Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

0420

Accredited to ISO/IEC 17025:2017

Lucideon Limited

Issue No: 024 **Issue date**: 05 July 2023

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Calibration performed at the above address only

Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
			Calibrations are carried out against suitable reference standards.
Spectral Diffuse Reflectance Geometries: 0:45, 8/d and 8/t Direct Comparison with NPL Standard.	Reflectance: 0 – 100 % Wavelength range: 380 nm to 750 nm	High reflectance - 0.66% Low reflectance - 0.20% High reflectance gradient - 1.0%	High reflectance gradient uncertainty quoted from the orange master standard
Spectral Diffuse Reflectance Geometries: 0:45, 8/d and 8/t Absolute Measurement.	Reflectance: 0 – 100 % Wavelength range: 380 nm to 750 nm	High reflectance – 0.86% Low reflectance – 0.31% High reflectance gradient – 1.34%	High reflectance gradient uncertainty quoted from the orange master standard
Colour data: CIE			
x, y, u', v'	0 to 1	0.00030	Colour data is given for the CIE 2° and 10° observers and CIE Standard Illuminants A, C, D65 and D50.
Luminous transmittance Y	0 %Y to 100 %Y	0.78 % for white, 0.29 % for black	
Colour data: CIELAB			
L* a* b* C* h°	0 to 100 ±60 ±60 ±60 360º	0.21 0.14 0.14 0.12 0.13	Colour data is given for the CIE 2° and 10° observers and CIE Standard Illuminants A, C, D65 and D50.
dE	0-197	0.30	

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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
Colour data: Hunter L a b	 0 to 100 ±40 ±40	 Sample expanded uncertainties in Hunter L*a*b* space: CCS II Black tile dL = 0.29 da = 0.04 db = 0.06 CCS II Deep Blue tile dL = 0.39 da = 0.45 db = 1.04 CCS II Red_2 tile dL = 1.08 da = 2.99 db = 1.34 CCS II White tile dL = 0.17 da = 0.29 db = 0.54 Uncertainties are calculated from n=5 measurements according to the guide to uncertainty in Measurement M3003.	 Colour data is given for the CIE 2° and 10° observers and CIE Standard Illuminants A, C, D65 and D50.
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: $Q[a, b] = [a^2 + b^2]^{1/2}$