



THE HASHEMITE KINGDOM OF JORDAN  
Accreditation Unit



Annex (1)

To the Accreditation Certificate No. **JAS Cal. - 003** Dated **04-12-2021**

For Calibration Laboratory at the Arab Center for Engineering Studies / Amman

Scope of Accreditation

Calibration of Mass, Thermometers, Non-automatic Balances, Force, Caliper and Micrometer

Measurand	Measuring Range	Calibration and measurement Capability (CMC) <i>a</i>	Calibration Methods/ Standards/ Remarks
<b>Mass (Calibration Location: Permanent)</b>			
MASS CLASS F2	20 g	0.3 mg	WI-011, rev.(2), dated on: 25/08/2020 according to OIML R111-1 e04, using calibrated reference weight Class F1
	50 g	0.3 mg	
	100 g	0.5 mg	
	200 g	1.0 mg	
	500 g	3 mg	
	1 kg	5 mg	
	2 kg	10 mg	
	5 kg	30 mg	
MASS CLASS M1 & Lower	1 g	0.3 mg	WI-011, rev.(2), dated on: 25/08/2020, according to OIML R111-1 e04, using calibrated reference weight Class F2
	2 g	0.4 mg	
	5 g	0.5 mg	
	10 g	0.6 mg	
	20 g	0.8 mg	
	50 g	1.0 mg	
	100 g	1.6 mg	
	200 g	3.0 mg	
	500 g	8.0 mg	
	1 kg	16 mg	
	2 kg	30 mg	
	5 kg	80 mg	
	10kg	0.16 g	
<b>Temperature (Calibration Location: Permanent)</b>			
Temperature Resistance Thermometers with Direct Reading Devices & data loggers with external sensors	(-25 to 400) °C	0.4 °C	In House Calibration Method WI-049, rev.(3), dated on: 24/11/2021
	(> 400 to 660) °C	0.5 °C	



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Measurand	Measuring Range	Calibration and measurement Capability (CMC) a	Calibration Methods/ Standards/ Remarks
<b>Temperature (Calibration Location: Permanent)</b>			
Temperature Thermocouple Devices & data loggers with external sensors	(-25 to 150) °C	0.6 °C	In House Calibration Method WI-049, rev.(3), dated on: 24/11/2021
	(> 150 to 400) °C	0.7 °C	
	(>400 to 660) °C	5 °C	
<b>Mass (Calibration Location: On-Site)</b>			
Non-automatic weighing instruments *	1 g to 100 g	0.90 mg	WI-012, rev.(3), dated on: 24/10/2021, according to EURAMET_cg-18, using calibrated reference weight Class F2
	> 100 g to 600 g	1.7 mg	
	> 600 g to 2100 g	6.3 mg	
	> 2100 g to 6100 g	11 mg	
	> 6.1 kg to 11.1 kg	37 mg	
	>11.1 kg to 21 kg	61 mg	
> 21 kg to 31 kg	0.12 g		
<b>Force (Calibration Location: On-Site)</b>			
Force machines In compression mode (Class I, II, & III)	(10 to 100) kN	0.35 % * Fi	WI-014, rev. (2) dated on: 11/1/2020, according to ISO 7500-1:2018
	(200 to 2000) kN	0.5 % * Fi	
<b>Dimensions Measurement devices (Calibration Location: Permanent)</b>			
Vernier Caliper for external, internal, & depth measurements (Including digital & dial Indicators)	(0 to 500) mm	$60 \mu\text{m} + 30 * 10^{-6} * L$	In House Calibration Method WI-046, rev. (3), dated on: 25/08/2020 L: is measured Length (m)
Micrometer for External Measurements	(0 to 25) mm	$6 \mu\text{m} + 10 * 10^{-6} * L$	In House Calibration Method WI-047, rev. (2), dated on: 25/08/2020 L: is measured Length (m)

\* Precision Balances to be calibrated only at customer's site

a) The reported CMCs are expressed at approximately the 95 % level of confidence, using a coverage factor of  $k = 2$ . The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.



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**List of employees in the laboratory who are technically responsible for issuing the calibration certificates in the scope of accreditation:**

- 1. Dr. Ibrahim Al-Assi : Head of Calibration Center**
- 2. Eng. Jamela Al-Nsour : Head of Materials Department**
- 3. Eng. Ahmad Al-Abbadi : Calibration Engineer**
- 4. Eng. Omar Al Sorakhi : Calibration Engineer**