

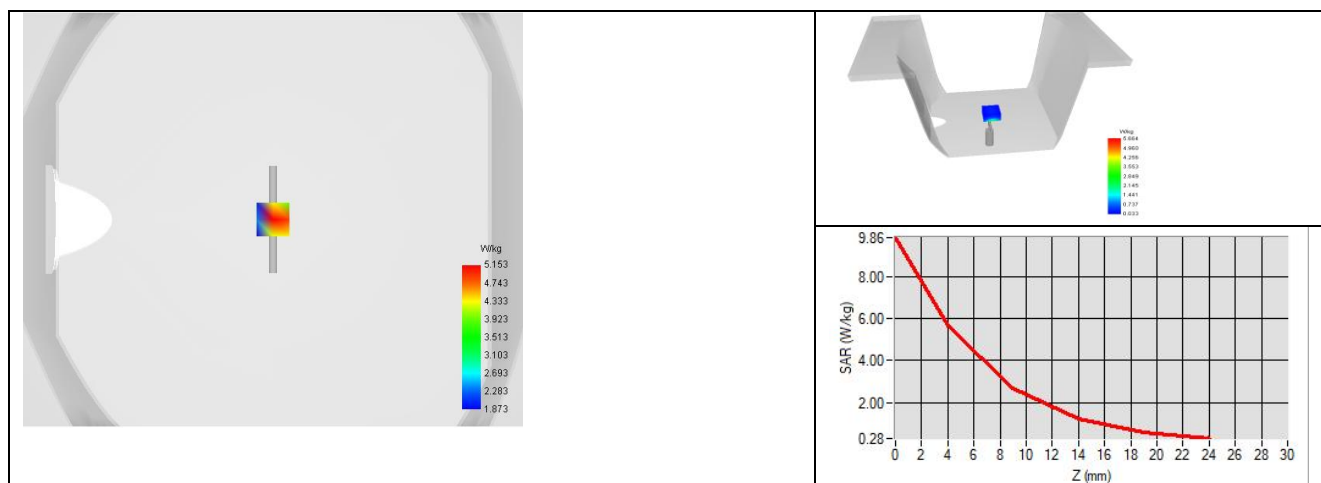
7.3 BODY LIQUID MEASUREMENT

Frequency MHz	Relative permittivity (ϵ_r')		Conductivity (σ) S/m	
	required	measured	required	measured
150	61.9 $\pm$ 10 %		0.80 $\pm$ 10 %	
300	58.2 $\pm$ 10 %		0.92 $\pm$ 10 %	
450	56.7 $\pm$ 10 %		0.94 $\pm$ 10 %	
750	55.5 $\pm$ 10 %		0.96 $\pm$ 10 %	
835	55.2 $\pm$ 10 %		0.97 $\pm$ 10 %	
900	55.0 $\pm$ 10 %		1.05 $\pm$ 10 %	
915	55.0 $\pm$ 10 %		1.06 $\pm$ 10 %	
1450	54.0 $\pm$ 10 %		1.30 $\pm$ 10 %	
1610	53.8 $\pm$ 10 %		1.40 $\pm$ 10 %	
1800	53.3 $\pm$ 10 %		1.52 $\pm$ 10 %	
1900	53.3 $\pm$ 10 %		1.52 $\pm$ 10 %	
2000	53.3 $\pm$ 10 %		1.52 $\pm$ 10 %	
2100	53.2 $\pm$ 10 %		1.62 $\pm$ 10 %	
2300	52.9 $\pm$ 10 %		1.81 $\pm$ 10 %	
2450	52.7 $\pm$ 10 %	53.4	1.95 $\pm$ 10 %	2.14
2600	52.5 $\pm$ 10 %		2.16 $\pm$ 10 %	
3000	52.0 $\pm$ 10 %		2.73 $\pm$ 10 %	
3300	51.6 $\pm$ 10 %		3.08 $\pm$ 10 %	
3500	51.3 $\pm$ 10 %		3.31 $\pm$ 10 %	
3700	51.0 $\pm$ 10 %		3.55 $\pm$ 10 %	
3900	50.8 $\pm$ 10 %		3.78 $\pm$ 10 %	
4200	50.4 $\pm$ 10 %		4.13 $\pm$ 10 %	
4600	49.8 $\pm$ 10 %		4.60 $\pm$ 10 %	
4900	49.4 $\pm$ 10 %		4.95 $\pm$ 10 %	
5200	49.0 $\pm$ 10 %		5.30 $\pm$ 10 %	
5300	48.9 $\pm$ 10 %		5.42 $\pm$ 10 %	
5400	48.7 $\pm$ 10 %		5.53 $\pm$ 10 %	
5500	48.6 $\pm$ 10 %		5.65 $\pm$ 10 %	
5600	48.5 $\pm$ 10 %		5.77 $\pm$ 10 %	
5800	48.2 $\pm$ 10 %		6.00 $\pm$ 10 %	

7.4 SAR MEASUREMENT RESULT WITH BODY LIQUID

Software	OPENSAR V5
Phantom	SN 13/09 SAM68
Probe	SN 41/18 EPG0333
Liquid	Body Liquid Values: ϵ_{ps} : 53.4 σ : 2.14
Distance between dipole center and liquid	10.0 mm
Area scan resolution	$dx=8mm/dy=8mm$
Zoon Scan Resolution	$dx=5mm/dy=5mm/dz=5mm$
Frequency	2450 MHz
Input power	20 dBm
Liquid Temperature	20 +/- 1 °C
Lab Temperature	20 +/- 1 °C
Lab Humidity	30-70 %

Frequency MHz	1 g SAR (W/kg/W)	10 g SAR (W/kg/W)
	measured	measured
2450	53.84 (5.38)	23.26 (2.33)





8 LIST OF EQUIPMENT

Equipment Summary Sheet				
Equipment Description	Manufacturer / Model	Identification No.	Current Calibration Date	Next Calibration Date
SAM Phantom	MVG	SN 13/09 SAM68	Validated. No cal required.	Validated. No cal required.
COMOSAR Test Bench	Version 3	NA	Validated. No cal required.	Validated. No cal required.
Network Analyzer	Rohde & Schwarz ZVM	100203	08/2021	08/2024
Network Analyzer	Agilent 8753ES	MY40003210	10/2021	10/2024
Network Analyzer – Calibration kit	Rohde & Schwarz ZV-Z235	101223	05/2021	05/2024
Network Analyzer – Calibration kit	HP 85033D	3423A08186	06/2021	06/2027
Calipers	Mitutoyo	SN 0009732	10/2021	10/2024
Reference Probe	MVG	SN 41/18 EPGO333	10/2021	10/2024
Multimeter	Keithley 2000	1160271	02/2021	02/2024
Signal Generator	Rohde & Schwarz SMB	106589	04/2021	04/2024
Amplifier	MVG	MODU-023-C-0002	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Power Meter	NI-USB 5680	170100013	06/2021	06/2024
Power Meter	Rohde & Schwarz NRVD	832839-056	11/2021	11/2024
Directional Coupler	Krytar 158020	131467	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Temperature / Humidity Sensor	Testo 184 H1	44225320	06/2021	06/2024



Dielectric Probe Calibration Report

Ref : ACR.49.20.22.BES.A

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MVG LIMESAR DIELECTRIC PROBE

FREQUENCY: 0.4-6 GHZ

SERIAL NO.: SN 06/22 OCPG 88

Calibrated at MVG

Z.I. de la pointe du diable

Technopôle Brest Iroise – 295 avenue Alexis de Rochon

29280 PLOUZANE - FRANCE

Calibration date: 02/02/2024



Accreditations #2-6789
Scope available on www.cofrac.fr

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Summary:

This document presents the method and results from an accredited Dielectric Probe calibration performed at MVG, using the LIMESAR test bench. The test results covered by accreditation are traceable to the International System of Units (SI).