

Schedule

Issue date: 15 November 2017
Valid until: 12 December 2020



NO: SMM 681

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LABORATORY LOCATION:
(PERMANENT LABORATORY)



MICRON METROLOGY
68-1-15, BLOCK H, CHERAS BUSINESS CENTRE
JALAN 5/101C
56100 KUALA LUMPUR
MALAYSIA

FIELDS OF CALIBRATION: DIMENSIONAL & FORCE

This laboratory has demonstrated its technical competence to operate in accordance with MS ISO/IEC 17025:2005 (ISO/IEC 17025:2005).

This laboratory's fulfillment 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 test results and calibrations. 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 (see Joint ISO-ILAC-IAF Communiqué dated April 2017).

* The expanded uncertainties are based on an estimated confidence probability of approximately 95% and have a coverage factor of $k=2$ unless stated otherwise.

SCOPE OF CALIBRATION: DIMENSIONAL

Instrument Calibrated/ Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty(\pm)*	Remarks
Long gauge block / Length bar / Setting Rod	25 mm to 1000 mm	$(0.08 + 0.02 L) \mu\text{m}$ L is in unit meter	Calibration by laser measurement system with reference to JIS B 7506
Caliper checker	0 mm to 600 mm	$(0.7 L) \mu\text{m}$ L is in unit meter	Calibration by laser measurement system
Check master	0 mm to 1000 mm	$(0.7 L) \mu\text{m}$ L is in unit meter	Calibration by laser measurement system
Inside micro checker	0 mm to 600 mm	$(0.7 L) \mu\text{m}$ L is in unit meter	Calibration by laser measurement system
Glass scale / Standard scale	0 mm to 600 mm	$(0.03 + 0.12 L) \mu\text{m}$ L is in unit meter	Calibration by laser measurement system with reference to JIS B 7541
Digital scale read out / Linear scale	0 mm to 1000 mm	$(0.02 + 0.12 L) \mu\text{m}$ L is in unit meter	Calibration by laser measurement system with reference to JIS B 7450

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SCOPE OF CALIBRATION: DIMENSIONAL

Instrument Calibrated/ Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty(\pm)*	Remarks
Straightedge / Planekator (Straightness only)	100 mm to 1000 mm	0.46 μ m	Calibration by laser measurement system with reference to JIS B 7514
Autocollimator	\pm 1 degree	0.0001 degree	Calibration by laser measurement system with reference to JIS B 7538
Inclinometer / Digital angular level	\pm 3 degree	0.00033 degree	Calibration by laser measurement system with reference to JIS B 7510
Precision level	\pm 1 degree	0.00066 degree	Calibration by laser measurement system with reference to JIS B 7510
Micrometer (external measurement)	25 mm Travel range Frame size: Up to 50 mm 50 mm to 100 mm 100 mm to 200 mm 200 mm to 300 mm 300 mm to 450 mm 450 mm to 600 mm	0.00063 mm 0.00065 mm 0.00077 mm 0.0012 mm 0.0018 mm 0.0026 mm 0.0035 mm	Calibration by gauge block with reference to BS EN ISO 3611 Note: Standard rod to be provided if the measurement range is > 25 mm
Caliper (external and internal measurement)	Up to 300 mm	0.006 mm	Calibration by gauge block with reference to JIS B 7507
Dial test indicator	Up to 3 mm	(0.3 + 0.06 L) μ m L is measurement length in unit meter	Calibration by laser measurement system with reference to JIS B 7533
Dial gauge	Up to 100 mm	(0.3 + 0.06 L) μ m L is measurement length in unit meter	Calibration by laser measurement system with reference to JIS B 7503
Digital linear probe / Digital level probe / LVDT probe	Up to 200 mm	(0.01 + 0.06 L) μ m L is measurement length in unit meter	Calibration by laser measurement system with reference to JIS B 7536

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SCOPE OF CALIBRATION: DIMENSIONAL

Instrument Calibrated/ Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty(\pm)*	Remarks
Rotary table / Angular indexing table / Rotational stage	0 ° to 360 °	0.00038 °	Calibration by laser autocollimator and precision polygon system
Precision polygon	0 ° to 360 °	0.00038 °	Calibration by laser autocollimator with reference to JIS B 7432
Squareness block / L-square / Tri-square	90 °	0.0019 °	Calibration by precision rotary table with reference to JIS B 7526 or JIS B 7534
Angle gauge	Up to 90 °	0.0019 °	Calibration by precision rotary table
Gauge block	0.5 mm to 100 mm	(0.002 L + 0.07) μ m L is length in mm	Calibration by comparison to gauge block with reference to JIS B 7506
Jig and part fixture (length, thickness, diameter, radius, angle, parallelism, straightness, plane flatness, circularity and cone)	Up to 360 degree 0.001 mm to 1350 mm (or inches equivalent)	0.005 degree (0.01 L + 4.3) μ m L is length in mm	Calibration coordinate measuring machine (CMM) with reference to NPL Good Practice No. 41, CMM Measurement Strategies
(Surface roughness)	-0.200 mm to 0.150 mm	0.0007 mm	Calibration by roughness measurement instrument
Angle level	-180 degree to 180 degree	0.0041 degree	Calibration by vertical precision rotary table and datum to gravity with reference to JIS B 7510
Feeler / Thickness gauge	Up to 3 mm (or inches equivalent)	0.0014 mm	Calibration by precision linear probe with reference to JIS B 7524

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SCOPE OF CALIBRATION: DIMENSIONAL

Instrument Calibrated/ Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty(\pm)*	Remarks
Plain ring gauge (diameter)	14 mm to 100 mm (or inches equivalent)	$(0.005 L + 1.3) \mu\text{m}$ L is length in mm	Calibration by gauge block and Measuring Machine with reference to JIS B 7420
Pin / plain plug gauge (diameter)	0.5 mm to 100 mm (or inches equivalent)	$(0.005 L + 1.3) \mu\text{m}$ L is length in mm	
Thread plug gauge (pitch diameter and major diameter)	3 mm to 100 mm (or inches equivalent)	$(0.005 L + 1.7) \mu\text{m}$ L is length in mm	Calibration by gauge block, thread wire pins and Measuring Machine with reference to JIS B 0261
Ruler	Up to 2000 mm (or inches equivalent)	0.12 mm	Calibration by laser measurement system with reference to JIS B 7516
Height gauge	Up to 300 mm	$(0.009 L + 1.8) \mu\text{m}$ L is length in mm	Calibration by gauge block and precision square with reference to BS EN ISO 13225

Signatory:1. **Dr. Lim Chin Keong**

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SCOPE OF CALIBRATION: DIMENSIONAL

SITE: CATEGORY I

Instrument Calibrated/ Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty(\pm)*	Remarks
CNC machine tools (Inclusive of CNC Milling, Lathe, Wire EDM, Water Jet, Laser Cut, Router and other production machine tools)	0 m to 10 m	$\sqrt{(1.9 + 2.0 L^2)} \mu\text{m}$ L is in unit meter	Calibration by laser measurement system with reference to ISO 230
Linear positioning (Inclusive of length measuring instrument, linear scale, linear position stage and table)	0 m to 10 m	$(0.02 + 0.12 L) \mu\text{m}$ L is in unit meter	Calibration by laser measurement system with reference to JIS B 7450
CNC machine tools (rotary axis)	0° to 360°	0.0025°	Calibration by laser autocollimator and precision polygon system with reference to ISO 230
Rotary table / Angular indexing table / Rotational stage	0° to 360°	0.0025°	Calibration by laser autocollimator and precision polygon system
Surface plate (overall flatness)	Up to 10 m x 10 m	$(1.3 L) \mu\text{m}$ L is diagonal length in unit meter	Calibration by Micro- Vel ME900s2 system (inclinometer) with reference to BS 817, ISO 8512 or JIS B 7513
Profile projector / Measuring microscope (Range on individual linear axis only)	Up to 2000 mm	$(0.19 + 0.5 L) \mu\text{m}$ L is measurement length in unit meter	Calibration by glass scale (axis length \leq 650 mm) or laser measurement system with reference to JIS B 7184 or JIS 7153

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SCOPE OF CALIBRATION: DIMENSIONAL

SITE: CATEGORY I

Instrument Calibrated/ Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty(\pm)*	Remarks
Video measurement machine / Non-contact coordinate measuring machine (CMM) (Range on individual linear and plane diagonal axes)	Up to 1000 mm	(0.19 + 0.5 L) μ m L is measurement length in unit meter	Calibration by glass scale (axis length \leq 650 mm) or laser measurement system with reference to ISO 10360-7

Signatory:

1. Dr. Lim Chin Keong

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SCOPE OF CALIBRATION: FORCE**SITE: CATEGORY III**

Instrument Calibrated/ Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty(\pm)*	Remarks
Indirect verification of Brinell Hardness Testers	150 HBW 3000 350 HBW 3000 550 HBW 3000	1.3 HBW 3000 1.3 HBW 3000 1.4 HBW 3000	Calibration by hardness test block of with reference to JIS 7724 and ASTM E10
Indirect verification of Vickers Hardness Testers	200 HV 0.1 400 HV 0.1 200 HV 1 700 HV 1 400 HV 10 700 HV 10	3.6 HV 0.1 4.7 HV 0.1 3.8 HV 1 4.2 HV 1 2.9 HV 10 2.8 HV 10	Calibration by hardness test block of with reference to JIS 7725 and ASTM E92
Indirect verification of Rockwell Hardness Testers	HRB 35 HRB 65 HRB 85 HRC 25 HRC 40 HRC 60	HRB 0.33 HRB 0.35 HRB 0.35 HRC 0.54 HRC 0.51 HRC 0.54	Calibration by hardness test block of with reference to JIS 7726 and ASTM E18

Signatory:

1. Dr. Lim Chin Keong

Any enquiry, please contact us :-



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