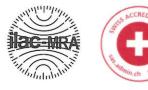
## Impedance Measurement Plot for Head TSL

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- 5.0 -5.0 -10. -15. -20. -25. -30. -35.			20				~			2+ 3: > 4.	5.	\$50000 GHz 50000 GHz 50000 GHz 200000 GHz	-27, 935 dB 28,212 dB -26,642 dB -26,749 dB
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S Swiss Calibration Service

Accreditation No.: SCS 0108

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

#### Client UL Korea (Dymstec)

Certificate No: D2300V2-1090\_Nov22

# **CALIBRATION CERTIFICATE**

			A 1 0	170 4	
Object	D2300V2 - SN:1	000	절		10.
,	02000VZ - SIV. I	030		2	HA.
			재 거	7	100
Calibration procedure(s)	QA CAL-05.v11	NAMES OF STREET, STREET			
		duro for CAD Validat	ion Courses	h 1	0.7.0.011
	Calibration Proce	edure for SAR Validat	ion Sources	between	0.7-3 GHz
	Contract of Case of the State of	The state of the s			
Calibration date:	November 15, 20	)22			
This calibration certificate document	nts the traceability to nation	onal standards, which realize	the physical units	s of measure	ements (SI)
The measurements and the uncert	ainties with confidence p	robability are given on the foll	owing pages and	are part of	the certificate
				- Portor	
All calibrations have been conducted	ed in the closed laborator	v facility: environment tempe	raturo (22 + 2)°C	and humidit	N < 700/
		y adding, on a former tempe	ature (22 ± 3) C		y < 70%.
Calibration Equipment used (M&TE	critical for calibration)				
earbianen Equipinent deca (mart					
Primary Standards	ID#	Cal Data (Cartificate Na.)			
Power meter NRP	SN: 104778	Cal Date (Certificate No.)	00504		duled Calibration
Power sensor NRP-Z91	SN: 103244	04-Apr-22 (No. 217-03525	(* ),	Apr-2	
Power sensor NRP-Z91	SN: 103245	04-Apr-22 (No. 217-03524	·	Apr-2	
Reference 20 dB Attenuator	SN: BH9394 (20k)	04-Apr-22 (No. 217-03525	50 C	Apr-2	
Type-N mismatch combination	SN: 310982 / 06327	04-Apr-22 (No. 217-03527		Apr-2	
Reference Probe EX3DV4	0.000 Move (0.000 / 49.68	04-Apr-22 (No. 217-03528		Apr-2	
DAE4	SN: 7349	31-Dec-21 (No. EX3-7349		Dec-2	
	SN: 601	31-Aug-22 (No. DAE4-601	_Aug22)	Aug-2	3
Secondary Standards	ID #	Check Date (in house)		Scher	luled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check	Oct-22)		ise check: Oct-24
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check	Contraction of Contraction		ise check: Oct-24
Power sensor HP 8481A	SN: MY41093315	07-Oct-15 (in house check			ise check: Oct-24
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check			ise check: Oct-24
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check	N		ise check: Oct-24
•	1		00(22)	III HOU	ise check. Oct-24
	Name	Function		Signa	ture
Calibrated by:	Jeton Kastrati	Laboratory Tec	chnician I	Ĩ	
			Ot	-	1
				G	
Approved by:	Sven Kühn	Technical Man	ager	C	1
				6	A
				01	
					N
This calibration certificate shall not l	o ronroduced event			Issued	: November 23, 2022
The calibration certificate shall not i	be reproduced except in	iuii without written approval o	t the laboratory.		



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#### 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) 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-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

#### Additional Documentation:

c) DASY 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 source is mounted in a touch configuration below the center marking of the flat phantom.
- Return Loss: This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. 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	DASY52	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	2300 MHz ± 1 MHz	<u></u>

## Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.5	1.67 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.9±6%	1.70 mho/m ± 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	12.3 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	48.5 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.94 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.6 W/kg ± 16.5 % (k=2)

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

#### Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.8 Ω - 5.9 jΩ
Return Loss	- 24.6 dB

### General Antenna Parameters and Design

Electrical Delay (one direction)	
Liectrical Delay (one direction)	1 171 pp
	1.1/1 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 be 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	
1	Manufactureu by	SPEAG
		OI LAG

#### **DASY5 Validation Report for Head TSL**

Date: 15.11.2022

Test Laboratory: SPEAG, Zurich, Switzerland

#### DUT: Dipole 2300 MHz; Type: D2300V2; Serial: D2300V2 - SN:1090

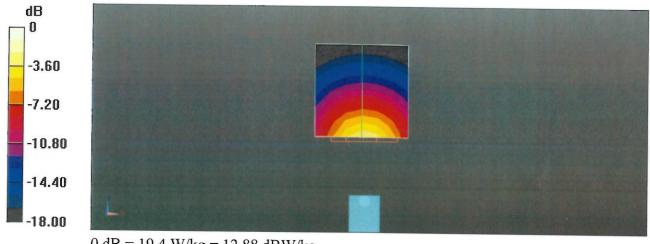
Communication System: UID 0 - CW; Frequency: 2300 MHz Medium parameters used: f = 2300 MHz;  $\sigma = 1.7$  S/m;  $\epsilon_r = 38.9$ ;  $\rho = 1000$  kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(7.98, 7.98, 7.98) @ 2300 MHz; Calibrated: 31.12.2021
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 31.08.2022
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

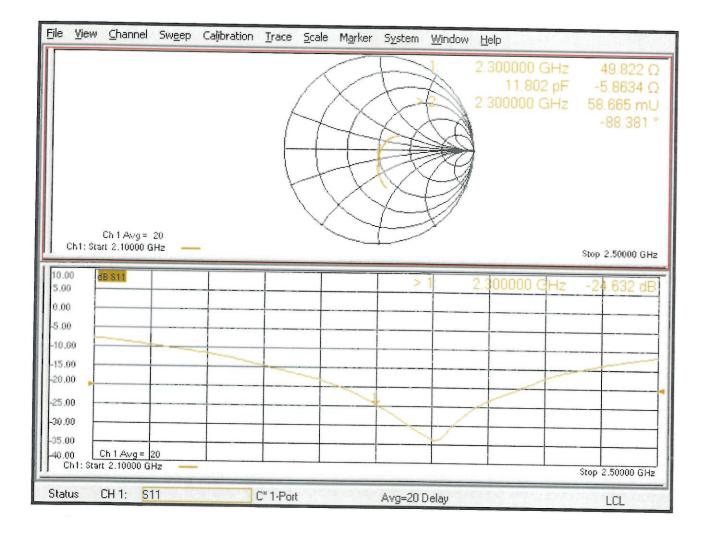
## Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mmReference Value = 114.5 V/m; Power Drift = -0.01 dB Peak SAR (extrapolated) = 22.4 W/kg SAR(1 g) = 12.3 W/kg; SAR(10 g) = 5.94 W/kg Smallest distance from peaks to all points 3 dB below = 9 mm Ratio of SAR at M2 to SAR at M1 = 55.1% Maximum value of SAR (measured) = 19.4 W/kg



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

## Impedance Measurement Plot for Head TSL



#### Justification for Extended SAR Dipole Calibrations

Instead of the typical annual calibration recommended by measurement standards, longer calibration intervals of up to three years may be considered when it is demonstrated that the SAR target, impedance and return loss of a dipole have remain stable according to the following requirements

KDB 865664 D01v01r04 requirements

`

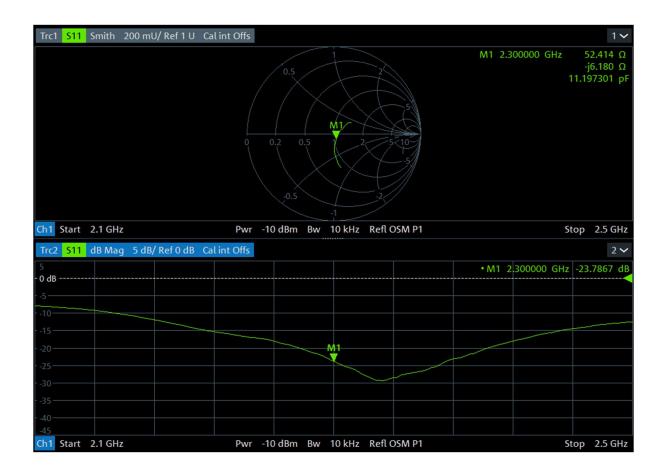
a) return loss : < - 20 dB, within 20% of previous measurement

b ) impedance : within 5  $\Omega$  from previous measurement

Dipole Antenna	Head/Body	Date of Measurement	Return Loss (dB)	Δ%	Impedance (Ω)	ΔΩ
D2300V2-SN : 1090	Head	2022.03.24	-24.632	3.4	49.822	-2.59
D2300V2-SN . 1090	пеай	2023.11.09	-23.787	5.4	52.414	-2.59

c ) extrapolated peak SAR : within 10% of that reported in the calibration data

Dipole Antenna	Head/Body	Date of Measurement	extrapolated peak SAR (W/kg)	Δ%
D2200V/2 CN - 1000	llood	2022.03.24	8.96	<u>с</u> г
D2300V2-SN : 1090	Head	2024.04.02	9.55	-6.5



#### **Calibration Laboratory of** Schmid & Partner

**Engineering AG** Zeughausstrasse 43, 8004 Zurich, Switzerland



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Swiss Calibration Service

Accreditation No.: SCS 0108

Certificate No. D3700V2-1036\_May23

Accredited by the Swiss Accreditation Service (SAS)

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#### Client UL

Gyeonggi-do, Republic of Korea

CALIBRATION C	ERTIFICAT	E			
Object	D3700V2 - SN:1036				
Calibration procedure(s)	QA CAL-22.v7 Calibration Proce	edure for SAR Validation Sources	s between 3-10 GHz		
Calibration date:	May 19, 2023				
The measurements and the uncerta	ainties with confidence p ed in the closed laborator	onal standards, which realize the physical un robability are given on the following pages ar y facility: environment temperature (22 $\pm$ 3)°(	nd are part of the certificate.		
Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration		
Power meter NRP2	SN: 104778	30-Mar-23 (No. 217-03804/03805)	Mar-24		
Power sensor NRP-Z91	SN: 103244	30-Mar-23 (No. 217-03804)	Mar-24 Mar-24		
Power sensor NRP-Z91	SN: 103245	30-Mar-23 (No. 217-03805)	Mar-24 Mar-24		
Reference 20 dB Attenuator	SN: BH9394 (20k)	30-Mar-23 (No. 217-03809)	Mar-24		
Type-N mismatch combination	SN: 310982 / 06327	30-Mar-23 (No. 217-03810)	Mar-24		
Reference Probe EX3DV4	SN: 3503	07-Mar-23 (No. EX3-3503_Mar23)	Mar-24		
DAE4	SN: 601	19-Dec-22 (No. DAE4-601_Dec22)	Dec-23		
Secondary Standards	ID #	Check Date (in house)	Scheduled Check		
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Oct-22)	In house check: Oct-24		
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-22)	In house check: Oct-24		
Power sensor HP 8481A	SN: MY41093315	07-Oct-15 (in house check Oct-22)	In house check: Oct-24		
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-22)	In house check: Oct-24		
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-22)	In house check: Oct-24		
	Name	Function	Circulture		
Calibrated by:	Krešimir Franjić	Laboratory Technician	Signature		
Approved by:	Sven Kühn	Technical Manager	Scr		
			Issued: May 19, 2023		

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





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Accreditation No.: SCS 0108

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#### 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) 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-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

#### Additional Documentation:

c) DASY 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 source is mounted in a touch configuration below the center marking of the flat phantom.
- *Return Loss:* This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. 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	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0  mm, dz = 1.4  mm	Graded Ratio = 1.4 (Z direction)
Frequency	3700 MHz ± 1 MHz	

#### Head TSL parameters at 3700 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	37.7	3.12 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	36.9 ± 6 %	3.07 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

#### SAR result with Head TSL at 3700 MHz

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	6.79 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	67.8 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.46 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.5 W/kg ± 19.5 % (k=2)

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

#### Antenna Parameters with Head TSL at 3700 MHz

Impedance, transformed to feed point	46.3 Ω - 0.1 jΩ
Return Loss	- 28.3 dB

#### **General Antenna Parameters and Design**

Electrical Delay (one direction)	1 100
Lioothour Delay (one unection)	1.139 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
	SI LAG

#### **DASY5 Validation Report for Head TSL**

Date: 19.05.2023

Test Laboratory: SPEAG, Zurich, Switzerland

#### DUT: Dipole 3700 MHz; Type: D3700V2; Serial: D3700V2 - SN:1036

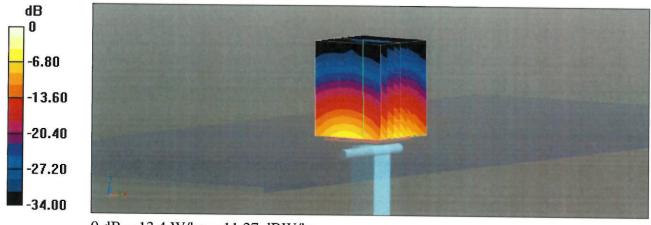
Communication System: UID 0 - CW; Frequency: 3700 MHz Medium parameters used: f = 3700 MHz;  $\sigma = 3.07$  S/m;  $\varepsilon_r = 36.9$ ;  $\rho = 1000$  kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN3503; ConvF(7.73, 7.73, 7.73) @ 3700 MHz; Calibrated: 07.03.2023
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 19.12.2022
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

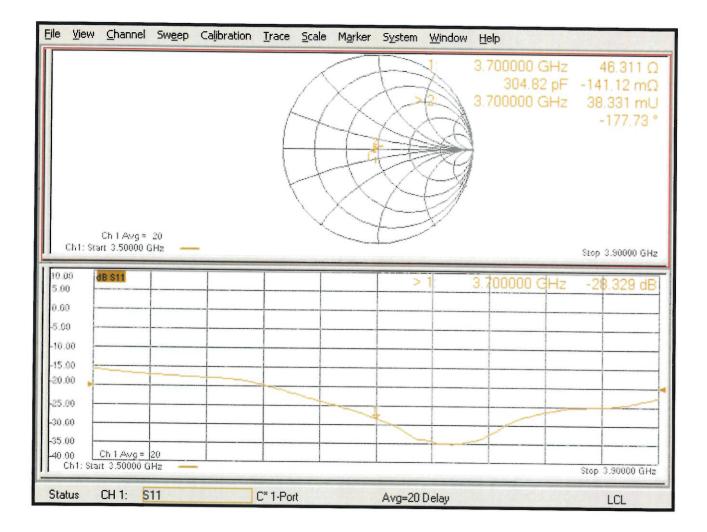
## Dipole Calibration for Head Tissue/Pin=100 mW, d=10mm, f=3700MHz/Zoom Scan,

dist=1.4mm (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 70.05 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 19.3 W/kg SAR(1 g) = 6.79 W/kg; SAR(10 g) = 2.46 W/kg Smallest distance from peaks to all points 3 dB below = 8 mm Ratio of SAR at M2 to SAR at M1 = 74% Maximum value of SAR (measured) = 13.4 W/kg



0 dB = 13.4 W/kg = 11.27 dBW/kg

## Impedance Measurement Plot for Head TSL



#### Calibration Laboratory of Schmid & Partner Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland

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#### Client UL

Gyeonggi-do, Republic of Korea

Object	D3500V2 - SN:1	075	
Calibration procedure(s)	QA CAL-22.v7 Calibration Proce	edure for SAR Validation Sources	s between 3-10 GHz
Calibration date:	May 19, 2023		
The measurements and the uncert	ainties with confidence p ed in the closed laborator	onal standards, which realize the physical un robability are given on the following pages an ry facility: environment temperature (22 $\pm$ 3)°C	nd are part of the certificate.
Primary Standards	ID #	Cal Date (Certificate No.)	Schedulad Calibration
rimary Standards	ID # SN: 104778	Cal Date (Certificate No.) 30-Mar-23 (No. 217-03804/03805)	Scheduled Calibration
imary Standards ower meter NRP2		30-Mar-23 (No. 217-03804/03805)	Mar-24
imary Standards ower meter NRP2 ower sensor NRP-Z91	SN: 104778		Mar-24 Mar-24
imary Standards wer meter NRP2 wer sensor NRP-Z91 wer sensor NRP-Z91 iference 20 dB Attenuator	SN: 104778 SN: 103244	30-Mar-23 (No. 217-03804/03805) 30-Mar-23 (No. 217-03804)	Mar-24 Mar-24 Mar-24
rimary Standards ower meter NRP2 ower sensor NRP-Z91 ower sensor NRP-Z91 eference 20 dB Attenuator ype-N mismatch combination	SN: 104778 SN: 103244 SN: 103245	30-Mar-23 (No. 217-03804/03805) 30-Mar-23 (No. 217-03804) 30-Mar-23 (No. 217-03805) 30-Mar-23 (No. 217-03809)	Mar-24 Mar-24 Mar-24 Mar-24
rimary Standards ower meter NRP2 ower sensor NRP-Z91 ower sensor NRP-Z91 oference 20 dB Attenuator ope-N mismatch combination	SN: 104778 SN: 103244 SN: 103245 SN: BH9394 (20k)	30-Mar-23 (No. 217-03804/03805) 30-Mar-23 (No. 217-03804) 30-Mar-23 (No. 217-03805) 30-Mar-23 (No. 217-03809) 30-Mar-23 (No. 217-03810)	Mar-24 Mar-24 Mar-24 Mar-24 Mar-24
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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

#### 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) 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-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

#### Additional Documentation:

c) DASY 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 source is mounted in a touch configuration below the center marking of the flat phantom.
- *Return Loss:* This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. 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	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	3500 MHz ± 1 MHz	

Head TSL parameters at 3500 MHz The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	37.9	2.91 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	37.2 ± 6 %	2.92 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

## SAR result with Head TSL at 3500 MHz

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	6.58 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	65.5 W/kg ± 19.9 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL SAR measured	condition 100 mW input power	2.48 W/kg

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

## Antenna Parameters with Head TSL at 3500 MHz

Impedance, transformed to feed point	53.2 Ω - 5.8 ϳΩ
Return Loss	- 23.8 dB

## General Antenna Parameters and Design

	Electrical Delay (one direction)	
1	Lieutical Delay (one direction)	4.400
- L	, , , , , , , , , , , , , , , , , , ,	1.139 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

3		
i	Manufactured by	
	Manufactured by	CDEAO
1		SPEAG