SINGAPORE LABORATORY ACCREDITATION SCHEME

Accredited Laboratory SAC-SINGLAS

Schedule

Quantum Technologies Global Pte Ltd
192 Pandan Loop
#06-07 Pantech Business Hub
Singapore 128381

Certificate No. : LA-2016-0606-C

Issue No. : 3

Date : 03 January 2019

FIELD OF TESTING : Calibration and Measurement

MEASURED QUANTITIES / INSTRUMENTS / RANGE TO BE CALIBRATED	METHOD	CALIBRATION AND MEASUREMENT CAPABILITY (CMC*)
A. Mechanical On-site calibration: Universal Testing Machine (UTM)		
1. Force Classification 0.5, 1, 2 & 3 - Compression Load Cell/Transducer - Tension Load Cell/Transducer	ISO 7500-1: 2018	
<u>Using Dead Weights</u>		
a. 1 N to 200 N (Tension) 1 N to 200 N (Compression)	QTG-02-WP-003-02 Rev 03	0.018 N 0.017 N
<u>Using Load Cells</u>		
b. 200 N to 2 kN (Tension) 200 N to 2 kN (Compression)	QTG-02-WP-003-01 Rev 03	0.42% 0.42%
c. 2 kN to 20 kN (Tension) 2 kN to 20 kN (Compression)		0.18% 0.13%
d. 20 kN to 200 kN (Tension) 20 kN to 200 kN (Compression)		0.14% 0.14%

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

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MEASURED QUANTITIES / INSTRUMENTS / RANGE TO BE CALIBRATED	METHOD	CALIBRATION AND MEASUREMENT CAPABILITY (CMC*)
2. Strain Classification 0.2, 0.5, 1 & 2 - Extensometer System - Crosshead Displacement	ISO 9513:2012 QTG-02-WP-003-03 Rev 04 QTG-02-WP-003-04 Rev 03	
<u>Displacement</u> a. up to 50 mm		8.6 µm
<u>Gauge Length</u> b. 20 mm Gauge Length c. 25 mm Gauge Length d. 50 mm Gauge Length		0.03 mm 0.04 mm 0.04 mm
B. Temperature and Humidity On-site calibration of: Temperature Chamber, Humidity Chamber, Chiller Climatic Chamber, Oven, LN2 Tank		
1. Temperature Calibration / Temperature Mapping	QTG-02-WP-004-02 Rev01	
a. -196 °C b. -50 °C to -25 °C c. -25 °C to 0 °C d. 0 °C to 120 °C e. 120 °C to 150 °C f. 150 °C to 180 °C		4.4 °C 1.5 °C 0.9 °C 0.8 °C 0.9 °C 1.0 °C
2. Humidity / Temperature Calibration Humidity / Temperature Mapping	QTG-02-WP-004-03 Rev01	
23 °C to 60 °C (30 to 95)% relative humidity		1.0 °C 3.9 % relative humidity

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Approved signatory

Mr Chong Tai Wei – All items

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 calibrations 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.