


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

 0334 Accredited to ISO/IEC 17025:2017	CD Measurements Ltd Issue No: 017 Issue date: 27 August 2021	
	Chomlea House Hadfield Road Hadfield Glossop Derbyshire SK13 2ER	Contact: Dr A Butterworth Tel: +44 (0)1457 852929 Fax: +44 (0)1457 860619 E-Mail: calibration@cdmeasurements.com Website: www.cdmeasurements.com

Calibration performed by the Organisations at the locations specified below

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details	Activity	Location code
Address Chomlea House Hadfield Road Hadfield Glossop Derbyshire SK13 2ER Local contact Dr A Butterworth	Dimensional	A

Site activities performed away from the locations listed above:

Location details	Activity	Location code
Address At customer's premises Contact: Dr A Butterworth	Dimensional	B



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Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
MEASURING INSTRUMENTS AND MACHINES			NOTES	
Machine tools				
Determination of accuracy and repeatability of positioning of numerically controlled machine tools	ISO 230-2:2014, ISO 230- 2:2006 (withdrawn), ISO 230- 2:1997 (withdrawn) and VDI 3441:1982 (withdrawn) Within the temperature range 5 °C to 35 °C		1 The stated uncertainty applies to scales involving zero expansion co-efficient. Using a laser interferometer.	B
	Linear, 0 m to 4 m	0.15 + (0.50 x length in m) See note 1 0.15 + (0.60 x length in m) See note 2	2 The stated uncertainty applies to calibration of steel scales conducted at 20 °C. Larger uncertainties will apply for calibrations conducted in non-ideal environmental conditions. Using a laser interferometer.	
	Linear, 4 m to 30 m	1.9/m	3 Multiple revolutions of rotary axes are also covered.	
	Rotary axis, 0° to 360° See note 3	0.60 seconds of arc	4. Excluding MOY/SCMI/28 and MOY/SCMI/93 type	B
Circular tests for numerically controlled machine tools	ISO 230-4:2005 50 mm to 250 mm radius circular deviation radial deviation bi-directional circular deviation mean bi-directional radial deviation	0.50 0.50 2.3 2.3		
Length measuring	Within the temperature range 5 °C to 35 °C			B
	0 m to 4 m	0.15 + (0.50 x length in m) See note 1 0.15 + (0.60 x length in m) See note 2		
	4 m to 30 m	1.9/m		
Flatness of measuring faces	2 to 25	0.25	Using optical flat.	B
Parallelism of measuring faces	2 to 25	0.12	Using two point contacts.	B



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
ANGLE				
Indexing tables	0° to 360°	0.30 seconds of arc	Using an angular reference device.	A
Polygons	4 sides to 12 sides 12 sides to 72 sides	0.50 seconds of arc 0.80 seconds of arc	Using an angular reference device	A
Electronic autocollimators	0 seconds to 600 seconds	0.20 seconds of arc See note 4	Using small angle generator	A
Electronic levels	0 seconds to 600 seconds	0.20 seconds of arc	Using small angle generator	A
END				



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Appendix - Calibration and Measurement Capabilities

Introduction

The definitive statement of the accreditation status of a calibration laboratory is the Accreditation Certificate and the associated Schedule of Accreditation. This Schedule of Accreditation is a critical document, as it defines the measurement capabilities, ranges and boundaries of the calibration activities for which the organisation holds accreditation.

Calibration and Measurement Capabilities (CMCs)

The capabilities provided by accredited calibration laboratories are described by the Calibration and Measurement Capability (CMC), which expresses the lowest measurement uncertainty that can be achieved during a calibration. If a particular device under calibration itself contributes significantly to the uncertainty (for example, if it has limited resolution or exhibits significant non-repeatability) then the uncertainty quoted on a calibration certificate will be increased to account for such factors.

The CMC is normally used to describe the uncertainty that appears in an accredited calibration laboratory's schedule of accreditation and is the uncertainty for which the laboratory has been accredited using the procedure that was the subject of assessment. The measurement uncertainty is calculated according to the procedures given in the GUM and is normally stated as an expanded uncertainty at a coverage probability of 95 %, which usually requires the use of a coverage factor of $k = 2$. An accredited laboratory is not permitted to quote an uncertainty that is smaller than the published measurement uncertainty in certificates issued under its accreditation.

Expression of CMCs - symbols and units

It should be noted that the percentage symbol (%) represents the number 0.01. In cases where the measurement uncertainty is stated as a percentage, this is to be interpreted as meaning percentage of the measurand. Thus, for example, a measurement uncertainty of 1.5 % means $1.5 \times 0.01 \times q$, where q is the quantity value.

The notation $Q[a, b]$ stands for the root-sum-square of the terms between brackets: $Q[a, b] = [a^2 + b^2]^{1/2}$