Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

9460

Accredited to ISO/IEC 17025:2017

NDT Maincal Limited

Issue No: 013 **Issue date:** 19 May 2023

Unit 1a **Bingswood Trading Estate** **Whaley Bridge** **High Peak** **SK23 7LY**	**Contact: Lee Wilde** **Tel: +44 (0) 1663 735283** **Fax: +44 (0) 1663 733482** **E-Mail: Lee@maincal.com** **Website: www.maincal.com**

Calibration performed by the Organisation at the locations specified

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details		Activity	Location code
Address NDT Maincal Limited Unit 1a Bingswood Trading Estate Whaley Bridge High Peak SK23 7LY United Kingdom	**Local contact** Lee Wilde Tel: +44 (0) 1663 735283 Fax: +44 (0) 1663 733482 E-Mail: Lee@maincal.com	Magnetic particle inspection and associated equipment Ultrasonic test equipment Pressure indicator AC conductivity	Lab

Site activities performed away from the locations listed above:

Location details	Activity	Location code
The customers' site or premises must be suitable for the nature of the particular calibrations undertaken and will be the subject of contract review arrangements between the laboratory and the customer.	Magnetic particle inspection and associated equipment Ultrasonic test equipment Pressure indicator Temperature	Site

Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
ELECTRICAL All electrical measurements a carried out using the method of direct comparison or transfer to laboratory reference standards unless otherwise determined in the remarks column.				
DC Current	1 mA to 2 A 2 A to 20 A	0.80 % 2.2 %		Lab & Site
Voltage Peak to Peak 10 Hz to 20 MHz	0.6 Vpk-pk to 40 Vpk-pk 40 Vpk-pk to 390 Vpk-pk	3.0 % 4.2 %		
DC Current All waveforms	20 A to 50 A 50 A to 3 kA	5.0 % 3.0 %		Lab & Site
AC Voltage RMS 50 Hz	100 V to 450 V	2.5 %		Lab & Site
AC Current 50 Hz	1 mA to 2 A 2 A to 20 A	1.4 % 2.6 %		
Attenuation 10 Hz to 25 MHz Nominal input 5 V to 10 V	0 dB to 90 dB 90 dB to 110 dB	.050 dB 0.10 dB		
Frequency	10 Hz to 100 MHz	0.50 %		Lab & Site
HWDC scaled in MAGAMPS (2XDC average)	100 A to 6 kA	3.0 %	Ranged is scaled up by 2	
50 Hz rms 50 Hz peak	50 A to 3.5 kA 50 A to 4.95 kA	3.0% 3.0 %		Lab & Site
AC & DC half wave peak current	50 A to 2.5 kA 2.5 kA to 7.0 kA	4.2 % 4.5 %		Lab & Site
Current Shot elapsed time	0 s to 1.9 s 1.9 s to 4.8 s	22 ms 56 ms		Lab & Site

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
AC Conductivity Nominal 60 kHz Sourcing nominal values				Lab
	2 MS/m to 60 MS/m	0.75 %	Note; 58.0 MS/m = 100 % on the International Annealed Copper Scale	
Measurement	2 MS/m to 60 MS/m	1.3%		
Traceability to Boeing (NIST)	0.5 MS/m to 36 MS/m 36 MS/m to 60.5 MS/m	0.75 % 1.5 %	Boeing BAC 5651 Table III. Results will be reported using the IACS Scale, the conversion to SI units will be reported on the certificate.	
Thickness	0 mm to 100 mm	0.50 mm	Supplementary information for the calibration of conductivity blocks only	
ELECTRICAL VERIFICATION of ULTRASONIC FLAW DETECTION EQUIPMENT	As BS EN 12668-1:2010 Group 2 tests and including the following calibrations and quantities:		The method of measurement is described in the standards listed.	Lab & Site
	Stability after warm up (height)	0.50 % of screen height	These claims are all dominated by the resolution of the digital readout rather than the display resolution.	
	Stability after warm up (width)	0.50 % of screen width		
	Jitter - screen height	0.50 % of screen height		
	Jitter - screen width	0.50 % of screen width		
	Stability against voltage variation (height)	0.50 % of screen height		
	Stability against voltage variation (width)	0.5 % of screen width		
	Transmitter voltage 50 V to 500 V	4.2 %		
	Pulse risetime 30 V to 450 V	3.0 ns		
	Pulse duration 1 ms to 25 ns	2.5 ns + 2.0 %		
	Pulse Reverberation	2.5 V		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
ELECTRICAL VERIFICATION of ULTRASONIC FLAW DETECTION EQUIPMENT continued	Amplifier frequency response 100 kHz to 50 MHz	4.0 % of screen height		
	Equivalent input noise	5.0 nV/√Hz		
	Linearity of vertical display	2.5 % of screen height		
	Linearity of timebase x axis	1.0 % of screen width		
	As BS EN ISO 22232-1:2020 Group 2 tests and including the following calibrations and quantities:		The method of measurement is described in the standards listed.	Lab & Site
	Transmitter voltage 50 V to 500 V	4.2 %		
	Pulse risetime 30 V to 450 V	3.0 ns		
	Pulse duration 1 ms to 25 ns	2.5 ns + 2.0 %		
	Amplifier frequency response 100 kHz to 50 MHz Equivalent input noise	4.0 % of screen height 5.0 nV/√Hz	Method B	
	Linearity of vertical display	2.5 % of screen height		
Eddy Current measurements Attenuation, probe drive voltage and frequency are listed in the general electrical capabilities.			ISO 15548-1:2013 tests as listed.	Lab & Site
Screen angle rotation	0° to 360° in 45° degree increments.	1.0°	Correlation between UUT digital readout and display.	Lab & Site
Overall system measurements with probe.	0.20 mm, 0.50 mm and 1.0 mm	3.0 % of full screen width	Serial number of probe used will be stated on the certificate	Lab & Site
Magnetics measurements	2 Gauss to 30 Gauss	0.50 Gauss		Lab

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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
PRESSURE Gas pressure gauge				
Calibration of pressure indicating instruments and gauges	0 Pa to 200 kPa 200 kPa to 400 kPa 400 kPa to 700 kPa	2.3 kPa 3.6 kPa 4.2 kPa	Calibration by comparison with a digital pressure standard. Calibrations can be undertaken in other pressure units.	Lab & Site
Temperature				
Temperature controlled ovens and associated indicators	45 °C to 75 °C	1.5 °C	Single and multipoint monitoring probes Time dependent temperature profiling	Site
Water temperature indicators	1 ºC to 55 ºC	2.5 °C		Lab & site
END				

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: $Q[a, b] = [a^2 + b^2]^{1/2}$