

Schedule

Unitest Instruments Pte Ltd
18 Boon Lay Way
#08-127
Singapore 609966

Certificate No. : LA-2023-0845-C
Issue No. : 3
Date : 29 August 2025
Expiry of Certificate : 02 August 2027
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FIELD OF TESTING : Calibration and Measurement

MEASURED QUANTITIES / INSTRUMENTS / RANGE TO BE CALIBRATED	Range to be Calibrated / Measured Quantities / Frequency	CALIBRATION AND MEASUREMENT CAPABILITY (CMC*)
A ELECTRICAL – DC/LF		
1. Resistance measuring instrument Lab In-House procedure UNI-E001 Rev:1	0 Ω – 12 Ω >12 Ω – 120 Ω >120 Ω – 1.2 k Ω >1.2 k Ω – 12 k Ω >12 k Ω – 120 k Ω >120 k Ω – 1.2 M Ω >1.2 M Ω – 12 M Ω >12 M Ω – 120 M Ω >120 M Ω – 1200 M Ω	0.011 Ω 0.13 % 0.11 % 0.019 % 0.011 % 0.011 % 0.021 % 0.062 % 0.42 %
2. DC Voltage measuring instrument Lab-In-House procedure UNI-E001 Rev:1	0 mV – 220mV >220mV – 2.2V >2.2V – 11V >11V-22V >22V – 220V >220V – 1020V	0.0022mV 0.012mV 0.043mV 0.084mV 0.0012V 0.0079V
3. AC Voltage measuring instruments Lab-In-House procedure UNI-E001 Rev:1	1mV – 2.2 mV 3 Hz to 5 Hz >5 Hz to 10 Hz >10Hz to 20Hz >20Hz to 40Hz >40Hz to 20kHz >20kHz to 50kHz >50kHz to 100kHz >100kHz to 300kHz >300kHz to 500kHz >500kHz to 1MHz	1.6% 1.0 % 0.0046mV 0.0043mV 0.0043mV 0.0046mV 0.0062mV 0.02mV 0.03mV 0.03mV

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	2.2mV to 22mV 3 Hz to 5 Hz >5 Hz to 10 Hz >10Hz to 20Hz >20Hz to 40Hz >40Hz to 20kHz >20kHz to 50kHz >50kHz to 100kHz >100kHz to 300kHz >300kHz to 500kHz >500kHz to 1MHz	0.32% 0.17 % 0.01mV 0.01mV 0.006mV 0.009mV 0.02mV 0.04mV 0.06mV 0.081mV
	22mV to 220mV 3 Hz to 5 Hz >5 Hz to 10 Hz >10Hz to 20Hz >20Hz to 40Hz >40Hz to 20kHz >20kHz to 50kHz >50kHz to 100kHz >100kHz to 300kHz >300kHz to 500kHz >500kHz to 1MHz	0.42% 0.15 % 0.066mV 0.028mV 0.021mV 0.035mV 0.086mV 0.17mV 0.34mV 0.65mV
	220mV to 2.2V 3 Hz to 5 Hz >5 Hz to 10 Hz >10Hz to 20Hz >20Hz to 40Hz >40Hz to 20kHz >20kHz to 50kHz >50kHz to 100kHz >100kHz to 300kHz >300kHz to 500kHz >500kHz to 1MHz	0.33% 0.5 % 0.58mV 0.22mV 0.11mV 0.17mV 0.23mV 0.86mV 0.0025V 0.0042V
	2.2V to 22V 3 Hz to 5 Hz >5 Hz to 10 Hz >10Hz to 20Hz	0.32 % 0.50 % 0.0057V

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	>20Hz to 40Hz >40Hz to 20kHz >20kHz to 50kHz >50kHz to 100kHz >100kHz to 300kHz >300kHz to 500kHz >500kHz to 1MHz 22V to 220V 3 Hz to 5 Hz >5 Hz to 10 Hz >10Hz to 20Hz >20Hz to 40Hz >40Hz to 20kHz >20kHz to 50kHz >50kHz to 100kHz	0.0022V 0.0011V 0.0016V 0.0021V 0.0067V 0.025V 0.038V 0.50 % 0.16 % 0.058V 0.022V 0.013V 0.019V 0.036V
	220V to 1020V 3 Hz to 5 Hz >5 Hz to 10 Hz >10Hz to 50Hz >50Hz to 1kHz >1 kHz – 10 kHz	0.29 % 0.12 % 0.12 % 0.085V 0.04 %
4. DC Current measuring instruments Lab-In-House procedure UNI-E001 Rev:1	0 μ A – 220 μ A >220 μ A – 2.2 mA >2.2 mA – 22 mA >22 mA – 220 mA >220 mA – 2.2 A >2.2 A – 3.1 A >3.1 A – 12 A >12 A – 30 A	0.015 μ A 0.09 μ A 0.83 μ A 0.011 mA 0.2 mA 0.044 % 0.041 % 0.11 %
5. DC Current Clamp measuring instruments Lab-In-House procedure UNI-E002 Rev:0	0 mA – 20 mA 20 mA – 100 mA 0.1 A – 4 A >4 A – 40 A >40 A – 60 A >60 A – 200 A	0.14 mA 0.72 % 1.0 % 0.7 % 0.67 % 0.67 %

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6. AC Current measuring instruments Lab-In-House procedure UNI-E001 Rev:1	>200 A – 300 A	0.67 %
	>300 A – 1500A	0.67 %
	20 μA – 220 μA	
	10Hz – 20Hz	0.08 μ A
	>20Hz – 40Hz	0.06 μ A
	>40Hz – 1kHz	0.040 μ A
	>1kHz – 5kHz	0.030 μ A
	>5kHz – 10kHz	0.12 μ A
	>10 kHz – 30 kHz	3.4 %
	220 μA – 2.2 mA	
	>10Hz – 20Hz	0.62 μ A
	>20Hz – 40Hz	0.51 μ A
	>40Hz – 1kHz	0.28 μ A
	>1kHz – 5kHz	0.6 μ A
	>5kHz – 10kHz	0.0032 mA
	>10 kHz – 30 kHz	4.8 %
	2.2 mA – 22 mA	
	10Hz – 20Hz	0.007 mA
	>20Hz – 40Hz	0.004 mA
	>40Hz – 1kHz	0.003 mA
	>1kHz – 5kHz	0.006 mA
	>5kHz – 10kHz	0.030 mA
	>10 kHz – 30 kHz	1.4 %
	22 mA – 220 mA	
	10Hz – 20Hz	0.061 mA
	>20Hz – 40Hz	0.04 mA
	>40Hz – 1kHz	0.027 mA
	>1kHz – 5kHz	0.06 mA
	>5kHz – 10kHz	0.26 mA
	>10 kHz – 30 kHz	1.4 %
	220 mA – 2.2 A	
	20Hz – 1kHz	0.59 mA
	>1kHz – 5kHz	1.2 mA
	>5kHz – 10kHz	0.016 A
	>10 kHz to 30 kHz	0.8 %

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7. AC Current clamp measuring instrument Lab-In-House procedure UNI-E002 Rev:0	2.2 A – 3.1 A	
	3 Hz – 45 Hz	0.25 %
	>45 Hz – 1 kHz	0.06 %
	>1 kHz – 5 kHz	0.06 %
	>5 kHz – 10 kHz	0.3 %
	3.1 A – 12 A	
	3 Hz – 45 Hz	0.12 %
	>45 Hz – 1 kHz	0.05 %
	>1 kHz – 5 kHz	0.07 %
	>5 kHz – 10 kHz	0.29 %
	12 A – 30.2 A	
	3 Hz – 45 Hz	0.21 %
	>45 Hz – 1 kHz	0.14 %
	>1 kHz – 5 kHz	0.57 %
	(30 Hz – 200 Hz)	
	10 mA – 40 mA	0.76 %
	40 mA – 400 mA	0.70 %
	0.4 A – 4 A	0.67 %
	>4 A – 40 A	0.68 %
	>40 A – 60 A	0.72 %
	>60 A – 200 A	0.69 %
	>200 A – 300 A	0.68 %
	(30 Hz – 60 Hz)	
	>300 A – 1500A	0.67 %
8 Frequency measuring instruments Lab-In-House procedure UNI-E001 Rev:0	0.01 Hz – 119.99 Hz	0.018 %
	120.0 Hz – 1199.9 Hz	0.0014 %
	1.200 kHz – 11.999 kHz	0.0011 %
	12.00 kHz – 119.99 kHz	0.00057 %
	120.1 kHz – 1199.9 kHz	0.0052 %
	1.200 MHz – 2.000 MHz	0.00027 %

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9. Capacitance measuring instruments @ 1 kHz Lab-In-House procedure UNI-E001 Rev:0	0.2 nF – 1.2 nF >1.2 nF – 12 nF >12 nF – 120 nF >120 nF – 1.2 μ F >1.2 μ F – 12 μ F >12 μ F – 120 μ F >120 μ F – 1.2 mF >1.2 mF – 12 mF >12 mF – 120 mF	2.3 % 0.6 % 0.4 % 0.4 % 0.4 % 0.4 % 0.45 % 0.49 % 0.8 %
10. Inductance measuring instruments @ 1 kHz Lab-In-House procedure UNI-E001 Rev:0	13 μ H – 120 μ H >120 μ H – 1.2 mH >1.2 mH – 12 mH >12 mH – 120 mH >120 mH – 1.2 H >1.2 H – 12 H >12 H – 120 H	2.0 % 1.0 % 1.0 % 1.0 % 1.0 % 1.0 % 1.1 %
11. Resistance sourcing instruments Lab-In-House procedure UNI-E003 Rev:0	0.01 Ω – 1 Ω >1 Ω – 10 Ω >10 Ω – 100 Ω >100 Ω – 1 k Ω >1 k Ω – 10 k Ω >10 k Ω – 100 k Ω >100 k Ω – 1 M Ω >1 M Ω – 10 M Ω >10 M Ω – 100 M Ω >100 M Ω – 1 G Ω >1 G Ω – 10 G Ω	0.16 % 0.0058 % 0.0042 % 0.002 % 0.003 % 0.004 % 0.008 % 0.02 % 0.13 % 0.17 % 1.2 %
12. DC Voltage sourcing instruments Lab-In-House procedure UNI-E003 Rev:0	0 mV – 100 mV >0.11 V – 1 V >1 V – 10 V >10 V – 100 V >100 V – 1000 V	0.0021 mV 0.0012 % 0.001 % 0.002 % 0.005 %
13. AC Voltage sourcing instruments Lab-In-House procedure UNI-E003 Rev:0	1 mV – 10 mV 3 Hz – 2 kHz >2 kHz – 10 kHz >10 kHz – 30 kHz	 0.26 % 0.26 % 0.27 %

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	>30 kHz – 100 kHz	0.53 %
	>100 kHz – 300 kHz	1.9 %
	10 mV – 100 mV	
	3 Hz – 2 kHz	0.57 %
	>2 kHz – 10 kHz	0.57 %
	>10 kHz – 30 kHz	0.07 %
	>30 kHz – 100 kHz	0.19 %
	>100 kHz – 300 kHz	1.0 %
	100 mV – 1 V	
	3Hz – 2 kHz	0.02 %
	1 V – 10 V	
	3Hz – 10 kHz	0.03 %
	>10 kHz – 30 kHz	0.05 %
	>30 kHz – 100 kHz	0.14 %
	>100 kHz – 300 kHz	0.66 %
	10 V – 100 V	
	3 Hz – 2 kHz	0.57 %
	>2 kHz – 10 kHz	0.57 %
	>10 kHz – 30 kHz	0.10 %
	>30 kHz – 100 kHz	0.15 %
	>100 kHz – 300 kHz	1.3 %
	100 V – 1000 V	
	3 Hz – 2 kHz	0.05 %
	>2 kHz – 10 kHz	0.05 %
	>10 kHz – 30 kHz	0.10 %
14. DC Current sourcing instruments	0 μ A – 10 μ A	0.0018 μ A
Lab-In-House procedure UNI-E003 Rev:0	>10 μ A – 100 μ A	0.017 %
	>100 μ A – 1 mA	0.025 %
	>1 mA – 10 mA	0.012 %
	>10 mA – 100 mA	0.02 %
	>100 mA – 1 A	0.13 %
	>1 A – 10 A	0.1 %
	1>0 A – 30 A	0.30 %

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15. AC current sourcing instruments Lab-In-House procedure UNI-E003 Rev:0	10 μA – 100 μA 3 Hz – 2 kHz 100 μA – 1 mA 3 Hz – 10 kHz 1 mA – 10 mA 3 Hz – 30 kHz >30 kHz – 100 kHz 10 mA – 100 mA 3 Hz – 2 kHz >2 kHz – 10 kHz >10 kHz – 30 kHz 100 mA – 1 A 3 Hz – 2 kHz >2 kHz – 10 kHz >10 kHz – 30 kHz 1 A – 10 A 10 Hz – 2 kHz >2 kHz – 10 kHz 10 A – 30 A 10 Hz – 2 kHz >2 kHz – 10 kHz	0.40 % 0.15 % 0.17 % 0.64 % 0.3 % 0.2 % 0.21 % 0.57 % 0.21 % 0.2 % 0.2 % 0.2 % 0.19 % 0.19 %
16. Frequency sourcing instruments Lab-In-House procedure UNI-E003 Rev:0	1 Hz – 10 Hz >10 Hz – 1 kHz >1 kHz – 10 kHz >10 kHz – 100 kHz >100 kHz – 1 MHz >1 MHz – 10 MHz >10 MHz – 100 MHz	0.006 % 0.03 % 0.0003 % 0.0002 % 0.001 % 0.001 % 0.0002 %
17. Capacitance sourcing instruments @ 1 kHz Lab-In-House procedure UNI-E003 Rev:0	0.1 nF – 1.2 nF >1.2 nF – 12 nF >12 nF – 120 nF >120 nF – 1.2 μ F >1.2 μ F – 12 μ F	2.4 % 0.4 % 0.2 % 0.17 % 0.76 %

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	>12 μ F – 120 μ F	0.3 %
	>120 μ F – 1.2 mF	0.1 %
	>1.2 mF – 12 mF	0.2 %
	>12 mF – 100 mF	0.1 %
18. DC Power measuring instruments	0.02 W – 0.5 W	0.74 %
	>0.5 W – 5 W	0.13%
Lab-In-House procedure UNI-E001 Rev:0	>5 W – 50 W	0.13 %
	>50 W – 1000 W	0.22 %
	>1 kW – 5 kW	0.33 %
	>5 kW – 20 kW	0.34 %
	>20 kW – 30 kW	0.33 %
	With Coil 30 kW – 1500 kW	1.0 %
19. AC Power measuring instruments	0.02 W – 0.5 W	0.60 %
	>0.5 W – 5 W	0.14%
Lab-In-House procedure UNI-E001 Rev:0	>5 W – 50 W	0.23 %
	>50 W – 1000 W	0.7 %
	>1 kW – 5 kW	2.3 %
	>5 kW – 20 kW	2.3 %
	>20 kW – 30 kW	3 %
	With Coil 30 kW – 1500 kW	4 %
20. Low Resistance (Earth resistance) – measuring instruments	100 m Ω – 0.199 Ω	0.013 Ω
	0.2 Ω – 0.499 Ω	0.013 Ω
	0.5 Ω – 1.999 Ω	0.051 Ω
Lab-In-House procedure UNI-E004 Rev:0	2 Ω – 4.99 Ω	0.019 Ω
	5 Ω – 29.9 Ω	0.026 Ω
	30 Ω – 199.9 Ω	0.12 Ω
	200 Ω – 499.99 Ω	0.49 Ω
	500 Ω – 1.999 k Ω	0.0014 k Ω
	2 k Ω – 4.99 k Ω	0.005 k Ω
	5 k Ω – 10 k Ω	0.014 k Ω
High Resistance (Insulation resistance) – measuring instruments	10 k Ω – 19.999 k Ω	0.025 k Ω
	20 k Ω – 39.99 k Ω	0.047 k Ω
	40 k Ω – 99.99 k Ω	0.12 k Ω
	100 k Ω – 199.99 k Ω	0.25 k Ω
	200 k Ω – 999.9 k Ω	0.47 k Ω
	1 M Ω – 1.999 M Ω	0.0081 M Ω
	2 M Ω – 9.999 M Ω	0.01 M Ω

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High Resistance (Insulation resistance source with R multiplier) – measuring Instruments	10 MΩ – 19.999 MΩ	0.092 MΩ
	20 MΩ – 199.99 MΩ	0.60 MΩ
	200 MΩ – 999.9 MΩ	1.4 MΩ
	1 GΩ – 1.9 GΩ	0.074 GΩ
	2 GΩ – 10 GΩ	0.077 GΩ
	100 GΩ	0.15 GΩ
	100 GΩ – 999.9 GΩ	2.5 GΩ
21. Ground Bond Resistance measuring instruments (fixed points) Lab-In-House procedure UNI-E004 Rev:0	30 mΩ	1.3 mΩ
	55 mΩ	2.1 mΩ
	97 mΩ	2.3 mΩ
	350 mΩ	4.1 mΩ
	490 mΩ	4.4 mΩ
	900 mΩ	9.2 mΩ
	1.7 Ω	0.1 Ω
	4.7 Ω	0.1 Ω
	9 Ω	0.1 Ω
	17 Ω	0.1 Ω
	47 Ω	0.4 Ω
	90 Ω	0.6 Ω
	170 Ω	1.2 Ω
	470 Ω	3.0 Ω
	900 Ω	5.9 Ω
	1.7 kΩ	0.08 kΩ
22. Leakage Current measuring instruments Lab-In-House procedure UNI-E004 Rev:0	0.1 mA – 30 mA	1.7 %
23. Residual Current measuring instruments Lab-In-House procedure UNI-E004 Rev:0		
Trip current:	3 mA – 3000 mA	1.8 %

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24. Oscilloscope Calibration Lab-In-House procedure UNI-E005 Rev:0 Vertical Deflection @ DC Signal Vertical Deflection @ AC Signal Horizontal Deflection Bandwidth	50 Ω Input $\pm 1 \text{ mV} - \pm 24.999 \text{ mV}$ $\pm 25 \text{ mV} - \pm 109.99 \text{ mV}$ $\pm 110 \text{ mV} - \pm 2.1999 \text{ V}$ $\pm 2.2 \text{ V} - \pm 6.6 \text{ V}$ 1 MΩ Input $\pm 1 \text{ mV} - \pm 24.999 \text{ mV}$ $\pm 25 \text{ mV} - \pm 109.99 \text{ mV}$ $\pm 110 \text{ mV} - \pm 2.1999 \text{ V}$ $\pm 2.2 - \pm 10.999 \text{ V}$ $\pm 11 \text{ V} - \pm 130 \text{ V}$ 50 Ω Input 1 mVp-p to $\pm 24.999 \text{ mVp-p}$ 25 mV p-p – $\pm 109.99 \text{ mVp-p}$ 110 mVp-p – $\pm 2.1999 \text{ Vp-p}$ 2.2 Vp-p – $\pm 6.6 \text{ Vp-p}$ 1 MΩ Input $\pm 1 \text{ mVp-p} - \pm 24.999 \text{ mVp-p}$ $\pm 25 \text{ mV} - \pm 109.99 \text{ mVp-p}$ $\pm 110 \text{ mVp-p} - \pm 2.1999 \text{ Vp-p}$ $\pm 2.2 \text{ Vp-p} - \pm 10.999 \text{ Vp-p}$ $\pm 11 \text{ Vp-p} - \pm 130 \text{ Vp-p}$ 2 ns – 5 ns >5 ns – 10 ns >10 ns – 20 ns >20 ns – 50 ns >50 ns – 50 μs >50 μs – 20 ms >20 ms – 50 ms >50 ms – 5 s 50 kHz – 100 MHz >100 MHz – 300 MHz >300 MHz – 600 MHz >600 MHz – 1100 MHz	2 % 0.6 % 6.4 % 0.5 % 3.8 % 0.49 % 0.47 % 0.46 % 0.46 % 1.9 % 0.6 % 5.3 % 0.5 % 3.2 % 0.51 % 0.48 % 0.47 % 0.47 % 0.063 % 0.081 % 0.073 % 0.061 % 0.095 % 0.073 % 0.061 % 0.14 % 0.26 dB 0.30 dB 0.48 dB 0.57 dB
25. Calibration of Stop Watch Timer Lab In-House procedure UNI-E006 Rev:0	1 s – 60 s 61 s – 600 s 601 s – 1200 s 1201 s – 1800 s	0.25 s 0.13 s 0.13 s 0.13 s

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26. Resistance measuring instrument Lab In-House procedure UNI-E001 Rev:1	1801 s – 3600 s	0.13 s
	3601 s – 7200 s	0.13 s
	7201 – 10800 s	0.13 s
	0 Ω	0.041 m Ω
	1 Ω	0.096 m Ω
	1.9 Ω	0.19 m Ω
	10 Ω	0.24 m Ω
	19 Ω	0.45 m Ω
	100 Ω	1.1 m Ω
	190 Ω	0.002 Ω
	1 k Ω	0.0068 Ω
	1.9 k Ω	0.013 Ω
	10 k Ω	0.068 Ω
	19 k Ω	0.13 Ω
	100 k Ω	0.87 Ω
	190 k Ω	1.7 Ω
	1 M Ω	0.014 k Ω
	1.9 M Ω	0.036 k Ω
	10 M Ω	0.42 k Ω
	19 M Ω	0.0010 M Ω
	100 M Ω	0.067 M Ω
B. TEMPERATURE		
1. a) RTD, PRT Sensor with Indicator & Temperature Measuring instruments (Lab) Lab In-House procedure UNI-T001 Rev:0	-80 $^{\circ}\text{C}$ – -40 $^{\circ}\text{C}$	0.011 $^{\circ}\text{C}$
	>-40 $^{\circ}\text{C}$ – 0 $^{\circ}\text{C}$	0.01 $^{\circ}\text{C}$
	>0 $^{\circ}\text{C}$ – 50 $^{\circ}\text{C}$	0.01 $^{\circ}\text{C}$
	>50 $^{\circ}\text{C}$ – 140 $^{\circ}\text{C}$	0.01 $^{\circ}\text{C}$
	>140 $^{\circ}\text{C}$ – 210 $^{\circ}\text{C}$	0.01 $^{\circ}\text{C}$
	>210 $^{\circ}\text{C}$ – 270 $^{\circ}\text{C}$	0.011 $^{\circ}\text{C}$
	>270 $^{\circ}\text{C}$ – 450 $^{\circ}\text{C}$	0.018 $^{\circ}\text{C}$
	>450 $^{\circ}\text{C}$ – 500 $^{\circ}\text{C}$	0.02 $^{\circ}\text{C}$
	>500 $^{\circ}\text{C}$ – 660 $^{\circ}\text{C}$	0.39 $^{\circ}\text{C}$

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(Site)	-95 °C – 0 °C >0 °C – 60 °C >60 °C – 140 °C >140 °C – 270 °C >270 °C – 450 °C >450 °C – 660 °	0.066 °C 0.033 °C 0.047 °C 0.26 °C 0.33 °C 0.39 °C
b) Thermocouple Wire with Indicator (Lab)	-80 °C - -40 °C >-40 °C – 0 °C >0 °C – 50 °C >50 °C – 140 °C >140 °C - -210 °C >210 °C – 270 °C >270 °C – 450 °C >270 °C – 450 °C >450 °C – 500 °C >500 °C – 660 °C >660 °C – 800 °C >800 °C – 1000 °C	0.17 °C 0.17 °C 0.17 °C 0.17 °C 0.17 °C 0.17 °C 0.17 °C 0.17 °C 0.17 °C 0.53 °C 0.9 °C 0.9 °C
(Site)	-95 °C – 0 °C >0 °C – 60 °C >60 °C – 140 °C >140 °C – 270 °C >270 °C – 450 °C >450 °C – 660 °C	0.29 °C 0.24 °C 0.24 °C 0.31 °C 0.33 °C 0.4 °C
(C) Temperature Indicator with other Sensors (Lab)	-80 °C – 0 °C >0 °C – 50 °C >50 °C – 140 °C >140 °C – 210 °C >210 °C – 270 °C >270 °C – 450 °C >450 °C – 500 °C >500 °C – 660 °C	0.14 °C 0.12 °C 0.12 °C 0.13 °C 0.13 °C 0.13 °C 0.13 °C 0.53 °C
(Site)	-95 °C – 0 °C >0 °C – 60 °C >60 °C – 140 °C >140 °C – 270 °C >270 °C – 450 °C >450 °C – 660 °C	0.17 °C 0.13 °C 0.13 °C 0.28 °C 0.35 °C 0.4 °C

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2. Fixed Point RTD Sensor Lab In-House procedure UNI-T002 Rev:0 Thermistor	Approx. -196.0 °C 0.01 (TPW) 29.7647 (Gallium) 660.3226 (Aluminium) 0.01 (TPW) 29.7647 (Gallium)	0.012 °C 3 mK 3 mK 9 mK 3 mK 3 mK
3. RTD Sensor without Indicator, PRT Sensor without Indicator & Temperature measuring instruments (Lab) Lab In-House procedure UNI-T003 Rev:0 (Site)	-80 °C - -40 °C >-40 °C – 0 °C >0 °C – 50 °C >50 °C – 140 °C >140 °C – 210 °C >210 °C – 270 °C >270 °C – 500 °C >500 °C – 660 °C -95 °C – 60 °C >60 °C – 140 °C >140 °C – 270 °C >270 °C – 450 °C >450 °C – 660 °C	0.01 °C 0.01 °C 0.01 °C 0.012 °C 0.012 °C 0.02 °C 0.03 °C 0.39 °C 0.6 °C 0.35 °C 0.43 °C 0.47 °C 0.52 °C
4. Thermocouple Wire without Indicator (Lab) Lab In-House procedure UNI-T004 Rev:0 (Site)	-80 °C - -40 °C >-40 °C – 0 °C >0 °C – 50 °C >50 °C – 140 °C >140 °C – 210 °C >210 °C – 270 °C >270 °C – 450 °C >450 °C – 500 °C >500 °C – 660 °C >660 °C – 800 °C >800 °C – 1000 °C -95 °C – 60 °C >60 °C – 140 °C >140 °C – 280 °C	0.8 °C 0.8 °C 0.36 °C 0.36 °C 0.36 °C 0.36 °C 0.36 °C 0.36 °C 0.5 °C 1.0 °C 1.1 °C 0.72 °C 0.71 °C 0.77 °C

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5 (a) Connecting Thermocouple wire	>280 °C – 450 °C	0.78 °C	
	>450 °C – 660 °C	0.8 °C	
	0 °C – 30 °C	0.0003 mV	
		0.0003 mV	
		0.001 mV	
		0.0008 mV	
		0.0005 mV	
		0.0008 mV	
		0.0012 mV	
	0 °C – 30 °C	0.0002 mV	
		0.0002 mV	
		0.0007 mV	
		0.0006 mV	
		0.0006 mV	
		0.0006 mV	
		0.0008 mV	
6. Thermocouple Indicator			
Lab In-House procedure UNI-T005 Rev:0			
Type K	-200 °C - -100 °C	Lab 0.10 °C	Site 0.91 °C
	>-100 °C - -25 °C	0.07 °C	0.55 °C
	>-25 °C – 120 °C	0.06 °C	0.55 °C
	>120 °C – 600 °C	0.06 °C	0.55 °C
	>600 °C – 1000 °C	0.06 °C	0.72 °C
	>1000 °C – 1372 °C	0.07 °C	0.91 °C
Type: N	-200 °C - -100 °C	0.08 °C	0.68 °C
	>-100 °C - -25 °C	0.06 °C	0.82 °C
	>-25 °C – 120 °C	0.06 °C	0.82 °C
	>120 °C – 410 °C	0.05 °C	0.82 °C
	>410 °C – 1000 °C	0.05 °C	0.82 °C
	>1000 °C – 1300 °C	0.06 °C	0.91 °C
Type: J	-210 - -100 °C	0.13 °C	0.91 °C
	>-100 °C - -30 °C	0.08 °C	0.64 °C
	>-30 °C – 150 °C	0.07 °C	0.64 °C
	>150 °C – 760 °C	0.07 °C	0.64 °C
	>760 °C – 1000 °C	0.07 °C	0.81 °C
	>1000 °C – 1200 °C	0.07 °C	0.81 °C

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Type: T	-250 °C – -150 °C	(Lab) 0.11 °C	(Site) 2.2 °C
	>-150 °C – 0 °C	0.10 °C	0.55 °C
	>0 °C – 120 °C	0.09 °C	0.55 °C
	>120 °C – 400 °C	0.09 °C	0.55 °C
	0 °C – 250 °C	0.20 °C	2.0 °C
	>250 °C – 400 °C	0.20 °C	1.5 °C
	>400 °C – 1000 °C	0.10 °C	1.5 °C
	>1000 °C – 1770 °C	0.13 °C	1.5 °C
	0 °C – 250 °C	0.15 °C	2.0 °C
	>250 °C – 1000 °C	0.13 °C	1.3 °C
	>1000 °C – 1400 °C	0.13 °C	1.3 °C
	>1400 °C – 1760 °C	0.13 °C	1.6 °C
Type: E	-250 °C - -150 °C	0.17 °C	1.7 °C
	>-150 °C - -25 °C	0.11 °C	0.6 °C
	>-25 °C – 350 °C	0.10 °C	0.6 °C
	>350 °C – 650 °C	0.10 °C	0.68 °C
	>650 °C – 1000 °C	0.10 °C	0.68 °C
7. Thermocouple Simulator			
Lab In-House procedure UNI-T005 Rev:0		(Lab)	(Site)
Type: K	-200 °C - -100 °C	0.13 °C	0.62 °C
	>-100 °C - -25 °C	0.07 °C	0.55 °C
	>25 °C – 120 °C	0.05 °C	0.55 °C
	>120 °C – 600 °C	0.05 °C	0.55 °C
	>600 °C – 1000 °C	0.05 °C	0.55 °C
	>1000 °C – 1372 °C	0.06 °C	0.55 °C
Type: N	-200 °C - -100 °C	0.19 °C	0.91 °C
	>-100 °C - -25 °C	0.09 °C	0.82 °C
	>-25 °C – 120 °C	0.08 °C	0.82 °C
	>120 °C – 410 °C	0.06 °C	0.82 °C
	>410 °C – 1000 °C	0.05 °C	0.68 °C
	>1000 °C – 1300 °C	0.05 °C	0.68 °C

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Type: J	-210 °C – -100 °C	(Lab) 0.16 °C	(Site) 0.63 °C
	>-100 °C – -30 °C	0.08 °C	0.57 °C
	>-30 °C – 150 °C	0.06 °C	0.57 °C
	>150 °C – 760 °C	0.06 °C	0.57 °C
	>760 °C – 1000 °C	0.05 °C	0.63 °C
	>1000 °C – 1200 °C	0.05 °C	0.63 °C
Type: T	-250 °C – -150 °C	0.14 °C	1.3 °C
	>-150 °C – 0 °C	0.10 °C	0.61 °C
	>0 °C – 120 °C	0.05 °C	0.61 °C
	>120 °C – 400 °C	0.05 °C	0.61 °C
Type: R	0 °C – 250 °C	0.38 °C	1.6 °C
	>250 °C – 400 °C	0.19 °C	1.4 °C
	>400 °C – 1000 °C	0.19 °C	1.4 °C
	>1000 °C – 1770 °C	0.16 °C	1.4 °C
Type: S	0 °C – 250 °C	0.38 °C	1.6 °C
	>250 °C – 1000 °C	0.18 °C	1.3 °C
	>1000 °C – 1400 °C	0.18 °C	1.4 °C
	>1400 °C – 1760 °C	0.19 °C	1.3 °C
Type: E	-250 °C – -150 °C	0.25 °C	0.91 °C
	>-150 °C – -25 °C	0.07 °C	0.64 °C
	>-25 °C – 350 °C	0.04 °C	0.64 °C
	>350 °C – 650 °C	0.03 °C	0.57 °C
	>650 °C – 1000 °C	0.03 °C	0.57 °C
8. RTD and PRT Indicator			
Lab In-House procedure UNI-T005 Rev:0	-200 °C – -80 °C	0.06 °C	0.1 °C
	>-80 °C – 0 °C	0.06 °C	0.1 °C
	>0 °C – 100 °C	0.07 °C	0.1 °C
(Lab / Site)	>100 °C – 300 °C	0.10 °C	0.15 °C
	>300 °C – 400 °C	0.11 °C	0.17 °C
	>400 °C – 630 °C	0.14 °C	0.22 °C
TYPE: PT 385 (100Ω)	>630 °C – 800 °C	0.23 °C	0.25 °C

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9. RTD Simulator Lab In-House procedure UNI-T006 Rev:0 (Lab / Site) TYPE: PT 385 (100Ω)	-200 °C – 80 °C >80 °C – 100 °C >100 °C – 200 °C >200 °C – 400 °C >400 °C – 800 °C -	0.02 °C 0.15 °C 0.01 °C 0.15 °C 0.01 °C 0.16 °C 0.01 °C 0.27 °C 0.01 °C 0.27 °C
10. Dry Block Calibrator Lab In-House procedure UNI-T007 Rev:0 (Lab / Site)	-95 °C – 140 °C >140 °C – 450 °C >450 °C – 600 °C	0.035 °C 0.05 °C 0.052 °C
11. Non-Contact Temperature Infrared Thermometer / Thermal imager Lab In-House procedure UNI-T008 Rev:0 Emissivity: 0.90 – 1.00 Spectral Band: 8 to 14 μm	5 °C – 35 °C 35 °C – 100 °C >100 °C – 200 °C >200 °C – 350 °C >350 °C – 500 °C	0.9 °C 1.1 °C 4.9 °C 5.7 °C 5.8 °C
12. Humidity / Temperature measuring instruments Lab In-House procedure UNI-T009 Rev:0 (Lab / Site) (Used Reference Probe) Temperature: Humidity: Lab: (Used Chilled Mirror) Temperature Humidity Fixed Temperature @23°C	5 °C – 50 °C (5 – 90) % relative humidity 5 °C – 50 °C (5 – 90) % relative humidity (5 – 50) % relative humidity (50 – 90) % relative humidity	0.3 °C 2.4 % relative humidity 0.2 °C 1.3 % relative humidity 0.7 % relative humidity 1.3 % relative humidity

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13. Temperature Enclosure Lab In-House procedure UNI-T010 Rev:0 (Lab / Site) Freezers Oven & Furnaces	-80 °C – -40 °C -40 °C – 50 °C 50 °C – 160 °C 160 °C – 200 °C 200 °C – 600 °C 600 °C – 800 °C 800 °C – 1000 °C	0.4 °C 0.4 °C 0.4 °C 1.1 °C 2.6 °C 2.6 °C 3.7 °C
14 Liquid Bath Lab In-House procedure UNI-T011 Rev:0 Stability Axial Uniformity Radial Uniformity	-80 °C – 270 °C	0.004 °C 0.006 °C 0.005 °C
C. PRESSURE		
1. Pneumatic Pressure Instruments (Lab & Site) Lab In-House procedure UNI-P001 Rev:0	-13 psi to 30 psi 30 psi to 1000 psi	0.008 psi 0.25 psi
2. Hydraulic Pressure Instruments (Lab & Site) Lab In-House procedure UNI-P002 Rev:0	0 psi to 1000 psi 1000 psi to 10000 psi	0.25 psi 2.5 psi

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

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Approved Signatories

- | | |
|-------------------------|---|
| Mr Gavin Tan | - For Electrical, A1 to A19 |
| Mr Prabhakar Sundararaj | - For Temperature, B1 to B3 and B5 to B11only
For Electrical, all items in Cat A
For Pressure, all items in Cat C |
| Mr S.Karupiah | - For All items (Cat A, B & C) |

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 calibration 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.