

Schedule

Mettler-Toledo (S) Pte Ltd
1 Clementi Loop
#02-03A
Singapore 129808

Certificate No. : LA-2005-0329-C
Issue No. : 20
Date : 30 August 2024
Expiry of Certificate : 12 June 2026
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FIELD OF TESTING : Calibration and Measurement

MEASURED QUANTITIES/ INSTRUMENT/ RANGE TO BE CALIBRATED	METHOD	CALIBRATION AND MEASUREMENT CAPABILITY (CMC*)
A. MECHANICAL		
1. Weighing Balances and Scales		
On-site calibration	QP-SVC-9-011, Rev.:18 27 May 2019	
<u>Range</u>	<u>Resolution</u>	
0 to 2.1 g	0.000 1 mg	0.030 mg
0 to 5.1 g	0.000 1 mg	0.035 mg
0 to 22 g	0.001 mg	i) Off-center errors 0.06 mg
0 to 52 g	0.001 mg	ii) Hysteresis 0.065 mg
0 to 220 g	0.1 mg	iii) Repeatability 0.2 mg
0 to 220 g	0.01mg	iv) Accuracy and Linearity 0.16 mg
0 to 520 g	0.1 mg	0.5 mg
0 to 1 210 g	0.001 g	<u>Environmental Conditions:</u> 0.002 g
0 to 2 300 g	0.001 g	Temperature : 18 °C to 29 °C 0.006 g
0 to 8 100 g	0.01 g	Relative Humidity : 45 % to 73 % 0.02 g
0 to 10 100 g	0.01 g	Air pressure: 1005 hPa to 1030 hPa 0.02 g
0 to 32 000 g	0.1 g	0.1 g
0 to 150 000 g	0.1 g	0.4 g

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MEASURED QUANTITIES/ INSTRUMENT/ RANGE TO BE CALIBRATED		METHOD	CALIBRATION AND MEASUREMENT CAPABILITY (CMC*)
2. Weighing Balances and Scales (ACC) On-site calibration		QP-SVC-9-024, Rev.:06 23 July 2024 (Euramet Cg-18)	
2A. Balance <u>Range</u> <u>Resolution</u>		<u>Uncertainty contributions:</u>	
≤ 20mg	0.000 1 mg	i) Rounding error at load	0.0019 mg
> 20mg ... ≤ 50mg	0.000 1 mg	ii) Rounding error at no load	0.0025 mg
> 50mg ... ≤ 100mg	0.000 1 mg	iii) Error due to eccentricity	0.0030 mg
> 100mg ... ≤ 200mg	0.000 1 mg	iv) Error due to repeatability	0.0036 mg
> 200mg ... ≤ 500mg	0.000 1 mg	v) Uncertainty of reference mass	0.0048 mg
> 500mg ... ≤ 1g	0.000 1 mg	vi) Correction of air buoyancy	0.0059 mg
> 1g ... ≤ 2g	0.000 1 mg	vii) Correction of drift of weights	0.0071 mg
> 2g ... ≤ 5g	0.000 1 mg	viii) Correction of convection	0.0094 mg
> 5g ... ≤ 6g	0.000 1 mg		0.0150 mg
> 6g ... ≤ 10g	0.00 1 mg		0.020 mg
> 10g ... ≤ 20g	0.00 1 mg		0.030 mg
> 20g ... ≤ 50g	0.00 1 mg		0.062 mg
> 50g ... ≤ 100g	0.0 1 mg		0.14 mg
> 100g ... ≤ 150g	0.0 1 mg		0.22 mg
> 150g ... ≤ 200g	0.0 1 mg		0.25 mg
> 200g ... ≤ 300g	0.0 1 mg		0.38 mg
> 300g ... ≤ 400g	0.0 1 mg		0.48 mg
> 400g ... ≤ 500g	0.0 1 mg		0.61 mg
> 500g ... ≤ 700g	0. 1 mg		2.1 mg
> 700g ... ≤ 1000g	0. 1 mg		3.0 mg
> 1kg ... ≤ 1.5kg	0. 1 mg		4.5 mg
> 1.5kg ... ≤ 2kg	0. 1 mg		5.9 mg
> 2kg ... ≤ 2.3kg	0. 1 mg		7.0 mg
> 2.3kg ... ≤ 3kg	1 mg		9 mg
> 3kg ... ≤ 4kg	1 mg		12 mg
> 4kg ... ≤ 5.1kg	1 mg		15 mg
> 5.1kg ... ≤ 6kg	1 mg		25 mg
> 6kg ... ≤ 7kg	0.0 1 g		0.027 g
> 7kg ... ≤ 8kg	0.0 1 g		0.029 g
> 8kg ... ≤ 10kg	0.0 1 g		0.035 g

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MEASURED QUANTITIES/ INSTRUMENT/ RANGE TO BE CALIBRATED	METHOD	CALIBRATION AND MEASUREMENT CAPABILITY (CMC*)																								
2B. Scale <table><tr><th><u>Range</u></th><th><u>Resolution</u></th></tr><tr><td>> 10kg ... ≤ 15kg</td><td>0.1 g</td></tr><tr><td>> 15kg ... ≤ 20kg</td><td>0.1 g</td></tr><tr><td>> 20kg ... ≤ 30kg</td><td>0.1 g</td></tr><tr><td>> 30kg ... ≤ 40kg</td><td>0.1 g</td></tr><tr><td>> 40kg ... ≤ 50kg</td><td>0.1 g</td></tr><tr><td>> 50kg ... ≤ 60kg</td><td>0.1 g</td></tr><tr><td>> 60kg ... ≤ 64kg</td><td>0.1 g</td></tr><tr><td>> 64kg ... ≤ 150kg</td><td>1 g</td></tr><tr><td>> 150kg ... ≤ 300kg</td><td>1 g</td></tr><tr><td>> 300kg ... ≤ 600kg</td><td>10 g</td></tr><tr><td>> 600kg ... ≤ 1000kg</td><td>10 g</td></tr></table>	<u>Range</u>	<u>Resolution</u>	> 10kg ... ≤ 15kg	0.1 g	> 15kg ... ≤ 20kg	0.1 g	> 20kg ... ≤ 30kg	0.1 g	> 30kg ... ≤ 40kg	0.1 g	> 40kg ... ≤ 50kg	0.1 g	> 50kg ... ≤ 60kg	0.1 g	> 60kg ... ≤ 64kg	0.1 g	> 64kg ... ≤ 150kg	1 g	> 150kg ... ≤ 300kg	1 g	> 300kg ... ≤ 600kg	10 g	> 600kg ... ≤ 1000kg	10 g		
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3B Single Channel, Positive Displacement Type D (Ex) <u>Range</u> 0uL < V ≤ 10uL 10uL < V ≤ 25uL 25uL < V ≤ 50uL 50uL < V ≤ 100uL 100uL < V ≤ 250uL 250uL < V ≤ 500uL 500uL < V ≤ 1000uL		0.0019 uL 0.018 uL 0.027 uL 0.039 uL 0.098uL 0.17 uL 0.20 uL
3C Multiple Type Delivery Systems (Ex) <u>Range</u> 0uL < V ≤ 2uL 2uL < V ≤ 10uL 10uL < V ≤ 20uL 20uL < V ≤ 100uL 100uL < V ≤ 200uL 200uL < V ≤ 1 000uL 1 000uL < V ≤ 5 000uL 5 000uL < V ≤ 10 000uL 10 000uL < V ≤ 50 000uL		0.0087 uL 0.017 uL 0.018 uL 0.023 uL 0.11 uL 0.19 uL 0.48 uL 0.92 4.70 uL
3D Single Channel, Repetitive (Ex) <u>Range</u> 0uL < V ≤ 10uL 10uL < V ≤ 20uL 20uL < V ≤ 100uL 100uL < V ≤ 200uL 200uL < V ≤ 1 000uL 1 000uL < V ≤ 2 000uL		0.0019 uL 0.0023 uL 0.0077 uL 0.023 uL 0.091 uL 0.18 uL
3E Bottle Top Dispenser (Ex) <u>Range</u> 0mL < V ≤ 5mL 5mL < V ≤ 10mL 10mL < V ≤ 12.5mL 12.5mL < V ≤ 25mL 25mL < V ≤ 50mL 50mL < V ≤ 100mL		1.9 uL 2.1 uL 7.1 uL 10 uL 13 uL 17 uL
3F Bottle Top Burette (Ex) <u>Range</u> 0mL < V ≤ 25mL		2.4uL

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MEASURED QUANTITIES/ INSTRUMENT/ RANGE TO BE CALIBRATED	METHOD	CALIBRATION AND MEASUREMENT CAPABILITY (CMC*)
5. Standard Weights (Lab) (Class E2 ONLY) In-house calibration <u>Range</u> 1 mg 2 mg 5 mg 10 mg 20 mg 50 mg 100 mg 200 mg 500 mg 1 g 2 g 5 g 10 g 20 g 50 g 100 g 200 g 500 g 1 kg 2 kg	QP-SVC-9-020, Rev.: 10, 28 June 2024	0.001 mg 0.002 mg 0.002 mg 0.002 mg 0.002 mg 0.002 mg 0.002 mg 0.002 mg 0.003 mg 0.004 mg 0.004 mg 0.004 mg 0.006 mg 0.007 mg 0.009 mg 0.020 mg 0.02 mg 0.04 mg 0.13 mg 0.30 mg 0.50 mg
6. Standard Weights (IND) (Class M2 and below) In-house calibration <u>Range</u> 1000 kg	WI-SVC-MAS-001, Rev.:00 02 August 2016	0.06 kg

*CMC is expressed as an expanded uncertainty estimated at a level of confidence of approximately 95%

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Approved Signatories:

Mr Chua Wen Feng - All items

Mr Antonius Christian - For items 1 & 2A

Mr Sun Xueyang - For items 3, 4, 5 & 6

Note:

This laboratory is accredited in accordance with the recognised International Standard ISO/IEC 17025. A laboratory's fulfilment of the requirements of ISO/IEC 17025 means the laboratory meets both the technical competence requirements and **management system requirements** that are necessary for it to consistently deliver technically valid calibration results. The **management system requirements** in ISO/IEC 17025 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001.