



Report No.: 2403V85163E-SA

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China Tel: +86-10-62304633-2117

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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL at 5250MHz

Impedance, transformed to feed point	47.0Ω- 2.60jΩ	
Return Loss	- 27.8dB	

Antenna Parameters with Head TSL at 5600MHz

Impedance, transformed to feed point	49.8Ω+ 3.05jΩ	
Return Loss	- 30.3dB	

Antenna Parameters with Head TSL at 5750MHz

Impedance, transformed to feed point	51.9Ω+ 0.96jΩ		
Return Loss	- 33.5dB		

General Antenna Parameters and Design

Electrical Delay (one direction)	1.101 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
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DASY5 Validation Report for Head TSL

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1245

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

Frequency: 5750 MHz

Medium parameters used: f = 5250 MHz; σ = 4.627 S/m; ϵ_r = 35.17; ρ = 1000 kg/m³ Medium parameters used: f = 5600 MHz; σ = 5 S/m; ϵ_r = 34.58; ρ = 1000 kg/m³ Medium parameters used: f = 5750 MHz; σ = 5.162 S/m; ϵ_r = 34.36; ρ = 1000 kg/m³

Phantom section: Right Section

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

DASY5 Configuration:

Probe: EX3DV4 - SN3617; ConvF(5.5, 5.5, 5.5) @ 5250 MHz; ConvF(5.01, 5.01, 5.01) @ 5600 MHz; ConvF(5.15, 5.15, 5.15) @ 5750 MHz; Calibrated: 2023-03-31

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 /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 = 61.63 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 31.2 W/kg

SAR(1 g) = 7.84 W/kg; SAR(10 g) = 2.22 W/kg

Smallest distance from peaks to all points 3 dB below = 7.2 mm

Ratio of SAR at M2 to SAR at M1 = 65.4%

Maximum value of SAR (measured) = 18.5 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 = 61.43 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 35.6 W/kg

SAR(1 g) = 8.15 W/kg; SAR(10 g) = 2.3 W/kg

Smallest distance from peaks to all points 3 dB below = 7.2 mm

Ratio of SAR at M2 to SAR at M1 = 62.4%

Maximum value of SAR (measured) = 19.7 W/kg

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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 = 61.00 V/m; Power Drift = -0.03 dB

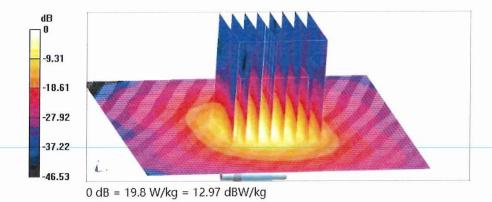
Peak SAR (extrapolated) = 36.0 W/kg

SAR(1 g) = 7.83 W/kg; SAR(10 g) = 2.19 W/kg

Smallest distance from peaks to all points 3 dB below = 7.2 mm

Ratio of SAR at M2 to SAR at M1 = 61%

Maximum value of SAR (measured) = 19.8 W/kg



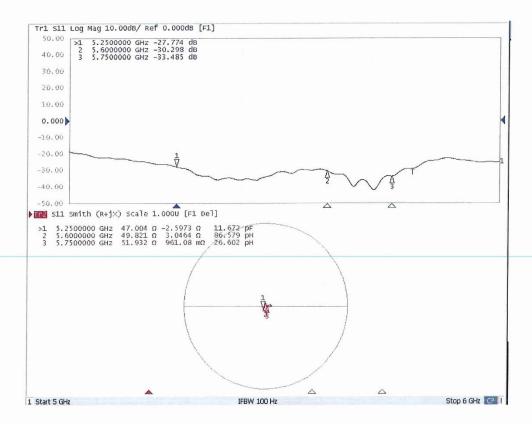
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Impedance Measurement Plot for Head TSL



D5GHzV2 - SN:1245 Extended Dipole Calibrations

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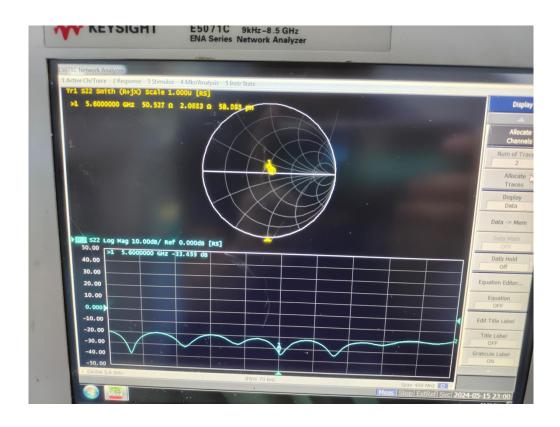
Per FCC KDB 865664 D01, calibration intervals of up to 3 years may be considered for reference dipoles when it is demonstrated that the SAR target, impedance and return loss of a dipole have remained stable according to the following requirements.

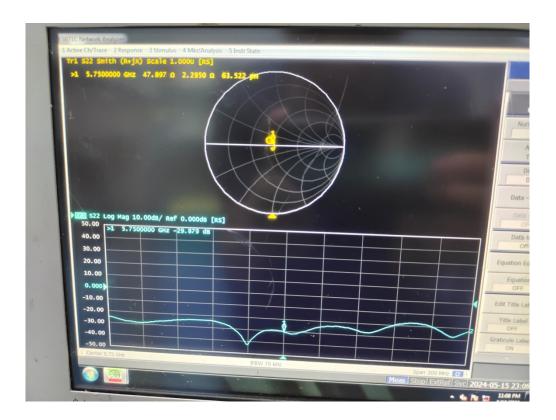
- 1. The measured SAR does not deviate more than 10% from the target on the calibration certificate.
- 2. The return-loss does not deviate more than 20% from the previous measurement and meets the required 20 dB minimum return-loss requirement.
- 3. The measurement of real or imaginary parts of impedance does not deviate more than 5Ω from the previous measurement.

The following dipole was checked to pass the above 3 requirements to have 3-year calibration period from calibration date.

D5GHzV2-SN:1245						
	5250MHz Head					
Date of	Return Loss	Delta	Real	Delta	Imaginary	Delta
Measurement	(dB)	(%)	Impedence(Ω)	(Ω)	Impedence(Ω)	(Ω)
2023/8/23	-27.774	/	47.004	/	-2.5973	/
2024/8/20	-25.515	-8.13	51.281	4.277	1.8032	4.4005
	5600MHz Head					
Date of	Return Loss	Delta	Real	Delta	Imaginary	Delta
Measurement	(dB)	(%)	Impedence(Ω)	(Ω)	Impedence(Ω)	(Ω)
2023/8/23	-30.298	/	49.821	/	3.0464	/
2024/8/20	-33.499	10.57	50.527	0.706	2.0683	-0.9781
5750MHz Head						
Date of	Return Loss	Delta	Real	Delta	Imaginary	Delta
Measurement	(dB)	(%)	Impedence(Ω)	(Ω)	Impedence(Ω)	(Ω)
2023/8/23	-33.485	/	51.932	/	0.9611	/
2024/8/20	-29.979	-10.47	47.897	-4.035	2.2950	1.3339







	Name	Signature
Calibrated By:	Karl Gong	Karl Gong