Hellenic Accreditation System

Annex F2/17 to the Certificate No. **263**-5

SCOPE of ACCREDITATION

of the

Testing & Calibration Laboratory

of

LINK LAB LTD

for the performance of calibrations

Measurand / Calibration item	**Range of measurement**	**Calibration & Measurement Capability (k=2)***	**Remarks**
Spectrophotometric Measurements			
Absorption / Visible and ultraviolet spectrophotometers in the range: 230nm …650nm	0,09 AU … 0,19 AU	5,0 mAU**	ASTM E 275: 2013 (baseline stability, photometric accuracy and precision) Calibration is also performed on-site.
	0,19 AU … 0,29 AU	5,6 mAU	
	0,29 AU … 0,38 AU	5,9 mAU	
	0,38 AU … 0,48 AU	6,7 mAU	
	0,48 AU … 1,5 AU	7,6 mAU	
Mass Measurements			
Mass / Non-automatic weighing instruments	1 mg	0,015 mg	According to EURAMET/cg-18/v.04 (2015). Using standard weights of OIML class: E2 : 1mg – 200 g Max grouped load 611g. E2 / F1: 500 g – 5 kg Max grouped load 10,5kg F2 : 10 kg – 20 kg Max grouped load 30kg. M2: 5kg – 20 kg
	2 mg	0,015 mg	
	5 mg	0,015 mg	
	10 mg	0,015 mg	
	20 mg	0,015 mg	
	50 mg	0,016 mg	
	100 mg	0,017 mg	
	200 mg	0,018 mg	
	500 mg	0,020 mg	
	1 g	0,023 mg	
	2 g	0,027 mg	
	5 g	0,032 mg	

Measurand / Calibration item	Range of measurement	Calibration & Measurement Capability (k=2)*	Remarks
	10 g	0,038 mg	Max grouped load 275kg. Calibration is performed on-site.
	20 g	0,048 mg	
	50 g	0,065 mg	
	100 g	0,11 mg	
	200 g	0,20 mg	
	500 g	0,48 mg	
	1 kg	0,95 mg	
	2 kg	5,5 mg	
	5 kg	12 mg	
	10 kg	0,09 g	
	20 kg	0,18 g	
	50 kg	2,1 g	
	100 kg	7,2 g	
	300 kg	17 g	
Temperature measurements			
Temperature / Temperature controlled chambers, with volume up to 2000l, with or without air circulation (ovens & incubators, autoclaves, refrigerators, freezers, climatic chambers)			EURAMET cg 20 v5.0 (2017)
	-20 °C … 60 °C	0,15 °C	Using platinum resistance sensors.
	-80 °C … -20 °C	0,40°C	Using K-type thermocouples. The temperature ranges -80°C to -20 °C and 180°C to 350°C, refer to single point calibration for different positions within the chamber volume.
	-20 °C … ~~160~~	0,60 °C	
	180 °C … 350 °C	0,60 °C	
Temperature / Temperature controlled chambers, with volume up to 2000l, with air circulation (ovens & incubators, autoclaves, refrigerators, freezers, climatic chambers)	350°C … 400°C	0,60 °C	Using K-type thermocouples. Method refers to single point calibration for different positions within the chamber volume.
	400°C … 500°C	1,3 °C	
Temperature / Liquid baths, volume up to 2000 l (water baths, oil baths)	-20 °C … 180 °C	0,40 ^{0}C	Using K-type thermocouples.

Measurand / Calibration item	Range of measurement	Calibration & Measurement Capability (k=2)*	Remarks
Temperature / Dissolution testers and disintegration testers	35 °C … 40 °C	0,30 ^{0}C	Using platinum resistance sensors.
Temperature / Cyclers, block calibrators	-20 °C … 180°C	0,40 °C	Using K-type thermocouples.
Temperature / Digital / Analog Direct reading thermometers	-20 °C … 180°C	0,050 ^{0}C	Using liquid bath and a platinum resistance thermometer.
Temperature / Digital / Analog thermometers	-25 °C … 140^{o}C	0,12 ^{0}C	Using dry block calibrator and platinum resistance thermometer. Calibration can be performed also on-site.
Temperature / Total and partial immersion, liquid in glass thermometers	-20 °C … 10 °C 10 °C … 40 °C 40 °C … 180 °C	0,050 ^{0}C 0,11 ^{0}C 0,050 ^{0}C	Using liquid bath and a platinum resistance thermometer.
Temperature / Temperature loggers	-10 °C … 0 °C 0 °C … 40 °C 40 °C … 60 °C	0,16 ^{0}C 0,15 ^{0}C 0,21 ^{0}C	Using a climatic chamber and a platinum resistance thermometer.
Relative Humidity measurements			
Relative humidity / Relative humidity controlled chambers (climatic chambers)	20% … 90% RH at 25 ^{o}C	1,6 % RH	EURAMET cg 20 v5.0 (2017) THE SOCIETY OF ENVIRONMENTAL ENGINEERS A guide to calculating the uncertainty of the performance of environmental chambers. Calibration is also performed on-site.
	20% … 90% RH at 40 ^{o}C	2,1 % RH	
Relative humidity / Analog and digital hygrometers	20% … 50% RH 50% … 70% RH 70% … 90% RH at 25°C	1,2% RH 1,3% RH 1,6% RH	Comparative calibration in limited volume inside climatic chamber based on: ▪ NPL: A guide to the Measurement of

Measurand / Calibration item	Range of measurement	Calibration & Measurement Capability (k=2)*	Remarks
	20% … 50% RH 50% … 60% RH 60% … 80% RH 80% … 90% RH at 40°C	1,3% RH 1,4% RH 1,9% RH 2,0% RH	Humidity, 1996. ▪ MIKES Centre for metrology and accreditation: Uncertainty in humidity measurements, Publication of the Euromet Workshop P758
	11% RH 33% RH 75% RH at 25°C	1,8% RH 2,5% RH 2,9% RH	Comparative calibration using saturated salt solutions. Calibration is also performed on-site.
Volume Measurements			
Volume / Piston pipettes	10µl … 20 µl 20µl … 100 µl 100µl … 1000 µl 1000µl … 5 ml 5ml … 10 ml	1,5% 0,6% 0,4% 0,04% 0,04%	ISO TR 20461 : 2000 / cor1 : 2008 EURAMET cg 19 v2.1 (2012)
Volume / Dispensers	1ml … 50ml	0,1% … 0,04%	
Volume / Burettes	1ml … 100ml	0,065% … 0,04%	ISO TR 20461 : 2000 / cor1 : 2008
Volume / Volumetric flasks	10 ml 20ml 50ml 100 ml 200ml 500ml 1000 ml 2000 ml	0,07% 0,07% 0,04% 0,04% 0,04% 0,04% 0,04% 0,04%	EURAMET cg 19 v2.1(2012)
Volume / Volumetric Cylinders	100ml … 1000ml	0,04%	
Volume / Glass pipettes	1ml … 100ml	0,065% … 0,04%	
pH-Measurements			
pH – meters	- 410 mV … + 410 mV	0,042 mV	Using Voltage simulator and buffers

Measurand / Calibration item	Range of measurement	Calibration & Measurement Capability (k=2)*	Remarks
Pressure Measurements			
Pressure / Analog and digital gauge pressure measuring instruments of direct reading	0,6 bar … 6 bar >6 bar … 25 bar	0,027 bar 0,06 bar	Gas or liquid pressure medium , according to guide DKD-R 6-1 03/2014
	25 bar … 400 bar	3,6 bar	Liquid pressure medium, according to guide DKD-R 6-1 03/2014
Frequency Measurements			
Rotation frequency / Centrifuges, Mixers	6 rpm … 30 rpm >30 rpm … 1.200 rpm >1.200 rpm … 12.000 rpm >12.000 rpm … 18.000 rpm	0,58 rpm 0,58 rpm 0,90 rpm 2,0 rpm	Internal method using standard tachometer. Calibration can also be performed on-site

** Where uncertainty is accompanied by the corresponding unit, it is absolute, while where it is not accompanied by a unit, it is relative.*

*** Uncertainty values are estimated assuming a spectrophotometer having a resolution of 0.1mAU.*

Site of assessment: **Permanent laboratory premises, 23 Pirronos Str., GR-116 36 Athens, Greece.**
Approved Signatories: **Panagiotis Mermigas, Konstantinos Salvarlis, Dimitrios Tambakopoulos**
This Scope of Accreditation replaces the previous one dated 11.04.2016.
The Accreditation Certificate No. **263**-5, to ELOT EN ISO/IEC 17025:2005, is valid until March 12th 2022

Athens, 19.07.2018

Konstantinos Voutsinas

Managing Director ESYD