SCOPE OF ACCREDITATION

Laboratory Name :	MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA
Accreditation Standard	ISO/IEC 17025:2017
Certificate Number	CC-3598
Validity	15/06/2023 to 12/04/2024

Last Amended on -

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)	Capacitance @ 1 kHz	Using Precision LCR Meter by Direct / Comparison Method	1 nF to 10 µF	0.062 % to 0.09 %
2	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Capacitance @ 1 kHz	Using Precision LCR Meter by Direct / Comparison Method	100 pF to 1 nF	0.064 % to 0.061 %
3	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ (1 kHz to 5 kHz)	Using 8.5 Digit DMM by Direct / Comparison Method	100 mA to 1 A	0.064 % to 0.14 %
4	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ (1 kHz to 5 kHz)	Using 8.5 Digit DMM by Direct / Comparison Method	5 mA to 100 mA	0.085 % to 0.064 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 2 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
5	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ (40 Hz to 10 kHz)	Using 8.5 Digit DMM & Current Shunt by Direct / Comparison Method	1 A to 20 A	0.026%
6	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ (45 Hz to 1 kHz)	Using 8.5 Digit DMM by Direct / Comparison Method	1 mA to 10 mA	0.14 % to 0.059 %
7	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ (45 Hz to 1 kHz)	Using 8.5 Digit DMM by Direct / Comparison Method	10 µA to 100 µA	0.45 % to 0.19 %
8	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ (45 Hz to 1 kHz)	Using 8.5 Digit DMM by Direct / Comparison Method	10 mA to 100 mA	0.060%
9	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ (45 Hz to 1 kHz)	Using 8.5 Digit DMM by Direct / Comparison Method	100 µA to 1 mA	0.19 % to 0.14 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 3 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
10	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ (50 Hz to 1 kHz)	Using 8.5 Digit DMM by Direct / Comparison Method	100 mA to 1 A	0.060 % to 0.12 %
11	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ (50 Hz)	Using 8.5 Digit DMM & CT by Direct / Comparison Method	100 A to 1000 A	0.10 % to 0.12 %
12	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ 50Hz	Using 8.5 Digit DMM & CT by Direct / Comparison Method	20 A to 100 A	0.026 % to 0.10 %
13	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	High Voltage	Using HV Probe with Indicator by Direct Method	1 kV RMS to 28 kV RMS	3.8%
14	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Inductance @ 1 kHz	Using Precision LCR Meter by Direct / Comparison Method	1 H to 10 H	0.091 % to 0.96 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 4 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
15	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Inductance @ 1 kHz	Using Precision LCR Meter by Direct / Comparison Method	1 mH to 100 mH	0.091 % to 0.066 %
16	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Inductance @ 1 kHz	Using Precision LCR Meter by Direct / Comparison Method	100 µH to 1 mH	0.26 % to 0.091 %
17	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Inductance @ 1 kHz	Using Precision LCR Meter by Direct / Comparison Method	100 mH to 1 H	0.066 % to 0.091 %
18	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Power @ 50Hz (Single/Three Phase) (Voltage: 63.5 V to 230 V, Current: 0.5 A to 5 A) @ UPF	Using Digital Power Meter by Direct Method	31.75 W to 3.6 kW	1.8 % to 0.26 %
19	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Resistance @ 1 kHz	Using Precision LCR meter by Direct Method	1 ohm to 10 ohm	0.069%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 5 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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) (Measure)	Resistance @ 1 kHz	Using Precision LCR Meter by Direct Method	10 Ohm to 10 kOhm	0.063 % to 0.064 %
21	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 1 kHz to 20 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	1 mV to 10 mV	0.28 % to 0.22 %
22	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 1 kHz to 20 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	10 mV to 100 mV	0.22 % to 0.072 %
23	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 1 kHz to 20 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	100 mV to 100 V	0.072% to 0.061%
24	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 1 kHz to 20 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	100 V to 700 V	0.061 % to 0.075 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 6 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
25	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 20 kHz to 50 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	1 mV to 10 mV	0.33 % to 0.74 %
26	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 20 kHz to 50 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	10 mV to 100 mV	0.29 % to 0.072 %
27	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 20 kHz to 50 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	100 mV to 100 V	0.079 % to 0.070 %
28	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 20 kHz to 50 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	100 V to 700 V	0.07 % to 0.14 %
29	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 45 Hz to 1 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	1 mV to 10 mV	0.26 % to 0.045 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 7 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
30	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 45 Hz to 1 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	10 mV to 100 mV	0.045 % to 0.03 %
31	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 45 Hz to 1 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	100 mV to 100 V	0.03 % to 0.061 %
32	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 45 Hz to 1 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	100 V to 700 V	0.061 % to 0.05 %
33	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 45 Hz to 1 kHz	Using 6.5 Digit DMM by Direct / Comparison Method	700 V to 1000 V	0.05 % to 0.1 %
34	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 50 kHz to 100 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	1 mV to 10 mV	0.74 % to 0.63 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 8 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
35	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 50 kHz to 100 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	10 mV to 100 mV	0.79 % to 0.12 %
36	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 50 kHz to 100 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	100 mV to 300 V	0.12 % to 0.35 %
37	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance @ 1 kHz	Using Standard Capacitance Box by Direct Method	1 µF to 10 µF	0.13 % to 0.16 %
38	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance @ 1 kHz	Using Standard Capacitance Box by Direct Method	1 nF to 10 nF	0.13 % to 0.34 %
39	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance @ 1 kHz	Using Standard Capacitance Box by Direct Method	10 nF to 100 nF	0.34 % to 0.14 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 9 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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-Alternating Current (< 1 GHz) (Source)	Capacitance @ 1 kHz	Using Standard Capacitance Box by Direct Method	100 nF to 1 µF	0.14 % to 0.13 %
41	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance @ 1 kHz	Using Standard Capacitance Box by Direct Method	100 pF to 1 nF	0.17 % to 0.13 %
42	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (1 kHz to 5 kHz)	Using Multi function Calibrator by Direct Method	1 mA to 19 mA	0.25 % to 0.10 %
43	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (1 kHz to 5 kHz)	Using Multi function Calibrator by Direct Method	19 mA to 329 mA	0.10 % to 0.13 %
44	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (1 kHz to 5 kHz)	Using Multi function Calibrator by Direct Method	3 A to 20 A	0.73 % to 3.49 %
45	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (1 kHz to 5 kHz)	Using Multi function Calibrator by Direct Method	329 mA to 3 A	0.13 % to 0.73 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 10 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
46	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (45 Hz to 1 kHz)	Using Multi function Calibrator by Direct Method	1 mA to 19 mA	0.13 % to 0.058 %
47	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (45 Hz to 1 kHz)	Using Multi function Calibrator by Direct Method	19 mA to 3 A	0.058 % to 0.073 %
48	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (45 Hz to 1 kHz)	Using Multi function Calibrator by Direct Method	3 A to 20 A	0.073 % to 0.20 %
49	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (5 kHz to 10 kHz)	Using Multi function Calibrator by Direct Method	1 mA to 19 mA	0.61 % to 0.25 %
50	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (5 kHz to 10 kHz)	Using Multi function Calibrator by Direct Method	19 mA to 329 mA	0.25 % to 0.27 %
51	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (5 kHz to 10 kHz)	Using Multi function Calibrator by Direct Method	329 mA to 3 A	0.27 % to 0.77 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 11 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
52	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (50 Hz to 1 kHz)	Using Multi function Calibrator, Transconductance Amplifier with Current Coil by Direct Method	20 A to 1000 A	1.2%
53	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Inductance @ 1 kHz	Using Standard Inductance Box by Direct Method	1 H to 10 H	0.15 % to 0.89 %
54	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Inductance @ 1 kHz	Using Standard Inductance Box by Direct Method	100 µH to 1000 µH	0.3 % to 0.15 %
55	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Inductance @ 1 kHz	Using Standard Inductance Box by Direct Method	1000 µH to 1000 mH	0.15%
56	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Power / Energy (Single / Three Phase) (Voltage 63.5 V to 230 V, Current 0.5 A to 15 A)@ UPF	Using Three Phase Power Calibrator by Direct Method	31.75 W to 10.35 kW	0.33%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 12 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
57	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Power @ 50 Hz (Single Phase)@0.5 Lead & Lag	Using Multi function Calibrator by Direct Method	6 W to 2.4 kW	0.10 % to 0.12 %
58	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Power @ 50 Hz (Single Phase)@0.8 Lead & Lag	Using Multi function Calibrator by Direct Method	9.6 W to 1.92 kW	0.10 % to 0.12 %
59	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Power @ 50 Hz (Single Phase)@UPF	Using Multi function Calibrator by Direct Method	1.2 W to 3 kW	0.10 % to 0.12 %
60	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Power Factor @ 50 Hz	Using Power Calibrator by Direct Method	0.2 lag to 1 UPF	0.0021 PF to 0.0031 PF
61	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Power Factor @ 50 Hz	Using Power Calibrator by Direct Method	1 UPF to 0.2 Lead	0.0031 PF to 0.0021 PF
62	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Resistance @ 1 kHz	Using Standard Resistance Box by Direct Method	1 ohm to 10 ohm	0.27 % to 0.076 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 13 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
63	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Resistance @ 1 kHz	Using Standard Resistance Box by Direct Method	10 Ohm to 1000 Ohm	0.076 % to 0.071 %
64	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Resistance @ 1 kHz	Using Standard Resistance Box by Direct Method	1000 Ohm to 10 kOhm	0.071 % to 0.081 %
65	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (1 kHz to 10 kHz)	Using Multi function Calibrator by Direct Method	3 mV to 30 mV	0.72 % to 0.10 %
66	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (1 kHz to 10 kHz)	Using Multi function Calibrator by Direct Method	30 mV to 300 V	0.10 % to 0.02 %
67	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (1 kHz to 10 kHz)	Using Multi function Calibrator by Direct Method	300 mV to 30 V	0.02 % to 0.054 %
68	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (10 Hz to 45 Hz)	Using Multi function Calibrator by Direct Method	3 mV to 30 mV	0.79 % to 0.14 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 14 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
69	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (10 Hz to 45 Hz)	Using Multi function Calibrator by Direct Method	30 mV to 300 mV	0.14 % to 0.04 %
70	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (10 Hz to 45 Hz)	Using Multi function Calibrator by Direct Method	300 mV to 30 V	0.04%
71	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (10 kHz to 50 kHz)	Using Multi function Calibrator by Direct Method	3 mV to 30 mV	0.81 % to 0.16 %
72	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (10 kHz to 50 kHz)	Using Multi function Calibrator by Direct Method	30 mV to 300 mV	0.16 % to 0.04 %
73	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (10 kHz to 50 kHz)	Using Multi function Calibrator by Direct Method	300 mV to 30 V	0.04 % to 0.066 %
74	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (45 Hz to 1 kHz)	Using Multi function Calibrator by Direct Method	1 mV to 30 mV	0.72 % to 0.12 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 15 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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-Alternating Current (< 1 GHz) (Source)	Voltage @ (45 Hz to 1 kHz)	Using Multi function Calibrator by Direct Method	30 mV to 300 mV	0.12 % to 0.02 %
76	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (45 Hz to 1 kHz)	Using Multi function Calibrator by Direct Method	300 mV to 1000 V	0.02 % to 0.035 %
77	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Current	Using 8.5 Digit DMM by Direct / Comparison Method	1 µA to 10 µA	0.0073 % to 0.004 %
78	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Current	Using 8.5 Digit DMM by Direct / Comparison Method	1 A to 10 A	0.014 % to 0.28 %
79	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Current	Using 8.5 Digit DMM by Direct / Comparison Method	1 mA to 10 mA	0.0035%
80	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Current	Using 8.5 Digit DMM by Direct / Comparison Method	10 µA to 1 mA	0.004 % to 0.0035 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 16 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
81	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Current	Using 8.5 Digit DMM by Direct / Comparison Method	10 mA to 100 mA	0.0035 % to 0.005 %
82	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Current	Using 8.5 Digit DMM & Current Shunt by Direct / Comparison Method	100 A to 1000 A	0.29 % to 0.4 %
83	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Current	Using 8.5 Digit DMM by Direct / Comparison Method	100 mA to 1 A	0.005 % to 0.014 %
84	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Current	Using 8.5 Digit DMM & Current Shunt by Direct / Comparison Method	20 A to 50 A	0.012%
85	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Current	Using 8.5 Digit DMM & Current Shunt by Direct / Comparison Method	50 A to 100 A	0.012 % to 0.29 %
86	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 8.5 Digit DMM & Current Shunt by Direct / Comparison Method	1A to 20A	0.014% to 0.012%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 17 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
87	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	High Voltage	Using HV Probe with Indicator by Direct / Comparison Method	1 kV to 5 kV	1.7%
88	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	High Voltage	Using HV Probe with Indicator by Direct / Comparison Method	5 kV to 40 kV	1.7 % to 2.0 %
89	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM by Direct / Comparison Method	1 kOhm to 1 MOhm	0.0015 % to 0.0025 %
90	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM & Calibrator by V / I Method	1 mOhm	0.004%
91	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM by Direct / Comparison Method	1 MOhm to 10 MOhm	0.0025 % to 0.012 %
92	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM & Calibrator by V / I Method	1 mOhm to 10 mOhm	0.004 % to 0.034 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 18 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
93	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM by Direct / Comparison Method	1 ohm to 10 ohm	0.0076 % to 0.0025 %
94	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM & Calibrator by V / I Method	10 GOhm to 100 GOhm	0.66 % to 2.5 %
95	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM by Direct / Comparison Method	10 MOhm to 100 MOhm	0.012 % to 0.091 %
96	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM & Calibrator by V / I Method	10 mOhm to 100 mOhm	0.034 % to 0.033 %
97	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM by Direct / Comparison Method	10 Ohm to 100 Ohm	0.0025 % to 0.0021 %
98	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM by Direct / Comparison Method	100 MOhm to 1 GOhm	0.091 % to 0.81 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 19 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
99	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM & Calibrator by V / I Method	100 mohm to 1000 mohm	0.036 % to 0.024 %
100	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM by Direct / Comparison Method	100 Ohm to 1 kOhm	0.0026 % to 0.0015 %
101	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Voltage	Using 8.5 Digit DMM by Direct / Comparison Method	0.01 mV to 0.1 mV	3.61 % to 0.37 %
102	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Voltage	Using 8.5 Digit DMM by Direct / Comparison Method	0.1 mV to 1 mV	0.37 % to 0.037 %
103	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Voltage	Using 8.5 Digit DMM by Direct / Comparison Method	1 mV to 10 mV	0.037 % to 0.0046 %
104	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Voltage	Using 8.5 Digit DMM by Direct / Comparison Method	1 V to 1000 V	0.0010 % to 0.0012 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 20 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
105	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Voltage	Using 8.5 Digit DMM by Direct / Comparison Method	10 mV to 100 mV	0.0046 % to 0.0014 %
106	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Voltage	Using 8.5 Digit DMM by Direct / Comparison Method	100 mV to 1 V	0.0014 % to 0.0010 %
107	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Current	Using Multi function Calibrator by Direct Method	10 µA to 100 µA	0.25 % to 0.040 %
108	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Current	Using Multi function Calibrator by Direct Method	100 µA to 329 µA	0.040 % to 0.024 %
109	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Current	Using Multi function Calibrator, Transconductance Amplifier with Current Coil by Direct Method	100 A to 1000 A	0.41 % to 1.2 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 21 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
110	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Current	Using Multi function Calibrator by Direct Method	2.99 A to 20 A	0.046 % to 0.12 %
111	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Current	Using Multi function Calibrator, Transconductance Amplifier with Current Coil by Direct Method	20 A to 100 A	0.035 % to 0.41 %
112	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Current	Using Multi function Calibrator by Direct Method	3.29 mA to 329 mA	0.013 % to 0.016 %
113	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Current	Using Multi function Calibrator by Direct Method	329 µA to 3.29 mA	0.024 % to 0.013 %
114	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Current	Using Multi function Calibrator by Direct Method	329 mA to 2.99 A	0.016 % to 0.046 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 22 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
115	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Power (Voltage 10 V to 1000 V, Current 10 mA to 20 A)	Using Multifunction Calibrator by Direct Method	0.1 W to 20 kW	0.027 % to 0.12 %
116	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Fixed Resistor by Direct Method	1 mohm	0.084%
117	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Multi function Calibrator by Direct Method	1 Mohm to 100 Mohm	0.004 % to 0.062 %
118	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Standard Resistance Box by Direct Method	1 Ohm to 10 Ohm	0.014 % to 0.012 %
119	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Fixed Resistor by Direct Method	10 GOhm	1.3%
120	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Fixed Resistor by Direct Method	10 mohm	0.027%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 23 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
121	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Standard Resistance Box by Direct Method	10 mohm to 100 mohm	0.028%
122	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Multi function Calibrator by Direct Method	10 Ohm to 30 Ohm	0.012 % to 0.0074 %
123	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Fixed Resistor by Direct Method	100 GOhm	3.4%
124	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Standard Resistance Box by Direct Method	100 mohm to 1000 mohm	0.028 % to 0.038 %
125	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Standard Resistance Box by Direct Method	100 MOhm to 1000 MOhm	0.63 % to 1 %
126	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Multi function Calibrator by Direct Method	100 Ohm to 1 Mohm	0.003 % to 0.004 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 24 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
127	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Multi function Calibrator by Direct Method	30 Ohm to 100 Ohm	0.009 % to 0.003 %
128	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Current Shunt by Direct Method	375 µohm	0.30%
129	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Current Shunt by Direct Method	75 µohm	0.31%
130	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Current Shunt by Direct Method	750 µohm	0.31%
131	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Voltage	Using Multifunction Calibrator by Direct Method	0.1 mV to 2 mV	1.2 % to 0.3 %
132	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Voltage	Using Multifunction Calibrator by Direct Method	1 mV to 10 mV	0.12 % to 0.017 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 25 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
133	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Voltage	Using Multifunction Calibrator by Direct Method	1 V to 1000 V	0.0015 % to 0.0023 %
134	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Voltage	Using Multifunction Calibrator by Direct Method	10 mV to 100 mV	0.017 % to 0.0036 %
135	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Voltage	Using Multi function Calibrator by Direct Method	100 mV to 1 V	0.0036 % to 0.0017 %
136	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope Calibration (Amplitude)	Using Programmable Oscilloscope Calibrator by Direct Method	8 mV to 50 V	0.51%
137	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope Calibration (Band Width)	Using Signal Generator by Direct Method	50 kHz to 1 GHz	11.8%
138	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope Calibration (Time Base)	Using Programmable Oscilloscope Calibrator by Direct Method	1 ns to 100 ms	0.0060%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 26 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
139	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	B-Type Thermocouple	Using 8.5 Digit DMM by Direct / Comparison Method	600 °C to 1820 °C	0.063 °C to 0.045 °C
140	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	E-Type Thermocouple	Using 8.5 Digit DMM by Direct / Comparison Method	-200 °C to 1000 °C	0.020 °C to 0.015 °C
141	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	J-Type Thermocouple	Using 8.5 Digit DMM by Direct / Comparison Method	-200 °C to 1200 °C	0.023 °C to 0.019 °C
142	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	K-Type Thermocouple	Using 8.5 Digit DMM by Direct / Comparison Method	-200 °C to 1372 °C	0.026 °C to 0.028 °C
143	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	N-Type Thermocouple	Using 8.5 Digit DMM by Direct / Comparison Method	-200 °C to 1300 °C	0.04 °C to 0.024 °C
144	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	R-Type Thermocouple	Using 8.5 Digit DMM by Direct / Comparison Method	-50 °C to 1768 °C	0.094°C

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 27 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RTD type	Using 8.5 Digit DMM by Direct / Comparison Method	-200 °C to 850 °C	0.0022 °C to 0.018 °C
146	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	S-Type Thermocouple	Using 8.5 Digit DMM by Direct / Comparison Method	-50 °C to 1768 °C	0.089 °C to 0.054 °C
147	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	T-Type Thermocouple	Using 8.5 Digit DMM by Direct / Comparison Method	-200 °C to 400 °C	0.026 °C to 0.011 °C
148	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	B-Type Thermocouple	Using Temperature Calibrator by Direct Method	450 °C to 1800 °C	0.95°C
149	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	E-Type Thermocouple	Using Temperature Calibrator by Direct Method	-200 °C to 1000 °C	0.55°C
150	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	J-Type Thermocouple	Using Temperature Calibrator by Direct Method	-200 °C to 1200 °C	0.17 °C to 0.38 °C

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 28 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
151	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	K-Type Thermocouple	Using Temperature Calibrator by Direct Method	-200 °C to 1350 °C	0.18 °C to 0.44 °C
152	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	N-Type Thermocouple	Using Temperature Calibrator by Direct Method	-200 °C to 1350 °C	0.16 °C to 0.42 °C
153	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	R-Type Thermocouple	Using Temperature Calibrator by Direct Method	0 °C to 1750 °C	0.95°C
154	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	RTD type	Using Temperature Calibrator by Direct Method	-200 °C to 800 °C	0.24 °C to 0.35 °C
155	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	S-Type Thermocouple	Using Temperature Calibrator by Direct Method	0 °C to 1750 °C	0.9°C
156	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	T-Type Thermocouple	Using Temperature Calibrator by Direct Method	-240 °C to 400 °C	0.5°C

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 29 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
157	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency	Using Universal Frequency Counter by Direct /Comparison Method	1 Hz to 10 Hz	0.00058%
158	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency	Using Universal Frequency Counter by Direct /Comparison Method	10 Hz to 2.4 GHz	0.00059%
159	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time Interval	Using Digital Timer by Comparison Method	0.1 s to 1 s	0.0069 s to 0.0094 s
160	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time Interval	Using Digital Timer by Comparison Method	1 s to 10 s	0.0094 s to 0.018 s
161	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time Interval	Using Digital Timer by Comparison Method	10 s to 100 s	0.018 s to 0.052 s
162	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time Interval	Using Digital Timer by Comparison Method	100 s to 1000 s	0.052 s to 0.17 s

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 30 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time Interval	Using Digital Timer by Comparison Method	1000 s to 10000 s	0.17 s to 1.6 s
164	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time Interval	Using Digital Timer by Comparison Method	10000 s to 86400 s	1.6 s to 10.1 s
165	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Using Signal Generator by Direct Method	1 Hz to 10 Hz	0.0065 % to 0.0021 %
166	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Using Signal Generator by Direct Method	10 Hz to 100 Hz	0.0021 % to 0.0023 %
167	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Using Signal Generator by Direct Method	100 Hz to 1000 MHz	0.0023 % to 0.0037 %
168	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Using Signal Generator by Direct Method	1000 MHz to 2.4 GHz	0.0037 % to 0.0014 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 31 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
169	MECHANICAL-ACCELERATION AND SPEED	RPM / Speed (Contact Type) Tachometers, Speed Meters, RPM Meters, RPM Indicators of Centrifuges, RPM Source/Calibrators	Using Digital Stop Watch by Comparison Method	1 RPM to 10 RPM	0.78% to 0.16%
170	MECHANICAL-ACCELERATION AND SPEED	RPM / Speed (Contact Type) Tachometers, Speed Meters, RPM Meters, RPM Indicators of Centrifuges, RPM Source/Calibrators	Using Master Tachometer by Comparison Method as per SANAS TR 45-02	10 RPM to 100 RPM	0.16% to 0.30%
171	MECHANICAL-ACCELERATION AND SPEED	RPM / Speed (Contact Type) Tachometers, Speed Meters, RPM Meters, RPM Indicators of Centrifuges, RPM Source/Calibrators	Using Master Tachometer by Comparison Method as per SANAS TR 45-02	100 RPM to 5000 RPM	0.30% to 0.015%
172	MECHANICAL-ACCELERATION AND SPEED	RPM / Speed (Contact Type) Tachometers, Speed Meters, RPM Meters, RPM Indicators of Centrifuges, RPM Source/Calibrators	Using Master Tachometer by Comparison Method as per SANAS TR 45-02	5000 RPM to 8000 RPM	0.015% to 0.019%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 32 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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-ACCELERATION AND SPEED	RPM / Speed (Non-Contact Type) Tachometers, Speed Meters, RPM Meters, RPM Indicators of Centrifuges, RPM Source/Calibrators, Proximity Sensors	Using Master Tachometer by Comparison Method as per SANAS TR 45-02	100 RPM to 10000 RPM	0.30 % to 0.019%
174	MECHANICAL-ACCELERATION AND SPEED	RPM / Speed (Non-Contact Type) Tachometers, Speed Meters, RPM Meters, RPM Indicators of Centrifuges, RPM Source/Calibrators, Proximity Sensors	Using Digital Stop Watch by Comparison Method	1 RPM to 10 RPM	0.59% to 0.12%
175	MECHANICAL-ACCELERATION AND SPEED	RPM / Speed (Non-Contact Type) Tachometers, Speed Meters, RPM Meters, RPM Indicators of Centrifuges, RPM Source/Calibrators, Proximity Sensors	Using Master Tachometer by Comparison Method as per SANAS TR 45-02	10 RPM to 100 RPM	0.12% to 0.30%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 33 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
176	MECHANICAL-ACCELERATION AND SPEED	RPM / Speed (Non-Contact Type) Tachometers, Speed Meters, RPM Meters, RPM Indicators of Centrifuges, RPM Source/Calibrators, Proximity Sensors	Using Master Tachometer by Comparison Method as per SANAS TR 45-02	10000 RPM to 90000 RPM	0.019% to 0.0054%
177	MECHANICAL-ACCELERATION AND SPEED	RPM / Speed (Non-Contact Type) Tachometers, Speed Meters, RPM Meters, RPM Indicators of Centrifuges, RPM Source/Calibrators, Proximity Sensors	Using Master Tachometer by Comparison Method as per SANAS TR 45-02	90000 RPM to 99900 RPM	0.0036% to 0.0035%
178	MECHANICAL-ACCELERATION AND SPEED	Vibration Meters (@ 10 Hz to 160 Hz) Acceleration	Using Master Vibration meter with Vibration Calibrator by Comparison Method	1.5 m/s^2 to 30 m/s^2	2.1%
179	MECHANICAL-ACCELERATION AND SPEED	Vibration Meters (@ 10 Hz to 160 Hz) Displacement	Using Master Vibration meter with Vibration Calibrator by Comparison Method	0.010 mm to 1.000 mm	9.14%
180	MECHANICAL-ACCELERATION AND SPEED	Vibration Meters (@ 10 Hz to 160 Hz) Displacement	Using Master Vibration meter with Vibration Calibrator by Comparison Method	1.000 mm to 2.000 mm	2.6%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 34 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
181	MECHANICAL-ACCELERATION AND SPEED	Vibration Meters (@ 10 Hz to 160 Hz) Velocity	Using Master Vibration meter with Vibration Calibrator by Comparison Method	1.5 mm/s to 100 mm/s	3%
182	MECHANICAL-ACOUSTICS	Sound Level Meter	Using Sound Level Calibrator by Direct Method	94 & 114 dB @1 kHz	0.30dB
183	MECHANICAL-DENSITY AND VISCOSITY	Specific Gravity / Relative Density (Density Hydrometer, Alcoholometer, Brix Hydrometer, Twiddle Hydrometer, Lactometer, Baume Hydrometer, Be° Hydrometer, °API)	Using E1 Standard Weights and Precision Weighing Balance by Cuckow's Hydrostatic Weighing Method	0.6 g/ml to 2.0 g/ml	0.00015g/ml
184	MECHANICAL-DENSITY AND VISCOSITY	Viscosity (Kinematic Viscosity of Newtonian Liquids)	Using Standard Newtonaian Liquids and Viscometer	0.8 cSt to 300000 cSt	0.18 % to 0.45 %
185	MECHANICAL-DENSITY AND VISCOSITY	Viscosity (Dynamic Viscosity) Rotational Viscometer	Using Standard Viscosity Liquids	7.5 cP to 100000 cP	0.14 % to 0.27 %
186	MECHANICAL-DENSITY AND VISCOSITY	Viscosity (Flow Cups) Ford Cup, Zahn, Sheen, ISO, Shell	Using Standard Viscosity Liquids	5 cSt to 1800 cSt	0.63%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 35 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
187	MECHANICAL-DENSITY AND VISCOSITY	Viscosity (Kinematic Viscosity - Direct Flow) Capillary Viscometer	Using Standard Capillary Viscometer & Viscosity Liquids	0.004 mm^2/s^2 to 20 mm^2/s^2	0.19 % to 0.45 %
188	MECHANICAL-DENSITY AND VISCOSITY	Viscosity (Kinematic Viscosity - Reverse Flow) Capillary Viscometer	Using Standard Capillary Viscometer & Viscosity Liquids	0.004 mm^2/s^2 to 20 mm^2/s^2	0.19 % to 0.45 %
189	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Angle Gauge	Using Slip Gauge Set (Gr. 0), Sine Bar & Dial Indicator / Profile Projector by Comparison Method	1/4 ° to 30 °	5 Arc of Minutes
190	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Bench Centre (Coaxiality & Parallelism)	Using Test Mandrel & Dial Indicator by Comparison Method	100 mm to 300 mm	8µm
191	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Bevel Protractor / Combination Set Resolution: 1 min	Using Angle Blocks by Comparison Method	0 ° to 90 °	2.40 Arc of Minutes

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 36 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
192	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Bore Dial Gauge (For Transmission Only) L.C 0.001 mm	Using Dial Calibration Tester / Slip Gauge Set & Dial Indicator by Comparison Method	0 to 1 mm	2.2µm
193	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Calipers (Digital/Dial/Vernier) Resolution: 0.01 mm	Using Slip Gauge Set (Gr 0) / Caliper Checker by Comparison Method	0 to 600 mm	10µm
194	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Calipers (Digital/Dial/Vernier) Resolution: 0.01 mm	Using Slip Gauge Set (Gr 0), Long Slip Gauge Set by Comparison Method	1000 mm to 2000 mm	19µm
195	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Calipers (Digital/Dial/Vernier) Resolution: 0.01 mm	Using Slip Gauge Set (Gr 0), Long Slip Gauge Set by Comparison Method	0 to 1000 mm	12µm
196	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Clinometer / Inclinometer Resolution: 0.01°	Using Angle Blocks by Comparison Method	0 ° to 90 °	2.4 Arc of Minutes

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 37 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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.)	Coating Thickness Gauge Resolution: 0.1 µm	Using Standard Foils by Comparison Method	0.01 mm to 2 mm	1.8µm
198	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Comparator Stand (Flatness Only)	Using Dial Indicator by Comparison Method	50 x 50 mm to 300 x 300 mm	1.2µm
199	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Cylinderical Pins	Using Electronic Probe with DRO by Comparison Method	0.1 mm to 20 mm	1.20µm
200	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Depth Gauge (Digital / Dial / Vernier) Resolution: 0.01 mm	Using Slip Gauge Set (Gr 0) / Long Slip Gauges by Comparison Method	0 to 600 mm	8.60µm
201	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Depth Micrometer (Analog / Digital) Resolution: 0.001 mm	Using Slip Gauge Set (Gr 0) by Comparison Method	0 to 300 mm	4.4µm

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 38 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
202	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Dial / Digital Gauge (Plunger Type) / Comparator / LVDT / Probes Resolution: 0.0001 mm	Using Dial Calibration Tester / Comparator Stand & Slip Gauge Set (Gr 0) By Comparison Method	0 to 100 mm	1.20µm
203	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Dial / Digital Test Indicator (Lever Type) Resolution: 0.001 mm	Using Dial Calibration Tester by Comparison Method	0 to 2 mm	2.3µm
204	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Dial / Digital Thickness Gauge Resolution: 0.001 mm	Using Slip Gauge Set (Gr 0) By Comparison Method	0 to 25 mm	0.98µm
205	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Digital / Dial Caliper Gauges Resolution: 0.01 mm	Using Slip Gauge Set (Gr 0) & Gauge Block Accessories by Comparison Method	0 to 200 mm	5.2µm
206	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Engineer's Parallels	Using Surface Plate, Slip Gauge Set Gr.0 & Dial Indicator by Comparison Method	25 mm to 400 mm	3.0µm

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 39 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
207	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer (Analog / Digital) Resolution: 0.001 mm	Using Micrometer Block Set & Slip Gauge Set (Gr 0) by Comparison Method	0 to 50 mm	1.5µm
208	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer (Analog / Digital) Resolution: 0.001 mm	Using Micrometer Block Set & Slip Gauge Set (Gr 0) by Comparison Method	50 mm to 300 mm	3.0µm
209	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer (Analog) Resolution: 0.01 mm	Using Long Slip Gauge Set, Micrometer Block Set & Slip Gauge Set (Gr 0) by Comparison Method	0 to 1000 mm	15µm
210	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer (Analog) Resolution: 0.01 mm	Using Micrometer Block Set & Slip Gauge Set (Gr 0) by Comparison Method	0 to 600 mm	7.3µm
211	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Feeler Gauge	Using Digital Micrometer by Comparison Method	0.01 mm to 2 mm	2.1µm

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 40 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
212	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Flush Pin Gauges	Using Slip Gauge Set Gr.0 & Dial Indicator by Comparison Method	0.5 mm to 200 mm	3.0µm
213	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Foils	Using Electronic Probe with DRO by Comparison Method	0.005 mm to 5 mm	0.9µm
214	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Hegman Gauge	Using Electronic Probe with Comparator Stand by Comparison Method	0 to 100 µm	1.20µm
215	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Height Gauge (Digital / Dial / Vernier) Resolution: 0.01 mm	Using Caliper Checker / Long Slip Gauges by Comparison Method	0 to 1000 mm	14.8µm
216	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Height Gauge (Digital) Resolution: 0.001 mm	Using Slip Gauge Set (Gr 0) & Caliper Checker by Comparison Method	0 to 600 mm	5.5µm

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 41 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
217	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Inside Micrometer (Caliper Type) Resolution: 0.001 mm	Using Slip Gauge Set (Gr 0) & Gauge Block Accessories by Comparison Method	5 mm to 100 mm	5.10µm
218	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Internal / Stick Micrometer Resolution: 0.01 mm	Using Slip Gauge Set (Gr 0) / Long Slip Gauges / Dial Indicator by Comparison Method	50 mm to 3000 mm	10µm
219	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Measuring Scale. L.C 1 mm	Using Profile Projector by Comparison Method	0 to 300 mm	8.8µm
220	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Micrometer Head Resolution: 0.001 mm	Using Slip Gauge Set Gr.0 & Electronic Comparator by Comparison Method	0 to 50 mm	2µm
221	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Microscope / Video Measuring System Linear only	Using Glass Scale by Comparison Method	25 X 25 mm to 300 X 200 .mm	3.0µm

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 42 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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 (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Pistol Caliper Resolution: 0.01 mm	Using Slip Gauge Set (Gr 0) By Comparison Method	0 to 100 mm	4.5µm
223	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Plain Plug Gauges	Using Slip Gauge Set Gr.0 and Electronic Probe with Comparator stand by Comparison Method	2 mm to 200 mm	1.6µm
224	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Radius Gauges (Concave and Convex Profile)	Using Profile Projector by Comparison Method	0.6 mm to 25 mm	6.20µm
225	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Setting Rod / Length Bar	Using Slip Gauge Set (Gr 0), Long Slip Gauges & Electronic Comparator by Comparison Method	25 mm to 300 mm	2.0µm
226	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Setting Rod / Length Bar	Using Slip Gauge Set (Gr 0), Long Slip Gauges & Electronic Comparator by Comparison Method	300 mm to 600 mm	4.1µm

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 43 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
227	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Setting Rod / Length Bar	Using Slip Gauge Set (Gr 0), Long Slip Gauges & Electronic Comparator by Comparison Method	600 mm to 1000 mm	5.7µm
228	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Sine Bar a. Centre Distance between Rollers b. Parallelism of Working Surface to Contact Surface c. Angular Measurement at 15°, 30° & 45°	Using Slip Gauge Set Gr.0, Dial Indicator, Granite Surface Plate Gr.0 & Angle Gauge Block by Comparison Method	100 mm to 200 mm	14.70 Arc of sec
229	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Snap Gauge / Gap Gauge / Width Gauge	Using Slip Gauge Set Gr.0 by Comparison Method	2 mm to 300 mm	4.20µm
230	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Spirit Level Sensitivity: 0.01 / 0.02 mm/mtr	Using Sine Bar, Slip Gauge Set Gr.0 & Granite Surface Plate Gr.0 by Comparison Method	100 mm to 300 mm	0.006mm/mtr

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 44 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
231	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Straight Edge (Straightness & Parallelism of Surface)	Using Slip Gauge Set Gr.0 & Dial Indicator by Comparison Method	100 mm to 1000 mm	12µm
232	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Surface Plate (Granite / Cast Iron)	Using Spirit Level by Comparison Method	300 X 300 mm to 3000 x 2000 mm	Sqrt((L+W)/150) x 1.5µm (L & W are in mm.)
233	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Taper Plug Gauge a. Total Length b. Major Diameter c. Half angle	Using Sine bar with Surface Plate, Slip Gauge Set Gr.0 and Dial Indicator by Comparison Method	25 mm to 150 mm	1.6µm
234	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Taper Scale	Using Profile Projector by Comparison Method	1 mm to 45 mm	8.1µm
235	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Test Mandrel a. Variation in Diameter b. Total Runout	Using Slip Gauge Gr.0, Dial Indicator & Electronic Comparator by Comparison Method	20 mm to 150 mm	2.0µm

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 45 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
236	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Test Sieves	Using Profile Projector & Digital Caliper by Comparison Method	0.032 mm to 10 mm	6.50µm
237	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Test Sieves	Using Profile Projector & Digital Caliper by Comparison Method	10 mm to 100 mm	31.30µm
238	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Thread Measuring Cylinder / Wire	Using Electronic Probe with Comparator by Comparison Method	0.17 mm to 6.35 mm	1.0µm
239	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Thread Pitch Gauges (Angle)	Using Profile Projector by Comparison Method	0 ° to 60 °	5 Arc of min
240	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Thread Pitch Gauges (Pitch)	Using Profile Projector by Comparison Method	0.4 mm to 6 mm	6.40µm

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 46 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Thread Plug Gauge (Effective Diameter Only)	Using Thread Measuring Wires, Cylinderical Setting Master & Floating Carriage Dia Measuring Machine by Comparison Method	1 mm to 100 mm	2.6µm
242	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Ultrasonic Thickness Gauge L.C 0.001mm	Using Slip Gauge Set Gr.0 by Comparison Method	1 mm to 300 mm	64µm
243	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	V Block Parallelism of axis of Vee to base surfaces Parallelism of axis of Vee to side surfaces Matching tolerance of V axes above the base Height over Minimum & Maximum Cylinders Symmetry	Using Test Mandrel & Dial Indicator by Comparison Method	40 x 50 x 40 mm to 300 x 100 x 100 mm	4.2µm
244	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Weld Fillet Gauge	Using Profile Projector by Comparison Method	0 to 25.4 mm	7.60µm

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 47 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
245	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Weld Gauge (Angle)	Using Profile Projector by Comparison Method	0 ° to 90 °	5 Arc of min
246	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Weld Gauge (Length)	Using Profile Projector by Comparison Method	0 to 60 mm	6µm
247	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Wet Film Gauge	Using Electronic Probe with Comparator by Comparison Method	0.025 mm to 3 mm	1.20µm
248	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Wire Gauge	Using Profile Projector by Comparison Method	0 to 10 mm	6.60µm
249	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Caliper Checker	Using Slip Gauge Set (Gr 0), Long Slip Gauges, Surface Plate & Dial Indicator by Comparison Method	0 to 300 mm	3.0µm

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 48 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
250	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Caliper Checker	Using Slip Gauge Set (Gr 0), Long Slip Gauges, Surface Plate & Dial Indicator by Comparison Method	0 to 600 mm	4.60µm
251	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Cylinderical Setting Master	Using Slip Gauge Set Gr.0 & Electronic Comparator by Comparison Method	3 mm to 100 mm	2.20µm
252	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Dial Calibration Tester Resolution: 0.0002 mm	Using Electronic Comparator by Comparison method	0 to 25 mm	0.8µm
253	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Electronic Height Gauge (Digital) Resolution: 0.0001 mm	Using Slip Gauge Set Gr.0 by Comparison Method as per IS 2921	0 to 600 mm	3.9µm
254	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector (Angle)	Using Angle Blocks by Comparison Method	0 ° to 360 °	0.41 Arc of min
255	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector (Linear) Resolution: 0.0001 mm	Using Glass Scale by Comparison Method	25 X 25 mm to 300 X 300 mm	3.0µm
256	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector (Magnification)	Using Slip Gauge Set Gr.0 and Digital Caliper by Comparison Method	10x - 100x	0.02%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 49 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
257	MECHANICAL-DUROMETER	Shore Hardness Tester	Using Rubber Hardness Tester Calibrator with Weights as per ISO 18898:2012 / IS 13360 (Part 5):2013 / ISO 868 by Direct Method	0 Shore A to 100 Shore A	0.6Shore A
258	MECHANICAL-DUROMETER	Shore Hardness Tester	Using Rubber Hardness Tester Calibrator with Weights as per ISO 18898:2012 / IS 13360 (Part 5):2013 / ISO 868 by Direct Method	0 Shore D to 100 Shore D	0.6Shore D
259	MECHANICAL-MOBILE FORCE MEASURING SYSTEM	Force Gauge / Push Pull Gauge	Calibration of Push Pull Gauge in Push and Pull Mode as per VDI/VDE 2624	10 N to 500 N	0.1%
260	MECHANICAL-MOBILE FORCE MEASURING SYSTEM	Force Gauge / Push Pull Gauge	Calibration of Push Pull Gauge in Push and Pull Mode as per VDI/VDE 2624	100 N to 5000 N	0.15%
261	MECHANICAL-MOBILE FORCE MEASURING SYSTEM	Force Gauge / Tension Gauge	Using Dead Weights with Hanger by Comparison Method as per VDI/VDE 2624	10 cN to 100 cN	0.024%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 50 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
262	MECHANICAL-MOBILE FORCE MEASURING SYSTEM	Force Gauge / Tension Gauge	Using Dead Weights with Hanger by Comparison Method as per VDI/VDE 2624	100 cN to 2000 cN	0.031%
263	MECHANICAL-PRESSURE INDICATING DEVICES	hydraulic Pressure (Gauges (Dial / Digital), Transducers, Transmitters,Digital Manometers, Switches, Recorders, Data Loggers, Modules and Indicating Devices)	Using Pressure Module as per DKD R-6-1/2	35 bar to 70 bar	0.018% of rdg
264	MECHANICAL-PRESSURE INDICATING DEVICES	hydraulic Pressure (Gauges (Dial / Digital), Transducers, Transmitters,Digital Manometers, Switches, Recorders, Data Loggers, Modules and Indicating Devices)	Using Dead Weight Tester as per DKD R-6-1/2	6.1 bar to 50 bar	0.014% of rdg

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 51 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
265	MECHANICAL-PRESSURE INDICATING DEVICES	hydraulic Pressure (Gauges (Dial / Digital), Transducers, Transmitters,Digital Manometers, Switches, Recorders, Data Loggers, Modules and Indicating Devices)	Using Digital Pressure Indicator as per DKD R-6-1/2	70 bar to 700 bar	0.021% of rdg
266	MECHANICAL-PRESSURE INDICATING DEVICES	hydraulic Pressure (Gauges (Dial / Digital), Transducers, Transmitters,Digital Manometers, Switches, Recorders, Data Loggers, Modules and Indicating Devices) Using DWT	Using Dead Weight Tester as per DKD R-6-1/2	50 bar to 1000 bar	0.018% of rdg

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 52 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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-PRESSURE INDICATING DEVICES	Low Pressure (Gauges (Dial / Digital), Transducers, Transmitters,Liquid Manometers,Digital Manometer, Switches, Recorders, Data Loggers, Modules Magnehlic Gauges and Indicating Devices)	Using Digital Pressure Calibrator as per DKD R-6-1/2	100 mbar to 1000 mbar	0.013% of rdg
268	MECHANICAL-PRESSURE INDICATING DEVICES	pneumatic Low Pressure (Gauges (Dial / Digital), Transducers, Transmitters,Liquid Manometers,Digital Manometer, Switches, Recorders, Data Loggers, Modules Magnehlic Gauges and Indicating Devices)	Using Digital Differential Manometer as per DKD R-6-1/2	10 mbar to 100 mbar	0.11% of rdg

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 53 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
269	MECHANICAL-PRESSURE INDICATING DEVICES	pneumatic Low Pressure (Gauges (Dial / Digital), Transducers, Transmitters,Liquid Manometers,Digital Manometers, Switches, Recorders, Data Loggers, Modules Magnehlic Gauges and Indicating Devices)	Using Digital Differential Manometer as per DKD R-6-1 / 2	-250 mmH2o (-0.02452 bar) to 250 mmH2o (0.02452 bar)	0.041% of rdg
270	MECHANICAL-PRESSURE INDICATING DEVICES	pneumatic Pressure (Gauges (Dial / Digital), Transducers, Transmitters,Digital Manometers, Switches, Recorders, Data Loggers, Modules and Indicating Devices)	Using Digital Pressure Indicator as per DKD R-6-1/2	20 bar to 35 bar	0.013% of rdg
271	MECHANICAL-PRESSURE INDICATING DEVICES	Pressure (Gauges (Dial / Digital), Transducers, Transmitters, Digital Manometers, Switches, Recorders, Data Loggers, Modules and Indicating Devices)	Using Digital Pressure Calibrator as per DKD R-6-1/2	1 bar to 20 bar	0.015% of rdg

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 54 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
272	MECHANICAL-PRESSURE INDICATING DEVICES	Pressure (Gauges (Dial / Digital), Transducers, Transmitters, Digital Manometers, Switches, Recorders, Data Loggers, Modules and Indicating Devices)	Using Digital Pressure Indicator as per DKD R-6-1/2	700 bar to 1000 bar	0.028% of rdg
273	MECHANICAL-PRESSURE INDICATING DEVICES	Vacuum (Gauges (Dial / Digital), Transducers, Transmitters, Recorders, Data Loggers, Modules and Indicating Devices)	Using Digital Pressure Calibrator as per ISO 3567 & DKD R-6	0 bar to -1 bar	0.076% of rdg
274	MECHANICAL-VOLUME	Glasswares (Measuring Cylinder, Pipette, Burette, Volumetric Flask, Beaker, Measuring Jar, Conical Flask, Dispenser, Crow Receiver, Specific Gravity Cup, Lechatelier Flask, Centrifuge Filter Tube, Sac	Using E1 & E2 Class Standard Weights and Precision Weighing Balance(Readability: 0.001 mg to 0.01 mg) by Gravimetric Method as per IS0 4787	1 ml to 50 ml	2µl

SCOPE OF ACCREDITATION

Laboratory Name :	MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA
Accreditation Standard	ISO/IEC 17025:2017
Certificate Number	CC-3598
Page No	55 of 116
Validity	15/06/2023 to 12/04/2024
Last Amended on	-

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)(±)
275	MECHANICAL-VOLUME	Glasswares (Measuring Cylinder, Pipette, Burette, Volumetric Flask, Beaker, Measuring Jar, Conical Flask, Dispenser, Crow Receiver, Specific Gravity Cup, Lechatelier Flask, Centrifuge Filter Tube, Sac	Using E1 & E2 Class Standard Weights and Precision Weighing Balance (Readability: 0.001 g to 0.1 g)by Gravimetric Method as per IS0 4787	2000ml to 20000ml	47ml
276	MECHANICAL-VOLUME	Glasswares (Measuring Cylinder, Pipette, Burette, Volumetric Flask, Beaker, Measuring Jar, Conical Flask, Dispenser, Crow Receiver, Specific Gravity Cup, Lechatelier Flask, Centrifuge Filter Tube, Sac	Using E1 & E2 Class Standard Weights and Precision Weighing Balance (Readability: 0.01 mg to 0.001 g) by Gravimetric Method as per IS0 4787	50 ml to 2000 ml	17µl
277	MECHANICAL-VOLUME	Micropipette	Using E1 & E2 Class Standard Weights & Precision Weighing Balance (Readability: 0.001 mg) by Gravimetric Method as per ISO 8655 (Part-6)	1 µl to 10 µl	0.013µl

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 56 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
278	MECHANICAL-VOLUME	Micropipette	Using E1 & E2 Class Standard Weights & Precision Weighing Balance (Readability: 0.001 mg) by Gravimetric Method as per ISO 8655 (Part-6)	10 µl to 1000 µl	0.1µl
279	MECHANICAL-VOLUME	Micropipette	Using E1 & E2 Class Standard Weights & Precision Weighing Balance (Readability: 0.001 mg) by Gravimetric Method as per ISO 8655 (Part-6)	1000 µl to 5000 µl	2µl
280	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class 1 & Coarser), d=0.0001 mg	Using E1 Class Standard Weights as per OIML R76-1	Upto 5 g	0.003mg
281	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class 1 & Coarser), d=0.001 mg	Using E1 Class Standard Weights as per OIML R76-1	upto 22 g	0.008mg
282	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class 1 & Coarser), d=0.01 mg	Using E1 Class Standard Weights as per OIML R76-1	upto 210 g	0.03mg

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 57 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
283	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class 1 & Coarser), d=0.1 mg	Using E1 Class Standard Weights as per OIML R76-1	Upto 5000 g	0.60mg
284	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class I & Coarser), d=5 mg	Using E1 Class Standard Weights as per OIML R76-1	Upto 18000 g	4.3mg
285	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class II & Coarser), d= 0.2 g	Using E1 & E2 Class Standard Weights as per OIML R76-1	Upto 55000 g	0.12g
286	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class II & Coarser), d=0.1 g	Using E1 & E2 Class Standard Weights as per OIML R76-1	Upto 25000 g	0.058g
287	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class III& Coarser), d=1 g	Using E1,E2 & F1 Class Standard Weights as per OIML R76-1	Upto 100 kg	0.00058kg
288	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class IV & Coarser), d=100 g	Using M1 Class Standard Weights as per OIML R76-1	Upto 1000 kg	58g
289	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class IV & Coarser), d=20 g	Using M1 Class Standard Weights as per OIML R76-1	Upto 400 kg	0.012kg

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 58 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
290	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E1 & Coarser)	Using E1 Class Standard Weights and Micro Balance (Readability: 0.001 mg) as per OIML R111	1 g	0.003mg
291	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E1 & Coarser)	Using E1 Class Standard Weights and Micro Balance (Readability: 0.001 mg) as per OIML R111	1 mg	0.001mg
292	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E1 & Coarser)	Using E1 Class Standard Weights and Micro Balance (Readability: 0.001 mg) as per OIML R111	10 g	0.004mg
293	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E1 & Coarser)	Using E1 Class Standard Weights and Micro Balance (Readability: 0.001 mg) as per OIML R111	10 mg	0.001mg
294	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E1 & Coarser)	Using E1 Class Standard Weights and Semi Micro Balance (Readability: 0.01 mg) as per OIML R111	100 g	0.02mg

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 59 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
295	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E1 & Coarser)	Using E1 Class Standard Weights and Micro Balance (Readability: 0.001 mg) as per OIML R111	100 mg	0.001mg
296	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E1 & Coarser)	Using E1 Class Standard Weights and Micro Balance (Readability: 0.001 mg) as per OIML R111	2 g	0.003mg
297	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E1 & Coarser)	Using E1 Class Standard Weights and Micro Balance (Readability: 0.001 mg) as per OIML R111	2 mg	0.001mg
298	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E1 & Coarser)	Using E1 Class Standard Weights and Micro Balance (Readability: 0.001 mg) as per OIML R111	20 g	0.0052mg
299	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E1 & Coarser)	Using E1 Class Standard Weights and Micro Balance (Readability: 0.001 mg) as per OIML R111	20 mg	0.001mg

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 60 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
300	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E1 & Coarser)	Using E1 Class Standard Weights and Semi Micro Balance (Readability: 0.01 mg) as per OIML R111	200 g	0.027mg
301	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E1 & Coarser)	Using E1 Class Standard Weights and Micro Balance (Readability: 0.001 mg) as per OIML R111	200 mg	0.001mg
302	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E1 & Coarser)	Using E1 Class Standard Weights and Micro Balance (Readability: 0.001 mg) as per OIML R111	5 g	0.003mg
303	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E1 & Coarser)	Using E1 Class Standard Weights and Micro Balance (Readability: 0.001 mg) as per OIML R111	5 mg	0.001mg

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 61 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
304	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E1 & Coarser)	Using E1 Class Standard Weights and Semi Micro Balance (Readability: 0.01 mg) as per OIML R111	50 g	0.01mg
305	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E1 & Coarser)	Using E1 Class Standard Weights and Micro Balance (Readability: 0.001 mg) as per OIML R111	50 mg	0.001mg
306	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E1 & Coarser)	Using E1 Class Standard Weights and Micro Balance (Readability: 0.001 mg) as per OIML R111	500 mg	0.002mg
307	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E2 & Coarser)	Using E1 Standard Class Weights and Precision Balance (Readability: 0.001 g):	1000 g	0.84mg
308	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E2 & Coarser)	Using E1 Class Standard Weights and Mass Comparator (Readability: 0.005 g) as per OIML R111	10000 g	5.5mg

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 62 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
309	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E2 & Coarser)	Using E1 Class Standard Weights and Precision Balance (Readability: 0.001 g) as per OIML R111	2000 g	0.9mg
310	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class E2 & Coarser)	Using E1 Class Standard Weights and Precision Balance (Readability: 0.001 g) as per OIML R111	5000 g	1.1mg
311	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class F1 & Coarser)	Using E1 & E2 Class Standard Weights and Mass Comparator (Readability: 0.005 g) as per OIML R111	20000 g	8.3mg
312	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class F1 & Coarser)	Using E1 Standard Class Weights and Precision Balance (Readability: 0.001 g) as per OIML R111	500 g	0.82mg
313	MECHANICAL-WEIGHTS	Mass - Weights (Accuracy Class F1 & Coarser)	Using E1 & E2 Class Standard Weights and Mass Comparator (Readability: 0.1 g) as per OIML R111	50000 g	0.083g

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 63 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
314	OPTICAL-OPTICAL	Lux Meter / Light Meter	Using Light Source & Illuminance Meter by Comparison Method	1 lux to 50000 lux	3.53%
315	THERMAL-SPECIFIC HEAT & HUMIDITY	Humidity (Digital / Analog Thermo Hygrometers, Hygrometers, Hygrographs, Humidity Sensors, Data Loggers, Temperature & Humidity Transmitters)	Using Digital Thermohygrometer with Humidity Chamber by Comparison Method	5 % RH to 95 % RH @ 25°C	1% RH
316	THERMAL-SPECIFIC HEAT & HUMIDITY	Temperature (Digital / Analog Thermo Hygrometers, Hygrometers, Hygrographs, Humidity Sensors, Data Loggers, Temperature & Humidity Transmitters)	Using RTD Sensor and Indicator with Chamber by Comparison Method	5 °C to 60 °C @ 50%R.H	0.19°C
317	THERMAL-TEMPERATURE	Glass Thermometer	Using SSPRT Sensor with Digital Multimeter and Liquid bath by Comparison Method	0 °C to 100 °C	0.035°C

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 64 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
318	THERMAL-TEMPERATURE	Glass Thermometer	Using SSPRT Sensor with Digital Multimeter and Liquid bath by Comparison Method	100 °C to 250 °C	0.11°C
319	THERMAL-TEMPERATURE	Glass Thermometer	Using SSPRT Sensor with Digital Multimeter and Liquid bath by Comparison Method	-80 °C to 0 °C	0.037°C
320	THERMAL-TEMPERATURE	Non-Contact Temperature Measurement (IR Thermometer, Pyrometer, Thermal Imager)	Using SSPRT and Digital Multimeter with Ice Point by Comparison Method	0 °C	0.37°C
321	THERMAL-TEMPERATURE	Non-Contact Temperature Measurement (IR Thermometer, Pyrometer, Thermal Imager)	Using Standard Contact/Non-Contact Thermometer with Black Body Source @ emissivity 0.95 by Comparison Method	-15 °C to 50 °C	1.8°C
322	THERMAL-TEMPERATURE	Non-Contact Temperature Measurement (IR Thermometer, Pyrometer, Thermal Imager)	Using Standard Contact/Non-Contact Thermometer with Black Body Source @ emissivity 0.95 by Comparison Method	200 °C to 500 °C	2.05°C

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 65 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
323	THERMAL-TEMPERATURE	Non-Contact Temperature Measurement (IR Thermometer, Pyrometer, Thermal Imager)	Using Standard Contact/Non-Contact Thermometer with Black Body Source @ emissivity 0.95 by Comparison Method	50 °C to 200 °C	1.38°C
324	THERMAL-TEMPERATURE	Temperature (RTD/TC with/without Indicator,Thermistor, Temperature Recorder,Temperature Datalogger,Temperature Gauge,Temperature Switch,Temperature Transmitter,Bi-Metallic Thermometer	Using SSPRT Sensor with Digital Multimeter and Liquid bath by Comparison Method	0 °C to 100 °C	0.037°C

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 66 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
325	THERMAL-TEMPERATURE	Temperature (RTD/TC with/without Indicator,Thermistor, Temperature Recorder,Temperature Datalogger,Temperature Gauge,Temperature Switch,Temperature Transmitter,Bi-Metallic Thermometer	Using SSPRT Sensor with Digital Multimeter and Dry block calibrator by Comparison Method	250 °C to 660 °C	0.25°C
326	THERMAL-TEMPERATURE	Temperature (RTD/TC with/without Indicator,Thermistor, Temperature Recorder,Temperature Datalogger,Temperature Gauge,Temperature Switch,Temperature Transmitter,Bi-Metallic Thermometer	Using SSPRT Sensor with Digital Multimeter and Liquid bath by Comparison Method	-80 °C to 0 °C	0.037°C

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 67 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
327	THERMAL-TEMPERATURE	Temperature (TC with or without Indicator,Thermistor, Temperature Recorder,Temperature Datalogger,Temperature Gauge,Temperature Switch,Temperature Transmitter,Bi-Metallic Thermometer	Using R-Type Thermocouple with Digital Multimeter and Dry block calibrator by Comparison Method	660 °C to 1200 °C	1.4°C
328	THERMAL-TEMPERATURE	Temperature (RTD/TC with/without Indicator,Thermistor, Temperature Recorder,Temperature Datalogger,Temperature Gauge,Temperature Switch,Temperature Transmitter,Bi-Metallic Thermometer	Using SSPRT Sensor with Digital Multimeter and Liquid bath by Comparison Method	100 °C to 250 °C	0.11°C

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 68 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)	Capacitance @ 1 kHz	Using Precision LCR Meter by Direct / Comparison Method	1 nF to 10 µF	0.062 % to 0.09 %
2	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Capacitance @ 1 kHz	Using Precision LCR Meter by Direct / Comparison Method	100 pF to 1 nF	0.064 % to 0.061 %
3	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ (1 kHz to 5 kHz)	Using 8.5 Digit DMM by Direct / Comparison Method	100 mA to 1 A	0.064 % to 0.14 %
4	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ (1 kHz to 5 kHz)	Using 8.5 Digit DMM by Direct / Comparison Method	5 mA to 100 mA	0.085 % to 0.064 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 69 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
5	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ (40 Hz to 10 kHz)	Using 8.5 Digit DMM & Current Shunt by Direct / Comparison Method	1 A to 20 A	0.026%
6	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ (45 Hz to 1 kHz)	Using 8.5 Digit DMM by Direct / Comparison Method	1 mA to 10 mA	0.14 % to 0.059 %
7	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ (45 Hz to 1 kHz)	Using 8.5 Digit DMM by Direct / Comparison Method	10 µA to 100 µA	0.45 % to 0.19 %
8	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ (45 Hz to 1 kHz)	Using 8.5 Digit DMM by Direct / Comparison Method	10 mA to 100 mA	0.060%
9	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ (45 Hz to 1 kHz)	Using 8.5 Digit DMM by Direct / Comparison Method	100 µA to 1 mA	0.19 % to 0.14 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 70 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
10	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ (50 Hz to 1 kHz)	Using 8.5 Digit DMM by Direct / Comparison Method	100 mA to 1 A	0.060 % to 0.12 %
11	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ (50 Hz)	Using 8.5 Digit DMM & CT by Direct / Comparison Method	100 A to 1000 A	0.10 % to 0.12 %
12	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Current @ 50Hz	Using 8.5 Digit DMM & CT by Direct / Comparison Method	20 A to 100 A	0.026 % to 0.10 %
13	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	High Voltage	Using HV Probe with Indicator by Direct Method	1 kV RMS to 28 kV RMS	3.8%
14	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Inductance @ 1 kHz	Using Precision LCR Meter by Direct / Comparison Method	1 H to 10 H	0.091 % to 0.96 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 71 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
15	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Inductance @ 1 kHz	Using Precision LCR Meter by Direct / Comparison Method	1 mH to 100 mH	0.091 % to 0.066 %
16	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Inductance @ 1 kHz	Using Precision LCR Meter by Direct / Comparison Method	100 µH to 1 mH	0.26 % to 0.091 %
17	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Inductance @ 1 kHz	Using Precision LCR Meter by Direct / Comparison Method	100 mH to 1 H	0.066 % to 0.091 %
18	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Power @ 50Hz (Single/Three Phase) (Voltage: 63.5 V to 230 V, Current: 0.5 A to 5 A) @ UPF	Using Digital Power Meter by Direct Method	31.75 W to 3.6 kW	1.8 % to 0.26 %
19	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Resistance @ 1 kHz	Using Precision LCR meter by Direct Method	1 ohm to 10 ohm	0.069%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 72 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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) (Measure)	Resistance @ 1 kHz	Using Precision LCR Meter by Direct Method	10 Ohm to 10 kOhm	0.063 % to 0.064 %
21	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 1 kHz to 20 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	1 mV to 10 mV	0.28 % to 0.22 %
22	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 1 kHz to 20 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	10 mV to 100 mV	0.22 % to 0.072 %
23	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 1 kHz to 20 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	100 mV to 100 V	0.072% to 0.061%
24	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 1 kHz to 20 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	100 V to 700 V	0.061 % to 0.075 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 73 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
25	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 20 kHz to 50 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	1 mV to 10 mV	0.33 % to 0.74 %
26	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 20 kHz to 50 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	10 mV to 100 mV	0.29 % to 0.072 %
27	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 20 kHz to 50 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	100 mV to 100 V	0.079 % to 0.070 %
28	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 20 kHz to 50 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	100 V to 700 V	0.07 % to 0.14 %
29	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 45 Hz to 1 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	1 mV to 10 mV	0.26 % to 0.045 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 74 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
30	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 45 Hz to 1 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	10 mV to 100 mV	0.045 % to 0.03 %
31	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 45 Hz to 1 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	100 mV to 100 V	0.03 % to 0.061 %
32	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 45 Hz to 1 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	100 V to 700 V	0.061 % to 0.05 %
33	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 45 Hz to 1 kHz	Using 6.5 Digit DMM by Direct / Comparison Method	700 V to 1000 V	0.05 % to 0.1 %
34	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 50 kHz to 100 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	1 mV to 10 mV	0.74 % to 0.63 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 75 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
35	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 50 kHz to 100 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	10 mV to 100 mV	0.79 % to 0.12 %
36	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Measure)	Voltage @ 50 kHz to 100 kHz	Using 8.5 Digit DMM by Direct / Comparison Method	100 mV to 300 V	0.12 % to 0.35 %
37	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance @ 1 kHz	Using Standard Capacitance Box by Direct Method	1 µF to 10 µF	0.13 % to 0.16 %
38	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance @ 1 kHz	Using Standard Capacitance Box by Direct Method	1 nF to 10 nF	0.13 % to 0.34 %
39	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance @ 1 kHz	Using Standard Capacitance Box by Direct Method	10 nF to 100 nF	0.34 % to 0.14 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 76 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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-Alternating Current (< 1 GHz) (Source)	Capacitance @ 1 kHz	Using Standard Capacitance Box by Direct Method	100 nF to 1 µF	0.14 % to 0.13 %
41	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Capacitance @ 1 kHz	Using Standard Capacitance Box by Direct Method	100 pF to 1 nF	0.17 % to 0.13 %
42	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (1 kHz to 5 kHz)	Using Multi function Calibrator by Direct Method	1 mA to 19 mA	0.25 % to 0.10 %
43	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (1 kHz to 5 kHz)	Using Multi function Calibrator by Direct Method	19 mA to 329 mA	0.10 % to 0.13 %
44	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (1 kHz to 5 kHz)	Using Multi function Calibrator by Direct Method	3 A to 20 A	0.73 % to 3.49 %
45	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (1 kHz to 5 kHz)	Using Multi function Calibrator by Direct Method	329 mA to 3 A	0.13 % to 0.73 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 77 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
46	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (45 Hz to 1 kHz)	Using Multi function Calibrator by Direct Method	1 mA to 19 mA	0.13 % to 0.058 %
47	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (45 Hz to 1 kHz)	Using Multi function Calibrator by Direct Method	19 mA to 3 A	0.058 % to 0.073 %
48	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (45 Hz to 1 kHz)	Using Multi function Calibrator by Direct Method	3 A to 20 A	0.073 % to 0.20 %
49	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (5 kHz to 10 kHz)	Using Multi function Calibrator by Direct Method	1 mA to 19 mA	0.61 % to 0.25 %
50	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (5 kHz to 10 kHz)	Using Multi function Calibrator by Direct Method	19 mA to 329 mA	0.25 % to 0.27 %
51	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (5 kHz to 10 kHz)	Using Multi function Calibrator by Direct Method	329 mA to 3 A	0.27 % to 0.77 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 78 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
52	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Current @ (50 Hz to 1 kHz)	Using Multi function Calibrator, Transconductance Amplifier with Current Coil by Direct Method	20 A to 1000 A	1.2%
53	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Inductance @ 1 kHz	Using Standard Inductance Box by Direct Method	1 H to 10 H	0.15 % to 0.89 %
54	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Inductance @ 1 kHz	Using Standard Inductance Box by Direct Method	100 µH to 1000 µH	0.3 % to 0.15 %
55	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Inductance @ 1 kHz	Using Standard Inductance Box by Direct Method	1000 µH to 1000 mH	0.15%
56	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Power / Energy (Single / Three Phase) (Voltage 63.5 V to 230 V, Current 0.5 A to 15 A)@ UPF	Using Three Phase Power Calibrator by Direct Method	31.75 W to 10.35 kW	0.33%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 79 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
57	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Power @ 50 Hz (Single Phase)@0.5 Lead & Lag	Using Multi function Calibrator by Direct Method	6 W to 2.4 kW	0.10 % to 0.12 %
58	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Power @ 50 Hz (Single Phase)@0.8 Lead & Lag	Using Multi function Calibrator by Direct Method	9.6 W to 1.92 kW	0.10 % to 0.12 %
59	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Power @ 50 Hz (Single Phase)@UPF	Using Multi function Calibrator by Direct Method	1.2 W to 3 kW	0.10 % to 0.12 %
60	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Power Factor @ 50 Hz	Using Power Calibrator by Direct Method	0.2 lag to 1 UPF	0.0021 PF to 0.0031 PF
61	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Power Factor @ 50 Hz	Using Power Calibrator by Direct Method	1 UPF to 0.2 Lead	0.0031 PF to 0.0021 PF
62	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Resistance @ 1 kHz	Using Standard Resistance Box by Direct Method	1 ohm to 10 ohm	0.27 % to 0.076 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 80 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
63	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Resistance @ 1 kHz	Using Standard Resistance Box by Direct Method	10 Ohm to 1000 Ohm	0.076 % to 0.071 %
64	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Resistance @ 1 kHz	Using Standard Resistance Box by Direct Method	1000 Ohm to 10 kOhm	0.071 % to 0.081 %
65	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (1 kHz to 10 kHz)	Using Multi function Calibrator by Direct Method	3 mV to 30 mV	0.72 % to 0.10 %
66	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (1 kHz to 10 kHz)	Using Multi function Calibrator by Direct Method	30 mV to 300 V	0.10 % to 0.02 %
67	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (1 kHz to 10 kHz)	Using Multi function Calibrator by Direct Method	300 mV to 30 V	0.02 % to 0.054 %
68	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (10 Hz to 45 Hz)	Using Multi function Calibrator by Direct Method	3 mV to 30 mV	0.79 % to 0.14 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 81 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
69	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (10 Hz to 45 Hz)	Using Multi function Calibrator by Direct Method	300 mV to 30 V	0.04%
70	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (10 kHz to 50 kHz)	Using Multi function Calibrator by Direct Method	3 mV to 30 mV	0.81 % to 0.16 %
71	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (10 kHz to 50 kHz)	Using Multi function Calibrator by Direct Method	30 mV to 300 mV	0.16 % to 0.04 %
72	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (10 kHz to 50 kHz)	Using Multi function Calibrator by Direct Method	300 mV to 30 V	0.04 % to 0.066 %
73	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (45 Hz to 1 kHz)	Using Multi function Calibrator by Direct Method	1 mV to 30 mV	0.72 % to 0.12 %
74	ELECTRO-TECHNICAL-Alternating Current (< 1 GHz) (Source)	Voltage @ (45 Hz to 1 kHz)	Using Multi function Calibrator by Direct Method	30 mV to 300 mV	0.12 % to 0.02 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 82 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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-Alternating Current (< 1 GHz) (Source)	Voltage @ (45 Hz to 1 kHz)	Using Multi function Calibrator by Direct Method	300 mV to 1000 V	0.02 % to 0.035 %
76	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Current	Using 8.5 Digit DMM by Direct / Comparison Method	1 µA to 10 µA	0.0073 % to 0.004 %
77	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Current	Using 8.5 Digit DMM by Direct / Comparison Method	1 A to 10 A	0.014 % to 0.28 %
78	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Current	Using 8.5 Digit DMM by Direct / Comparison Method	1 mA to 10 mA	0.0035%
79	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Current	Using 8.5 Digit DMM by Direct / Comparison Method	10 µA to 1 mA	0.004 % to 0.0035 %
80	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Current	Using 8.5 Digit DMM by Direct / Comparison Method	10 mA to 100 mA	0.0035 % to 0.005 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 83 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
81	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Current	Using 8.5 Digit DMM & Current Shunt by Direct / Comparison Method	100 A to 1000 A	0.29 % to 0.4 %
82	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Current	Using 8.5 Digit DMM by Direct / Comparison Method	100 mA to 1 A	0.005 % to 0.014 %
83	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Current	Using 8.5 Digit DMM & Current Shunt by Direct / Comparison Method	20 A to 50 A	0.012%
84	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Current	Using 8.5 Digit DMM & Current Shunt by Direct / Comparison Method	50 A to 100 A	0.012 % to 0.29 %
85	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	DC Current	Using 8.5 Digit DMM & Current Shunt by Direct / Comparison Method	1A to 20A	0.014% to 0.012%
86	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	High Voltage	Using HV Probe with Indicator by Direct / Comparison Method	1 kV to 5 kV	1.7%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 84 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
87	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	High Voltage	Using HV Probe with Indicator by Direct / Comparison Method	5 kV to 40 kV	1.7 % to 2.0 %
88	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM by Direct / Comparison Method	1 kOhm to 1 MOhm	0.0015 % to 0.0025 %
89	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM & Calibrator by V / I Method	1 mOhm	0.004%
90	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM by Direct / Comparison Method	1 MOhm to 10 MOhm	0.0025 % to 0.012 %
91	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM & Calibrator by V / I Method	1 mOhm to 10 mOhm	0.004 % to 0.034 %
92	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM by Direct / Comparison Method	1 ohm to 10 ohm	0.0076 % to 0.0025 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 85 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
93	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM & Calibrator by V / I Method	10 GOhm to 100 GOhm	0.66 % to 2.5 %
94	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM by Direct / Comparison Method	10 MOhm to 100 MOhm	0.012 % to 0.091 %
95	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM & Calibrator by V / I Method	10 mOhm to 100 mOhm	0.034 % to 0.033 %
96	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM by Direct / Comparison Method	10 Ohm to 100 Ohm	0.0025 % to 0.0021 %
97	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM by Direct / Comparison Method	100 MOhm to 1 GOhm	0.091 % to 0.81 %
98	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM & Calibrator by V / I Method	100 mohm to 1000 mohm	0.036 % to 0.024 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 86 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
99	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Resistance	Using 8.5 Digit DMM by Direct / Comparison Method	100 Ohm to 1 kOhm	0.0026 % to 0.0015 %
100	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Voltage	Using 8.5 Digit DMM by Direct / Comparison Method	0.01 mV to 0.1 mV	3.61 % to 0.37 %
101	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Voltage	Using 8.5 Digit DMM by Direct / Comparison Method	0.1 mV to 1 mV	0.37 % to 0.037 %
102	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Voltage	Using 8.5 Digit DMM by Direct / Comparison Method	1 mV to 10 mV	0.037 % to 0.0046 %
103	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Voltage	Using 8.5 Digit DMM by Direct / Comparison Method	1 V to 1000 V	0.0010 % to 0.0012 %
104	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Voltage	Using 8.5 Digit DMM by Direct / Comparison Method	10 mV to 100 mV	0.0046 % to 0.0014 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 87 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
105	ELECTRO-TECHNICAL-DIRECT CURRENT (Measure)	Voltage	Using 8.5 Digit DMM by Direct / Comparison Method	100 mV to 1 V	0.0014 % to 0.0010 %
106	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Current	Using Multi function Calibrator by Direct Method	10 µA to 100 µA	0.25 % to 0.040 %
107	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Current	Using Multi function Calibrator by Direct Method	100 µA to 329 µA	0.040 % to 0.024 %
108	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Current	Using Multi function Calibrator, Transconductance Amplifier with Current Coil by Direct Method	100 A to 1000 A	0.41 % to 1.2 %
109	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Current	Using Multi function Calibrator by Direct Method	2.99 A to 20 A	0.046 % to 0.12 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 88 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
110	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Current	Using Multi function Calibrator, Transconductance Amplifier with Current Coil by Direct Method	20 A to 100 A	0.035 % to 0.41 %
111	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Current	Using Multi function Calibrator by Direct Method	3.29 mA to 329 mA	0.013 % to 0.016 %
112	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Current	Using Multi function Calibrator by Direct Method	329 µA to 3.29 mA	0.024 % to 0.013 %
113	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Current	Using Multi function Calibrator by Direct Method	329 mA to 2.99 A	0.016 % to 0.046 %
114	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Power (Voltage 10 V to 1000 V, Current 10 mA to 20 A)	Using Multifunction Calibrator by Direct Method	0.1 W to 20 kW	0.027 % to 0.12 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 89 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
115	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Fixed Resistor by Direct Method	1 mohm	0.084%
116	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Multi function Calibrator by Direct Method	1 Mohm to 100 Mohm	0.004 % to 0.062 %
117	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Standard Resistance Box by Direct Method	1 Ohm to 10 Ohm	0.014 % to 0.012 %
118	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Fixed Resistor by Direct Method	10 GOhm	1.3%
119	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Fixed Resistor by Direct Method	10 mohm	0.027%
120	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Standard Resistance Box by Direct Method	10 mohm to 100 mohm	0.028%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 90 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
121	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Multi function Calibrator by Direct Method	10 Ohm to 30 Ohm	0.012 % to 0.0074 %
122	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Fixed Resistor by Direct Method	100 GOhm	3.4%
123	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Standard Resistance Box by Direct Method	100 mohm to 1000 mohm	0.028 % to 0.038 %
124	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Standard Resistance Box by Direct Method	100 MOhm to 1000 MOhm	0.63 % to 1 %
125	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Multi function Calibrator by Direct Method	100 Ohm to 1 Mohm	0.003 % to 0.004 %
126	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Multi function Calibrator by Direct Method	30 Ohm to 100 Ohm	0.009 % to 0.003 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 91 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
127	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Current Shunt by Direct Method	375 µohm	0.30%
128	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Current Shunt by Direct Method	75 µohm	0.31%
129	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Current Shunt by Direct Method	750 µohm	0.31%
130	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Voltage	Using Multifunction Calibrator by Direct Method	0.1 mV to 2 mV	1.2 % to 0.3 %
131	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Voltage	Using Multifunction Calibrator by Direct Method	1 mV to 10 mV	0.12 % to 0.017 %
132	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Voltage	Using Multifunction Calibrator by Direct Method	1 V to 1000 V	0.0015 % to 0.0023 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 92 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
133	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Voltage	Using Multifunction Calibrator by Direct Method	10 mV to 100 mV	0.017 % to 0.0036 %
134	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Voltage	Using Multi function Calibrator by Direct Method	100 mV to 1 V	0.0036 % to 0.0017 %
135	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope Calibration (Amplitude)	Using Programmable Oscilloscope Calibrator by Direct Method	8 mV to 50 V	0.51%
136	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope Calibration (Band Width)	Using Signal Generator by Direct Method	50 kHz to 1 GHz	11.8%
137	ELECTRO-TECHNICAL-ELECTRICAL EQUIPMENT (Source)	Oscilloscope Calibration (Time Base)	Using Programmable Oscilloscope Calibrator by Direct Method	1 ns to 100 ms	0.0060%
138	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	B-Type Thermocouple	Using 8.5 Digit DMM by Direct / Comparison Method	600 °C to 1820 °C	0.063 °C to 0.045 °C

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 93 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
139	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	E-Type Thermocouple	Using 8.5 Digit DMM by Direct / Comparison Method	-200 °C to 1000 °C	0.020 °C to 0.015 °C
140	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	J-Type Thermocouple	Using 8.5 Digit DMM by Direct / Comparison Method	-200 °C to 1200 °C	0.023 °C to 0.019 °C
141	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	K-Type Thermocouple	Using 8.5 Digit DMM by Direct / Comparison Method	-200 °C to 1372 °C	0.026 °C to 0.028 °C
142	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	N-Type Thermocouple	Using 8.5 Digit DMM by Direct / Comparison Method	-200 °C to 1300 °C	0.04 °C to 0.024 °C
143	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	R-Type Thermocouple	Using 8.5 Digit DMM by Direct / Comparison Method	-50 °C to 1768 °C	0.094°C
144	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RTD type	Using 8.5 Digit DMM by Direct / Comparison Method	-200 °C to 850 °C	0.0022 °C to 0.018 °C

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 94 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	S-Type Thermocouple	Using 8.5 Digit DMM by Direct / Comparison Method	-50 °C to 1768 °C	0.089 °C to 0.054 °C
146	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	T-Type Thermocouple	Using 8.5 Digit DMM by Direct / Comparison Method	-200 °C to 400 °C	0.026 °C to 0.011 °C
147	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	B-Type Thermocouple	Using Temperature Calibrator by Direct Method	450 °C to 1800 °C	0.95°C
148	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	E-Type Thermocouple	Using Temperature Calibrator by Direct Method	-200 °C to 1000 °C	0.55°C
149	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	J-Type Thermocouple	Using Temperature Calibrator by Direct Method	-200 °C to 1200 °C	0.17 °C to 0.38 °C
150	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	K-Type Thermocouple	Using Temperature Calibrator by Direct Method	-200 °C to 1350 °C	0.18 °C to 0.44 °C

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 95 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
151	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	N-Type Thermocouple	Using Temperature Calibrator by Direct Method	-200 °C to 1350 °C	0.16 °C to 0.42 °C
152	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	R-Type Thermocouple	Using Temperature Calibrator by Direct Method	0 °C to 1750 °C	0.95°C
153	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	RTD type	Using Temperature Calibrator by Direct Method	-200 °C to 800 °C	0.24 °C to 0.35 °C
154	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	S-Type Thermocouple	Using Temperature Calibrator by Direct Method	0 °C to 1750 °C	0.9°C
155	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	T-Type Thermocouple	Using Temperature Calibrator by Direct Method	-240 °C to 400 °C	0.5°C
156	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency	Using Universal Frequency Counter by Direct /Comparison Method	1 Hz to 10 Hz	0.00058%

SCOPE OF ACCREDITATION

Laboratory Name :	MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA
Accreditation Standard	ISO/IEC 17025:2017
Certificate Number	CC-3598
Page No	96 of 116
Validity	15/06/2023 to 12/04/2024
Last Amended on	-

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)(±)
157	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Frequency	Using Universal Frequency Counter by Direct /Comparison Method	10 Hz to 2.4 GHz	0.00059%
158	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time Interval	Using Digital Timer by Comparison Method	0.1 s to 1 s	0.0069 s to 0.0094 s
159	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time Interval	Using Digital Timer by Comparison Method	1 s to 10 s	0.0094 s to 0.018 s
160	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time Interval	Using Digital Timer by Comparison Method	10 s to 100 s	0.018 s to 0.052 s
161	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time Interval	Using Digital Timer by Comparison Method	100 s to 1000 s	0.052 s to 0.17 s
162	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time Interval	Using Digital Timer by Comparison Method	1000 s to 10000 s	0.17 s to 1.6 s

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 97 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Time Interval	Using Digital Timer by Comparison Method	10000 s to 86400 s	1.6 s to 10.1 s
164	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Using Signal Generator by Direct Method	1 Hz to 10 Hz	0.0065 % to 0.0021 %
165	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Using Signal Generator by Direct Method	10 Hz to 100 Hz	0.0021 % to 0.0023 %
166	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Using Signal Generator by Direct Method	100 Hz to 1000 MHz	0.0023 % to 0.0037 %
167	ELECTRO-TECHNICAL-TIME & FREQUENCY (Source)	Frequency	Using Signal Generator by Direct Method	1000 MHz to 2.4 GHz	0.0037 % to 0.0014 %

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 98 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
168	MECHANICAL-ACCELERATION AND SPEED	RPM / Speed (Contact Type) Tachometers, Speed Meters, RPM Meters, RPM Indicators of Centrifuges, RPM Source/Calibrators	Using Digital Stop Watch by Comparison Method	1 RPM to 10 RPM	0.78% to 0.16%
169	MECHANICAL-ACCELERATION AND SPEED	RPM / Speed (Contact Type) Tachometers, Speed Meters, RPM Meters, RPM Indicators of Centrifuges, RPM Source/Calibrators	Using Master Tachometer by Comparison Method as per SANAS TR 45-02	10 RPM to 100 RPM	0.16% to 0.30%
170	MECHANICAL-ACCELERATION AND SPEED	RPM / Speed (Contact Type) Tachometers, Speed Meters, RPM Meters, RPM Indicators of Centrifuges, RPM Source/Calibrators	Using Master Tachometer by Comparison Method as per SANAS TR 45-02	100 RPM to 5000 RPM	0.30% to 0.015%
171	MECHANICAL-ACCELERATION AND SPEED	RPM / Speed (Contact Type) Tachometers, Speed Meters, RPM Meters, RPM Indicators of Centrifuges, RPM Source/Calibrators	Using Master Tachometer by Comparison Method as per SANAS TR 45-02	5000 RPM to 8000 RPM	0.015% to 0.019%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 99 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
172	MECHANICAL-ACCELERATION AND SPEED	RPM / Speed (Non-Contact Type) Tachometers, Speed Meters, RPM Meters, RPM Indicators of Centrifuges, RPM Source/Calibrators, Proximity Sensors	Using Master Tachometer by Comparison Method as per SANAS TR 45-02	100 RPM to 10000 RPM	0.30 % to 0.019%
173	MECHANICAL-ACCELERATION AND SPEED	RPM / Speed (Non-Contact Type) Tachometers, Speed Meters, RPM Meters, RPM Indicators of Centrifuges, RPM Source/Calibrators, Proximity Sensors	Using Digital Stop Watch by Comparison Method	1 RPM to 10 RPM	0.59% to 0.12%
174	MECHANICAL-ACCELERATION AND SPEED	RPM / Speed (Non-Contact Type) Tachometers, Speed Meters, RPM Meters, RPM Indicators of Centrifuges, RPM Source/Calibrators, Proximity Sensors	Using Master Tachometer by Comparison Method as per SANAS TR 45-02	10 RPM to 100 RPM	0.12% to 0.30%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 100 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
175	MECHANICAL-ACCELERATION AND SPEED	RPM / Speed (Non-Contact Type) Tachometers, Speed Meters, RPM Meters, RPM Indicators of Centrifuges, RPM Source/Calibrators, Proximity Sensors	Using Master Tachometer by Comparison Method as per SANAS TR 45-02	10000 RPM to 90000 RPM	0.019% to 0.0054%
176	MECHANICAL-ACCELERATION AND SPEED	RPM / Speed (Non-Contact Type) Tachometers, Speed Meters, RPM Meters, RPM Indicators of Centrifuges, RPM Source/Calibrators, Proximity Sensors	Using Master Tachometer by Comparison Method as per SANAS TR 45-02	90000 RPM to 99900 RPM	0.0036% to 0.0035%
177	MECHANICAL-ACCELERATION AND SPEED	Vibration Meters (@ 10 Hz to 160 Hz) Acceleration	Using Master Vibration meter with Vibration Calibrator by Comparison Method	1.5 m/s^2 to 30 m/s^2	2.1%
178	MECHANICAL-ACCELERATION AND SPEED	Vibration Meters (@ 10 Hz to 160 Hz) Displacement	Using Master Vibration meter with Vibration Calibrator by Comparison Method	0.010 mm to 1.000 mm	9.14%
179	MECHANICAL-ACCELERATION AND SPEED	Vibration Meters (@ 10 Hz to 160 Hz) Displacement	Using Master Vibration meter with Vibration Calibrator by Comparison Method	1.000 mm to 2.000 mm	2.6%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 101 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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	MECHANICAL-ACCELERATION AND SPEED	Vibration Meters (@ 10 Hz to 160 Hz) Velocity	Using Master Vibration meter with Vibration Calibrator by Comparison Method	1.5 mm/s to 100 mm/s	3%
181	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Bench Centre (Coaxiality & Parallelism)	Using Test Mandrel & Dial Indicator by Comparison Method	100 mm to 300 mm	8µm
182	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Calipers (Digital/Dial/Vernier) Resolution: 0.01 mm	Using Slip Gauge Set (Gr 0), Long Slip Gauge Set by Comparison Method	1000 mm to 2000 mm	19µm
183	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Height Gauge (Digital / Dial / Vernier) Resolution: 0.01 mm	Using Caliper Checker / Long Slip Gauges by Comparison Method	0 to 1000 mm	14.8µm
184	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Microscope / Video Measuring System Linear only	Using Glass Scale by Comparison Method	25 X 25 mm to 300 X 200 .mm	3.0µm

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 102 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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.)	Surface Plate (Granite / Cast Iron)	Using Spirit Level by Comparison Method	300 X 300 mm to 3000 x 2000 mm	Sqrt((L+W)/150) x 1.5µm (L & W are in mm.)
186	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Electronic Height Gauge (Digital) Resolution: 0.0001 mm	Using Slip Gauge Set Gr.0 by Comparison Method as per IS 2921	0 to 600 mm	3.9µm
187	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector (Angle)	Using Angle Blocks by Comparison Method	0 ° to 360 °	0.41 Arc of min
188	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector (Linear) Resolution: 0.0001 mm	Using Glass Scale by Comparison Method	25 X 25 mm to 300 X 300 mm	3.0µm
189	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector (Magnification)	Using Slip Gauge Set Gr.0 and Digital Caliper by Comparison Method	10x - 100x	0.02%
190	MECHANICAL-HARDNESS TESTING MACHINES	Brinell Hardness Testing Machine	Using Standard Hardness Blocks by Indirect Method as per IS 1500 (Part 2) 2021 / ISO 6506 (Part 2) 2017	HBW 10/3000	2.25%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 103 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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-HARDNESS TESTING MACHINES	Brinell Hardness Testing Machine	Using Standard Hardness Blocks by Indirect Method as per IS 1500 (Part 2) 2021 / ISO 6506 (Part 2) 2017	HBW 2.5/187.5	1.68%
192	MECHANICAL-HARDNESS TESTING MACHINES	Brinell Hardness Testing Machine	Using Standard Hardness Blocks by Indirect Method as per IS 1500 (Part 2) 2021 / ISO 6506 (Part 2) 2017	HBW 5/750	2.39%
193	MECHANICAL-HARDNESS TESTING MACHINES	Direct Verification of Brinell Hardness Tester (Diameter Measuring System)	Using Glass Scale IS 1500 (Part 2) 2021 / ISO 6506 (Part 2) 2017	Upto 6 mm	6.0µm
194	MECHANICAL-HARDNESS TESTING MACHINES	Direct Verification of Brinell Hardness Tester (Test Force)	Using Load Cell with Indicator IS 1500 (Part 2) 2021 / ISO 6506 (Part 2) 2017	49.03 N to 29.42 kN	0.25%
195	MECHANICAL-HARDNESS TESTING MACHINES	Direct Verification of Rockwell Hardness Tester (Depth Measuring System)	Using Slip Gauge Set (Gr. 0) IS 1586 (Part 2) 2018 / ISO 6508 (Part 2) 2015	Upto 1 mm	1.0µm
196	MECHANICAL-HARDNESS TESTING MACHINES	Direct Verification of Rockwell Hardness Tester (Test Force)	Using Load Cell with Indicator IS 1586 (Part 2) 2018 / ISO 6508 (Part 2) 2015	147.1 N to 1471 N	0.20%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 104 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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-HARDNESS TESTING MACHINES	Direct Verification of Vickers Hardness Tester (Diagnol Measuring System)	Using Glass Scale IS 1501 (Part 2) 2020 / ISO 6507 (Part 2) 2018	Upto 1.4 mm	2.3µm
198	MECHANICAL-HARDNESS TESTING MACHINES	Direct Verification of Vickers Hardness Tester (Test Force)	Using Load Cell with Indicator as per IS 1501 (Part 2) 2013 / ISO 6507 (Part 2) 2018	49.03 N to 980.7 N	0.14%
199	MECHANICAL-HARDNESS TESTING MACHINES	Rockwell Hardness Testing Machine	Using Standard Hardness Blocks by Indirect Method IS 1586 (Part 2) 2018 / ISO 6508 (Part 2) 2015	HRA	0.55HRA
200	MECHANICAL-HARDNESS TESTING MACHINES	Rockwell Hardness Testing Machine	Using Standard Hardness Blocks by Indirect Method IS 1586 (Part 2) 2018 / ISO 6508 (Part 2) 2015	HRB	1.0HRB
201	MECHANICAL-HARDNESS TESTING MACHINES	Rockwell Hardness Testing Machine	Using Standard Hardness Blocks by Indirect Method IS 1586 (Part 2) 2018 / ISO 6508 (Part 2) 2015	HRC	0.48HRC

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 105 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
202	MECHANICAL-HARDNESS TESTING MACHINES	Vickers Hardness Testing Machine	Using Standard Hardness Blocks by Indirect Method IS 1501 (Part 2) 2020 / ISO 6507 (Part 2) 2018	HV 5	2.95%
203	MECHANICAL-HARDNESS TESTING MACHINES	Vickers Hardness Testing Machine	Using Standard Hardness Blocks by Indirect Method IS 1501 (Part 2) 2020 / ISO 6507 (Part 2) 2018	HV10	2.0%
204	MECHANICAL-HARDNESS TESTING MACHINES	Vickers Hardness Testing Machine	Using Standard Hardness Blocks by Indirect Method IS 1501 (Part 2) 2020 / ISO 6507 (Part 2) 2018	HV30	2.0%
205	MECHANICAL-HARDNESS TESTING MACHINES	Vickers Hardness Testing Machine	Using Standard Hardness Blocks by Indirect Method IS 1501 (Part 2) 2020 / ISO 6507 (Part 2) 2018	HV50	2.0%

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 106 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
206	MECHANICAL-PRESSURE INDICATING DEVICES	hydraulic Pressure (Gauges (Dial / Digital), Transducers, Transmitters,Digital Manometers, Switches, Recorders, Data Loggers, Modules and Indicating Devices)	Using Pressure Module as per DKD R-6-1/2	35 bar to 70 bar	0.018% of rdg
207	MECHANICAL-PRESSURE INDICATING DEVICES	hydraulic Pressure (Gauges (Dial / Digital), Transducers, Transmitters,Digital Manometers, Switches, Recorders, Data Loggers, Modules and Indicating Devices)	Using Digital Pressure Indicator as per DKD R-6-1/2	70 bar to 700 bar	0.021% of rdg
208	MECHANICAL-PRESSURE INDICATING DEVICES	Low Pressure (Gauges (Dial / Digital), Transducers, Transmitters,Liquid Manometers,Digital Manometer, Switches, Recorders, Data Loggers, Modules Magnehlic Gauges and Indicating Devices)	Using Digital Pressure Calibrator as per DKD R-6-1/2	100 mbar to 1000 mbar	0.013% of rdg

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 107 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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-PRESSURE INDICATING DEVICES	pneumatic Low Pressure (Gauges (Dial / Digital), Transducers, Transmitters,Liquid Manometers,Digital Manometer, Switches, Recorders, Data Loggers, Modules Magnehlic Gauges and Indicating Devices)	Using Digital Differential Manometer as per DKD R-6-1/2	10 mbar to 100 mbar	0.11% of rdg
210	MECHANICAL-PRESSURE INDICATING DEVICES	pneumatic Low Pressure (Gauges (Dial / Digital), Transducers, Transmitters,Liquid Manometers,Digital Manometers, Switches, Recorders, Data Loggers, Modules Magnehlic Gauges and Indicating Devices)	Using Digital Differential Manometer as per DKD R-6-1 / 2	-250 mmH2o (-0.02452 bar) to 250 mmH2o (0.02452 bar)	0.041% of rdg

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 108 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
211	MECHANICAL-PRESSURE INDICATING DEVICES	pneumatic Pressure (Gauges (Dial / Digital), Transducers, Transmitters,Digital Manometers, Switches, Recorders, Data Loggers, Modules and Indicating Devices)	Using Digital Pressure Indicator as per DKD R-6-1/2	20 bar to 35 bar	0.013% of rdg
212	MECHANICAL-PRESSURE INDICATING DEVICES	Pressure (Gauges (Dial / Digital), Transducers, Transmitters, Digital Manometers, Switches, Recorders, Data Loggers, Modules and Indicating Devices)	Using Digital Pressure Calibrator as per DKD R-6-1/2	1 bar to 20 bar	0.015% of rdg
213	MECHANICAL-PRESSURE INDICATING DEVICES	Pressure (Gauges (Dial / Digital), Transducers, Transmitters, Digital Manometers, Switches, Recorders, Data Loggers, Modules and Indicating Devices)	Using Digital Pressure Indicator as per DKD R-6-1/2	700 bar to 1000 bar	0.028% of rdg

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 109 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
214	MECHANICAL-PRESSURE INDICATING DEVICES	Vacuum (Gauges (Dial / Digital), Transducers, Transmitters, Recorders, Data Loggers, Modules and Indicating Devices)	Using Digital Pressure Calibrator as per ISO 3567 & DKD R-6	0 bar to -1 bar	0.076% of rdg
215	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Force Measuring System of UTM (Compression / Tension)	Using Load Cell with Indicator as per IS 1828 (Part 1) 2015	10 N to 100 kN	0.10%
216	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Force Measuring System of UTM (Compression)	Using Load Cell with Indicator as per IS 1828 (Part 1) 2015	100 kN to 2000 kN	0.2%
217	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Verification of Displacement System in the Material Testing Machine	Using Linear Dimensional Instruments as per ASTM E2309/E2309 M-16	0 mm to 600 mm	0.019mm

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 110 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
218	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Verification of Speed for Material Testing Machine	Using Linear Length Measuring Instruments and Stop Watch as per ASTM E 2658	Upto 1000 mm/min	0.23mm/min
219	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class 1 & Coarser), d=0.0001 mg	Using E1 Class Standard Weights as per OIML R76-1	Upto 5 g	0.003mg
220	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class 1 & Coarser), d=0.001 mg	Using E1 Class Standard Weights as per OIML R76-1	upto 22 g	0.008mg
221	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class 1 & Coarser), d=0.01 mg	Using E1 Class Standard Weights as per OIML R76-1	upto 210 g	0.03mg
222	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class 1 & Coarser), d=0.1 mg	Using E1 Class Standard Weights as per OIML R76-1	Upto 5000 g	0.60mg
223	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class I & Coarser), d=5 mg	Using E1 Class Standard Weights as per OIML R76-1	Upto 18000 g	4.3mg
224	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class II & Coarser), d= 0.2 g	Using E1 & E2 Class Standard Weights as per OIML R76-1	Upto 55000 g	0.12g

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 111 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
225	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class II & Coarser), d=0.1 g	Using E1 & E2 Class Standard Weights as per OIML R76-1	Upto 25000 g	0.058g
226	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class III& Coarser), d=1 g	Using E1,E2 & F1 Class Standard Weights as per OIML R76-1	Upto 100 kg	0.00058kg
227	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class IV & Coarser), d=100 g	Using M1 Class Standard Weights as per OIML R76-1	Upto 1000 kg	58g
228	MECHANICAL-WEIGHING SCALE AND BALANCE	Digital / Analog Weighing Balances (Class IV & Coarser), d=20 g	Using M1 Class Standard Weights as per OIML R76-1	Upto 400 kg	0.012kg
229	THERMAL-SPECIFIC HEAT & HUMIDITY	Humidity (Digital / Analog Thermo Hygrometers, Hygrometers, Hygrographs, Humidity Sensors, Data Loggers, Temperature & Humidity Transmitters)	Using Digital Thermohygrometer with Humidity Chamber by Comparison Method	5 % RH to 95 % RH @ 25°C	1% RH
230	THERMAL-SPECIFIC HEAT & HUMIDITY	Humidity Chamber, Environmental Chamber, Climatic Chamber	Using Digital Thermohygrometer by Comparison Method	5 % RH to 95 %RH @25°C	0.80%RH

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 112 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
231	THERMAL-SPECIFIC HEAT & HUMIDITY	Temperature (Digital / Analog Thermo Hygrometers, Hygrometers, Hygrographs, Humidity Sensors, Data Loggers, Temperature & Humidity Transmitters)	Using RTD Sensor and Indicator with Chamber by Comparison Method	5 °C to 60 °C @ 50%R.H	0.19°C
232	THERMAL-TEMPERATURE	DUC Indicator with sensor of Ovens, Furnace, BOD Incubator, Dry Temperature Bath	Using Single sensor and Datalogger by Comparison Method	600 °C to 1200 °C	1.52°C
233	THERMAL-TEMPERATURE	DUC Indicator with sensor of Ovens, Furnace, Freezer, BOD Incubator, Dry Temperature Bath, Liquid Bath	Using Single Sensor and Datalogger by Comparison Method	200 °C to 600 °C	0.29°C
234	THERMAL-TEMPERATURE	Indicator with sensor of Ovens, Furnace, Chambers, Dry Block Calibrators	Using Single sensor and Datalogger by Comparison Method	1200 °C to 1500 °C	2.66°C
235	THERMAL-TEMPERATURE	Non-Contact Temperature Measurement (IR Thermometer, Pyrometer, Thermal Imager)	Using Standard Contact/Non-Contact Thermometer with Black Body Source @ emissivity 0.95 by Comparison Method	-15 °C to 50 °C	1.8°C

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 113 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
236	THERMAL-TEMPERATURE	Non-Contact Temperature Measurement (IR Thermometer, Pyrometer, Thermal Imager)	Using Standard Contact/Non-Contact Thermometer with Black Body Source @ emissivity 0.95 by Comparison Method	200 °C to 500 °C	2.05°C
237	THERMAL-TEMPERATURE	Non-Contact Temperature Measurement (IR Thermometer, Pyrometer, Thermal Imager)	Using Standard Contact/Non-Contact Thermometer with Black Body Source @ emissivity 0.95 by Comparison Method	50 °C to 200 °C	1.38°C
238	THERMAL-TEMPERATURE	Ovens, Furnace, BOD Incubator, Dry Temperature Bath,Mapping	Using Multiple sensors (Minimum 5 Sensors used) and Multi Channel Datalogger by Comparison Method	600 °C to 1200 °C	6.7°C
239	THERMAL-TEMPERATURE	Ovens, Furnace, Freezer, BOD Incubator, Dry Temperature Bath, Liquid Bath	Using Multiple Sensors (Minimum 5 Sensors used) and Multi Channel Datalogger by Comparison Method	200 °C to 600 °C	2.1°C
240	THERMAL-TEMPERATURE	Ovens, Furnace, Freezer,Refrigerator, BOD Incubator, Dry Temperature Bath, Liquid Bath, Mapping	Using Multiple sensors (Minimum 5 Sensors used) and Multi Channel Datalogger by Comparison Method	-80 °C to 200 °C	0.81°C

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 114 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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	THERMAL-TEMPERATURE	Ovens, Furnace, Freezer,Refrigerator, BOD Incubator,Dry Temperature Bath, Liquid Bath	Using SSPRT Sensor with Digital Multimeter by Comparison Method	-80 °C to 200 °C	0.047°C
242	THERMAL-TEMPERATURE	Temperature (RTD/TC with/without Indicator,Thermistor, Temperature Recorder,Temperature Datalogger,Temperature Gauge,Temperature Switch,Temperature Transmitter,Bi-Metallic Thermometer	Using SSPRT Sensor with Digital Multimeter and Liquid bath by Comparison Method	0 °C to 100 °C	0.037°C

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 115 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
243	THERMAL-TEMPERATURE	Temperature (RTD/TC with/without Indicator,Thermistor, Temperature Recorder,Temperature Datalogger,Temperature Gauge,Temperature Switch,Temperature Transmitter,Bi-Metallic Thermometer	Using SSPRT Sensor with Digital Multimeter and Dry block calibrator by Comparison Method	250 °C to 660 °C	0.25°C
244	THERMAL-TEMPERATURE	Temperature (RTD/TC with/without Indicator,Thermistor, Temperature Recorder,Temperature Datalogger,Temperature Gauge,Temperature Switch,Temperature Transmitter,Bi-Metallic Thermometer	Using SSPRT Sensor with Digital Multimeter and Liquid bath by Comparison Method	-80 °C to 0 °C	0.037°C

SCOPE OF ACCREDITATION

Laboratory Name : MACRO CALIBRATION SERVICES PRIVATE LIMITED, NO. 4/7, I-FLOOR, HASTHINAPURAM MAIN ROAD, NEHRU NAGAR, CHROMEPET, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3598 **Page No** 116 of 116

Validity 15/06/2023 to 12/04/2024 **Last Amended on** -

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)(±)
245	THERMAL-TEMPERATURE	Temperature (TC with or without Indicator,Thermistor, Temperature Recorder,Temperature Datalogger,Temperature Gauge,Temperature Switch,Temperature Transmitter,Bi-Metallic Thermometer	Using R-Type Thermocouple with Digital Multimeter and Dry block calibrator by Comparison Method	660 °C to 1200 °C	1.4°C
246	THERMAL-TEMPERATURE	Temperature (RTD/TC with/without Indicator,Thermistor, Temperature Recorder,Temperature Datalogger,Temperature Gauge,Temperature Switch,Temperature Transmitter,Bi-Metallic Thermometer	Using SSPRT Sensor with Digital Multimeter and Liquid bath by Comparison Method	100 °C to 250 °C	0.11°C

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