National Accreditation Board for Testing and Calibration Laboratories

CERTIFICATE OF ACCREDITATION

ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED)

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

in the field of

CALIBRATION

Certificate Number: CC-3939

Issue Date: 31/03/2025 **Valid Until:** 30/03/2029

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.
(To see the scope of accreditation of thislaboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Entity: ROOTS INDUSTRIES INDIA PRIVATE LIMITED

Signed for and on behalf of NABL

Anita Rani
Director

N. Venkateswaran
Chief Executive Officer

National Accreditation Board for Testing and Calibration Laboratories

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 1 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
Permanent Facility					
1	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @50 Hz	Using 6½ Digit Multimeter by Direct Method	0.1 mA to 1 mA	0.59 % to 0.34 %
2	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @50 Hz	Using 6½ Digit Multimeter by Direct Method	1 A to 10 A	0.17 % to 0.25 %
3	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @50 Hz	Using 6½ Digit Multimeter by Direct Method	1 mA to 10 mA	0.34 % to 0.24 %
4	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @50 Hz	Using 6½ Digit Multimeter by Direct Method	10 mA to 1 A	0.24 % to 0.17 %
5	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC High Voltage @50 Hz	Using High Voltage Probe with DMM by Direct Method	10 kV to 100 kV	4.47 % to 9.1 %
6	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC High Voltage@50 Hz	Using High Voltage Probe with DMM by Direct Method	0.5 kV to 10 kV	4.47 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 2 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
7	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @50 Hz	Using 6½ Digit Multimeter by Direct Method	1 mV to 10 mV	4.77 % to 0.57 %
8	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @50 Hz	Using 6½ Digit Multimeter by Direct Method	10 V to 750 V	0.11 %
9	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage@50 Hz	Using 6½ Digit Multimeter by Direct Method	1 V to 10 V	0.23 % to 0.11 %
10	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage@50 Hz	Using 6½ Digit Multimeter by Direct Method	10 mV to 1 V	0.57 % to 0.23 %
11	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @ 50 Hz	Using Multi product calibrator with Current Coil by Direct Method	20 A to 100 A	0.99 % to 0.82 %
12	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @ 50 Hz to 1 kHz	Using Multi Product Calibrator by Direct Method	100 mA to 10 A	0.07 % to 0.11 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 3 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
13	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @50 Hz	Using Multi product calibrator with Current Coil by Direct Method	100 A to 1000 A	0.82 % to 0.89 %
14	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @50 Hz to 1 kHz	Using Multi Product Calibrator by Direct Method	1 mA to 100 mA	0.15 % to 0.07 %
15	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @50 Hz to 1 kHz	Using Multi Product Calibrator by Direct Method	10 A to 20 A	0.11 % to 0.21 %
16	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @50 Hz to 1 kHz	Using Multi Product Calibrator by Direct Method	100 µA to 1 mA	0.27 % to 0.15 %
17	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @50 Hz to 1 kHz	Using Multi Product Calibrator by Direct Method	30 µA to 100 µA	0.54 % to 0.27 %
18	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage (@50 Hz to 10 kHz)	Using Multi Product Calibrator by Direct Method	1 V to 10 V	0.06 % to 0.05 %
19	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage @50 Hz to 1 kHz	Using Multi Product Calibrator by Direct Method	100 V to 1000 V	0.076 % to 0.084 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 4 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
20	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage @50 Hz to 10 kHz	Using Multi Product Calibrator by Direct Method	10 V to 100 V	0.05 % to 0.076 %
21	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage@50 Hz to 10 kHz	Using Multi Product Calibrator by Direct Method	1 mV to 10 mV	2.88 % to 2.5 %
22	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage@50 Hz to 10 kHz	Using Multi Product Calibrator by Direct Method	10 mV to 100 mV	2.5 % to 0.06 %
23	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage@50 Hz to 10 kHz	Using Multi Product Calibrator by Direct Method	100 mV to 1 V	0.06 % to 0.04 %
24	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance @1 kHz	Using Multi Product Calibrator by Direct Method	1 nF to 100 nF	1.74 % to 0.42 %
25	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance @1 kHz	Using Multi Product Calibrator by Direct Method	330 pF to 1 nF	4.23 % to 1.74 %
26	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance @100 Hz	Using Multi Product Calibrator by Direct Method	100 nF to 100 µF	0.42 % to 0.65 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 5 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
27	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Power Factor at 50 Hz	Using Multi product calibrator by Direct Method	0.2 PF to 1 PF (Lag & Lead)	0.002 PF
28	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Single Phase AC Power (Active) (50 Hz @0.2 Lag)Voltage: 120 V to 240 V,Current: 0.1 A to 20 A	Using Multi product calibrator by two Wire Connection Direct Method	2.4 W to 960 W	1.73 %
29	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Single Phase AC Power (Active) (50 Hz @0.5 Lag)Voltage: 120 V to 240 V,Current: 0.1 A to 20 A	Using Multi product calibrator by two Wire Connection Direct Method	6 W to 2.4 kW	1.10 % to 0.55 %
30	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Single Phase AC Power (Active) (50 Hz @0.8 Lead)Voltage: 120 V to 240 V,Current: 0.1 A to 20 A	Using Multi product calibrator by two Wire Connection Direct Method	9.6 W to 3.84 kW	0.34 % to 0.21 %
31	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Single Phase AC Power (Active) (50 Hz @Unity)Voltage: 120 V to 240 V, Current: 0.1 A to 20 A	Using Multi product calibrator by two Wire Connection Direct Method	12 W to 4.8 kW	0.19 % to 0.22 %
32	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digit Multimeter by Direct Method	1 A to 10 A	0.14 % to 0.19 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 6 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
33	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digit Multimeter by Direct Method	1 mA to 10 mA	0.07 % to 0.081 %
34	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digit Multimeter by Direct Method	10 µA to 1 mA	0.36 % to 0.07 %
35	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using Shunt with 6½ Digit Multimeter by V-I Method	10 A to 100 A	0.6 %
36	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digit Multimeter by Direct Method	10 mA to 1 A	0.081 % to 0.14 %
37	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using Shunt with 6½ Digit Multimeter by V-I Method	100 A to 1000 A	0.6 %
38	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC High Voltage	Using High Voltage Probe with DMM by Direct Method	0.5 kV to 10 kV	3.35 %
39	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC High Voltage	Using High Voltage Probe with DMM by Direct Method	10 kV to 100 kV	3.35 % to 6.51 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 7 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
40	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digit Multimeter by Direct Method	1 mV to 10 mV	0.42 % to 0.06 %
41	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digit Multimeter by Direct Method	1 V to 10 V	0.005 % to 0.006 %
42	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digit Multimeter by Direct Method	10 mV to 1 V	0.06 % to 0.005 %
43	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digit Multimeter by Direct Method	10 V to 1000 V	0.006 % to 0.012 %
44	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance - 2 Wire	Using 6½ Digit Multimeter by Direct Method	1 ohm to 10 ohm	0.51 % to 0.06 %
45	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance- 2 Wire	Using 6½ Digit Multimeter by Direct Method	0.10 Mohm to 1 Mohm	0.016 % to 0.017 %
46	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance- 2 Wire	Using 6½ Digit Multimeter by Direct Method	1 Mohm to 10 Mohm	0.017 % to 0.05 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 8 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
47	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance- 2 Wire	Using 6½ Digit Multimeter by Direct Method	10 Mohm to 100 Mohm	0.05 % to 0.92 %
48	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance-2 Wire	Using 6½ Digit Multimeter by Direct Method	1 kohm to 0.1 Mohm	0.013 % to 0.016 %
49	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance-2 Wire	Using 6½ Digit Multimeter by Direct Method:	10 ohm to 1 kohm	0.06 % to 0.013 %
50	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multi Product Calibrator by Direct Method	1 µA to 10 µA	2.38 % to 0.25 %
51	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multi Product Calibrator by Direct Method	1 A to 10 A	0.10 % to 0.08 %
52	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multi Product Calibrator by Direct Method	1 mA to 100 mA	0.02 %
53	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multi Product Calibrator by Direct Method	10 µA to 100 µA	0.25 % to 0.042 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 9 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
54	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multi Product Calibrator by Direct Method	10 A to 20 A	0.08 % to 0.13 %
55	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multi Product Calibrator by Direct Method	100 µA to 1 mA	0.042 % to 0.02 %
56	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multi Product Calibrator by Direct Method	100 mA to 1 A	0.02 % to 0.10 %
57	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multi Product Calibrator with Current Coil by Direct Method	20 A to 1000 A	0.23 % to 0.77 %
58	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Power (V : 1 V to 1 V, A : 1 mA to 1 A)	Using Multiproduct Calibrator by Direct Method	1 mW to 1 W	0.09 %
59	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Power (Voltage 1 V to 600 V, 1 A to 20 A)	Using Multi product calibrator by Direct Method	1 W to 12 kW	0.09 % to 0.45 %
60	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using Multi Product Calibrator by Direct Method	0.5 mV to 1 mV	1.85 % to 0.36 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 10 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
61	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using Multi Product Calibrator by Direct Method	1 mV to 10 mV	0.36 % to 0.10 %
62	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using Multi Product Calibrator by Direct Method	10 mV to 100 mV	0.10 % to 0.012 %
63	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using Multi Product Calibrator by Direct Method	100 mV to 100 V	0.012 % to 0.01 %
64	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using Multi Product Calibrator by Direct Method	100 V to 1000 V	0.01 % to 0.007 %
65	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Inductance @1kHz	Using Decade Inductance Box by Direct Method	100 µH to 10 H	1.16 %
66	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using High stability Decade Meg ohm Box By Direct Method	0.1 M ohm to 100 M ohm	5.8 % to 1.16 %
67	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using 4 Wire Low Resistance Standard by Direct Method	1 mohm to 1 ohm	0.16 % to 0.14 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 11 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
68	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance - 2 Wire @ 1 kV	Using High stability Decade Meg ohm Box By Direct Method	1 Gohm to 100 Gohm	1.8 % to 3.78 %
69	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance @ 1 kV	Using High stability Decade Meg ohm Box By Direct Method	100 Gohm to 1 Tohm	3.78 % to 5.36 %
70	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance- 2 Wire	Using Multi Product Calibrator By Direct Method	1 Mohm to 100 Mohm	0.044 % to 0.6 %
71	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance- 2 Wire	Using Multiproduct Calibrator by Direct Method	100 Mohm to 1 Gohm	0.60 % to 1.80 %
72	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance- 2 Wire	Using High stability Decade Meg ohm Box By Direct Method	100 Mohm to 1 Gohm	1.16 % to 1.31 %
73	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance- 4 Wire	Using Multi Product Calibrator By Direct Method	1 ohm to 10 ohm	1.17 % to 0.13 %
74	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance-2 Wire	Using Multi Product Calibrator By Direct Method	1 kohm to 1 Mohm	0.01 % to 0.044 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 12 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
75	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance-4 Wire	Using Multi Product Calibrator By Direct Method	10 ohm to 1 kohm	0.13 % to 0.01 %
76	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance-4 Wire	Using 4 Wire Low Resistance Standard by Direct Method	100 µohm to 1 mohm	0.14 % to 0.16 %
77	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	B-Type Thermocouple	Using Multiproduct Calibrator by Direct Method	600 °C to 1800 °C	1.16 °C
78	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	E-Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 1000 °C	0.61 °C
79	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	J-Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 1200 °C	0.32 °C
80	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	K-Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 1350 °C	0.43°C
81	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	L -Type Thermocouple	Using Multi Function Calibrator by Direct Method	-200 °C to 900 °C	0.30 °C

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 13 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
82	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	N-Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 1300 °C	0.47°C
83	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	R-Type Thermocouple	Using Multi Product Calibrator by Direct Method	3 °C to 1750 °C	0.7 °C
84	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RTD - PT100	Using 6.5 digit DMM by Direct Method	-200 °C to 800 °C	0.35 °C
85	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	S-Type Thermocouple	Using Multi Product Calibrator by Direct Method	3 °C to 1750 °C	1.17 °C
86	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	T-Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 400 °C	0.73 °C
87	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	U -Type Thermocouple	Using Multi Function Calibrator by Direct Method	-200 °C to 400 °C	0.35 °C
88	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	B-Type Thermocouple	Using Multi Product calibrator by Direct Method	600 °C to 1800 °C	1.16 °C

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 14 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
89	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	E-Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 1000 °C	0.61 °C
90	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	J -Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 1200 °C	0.32 °C
91	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	K-Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 1370 °C	0.43 °C
92	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	L-Type Thermocouple	Using Multi Function Calibrator by Direct Method	-200 °C to 900 °C	0.30 °C
93	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	N-Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 1300 °C	0.47 °C
94	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	R-Type Thermocouple	Using Multi Product Calibrator by Direct Method	3 °C to 1750 °C	0.70 °C
95	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	RTD - PT100	Using Multi Product Calibrator by Direct Method	-200 °C to 800 °C	0.27 °C

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 15 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
96	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	S-Type Thermocouple	Using Multi Product Calibrator by Direct Method	3 °C to 1750 °C	1.17 °C
97	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	T-Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 400 °C	0.73 °C
98	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	U-Type Thermocouple	Using Multi Function Calibrator by Direct Method	-200 °C to 400 °C	0.35 °C
99	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency	Using 6½ Digit Multimeter by Direct Method	10 Hz to 300 kHz	0.06 %
100	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time	Using Digital Time Interval Meter By Comparison Method	3600 s to 86400 s	1.52 s to 5.08 s
101	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time	Using Digital Time Interval Meter By Comparison Method	5 s to 60 s	0.27 s
102	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time	Using Digital Time Interval Meter By Comparison Method	60 s to 3600 s	0.27 s to 1.52 s

National Accreditation Board for Testing and Calibration Laboratories

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 16 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
103	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Using Multi product calibrator by Direct Method	1 Hz to 1 MHz	0.13 %
104	MECHANICAL-ACCELERATION AND SPEED	Centrifuge/ Stirrers/RPM Indicators (Non Contact Type)	Using Digital Tachometer By Comparison Method	100 RPM to 1000 RPM	1.08 RPM
105	MECHANICAL-ACCELERATION AND SPEED	Centrifuge/ Stirrers/RPM Indicators (Non Contact Type)	Using Digital Tachometer By Comparison Method	1000 RPM to 10000 RPM	2.21 RPM
106	MECHANICAL-ACCELERATION AND SPEED	Centrifuge/ Stirrers/RPM Indicators (Non Contact Type)	Using Digital Tachometer By Comparison Method	10000 RPM to 16000 RPM	3.70 RPM
107	MECHANICAL-ACCELERATION AND SPEED	Mechanical / Digital Tachometers (Contact Type)	Using Digital Tachometer and Tachometer calibrator By Comparison Method	10 RPM to 100 RPM	1.3 RPM
108	MECHANICAL-ACCELERATION AND SPEED	Mechanical / Digital Tachometers (Contact Type)	Using Digital Tachometer and Tachometer calibrator By Comparison Method	100 RPM to 1000 RPM	1.46 RPM
109	MECHANICAL-ACCELERATION AND SPEED	Mechanical / Digital Tachometers (Contact Type)	Using Digital Tachometer and Tachometer calibrator By Comparison Method	1000 RPM to 10000 RPM	5.92 RPM
110	MECHANICAL-ACCELERATION AND SPEED	Mechanical / Digital Tachometers (Contact Type)	Using Digital Tachometer and Tachometer calibrator By Comparison Method	10000 RPM to 12000 RPM	6.05 RPM

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 17 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
111	MECHANICAL-ACCELERATION AND SPEED	Mechanical /Digital Tachometers/RPM Indicators with sensor (Non Contact Type)	Using Digital Tachometer and Tachometer calibrator By Comparison Method	10 RPM to 100 RPM	0.86 RPM
112	MECHANICAL-ACCELERATION AND SPEED	Mechanical /Digital Tachometers/RPM Indicators with sensor (Non Contact Type)	Using Digital Tachometer and Tachometer calibrator By Comparison Method	10000 RPM to 90000 RPM	4.71 RPM
113	MECHANICAL-ACCELERATION AND SPEED	Mechanical /Digital Tachometers/RPM Indicators with sensor (Non Contact Type)	Using Digital Tachometer and Tachometer calibrator By Comparison Method	100 RPM to 1000 RPM	1.86 RPM
114	MECHANICAL-ACCELERATION AND SPEED	Mechanical /Digital Tachometers/RPM Indicators with sensor (Non Contact Type)	Using Digital Tachometer and Tachometer calibrator By Comparison Method	1000 RPM to 10000 RPM	4.19 RPM
115	MECHANICAL-ACCELERATION AND SPEED	RPM Source/ Calibrators (Non Contact Type)	Using Digital Tachometer By Comparison Method	1000 RPM to 10000 RPM	2.23 RPM
116	MECHANICAL-ACCELERATION AND SPEED	RPM Source - Centrifuge/Stirrers/RPM Indicators/ Calibrators (Non Contact Type)	Using Digital Tachometer By Comparison Method	10 RPM to 100 RPM	0.87 RPM
117	MECHANICAL-ACCELERATION AND SPEED	RPM Source/ Calibrators (Non Contact Type)	Using Digital Tachometer By Comparison Method	10000 RPM to 90000 RPM	4.71 RPM
118	MECHANICAL-ACCELERATION AND SPEED	RPM Source/ Calibrators (Non Contact Type)	Using Digital Tachometer By Comparison Method	100 RPM to 1000 RPM	1.86 RPM

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 18 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
119	MECHANICAL-ACOUSTICS	Noise/Sound Level Meter @1 kHz	Using Sound Level Calibrator By Direct Method as per IS 15575 / OIML-R-58	94 dB and 114 dB	0.62 dB
120	MECHANICAL-DENSITY AND VISCOSITY	Hydrometers	Using Hydrometer of resolution : 0.0005 g/ml and Appropriate liquid by Comparison Method as per Archimedes Principle based on IS 3104	0.600 g/ml to 1.600 g/ml	0.0021 g/ml
121	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Bevel Protractor (Digital/Analog) (L.C: 1 Min)	Using Vision Measuring System by Comparison Method	0 ° to 360 °	69.48 arc sec
122	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Bore Gauge (Transmission only) (Span Diameter: 1.5mm to 600mm) (L.C: 0.001 mm)	Using Universal Length Measuring System by Comparison Method	Up to 1.5 mm	0.9 µm
123	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Bore Micrometer - Three Point (Analog / Digital)	Using Master Setting Ring gauges which is calibrated by Universal Length Measuring System by Comparison Method	>100 mm to 150 mm	3.4 µm
124	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Bore Micrometer - Three Point (Analog / Digital)	Using Master Setting Ring gauges which is calibrated by Universal Length Measuring System by Comparison Method	2.5 mm to 100 mm	3 µm

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 19 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
125	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Caliper (Vernier/Digital/Dial) (L.C.: 0.01 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	0 to 2000 mm	24.1 µm
126	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Caliper (Vernier/Digital/Dial) (L.C: 0.01 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	0 to 1000 mm	12.7 µm
127	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Caliper (Vernier/Digital/Dial) (L.C: 0.01 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	0 to 300 mm	7.2 µm
128	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Caliper (Vernier/Digital/Dial) (L.C: 0.01 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	0 to 600 mm	9.12 µm
129	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Coating Thickness Gauge (L.C: 0.1 µm)	Using Standard Foils by Comparison Method	10 µm to 100 µm	0.43 µm
130	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Coating Thickness Gauge (L.C: 1 µm)	Using Standard Foils by Comparison Method	>100 µm to 1800 µm	1.72 µm

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 20 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
131	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Coating Thickness Foil	Using Universal Length Measuring System by Comparison Method	0.01 to 3.0 mm	0.40 µm
132	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Combination Set /Inclinometer/ Degree Protractor (L.C: 0.05°)	Using Vision Measuring System/ Angle Gauge Block by Comparison Method	0 ° to 180 °	35 arc s
133	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Cube Mould (Linear)	Using Digital Caliper as per IS 10086 by Comparison Method	Up to 150 mm	23.66 µm
134	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Cylindrical Measuring Pins (Grade "0" and Coarser)	Using Universal Length Measuring System by Comparison Method	0.1 to 20 mm	0.33 µm
135	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Depth Gauge (Vernier/Digital/Dial/ Hook) (L.C: 0.01 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	0 to 300 mm	7.44 µm
136	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Depth Gauge (Vernier/Digital/Dial/ Hook) (L.C: 0.01 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	0 to 600 mm	9.3 µm

National Accreditation Board for Testing and Calibration Laboratories

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 21 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
137	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Depth Micrometer (Analog/Digital) (L.C: 0.001 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	0 to 300 mm	2.4 µm
138	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Dial Calibration Tester (L.C: 0.0002 mm)	Using Universal Length Measuring System by Comparison Method	0 to 25 mm	1.00 µm
139	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Dial Caliper Gauge (L.C: 0.01 mm)	Using Gauge Blocks by Comparison Method	2.5 mm to 100 mm	6.6 µm
140	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Electronic Probe/ LVDT with Digital Indicator (L.C: 0.1 µm)	Using Universal Length Measuring System by Comparison Method	0 to 25 mm	0.51 µm
141	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Engineer's Square / Granite Square (Parallelism)	Using Height Measuring System by Comparison Method	0 to 600 mm	1.28 µm
142	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Engineer's Square / Granite Square (Squareness)	Using Height Measuring System by Comparison Method	0 to 600 mm	5.12 µm

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 22 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
143	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer (Mechanical/Digital) (L.C.: 0.001 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	>100 mm to 300 mm	3.6 µm
144	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer (Mechanical/Digital) (L.C.: 0.001 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	>300 mm to 500 mm	5.21 µm
145	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer (Mechanical/Digital) (L.C.: 0.001 mm)	Using Gauge Blocks by Comparison Method	0 to 100 mm	1.2 µm
146	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer (Mechanical/Digital) (L.C: 0.001 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	>500 mm to 1000 mm	9.6 µm
147	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer (Mechanical/Digital) (L.C: 0.01 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	>1000 mm to 1200 mm	12.0 µm
148	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Feeler Gauge	Using Digital Micrometer by Comparison Method	Up to 1 mm	1.03 µm

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 23 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
149	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Fillet Gauge - Angular	Using Vision Measuring System by Comparison Method	0 ° to 360 °	13.2 arc sec
150	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Fillet Gauge - Linear	Using Vision Measuring System by Comparison Method	Up to 200 mm	3.15 µm
151	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Flush Pin Gauge	Using Universal Length Measuring Machine by Comparison Method	0 to 70 mm	0.83 µm
152	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Gear Tooth Caliper (Vernier/Digital/Dial) L.C.: 0.01 mm	Using Gauge Blocks by Comparison Method	0 to 50 mm	6.6 µm
153	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Height Gauge (Vernier/Digital/Dial) (L.C.: 0.01 mm)	Using Electronic Height Gauge, Gauge block and Long Gauge Blocks by Comparison Method	0 to 600 mm	7.4 µm
154	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Height Gauge (Vernier/Digital/Dial) (L.C: 0.01 mm)	Using Electronic Height Gauge, Gauge block and Long Gauge Blocks by Comparison Method	0 to 300 mm	7.3 µm

National Accreditation Board for Testing and Calibration Laboratories

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 24 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
155	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Inside/Groove Micrometer/ Caliper type Micrometer (L.C.: 0.01 mm)	Using Gauge Block and Gauge Block accessory by Comparison Method	5 mm to 100 mm	5.9 µm
156	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Lever Type Dial Gauge (L.C.: 0.001 mm)	Using Universal Length Measuring System by Comparison Method	0 to 0.14 mm	0.7 µm
157	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Lever Type Dial Gauge (L.C.: 0.01 mm)	Using Universal Length Measuring System by Comparison Method	0 to 2.0 mm	5.8 µm
158	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Lever type Dial Gauge (L.C: 0.002 mm and Coarser)	Using Universal Length Measuring System by Comparison method	0 to 0.2 mm	0.7 µm
159	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Limit Gauges - Angle	Using Electronic Height Gauge/ Vision Measuring System by Comparison method	0 ° to 360 °	37 arc s
160	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Limit Gauges - Height / Depth / Length / Width/ Radius/Diameter	Using Electronic Height Gauge/ Universal Length Measuring System/ Vision Measuring system by Comparison Method	Up to 300 mm	2.96 µm

National Accreditation Board for Testing and Calibration Laboratories

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 25 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
161	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Measuring Scale (L.C: 0.5 mm)	Using Tape & Scale Calibrator by Comparison Method	0 to 2000 mm	(289.3xsqrt(L)) µm; Where L in m
162	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Measuring Tape (L.C: 0.5 mm)	Using Tape & Scale Calibrator by Comparison Method	0 to 30 m	(577.5xsqrt(L)) µm Where L in m
163	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Micrometer Head (L.C.: 0.0001 mm)	Using Universal Length Measuring System by Comparison Method	0 to 25 mm	0.31 µm
164	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Micrometer Setting Rod	Using Universal Length Measuring System by Comparison Method	>100 mm to 500 mm	2.64 µm
165	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Micrometer Setting Rod	Using Universal Length Measuring System by Comparison Method	>500 mm to 1000 mm	7.2 µm
166	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Micrometer Setting Rod	Using Universal Length Measuring System by Comparison Method	25 mm to 100 mm	0.59 µm

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 26 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
167	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Pie Tape (L.C: 0.01 mm)	Using Tape & Scale Calibrator by comparison method	Up to 3 m	(577.5 x sqrt(L)) µm ; Where L in m
168	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Pistol Caliper/ OD Caliper/ OD Groove dial gauge (L.C: 0.1 mm)	Using Gauge Blocks by Comparison Method	0 to 100 mm	66.7 µm
169	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Plain / Setting Ring Gauge	Using Universal Length Measuring System by Comparison Method	>100 mm to 200 mm	1.4 µm
170	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Plain / Setting Ring Gauge	Using Universal Length Measuring System by Comparison Method	>200 mm to 300 mm	1.75 µm
171	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Plain / Setting Ring Gauge	Using Universal Length Measuring System by Comparison Method	3 mm to 100 mm	0.65 µm
172	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Plain / Setting Ring Gauge	Using Universal Length Measuring System by Comparison Method	300 mm to 400 mm	3.57 µm

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 27 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
173	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Plain Plug Gauge	Using Universal Length Measuring System by Comparison Method	>100 mm to 200 mm	1.3 µm
174	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Plain Plug Gauge	Using Universal Length Measuring System by Comparison Method	>200 mm to 400 mm	2.2 µm
175	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Plain Plug Gauge	Using Universal Length Measuring System by Comparison Method	1 mm to 100 mm	0.7 µm
176	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Plunger Type Dial/ Digital Gauge (L.C: 0.001 mm)	Using Universal Length Measuring System by Comparison Method	0 to 50 mm	0.76 µm
177	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Plunger Type Dial/ Digital Gauge (L.C: 0.01 mm)	Using Universal Length Measuring System by Comparison Method	0 to 100 mm	5.86 µm
178	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Radius Gauge	Using Vision Measuring System by Comparison Method	Up to 40 mm	4.79 µm

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 28 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
179	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Sine Bar /Sine Centers (Centre Distance)	Using Angle Gauge Block/Electronic height Gauge by Comparison Method	50 mm to 200 mm	1.84 µm
180	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Sine Bar /Sine Centers (Angular)	Using Angle Gauge Block/Electronic height Gauge by Comparison Method	0° to 45°	2.97 Arc second
181	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Sine Bar /Sine Centers (Parallelism)	Using Angle Gauge Block/ Electronic Height Gauge by Comparison Method	50 mm to 200 mm	1.31 µm
182	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Slip Gauge Accessories	Using Optical Parallel, Height Measuring System by Comparison Method	Up to 300 mm	0.32 µm
183	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Snap Gauge (Plain/ Adjustable)	Using Gauge Block and Long Gauge Block by Comparison Method	100 mm to 300 mm	2.82 µm
184	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Snap Gauge (Plain/ Adjustable)	Using Gauge Block by Comparison Method	2 mm to 100 mm	1.31 µm

National Accreditation Board for Testing and Calibration Laboratories

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 29 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
185	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Snap Micrometer (L.C: 0.001 mm)	Using Gauge Block by Comparison Method	0 to 100 mm	1.25 µm
186	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Spline Plug Gauge [Over Pin Diameter]	Using Universal Length measuring System by comparison Method	10 mm to 100 mm	2.0 µm
187	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Spline Ring gauge (Between Pin Diameter)	Using Universal Length measuring System by comparison Method	10 mm to 100 mm	2.2 µm
188	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Surface Roughness Tester (Ra)	Using Surface Roughness Specimen by Comparison method	Up to 3.18 µm	6.1%
189	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Surface Roughness Specimen	Using Surface Roughness Tester & Master Specimen by Comparison Method	Up to 3.18 µm	10.3 %
190	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Taper Scale	Using Vision Measuring System by Comparison Method	Up to 15 mm	2.46 µm

National Accreditation Board for Testing and Calibration Laboratories

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 30 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
191	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Taper Thread Plug Gauge	Using Universal Length Measuring System by Comparison Method	Up to 150 mm	1.19 µm
192	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Taper Thread Ring Gauge (Effective Diameter)	Using Universal Length Measuring System by Comparison Method	7 mm to 150 mm	0.97 µm
193	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Test Sieves	Using Vision Measuring System by Comparison Method	4 mm to 10 mm	3.30 µm
194	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Test Sieves	Using Vision Measuring System by Comparison Method	Up to 4 mm	2.81 µm
195	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Test Sieves (Perforated Plate/ Wire Cloth)	Using Digital Caliper by comparison method	10 mm to 100 mm	19.2 µm
196	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Thickness Gauge (Digital/Dial) (L.C: 0.001 mm)	Using Gauge Blocks by Comparison Method	0 to 25 mm	0.69 µm

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 31 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
197	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Thread Measuring Cylinders	Using Universal Length Measuring System by Comparison Method	0.17 mm to 5 mm	0.5 µm
198	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Thread Pitch Gauge	Using Vision Measuring System by Comparison Method	0.2 mm to 7.0 mm	2.60 µm
199	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Thread Plug Gauge (Major/ Effective diameter)	Using Universal Length Measuring System by Comparison Method	>200 mm to 400 mm	2.93 µm
200	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Thread Plug Gauge (Major/Effective diameter)	Using Universal Length Measuring System by Comparison Method	>100 mm to 200 mm	2.04 µm
201	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Thread Plug Gauge (Major/Effective diameter)	Using Universal Length Measuring System by Comparison Method	1 mm to 100 mm	1.1 µm
202	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Thread Ring Gauge (Effective diameter)	Using Universal Length Measuring System by Comparison Method	>90 mm to 200 mm	1.4 µm

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 32 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
203	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Thread Ring Gauge (Effective diameter)	Using Universal Length Measuring System by Comparison Method	3 mm to 90 mm	0.9 µm
204	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Tubular /Stick Micrometer (L.C.: 0.01 mm)	Using Universal Length Measuring system/ Electronic Height Gauge/ Long Gauge block by Comparison Method	300 mm to 1000 mm	9.14 µm
205	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Tubular /Stick Micrometer (L.C: 0.01 mm)	Using Universal Length Measuring System/ Electronic Height Gauge by Comparison Method	25 mm to 300 mm	6.2 µm
206	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Ultrasonic Thickness Gauge (L.C: 0.01 mm)	Using Slip Gauges by Comparison Method	0 to 100 mm	18.4 µm
207	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Using Electronic Height Gauge, Gauge block and Long Gauge Blocks by Comparison Method	Using Electronic Height Gauge and Long Gauge Blocks by Comparison Method	0 to 1000 mm	10.48 µm
208	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	V-Block (Flatness)	Using Height measuring system & Mandrel by Comparison Method	0 to 300 mm	4.95 µm

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 33 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
209	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	V-Block (Parallelism)	Using Height measuring system & Mandrel by Comparison Method	0 to 300 mm	4.95 µm
210	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	V-Block (Perpendicularity)	Using Height measuring system & Mandrel by Comparison Method	0 to 300 mm	4.95 µm
211	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	V-Block (Symmetry)	Using Height measuring system & Mandrel by Comparison Method	0 to 300 mm	4.95 µm
212	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Width/Gap Gauge	Using Universal Length Measuring System by Comparison Method	>100 mm to 300 mm	1.75 µm
213	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Width/Gap Gauge	Using Universal Length Measuring System by Comparison Method	Up to 100 mm	0.8 µm
214	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Angular Graticule	Using Vision measuring System by Comparison method	Up to 360 °	18.2 arc s

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 34 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
215	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Caliper Checker	Using Laser Interferometer with Electronic Height Gauge by Comparison Method	0 to 1000 mm	0.1 + (0.60 X L) µm , Where L in Meter
216	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Caliper Checker	Using Height Measuring System and Long Slip Gauges by Comparison Method	0 to 600 mm	1.72 + (L/587) µm; where L in mm
217	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Co-Ordinate Measuring Machine (Linear & Volumetric) ,(X -1000 mm ,Y- 1000 mm and Z- 1000 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	0 to 1000 mm	0.85 + (L/200) µm, L in mm
218	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Co-Ordinate Measuring Machine (Resolution: 0.0001 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	0 to 1000 mm	0.85 + (L/200) µm, L in mm
219	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Glass Scale	Using Laser Interferometer and Vision measuring system by Comparison method	0 to 300 mm	0.39 + (0.93 x L) µm, Where L is in meter
220	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Height Measuring System (L.C.: 0.0001 mm)	Using Gauge Blocks, Long Gauge Blocks and Granite Square by Comparison Method	0 to 1000 mm	0.29 + (L/180) µm, L in mm
221	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Height Measuring System (L.C: 0.0001 mm)	Using Laser Interferometer and Granite Square by comparison method	0 to 1000 mm	0.20 +(0.20 X L) µm Where L in Meters

National Accreditation Board for Testing and Calibration Laboratories

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 35 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
222	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Length Measuring Machine (L.C: 0.0001 mm)	Using Laser Interferometer by comparison method	0 to 3000 mm	0.15 + (0.15 X L) µm; Where L in Meters
223	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Long Slip Gauge	Using Laser Interferometer with Universal Length Measuring system by comparison method	100 mm to 1000 mm	0.20 + (0.60 X L) µm; Where L in Meters
224	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector/ Tool Maker Microscope/ Vision Measuring System - Linear (L.C: 0.1 µm)	Using Glass Calibration Grid by Comparison Method	400 mm to 400 mm	3.1 µm
225	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector/ Tool Maker Microscope/ Vision Measuring System-Angular (L.C: 1 arc s)	Using Angle Graticule by Comparison Method	0 ° to 360 °	20.16 arc s
226	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector/ Tool Maker Microscope/ Vision Measuring System-Magnification	Using Glass Calibration Grid and Digital Vernier Caliper by Comparison Method	10 X to 100 X	0.25 %
227	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector/ Vision Measuring System - Linear (L.C: 0.0001 mm)	Using Laser Interferometer by comparison method	(400 x 400) mm	0.40 + (0.93 x L) µm; Where L in meter
228	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Scale & Tape Measuring Machine / Calibrator (L.C: 0.001 mm)	Using Slip Gauges & Long Slip Gauges By Comparison Method	0 to 1000 mm	0.66+(L/195) µm; Where L in mm
229	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Scale & Tape Measuring Machine/ Calibrator (L.C: 0.001 mm)	Using Laser interferometer by comparison method	0 to 1000 mm	0.15 +(0.30 X L) µm; Where L in Meters

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 36 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
230	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Spirit Level (Sensitivity: 0.01 mm/m) (Type 1 & 2 &3)	Using Electronic Level by Comparison Method	Up to 300 mm	0.007 mm/m
231	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Surface Plate (Granite /Cast Iron)	Using Electronic Level by Comparison Method	3500 mm to 2600 mm	0.63 x Sqrt((L+W)/150) µm; where L& W in mm
232	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Universal Length Measuring System (L.C : 0.00001 mm)	Using Laser Interferometer by comparison method	0 to 3000 mm	0.10 +(0.10 X L) µm; Where L in Meters
233	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Universal Length Measuring System (L.C: 0.0001 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	0 to 100 mm	0.25 + (L/170) µm, Where L in mm
234	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Universal Length Measuring System (L.C: 0.0001 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	100 mm to 600 mm	0.85 + (L/225) µm; Where L in mm
235	MECHANICAL-DUROMETER	Durometers / Shore Hardness Tester, (Type A, B, C, D,E): Spring Force Measurement Method	Using Durometer Calibrator (Load Cell Indicator with Fixture) as per ASTM D2240	0 to 100 Shore	0.78 Shore
236	MECHANICAL-MOBILE FORCE MEASURING SYSTEM	Force Gauge/ Push Pull Gauge	Using Newtonian Weights and frame fixture as per VDI/VDE 2624-part2.1	10 N to 1000 N	0.2 N

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 37 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
237	MECHANICAL-PRESSURE INDICATING DEVICES	Absolute Pressure (Pneumatic) (Absolute Pressure Gauges/Barometers / Manometers)	Using Standard Digital Barometer and Pressure/Vacuum Generator with Chamber Setup by Comparison Method as per OIML-R-97	300 mbar to 1100 mbar	0.36 mbar
238	MECHANICAL-PRESSURE INDICATING DEVICES	Dial & Digital Vacuum Gauges, Transducers/ Transmitters, Switches	Using Standard Digital Vacuum Calibrator , 6.5 digit Multimeter by Comparison Method as per DKD-R-6-1	-0.95 bar to 0 bar	0.006 bar
239	MECHANICAL-PRESSURE INDICATING DEVICES	Hydraulic:-Dial & Digital Pressure Gauges, Pressure Calibrators, Pressure Transmitters/Transducers	Using Standard Digital Pressure Calibrator with external sensor, 6.5 digit Multimeter by Comparison Method as per DKD-R-6-1	0 bar to 700 bar	0.13 bar
240	MECHANICAL-PRESSURE INDICATING DEVICES	Low Pressure (Pneumatic) (Magnehelic Gauges, Manometer, Low Pressure Gauges/Vacuum, Calibrators, Pressure Transmitter, Transducer, Switch, Differential Pressure Gauge)	Using Standard Digital Pressure / Vacuumcalibrator, 6.5 Digit Multimeter by Comparison Method as per DKD-R-6-1	-1 bar to 2 bar	1.3 mbar

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 38 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
241	MECHANICAL-PRESSURE INDICATING DEVICES	Low Pressure (Pneumatic) (Magnehelic Gauges, Manometer, Low Pressure Gauges/Vacuum, Calibrators, Differential Pressure Gauge)	Using Differential Pressure Calibrator By Comparison Method as per DKD R-6-1	-10 kPa to 10 kPa	0.029 kPa
242	MECHANICAL-PRESSURE INDICATING DEVICES	Low Pressure (Pneumatic) (Magnehelic Gauges, Manometer, Low Pressure Gauges/Vacuum, Calibrators, Differential Pressure Gauge)	Using Differential Pressure Calibrator By Comparison Method as per DKD R-6-1	-245 Pa to 245 Pa	0.78 Pa
243	MECHANICAL-PRESSURE INDICATING DEVICES	Low Pressure (Pneumatic) (Magnehelic Gauges, Manometer, Low Pressure/Vacuum Gauges) Calibrators	Using Standard Digital Pressure/ Vacuum calibrator by Comparison Method as per DKD-R-6-1	-700 mbar to 0 mbar	1.1 mbar
244	MECHANICAL-PRESSURE INDICATING DEVICES	Low Pressure (Pneumatic)- (Magnehelic Gauges, Manometer, Low Pressure Calibrators)	Using Standard Digital Pressure calibrator by Comparison Method as per DKD-R-6-1	0 to 700 mbar	0.93 mbar
245	MECHANICAL-PRESSURE INDICATING DEVICES	Pneumatic - Dial & Digital Pressure Gauges, Pressure Calibrators, Pressure Switches, Pressure Transmitters/Transducers	Using Standard Digital Pressure Calibrator, 6.5 digit Multimeter by Comparison Method as per DKD-R-6-1	0 bar to 20 bar	0.006 bar

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 39 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
246	MECHANICAL-TORQUE GENERATING DEVICES	Torque Generating Devices- Type I (Class: A,B,C,D,E) and Type II (Class: A,B,C,D,E)	Using Torque Transducer with indicator and Torque Wrench Calibrator as per ISO 6789 (part1 and 2):2017	10 Nm to 1000 Nm	1.54 %rdg.
247	MECHANICAL-TORQUE GENERATING DEVICES	Torque Generating Devices- Type I (Class: A,B,C,D,E) and Type II (Class: A,B,C,D,E)	Using Digital Torque Tester and Torque Wrench Calibrator ISO 6789 (part1 and 2):2017	1 Nm to 10 Nm	3.07 % rdg
248	MECHANICAL-WEIGHTS	Accuracy class F1 & coarser	Using E1 Class Standard Weights and Electronic Weighing Balance (Readability: 0.01 mg upto 82 g / 0.1 mg above)	1 g	0.01 mg
249	MECHANICAL-WEIGHTS	Accuracy class F1 & coarser	Using E1 Class Standard Weights and Electronic Weighing Balance (Readability: 0.01 mg upto 82 g / 0.1 mg above)	10 g	0.012 mg
250	MECHANICAL-WEIGHTS	Accuracy class F1 & coarser	Using E1 Class Standard Weights and Electronic Weighing Balance (Readability: 0.01 mg upto 82 g / 0.1 mg above)	10 mg	0.01 mg

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 40 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
251	MECHANICAL-WEIGHTS	Accuracy class F1 & coarser	Using E1 Class Standard Weights and Electronic Weighing Balance (Readability: 0.01 mg upto 82 g / 0.1 mg above)	100 g	0.10 mg
252	MECHANICAL-WEIGHTS	Accuracy class F1 & coarser	Using E1 Class Standard Weights and Electronic Weighing Balance (Readability: 0.01 mg upto 82 g / 0.1 mg above)	100 mg	0.012 mg
253	MECHANICAL-WEIGHTS	Accuracy class F1 & coarser	Using E2 Class Standard Weight & Electronic Balance (Readability 1 mg)	1000 g	1 mg
254	MECHANICAL-WEIGHTS	Accuracy class F1 & coarser	Using E1 Class Standard Weights and Electronic Weighing Balance (Readability: 0.01 mg upto 82 g / 0.1 mg above)	2 g	0.01 mg
255	MECHANICAL-WEIGHTS	Accuracy class F1 & coarser	Using E1 Class Standard Weights and Electronic Weighing Balance (Readability: 0.01 mg upto 82 g / 0.1 mg above)	20 g	0.014 mg

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 41 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
256	MECHANICAL-WEIGHTS	Accuracy class F1 & coarser	Using E1 Class Standard Weights and Electronic Weighing Balance (Readability: 0.01 mg upto 82 g / 0.1 mg above)	20 mg	0.01 mg
257	MECHANICAL-WEIGHTS	Accuracy class F1 & coarser	Using E1 Class Standard Weights and Electronic Weighing Balance (Readability: 0.01 mg upto 82 g / 0.1 mg above)	200 g	0.1 mg
258	MECHANICAL-WEIGHTS	Accuracy class F1 & coarser	Using E1 Class Standard Weights and Electronic Weighing Balance (Readability: 0.01 mg upto 82 g / 0.1 mg above)	200 mg	0.01 mg
259	MECHANICAL-WEIGHTS	Accuracy class F1 & coarser	Using E1 Class Standard Weights and Electronic Weighing Balance (Readability: 0.01 mg upto 82 g / 0.1 mg above)	5 g	0.01 mg
260	MECHANICAL-WEIGHTS	Accuracy class F1 & coarser	Using E1 Class Standard Weights and Electronic Weighing Balance (Readability: 0.01 mg upto 82 g / 0.1 mg above)	50 g	0.02 mg

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 42 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
261	MECHANICAL-WEIGHTS	Accuracy class F1 & coarser	Using E1 Class Standard Weights and Electronic Weighing Balance (Readability: 0.01 mg upto 82 g / 0.1 mg above)	50 mg	0.01 mg
262	MECHANICAL-WEIGHTS	Accuracy class F1 & coarser	Using E2 Class Standard Weight & Electronic Balance (Readability 1 mg)	500 g	0.90 mg
263	MECHANICAL-WEIGHTS	Accuracy class F1 & coarser	Using E1 Class Standard Weights and Electronic Weighing Balance (Readability: 0.01 mg upto 82 g / 0.1 mg above)	500 mg	0.011 mg
264	MECHANICAL-WEIGHTS	Accuracy class F2 & coarser	Using E1 Class Standard Weights and Electronic Weighing Balance (Readability: 0.01 mg upto 82 g / 0.1 mg above)	1 mg	0.01 mg
265	MECHANICAL-WEIGHTS	Accuracy class F2 & coarser	Using F1 Class Standard Weight & Electronic Balance (Readability 10 mg)	2 kg	10 mg
266	MECHANICAL-WEIGHTS	Accuracy class F2 & coarser	Using E1 Class Standard Weights and Electronic Weighing Balance (Readability: 0.01 mg upto 82 g / 0.1 mg above)	2 mg	0.01 mg

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 43 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
267	MECHANICAL-WEIGHTS	Accuracy class F2 & coarser	Using F1 Class Standard Weight & Electronic Balance (Readability 10 mg)	5 kg	8.35 mg
268	MECHANICAL-WEIGHTS	Accuracy class F2 & coarser	Using E1 Class Standard Weights and Electronic Weighing Balance (Readability: 0.01 mg upto 82 g / 0.1 mg above)	5 mg	0.01 mg
269	MECHANICAL-WEIGHTS	Accuracy class M1 & coarser	Using F1 Class Standard Weight & Electronic Balance (Readability 0.1g)	10 kg	65 mg
270	MECHANICAL-WEIGHTS	Accuracy class M1 & coarser	Using F1 Class Standard Weight & Electronic Balance (Readability 0.1g)	20 kg	96 mg
271	OPTICAL-EQUIPMENTS	Digital Lux Meter / Illuminance Meter	Using Digital Lux / Illuminance Meter, Light Source and Regulated Power Supply by Comparison Method	10 lux to 10000 lux	4.5 %
272	THERMAL-SPECIFIC HEAT & HUMIDITY	ThermoHygrometers (Analog/Digital), Temp.& Humidity Indicator, Temp.&Humidity Sensors without Indicator, Hygrographs, Temp.& Humidity Data Loggers, Humidity Transmitters (20°C to 50°C)	Using Digital Temperature & Humidity Indicator with Sensor, Temperature & Humidity Generator, 6½ DMM by Comparison method	20 %RH to 95 %RH	1.3 %RH

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 44 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
273	THERMAL-SPECIFIC HEAT & HUMIDITY	ThermoHygrometers (Analog/Digital), Temp.& Humidity Indicator, Temp.& Humidity Sensors without Indicator, Temp. & Humidity Data Loggers, Humidity Transmitters @ 50 %RH	Using Digital Temperature and Humidity indicator with sensor, Temperature & Humidity Generator, with 6½ DMM by Comparison Method	10 °C to 50 °C	0.49 °C
274	THERMAL-TEMPERATURE	Indicator of Oven, Furnace, Dry Block Furnace, Dry Block Calibrators, Temperature Bath for industrial purpose only (Single Position)	Using S-Type Thermocouple with Indicator by Comparison Method	250 °C to 1200 °C	1.44 °C
275	THERMAL-TEMPERATURE	Indicator with sensor of Deep Freezer, Refrigerator, Oven, Low Temperature Bath/ Dry Block Calibrators,/ incubator for industrial purpose only (Single Position)	Using 4-Wire RTD Sensor with Indicator by Comparison Method	-80 °C to 50 °C	0.27 °C
276	THERMAL-TEMPERATURE	Indicator with sensor of Oven,Autoclave,Low Temperature Bath, Dry Block Calibrators, / incubator for industrial purpose only (Single Position)	Using 4-Wire RTD Sensor with Indicator by Comparison Method	50 °C to 250 °C	0.36 °C

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 45 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
277	THERMAL-TEMPERATURE	Liquid-In-Glass Thermometers	Using SSPRT Sensor with Multimeter and Hot Bath by Comparison Method	50 °C to 250 °C	0.59 °C
278	THERMAL-TEMPERATURE	Liquid-In-Glass Thermometers	Using SSPRT Sensor with multimeter and Hot Bath by Comparison Method	-80 °C to 50 °C	0.67 °C
279	THERMAL-TEMPERATURE	Non-Contact Type Thermometer (Infrared Thermometer / Digital Pyrometer /Thermal Imager)	Using Infrared Thermometer & Black Body Source (Emissivity: 0.95) By comparison method	50 °C to 500 °C	1.20 °C
280	THERMAL-TEMPERATURE	Non-Contact Type Thermometer (Infrared Thermometer / Digital Pyrometer)	Using Infrared Thermometer & Black Body Source (Emissivity: 0.95) By comparison method	0 °C to 100 °C	1.47 ° C
281	THERMAL-TEMPERATURE	RTDs, Thermocouple With & Without indicator/ Controllers, Temperature Indicator With Sensor, Temperature Gauge, Data Logger With Sensor, Temperature Transmitter/Switch, Temperature Transducer with indicators	Using SSPRT Sensor with Multimeter, 6.5 Digit Multimeter,MultiFunction calibrator, Hot Bath by Comparison Method	50 °C to 250 °C	0.35 °C

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 46 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
282	THERMAL-TEMPERATURE	RTDs, Thermocouple With & Without indicator/ Controllers, Temperature Indicator With Sensor, Data Logger With Sensor, Temperature Transmitter/Switch, Temperature Transducer with Indicators	Using SSPRT Sensor with Multimeter, S-Type thermocouple with indicator, 6.5 Digit Multimeter,MultiFunction Calibrator , Dry Block Calibrator by Comparison Method	250 °C to 650 °C	0.54 °C
283	THERMAL-TEMPERATURE	RTDs, Thermocouple With & Without indicator/ Controllers, Temperature Indicator With Sensor, Temperature Gauge, Data Logger With Sensor, Temperature Transmitter/Switch, Temperature Transducer with indicators	Using SSPRT Sensor with Multimeter indicator Cold Bath by Comparison Method	(-)30 °C to 50 °C	0.27 °C

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 47 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
284	THERMAL-TEMPERATURE	Thermocouple With & Without indicator/ Controllers, Temperature Indicator With Sensor, Data Logger With Sensor, Temperature Transmitter/ Switch, Temperature Transducer with Indicators	Using S-type Thermocouple with MultiFunction Calibrator,6.5 Digit Multimeter and Dry Block Calibrators by Comparison Method	650 °C to 1200 °C	1.38 °C

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 48 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
Site Facility					
1	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @50 Hz	Using 6½ Digit Multimeter by Direct Method	0.1 mA to 1 mA	0.59 % to 0.34 %
2	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @50 Hz	Using 6½ Digit Multimeter by Direct Method	1 A to 10 A	0.17 % to 0.25 %
3	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @50 Hz	Using 6½ Digit Multimeter by Direct Method	1 mA to 10 mA	0.34 % to 0.24 %
4	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Current @50 Hz	Using 6½ Digit Multimeter by Direct Method	10 mA to 1 A	0.24 % to 0.17 %
5	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC High Voltage @50 Hz	Using High Voltage Probe with DMM by Direct Method	10 kV to 100 kV	4.47 % to 9.1 %
6	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC High Voltage@50 Hz	Using High Voltage Probe with DMM by Direct Method	0.5 kV to 10 kV	4.47 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 49 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
7	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @50 Hz	Using 6½ Digit Multimeter by Direct Method	1 mV to 10 mV	4.77 % to 0.57 %
8	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage @50 Hz	Using 6½ Digit Multimeter by Direct Method	10 V to 750 V	0.11 %
9	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage@50 Hz	Using 6½ Digit Multimeter by Direct Method	1 V to 10 V	0.23 % to 0.11 %
10	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	AC Voltage@50 Hz	Using 6½ Digit Multimeter by Direct Method	10 mV to 1 V	0.57 % to 0.23 %
11	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @ 50 Hz	Using Multi product calibrator with Current Coil by Direct Method	20 A to 100 A	0.99 % to 0.82 %
12	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @ 50 Hz to 1 kHz	Using Multi Product Calibrator by Direct Method	100 mA to 10 A	0.07 % to 0.11 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 50 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
13	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @50 Hz	Using Multi product calibrator with Current Coil by Direct Method	100 A to 1000 A	0.82 % to 0.89 %
14	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @50 Hz to 1 kHz	Using Multi Product Calibrator by Direct Method	1 mA to 100 mA	0.15 % to 0.07 %
15	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @50 Hz to 1 kHz	Using Multi Product Calibrator by Direct Method	10 A to 20 A	0.11 % to 0.21 %
16	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @50 Hz to 1 kHz	Using Multi Product Calibrator by Direct Method	100 µA to 1 mA	0.27 % to 0.15 %
17	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Current @50 Hz to 1 kHz	Using Multi Product Calibrator by Direct Method	30 µA to 100 µA	0.54 % to 0.27 %
18	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage (@50 Hz to 10 kHz)	Using Multi Product Calibrator by Direct Method	1 V to 10 V	0.06 % to 0.05 %
19	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage @50 Hz to 1 kHz	Using Multi Product Calibrator by Direct Method	100 V to 1000 V	0.076 % to 0.084 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 51 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
20	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage @50 Hz to 10 kHz	Using Multi Product Calibrator by Direct Method	10 V to 100 V	0.05 % to 0.076 %
21	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage@50 Hz to 10 kHz	Using Multi Product Calibrator by Direct Method	1 mV to 10 mV	2.88 % to 2.5 %
22	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage@50 Hz to 10 kHz	Using Multi Product Calibrator by Direct Method	10 mV to 100 mV	2.5 % to 0.06 %
23	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	AC Voltage@50 Hz to 10 kHz	Using Multi Product Calibrator by Direct Method	100 mV to 1 V	0.06 % to 0.04 %
24	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance @1 kHz	Using Multi Product Calibrator by Direct Method	1 nF to 100 nF	1.74 % to 0.42 %
25	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance @1 kHz	Using Multi Product Calibrator by Direct Method	330 pF to 1 nF	4.23 % to 1.74 %
26	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance @100 Hz	Using Multi Product Calibrator by Direct Method	100 nF to 100 µF	0.42 % to 0.65 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 52 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
27	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Power Factor at 50 Hz	Using Multi product calibrator by Direct Method	0.2 PF to 1 PF (Lag & Lead)	0.002 PF
28	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Single Phase AC Power (Active) (50 Hz @0.2 Lag)Voltage: 120 V to 240 V,Current: 0.1 A to 20 A	Using Multi product calibrator by two Wire Connection Direct Method	2.4 W to 960 W	1.73 %
29	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Single Phase AC Power (Active) (50 Hz @0.5 Lag)Voltage: 120 V to 240 V,Current: 0.1 A to 20 A	Using Multi product calibrator by two Wire Connection Direct Method	6 W to 2.4 kW	1.10 % to 0.55 %
30	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Single Phase AC Power (Active) (50 Hz @0.8 Lead)Voltage: 120 V to 240 V,Current: 0.1 A to 20 A	Using Multi product calibrator by two Wire Connection Direct Method	9.6 W to 3.84 kW	0.34 % to 0.21 %
31	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Single Phase AC Power (Active) (50 Hz @Unity)Voltage: 120 V to 240 V, Current: 0.1 A to 20 A	Using Multi product calibrator by two Wire Connection Direct Method	12 W to 4.8 kW	0.19 % to 0.22 %
32	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digit Multimeter by Direct Method	1 A to 10 A	0.14 % to 0.19 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 53 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
33	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digit Multimeter by Direct Method	1 mA to 10 mA	0.07 % to 0.081 %
34	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digit Multimeter by Direct Method	10 µA to 1 mA	0.36 % to 0.07 %
35	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using Shunt with 6½ Digit Multimeter by V-I Method	10 A to 100 A	0.6 %
36	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 6½ Digit Multimeter by Direct Method	10 mA to 1 A	0.081 % to 0.14 %
37	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using Shunt with 6½ Digit Multimeter by V-I Method	100 A to 1000 A	0.6 %
38	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC High Voltage	Using High Voltage Probe with DMM by Direct Method	0.5 kV to 10 kV	3.35 %
39	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC High Voltage	Using High Voltage Probe with DMM by Direct Method	10 kV to 100 kV	3.35 % to 6.51 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 54 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
40	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digit Multimeter by Direct Method	1 mV to 10 mV	0.42 % to 0.06 %
41	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digit Multimeter by Direct Method	1 V to 10 V	0.005 % to 0.006 %
42	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digit Multimeter by Direct Method	10 mV to 1 V	0.06 % to 0.005 %
43	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digit Multimeter by Direct Method	10 V to 1000 V	0.006 % to 0.012 %
44	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance - 2 Wire	Using 6½ Digit Multimeter by Direct Method	1 ohm to 10 ohm	0.51 % to 0.06 %
45	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance- 2 Wire	Using 6½ Digit Multimeter by Direct Method	0.10 Mohm to 1 Mohm	0.016 % to 0.017 %
46	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance- 2 Wire	Using 6½ Digit Multimeter by Direct Method	1 Mohm to 10 Mohm	0.017 % to 0.05 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 55 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
47	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance- 2 Wire	Using 6½ Digit Multimeter by Direct Method	10 Mohm to 100 Mohm	0.05 % to 0.92 %
48	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance-2 Wire	Using 6½ Digit Multimeter by Direct Method	1 kohm to 0.1 Mohm	0.013 % to 0.016 %
49	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance-2 Wire	Using 6½ Digit Multimeter by Direct Method:	10 ohm to 1 kohm	0.06 % to 0.013 %
50	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multi Product Calibrator by Direct Method	1 µA to 10 µA	2.38 % to 0.25 %
51	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multi Product Calibrator by Direct Method	1 A to 10 A	0.10 % to 0.08 %
52	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multi Product Calibrator by Direct Method	1 mA to 100 mA	0.02 %
53	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multi Product Calibrator by Direct Method	10 µA to 100 µA	0.25 % to 0.042 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 56 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
54	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multi Product Calibrator by Direct Method	10 A to 20 A	0.08 % to 0.13 %
55	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multi Product Calibrator by Direct Method	100 µA to 1 mA	0.042 % to 0.02 %
56	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multi Product Calibrator by Direct Method	100 mA to 1 A	0.02 % to 0.10 %
57	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Current	Using Multi Product Calibrator with Current Coil by Direct Method	20 A to 1000 A	0.23 % to 0.77 %
58	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Power (V : 1 V to 1 V, A : 1 mA to 1 A)	Using Multiproduct Calibrator by Direct Method	1 mW to 1 W	0.09 %
59	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Power (Voltage 1 V to 600 V, 1 A to 20 A)	Using Multi product calibrator by Direct Method	1 W to 12 kW	0.09 % to 0.45 %
60	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using Multi Product Calibrator by Direct Method	0.5 mV to 1 mV	1.85 % to 0.36 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 57 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
61	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using Multi Product Calibrator by Direct Method	1 mV to 10 mV	0.36 % to 0.10 %
62	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using Multi Product Calibrator by Direct Method	10 mV to 100 mV	0.10 % to 0.012 %
63	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using Multi Product Calibrator by Direct Method	100 mV to 100 V	0.012 % to 0.01 %
64	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using Multi Product Calibrator by Direct Method	100 V to 1000 V	0.01 % to 0.007 %
65	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Inductance @1kHz	Using Decade Inductance Box by Direct Method	100 µH to 10 H	1.16 %
66	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using High stability Decade Meg ohm Box By Direct Method	0.1 M ohm to 100 M ohm	5.8 % to 1.16 %
67	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using 4 Wire Low Resistance Standard by Direct Method	1 mohm to 1 ohm	0.16 % to 0.14 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 58 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
68	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance - 2 Wire @ 1 kV	Using High stability Decade Meg ohm Box By Direct Method	1 Gohm to 100 Gohm	1.8 % to 3.78 %
69	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance @ 1 kV	Using High stability Decade Meg ohm Box By Direct Method	100 Gohm to 1 Tohm	3.78 % to 5.36 %
70	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance- 2 Wire	Using Multi Product Calibrator By Direct Method	1 Mohm to 100 Mohm	0.044 % to 0.6 %
71	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance- 2 Wire	Using Multiproduct Calibrator by Direct Method	100 Mohm to 1 Gohm	0.60 % to 1.80 %
72	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance- 2 Wire	Using High stability Decade Meg ohm Box By Direct Method	100 Mohm to 1 Gohm	1.16 % to 1.31 %
73	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance- 4 Wire	Using Multi Product Calibrator By Direct Method	1 ohm to 10 ohm	1.17 % to 0.13 %
74	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance-2 Wire	Using Multi Product Calibrator By Direct Method	1 kohm to 1 Mohm	0.01 % to 0.044 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 59 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
75	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance-4 Wire	Using Multi Product Calibrator By Direct Method	10 ohm to 1 kohm	0.13 % to 0.01 %
76	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance-4 Wire	Using 4 Wire Low Resistance Standard by Direct Method	100 µohm to 1 mohm	0.14 % to 0.16 %
77	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	B-Type Thermocouple	Using Multiproduct Calibrator by Direct Method	600 °C to 1800 °C	1.16 °C
78	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	E-Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 1000 °C	0.61 °C
79	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	J-Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 1200 °C	0.32 °C
80	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	K-Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 1350 °C	0.43°C
81	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	L -Type Thermocouple	Using Multi Function Calibrator by Direct Method	-200 °C to 900 °C	0.30 °C

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 60 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
82	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	N-Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 1300 °C	0.47°C
83	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	R-Type Thermocouple	Using Multi Product Calibrator by Direct Method	3 °C to 1750 °C	0.7 °C
84	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RTD - PT100	Using 6.5 digit DMM by Direct Method	-200 °C to 800 °C	0.35 °C
85	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	S-Type Thermocouple	Using Multi Product Calibrator by Direct Method	3 °C to 1750 °C	1.17 °C
86	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	T-Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 400 °C	0.73 °C
87	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	U -Type Thermocouple	Using Multi Function Calibrator by Direct Method	-200 °C to 400 °C	0.35 °C
88	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	B-Type Thermocouple	Using Multi Product calibrator by Direct Method	600 °C to 1800 °C	1.16 °C

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 61 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
89	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	E-Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 1000 °C	0.61 °C
90	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	J -Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 1200 °C	0.32 °C
91	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	K-Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 1370 °C	0.43 °C
92	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	L-Type Thermocouple	Using Multi Function Calibrator by Direct Method	-200 °C to 900 °C	0.30 °C
93	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	N-Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 1300 °C	0.47 °C
94	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	R-Type Thermocouple	Using Multi Product Calibrator by Direct Method	3 °C to 1750 °C	0.70 °C
95	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	RTD - PT100	Using Multi Product Calibrator by Direct Method	-200 °C to 800 °C	0.27 °C

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 62 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
96	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	S-Type Thermocouple	Using Multi Product Calibrator by Direct Method	3 °C to 1750 °C	1.17 °C
97	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	T-Type Thermocouple	Using Multi Product Calibrator by Direct Method	-200 °C to 400 °C	0.73 °C
98	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	U-Type Thermocouple	Using Multi Function Calibrator by Direct Method	-200 °C to 400 °C	0.35 °C
99	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency	Using 6½ Digit Multimeter by Direct Method	10 Hz to 300 kHz	0.06 %
100	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time	Using Digital Time Interval Meter By Comparison Method	3600 s to 86400 s	1.52 s to 5.08 s
101	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time	Using Digital Time Interval Meter By Comparison Method	5 s to 60 s	0.27 s
102	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time	Using Digital Time Interval Meter By Comparison Method	60 s to 3600 s	0.27 s to 1.52 s

National Accreditation Board for Testing and Calibration Laboratories

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 63 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
103	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Using Multi product calibrator by Direct Method	1 Hz to 1 MHz	0.13 %
104	MECHANICAL-ACCELERATION AND SPEED	Centrifuge/ Stirrers/RPM Indicators (Non Contact Type)	Using Digital Tachometer By Comparison Method	100 RPM to 1000 RPM	1.08 RPM
105	MECHANICAL-ACCELERATION AND SPEED	Centrifuge/ Stirrers/RPM Indicators (Non Contact Type)	Using Digital Tachometer By Comparison Method	1000 RPM to 10000 RPM	2.21 RPM
106	MECHANICAL-ACCELERATION AND SPEED	Centrifuge/ Stirrers/RPM Indicators (Non Contact Type)	Using Digital Tachometer By Comparison Method	10000 RPM to 16000 RPM	3.70 RPM
107	MECHANICAL-ACCELERATION AND SPEED	Mechanical / Digital Tachometers (Contact Type)	Using Digital Tachometer and Tachometer calibrator By Comparison Method	10 RPM to 100 RPM	1.3 RPM
108	MECHANICAL-ACCELERATION AND SPEED	Mechanical / Digital Tachometers (Contact Type)	Using Digital Tachometer and Tachometer calibrator By Comparison Method	100 RPM to 1000 RPM	1.46 RPM
109	MECHANICAL-ACCELERATION AND SPEED	Mechanical / Digital Tachometers (Contact Type)	Using Digital Tachometer and Tachometer calibrator By Comparison Method	1000 RPM to 10000 RPM	5.92 RPM
110	MECHANICAL-ACCELERATION AND SPEED	Mechanical / Digital Tachometers (Contact Type)	Using Digital Tachometer and Tachometer calibrator By Comparison Method	10000 RPM to 12000 RPM	6.05 RPM

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 64 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
111	MECHANICAL-ACCELERATION AND SPEED	Mechanical /Digital Tachometers/RPM Indicators with sensor (Non Contact Type)	Using Digital Tachometer and Tachometer calibrator By Comparison Method	10 RPM to 100 RPM	0.86 RPM
112	MECHANICAL-ACCELERATION AND SPEED	Mechanical /Digital Tachometers/RPM Indicators with sensor (Non Contact Type)	Using Digital Tachometer and Tachometer calibrator By Comparison Method	10000 RPM to 90000 RPM	4.71 RPM
113	MECHANICAL-ACCELERATION AND SPEED	Mechanical /Digital Tachometers/RPM Indicators with sensor (Non Contact Type)	Using Digital Tachometer and Tachometer calibrator By Comparison Method	100 RPM to 1000 RPM	1.86 RPM
114	MECHANICAL-ACCELERATION AND SPEED	Mechanical /Digital Tachometers/RPM Indicators with sensor (Non Contact Type)	Using Digital Tachometer and Tachometer calibrator By Comparison Method	1000 RPM to 10000 RPM	4.19 RPM
115	MECHANICAL-ACCELERATION AND SPEED	RPM Source/ Calibrators (Non Contact Type)	Using Digital Tachometer By Comparison Method	1000 RPM to 10000 RPM	2.23 RPM
116	MECHANICAL-ACCELERATION AND SPEED	RPM Source - Centrifuge/Stirrers/RPM Indicators/ Calibrators (Non Contact Type)	Using Digital Tachometer By Comparison Method	10 RPM to 100 RPM	0.87 RPM
117	MECHANICAL-ACCELERATION AND SPEED	RPM Source/ Calibrators (Non Contact Type)	Using Digital Tachometer By Comparison Method	10000 RPM to 90000 RPM	4.71 RPM
118	MECHANICAL-ACCELERATION AND SPEED	RPM Source/ Calibrators (Non Contact Type)	Using Digital Tachometer By Comparison Method	100 RPM to 1000 RPM	1.86 RPM

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 65 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
119	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Caliper (Vernier/Digital/Dial) (L.C.: 0.01 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	0 to 2000 mm	24.1 µm
120	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Cube Mould (Linear)	Using Digital Caliper as per IS 10086 by Comparison Method	Up to 150 mm	23.66 µm
121	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer (Mechanical/Digital) (L.C: 0.01 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	>1000 mm to 1200 mm	12.0 µm
122	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Height Gauge (Vernier/Digital/Dial) (L.C.: 0.01 mm)	Using Electronic Height Gauge, Gauge block and Long Gauge Blocks by Comparison Method	0 to 600 mm	7.4 µm
123	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Height Gauge (Vernier/Digital/Dial) (L.C: 0.01 mm)	Using Electronic Height Gauge, Gauge block and Long Gauge Blocks by Comparison Method	0 to 300 mm	7.3 µm
124	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Using Electronic Height Gauge, Gauge block and Long Gauge Blocks by Comparison Method	Using Electronic Height Gauge and Long Gauge Blocks by Comparison Method	0 to 1000 mm	10.48 µm

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 66 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
125	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	CNC Machine Tools (Positioning Accuracy - Linear, Angular, Pitch & Yaw)	Using Laser Interferometer by comparison method	0 to 10000 mm	0.91 + (2.13 x L) µm, L in Meter
126	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Co-Ordinate Measuring Machine (Linear & Volumetric) ,(X -1000 mm ,Y- 1000 mm and Z- 1000 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	0 to 1000 mm	0.85 + (L/200) µm, L in mm
127	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Co-Ordinate Measuring Machine (Resolution: 0.0001 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	0 to 1000 mm	0.85 + (L/200) µm, L in mm
128	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Height Measuring System (L.C.: 0.0001 mm)	Using Gauge Blocks, Long Gauge Blocks and Granite Square by Comparison Method	0 to 1000 mm	0.29 + (L/180) µm, L in mm
129	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Height Measuring System (L.C: 0.0001 mm)	Using Laser Interferometer and Granite Square by comparison method	0 to 1000 mm	0.20 +(0.20 X L) µm Where L in Meters
130	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Length Measuring Machine (L.C: 0.0001 mm)	Using Laser Interferometer by comparison method	0 to 3000 mm	0.15 + (0.15 X L) µm; Where L in Meters
131	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector/ Tool Maker Microscope/ Vision Measuring System - Linear (L.C: 0.1 µm)	Using Glass Calibration Grid by Comparison Method	400 mm to 400 mm	3.1 µm

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 67 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
132	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector/ Tool Maker Microscope/ Vision Measuring System-Angular (L.C: 1 arc s)	Using Angle Graticule by Comparison Method	0 ° to 360 °	20.16 arc s
133	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector/ Tool Maker Microscope/ Vision Measuring System-Magnification	Using Glass Calibration Grid and Digital Vernier Caliper by Comparison Method	10 X to 100 X	0.25 %
134	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector/ Vision Measuring System - Linear (L.C: 0.0001 mm)	Using Laser Interferometer by comparison method	(400 x 400) mm	0.40 + (0.93 x L) µm; Where L in meter
135	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Scale & Tape Measuring Machine / Calibrator (L.C: 0.001 mm)	Using Slip Gauges & Long Slip Gauges By Comparison Method	0 to 1000 mm	0.66+(L/195) µm; Where L in mm
136	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Scale & Tape Measuring Machine/ Calibrator (L.C: 0.001 mm)	Using Laser interferometer by comparison method	0 to 1000 mm	0.15 +(0.30 X L) µm; Where L in Meters
137	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Surface Plate (Granite /Cast Iron)	Using Electronic Level by Comparison Method	3500 mm to 2600 mm	0.63 x Sqrt((L+W)/150) µm; where L& W in mm
138	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Universal Length Measuring System (L.C : 0.00001 mm)	Using Laser Interferometer by comparison method	0 to 3000 mm	0.10 +(0.10 X L) µm; Where L in Meters
139	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Universal Length Measuring System (L.C: 0.0001 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	0 to 100 mm	0.25 + (L/170) µm, Where L in mm

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 68 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
140	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Universal Length Measuring System (L.C: 0.0001 mm)	Using Gauge Blocks and Long Gauge Blocks by Comparison Method	100 mm to 600 mm	0.85 + (L/225) µm; Where L in mm
141	MECHANICAL-PRESSURE INDICATING DEVICES	Dial & Digital Vacuum Gauges, Transducers/ Transmitters, Switches	Using Standard Digital Vacuum Calibrator , 6.5 digit Multimeter by Comparison Method as per DKD-R-6-1	-0.95 bar to 0 bar	0.006 bar
142	MECHANICAL-PRESSURE INDICATING DEVICES	Hydraulic:-Dial & Digital Pressure Gauges, Pressure Calibrators, Pressure Transmitters/Transducers	Using Standard Digital Pressure Calibrator with external sensor, 6.5 digit Multimeter by Comparison Method as per DKD-R-6-1	0 bar to 700 bar	0.13 bar
143	MECHANICAL-PRESSURE INDICATING DEVICES	Low Pressure (Pneumatic) (Magnehelic Gauges, Manometer, Low Pressure Gauges/Vacuum, Calibrators, Pressure Transmitter, Transducer, Switch, Differential Pressure Gauge)	Using Standard Digital Pressure / Vacuumcalibrator, 6.5 Digit Multimeter by Comparison Method as per DKD-R-6-1	-1 bar to 2 bar	1.3 mbar
144	MECHANICAL-PRESSURE INDICATING DEVICES	Low Pressure (Pneumatic) (Magnehelic Gauges, Manometer, Low Pressure Gauges/Vacuum, Calibrators, Differential Pressure Gauge)	Using Differential Pressure Calibrator By Comparison Method as per DKD R-6-1	-10 kPa to 10 kPa	0.029 kPa

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 69 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
145	MECHANICAL-PRESSURE INDICATING DEVICES	Low Pressure (Pneumatic) (Magnehelic Gauges, Manometer, Low Pressure Gauges/Vacuum, Calibrators, Differential Pressure Gauge)	Using Differential Pressure Calibrator By Comparison Method as per DKD R-6-1	-245 Pa to 245 Pa	0.78 Pa
146	MECHANICAL-PRESSURE INDICATING DEVICES	Low Pressure (Pneumatic) (Magnehelic Gauges, Manometer, Low Pressure/Vacuum Gauges) Calibrators	Using Standard Digital Pressure/ Vacuum calibrator by Comparison Method as per DKD-R-6-1	-700 mbar to 0 mbar	1.1 mbar
147	MECHANICAL-PRESSURE INDICATING DEVICES	Low Pressure (Pneumatic)- (Magnehelic Gauges, Manometer, Low Pressure Calibrators)	Using Standard Digital Pressure calibrator by Comparison Method as per DKD-R-6-1	0 to 700 mbar	0.93 mbar
148	MECHANICAL-PRESSURE INDICATING DEVICES	Pneumatic - Dial & Digital Pressure Gauges, Pressure Calibrators, Pressure Switches, Pressure Transmitters/Transducers	Using Standard Digital Pressure Calibrator, 6.5 digit Multimeter by Comparison Method as per DKD-R-6-1	0 bar to 20 bar	0.006 bar
149	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Universal Testing Machine in Compression / Compression Testing Machine (CTM)	Using Master Load Cell As per IS 1828 (Part -1)/ ISO 7500	1 kN to 10 kN	0.20 %

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 70 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
150	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Universal Testing Machine in Compression / Compression Testing Machine (CTM)	Using Master Load Cell As per IS 1828 (Part -1)/ ISO 7500	10 kN to 100 kN	0.24 %
151	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Universal Testing Machine in Compression / Compression Testing Machine (CTM)	Using Master Load Cell As per IS 1828 (Part -1)/ ISO 7500	100 kN to 500 kN	0.21 %
152	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Universal Testing Machine in Compression / Compression Testing Machine (CTM)	Using Master Load Cell As per IS 1828 (Part -1)/ ISO 7500	100 N to 1 kN	0.30 %
153	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Universal Testing Machine in Tension / Tensile Testing Machine (TTM)	Using Master Load Cell As per IS 1828 (Part -1)/ ISO 7500	1 kN to 10 kN	0.23 %
154	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Universal Testing Machine in Tension / Tensile Testing Machine (TTM)	Using Master Load Cell As per IS 1828 (Part -1)/ ISO 7500	10 kN to 100 kN	0.24 %
155	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Universal Testing Machine in Tension / Tensile Testing Machine (TTM)	Using Master Load Cell As per IS 1828 (Part -1)/ ISO 7500	100 KN to 500 KN	0.3

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 71 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
156	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Universal Testing Machine in Tension / Tensile Testing Machine (TTM)	Using Master Load Cell As per IS 1828 (Part -1)/ ISO 7500	100 N to 1 kN	0.31 %
157	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Verification of Displacement Measuring System in Universal Testing Machine (UTM/TTM).	Using Height Gauge by Comparison Method	0.5 mm to 1000 mm	14 µm
158	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Verification of Speed for Universal Testing Machine (UTM/TTM)	Using Height gauge and Stop Watch by Comparison Method	0.01 mm/min to 1000 mm/min	54 µm/min
159	MECHANICAL-WEIGHING SCALE AND BALANCE	Electronic Weighing Balance (Class I and Coarser, d = 0.01 mg and Coarser)	Using Standard Weights(E1 Class) as per OIML R-76-1	1 mg to 80 g	0.025 mg
160	MECHANICAL-WEIGHING SCALE AND BALANCE	Electronic Weighing Balance (Class I and Coarser, d = 0.1 mg and Coarser)	Using Standard Weights(E1 Class) as per OIML R-76-1	10 mg to 220 g	0.080 mg
161	MECHANICAL-WEIGHING SCALE AND BALANCE	Electronic Weighing Balance (Class II and Coarser, d = 1 g and Coarser)	Using F1 Class Standard Weights as per OIML R 76	1 g to 35 kg	1 g
162	MECHANICAL-WEIGHING SCALE AND BALANCE	Electronic Weighing Balance (Class II and Coarser, d = 10 mg and Coarser)	Using E2 Class Standard Weights as per OIML R 76	10 mg to 1 kg	7.35 mg

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 72 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
163	MECHANICAL-WEIGHING SCALE AND BALANCE	Electronic Weighing Balance (Class III and Coarser, d = 100 mg and Coarser)	Using F1 Class Standard Weights as per OIML R 76	100 mg to 6.1 kg	76 mg
164	MECHANICAL-WEIGHING SCALE AND BALANCE	Electronic Weighing Balance (Class IV and Coarser, d = 100 g and Coarser)	Using M1 Class Standard Weights as per OIML R 76	500 g to 1000 kg	100 g
165	MECHANICAL-WEIGHING SCALE AND BALANCE	Electronic Weighing Balance (Class IV and Coarser, d = 20 g and Coarser)	Using M1 Class Standard Weights as per OIML R 76	50 g to 200 kg	16.9 g
166	MECHANICAL-WEIGHING SCALE AND BALANCE	Electronic Weighing Balance (Class IV and Coarser, d = 50 g and Coarser)	Using M1 Class Standard Weights as per OIML R 76	500 g to 300 kg	30.56
167	MECHANICAL-WEIGHING SCALE AND BALANCE	Electronic Weighing Balance (Class IV and Coarser, d = 500 g and Coarser)	Using M1 Class Standard Weights as per OIML R 76	1 kg to 3000 kg	326.6 g
168	MECHANICAL-WEIGHING SCALE AND BALANCE	Electronic Weighing Balance (Class IV and Coarser, d=10 g and Coarser)	Using M1 Class Standard Weights as per OIML R 76	10 g to 100 kg	13.59 g
169	THERMAL-SPECIFIC HEAT & HUMIDITY	Humidity & Temperature Chamber/ Environmental Chamber/ Climatic Chamber (Multiposition calibration) @25 °C	Using Humidity Transmitter with Paperless Recorder by Comparison method with minimum 9 sensors	20 %RH to 95 %RH	1.98 %RH

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 73 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
170	THERMAL-SPECIFIC HEAT & HUMIDITY	Indicator with sensor of Humidity & Temperature Chamber/ Environmental Chamber/Climatic Chamber/ Temperature & Humidity Indicators (20 °C to 50 °C)-Single Position	Using Digital Temperature & Humidity Indicator with Sensor by Comparison method	20 %RH to 95 %RH	1.26 %RH
171	THERMAL-TEMPERATURE	Indicator of Oven, Furnace, Dry Block Furnace, Dry Block Calibrators, Temperature Bath for industrial purpose only (Single Position)	Using S-Type Thermocouple with Indicator by Comparison Method	250 °C to 1200 °C	1.44 °C
172	THERMAL-TEMPERATURE	Indicator with sensor of Deep Freezer, Refrigerator, Oven, Low Temperature Bath/ Dry Block Calibrators,/ incubator for industrial purpose only (Single Position)	Using 4-Wire RTD Sensor with Indicator by Comparison Method	-80 °C to 50 °C	0.27 °C
173	THERMAL-TEMPERATURE	Indicator with sensor of Oven,Autoclave,Low Temperature Bath, Dry Block Calibrators, / incubator for industrial purpose only (Single Position)	Using 4-Wire RTD Sensor with Indicator by Comparison Method	50 °C to 250 °C	0.36 °C

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 74 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
174	THERMAL-TEMPERATURE	Non-Contact Type Thermometer (Infrared Thermometer / Digital Pyrometer /Thermal Imager)	Using Infrared Thermometer & Black Body Source (Emissivity: 0.95) By comparison method	50 °C to 500 °C	1.20 °C
175	THERMAL-TEMPERATURE	Non-Contact Type Thermometer (Infrared Thermometer / Digital Pyrometer)	Using Infrared Thermometer & Black Body Source (Emissivity: 0.95) By comparison method	0 °C to 100 °C	1.47 ° C
176	THERMAL-TEMPERATURE	RTDs, Thermocouple With & Without indicator/ Controllers, Temperature Indicator With Sensor, Temperature Gauge, Data Logger With Sensor, Temperature Transmitter/Switch, Temperature Transducer with indicators	Using SSPRT Sensor with Multimeter, 6.5 Digit Multimeter,MultiFunction calibrator, Hot Bath by Comparison Method	50 °C to 250 °C	0.35 °C

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 75 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
177	THERMAL-TEMPERATURE	RTDs, Thermocouple With & Without indicator/ Controllers, Temperature Indicator With Sensor, Data Logger With Sensor, Temperature Transmitter/Switch, Temperature Transducer with Indicators	Using SSPRT Sensor with Multimeter, S-Type thermocouple with indicator, 6.5 Digit Multimeter,MultiFunction Calibrator , Dry Block Calibrator by Comparison Method	250 °C to 650 °C	0.54 °C
178	THERMAL-TEMPERATURE	RTDs, Thermocouple With & Without indicator/ Controllers, Temperature Indicator With Sensor, Temperature Gauge, Data Logger With Sensor, Temperature Transmitter/Switch, Temperature Transducer with indicators	Using SSPRT Sensor with Multimeter indicator Cold Bath by Comparison Method	(-)30 °C to 50 °C	0.27 °C
179	THERMAL-TEMPERATURE	Thermal Chamber, Furnace, Oven (Multi position calibration)	Using Multiple N-Type Thermocouple (Minimum 9 Sensors) with Paperless Recorder by Comparison Method as per AMS2750	250 °C to 1200 °C	3.65 °C

SCOPE OF ACCREDITATION

Laboratory Name : ROOTS METROLOGY & TESTING LABORATORY (UNIT OF ROOTS INDUSTRIES INDIA PRIVATE LIMITED), DOOR NO. 1/55, SURVEY NO. 25/9B2A & 9B3A, POONAMALLEE HIGH ROAD, VANAGARAM, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3939 **Page No** 76 of 76

Validity 31/03/2025 to 30/03/2029 **Last Amended on** 18/04/2025

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
180	THERMAL-TEMPERATURE	Thermal Chamber/ Oven/ Fluid Bath/ Refrigerator/ Deep Freezer/Cold Room, Autoclave / incubator for industrial purpose only (Multiposition calibration)	Using Multiple RTD Sensors with Paperless Recorder by Comparison Method as per IEC 60068-3-11/DKD R-5-7/AMS2750	(-)80 °C to 250 °C	1.75 °C
181	THERMAL-TEMPERATURE	Thermocouple With & Without indicator/ Controllers, Temperature Indicator With Sensor, Data Logger With Sensor, Temperature Transmitter/ Switch, Temperature Transducer with Indicators	Using S-type Thermocouple with MultiFunction Calibrator,6.5 Digit Multimeter and Dry Block Calibrators by Comparison Method	650 °C to 1200 °C	1.38 °C

*** CMCs represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k = 2.**