In Collaboration with
s p e a g
CALIBRATION LABORATORY

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

DASY5 Validation Report for Head TSL Date: 2023-08-23

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/m^3

Medium parameters used: f = 5600 MHz; σ = 5 S/m; ε_r = 34.58; ρ = 1000 kg/m^3

Medium parameters used: f = 5750 MHz; σ = 5.162 S/m; ε_r = 34.36; ρ = 1000 kg/m^3

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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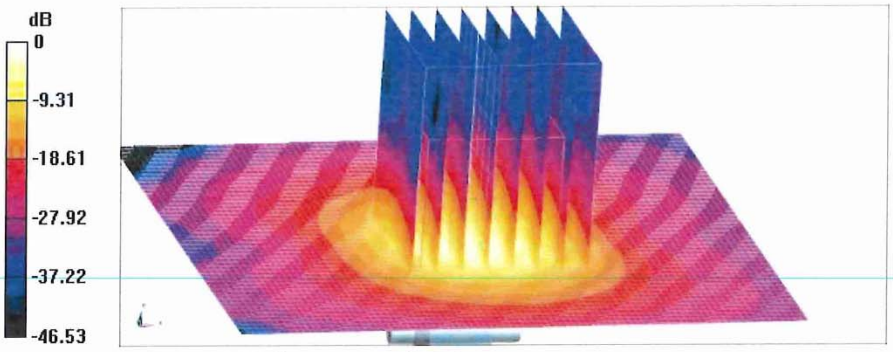
Dipole Calibration /Pin=100mW, d=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 61.00 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 36.0 W/kg
SAR(1 g) = 7.83 W/kg; SAR(10 g) = 2.19 W/kg
Smallest distance from peaks to all points 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



0 dB = 19.8 W/kg = 12.97 dBW/kg

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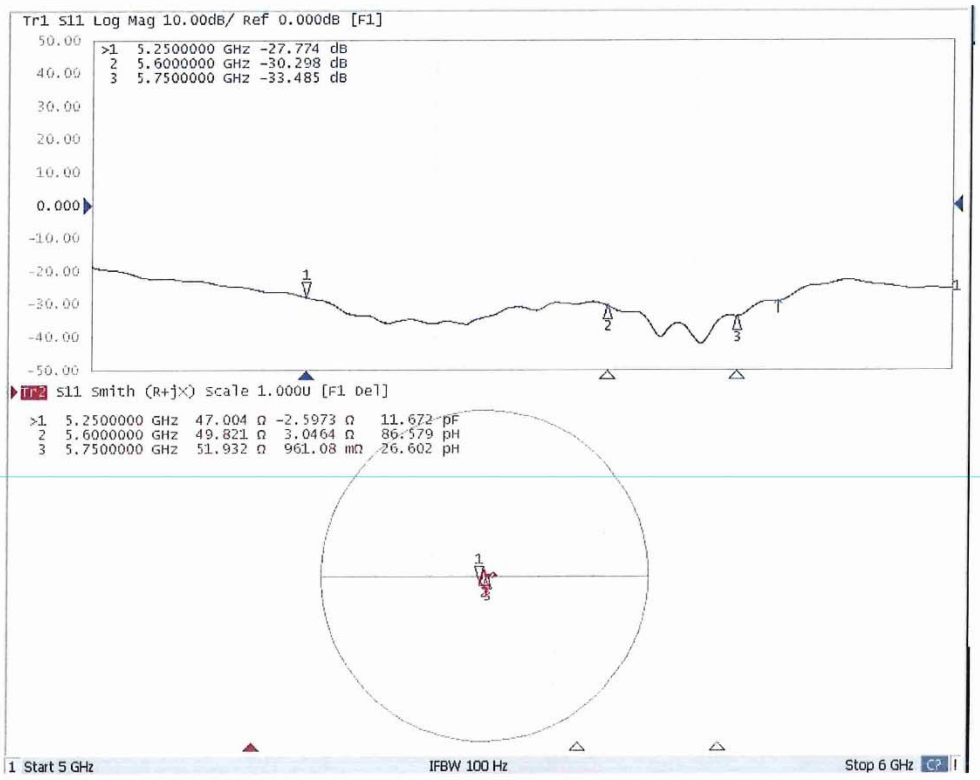
Impedance Measurement Plot for Head TSL



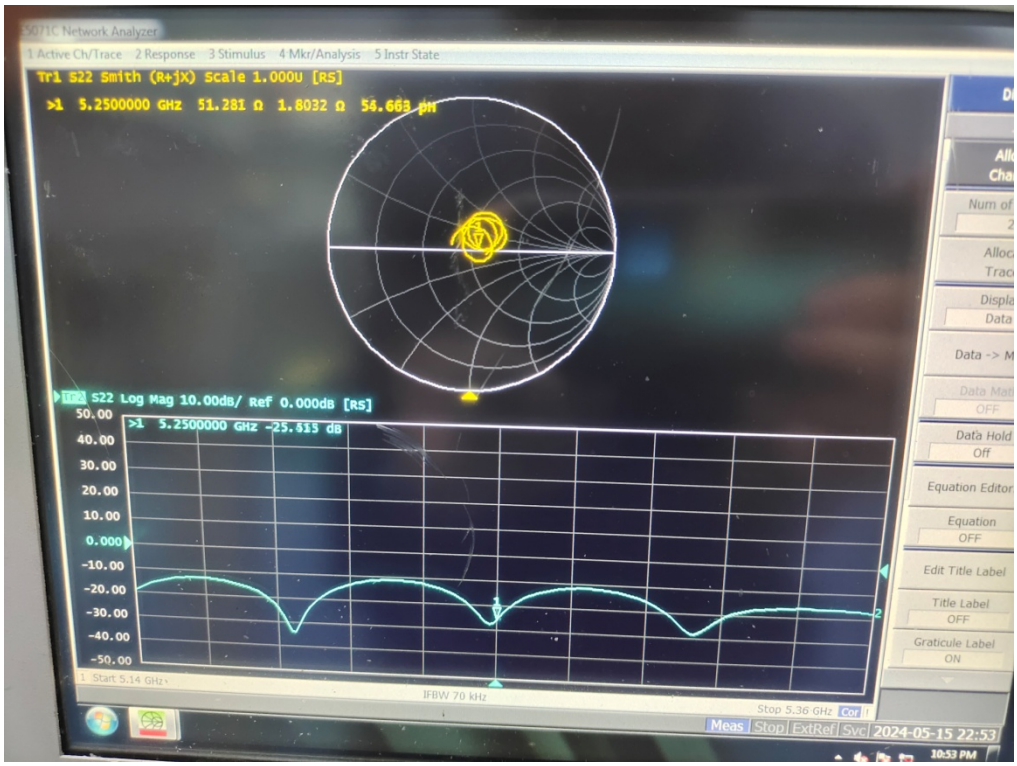
D5GHzV2 - SN:1245 Extended Dipole Calibrations

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 Measurement	Return Loss (dB)	Delta (%)	Real Impedence(Ω)	Delta (Ω)	Imaginary Impedence(Ω)	Delta (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 Measurement	Return Loss (dB)	Delta (%)	Real Impedence(Ω)	Delta (Ω)	Imaginary Impedence(Ω)	Delta (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 Measurement	Return Loss (dB)	Delta (%)	Real Impedence(Ω)	Delta (Ω)	Imaginary Impedence(Ω)	Delta (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


E5071C Network Analyzer
1 Active Ch/Trace 2 Response 3 Stimulus 4 Mkr/Analysis 5 Instr State
Tr1 S22 Smith (R+jX) Scale 1.000U [RS]
>1 5.2500000 GHz 51.281 Ω 1.8032 Ω 56.663 pH
Tr2 S22 Log Mag 10.00dB/ Ref 0.000dB [RS]
>1 5.2500000 GHz -25.513 dB
50.00
40.00
30.00
20.00
10.00
0.000
-10.00
-20.00
-30.00
-40.00
-50.00
1 Start 5.14 GHz
IFBW 70 kHz
Stop 5.36 GHz
Meas Stop ExtRef Svc 2024-05-15 22:53
10:53 PM
Num of
Alloc
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Data -> M
Data Hold
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Graticule Label
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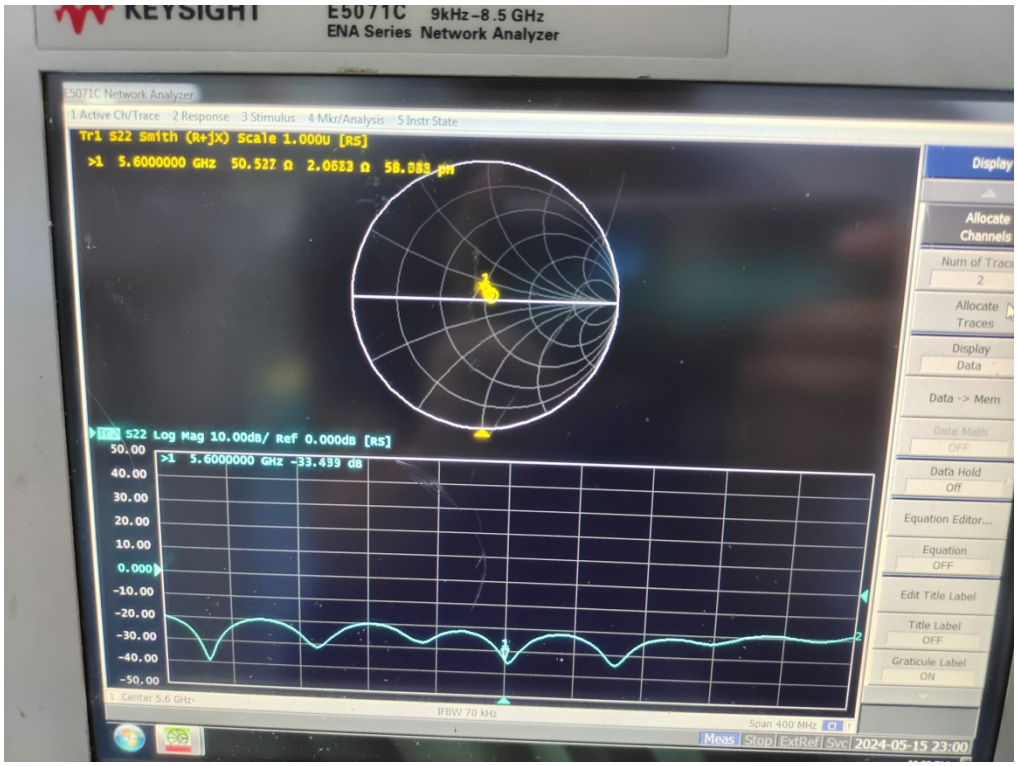
KEYSIGHT
E5071C 9kHz-8.5 GHz
ENA Series Network Analyzer
E5071C Network Analyzer
1 Active Ch/Trace 2 Response 3 Stimulus 4 Mkr/Analysis 5 Instr State
Tr1 S22 Smith (R+jX) Scale 1.000U [RS]
>1 5.6000000 GHz 50.527 Ω 2.0623 Ω 58.883 pH
Tr2 S22 Log Mag 10.00dB/ Ref 0.000dB [RS]
>1 5.6000000 GHz -33.439 dB
50.00
40.00
30.00
20.00
10.00
0.000
-10.00
-20.00
-30.00
-40.00
-50.00
1 Center 5.6 GHz
IFBW 70 kHz
Span 400 MHz
Meas Stop ExtRef Svc 2024-05-15 23:00
Display
Allocate Channels
Num of Traces
2
Allocate Traces
Display Data
Data -> Mem
Data Math
OFF
Data Hold
Off
Equation Editor...
Equation
OFF
Edit Title Label
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Graticule Label
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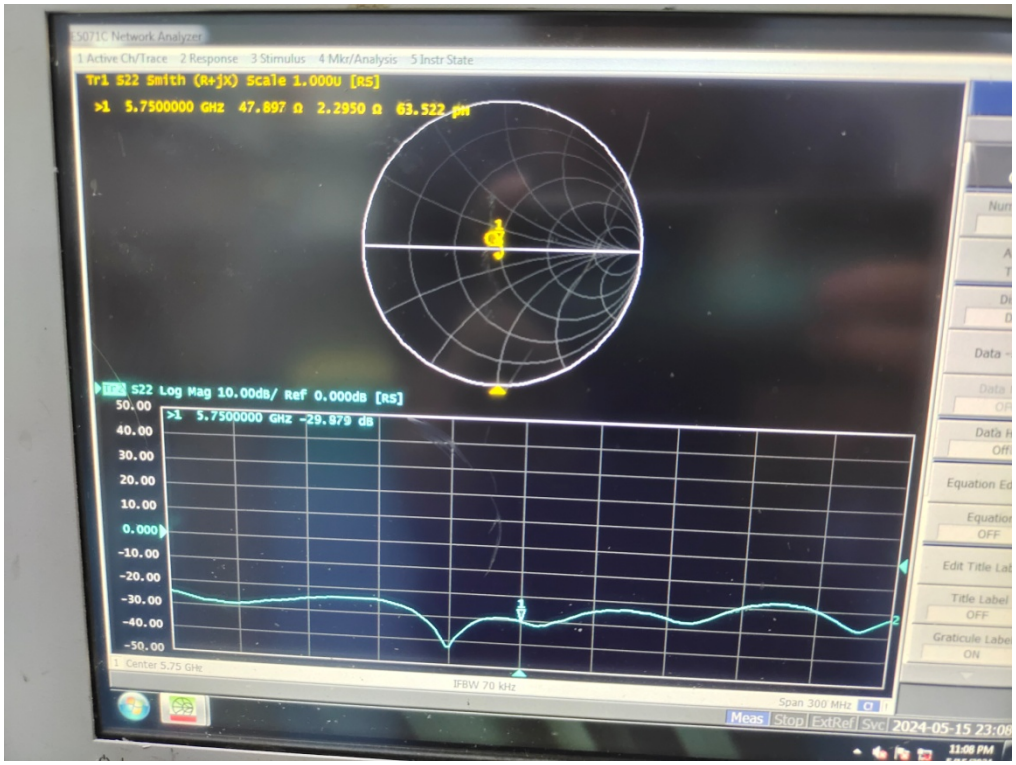

	Name	Signature
Calibrated By:	Karl Gong	Karl Gong