

# Schedule

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Singapore 787601

Certificate No. : LA-2003-0292-C  
Issue No. : 20  
Date : 01 March 2023  
Expiry of Certificate : 10 November 2024  
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FIELD OF TESTING : Calibration and Measurement

MEASURED QUANTITIES/ INSTRUMENT/RANGE TO BE CALIBRATED	METHOD	CALIBRATION & MEASUREMENT CAPABILITY (CMC*)
<p><b>A. Mechanical</b></p> <p><b>A.1 Low Pressure//Differential Ranges</b></p> <ul style="list-style-type: none"> <li>• Gauges</li> <li>• Transducers</li> <li>• Transmitters</li> <li>• Digital Indicators</li> <li>• Photohelic/ Magnehelic Gauges</li> <li>• Manometers</li> <li>• Micromanometers</li> <li>• Differential Pressure Recorders / Calibrators</li> <li>• Velometers</li> <li>• Hook Gauges</li> <li>• Low Differential Switches</li> <li>• Differential Pressure Sensors (Flow meters)</li> <li>• Digital Gauges</li> <li>• Differential Pressure Gauges</li> </ul> <p><u>Lab/Site</u> (-1.0 ~ 1.0) in H<sub>2</sub>O</p> <p>(-25.0 ~ 25.0) Pa</p> <p>(-5.0 ~ 5.0) in H<sub>2</sub>O (-10.0 ~ 10.0) in H<sub>2</sub>O</p> <p>(0.0 ~ 100) mbar</p>	CTTM-M02-2007, Rev. 09	<p>0.002 in H<sub>2</sub>O</p> <p>0.4 Pa</p> <p>0.006 in H<sub>2</sub>O 0.006 in H<sub>2</sub>O</p> <p>1 mbar</p>

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<p><b>A.2 Vacuum &amp; Pressure Ranges (Lab/Site)</b></p> <ul style="list-style-type: none"> <li>• Compound Gauges</li> <li>• Vacuum Gauges</li> <li>• Vacuum Recorders</li> <li>• Manometers</li> <li>• Digital Vacuum Gauges</li> <li>• Vacuum Transmitters</li> <li>• Vacuum Transducers</li> <li>• Vacuum Switches</li> </ul> <p>Vacuum (0 ~ -2) psi (0 ~ -14) psi</p> <p>Pressure (0 ~ 2) psi (0 ~ 30) psi</p>	<p>CTTM-M02-2007, Rev. 09</p>	<p>0.0024 psi 0.011 psi</p> <p>0.0024 psi 0.011 psi</p>
<p><b>A.3 Pneumatic Pressure Ranges (Lab/Site)</b></p> <ul style="list-style-type: none"> <li>• Low Pressure Gauges</li> <li>• Manometers</li> <li>• Transducers / Transmitters</li> <li>• Pressure Gauges</li> <li>• Oil Free Gauges</li> <li>• Gas Gauges</li> <li>• Robin air Gauges</li> <li>• Switches</li> <li>• Pen Recorders</li> <li>• Data Loggers</li> <li>• Oxygen Service Gauges</li> <li>• Altimeters</li> <li>• Calibrators</li> </ul> <p>(0 ~ -14) psi (0 ~ 300) psi</p>	<p>CTTM-M03-2007, Rev. 07</p>	<p>0.08 psi 0.14 psi</p>
<p><b>A.4 Absolute Pressure Ranges (Lab/Site)</b></p> <p>Gauges Transducers Barometers Barographs Calibrators Caisson Gauges Switches Absolute Gauges</p>		

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(50 ~ 1600) mbar a	CTTM-M04-2007, Rev. 07	2.4 mbar a
(0 ~ 50) psi a	CTTM-M07-2007, Rev. 08	0.02 psi a
(>50 ~ 100) psi a		0.03 psi a
(>100 ~ 500) psi a		0.11 psi a
(>500 ~ 1000) psi a		0.21 psi a
(>1000 ~ 1600) psi a		0.33 psi a
(0 ~ 2000) psi a	CTTM-M09-2007, Rev. 09	0.41 psi a
(>2000 ~ 4000) psi a		0.82 psi a
(>4000 ~ 5000) psi a		1.1 psi a
(>5000 ~ 6000) psi a		1.3 psi a
<b>A.5 Pneumatic High Pressure Gauge (Lab/Site)</b>		
<ul style="list-style-type: none"> <li>• Low Pressure Gauges</li> <li>• Manometers</li> <li>• Transducer/ Transmitters</li> <li>• Pressure Gauges</li> <li>• Oil Free Gauges</li> <li>• Gas Gauges</li> <li>• Robinair Gauges</li> <li>• Barometers</li> <li>• Switches</li> </ul>		
<ul style="list-style-type: none"> <li>• Pen Recorders</li> <li>• Data Loggers</li> <li>• Oxygen Service Gauges</li> <li>• Altimeters</li> <li>• Calibrators</li> <li>• Air Gauges</li> <li>• Transducers</li> <li>• Transmitters</li> <li>• Recorders</li> </ul>		
(0 ~ 30) psi	CTTM-M07-2007, Rev. 08	0.0062 psi
(>30 ~ 250) psi		0.06 psi
(>250 ~ 500) psi		0.11 psi
(>500 ~ 750) psi		0.16 psi
(>750 ~ 1000) psi		0.21 psi
(>1000 ~ 1250) psi		0.26 psi
(>1250 ~ 1600) psi		0.33 psi

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<p><b>A.6 Oxygen Service /Oil free Pressure Ranges (Lab/Site)</b></p> <ul style="list-style-type: none"> <li>• Oxygen Service Gauges</li> <li>• Air Gauges</li> <li>• Air Test Sets</li> <li>• Data Loggers</li> <li>• Calibrators</li> <li>• Switches</li> <li>• Barfield Test Sets</li> <li>• High Pressure Gas Gauges</li> <li>• Manometers</li> <li>• Pen Recorders</li> <li>• Digital Indicators</li> </ul> <p>(0 ~ 2000) psi (&gt;2000 ~ 8000) psi (&gt;8000 ~ 10000) psi</p>	<p>CTTM-M09-2007, Rev. 09</p>	<p>1 psi 1 psi 3 psi</p>
<p><b>A.7 Pressure Force Gauge (Lab / Site)</b></p> <ul style="list-style-type: none"> <li>• Pressure Force Gauges</li> <li>• Load Gauges</li> <li>• Tonne Gauges</li> <li>• Hydraulic Gauges</li> <li>• Mud Gauges</li> <li>• Crane Gauges</li> <li>• Metric Gauges</li> </ul> <p>(0 ~ 30) psi (&gt;30 ~ 250) psi (&gt;250 ~ 500) psi (&gt;500 ~ 800) psi (&gt;800 ~ 1500) psi</p> <p>(0 ~ 2000) psi (&gt;2000 ~ 8000) psi (&gt;8000 ~ 14000) psi (&gt;14000 ~ 16000) psi</p> <p>(0 ~ 30000) psi</p> <p>(0 ~ 60000) psi (&gt;60000 ~ 72000) psi</p>	<p>CTTM-M07-2007, Rev. 08</p> <p>CTTM-M09-2007, Rev. 09</p> <p>CTTM-M10-2007, Rev. 07</p> <p>CTTM-M11-2007, Rev. 07</p>	<p>0.0062 psi 0.06 psi 0.11 psi 0.17 psi 0.31 psi</p> <p>1 psi 1 psi 3 psi 4 psi</p> <p>35 psi</p> <p>150 psi 1500 psi</p>

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<p><b>A.8 Pneumatic Low Pressure Ranges (Lab)</b></p> <ul style="list-style-type: none"><li>Air Gauge</li><li>Transducers</li><li>Recorders</li><li>Transmitters</li></ul> <p>(0 to -200) mbar (&gt;-200 to -950) mbar (0 to 200) mbar (&gt;200 to 600) mbar (&gt;600 to 1000) mbar</p>	CTTM-M26-2009, Rev. 06	0.2 mbar 0.3 mbar 0.1 mbar 0.2 mbar 0.3 mbar
<p><b>A.9 Hydraulic Pressure Ranges (Lab/Site)</b></p> <ul style="list-style-type: none"><li>Hydraulic Gauges</li><li>Piston Gauges</li><li>Pressure Gauges</li><li>Manometers</li><li>Pen Recorders</li><li>Transducers</li><li>Transmitters</li><li>Data Loggers</li><li>Hydraulic Switches</li><li>High Pressure Gauges</li></ul> <p>(0 ~ 100) psi (&gt;100 ~ 200) psi (&gt;200 ~ 400) psi (&gt;400 ~ 600) psi (&gt;600 ~ 800) psi (&gt;800 ~ 1000) psi (&gt;1000 ~ 2000) psi (&gt;2000 ~ 4000) psi (&gt;4000 ~ 6000) psi (&gt;6000 ~ 8000) psi (&gt;8000 ~ 12000) psi (&gt;12000 ~ 16000) psi</p>	CTTM-M09-2007, Rev. 09	0.03 psi 0.05 psi 0.09 psi 0.13 psi 0.17 psi 0.21 psi 0.5 psi 0.9 psi 1.3 psi 2 psi 3 psi 4 psi

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<p><b>A.10 High Pressure Ranges (Lab/Site)</b></p> <ul style="list-style-type: none"> <li>• Pen Recorders</li> <li>• High Pressure Gauges</li> <li>• Pressure Transducers</li> <li>• Pressure Transmitters</li> <li>• Mud Gauges</li> <li>• Data Loggers</li> <li>• Pressure Switches</li> </ul> <p>(0 ~ 30000) psi</p>	CTTM-M10-2007, Rev. 07	40 psi
<p><b>A.11 Ultra High Pressure Ranges (Lab/Site)</b></p> <ul style="list-style-type: none"> <li>• Pen Recorders</li> <li>• High Pressure Gauges</li> <li>• Pressure Transducers</li> <li>• Pressure Transmitters</li> <li>• Mud Gauges</li> <li>• Data Loggers</li> <li>• Pressure Switches</li> </ul> <p>(0 ~ 60000) psi (&gt;60000 ~ 72000) psi</p>	CTTM-M11-2007, Rev. 07	150 psi 1500 psi
<p><b>A.12 Pneumatic Dead Weight Tester- Cross Float, Verification (Lab)</b></p> <ul style="list-style-type: none"> <li>• Pneumatic DWT</li> </ul> <p>(10 ~ 50) psi (&gt;50 ~ 160) psi (&gt;160 ~ 320) psi (&gt;320 ~ 640) psi (&gt;640 ~ 960) psi (&gt;960 ~ 1280) psi (&gt;1280 ~ 1600) psi</p>	CTTM-M07-2007, Rev. 08	0.011 psi 0.033 psi 0.066 psi 0.14 psi 0.20 psi 0.27 psi 0.33 psi
<p><b>A.13 Hydraulic Dead Weight Tester- Cross Float, Verification (Lab)</b></p> <ul style="list-style-type: none"> <li>• Hydraulic DWT</li> </ul>		

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<p>(10 ~ 80) psi (&gt;80 ~ 160) psi (&gt;160 ~ 320) psi (&gt;320 ~ 480) psi (&gt;480 ~ 640) psi (&gt;640 ~ 800) psi (&gt;800 ~ 1600) psi (&gt;1600 ~ 3200) psi (&gt;3200 ~ 6400) psi (&gt;6400 ~ 9600) psi (&gt;9600 ~ 12000) psi (&gt;12000 ~ 16000) psi</p>	<p>CTTM-M09-2007, Rev. 09</p>	<p>0.017 psi 0.033 psi 0.066 psi 0.099 psi 0.14 psi 0.17 psi 0.33 psi 0.66 psi 1.4 psi 2.0 psi 2.5 psi 3.3 psi</p>
<p><b>A.14 High Vacuum Ranges (Lab/Site)</b></p> <ul style="list-style-type: none"> <li>• Pirani Gauge</li> <li>• Hot Cathode Gauge</li> <li>• Thermistor Gauge</li> <li>• Torr Meter</li> <li>• Micron Gauge</li> </ul>	<p>CTTM-M05-2007, Rev. 07</p>	
<p>(1.0x10<sup>-6</sup> ~ 5.0x10<sup>-5</sup>) Torr (5.0x10<sup>-5</sup> ~ 8.0x10<sup>-5</sup>) Torr (&gt;8.0x10<sup>-5</sup> ~ 2.0x10<sup>-4</sup>) Torr (&gt;2.0x10<sup>-4</sup> ~ 2.0x10<sup>-3</sup>) Torr (&gt;2.0x10<sup>-3</sup> ~ 6.0x10<sup>-3</sup>) Torr (&gt;6.0x10<sup>-3</sup> ~ 1.0x10<sup>-2</sup>) Torr (&gt;1.0x10<sup>-2</sup> ~ 8.0x10<sup>-2</sup>) Torr (&gt;8.0x10<sup>-2</sup> ~ 1.0x10<sup>-1</sup>) Torr (&gt;0.1~0.8) Torr (&gt;0.8~4.0) Torr (&gt;4.0~10.0) Torr</p>		<p>1.5E-05 Torr 1.4E-05 Torr 3.7E-05 Torr 1.1E-04 Torr 2.6E-04 Torr 3.8E-04 Torr 2.7E-03 Torr 4.1E-03 Torr 2.7E-02 Torr 1.4E-01 Torr 3.3E-01 Torr</p>
<p><b>A.15 Tachometer Non-Contact (Lab/Site)</b></p> <ul style="list-style-type: none"> <li>• Laser Tachometers</li> <li>• Optical Tachometers</li> <li>• Infrared Tachometers</li> <li>• Dial Tachometers</li> <li>• Mechanical Tachometers</li> <li>• Non-contact Tachometers</li> <li>• RPM Meters</li> <li>• Revolution Meters</li> <li>• Speed Indicators / Meters</li> </ul>		

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(0 ~ 30) rpm (>30 ~ 240) rpm (>240 ~ 600) rpm (>600 ~ 1200) rpm (>1200 ~ 3000) rpm (>3000 ~ 6000) rpm (>6000 ~ 18000) rpm (>18000 ~ 27000) rpm (>27000 ~ 45000) rpm (>45000 ~ 66000) rpm (>66000 ~ 90000) rpm	CTTM-M17-2007, Rev. 06	2.4E-01 % of full scale 3.0E-02 % of full scale 1.2E-02 % of full scale 7.6E-03 % of full scale 3.1E-03 % of full scale 1.5E-03 % of full scale 1.5E-03 % of full scale 3.2E-03 % of full scale 2.2E-03 % of full scale 8.9E-04 % of full scale 6.5E-04 % of full scale
<b>A.16 Stroboscope (Lab/Site)</b>  (0 ~ 30) rpm (>30 ~ 240) rpm (>240 ~ 600) rpm (>600 ~ 1200) rpm (>1200 ~ 3000) rpm (>3000 ~ 6000) rpm (>6000 ~ 18000) rpm (>18000 ~ 27000) rpm (>27000 ~ 45000) rpm (>45000 ~ 66000) rpm (>66000 ~ 90000) rpm	CTTM-M17-2007, Rev. 06	5.0E-01 % of full scale 8.1E-02 % of full scale 5.5E-02 % of full scale 6.8E-02 % of full scale 5.4E-02 % of full scale 5.0E-02 % of full scale 5.9E-02 % of full scale 5.5E-02 % of full scale 5.1E-02 % of full scale 5.0E-02 % of full scale 4.9E-02 % of full scale
<b>A.17 Contact Tachometer (Lab/Site)</b>  <ul style="list-style-type: none"> <li>• Contact Tachometers</li> <li>• RPM Meters</li> <li>• Dial Tachometers</li> <li>• Mechanical Tachometers</li> <li>• Speed Meters</li> </ul> (250 ~ 300) rpm (>300 ~ 600) rpm (>600 ~ 900) rpm (>900 ~ 1200) rpm (>1200 ~ 2400) rpm (>2400 ~ 3000) rpm (>3000 ~ 3600) rpm (>3600 ~ 4200) rpm (>4200 ~ 5000) rpm	CTTM-M17-2007, Rev. 06	7.1E-02 % of full scale 5.5E-02 % of full scale 5.4E-02 % of full scale 6.8E-02 % of full scale 5.6E-02 % of full scale 5.5E-02 % of full scale 5.3E-02 % of full scale 5.2E-02 % of full scale 5.1E-02 % of full scale



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<p><b>A.18 Speed Indicators (Lab/ Site)</b></p> <ul style="list-style-type: none"> <li>Speed Revolution Indicators</li> <li>Centrifuge</li> <li>Gear Tachometer</li> </ul> <p>(0 ~ 30) rpm (&gt;30 ~ 240) rpm (&gt;240 ~ 600) rpm (&gt;600 ~ 1200) rpm (&gt;1200 ~ 3000) rpm (&gt;3000 ~ 6000) rpm (&gt;6000 ~ 15000) rpm (&gt;15000 ~ 30000) rpm</p>	<p>CTTM-M17-2007, Rev. 06</p>	<p>5.1E-01 % of full scale 8.4E-02 % of full scale 5.6E-02 % of full scale 6.9E-02 % of full scale 5.5E-02 % of full scale 5.1E-02 % of full scale 6.2E-02 % of full scale 5.4E-02 % of full scale</p>
<p><b>A.19 Balance and Weighing Scales (Lab/Site)</b></p> <ul style="list-style-type: none"> <li>Top-loading, Direct-reading, Scales and Balances</li> </ul> <p>(0 ~ 1) g (0 ~ 80) g (0 ~ 220) g (0 ~ 300) g (0 ~ 6000) g (0 ~ 10) kg (0 ~ 22) kg (0 ~ 30) kg (0 ~ 100) kg (0 ~ 300) kg (0 ~ 1000) kg</p>	<p>CTTM-M18-2007, Rev. 06</p>	<p>0.00012 g 0.00015 g 0.0002 g 0.0003 g 0.03 g 0.0001 kg 0.0001 kg 0.01 kg 0.01 kg 0.01 kg 0.1 kg</p>
<p><b>A.20 Non-Standard Mass (Lab)</b> (Excluding OIML R111 and ANSI/ASTM E716 Class of Mass)</p> <p>(1 to 1000) mg (&gt;1 to 50) g (&gt;50 to 80) g (&gt;80 to 220) g (&gt;220 to 300) g (&gt;300 to 1000) g (&gt;1000 to 6000) g (&gt;6 to 10) kg (&gt;10 to 20) kg (&gt;20 to 30) kg</p>	<p>CTTM-M13-2008, Rev. 06</p>	<p>0.04 mg 0.11 mg 0.11 mg 0.3 mg 0.3 mg 0.02 g 0.02 g 0.0001 kg 0.0001 kg 0.01 kg</p>

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<p><b>A.21 Mass (Lab) Working Class Mass</b> (OIML R111 Class F1 and lower and equivalent classes in ANSI/ASTM E716)</p> <p>1 mg 2 mg 5 mg 10 mg 20 mg 50 mg 100 mg 200 mg 500 mg 1 g 2 g 5 g 10 g 20 g 50 g 100 g 200 g 500 g 1 kg 2 kg 5 kg 10 kg 20 kg</p>	<p>CTTM-M13-2008, Rev. 06</p>	<p>0.01 mg 0.01 mg 0.01 mg 0.02 mg 0.02 mg 0.02 mg 0.02 mg 0.02 mg 0.03 mg 0.04 mg 0.00004 g 0.00005 g 0.00006 g 0.00008 g 0.00010 g 0.00012 g 0.0002 g 0.0004 g 0.01 g 0.01 g 0.01 g 0.02 g 0.0001 kg 0.0001 kg</p>
<p><b>A.22 Volume Measuring Instrument (Lab)</b></p> <ul style="list-style-type: none"> <li>• Burettes (1 ~ 200) ml (&gt;200 ~ 300) ml</li> <li>• Pipettes (1 ~ 500) µl (&gt;500 ~ 1000) µl (&gt;1 ~ 50) ml</li> <li>• Volumetric Flasks and Cylinders (1 ~ 200) ml (&gt;200 ~ 300) ml</li> </ul>	<p>CTTM-M12-2008, Rev. 08</p> <p>CTTM-M12-2008, Rev. 08</p> <p>CTTM-M12-2008, Rev. 08</p>	<p>0.0005 ml 0.0015 ml</p> <p>0.20 µl 0.20 µl 0.0026 ml</p> <p>0.0005 ml 0.0015 ml</p>

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<p>(&gt;300 ~ 6000) ml (&gt;6 ~ 22) L (&gt;22 ~ 30) L (&gt;30 ~ 100) L</p> <ul style="list-style-type: none"> <li>• Syringe                             <ul style="list-style-type: none"> <li>(1 – 500) µl</li> <li>(&gt;500 – 1000) µl</li> <li>(&gt;1 – 200) ml</li> <li>(&gt;200 – 300) ml</li> <li>&gt;300 ml – 1 L</li> <li>(&gt;1 – 5) L</li> </ul> </li> <li>• Dispenser                             <ul style="list-style-type: none"> <li>(100 – 500) µl</li> <li>(&gt;500 – 1000) µl</li> <li>(&gt;1 – 200) ml</li> <li>(&gt;200 – 300) ml</li> </ul> </li> </ul>	<p>CTTM-M12-2008, Rev. 08</p> <p>CTTM-M12-2008, Rev. 08</p>	<p>0.06 ml 0.0013 L 0.02 L 0.1 L</p> <p>0.20 µl 0.20 µl 0.0005 ml 0.0015 ml 0.06 ml 0.06 ml</p> <p>0.20 µl 0.20 µl 0.0005 ml 0.0015 ml</p>
<p><b>A.23 Density Measuring Instruments (Lab)</b></p> <ul style="list-style-type: none"> <li>• S.G Hydrometer</li> <li>• API Gravity</li> <li>• Bulb Hydrometer</li> <li>• Glass Hydrometer</li> </ul> <p>(0.65 – 1.95) g/cm<sup>3</sup></p>	<p>CTTM-M20-2008, Rev. 04</p>	<p>0.00011 g/cm<sup>3</sup></p>
<p><b>A.24 Vibration/Acceleration Measuring Instruments (Lab/Site)</b></p> <p><b>Acceleration Measurement (without sensitivity)</b></p> <p>(0 ~ 10) m/s<sup>2</sup> at 40 Hz (0 ~ 10) m/s<sup>2</sup> at 80 Hz (0 ~ 10) m/s<sup>2</sup> at 160 Hz (0 ~ 10) m/s<sup>2</sup> at 315 Hz (0 ~ 10) m/s<sup>2</sup> at 630 Hz (0 ~ 10) m/s<sup>2</sup> at 1.25 kHz (0 ~ 10) m/s<sup>2</sup> at 2.5 kHz (0 ~ 10) m/s<sup>2</sup> at 5 kHz</p>	<p>CTTM-M15-2008, Rev. 04</p>	<p>0.48 m/s<sup>2</sup> 0.49 m/s<sup>2</sup> 0.49 m/s<sup>2</sup> 0.48 m/s<sup>2</sup> 0.49 m/s<sup>2</sup> 0.50 m/s<sup>2</sup> 1.2 m/s<sup>2</sup> 1.2 m/s<sup>2</sup></p>

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<p><b>Velocity Measurement (without sensitivity)</b> (0 ~ 40) mm/s at 40 Hz (0 ~ 20) mm/s at 80 Hz (0 ~ 5) mm/s at 315 Hz</p>	CTTM – M15 – 2008, Rev. 04	1.8 mm/s 0.65 mm/s 0.17 mm/s
<p><b>A.25 Force Measuring Instruments (Lab) Tension and Compression Modes</b></p> <ul style="list-style-type: none"> <li>• Load cell</li> <li>• Load Indicator</li> <li>• Strain Gauge</li> <li>• Tension Meter/Gauge</li> <li>• Dynamometer</li> <li>• Force Gauge/Indicator</li> </ul> <p><b>Tension Mode</b> (0 ~ 100) kN (&gt;100 ~ 200) kN (&gt;200 ~ 300) kN (&gt;300 ~ 400) kN (&gt;400 ~ 450) kN</p> <p><b>Compression Mode</b> (0 ~ 100) kN (&gt;100 ~ 200) kN (&gt;200 ~ 300) kN (&gt;300 ~ 400) kN (&gt;400 ~ 450) kN</p>	<p>CTTM – M14 – 2008, Rev. 06</p> <p>CTTM – M14 – 2008, Rev. 06</p>	<p>0.74 kN 1.1 kN 1.8 kN 2.6 kN 3.1 kN</p> <p>0.52 kN 1.2 kN 2.1 kN 2.7 kN 2.8 kN</p>
<p><b>A.26 Force Testing Machine (Lab/Site) Tension and Compression Modes</b></p> <p>(0 ~ 5000) lbf</p>	CTTM – M14 – 2008, Rev. 06	32 lbf
<p><b>A.27 a) Torque measuring Devices (Lab)</b> Indicating Torque Wrench and Driver Setting Toque Wrench and Driver</p> <p>≤ 0.5 N·m (&gt;0.5 to 1.5) N·m (&gt;1.5 to 3.0) N·m</p> <p>(&gt;3.0 to 12.0) N·m (&gt;12.0 to 36.0) N·m (&gt;36.0 to 60.0) N·m</p>	<p><b>(As Per ISO 6789:2003E)</b> CTTM – M08 – 2013, Rev. 03</p> <p>CTTM – M08 – 2013, Rev. 03</p>	<p>0.008 N·m 0.020 N·m 0.036 N·m</p> <p>0.80 N·m 1.2 N·m 1.8 N·m</p>

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(>60.0 to 200.0) N·m (>200.0 to 350.0) N·m	CTTM – M08 – 2013, Rev. 03	2.4 N·m 4.1 N·m
(>350.0 to 480.0) N·m (>480.0 to 560.0) N·m (>560.0 to 950.0) N·m	CTTM – M08 – 2013, Rev. 03	6 N·m 7 N·m 12 N·m
<b>b) Torque measuring Devices (Lab)</b> Indicating Torque Wrench and Driver Setting Toque Wrench and Driver	<b>(As Per ISO 6789:2017E)</b> CTTM - M08 – 2013, Rev. 03	0.47 % of reading 0.46 % of reading 0.32 % of reading 0.71 % of reading
<b>A.28 Sound Pressure Level Devices (Lab &amp; Site)</b> Sound Level Meters and Noise Analysers 94 dB @ 1000 Hz 114 dB @ 1000 Hz	CTTM - M16 – 2007, Rev.05	0.3 dB 0.4 dB
<b>A.29 Gas Flow Meters (Lab &amp; Site)</b> Gas Flow meters Thermal mass Flow Meter Airflow Sampler Rota Meter (0 ~ 300) mlpm (>0.3 ~ 0.5) lpm (>0.5 ~ 50) lpm (>50 ~ 100) lpm (>100 ~ 500) lpm (>500 ~ 650) lpm	CTTM – M21 – 2007, Rev.08	0.96 % of reading 1.3 % of reading 0.6 % of reading 2.5 % of reading 1.3 % of reading 0.9 % of reading

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<b>A.30 (a) Liquid Flow Meters (Lab*)</b> <ul style="list-style-type: none"> <li>• Mass flow meters</li> <li>• Coriolis meters</li> <li>• Rota meters</li> <li>• Magnetic flow meters</li> <li>• Turbine flow meters</li> <li>• Ultrasonic flow meters</li> <li>• PD meters</li> <li>• Vortex meters</li> </ul> <b>Mass Flow Rate</b> (0.0 to 420) kg / h (>0.4 to 0.8) Mt / h (> 0.8 to 5.0) Mt / h (> 5.0 to 200) Mt / h (> 200 to 280) Mt / h  <b>Volume Flow Rate</b> (0.0 to 420) l / h (>0.4 to 0.8) m <sup>3</sup> / h (> 0.8 to 5.0) m <sup>3</sup> / h (> 5.0 to 200) m <sup>3</sup> / h (>200 to 280) m <sup>3</sup> / h	CTTM – M22 – 2007 Part 1, Rev 07	0.79 % (0.18 – 0.15) % 0.09 % (0.11 – 0.09) % 0.16 %  0.79 % (0.21 % to 0.18) % 0.14 % (0.15 % to 0.13) % 0.20 %
<b>(b) Liquid Flow Meters (Site)</b> <ul style="list-style-type: none"> <li>• Mass flow meters</li> <li>• Rota meters</li> <li>• Magnetic flow meters</li> <li>• Turbine flow meters</li> <li>• Ultrasonic flow meters</li> <li>• PD meters</li> <li>• Vortex meters</li> </ul> <b>Mass Flow Rate</b> (>0.4 to 0.8) Mt / h (> 0.8 to 5.0) Mt / h (> 5.0 to 200) Mt / h (> 200 to 280) Mt / h	CTTM – M22 – 2007 Part 2, Rev 07	2.4 % to 1.6 % 1.2 % 1.2 % 1.2 %

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<p><b>Volume Flow Rate</b> (&gt;0.4 to 0.8) m<sup>3</sup> / h (&gt; 0.8 to 5.0) m<sup>3</sup> / h (&gt; 5.0 to 200) m<sup>3</sup> / h (&gt;200 to 280) m<sup>3</sup> / h</p> <p><b>A.31 Air Volume meters (Lab)</b></p> <ul style="list-style-type: none"> <li>Balometer</li> <li>Airflow meter</li> <li>Air Data Multimeter</li> <li>Velometer</li> </ul> <p><b>Volumetric Flow Rate</b>  (500 to 1000) m<sup>3</sup> / h (&gt;1000 to 1500) m<sup>3</sup> / h (&gt;1500 to 2500) m<sup>3</sup> / h (&gt;2500 to 3300) m<sup>3</sup> / h</p> <p><b>A.32 Air Velocity Meters (Lab/Site)</b></p> <ul style="list-style-type: none"> <li>Hot-wire Anemometer</li> <li>Air Velocity Meter</li> <li>Vane Anemometer</li> <li>Cup Anemometer</li> <li>Anemometer</li> </ul> <p><b>Air Speed</b> (0.3 to 0.5) m / s (&gt;0.5.0 to 1.0) m / s (&gt;1.0 to 10.0) m / s (&gt;10.0 to 25.0) m / s</p>	<p>CTTM – M34 – 2007, Rev.04</p> <p>CTTM – M19 – 2007 ,Rev.05</p>	<p>1.2 % 1.2 % 1.2 % 1.2 %</p> <p>1.5 % of reading 1.4 % of reading 0.69 % of reading 0.86 % of reading</p> <p>0.29 m/s 0.17 m/s 0.10 m/s 0.58 m/s</p>

Note: The calibration activity for Item A30 (a) is performed at the liquid flow facility located at 23 Tagore Lane, #01-05/06, Tagore 23 Warehouse, Singapore 787601. The calibration activity for Item A31 and A32 are performed at the facility located at 23 Tagore Lane, #03-19, Tagore 23 Warehouse, Singapore 787601.

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<b>B. Electrical</b>		
<b>B.1 DC Voltage Measuring Instruments (Lab/Site)</b>  0 mV ~ 329.9999 mV 330 mV ~ 3.299999 V 3.3 V ~ 32.99999 V 33V ~ 329.9999 V 330 V ~1020 V	CTTM – E01 – 2007, Rev. 08	9.4 µV 47 µV 0.52 mV 7.3 mV 25 mV
<b>B.2 DC High Voltage Measuring Instruments (Lab/ Site)</b>  1 kV ~ 5 kV 5 kV ~ 10 kV 10 kV ~ 20 kV 20 kV ~ 30 kV 30 kV ~ 40 kV 40 kV ~ 50 kV 50 kV ~ 60 kV 60 kV ~ 70 kV	CTTM – E01 – 2007, Rev. 08	0.16 kV 0.26 kV 0.66 kV 0.84 kV 1.0 kV 1.2 kV 1.8 kV 2.0 kV
<b>B.3 DC Current Measuring Instruments (Lab/Site)</b>  0 µA ~ 329.999 µA 0.33 mA ~ 3.29999 mA 3.3 mA ~ 32.9999 mA 33.0 mA ~ 329.999 mA 0.33 A ~ 1.09999 A 1.1 A ~ 2.99999 A 3.0 A ~ 10.9999 A  11 A ~ 16.499 A 16.5 A ~ 109.49 A 109.5 A ~149.99 A 150 A ~ 549.99 A 550 A ~ 1000 A	CTTM – E01 – 2007, Rev. 08         CTTM – E04 – 2007, Rev. 06	0.062µA 0.45 µA 4.2 µA 41 µA 0.30 mA 1.4 mA 7.0 mA  0.28 A 0.95 A 1.6 A 4.2 A 7.5 A



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<p><b>B.4 AC Voltage Measuring Instruments (Lab/Site)</b></p> <ul style="list-style-type: none"> <li>• 1 mV ~ 32.999 mV               <ul style="list-style-type: none"> <li>10 Hz ~ 45 Hz</li> <li>45 Hz ~ 1 kHz</li> <li>1 kHz ~ 10 kHz</li> <li>10 kHz ~ 20 kHz</li> <li>20 kHz ~ 50 kHz</li> <li>50 kHz ~ 100 kHz</li> <li>100 kHz ~ 450 kHz</li> </ul> </li> <li>• 33 mV ~ 329.999 mV               <ul style="list-style-type: none"> <li>10 Hz ~ 45 Hz</li> <li>45 Hz ~ 1 kHz</li> <li>1 kHz ~ 10 kHz</li> <li>10 kHz ~ 20 kHz</li> <li>20 kHz ~ 50 kHz</li> <li>50 kHz ~ 100 kHz</li> <li>100 kHz ~ 450 kHz</li> </ul> </li> <li>• 0.33 V ~ 3.29999 V               <ul style="list-style-type: none"> <li>10 Hz ~ 45 Hz</li> <li>45 Hz ~ 1 kHz</li> <li>1 kHz ~ 10 kHz</li> <li>10 kHz ~ 20 kHz</li> <li>20 kHz ~ 50 kHz</li> <li>50 kHz ~ 100 kHz</li> <li>100 kHz ~ 450 kHz</li> </ul> </li> <li>• 3.3 V ~ 32.9999 V               <ul style="list-style-type: none"> <li>10 Hz ~ 45 Hz</li> <li>45 Hz ~ 10 kHz</li> <li>10 kHz ~ 20 kHz</li> <li>20 kHz ~ 50 kHz</li> <li>50 kHz ~ 100 kHz</li> </ul> </li> <li>• 33 V ~ 329.999 V               <ul style="list-style-type: none"> <li>45 Hz ~ 1 kHz</li> <li>1 kHz ~ 10 kHz</li> <li>10 kHz ~ 20 kHz</li> </ul> </li> <li>• 330 V ~ 1000 V               <ul style="list-style-type: none"> <li>45 Hz ~ 1 kHz</li> <li>1 kHz ~ 5 kHz</li> <li>5 kHz ~ 10 kHz</li> </ul> </li> </ul>	<p>CTTM – E01 – 2007, Rev. 08</p>	<ul style="list-style-type: none"> <li>21 µV</li> <li>15 µV</li> <li>20 µV</li> <li>21 µV</li> <li>27 µV</li> <li>80 µV</li> <li>0.17 mV</li> <li>0.13 mV</li> <li>65 µV</li> <li>65 µV</li> <li>71 µV</li> <li>0.15mV</li> <li>0.34 mV</li> <li>0.85 mV</li> <li>5.2 mV</li> <li>1.9 mV</li> <li>12mV</li> <li>14mV</li> <li>15mV</li> <li>41mV</li> <li>41mV</li> <li>14 mV</li> <li>19 mV</li> <li>21 mV</li> <li>30 mV</li> <li>30 mV</li> <li>130 mV</li> <li>130 mV</li> <li>110 mV</li> <li>0.36 V</li> <li>0.36 V</li> <li>0.36 V</li> </ul>

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<p>0 kV ~ 5 kV @ 50 Hz                      5 kV ~ 10 kV @ 50 Hz                      10 kV ~ 20 kV @ 50 Hz                      20 kV ~ 30 kV @ 50 Hz                      30 kV ~ 40 kV @ 50 Hz                      40 kV ~ 50 kV @ 50 Hz                      50 kV ~ 60 kV @ 50 Hz                      60 kV ~ 70 kV @ 50 Hz</p> <p><b>B.5 AC Current Measuring Instruments (Lab/Site)</b></p> <ul style="list-style-type: none"> <li>• 29.00 <math>\mu</math>A ~ 329.99 <math>\mu</math>A                              20 Hz ~ 45 Hz                              45 Hz ~ 1 kHz                              1 kHz ~ 5 kHz                              5 kHz ~ 10 kHz</li> <li>• 0.33 mA ~ 3.2999 mA                              20 Hz ~ 45 Hz                              45 Hz ~ 1 kHz                              1 kHz ~ 5 kHz                              5 kHz ~ 10 kHz</li> <li>• 3.3 mA ~ 32.9999 mA                              20 Hz ~ 45 Hz                              45 Hz ~ 1 kHz                              1 kHz ~ 5 kHz                              5 kHz ~ 10 kHz</li> <li>• 33 mA ~ 329.999 mA                              20 Hz ~ 45 Hz                              45 Hz ~ 1 kHz                              1 kHz ~ 5 kHz                              5 kHz ~ 10 kHz</li> <li>• 0.33 A ~ 1.09999 A                              20 Hz ~ 45 Hz                              45 Hz ~ 1 kHz                              1 kHz ~ 5 kHz                              5 kHz ~ 10 kHz</li> </ul>	<p>CTTM – E01 – 2007, Rev. 08</p>	<p>0.14 kV                      0.25 kV                      0.57 kV                      0.77 kV                      0.98 kV                      1.2 kV                      1.7 kV                      1.9 kV</p> <p>0.84 <math>\mu</math>A                      0.77 <math>\mu</math>A                      1.4 <math>\mu</math>A                      3.4 <math>\mu</math>A</p> <p>5 <math>\mu</math>A                      4 <math>\mu</math>A                      7.9 <math>\mu</math>A                      19 <math>\mu</math>A</p> <p>37 <math>\mu</math>A                      18 <math>\mu</math>A                      33 <math>\mu</math>A                      80 <math>\mu</math>A</p> <p>0.37 mA                      0.18 mA                      0.44 mA                      0.88 mA</p> <p>2.4 mA                      0.77 mA                      8.8 mA                      38 mA</p>

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<ul style="list-style-type: none"> <li>1.1 A ~ 2.99999 A 20 Hz ~ 45 Hz 45 Hz ~ 1 kHz 1 kHz ~ 5 kHz 5 kHz ~ 10 kHz</li> </ul>		15 mA 13 mA 26 mA 94 mA
<ul style="list-style-type: none"> <li>2.2 A ~ 10.999 A 45 Hz ~ 100 Hz 100 Hz ~ 1 kHz 1 kHz ~ 5 kHz</li> </ul>		10 mA 15 mA 390 mA
<ul style="list-style-type: none"> <li>11 A ~ 20.5 A 45 Hz ~ 100 Hz 100 Hz ~ 1 kHz 1 kHz ~ 5 kHz</li> </ul>		35 mA 42 mA 0.72 A
11 A ~ 16.499 A @ 50 Hz 16.5 A ~ 109.49 A @ 50 Hz 110 A ~ 149.99 A @ 50 Hz 150 A ~ 550 A @ 50 Hz 550 A ~ 1000 A @ 50 Hz	CTTM – E04 – 2007, Rev. 06 (Toroidal Type Clamp)	0.21 A 0.55 A 0.76 A 2.6 A 7.5 A
11 A ~ 16.499 A @ 400 Hz 16.5 A ~ 109.49 A @ 400 Hz 110 A ~ 149.99 A @ 400 Hz 150 A ~ 550 A @ 400 Hz 550 A ~ 1000 A @ 400 Hz	CTTM – E04 – 2007, Rev. 06 (Toroidal Type Clamp)	0.26 A 1.2 A 1.6 A 5.5 A 12 A
11 A ~ 16.499 A @ 50 Hz 16.5 A ~ 109.49 A @ 50 Hz 110 A ~ 149.99 A @ 50 Hz 150 A ~ 550 A @ 50 Hz 550 A ~ 1000 A @ 50 Hz	CTTM – E04 – 2007, Rev. 06 (Non-Toroidal Type Clamp)	0.25 A 1.1 A 2.1 A 4.9 A 7.8 A
10.1 A ~ 16.499 A @ 400 Hz 16.5 A ~ 109.49 A @ 400 Hz 110 A ~ 149.99 A @ 400 Hz 150 A ~ 550 A @ 400 Hz 550 A ~ 1000 A @ 400 Hz	CTTM – E04 – 2007, Rev. 06 (Non-Toroidal Type Clamp)	0.31 A 1.7 A 2.1 A 8.8 A 13 A

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<p><b>B.6 Capacitance Measuring Instruments (Lab/Site)</b></p> <p>35.00 pF ~ 50.00 pF @ 1 kHz                      50.00 pF ~ 70.00 pF @ 1 kHz                      70.00 pF ~ 145.00 pF @ 1 kHz                      100.00 pF ~ 200.00 pF @ 1 kHz                      200.00 pF ~ 1155.0 pF @ 1 kHz</p> <p>0.19 nF ~ 0.3999 nF @ 1 kHz                      0.4 nF ~ 1.0999 nF @ 1 kHz                      1.1 nF ~ 3.2999 nF @ 1 kHz                      3.3 nF ~ 10.9999 nF @ 1 kHz                      11 nF ~ 32.9999 nF @ 1 kHz                      33 nF ~ 109.999 nF @ 1 kHz                      110 nF ~ 329.999 nF @ 1 kHz                      0.33 μF ~ 1.09999 μF @ 100 Hz                      1.1 μF ~ 3.29999 μF @ 100 Hz                      3.3 μF ~ 10.9999 μF @ 100 Hz                      11 μF ~ 32.9999 μF @ 100 Hz                      33 μF ~ 109.999 μF @ 50 Hz                      110 μF ~ 329.999 μF @ 50 Hz                      0.33 mF ~ 1.09999 mF DC                      1.1 mF ~ 3.29999 mF DC                      3.3 mF ~ 10.9999 mF DC                      11 mF ~ 32.9999 mF DC                      33 mF ~ 110 mF DC</p>	<p>CTTM – E03 – 2007, Rev. 07</p>	<p>7.4% of reading                      5.2% of reading                      2.3% of reading                      7.7 pF                      7.8 pF</p> <p>14 pF                      18 pF                      32 pF                      45 pF                      0.23 nF                      0.44 nF                      1.3 nF                      4.6 nF                      16 nF                      44 nF                      0.20 μF                      0.70 μF                      2.2 μF                      7.0 μF                      19 μF                      58 μF                      300 μF                      1.4 mF</p>
<p><b>B.7 Milliohm Resistance Measuring Instruments (Lab/Site)</b></p> <p>1 mΩ                      2 mΩ                      5 mΩ                      0.001 Ω ~ 0.01 Ω                      0.01 Ω ~ 0.1 Ω</p> <p>0.1 Ω ~ 1 Ω                      1 Ω ~ 10 Ω                      10 Ω ~ 100 Ω                      100 Ω ~ 1 kΩ</p>	<p>CTTM – E12 – 2007, Rev. 05</p>	<p>0.059 % of reading                      0.030 % of reading                      0.014 % of reading                      5.9 % of reading                      2.4 % of reading</p> <p>0.14 % of reading                      0.059 % of reading                      0.015 % of reading                      0.014 % of reading</p>

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<b>B.8 Resistance Measuring Instruments (Lab/Site)</b>	CTTM – E03 – 2007, Rev. 07	
0 $\Omega$ ~ 10.999 $\Omega$		18 m $\Omega$
11 $\Omega$ ~ 32.9999 $\Omega$		25 m $\Omega$
33 $\Omega$ ~ 109.9999 $\Omega$		27 m $\Omega$
110 $\Omega$ ~ 329.9999 $\Omega$		30 m $\Omega$
330 $\Omega$ ~ 1.099999 k $\Omega$		0.60 $\Omega$
1.1 k $\Omega$ ~ 3.299999 k $\Omega$		0.72 $\Omega$
3.3 k $\Omega$ ~ 10.99999 k $\Omega$		0.80 $\Omega$
11 k $\Omega$ ~ 32.99999 k $\Omega$		2.9 $\Omega$
33 k $\Omega$ ~ 109.9999 k $\Omega$		5.7 $\Omega$
110 k $\Omega$ ~ 329.9999 k $\Omega$		30 $\Omega$
330 k $\Omega$ ~ 1.099999 M $\Omega$		0.60 k $\Omega$
1.1 M $\Omega$ ~ 3.299999 M $\Omega$		0.74 k $\Omega$
3.3 M $\Omega$ ~ 10.99999 M $\Omega$		2 k $\Omega$
11 M $\Omega$ ~ 32.99999 M $\Omega$		14 k $\Omega$
33 M $\Omega$ ~ 109.9999 M $\Omega$		70 k $\Omega$
110 M $\Omega$ ~ 329.9999 M $\Omega$		1.3 M $\Omega$
330 M $\Omega$ ~ 1100 M $\Omega$		20 M $\Omega$
0.01 $\Omega$ ~ 0.05 $\Omega$	CTTM – E03 – 2007, Rev. 07	2.9 m $\Omega$
0.05 $\Omega$ ~ 0.1 $\Omega$		5.8 m $\Omega$
0.1 $\Omega$ ~ 0.5 $\Omega$		12 m $\Omega$
0.5 $\Omega$ ~ 1.0 $\Omega$		24 m $\Omega$
1.0 $\Omega$ ~ 5.0 $\Omega$		29 m $\Omega$
5.0 $\Omega$ ~ 10.0 $\Omega$		58 m $\Omega$
10.0 $\Omega$ ~ 50.0 $\Omega$		59 m $\Omega$
50.0 $\Omega$ ~ 100.0 $\Omega$		120 m $\Omega$
100.0 $\Omega$ ~ 500.0 $\Omega$		580 m $\Omega$
500.0 $\Omega$ ~ 1000.0 $\Omega$		1.2 $\Omega$
1.0 k $\Omega$ ~ 5.0 k $\Omega$		5.8 $\Omega$
5.0 k $\Omega$ ~ 10.0 k $\Omega$		12 $\Omega$
10.0 k $\Omega$ ~ 50.0 k $\Omega$		58 $\Omega$
50.0 k $\Omega$ ~ 100.0 k $\Omega$		120 $\Omega$

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<b>B.9 High Voltage Resistance Measuring Instruments (Lab / Site)</b> 100 k $\Omega$ 1000 k $\Omega$ 10 M $\Omega$  100 M $\Omega$ 1000 M $\Omega$ 10 G $\Omega$ 100 G $\Omega$ 1000 G $\Omega$	CTTM – E11 – 2007, Rev. 06	140 $\Omega$ 1.4 k $\Omega$ 120 k $\Omega$  1.7 M $\Omega$ 12 M $\Omega$ 0.13 G $\Omega$ 3.5 G $\Omega$ 45 G $\Omega$
<b>B.10 Resistance Sourcing Instruments (Lab/Site)</b> 0 $\Omega$ ~ 10 $\Omega$ 10 $\Omega$ ~ 100 $\Omega$ 100 $\Omega$ ~ 1 k $\Omega$ 1 k $\Omega$ ~ 10 k $\Omega$ 10 k $\Omega$ ~ 100 k $\Omega$ 100 k $\Omega$ ~ 1 M $\Omega$ 1 M $\Omega$ ~ 10 M $\Omega$ 10 M $\Omega$ ~ 100 M $\Omega$ 100 M $\Omega$ ~ 1 G $\Omega$	CTTM – E06 – 2007, Rev. 06	0.0047 $\Omega$ 0.017 $\Omega$ 0.13 $\Omega$ 1.3 $\Omega$ 13 $\Omega$ 0.15 k $\Omega$ 4.8 k $\Omega$ 0.94 M $\Omega$ 24 M $\Omega$
<b>B.11 Frequency Measuring Instruments (Lab/Site)</b> 0.010 Hz ~ 119.990 Hz 120.0 Hz ~ 1199.9 Hz 1.200 kHz ~ 11.999 kHz 12.00 kHz ~ 119.99 kHz 120.0 kHz ~ 1199.9 kHz 1200.0kHz ~ 2000.0 kHz	CTTM – E01 – 2007, Rev. 08	8 mHz 0.2 Hz 0.14 Hz 5.5 Hz 3.5 Hz 58 Hz
<b>B.12 Frequency Sourcing Instruments (Lab/Site)</b> 3 Hz ~ 5 Hz 5 Hz ~ 10 Hz 10 Hz ~ 40 Hz 40 Hz ~ 1 kHz 1 kHz ~ 300 kHz 300 kHz ~ 1 MHz	CTTM – E06 – 2007, Rev. 06	0.17 % of reading 0.15 % of reading 0.038 % of reading 0.013 % of reading 0.023 % of reading 0.013 % of reading

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<b>B.13 DC Voltage Sourcing Instruments (Lab/Site)</b>  0.0 mV ~ 100 mV 0.1 V ~ 1 V 1 V ~ 10 V 10 V ~ 100 V 100 V ~ 1000 V  <b>DC High Voltage Sourcing Instruments (Lab/Site)</b> ~10 kV 10 kV ~ 20 kV 20 kV ~ 50 kV 50 kV ~ 100 kV	CTTM – E06 – 2007, Rev. 06           CTTM – E07 – 2007, Rev. 07	8.7 $\mu$ V 39 $\mu$ V 340 $\mu$ V 5.2 mV 60 mV           0.090 kV 0.12 kV 0.35 kV 0.74 kV
<b>B.14 DC Current Sourcing Instruments (Lab/Site)</b> 0 $\mu$ A ~ 100 $\mu$ A 100 $\mu$ A ~ 1 mA 1 mA ~ 10 mA 10 mA ~ 100 mA 100 mA ~ 1 A 1 A ~ 3 A 2 A ~ 10 A  <b>DC High Current Sourcing Instruments (Lab/Site)</b> 0.0 A ~ 30.0 A 30.0 A ~ 100 A 101 A ~ 250 A 251 A ~ 500 A 501 A ~ 750 A 751 A ~ 900 A	CTTM – E06 – 2007, Rev. 06           CTTM – E09 – 2007, Rev. 06	88 nA 640 nA 8.2 $\mu$ A 64 $\mu$ A 830 $\mu$ A 4.2 mA 19 mA           1.4 A 4.6 A 16 A 19 A 23 A 26 A
<b>B.15 AC Current Sourcing Instruments (Lab/Site)</b>  1 $\mu$ A ~ 100 $\mu$ A 10 Hz ~ 5 kHz 5 kHz ~ 10 kHz  100 $\mu$ A ~ 1 mA 10 Hz ~ 5 kHz 5 kHz ~ 10 kHz	CTTM – E06 – 2007, Rev. 06	0.17 $\mu$ A 0.52 $\mu$ A        1.7 $\mu$ A 5.3 $\mu$ A

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<b>1 mA ~ 10 mA</b> 10 Hz ~ 5 kHz 5 kHz ~ 10 kHz  <b>10 mA ~ 100 mA</b> 10 Hz ~ 5 kHz 5 kHz ~ 10 kHz <b>100 mA ~ 1 A</b> 10 Hz ~ 5 kHz 5 kHz ~ 10 kHz  <b>1 A ~ 3 A</b> 10 Hz ~ 5 kHz 5 kHz ~ 10 kHz  <b>3 A ~ 10 A</b> 10 Hz ~ 1 kHz  0.0 A ~ 100 A 101 A ~ 250 A 251 A ~ 500 A 501 A ~ 750 A 751 A ~ 900 A	CTTM – E09 – 2007, Rev. 06	17 µA 52 µA  170 µA 530 µA  1.7 mA 13 mA  7.3 mA 37 mA  25 mA
<b>B.16 AC Voltage Sourcing Instruments (Lab/Site)</b>  <b>1 mV ~ 100 mV</b> 5 Hz ~ 10 Hz 10 Hz ~ 20 k Hz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz 100 kHz ~ 300 kHz  <b>100 mV ~ 1.0 V</b> 5 Hz ~ 10 Hz 10 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz 100 kHz ~ 300 kHz  <b>1.0 V ~ 10 V</b> 5 Hz ~ 10 Hz 10 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz	CTTM – E06 – 2007, Rev. 06	0.46 mV 0.12 mV 0.2 mV 5.4 mV 5.3 mV  4.4 mV 1.1 mV 2.0 mV 52 mV 52 mV  44 mV 11 mV 20 mV 79 mV



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MEASURED QUANTITIES/ INSTRUMENT/RANGE TO BE CALIBRATED	METHOD	CALIBRATION & MEASUREMENT CAPABILITY (CMC*)
<b>10 V ~ 100 V</b> 10 Hz ~ 20 kHz  <b>100 V ~ 1000 V</b> 10 Hz ~ 20 kHz  ~10 kV @ 50 Hz 10 kV ~ 20 kV @ 50 Hz 20 kV ~ 50 kV @ 50 Hz 50 kV ~ 100 kV @ 50 Hz	CTTM – E07 – 2007, Rev. 07	110 mV  1.1 V  0.043 kV 0.079 kV 0.32 kV 0.39 kV
<b>B.17 Inductance Measuring Instruments (Lab/Site)</b>  0.1 mH ~1 mH @ 1kHz 1 mH ~ 10 mH @ 1kHz 10 mH ~ 100 mH @ 1kHz 100 mH ~ 1000 mH @ 1kHz 1 H ~ 5 H @ 1kHz 5 H ~ 10 H @ 1kHz	CTTM – E03 – 2007, Rev. 07	2.4 % of reading 2.4 % of reading 2.4 % of reading 2.4 % of reading 2.5 % of reading 3.0 % of reading
<b>B.18 Time Measuring Instruments (Lab/Site)</b> 1 s ~ 59 s 1 min ~ 59 mins 60 mins ~ 180 mins  1 s ~ 59 s 1 min ~ 59 mins 60 mins ~ 180 mins	CTTM – E13 – 2007, Rev. 04  <b>Ref: Universal Counter</b>  <b>Ref: Stopwatch</b>	0.056 sec 0.056 sec 0.099 sec  0.81 sec 1.9 sec 3.1 sec
<b>B.19 Power Measuring Instruments DC Power (Lab/Site)</b> ~ 11 kW 10 kW ~16.499 kW 16.5 kW ~ 149.999 kW 149.999 kW ~ 549.999 kW 550.000 kW ~ 1000 kW	CTTM – E02 – 2007, Rev. 05	0.48 % of reading 0.41 % of reading 0.32 % of reading 0.32 % of reading 0.32 % of reading

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<b>B.20 Power Measuring Instruments AC Power (Lab/Site)</b>  Up to 11 kW 10 kW ~ 16.499 kW 16.5 kW ~ 149.999 kW 149.999 kW ~ 549.999 kW 550.000 kW ~ 1000 kW	CTTM – E02 – 2007, Rev. 05  45 Hz ~ 50 Hz @ PF = 1	1.1% of reading 0.81 % of reading 0.39 % of reading 0.38 % of reading 0.38 % of reading
<b>B.21 Capacitance Sourcing Instruments (Lab/Site)</b>  0.1 nF ~ 1 nF @1kHz 1 nF ~ 10 nF @1kHz 10 nF ~ 100 nF @1kHz 100 nF ~ 1 μF @1kHz 1 μF ~ 10 μF @1kHz 10 μF ~ 100 μF @1kHz 100 μF ~ 1 mF @1kHz	CTTM – E06 – 2007, Rev. 06	5.4 % of reading 1.8 % of reading 1.8 % of reading 1.8 % of reading 1.8 % of reading 1.8 % of reading 1.8 % of reading
<b>B.22 Electrostatic Voltmeter Measuring Instruments (Lab)</b> 1.00 kV ~ 10.00 kV	CTTM-E15:2011, Rev. 04	0.46 kV
<b>B.23 Gauss Measuring Instrument (Lab) Magnetometer</b> 0.00 Gauss ~ 20.00 Gauss 0.0 Gauss ~ 100.0 Gauss  <b>Probe (Transverse &amp; Axial Probe)</b> 0.00 Gauss ~ 20.00 Gauss 20.00 Gauss ~ 50.00 Gauss 50.00 Gauss ~ 100.00 Gauss  <b>Transverse Probe</b> 0.5000 kGauss 5.000 kGauss 10.000 kGauss  <b>Axial Probe</b> 0.5000 kGauss 2.000 kGauss	CTTM-E16:2011, Rev. 03	0.68 Gauss 1.5 Gauss  0.68 Gauss 0.48 Gauss 0.63 Gauss  0.029 kGauss 0.29 kGauss 0.58 kGauss  0.029 kGauss 0.12 kGauss

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<p><b>B.24 Oscilloscope Measuring Instrument (Lab/Site)</b></p> <p><b>Vertical Gain (DC)</b>  <math>\pm 1 \text{ mV} \sim \pm 6 \text{ V} @ 50 \Omega</math>  <math>\pm 1 \text{ mV} \sim \pm 120 \text{ V} @ 1 \text{ M}\Omega</math></p> <p><b>Vertical Gain (AC)</b>  <math>1 \text{ mV}_{pp} \sim 6 \text{ V}_{pp} @ 50 \Omega</math>  <math>1 \text{ mV}_{pp} \sim 120 \text{ V}_{pp} @ 1 \text{ M}\Omega</math></p> <p><b>Time Test</b>  <math>2 \text{ ns} \sim 20 \text{ ms}</math>  <math>50 \text{ ms} \sim 5 \text{ s}</math></p> <p><b>Bandwidth test (Relative Flatness to 50 kHz)</b>  <math>50 \text{ kHz} \sim 100 \text{ MHz}</math>  <math>100 \text{ MHz} \sim 300 \text{ MHz}</math>  <math>300 \text{ MHz} \sim 600 \text{ MHz}</math></p>	CTTM-E05:2007, Rev 05	<p>0.31 % of Reading 0.076 % of Reading</p> <p>0.51 % of Reading 0.13 % of Reading</p> <p>0.58 <math>\mu\text{s}</math> 4.4 ms</p> <p>2.0 % of Reading 2,5 % of Reading 4.8 % of Reading</p>
<p><b>C. Temperature</b></p> <p><b>C.1 Ice Point of Water/Fixed Point Cells (Lab)</b></p> <p>Ice Point of Water @ 0 °C  RTD/PRT Sensor with Indicator  RTD/PRT Sensor without Indicator</p> <p>Triple Point of Water (0.01 °C)  Gallium Melting Point (29.7646 °C)</p>	CTTM – T01 – 2007, Rev. 06	<p>0.033 °C 0.068 °C</p> <p>3 mK 2 mK</p>
<p><b>C.2 Temperature Measuring Sensors with indicators (Lab)</b></p> <p>RTD/PRT Sensor with Indicator</p> <p>(-100 to -75) °C  (-75 to 75) °C  (75 to 200) °C  (200 to 300) °C  (300 to 400) °C  (400 to 500) °C</p>	CTTM – T02 – 2007, Rev. 08	<p>0.23 °C 0.085 °C 0.045 °C 0.41 °C 0.43 °C 0.48 °C</p>

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<b>C.3 Temperature Measuring Sensors Without indicators (Lab)</b>  RTD/PRT Sensor without Indicator  (-100 to -75) °C (-75 to 75) °C (75 to 200) °C (200 to 300) °C (300 to 400) °C (400 to 500) °C	CTTM – T02 – 2007, Rev. 08	0.23 °C 0.10 °C 0.11 °C 0.44 °C 0.45 °C 0.58 °C
<b>C.4 Temperature Measuring Sensors With and Without Indicator (Lab)</b>  <u>TYPE K (Sensor)</u> (-100 to -75) °C (-75 to 200) °C (200 to 400) °C (400 to 500) °C  <u>TYPE J (Sensor)</u> (-100 to -75) °C (-75 to 200) °C (200 to 400) °C (400 to 500) °C  <u>TYPE R (Sensor)</u> (0 to 200) °C (200 to 400) °C (400 to 500) °C  <u>TYPE S (Sensor)</u> (0 to 200) °C (200 to 400) °C (400 to 500) °C  <u>TYPE E (Sensor)</u> (-100 to -75) °C (-75 to 200) °C (200 to 400) °C (400 to 500) °C	CTTM – T02 – 2007, Rev. 08	1.1 °C 1.1 °C 1.3 °C 1.6 °C  1.1 °C 1.1 °C 1.3 °C 1.6 °C  0.80 °C 0.75 °C 0.92 °C  0.80 °C 0.78 °C 0.94 °C  1.1 °C 1.0 °C 1.3 °C 1.6 °C

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<p><u>TYPE T (Sensor)</u> (-100 to -75) °C (-75 to 200) °C</p> <p><u>TYPE N (Sensor)</u> (-100 to -75) °C (-75 to 200) °C (200 to 400) °C (400 to 500) °C</p> <p><b>Temperature Measuring Sensors With and Without Indicator (Lab)</b></p> <p><u>TYPE K (Sensor)</u> (500 to 600) °C (600 to 800) °C (800 to 1000) °C (1000 to 1200) °C</p> <p><u>TYPE J (Sensor)</u> (500 to 600) °C (600 to 800) °C (800 to 1000) °C (1000 to 1200) °C</p> <p><u>TYPE N (Sensor)</u> (500 to 600) °C (600 to 800) °C (800 to 1000) °C (1000 to 1200) °C</p> <p><u>TYPE R (Sensor)</u> (500 to 600) °C (600 to 800) °C (800 to 1000) °C (1000 to 1200) °C</p>	<p>CTTM – T03 – 2007, Rev. 06</p>	<p>0.48 °C 0.61 °C</p> <p>1.1 °C 1.1 °C 1.3 °C 1.6 °C</p> <p>2.5 °C 3.2 °C 4.1 °C 4.8 °C</p> <p>2.5 °C 3.2 °C 4.1 °C 4.8 °C</p> <p>2.5 °C 3.2 °C 4.1 °C 4.8 °C</p> <p>1.9 °C 2.3 °C 3.0 °C 3.4 °C</p>

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<u>TYPE S (Sensor)</u> (500 to 600) °C (600 to 800) °C (800 to 1000) °C (1000 to 1200) °C  <u>TYPE E (Sensor)</u> (500 to 600) °C (600 to 800) °C (800 to 1000) °C		1.9 °C 2.3 °C 3.0 °C 3.4 °C  2.5 °C 3.2 °C 4.1 °C
<b>C.5 Liquid -In-Glass Thermometers (Lab)(Total Immersion)</b>  <b>Graduation= 0.10 °C</b> (-80.0 to 0.0) °C (0.1 to 75.0) °C (75.1 to 100.0) °C (100.1 to 280.0) °C  <b>Graduation= 0.50 °C</b> (-80.0 to 0.0) °C (0.1 to 75.0) °C (75.1 to 100.0) °C (100.1 to 280.0) °C	CTTM – T02 – 2007, Rev. 08	0.08 °C 0.11 °C 0.11 °C 0.42 °C  0.30 °C 0.31 °C 0.30 °C 0.51 °C
<b>C.6 Temperature Calibrators (Lab/Site)</b> Block Calibrators Temperature Baths Furnaces Sand and Liquid Baths Dry Block Calibrators Oil Baths Water Baths	CTTM – T04 – 2007, Rev. 05	

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-196 °C to -80 °C -80 °C ~ 100 °C 100 °C ~ 300 °C 300 °C ~ 500 °C 500 °C ~ 800 °C 800 °C ~ 1000 °C 1000 °C ~ 1200 °C		0.30 °C 0.14 °C 0.16 °C 0.17 °C 2.7 °C 2.7 °C 3.2 °C
<b>C.7 Temperature Radiation Devices (Lab)</b>	CTTM – T05 – 2007, Rev. 05	
Emissivity		
-30 °C ~ 0 °C      ε=0.90 to 1.00		1.4 °C
0 °C ~ 50 °C      ε=0.90 to 1.00		3.8 °C
50 °C ~ 100 °C      ε=0.90 to 1.00		1.6 °C
100 °C ~ 300 °C      ε=0.90 to 1.00		3.3 °C
300 °C ~ 500 °C      ε=0.90 to 1.00		4.7 °C
500 °C ~ 600 °C      ε=0.90 to 1.00		3.1 °C
600 °C ~ 800 °C      ε=0.90 to 1.00		3.9 °C
800 °C ~ 1000 °C      ε=0.90 to 1.00		3.9 °C
1000 °C ~ 1200 °C      ε=0.90 to 1.00		8.1 °C
<b>C.8 Temperature Indicator without Sensor (Lab)</b>	CTTM – T06 – 2007, Rev. 05	
<b>Measure Mode:</b>		
<b>a) Type K</b>		
-200 °C ~ 0 °C		0.51 °C
0 °C ~ 900 °C		0.45 °C
900 °C ~ 1370 °C		0.57 °C
<b>b) Type T</b>		
-200 °C ~ 0 °C		0.79 °C
0 °C ~ 400 °C		0.35 °C
<b>c) Type J</b>		
-210 °C ~ 0 °C		0.45 °C
0 °C ~ 600 °C		0.38 °C
600 °C ~ 1200 °C		0.42 °C

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<p><b>d) Type N</b> -200 °C ~ 0 °C 0 °C ~ 300 °C 300 °C ~ 1200 °C</p> <p><b>e) Type R</b> 0 °C ~ 250 °C 250 °C ~ 400 °C 400 °C ~ 1000 °C 1000 °C ~ 1760 °C</p> <p><b>f) Type S</b> 0 °C ~ 250 °C 250 °C ~ 400 °C 400 °C ~ 1000 °C 1000 °C ~ 1760 °C</p> <p><b>g) Type E</b> -199 °C ~ -100 °C -100 °C ~ 0 °C 0 °C ~ 600 °C 600 °C ~ 1000 °C</p> <p><b>h) RTD Measuring Devices (Indicator)</b> -200 °C ~ -100 °C -100 °C ~ 300 °C 300 °C ~ 600 °C 600 °C ~ 800 °C</p> <p><b>Temperature Indicator without Sensor (Site)</b> <b>Measure Mode:</b></p> <p><b>a) Type K</b> -200 °C ~ 0 °C 0 °C ~ 900 °C 900 °C ~ 1370 °C</p> <p><b>b) Type T</b> -200 °C ~ 0 °C 0 °C ~ 400 °C</p>	<p>CTTM – T06 – 2007, Rev. 05</p>	<p>0.72 °C 0.60 °C 0.64 °C</p> <p>0.76 °C 0.59 °C 0.57 °C 0.63 °C</p> <p>0.70 °C 0.60 °C 0.60 °C 0.69 °C</p> <p>0.66 °C 0.35 °C 0.36 °C 0.39 °C</p> <p>0.062 °C 0.11 °C 0.15 °C 0.27 °C</p> <p>0.61 °C 0.72 °C 0.81 °C</p> <p>1.3 °C 5.6 °C</p>



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<b>c) Type J</b> -210 °C ~ 0 °C 0 °C ~ 600 °C 600 °C ~ 1200 °C		0.57 °C 0.63 °C 0.72 °C
<b>d) Type N</b> -200 °C ~ 0 °C 0 °C ~ 300 °C 300 °C ~ 1200 °C		0.97 °C 0.94 °C 0.99 °C
<b>e) Type R</b> 0 °C ~ 250 °C 250 °C ~ 400 °C 400 °C ~ 1000 °C 1000 °C ~ 1760 °C		1.6 °C 1.3 °C 1.3 °C 1.3 °C
<b>f) Type S</b> 0 °C ~ 250 °C 250 °C ~ 400 °C 400 °C ~ 1000 °C 1000 °C ~ 1760 °C		1.7 °C 1.4 °C 1.4 °C 1.5 °C
<b>g) Type E</b> -199 °C ~ -100 °C -100 °C ~ 0 °C 0 °C ~ 600 °C 600 °C ~ 1000 °C		0.73 °C 0.74 °C 0.74 °C 0.65 °C
<b>h) RTD Measuring Devices (Indicator)</b> -200 °C ~ -100 °C -100 °C ~ 300 °C 300 °C ~ 600 °C 600 °C ~ 800 °C		0.14 °C 0.37 °C 0.48 °C 0.52 °C

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<p><b>Thermocouple Sourcing Source Mode: (Lab)</b></p> <p><b>a) Type K</b> -200 °C ~ 0 °C 0 °C ~ 900 °C 900 °C ~ 1370 °C</p> <p><b>b) Type T</b> -200 °C ~ 0 °C 0 °C ~ 400 °C</p> <p><b>c) Type J</b> -210 °C ~ 0 °C 0 °C ~ 600 °C 600 °C ~ 1200 °C</p> <p><b>d) Type N</b> -200 °C ~ 0 °C 0 °C ~ 400 °C 400 °C ~ 1200 °C</p> <p><b>e) Type R</b> 0 °C ~ 250 °C 250 °C ~ 400 °C 400 °C ~ 1000 °C 1000 °C ~ 1760 °C</p> <p><b>f) Type S</b> 0 °C ~ 250 °C 250 °C ~ 400 °C 400 °C ~ 1000 °C 1000 °C ~ 1760 °C</p> <p><b>g) Type E</b> -199 °C ~ -100 °C -100 °C ~ 600 °C 600 °C ~ 1000 °C</p> <p><b>h) RTD Sourcing Devices (Indicator)</b> -200 °C ~ -100 °C -100 °C ~ 0 °C 0 °C ~ 300 °C 300 °C ~ 600 °C 600 °C ~ 800 °C</p>	<p>CTTM – T06 – 2007, Rev. 05</p>	<p>0.51 °C 0.45 °C 0.57 °C</p> <p>0.79 °C 0.35 °C</p> <p>0.45 °C 0.38 °C 0.42 °C</p> <p>0.72 °C 0.60 °C 0.64 °C</p> <p>0.79 °C 0.59 °C 0.57 °C 0.63 °C</p> <p>0.70 °C 0.60 °C 0.60 °C 0.69 °C</p> <p>0.66 °C 0.36 °C 0.39 °C</p> <p>0.030 °C 0.060 °C 0.11 °C 0.15 °C 0.19 °C</p>

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<p><b>Thermocouple Sourcing Source Mode: (Site)</b></p> <p><b>a) Type K</b> -200 °C ~ 0 °C 0 °C ~ 900 °C 900 °C ~ 1370 °C</p> <p><b>b) Type T</b> -200 °C ~ 0 °C 0 °C ~ 400 °C</p> <p><b>c) Type J</b> -210 °C ~ 0 °C 0 °C ~ 600 °C 600 °C ~ 1200 °C</p> <p><b>d) Type N</b> -200 °C ~ 0 °C 0 °C ~ 400 °C 400 °C ~ 1200 °C</p> <p><b>e) Type R</b> 0 °C ~ 250 °C 250 °C ~ 400 °C 400 °C ~ 1000 °C 1000 °C ~ 1760 °C</p> <p><b>f) Type S</b> 0 °C ~ 250 °C 250 °C ~ 400 °C 400 °C ~ 1000 °C 1000 °C ~ 1760 °C</p> <p><b>g) Type E</b> -199 °C ~ -100 °C -100 °C ~ 600 °C 600 °C ~ 1000 °C</p> <p><b>h) RTD Sourcing Devices (Indicator)</b> -200 °C ~ -100 °C -100 °C ~ 0 °C 0 °C ~ 300 °C 300 °C ~ 600 °C 600 °C ~ 800 °C</p>	<p>CTTM – T06 – 2007, Rev. 05</p>	<p>0.61 °C 0.72 °C 0.81 °C</p> <p>1.3 °C 0.56 °C</p> <p>0.57 °C 0.63 °C 0.72 °C</p> <p>0.97 °C 0.94 °C 0.99 °C</p> <p>1.8 °C 1.3 °C 1.5 °C 1.5 °C</p> <p>1.7 °C 1.4 °C 1.4 °C 1.5 °C</p> <p>0.73 °C 0.73 °C 0.65 °C</p> <p>0.030 °C 0.060 °C 0.10 °C 0.15 °C 0.18 °C</p>

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<p><b>C.9 a) Surface Measuring Devices (With and Without Indicator) (Lab / Site)</b></p> <ul style="list-style-type: none"> <li>• Surface Probes</li> <li>• Surface Thermometers</li> <li>• Contact Probes</li> <li>• Contact Thermometers</li> <li>• Magnetic Thermometers</li> <li>• Magnetic Temperature Sensors</li> </ul> <p>35 °C ~ 100 °C 100 °C ~ 200 °C 200 °C ~ 300 °C 300 °C ~ 400 °C</p>	<p>CTTM – T07 – 2007, Rev. 04</p>	<p>0.93 °C 1.2 °C 1.1 °C 1.1 °C</p>
<p><b>b) Surface Hot Plates (Lab / Site)</b></p> <p>35 °C ~ 100 °C 100 °C ~ 200 °C 200 °C ~ 300 °C 300 °C ~ 400 °C</p>	<p>CTTM – T07 – 2007, Rev. 04</p>	<p>3.7 °C 4.2 °C 4.3 °C 6.4 °C</p>
<p><b>C.10 Controlled Temperature Enclosures (Lab/Site)</b></p> <ul style="list-style-type: none"> <li>• Ovens</li> <li>• Freezers</li> <li>• Fridges</li> <li>• Incubators</li> <li>• Water Bath</li> <li>• Furnace</li> <li>• Chambers</li> <li>• Sterilizers</li> </ul> <p>-80 °C ~ 0 °C 0 °C ~ 50 °C 50 °C ~ 200 °C 200 °C ~ 400 °C 400 °C ~ 600 °C 600 °C ~ 800 °C 800 °C ~ 1000 °C 1000 °C ~ 1200 °C</p>	<p>CTTM – T08 – 2007, Rev. 07</p>	<p>1.6 °C 1.6 °C 1.9 °C 2.0 °C 4.2 °C 4.2 °C 4.4 °C 4.4 °C</p>

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<p><b>Controlled Temperature Enclosures (Site)</b></p> <p>-196 °C ~ -80 °C</p>	<p>CTTM – T08 – 2007, Rev. 07</p>	<p>2.7 °C</p>
<p><b>Autoclave and Pressurised Enclosure (Lab/Site)</b></p> <p>121 °C</p>	<p>CTTM – T08 – 2007, Rev. 07</p>	<p>0.32 °C</p>
<p><b>Controlled Temperature/Humidity Enclosures (Lab/Site)</b></p> <p>-80 °C ~ 0 °C 0 °C ~ 50 °C 50 °C ~ 200 °C 200 °C ~ 400 °C 400 °C ~ 600 °C 600 °C ~ 800 °C 800 °C ~ 1000 °C 1000 °C ~ 1200 °C</p>	<p>CTTM – T09 – 2007, Rev. 06</p>	<p>1.6 °C 1.6 °C 1.9 °C 2.0 °C 4.2 °C 4.2 °C 4.4 °C 4.4 °C</p>
<p><b>Relative humidity at fixed Temperature (5 ~ 50) °C</b></p> <p>(10 ~ 20) % r.h. (20 ~ 40) % r.h. (40 ~ 60) % r.h. (60 ~ 95) % r.h.</p>		<p>* % r.h. = % relative humidity</p> <p>6.4% r.h. &amp; 0.60°C 6.4% r.h. &amp; 0.60°C 6.4% r.h. &amp; 0.60°C 6.4% r.h. &amp; 0.60°C</p>
<p><b>C.11 Humidity/Temperature/Measuring Devices (Lab)</b></p> <ul style="list-style-type: none"> <li>• Hygrometer</li> <li>• Humidity Meter</li> <li>• Hygrograph</li> <li>• Thermo Hygrograph</li> <li>• Data Logger</li> <li>• Hygrometer Indicator</li> <li>• Digital Humidity Meter</li> <li>• Humidity Sensor</li> <li>• Dew Meter</li> </ul>	<p>CTTM – T10 – 2007, Rev. 05</p>	

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MEASURED QUANTITIES/ INSTRUMENT/RANGE TO BE CALIBRATED	METHOD	CALIBRATION & MEASUREMENT CAPABILITY (CMC*)
<p><b>Relative humidity at fixed Temperature (23 ~ 50 ) °C</b></p> <p>(20 ~ 40) % r.h (40 ~ 60) % r.h (60 ~ 90) % r.h</p> <p><b>Dry mode Temperature Calibration</b></p> <p>-75 °C ~ 0 °C 0 °C ~ 35 °C 35 °C ~ 50 °C 50 °C ~ 100 °C 100 °C ~ 150 °C</p> <p><b>C.12 Humidity / Temperature Measuring Devices (Lab)</b></p> <ul style="list-style-type: none"> <li>• Hygrometers</li> <li>• Humidity Meters</li> <li>• Data Loggers</li> <li>• Hygrometer Indicators</li> <li>• Digital Humidity Meters</li> <li>• Humidity Sensors</li> <li>• Dew Meters</li> </ul> <p>10 % r.h. ~ 35 % r.h. @ (5 ~15) °C 35 % r.h. ~ 65 % r.h. @ (5 ~15) °C 65 % r.h. ~ 95 % r.h. @ (5 ~15) °C</p> <p>10 % r.h. ~ 35 % r.h. @ (15~35) °C 35 % r.h. ~ 65 % r.h. @ (15~35) °C 65 % r.h. ~ 95 % r.h. @ (15~35) °C</p> <p>10 % r.h. ~ 35 % r.h. @ (35~50) °C 35 % r.h. ~ 65 % r.h. @ (35~50) °C 65 % r.h. ~ 95 % r.h. @ (35~50) °C</p> <p>5 °C ~ 10 °C @ (10 ~95)% r.h. 10 °C ~ 20 °C @ (10 ~95)% r.h. 20 °C ~ 40 °C @ (10 ~95)% r.h. 40 °C ~ 60 °C @ (10 ~95)% r.h.</p>	<p>CTTM –T17 – 2007, Rev. 07</p>	<p>2.5% r.h. &amp; 0.59°C 2.5% r.h. &amp; 0.59°C 2.7% r.h. &amp; 0.59°C</p> <p>0.59 °C 0.59 °C 0.51 °C 0.80 °C 1.4 °C</p> <p>2.0 % r.h. &amp; 0.39 °C 2.1 % r.h. &amp; 0.39 °C 2.4 % r.h. &amp; 0.39 °C</p> <p>1.8 % r.h. &amp; 0.36 °C 1.8 % r.h. &amp; 0.36 °C 1.4 % r.h. &amp; 0.36 °C</p> <p>1.7 % r.h. &amp; 0.36 °C 1.4 % r.h. &amp; 0.36 °C 1.7 % r.h. &amp; 0.36 °C</p> <p>0.23 °C &amp; 2.1%r.h. 0.20 °C &amp; 1.8 % r.h. 0.18 °C &amp; 1.8 % r.h. 0.21 °C &amp; 2.1 % r.h</p>

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MEASURED QUANTITIES/ INSTRUMENT/RANGE TO BE CALIBRATED	METHOD	CALIBRATION & MEASUREMENT CAPABILITY (CMC*)
<p><b>Humidity / Temperature Measuring Devices (Site)</b></p> <p>10 % r.h. ~ 35 % r.h. @ (5 ~15) °C            35 % r.h. ~ 65 % r.h. @ (5 ~15) °C            65 % r.h. ~ 95 % r.h. @ (5 ~15) °C</p> <p>10 % r.h. ~ 35 % r.h. @ (15~35) °C            35 % r.h. ~ 65 % r.h. @ (15~35) °C            65 % r.h. ~ 95 % r.h. @ (15~35) °C</p> <p>10 % r.h. ~ 35 % r.h. @ (35~50) °C            35 % r.h. ~ 65 % r.h. @ (35~50) °C            65 % r.h. ~ 95 % r.h. @ (35~50) °C</p> <p>5 °C ~ 10 °C @ (10 ~95)% r.h.            10 °C ~ 20 °C @ (10 ~95)% r.h.            20 °C ~ 40 °C @ (10 ~95)% r.h.            40 °C ~ 60 °C @ (10 ~95)% r.h.</p> <p><b>C.13 Dew Point Measuring Devices (Lab/Site)</b></p> <ul style="list-style-type: none"> <li>• Dew Meter</li> <li>• Chilled Mirror</li> <li>• Dew Point Sensor</li> <li>• Dew Point Meters</li> </ul> <p>-60 °C Frost point ~ 0 °C Dew point / frost point</p> <p>0 °C Dew point/Frost point ~ 20 °C Dew point</p>	<p>CTTM – T18 – 2007, Rev. 06</p>	<p>2.0 % r.h. &amp; 0.39 °C            2.1 % r.h. &amp; 0.39 °C            2.4 % r.h. &amp; 0.39 °C</p> <p>1.8 % r.h. &amp; 0.36 °C            1.8 % r.h. &amp; 0.36 °C            1.8 % r.h. &amp; 0.36 °C</p> <p>1.7 % r.h. &amp; 0.36 °C            1.7% r.h. &amp; 0.36 °C            1.7 % r.h. &amp; 0.36 °C</p> <p>0.39 °C &amp; 2.4 % r. h.            0.36 °C &amp; 2.2 % r.h.            0.36 °C &amp; 1.7 % r. h.            0.36 °C &amp; 1.8 % r.h.</p> <p>3.2 °C (Dew point/Frost point)</p> <p>0.31 °C Dew point</p>

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MEASURED QUANTITIES/ INSTRUMENT/RANGE TO BE CALIBRATED	METHOD	CALIBRATION & MEASUREMENT CAPABILITY (CMC*)
<b>C.14 Temperature Measuring Devices With/ Without indicators/ (Site)</b>  -100 °C ~ -35 °C -35 °C ~ 35 °C 35 °C ~ 100 °C 100 °C ~ 400 °C 400 °C ~ 500 °C 500 °C ~ 1000 °C 1000 °C ~ 1200 °C	CTTM-T02-2007, Rev. 08       CTTM – T03 – 2007, Rev. 06	0.23 °C 0.12 °C 0.12 °C 0.43 °C 0.48 °C 4.1 °C 4.8 °C
<b>C.15 Temperature Measuring Devices (Thermistor) (Lab)</b>  Triple Point of Water (0.01 °C) (0 ~ 30) °C Gallium Melting Point (29.7646 °C)	CTTM-T02-2007, Rev. 08	4 mK 0.025 °C 7 mK
<b>C.16 Liquid -In-Glass Thermometers (Lab)(Partial Immersion)</b>  Graduation =0.1 °C (-80.0 to 0.0) °C (0.1 to 75.0) °C (75.1 to 100.0) °C (100.1 to 280.0)° C  Graduation =0.5 °C (-80.0 to 0.0) °C (0.1 to 75.0) °C (75.1 to 100.0)° C (100.1 to 280.0) °C Graduation =0.1 °C	CTTM – T02 – 2007, Rev. 08	0.09 °C 0.52 °C 0.56 °C 0.68 °C  0.30 °C 0.59 °C 0.62 °C 0.74 °C

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



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## Approved Signatories:

- |                          |  |
|--------------------------|--|
| Mr V. Siva               | - For all items  |
| Mr Kyaw Moe Shein        | - For categories A and C1 to C15   |
| Mr Jaswanth Lal D        | - For items A15 to A19, A24, A27 & A30, categories B and C,  |
| Mr Ayyappan Mahalingam   | - For items A1 to A21 and A24 to A30, A31, A32 items B1 to B21 items C1, C2, C3 (with Indicator Only), C6 to C14 |
| Mr Anoop Ummappilly      | - For items A1 to A18, A30, A31, A32 and categories B and C  |
| Mr Ananthakumar Sivasamy | - For items A1 to A19, A25 to A28 and C1 to C5, C8, C10 to C12, C14, C15   |
| Mr Premkumar Seeriram    | - For items A1 to A19, A25 to A28, A31, A32  |
| Mr Narasimman Rao Appana | - For items A1 to A14, A15 to A18, A28 and category B  |
| Mr Athul Jayakumar       | - For items B1 to B21 and C1 to C9, C11 to C16   |
| Mr Mohan Vasanth         | - For items B1 to B21 and C1 to C5, C8 to C12, C14 to C15  |

## Note :

This laboratory is accredited in accordance with the recognized 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 test 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.