

Measurement Conditions

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

DASY Version	DASY6	V16.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	5 mm	with Spacer
Zoom Scan Resolution	dx, dy = 2.7 mm, dz = 1.2 mm	Graded Ratio = 1.2 (Z direction)
Frequency	8000 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	32.7	7.84 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	31.1 ± 6 %	7.90 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	26.9 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	267 W/kg ± 24.7 % (k=2)

SAR averaged over 1 cm³ (8 g) of Head TSL	Condition	
SAR measured	100 mW input power	5.58 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	55.1 W/kg ± 24.4 % (k=2)

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	4.56 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	45.0 W/kg ± 24.4 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.6 Ω - 2.7 j Ω
Return Loss	- 30.3 dB

APD (Absorbed Power Density)

APD averaged over 1 cm ²	Condition	
APD measured	100 mW input power	266 W/m ²
APD measured	normalized to 1W	2660 W/m² \pm 29.2 % (k=2)

APD averaged over 4 cm ²	condition	
APD measured	100 mW input power	112 W/m ²
APD measured	normalized to 1W	1120 W/m² \pm 28.9 % (k=2)

*The reported APD values have been derived using psSAR8g.

General Antenna Parameters and Design

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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DASY6 Validation Report for Head TSL

Measurement Report for D8GHz-1008, UID 0 -, Channel 8000 (8000.0MHz)

Device under Test Properties

Name, Manufacturer	Dimensions [mm]	IMEI	DUT Type
D8GHz	16.0 x 6.0 x 300.0	SN: 1008	-

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz]	Conversion Factor	TSL Cond. [S/m]	TSL Permittivity
Flat, HSL	5.00	Band	CW,	8000	5.90	7.90	31.1

Hardware Setup

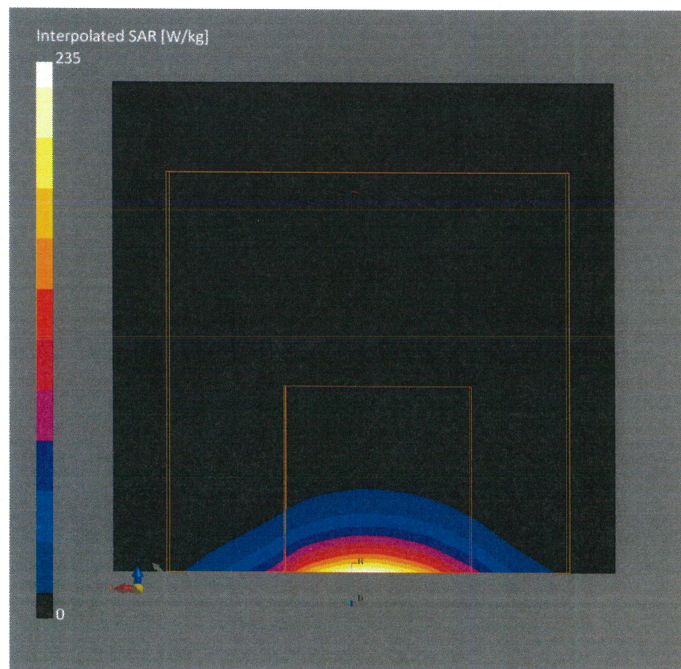
Phantom	TSL	Probe, Calibration Date	DAE, Calibration Date
MFP V8.0 Center - 1182	HBBL600-10000V6	EX3DV4 - SN7405, 2022-06-02	DAE4 Sn908, 2021-06-24

Scan Setup

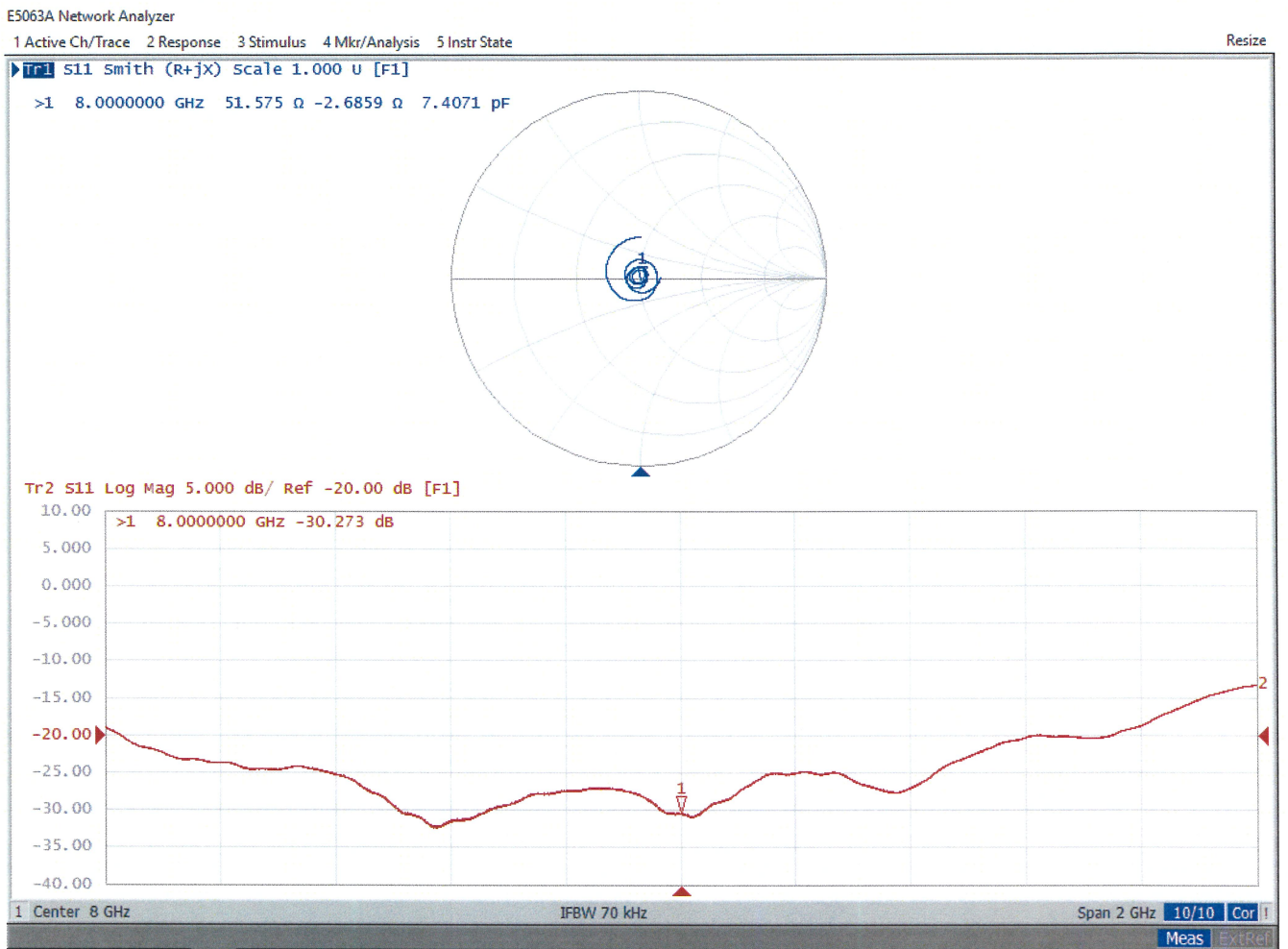
	Zoom Scan
Grid Extents [mm]	28.0 x 28.0 x 24.0
Grid Steps [mm]	2.7 x 2.7 x 1.2
Sensor Surface [mm]	1.4
Graded Grid	Yes
Grading Ratio	1.2
MAIA	N/A
Surface Detection	VMS + 6p
Scan Method	Measured

Measurement Results

	Zoom Scan
Date	2022-06-10, 15:02
psSAR1g [W/Kg]	26.9
psSAR8g [W/Kg]	5.58
psSAR10g [W/Kg]	4.56
Power Drift [dB]	0.05
Power Scaling	Disabled
Scaling Factor [dB]	
TSL Correction	Enabled
M2/M1 [%]	48.7
Dist 3dB Peak [mm]	4.3

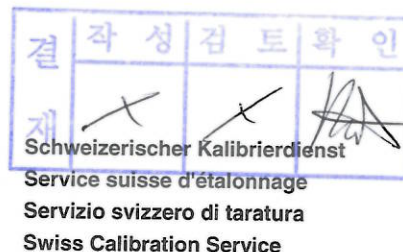


Impedance Measurement Plot for Head TSL





SCS



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **UL Korea (Dymstec)**

Certificate No: **5G-Veri10-1022_Mar22**

CALIBRATION CERTIFICATE

Object **5G Verification Source 10 GHz - SN: 1022**

Calibration procedure(s) **QA CAL-45.v3
Calibration procedure for sources in air above 6 GHz**

Calibration date: **March 01, 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 $(22 \pm 3)^\circ\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Reference Probe EUmWV3 DAE4ip	SN: 9374	2021-12-21 (No. EUmWV3-9374_Dec21)	Dec-22
	SN: 1602	2021-06-25 (No. DAE4ip-1602_Jun21)	Jun-22

Secondary Standards	ID #	Check Date (in house)	Scheduled Check

	Name	Function	Signature
Calibrated by:	Leif Klysner	Laboratory Technician	
Approved by:	Niels Kuster	Quality Manager	

Issued: March 3, 2022

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