

Schedule

Hylab Pte. Ltd.
63 Ubi Crescent
Singapore 408599

Certificate No. : LA-2013-0549-C

Issue No. : 7

Date : 24 August 2020

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FIELD OF TESTING : Calibration and Measurement

MEASURED QUANTITIES/ INSTRUMENT/RANGE TO BE CALIBRATED	METHOD	CALIBRATION & MEASUREMENT CAPABILITY (CMC *)
A. ELECTRICAL (Lab and Site)		
1. Calibration of Sourcing Instrument: DC Voltage 1 μ V – 0.1 mV 0.1 mV - 25 mV 25 mV - 100 mV 100 mV - 0.5 V 0.5 V - 1 V 1 V - 5 V 5 V - 10 V 10 V - 50 V 50 V - 100 V 100 V - 250 V 250 V - 500 V 500 V - 750 V 750 V - 1000 V	In-house procedure HYL/WI/E-04, Rev: 02, 8½ digit multimeter	0.8 μ V 1.1 μ V 2.1 μ V 9.0 μ V 17 μ V 0.1 mV 0.2 mV 1.5 mV 2.9 mV 8.0 mV 11 mV 15 mV 29 mV
2. Calibration of Sourcing Instrument: AC Voltage 1 mV) 1 mV - 5 mV) 5 mV - 10 mV)	In-house procedure HYL/WI/E-04, Rev: 02, 8½ digit multimeter 50 Hz - 1kHz	4.6 μ V 5.0 μ V 5.6 μ V

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1 mV) 1 kHz - 20 kHz	4.6 μ V
1 mV - 5 mV)	5.2 μ V
5 mV - 10 mV)	6.4 μ V
1 mV) 20 kHz - 50 kHz	4.9 μ V
1 mV - 5 mV)	8.3 μ V
5 mV - 10 mV	)	14 μ V
1 mV	) 50 kHz - 100 kHz	9 μ V
1 mV - 5 mV	)	31 μ V
5 mV - 10 mV	)	60 μ V
10 mV - 50 mV	) 50 Hz - 1 kHz	7.7 μ V
50 mV - 75 mV	)	10 μ V
75 mV - 100 mV	)	12 μ V
10 mV - 50 mV	) 1kHz - 20 kHz	12 μ V
50 mV - 75 mV	)	16 μ V
75 mV - 100 mV	)	19 μ V
10 mV - 50 mV	) 20 kHz - 50 kHz	21 μ V
50 mV - 75 mV	)	29 μ V
75 mV - 100 mV	)	38 μ V
10 mV - 50 mV	) 50 kHz - 100 kHz	49 μ V
50 mV - 75 mV	)	72 μ V
75 mV - 100 mV	)	95 μ V
0.1 V - 1 V	50 Hz - 1 kHz	0.2 mV
0.1 V - 1 V	1 kHz - 20 kHz	0.2 mV
0.1 V - 1 V	20 kHz - 50 kHz	0.4 mV
0.1 V - 1 V	50 kHz - 100 kHz	1.0 mV

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1 V - 2.5 V) 50 Hz - 1 kHz	0.5 mV
2.5 V - 5 V)	0.7 mV
5 V - 10 V)	1.1 mV
1 V - 2.5 V) 1 kHz - 20 kHz	0.7 mV
2.5 V - 5 V)	1.1 mV
5 V - 10 V	)	1.9 mV
1 V - 2.5 V	) 20 kHz - 50 kHz	2.1 mV
2.5 V - 5 V	)	3.8 mV
5 V - 10 V	)	3.8 mV
1 V - 2.5 V	) 50 kHz - 100 kHz	2.7 mV
2.5 V - 5 V	)	4.9 mV
5 V - 10 V	)	9.5 mV
10 V - 25 V	) 50 Hz - 20 kHz	8.5mV
25 V - 50 V	)	15 mV
50 V - 100 V	)	26 mV
100 V - 230 V	) 50 Hz - 1 kHz	0.2 V
230 V - 750 V	)	0.4 V
3. Calibration of Sourcing Instrument: DC Current	In-house procedure HYL/WI/E-04, Rev: 02, 8½ digit multimeter	
1 µA - 10 µA		0.8 nA
10 µA - 75 µA		3.2 nA
75 µA - 100 µA		4.0 nA
0.1 mA - 10 mA		0.4 µA
10 mA - 50 mA		3.0 µA
50 mA - 100 mA		6.0 µA
0.1 A - 0.5 A		0.1 mA
0.5 A - 1 A		0.2 mA
1 A - 10 A	Using current shunt	0.04 A
10 A - 20 A		0.07 A
20 A - 30 A		0.11 A

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4. Calibration of Sourcing Instrument: AC Current	In-house procedure HYL/WI/E-04, Rev: 02, 8½ digit multimeter	
10 µA - 100 µA	50 Hz - 5 kHz	0.2 µA
0.1 mA - 1 mA	) 50 Hz - 500 Hz	1.0 µA
1 mA - 10 mA	)	9.4 µA
10 mA - 50 mA	)	60 µA
50 mA - 100 mA	)	94 µA
0.1 A - 0.5 A	)	0.9 mA
0.5 A - 1 A	)	1.5 mA
0.1 mA - 1 mA	) 500 Hz - 5 kHz	1 µA
1 mA - 10 mA	)	6.4 µA
10 mA - 50 mA	)	53 µA
50 mA - 100 mA	)	68 µA
0.1 A - 0.5 A	)	1 mA
0.5 A - 1 A	)	1.5 mA
1 A - 10 A	50 Hz & 1 kHz	0.06 A
10 A - 20 A	Using Current Shunt	0.11 A
5. Calibration of Sourcing Instrument: Resistance, 2 wire	In-house procedure HYL/WI/E-04, Rev: 02, 8½ digit multimeter	
0 mΩ - 10 Ω		0.02 Ω
10 Ω - 100 Ω		0.6 Ω
100 Ω - 1 kΩ		0.6 Ω
1 kΩ - 10 kΩ		0.8 Ω
10 kΩ - 100 kΩ		2.4 Ω
100 kΩ - 1 MΩ		0.1 kΩ
1 MΩ - 10 MΩ		1.1 kΩ
10 MΩ - 100 MΩ		0.12 MΩ
100 MΩ - 1 GΩ		12 MΩ
1 GΩ	In-house procedure	8.4 MΩ
2 GΩ	HYL/WI/E-07, Rev: 03,	27 MΩ
5 GΩ		154 MΩ

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<p>6. Calibration of Sourcing Instrument: Resistance, 4 wire</p> <p>0 Ω - 1 Ω 1 Ω - 10 Ω 10 Ω - 100 Ω 100 Ω - 1 kΩ 1 kΩ - 10 kΩ 10 kΩ - 100 kΩ</p>	<p>In-house procedure HYL/WI/E-04, Rev: 02, 8½ digit multimeter</p>	<p>0.2 mΩ 0.4 mΩ 2.5 mΩ 19 mΩ 0.2 Ω 1.8 Ω</p>
<p>7. Calibration of Sourcing Instrument: Frequency</p> <p>10 Hz - 25 Hz 25 Hz - 50 Hz 50 Hz - 100 Hz 100 Hz - 500 Hz 500 Hz - 1 kHz 1 kHz - 5 kHz 5 kHz - 10 kHz 10 kHz - 50 kHz 50 kHz - 100 kHz 100 kHz - 1000 kHz</p>	<p>In-house procedure HYL/WI/E-04, Rev: 02, 8½ digit multimeter</p>	<p>16 mHz 30 mHz 13 mHz 59 mHz 0.2 Hz 0.6 Hz 1.2 Hz 5.8 Hz 12 Hz 0.2 kHz</p>
<p>8. Calibration of Measuring Instrument: DC Voltage</p> <p>0 mV - 50 mV 50 mV - 200 mV 0.2 V - 1 V 1 V - 2 V 2 V - 10 V 10 V - 20 V 20 V - 100 V 100 V - 200 V 200 V - 750 V 750 V - 1000 V</p>	<p>In-house procedure HYL/WI/E-03, Rev: 01, Transmille 3041, Using Direct Method with 4-½ DMM</p>	<p>8.1 μV 16 μV 78 μV 0.12 mV 0.8 mV 1.8 mV 7.9 mV 13 mV 73 mV 80 mV</p>

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9. Calibration of Measuring Instrument: AC Voltage	In-house procedure HYL/WI/E-03 Rev: 01, Transmille 3041 Using Direct Method with 4-½ DMM	
1 mV - 100 mV	50 Hz 50 Hz – 10 kHz 10 kHz – 20 kHz	0.1 mV 0.2 mV 0.6 mV
100 mV - 200 mV	50 Hz 50 Hz – 10 kHz 10 kHz – 20 kHz	0.2 mV 0.3 mV 1.1 mV
0.2 V – 2 V	50 Hz 50 Hz – 10 kHz 10 kHz – 20 kHz	1.2 mV 2.2 mV 11 mV
2 V – 10 V	50 Hz 50 Hz – 10 kHz 10 kHz – 20 kHz	6.1 mV 16 mV 83 mV
10 V – 20 V	50 Hz 50 Hz – 10 kHz 10 kHz – 20 kHz	11 mV 29 mV 0.12 V
20 V – 100 V	50 Hz 50 Hz – 20 kHz	62 mV 0.2 V
100 V – 200 V	50 Hz 50 Hz – 20 kHz	0.2 V 0.3 V
200 V – 1000 V	50 Hz 50 Hz – 10 kHz	0.7 V 2.6 V

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10. Calibration of Measuring Instrument: DC Current	In-house procedure HYL/WI/E-03 Rev: 01, Transmille 3041 Using Direct Method with 4-½ DMM	
0.2 µA – 100 µA		62 nA
100 µA – 200 µA		75 nA
0.2 mA – 2 mA		0.8 µA
2 mA – 10 mA		1.3 µA
10 mA – 20 mA		1.9 µA
20 mA – 100 mA		15 µA
100 mA - 200 mA		23 µA
0.2 A - 1 A		0.2 mA
1 A - 2 A		0.4 mA
2 A - 5 A		3.7 mA
5 A - 10 A		5.9 mA
10 A - 20 A		17 mA
10 A - 100 A	In-house procedures	0.9 A
100 A - 200 A	HYL/WI/E-03 Rev: 01,	1.6 A
200 A - 500 A	HYL/WI/E-09 Rev: 01,	3.5 A
500 A - 1000 A	Transmille 3041, Current	6.3 A
1000 A - 1200 A	Clamp EA002	7.6 A
1200 A - 1400 A		8.6 A
11. Calibration of Measuring Instrument: AC Current	In-house procedure HYL/WI/E-03 Rev: 01, Transmille 3041, Using Direct Method with 4-½ DMM	
20 µA - 200 µA	) 50 Hz - 500 Hz	0.8 µA
0.2 mA - 1 mA	)	3.2 µA
1 mA - 2 mA	)	3.9 µA
2 mA - 10 mA)	23 µA
10 mA - 20 mA)	38 µA
20 mA - 200 mA)	0.4 mA
0.2 A - 2 A)	4.0 mA
2 A - 10 A)	27 mA
10 A – 20 A)	30 mA

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20 μ A - 200 μ A) 500 Hz - 1 kHz	4.0 μ A
0.2 mA - 1 mA)	12 μ A
1 mA - 2 mA)	21 μ A
2mA - 20 mA)	0.3 mA
20 mA - 200 mA)	1.4 mA
0.2 A - 2 A	)	17 mA
2 A - 10 A	)	54 mA
10 A - 20 A	)	92 mA
10 A - 100 A	@ 50 Hz, In house procedures	0.9 A
100 A - 200 A	HYL/WI/E-03 Rev: 01,	1.6 A
200 A - 500A	HYL/WI/E-09 Rev: 01,	3.6 A
500 A - 1000 A	Transmille 3041,	6.2 A
1000 A - 1200 A	Current Clamp EA002	7.6 A
12. Calibration of Measuring Instrument: Resistance, 2 wire	In-house procedure HYL/WI/E-03, Rev: 01, Transmille 3041 Using Direct Method with 4- $\frac{1}{2}$ DMM	
0.1 Ω		47 m Ω
0.2 Ω		47 m Ω
1 Ω		47 m Ω
10 Ω		49 m Ω
100 Ω		54 m Ω
1 k Ω		0.2 Ω
10 k Ω		1.3 Ω
100 k Ω		12 Ω
1 M Ω		0.3 k Ω
10 M Ω		5.4 k Ω
100 M Ω		0.7 M Ω

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<p>13. Calibration of Measuring Instrument: 4-wired Resistance</p> <p>0.01Ω 0.1 Ω 1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ</p>	<p>In-house procedure HYL/WI/E-03, Rev 01, Transmille 3041 Using Direct Method with 4-½ DMM</p>	<p>5.8 mΩ 5.8 mΩ 9 mΩ 10 mΩ 15 mΩ 0.2 Ω 1.2 Ω 12 Ω</p>
<p>14. Calibration of Measuring Instrument: Frequency</p> <p>100 Hz - 500 Hz 0.5 kHz - 5 kHz 5 kHz - 50 kHz 50 kHz - 500 kHz 500 kHz - 1000 kHz</p>	<p>In-house procedure HYL/ WI/E-03 Rev: 01, Transmille 3041 Using Direct Method with 4-½ DMM</p>	<p>18 mHz 0.2 Hz 1.3 Hz 20 Hz 34 Hz</p>
<p>15. Calibration of Measuring Instrument: Capacitance</p> <p>1 nF 10 nF 20 nF 50 nF 100 nF 1 μF 10 μF</p>	<p>In-house procedure HYL/WI/E-14, Rev: 01, Transmille 3041 Using Direct Method with 4-½ DMM</p> <p>) 1 kHz))))))</p>	<p>0.01 nF 0.09 nF 0.2 nF 0.3 nF 0.4 nF 0.004 μF 0.15 μF</p>

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16. Inductance Measuring Instrument	In-house procedure HYL/WI/E-14, Rev: 01, Transmille 3041	
1 mH	) 1 kHz	8.7 μ H
10 mH	)	84 μ H
20 mH	)	73 μ H
30 mH	)	0.3 mH
50 mH	)	0.4 mH
100 mH	)	0.8 mH
1 H	)	7.3 mH
10 H	)	75 mH
17. Stopwatch and Digital Timer	In-house procedure HYL / WI / E-11, Rev: 01, Digital Timer	
90 s - 480 s		0.9 s
480 s - 1800 s		2.3 s
1800 s - 3600 s		2.8 s
3600 s - 7200 s		4.9 s
18. Calibration of Measuring Instrument: Earth Resistance / Insulation Resistance test	In-house procedure HYL / WI / E-10, Rev: 01, Resistance Box	
Earth Resistance		
0.01 Ω - 1 Ω		0.002 Ω
1 Ω - 100 Ω		0.06 Ω
100 Ω - 1000 Ω		0.6 Ω
1 k Ω - 20 k Ω		12 Ω
Insulation Resistance		
0.5 M Ω - 10 M Ω		0.12 M Ω
10 M Ω - 100 M Ω		1.2 M Ω
100 M Ω - 500 M Ω		8.2 M Ω
500 M Ω - 1000 M Ω		18 M Ω

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B. MECHANICAL		
1. Tachometer (Non-Contact) (Lab only)	In-house procedure HYL / WI / M-20 Rev: 02	
240 rpm - 900 rpm		0.1 rpm
900 rpm – 3000 rpm		0.2 rpm
3 000 rpm – 12 000 rpm		1.0 rpm
12 000 rpm – 18 000 rpm		1.3 rpm
18 000 rpm – 19 992 rpm		1.4 rpm
19 992 rpm – 30 000 rpm		1.9 rpm
30 000 rpm – 39 996 rpm		2.4 rpm
39 996 rpm – 49 992 rpm		3.0 rpm
49 992 rpm – 60 000 rpm		3.6 rpm
2. Weights (Lab only)	In-house procedure HYL / WI / M-06 Rev: 02	
1 mg - 10 mg		10 µg
Above 10 mg – 500 mg		20 µg
Above 500 mg – 10 g		30 µg
Above 10 g – 50 g		40 µg
Above 50 g – 100 g		60 µg
Above 100 g – 200 g		0.15 mg
Above 200 g – 500 g		9 mg
Above 500 g – 8.2 kg		10 mg
Above 8.2 kg – 20 kg		1 g
3. Weighing Balance and Scales	In-house procedure HYL / WI / M-11 Rev: 04	
1 mg – 220 g		Lab On-site
Upto 1000 g		0.3 mg 0.3 mg
Upto 8.2 kg		3 mg 3 mg
Upto 30 kg		0.02 g 0.02 g
Upto 150 kg		2 g 2 g
Upto 250 kg		0.02 kg 0.02 kg
		0.2 kg 0.2 kg

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<p>4. Torque Wrench & Hand Torque Tools</p> <p>Type I & Type II</p> <p>10 Nm range 50 Nm range 100 Nm range 1000 Nm range 2500 Nm range</p>	<p>In-house procedure</p> <p>HYL/WI/M-10 Rev: 03 & ISO 6789:2017</p>	<p>(Lab only)</p> <p>0.7 % Rdg 0.5 % Rdg 0.4 % Rdg 0.4 % Rdg 0.6 % Rdg</p>
<p>5. Pressure Vacuum</p> <p>a) Vacuum Instruments Analog gauge, Digital gauge/ Calibrators, Manometer, Switch</p> <p><u>Range :</u> -0.95 to 0 bar</p>	<p>In-house procedure HYL / WI / M-02, Rev: 03, 6 June 2017 HYL / WI / M-04, Rev: 03, 1 Apr 2017</p>	<p><u>(Lab / On-Site)</u> 0.002 bar</p>
<p>b) Pneumatic Pressure Instruments</p> <p>Analog gauge, Digital gauge/ Calibrators, Manometer, Switch</p> <p><u>Range :</u> 0 to 700 mbar 0.7 to 7 bar 7 to 35 bar</p>	<p>In-house procedure HYL / WI / M-02, Rev: 03, 6 June 2017 HYL / WI / M-04, Rev: 03, 1 Apr 2017</p>	<p><u>(Lab / On-Site)</u> 1.5 mbar 0.003 bar 0.015 bar</p>

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<p>c) Hydraulic Pressure Instruments Analog Gauge, Digital Gauge / Calibrators, Manometer, Switch</p> <p><u>Range :</u> 36 bar to 70 bar 71 bar to 350 bar 351 bar to 700 bar 701 bar to 1000 bar 1000 bar to 1200 bar</p>	<p>In-house procedure HYL / WI / M-02, Rev: 03, 6 June 2017 HYL / WI / M-04, Rev: 03, 1 Apr 2017 By DPC</p>	<p><u>(Lab / On-Site)</u></p> <p>0.08 bar 0.2 bar 0.3 bar 0.6 bar 0.7 bar</p>
<p>d) Pressure Transmitter</p> <p><u>Range :</u> -0.95 to 3 bar Above 3 bar to 600 bar</p>	<p>In-house procedure HYL / WI / M-03 Rev: 01, 2 May 2014</p>	<p><u>(Lab / On-Site)</u></p> <p>0.025 mA 0.02 mA</p>
<p>e) Hydraulic Pressure Instruments Analog Gauge, Digital Gauge /Calibrators, Manometer, Switch</p> <p><u>Range :</u> 1 bar to 30 bar 30 bar to 70 bar 71 bar to 700 bar 701 bar to 1300 bar</p>	<p>In-house procedure HYL / WI / M-02, Rev: 03 6 June 2017 HYL / WI / M-04, Rev: 03, 1 Apr 2017 By DWT</p>	<p><u>(Lab only)</u></p> <p>0.01 bar 0.023 bar 0.027 % reading 0.028 % reading</p>

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C. TEMPERATURE			
1. Calibration of RTD	In-house procedure HYL / WI / T-02 Rev: 06	Lab	On-site
<u>Range:</u> -75 °C to -10 °C		0.2 °C	N.A.
>-10 °C to 50 °C		0.2 °C	0.4 °C
>50 °C to 250 °C		0.4 °C	0.4 °C
>250 °C to 350 °C		0.6 °C	0.6 °C
>350 °C to 650 °C		0.8 °C	0.8 °C
2. Calibration of Liquid Bath	In-house procedure HYL / WI / T-06 Rev: 03	<u>(Lab / On-Site)</u>	
<u>Range:</u> - 75 °C to 50 °C		0.2 °C	
>50 °C to 250 °C		0.3 °C	
3. Calibration of Dry Block	In-house procedure HYL / WI / T-04 Rev: 05	<u>(Lab / On-Site)</u>	
<u>Range:</u> -50 °C to 0 °C		0.2 °C	
> 0 °C to 50 °C		0.2 °C	
> 50 °C to 200 °C		0.4 °C	
> 200 °C to 350 °C		0.6 °C	
> 350 °C to 650 °C		0.7 °C	
4. Calibration of Digital Thermometer for RTD -Simulate & Measure	In-house procedure HYL / WI / T-07, Rev: 02	(Lab)	(On-Site)
<u>Range:</u> -200 °C to 850 °C (Measure)		0.1 °C	0.2 °C
-200 °C to 850 °C (Simulate)		0.03 °C	0.2 °C

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<p>5. Calibration of Digital Thermometer for Thermocouple</p> <p><u>Range:</u></p> <p>Type J (Measure): -200 °C to 1200 °C Type J (Simulate): -200 °C to 1200 °C Type K (Measure): -260 °C to 1370 °C Type K (Simulate): -260 °C to 1370 °C Type T (Measure): -260 °C to 400 °C Type T (Simulate): -260 °C to 400 °C Type N (Measure): 0 °C to 1200 °C Type N (Simulate): 0 °C to 1200 °C Type E (Measure): -200°C to 1000°C Type E (Simulate): -200°C to 1000°C Type R (Measure): 170 °C to 1700°C Type R (Simulate): 170 °C to 1700°C Type S (Measure): 170 °C to 1700°C Type S (Simulate): 170 °C to 1700°C</p>	<p>In-house procedure HYL / WI / T-08, Rev: 04,</p>	<table border="0"> <tr> <td>(Lab)</td> <td>(On-Site)</td> </tr> <tr> <td>0.34 °C</td> <td>0.35 °C</td> </tr> <tr> <td>0.30 °C</td> <td>0.31 °C</td> </tr> <tr> <td>0.36 °C</td> <td>0.37 °C</td> </tr> <tr> <td>0.31 °C</td> <td>0.32 °C</td> </tr> <tr> <td>0.31 °C</td> <td>0.32 °C</td> </tr> <tr> <td>0.30 °C</td> <td>0.30 °C</td> </tr> <tr> <td>0.33 °C</td> <td>0.36 °C</td> </tr> <tr> <td>0.30 °C</td> <td>0.30 °C</td> </tr> <tr> <td>0.32 °C</td> <td>0.33 °C</td> </tr> <tr> <td>0.30 °C</td> <td>0.30 °C</td> </tr> <tr> <td>0.65 °C</td> <td>0.65 °C</td> </tr> <tr> <td>0.43 °C</td> <td>0.44 °C</td> </tr> <tr> <td>0.75 °C</td> <td>0.76 °C</td> </tr> <tr> <td>0.45 °C</td> <td>0.46 °C</td> </tr> </table>	(Lab)	(On-Site)	0.34 °C	0.35 °C	0.30 °C	0.31 °C	0.36 °C	0.37 °C	0.31 °C	0.32 °C	0.31 °C	0.32 °C	0.30 °C	0.30 °C	0.33 °C	0.36 °C	0.30 °C	0.30 °C	0.32 °C	0.33 °C	0.30 °C	0.30 °C	0.65 °C	0.65 °C	0.43 °C	0.44 °C	0.75 °C	0.76 °C	0.45 °C	0.46 °C
(Lab)	(On-Site)																															
0.34 °C	0.35 °C																															
0.30 °C	0.31 °C																															
0.36 °C	0.37 °C																															
0.31 °C	0.32 °C																															
0.31 °C	0.32 °C																															
0.30 °C	0.30 °C																															
0.33 °C	0.36 °C																															
0.30 °C	0.30 °C																															
0.32 °C	0.33 °C																															
0.30 °C	0.30 °C																															
0.65 °C	0.65 °C																															
0.43 °C	0.44 °C																															
0.75 °C	0.76 °C																															
0.45 °C	0.46 °C																															
<p>6. Calibration of Temperature Transmitter</p> <p><u>Range:</u></p> <p>- 50 °C to 50 °C > 50 °C to 300 °C > 300 °C to 600 °C</p>	<p>In-house procedure HYL / WI / T-09 Rev: 02</p>	<table border="0"> <tr> <td colspan="2"><u>(Lab / On-Site)</u></td> </tr> <tr> <td></td> <td>0.2 °C</td> </tr> <tr> <td></td> <td>0.3 °C</td> </tr> <tr> <td></td> <td>0.3 °C</td> </tr> </table>	<u>(Lab / On-Site)</u>			0.2 °C		0.3 °C		0.3 °C																						
<u>(Lab / On-Site)</u>																																
	0.2 °C																															
	0.3 °C																															
	0.3 °C																															
<p>7. Calibration of Mechanical Temperature Gauges / Bimetal Thermometer / Surface Probe</p> <p><u>Range:</u></p> <p>- 50 °C to 0 °C > 0 to 200 °C > 200 °C to 600 °C</p>	<p>In-house procedure HYL / WI / T-02 Rev: 06</p>	<table border="0"> <tr> <td><u>(Lab)</u></td> <td><u>(On-Site)</u></td> </tr> <tr> <td>0.4 °C</td> <td>NA</td> </tr> <tr> <td>0.5 °C</td> <td>0.6 °C</td> </tr> <tr> <td>1.0 °C</td> <td>1.1 °C</td> </tr> </table>	<u>(Lab)</u>	<u>(On-Site)</u>	0.4 °C	NA	0.5 °C	0.6 °C	1.0 °C	1.1 °C																						
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MEASURED QUANTITIES/ INSTRUMENT/RANGE TO BE CALIBRATED	METHOD	CALIBRATION & MEASUREMENT CAPABILITY (CMC *)
<p>8. Calibration of Temperature and Humidity measuring instruments</p> <p><u>Range:</u> 15 °C to 45 °C @ 55%Rh 30 %Rh to 80% Rh @ 25 °C</p> <p>9. Calibration of Humidity Chamber</p> <p><u>Range:</u> 15 °C to 45 °C 30 %Rh to 80% Rh</p> <p>10. Calibration of Temperature Enclosure / Oven / Freezer / Autoclave / Incubator</p> <p><u>Range:</u> -75 °C to 50 °C 50 °C to 200 °C 200 °C to 700 °C Upto 121 °C (Pressurized vessel / Autoclave)</p>	<p>In-house procedure HYL / WI / T-11</p> <p>Rev: 02</p> <p>In-house procedure HYL / WI / T-10 Rev: 02</p> <p>In-house procedure HYL / WI / T-10 Rev: 02</p>	<p>(Lab) 0.5 °C 2.6 %Rh</p> <p>(Lab / On-Site) 1.1 °C to 1.4 °C 4.0 %Rh to 7.8 %Rh</p> <p>(Lab / On-Site) 1.7 °C 2.6 °C 4.8 °C 1.4 °C</p>
<p>D. Dimensional (Lab Only)</p> <p>1. External Micrometer (Fixed Anvil)</p> <p>Range : 0 – 25mm Resolution: 0.01mm 0.001 mm</p> <p>0.01mm 0.001mm</p> <p>Note: (#) Range of Error of Traverse of Micrometer Screw</p>	<p>In-house procedure HYL / WI / M-18 Rev: 01, 8 June 2013 Set of Slip Gauges</p>	<p>6 µm 1 µm</p> <p>9 µm # 2 µm #</p>

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MEASURED QUANTITIES/ INSTRUMENT/RANGE TO BE CALIBRATED	METHOD	CALIBRATION & MEASUREMENT CAPABILITY (CMC *)
2. Vernier Caliper (Outside/Inside) Range : 20 mm – 50 mm 50 mm – 350 mm 350 mm – 400 mm	In-house procedure HYL / WI / M-17 Rev: 01, 8 June 2013 By Caliper Checker	13 µm 14 µm 15 µm
3. Digital Caliper (Outside/Inside) Range : 20 mm - 250 mm 250 mm - 400 mm	In-house procedure HYL / WI / M-17 Rev: 01, 8 June 2013 By Caliper Checker	9 µm 10 µm
4. Dial Caliper (Outside/Inside) Range : 20 mm - 250 mm 250 mm - 300 mm	In-house procedure HYL / WI / M-17 Rev: 01, 8 June 2013 By Caliper Checker	9 µm 10 µm

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

Approved signatories :

Mr Vinodh Rajendran) For all categories
Mr Steve Eer)

Mr. Saranraj Tamilarasan) For Section B, item 4

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 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.