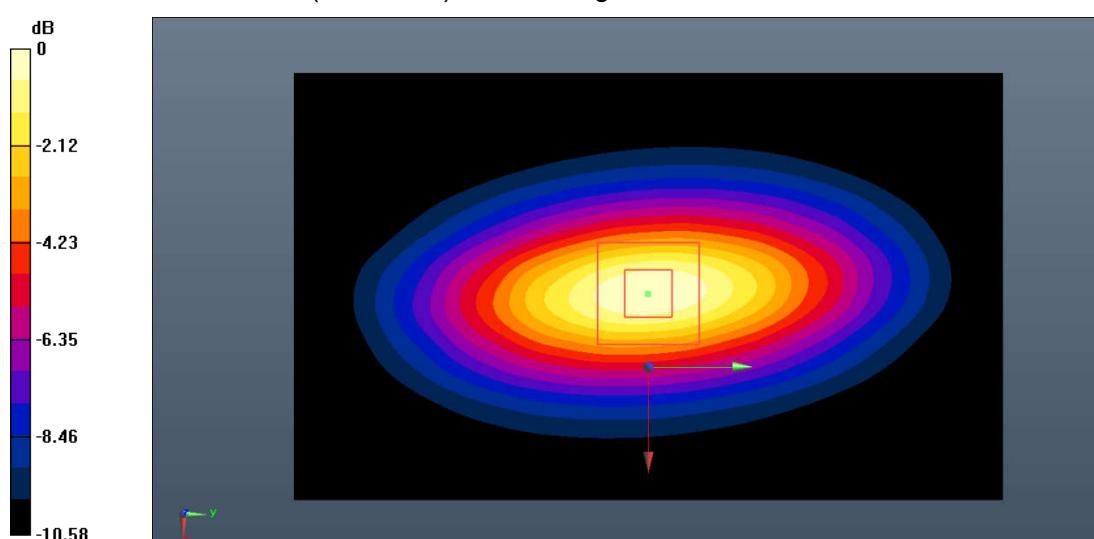
**System Validation/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 63.837 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 4.30 W/kg

**SAR(1 g) = 2.48 W/kg; SAR(10 g) = 1.60 W/kg**

Maximum value of SAR (measured) = 3.65 W/kg



0 dB = 3.65 W/kg = 5.62 dB W/kg

**1750MHz**

Date: 2022-9-15

Electronics: DAE4 Sn1527

Medium: Head 1750MHz

Medium parameters used:  $f = 1750$  MHz;  $\sigma = 1.388$  S/m;  $\epsilon_r = 39.424$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

Probe: EX3DV4 - SN7621 ConvF (9.22, 9.22, 9.22)

**System Validation/Area Scan (81x121x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Reference Value = 78.752 V/m; Power Drift = 0.08 dB

**SAR(1 g) = 9.20 W/kg; SAR(10 g) = 4.88 W/kg**

Maximum value of SAR (interpolated) = 11.1 W/kg

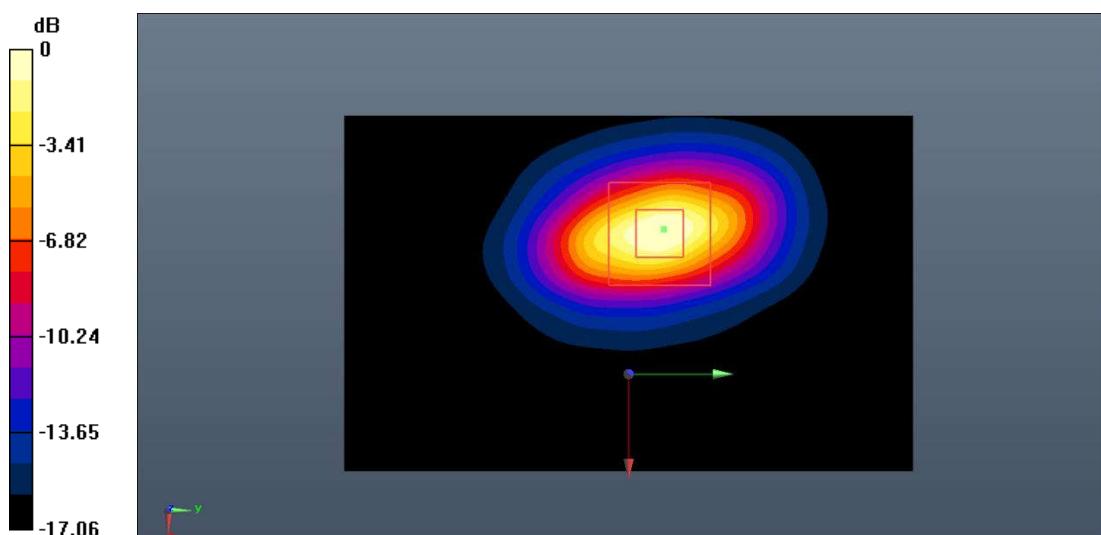
**System Validation/Zoom Scan (7x7x7)/Cube0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 78.752 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 20.4 W/kg

**SAR(1 g) = 9.46 W/kg; SAR(10 g) = 5.01 W/kg**

Maximum value of SAR (measured) = 11.3 W/kg



**1900MHz**

Date: 2022-9-15

Electronics: DAE4 Sn1527

Medium: Head 1900MHz

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.414$  S/m;  $\epsilon_r = 39.058$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

Probe: EX3DV4 - SN7621 ConvF (8.90, 8.90, 8.90)

**System Validation/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Reference Value = 81.542 V/m; Power Drift = 0.02 dB

**SAR(1 g) = 10.2 W/kg; SAR(10 g) = 5.15 W/kg**

Maximum value of SAR (interpolated) = 12.0 W/kg

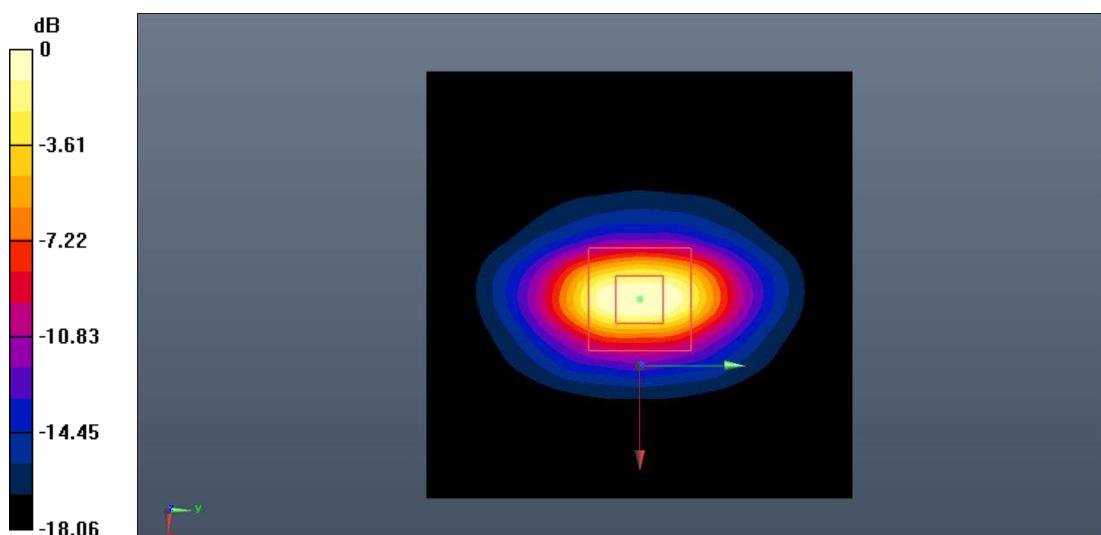
**System Validation/Zoom Scan (7x7x7)/Cube0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 81.542 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 25.1 W/kg

**SAR(1 g) = 10.4 W/kg; SAR(10 g) = 5.24 W/kg**

Maximum value of SAR (measured) = 12.3 W/kg



**2450MHz**

Date: 2022-9-13

Electronics: DAE4 Sn1527

Medium: Head 2450MHz

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.839$  S/m;  $\epsilon_r = 38.442$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

Probe: EX3DV4 - SN7621 ConvF (8.17, 8.17, 8.17)

**System Validation/Area Scan (81x121x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Reference Value = 92.495 V/m; Power Drift = 0.12 dB

**SAR(1 g) = 13.5 W/kg; SAR(10 g) = 6.09 W/kg**

Maximum value of SAR (interpolated) = 15.4 W/kg

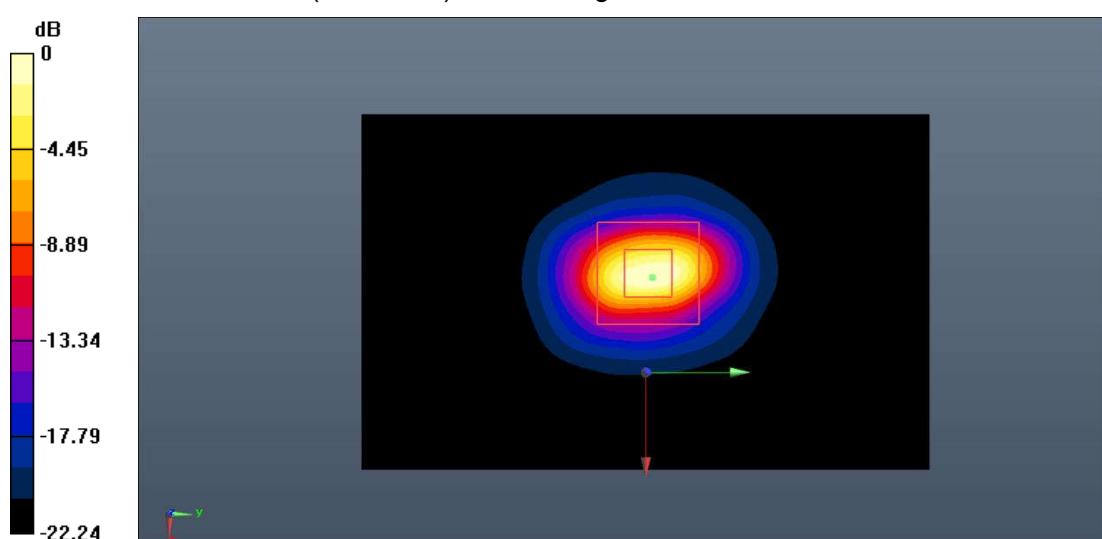
**System Validation/Zoom Scan (7x7x7)/Cube0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 92.495 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 34.7 W/kg

**SAR(1 g) = 13.8 W/kg; SAR(10 g) = 6.18 W/kg**

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



0 dB = 15.7 W/kg = 11.96 dB W/kg

**2550MHz**

Date: 2022-9-15

Electronics: DAE4 Sn1527

Medium: Head 2550MHz

Medium parameters used:  $f = 2550$  MHz;  $\sigma = 1.937$  S/m;  $\epsilon_r = 38.149$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: CW\_TMC Frequency: 2550 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN7621 ConvF (8.17, 8.17, 8.17)

**System Validation/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Reference Value = 94.008 V/m; Power Drift = 0.09 dB

**SAR(1 g) = 14.1 W/kg; SAR(10 g) = 6.31 W/kg**

Maximum value of SAR (interpolated) = 16.1 W/kg

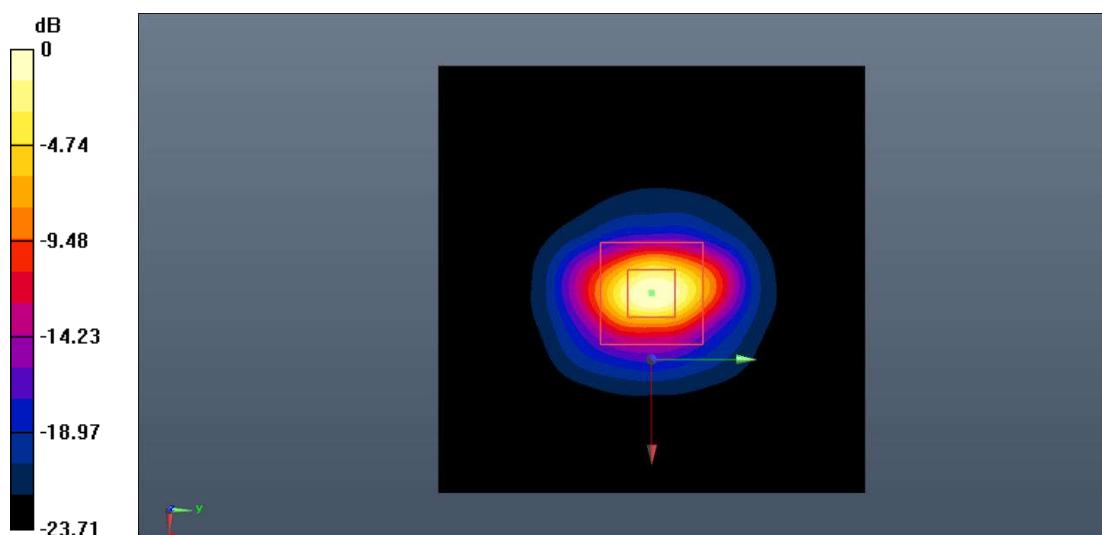
**System Validation/Zoom Scan (7x7x7)/Cube0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 94.008 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 37.7 W/kg

**SAR(1 g) = 14.4 W/kg; SAR(10 g) = 6.42 W/kg**

Maximum value of SAR (measured) = 16.4 W/kg



**5250MHz**

Date: 2022-9-13

Electronics: DAE4 Sn1527

Medium: Head 5250MHz

Medium parameters used:  $f = 5250$  MHz;  $\sigma = 4.646$  S/m;  $\epsilon_r = 36.482$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: CW\_TMC Frequency: 5250 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (5.98, 5.98, 5.98)

**System Validation/Area Scan (61x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Reference Value = 64.623 V/m; Power Drift = -0.09 dB

**SAR(1 g) = 7.98 W/kg; SAR(10 g) = 2.26 W/kg**

Maximum value of SAR (interpolated) = 9.93 W/kg

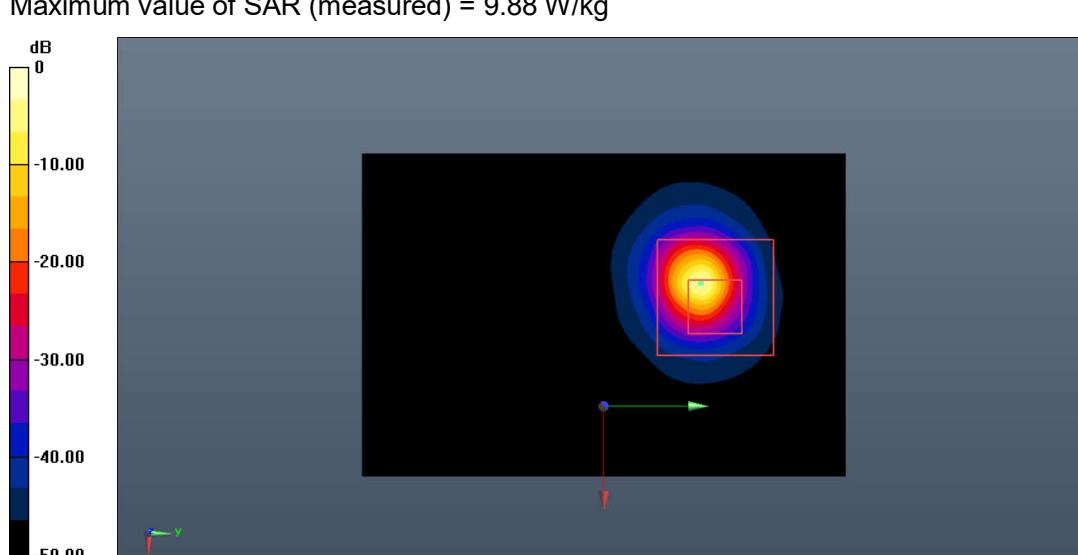
**System Validation/Zoom Scan (8x8x21)/Cube0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 64.623 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 24.9 W/kg

**SAR(1 g) = 7.76 W/kg; SAR(10 g) = 2.24 W/kg**

Maximum value of SAR (measured) = 9.88 W/kg



0 dB = 9.88 W/kg = 9.95 dB W/kg

**5600MHz**

Date: 2022-9-13

Electronics: DAE4 Sn1527

Medium: Head 5600MHz

Medium parameters used:  $f = 5600$  MHz;  $\sigma = 5.153$  S/m;  $\epsilon_r = 34.865$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: CW\_TMC Frequency: 5600 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (5.47, 5.47, 5.47)

**System Validation/Area Scan (61x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Reference Value = 67.559 V/m; Power Drift = 0.08 dB

**SAR(1 g) = 8.29 W/kg; SAR(10 g) = 2.33 W/kg**

Maximum value of SAR (interpolated) = 10.2 W/kg

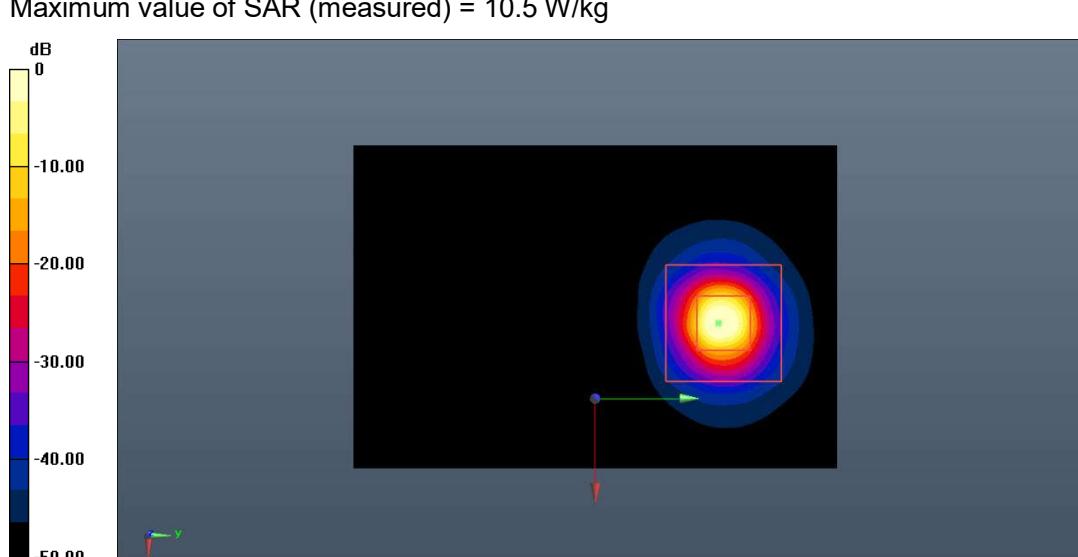
**System Validation/Zoom Scan (8x8x21)/Cube0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 67.559 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 27.8 W/kg

**SAR(1 g) = 8.45 W/kg; SAR(10 g) = 2.39 W/kg**

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



0 dB = 10.5 W/kg = 10.21 dB W/kg

**5750MHz**

Date: 2022-9-13

Electronics: DAE4 Sn1527

Medium: Head 5750MHz

Medium parameters used:  $f = 5750$  MHz;  $\sigma = 5.345$  S/m;  $\epsilon_r = 34.411$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Communication System: CW\_TMC Frequency: 5750 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (5.40, 5.40, 5.40)

**System Validation/Area Scan (61x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Reference Value = 65.983 V/m; Power Drift = 0.05 dB

**SAR(1 g) = 7.98 W/kg; SAR(10 g) = 2.22 W/kg**

Maximum value of SAR (interpolated) = 9.97 W/kg

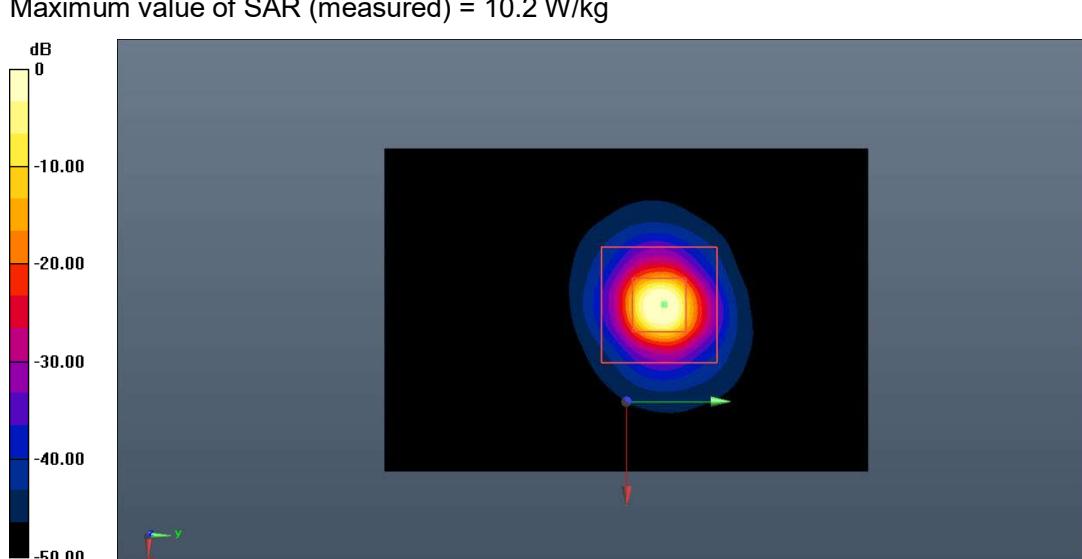
**System Validation/Zoom Scan (8x8x21)/Cube0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 65.983 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 26.2 W/kg

**SAR(1 g) = 8.19 W/kg; SAR(10 g) = 2.27 W/kg**

Maximum value of SAR (measured) = 10.2 W/kg



0 dB = 10.2 W/kg = 10.09 dB W/kg

\*\*\*END OF REPORT\*\*\*