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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	2600 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.0	1.96 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	39.8 $\pm$ 6 %	1.98 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	14.2 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	56.8 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	6.36 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	25.5 W/kg $\pm$ 18.7 % (k=2)



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	48.6Ω- 6.32jΩ
Return Loss	- 23.7dB

General Antenna Parameters and Design

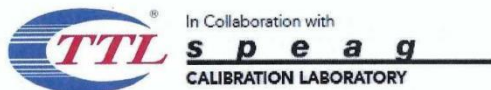
Electrical Delay (one direction)	1.058 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point can be measured.

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
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**DASY5 Validation Report for Head TSL**

Date: 2023-02-17

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1073

Communication System: UID 0, CW; Frequency: 2600 MHz

Medium parameters used: $f = 2600$ MHz; $\sigma = 1.98$ S/m; $\epsilon_r = 39.75$; $\rho = 1000$ kg/m³

Phantom section: Right Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7464; ConvF(7.5, 7.5, 7.5) @ 2600 MHz; Calibrated: 2023-01-19
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2023-01-11
- 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 = 98.06 V/m; Power Drift = -0.04 dB

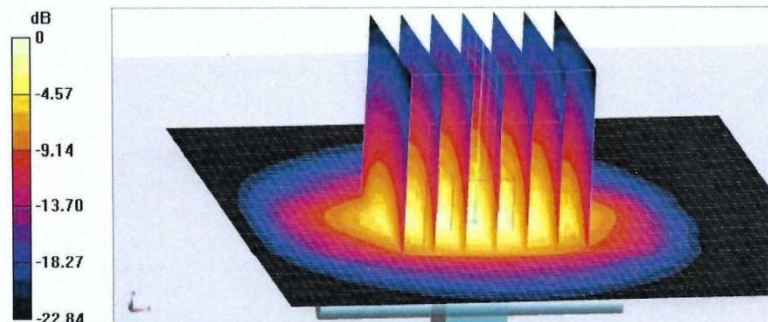
Peak SAR (extrapolated) = 30.6 W/kg

SAR(1 g) = 14.2 W/kg; SAR(10 g) = 6.36 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 47.1%

Maximum value of SAR (measured) = 24.5 W/kg



Certificate No: Z23-60086

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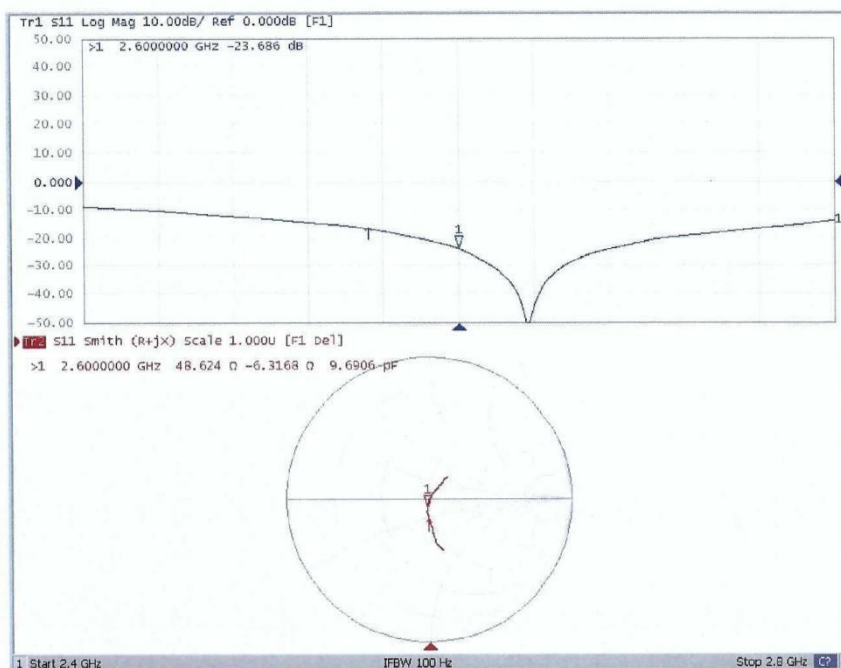


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Impedance Measurement Plot for Head TSL



Referring to KDB 865664D01V01r03, if dipoles are verified in return loss ($< -20\text{dB}$, 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.

D835V2, SN.484				
835 Head				
Date of. Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)
2023-08-25	-31.2		49.8	
2024-08-24	-31.25	0.16	49.6	-0.2

D1800V2, SN. 2d158				
1800 Head				
Date of. Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)
2021-12-17	-29.8		49.7	
2022-12-16	-29.78	-0.07	49.4	-0.3
2023-12-15	-29.74	-0.13	49.3	-0.1

D1900V2, SN. 5d002				
1900 Head				
Date of. Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)
2023-08-25	-35.7		50.6	
2024-08-24	-35.64	-0.17	50.3	-0.3

D2300V2, SN. 1103				
2300 Head				
Date of. Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)
2023-02-16	-31.5		48.2	
2024-02-15	-31.2	-0.01	48.4	0.2

D2450V2, SN. 745				
2450 Head				
Date of. Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)
2023-08-28	-23.7		54.2	
2024-08-27	-23.68	-0.08	54.1	-0.1

D2600V2, SN. 1073				
2600 Head				
Date of. Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)
2023-02-17	-23.7		48.6	
2024-02-16	-23.73	0.13	48.7	0.1

The return loss is <-20dB, within 20% of prior calibration; the impedance is within 5 ohm of prior calibration.

Therefore the verification result should support extended calibration.

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