FEDERATION FOR DEVELOPMENT OF ACCREDITATION SERVICES

118-119, First Floor, Sushant Tower, Sector – 56, Gurugram – 122011, Haryana, India.

CERTIFICATE OF ACCREDITATION

(AS PER ISO/IEC 17025:2017)

This is to attest that

M/s STAR CALIBRATION SERVICES.

207,208 PM Plaza, Near –Laxmi Petrol Pump, Opp- Jalaram Temple,
Viramgam-382150, Dist.- Ahmedabad, Gujarat, India

Calibration Laboratory

has demonstrated compliance with ISO/IEC Standard 17025:2017, General requirements for the competence of testing and calibration laboratories and supplementary criteria for calibration laboratories.

Certificate Number: CL-116

Issue Date: 28.12.2023 **Valid Until:** 27.12.2025

The certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard and the relevant requirements of FDAS. (for scope of accreditation visit website www. fdasindia.org).

DEVI SARAN TEWARI
Director

FEDERATION FOR DEVELOPMENT OF ACCREDITATION SERVICES

118-119, First Floor, Sushant Tower, Sector – 56, Gurugram – 122011, Haryana, India.

SCOPE OF ACCREDITATION

(Annexure to Certificate of CL - 116)

Validity 28.12.2023 to 27.12.2025 **Amended on** - NA

Mechanical Calibration (Laboratory Based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *
Dimension				
1	Bevel Protractor/ Combination Set/ Angle Protector/ Clinometers / Inclinometers (Angle) L.C. 1 / 5 (min)	Using Angle Gauge Set & IS 4239: 1970 RA 2011, IS 5812:1970	Up to 180 °	2.90'
2	Angle Glass Scale Graticules) L.C : 1 °	Using Profile Projector by Comparison Method	0 ° to 360 °	11.76' arc
3	Calibration Slide/Glass Scale/ Graticules and Glass Grid (Parameter-linear Measurement)	Using Profile Projector by comparison method & JIS B 7541:2001	0.005 mm to 100 mm	4.50 µm
4	Caliper (Vernier/Dial/Digital, Error external jaw, internal jaw and depth, parallelism of external and internal jaws) L.C. 0.01mm or coarser	Using Slip Gauge Set, Caliper Checker& Long Slip Gauges & IS 16491(part-1) -2021	0 – 300 mm	11.20 µm
			0 to 1000 mm	12.50 µm
			0-2000 mm	34.80 µm
5	Bore Gauge with or without Dial (Transmission Accuracy Check Only) L.C.: 0.1 µm	Using Dial Calibration Tester by JIS B 7515:2020	Up to 1 mm	1.50 µm
6	Surface Plate/Comparator Base (Flatness Measurement)	Using Electronic Level, IS 12937:1990 RA 2020, IS-2285:2003 RA 2020 , IS-7327:2003 RA 2019	150x150 mm to 2000x2000 mm	13.31* Sqrt. (L+W) /100 µm/mtr
7	Comparator base (Flatness Measurement)	Using Electronic probe and Surface plate by comparison method	Up to 300 mm	2.60 µm

Jitendra Parmar

Dealing Officer

SCOPE OF ACCREDITATION

(Annexure to Certificate of CL - 116)

Mechanical Calibration (Laboratory Based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *
8	External Micrometer (analog/ digital/ pin /disc/screw thread/caliper/gear tooth/tube/crimp height type)- (Screw error & Error in length ofeach extension)- L.C 0.001mm or coarser	Using Slip Gauge Set & IS 2967:1983	Up to 100 mm	2.20 µm
9	External Micrometer (analog/ digital/ pin /disc/screw thread/caliper/gear tooth /tube/crimp height type)- (Screw error & Error in length ofeach extension)- L.C 0.01mm or coarser	Using Slip Gauge Set & Long Slip Gauges & IS 2967:1983	>100 to 300 mm	7.50 µm
			>300 to 600 mm	7.90 µm
			>600 to 1000 mm	13.90 µm
10	Feeler Gauge	Using comparator stand with electronic probe by comparison Method	0.01 mm to 2 mm	2 µm
11	Internal Micrometer / Stick Micrometer 0.01 mm	Using Steel Long Slip Gauge Set , "0" Grade Slip Gauges & Accessories set by comparison Method	25 mm to 1500 mm	23.6 µm
12	Depth Micrometer L.C.: 0.001mm	Using Grade '0' Slip Gauge set, Steel Long Slip, Surface Plate BS:6468:2008	0 mm to 150 mm	8.70 µm
13	Depth Caliper (Vernier/Dial/ Digital) L.C.: 0.01mm	Using Grade '0' Slip Gauge set, Steel Long Slip gauge Set ,Surface Plate by Comparison Method	0 mm to 300 mm	15.60 µm
14	Dial / Digital Thickness Gauge LC 0.001 mm	Using Gauge Block Set By Comparison Method	0 mm to 50 mm	1.50 µm

Dealing Officer

SCOPE OF ACCREDITATION

(Annexure to Certificate of CL - 116)

Mechanical Calibration (Laboratory Based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *
15	Cube Mould	Using Digital Caliper By Comparison Method	0 mm to 150 mm	25 µm
16	Coating Thickness Gauge	Using Standard Thickness Foil by comparison method	0.01 mm to 2 mm	8.10 µm
17	Ultrasonic Thickness Gauge	Using Gauge Block Set by comparison method	0.5 mm to 300 mm	71.10 µm
18	Thickness Foils	Using Electronic Probe with comparator Stand by comparison Method	0.04 mm to 2 mm	1.40 µm
19	Test Sieve	Using Profile Projector, Vernier Caliper By IS 460 P-1,2020, IS 460 P-2:2020,IS 460 P-3:2020	15 µm to 4 mm	6.20 µm
			4 mm to 125 mm	21.0 µm
20	Taper Scale	Using Profile Projector By Comparison Method	0 mm to 45 mm	5.90 µm
21	Snap Gauge / Gap Gauge / Templates / Dial Snap Gauge	Using “0” Grade Slip Gauge Set by comparison method	0 mm to 100 mm	2.60 µm
			100 mm to 200 mm	2.60 µm
22	Steel Scale	Using Measuring Scale and Tape Calibrator As per IS:1269 (Part I,11):1997 RA 2018 by Comparison Method	0 mm to 1000 mm	70 x Sqrt of L µm, where L in m
23	Measuring Tape(woven metallic & glass fiber) /Pie Tape / Circumference Tape L.C : 1 mm	Using Measuring Scale and Tape Calibrator As per IS:1269 (Part I,11):1997 RA 2018 by Comparison Method	0 mm to 5000 mm	116 x Sqrt of L µm, where L in m
24	Plain Plug Gauge / OD Master / Width Thickness Gauge / Cylindrical Setting Master /Reference Disc/Paddle Gauges	Using Grade ‘0’ Slip Gauge set, Electronic Probe, Comparator Stand as per IS 3455:1971 by Comparison Method	0 mm to 100 mm	0.90 µm

Dealing Officer

SCOPE OF ACCREDITATION

(Annexure to Certificate of CL - 116)

Mechanical Calibration (Laboratory Based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *
25	Plain Plug Gauge / OD Master / Width Thickness Gauge / Cylindrical Setting Master/ Reference Disc/Paddle Gauges	Using Grade '0' Slip Gauge set, Electronic Probe, Comparator Stand as per IS 3455:1971 by Comparison Method	100 mm to 200 mm	3.20 µm
26	Micrometer Setting Rod	Using Grade '0' Slip Gauge set, Surface Plate, Electronics Probe as a comparison method	Up to 275 mm	6 µm
27	Micrometer Setting Rod / Height Block	Using Grade '0' Slip Gauge set, Surface Plate, Electronics Probe as a comparison method	275 mm to 675 mm	10.20 µm
28	LVDT Probe / Electronic Probe With Indicator L.C :0.0001 mm	Using Grade "0" Slip GaugeSet, Comparator Stand by Comparison Method	0 to 25 mm	1.30 µm
29	Outside Dial Caliper / Pistol Caliper	Using Slip Gauge block Set by Comparison Method	0 mm to 100 mm	75.40 µm
30	Plunger Type Dial Gauge L.C.: 0.001mm	Using Dial Calibration Tester by comparison Method	0 mm to 25 mm	2.90 µm
31	Plunger Type Dial Gauge L.C.: 0.01mm	Using Gauge Blocks, Comparator Stand by Comparison Method	0 mm to 50 mm	3.80 µm
32	Radius Gauge/ Radius Chart/ Radius Measurement	Using Profile Projector By IS: 5273:1969 RA 2019	0.2 mm to 40 mm	38.90 µm
33	Lever Type Dial Gauge L.C.: 0.001 mm	Using Dial Calibration Tester by comparison Method	0 mm to 0.14 mm	2.60 µm
34	Lever Type Dial Gauge L.C.: 0.002 mm	Using Dial Calibration Tester by comparison Method	0 mm to 0.2 mm	2.60 µm

Dealing Officer

SCOPE OF ACCREDITATION

(Annexure to Certificate of CL - 116)

Mechanical Calibration (Laboratory Based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *
35	Lever Type Dial Gauge L.C.: 0.01 mm	Using Dial Calibration Tester by Comparison Method	0 mm to 0.8 mm	2.70 µm
36	Height Gauge (Vernier /Dial/ Digital) L.C.: 0.01 mm	Using Steel Slip Gauge Set, Caliper Checker ,Surface Plate By Comparison Method	0 mm to 600 mm	13.60 µm
37	Step Gauge	Using "0" Grade Slip Gauge Set & Dial Gauge with Comparison Stand by Comparison Method	Up to 100 mm	6.20 µm
38	Thread Plug Gauge/ WCP(Only Effective Diameter)	Using FCDM Machine By Comparison Method.	Up to 100 mm	5.40 µm
39	Thread Measuring Wire / Measuring Pin	Using Electronics Probe by comparison Method	0.01 mm to 50 mm	0.80 µm
40	Thread Pitch Gauge/Pitch Measurement (Pitch)	Using Profile Projector By Comparison Method	0.25 mm to 7 mm	5.80 µm
41	Thread Pitch Gauge (Angle)	Using Profile Projector by Comparison Method	55° to 60°	3.10’
42	V Block - (Parallelism)	Using Electronic Probe and Test Mandrel by comparison Method	Up to 150	6.60 µm
43	V Block - (Squareness)	Using Electronic Probe and Slip gauge Set by comparison Method	Up to 150 mm	6.60 µm
44	V Block - (Symmetricity)	Using Electronic Probe and Test Mandrel by comparison Method	Up to 150 mm	6.60 µm
45	Inspection JIG And Fixture/Moulds/Bridge Cam Gauge/Limit Gauges/Paddle Gauge/Receiver Gauge/Plain Work Piece	Using Profile Projector / Vernier Caliper by Comparison Method	L/W/D : upto 100 mm Radius: upto 40 mm Angle: upto 360° Height: upto 100 mm Inner/Outer Dia:40 mm	2.60 µm 38.90 µm 10.76’ of arc 2.60 µm 38.90 µm

Dealing Officer

SCOPE OF ACCREDITATION

(Annexure to Certificate of CL - 116)

Mechanical Calibration (Laboratory Based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *
46	Wire Gauge (Linear measurement)	Using Profile Projector by Comparison Method	0 mm to 8 mm	10.10 µm
47	Weld Fillet Gauge(Angle)	Using Profile Projector by Comparison Method	Up to 60 °	6.10 µm
48	Weld Fillet Gauge(Length)	Using Profile Projector By Comparison Method	0 mm to 25 mm	6 µm
49	Test Mandrels (Straightness)	Using Dial Test Indicator by Comparison Method	50 x 150 mm – Dia Up to 50 mm	6.60 µm
50	Flakiness / Elongation gauge (Length)	Using Electronic Caliper by Comparison Method	Up to 100 mm	8.90 µm
51	Wet Film Thickness Gauge	Using Profile Projector By Comparison Method	25 µm to 3000 µm	7 µm
52	Angular scale, Angle Measurement, Angle Gauge	Profile Projector & IS 6231:1971 RA 2019	Up to 360°	10.76' arc
53	Dial Calibration Tester L.C. 0.0001 mm	Using Electronics Probe, Grade '0' Slip Gauge set by comparison Method	0 mm to 25 mm	1.50 µm
54	Measuring Tape and Scale Calibrator L.C. 0.01 mm	Using Gauge Blocks & Long Gauge Block set by Comparison Method	0 mm to 1000 mm	18.60 µm
55	Profile Projector/ Video measuring Machine/ Vision Measuring Machine/ Measuring Microscope (Linear Scale) L.C : 0.001 µm	Using Slip Gauge Block Set by comparison Method	100 mm X 150 mm	3 µm
56	Profile Projector/ Video measuring Machine/ Vision Measuring Machine/ Measuring Microscope (Magnification)	Using Digimatic Caliper & Gauge Blocks by Comparison Method	10X to 100X	11.20 µm

Dealing Officer

SCOPE OF ACCREDITATION

(Annexure to Certificate of CL - 116)

Mechanical Calibration (Laboratory Based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *
57	Profile Projector/ / Video Measuring Machine / Measuring Microscope (Angular Scale) L.C : 1"	Using Angle Gauge set by comparison method	0° to 360°	3.90' arc
Pressure & Vacuum				
1	Hydraulic Pressure Pressure Gauge (Digital /Analogue) indicator with Transmitter /Switches, Pressure Calibrators/Pressure Chart / Recorder with pressure sensor	Using Digital pressure Gauge and Pressure Pump as per DKD R6-1:2016 by Comparison Method	0 bar to 700 bar	0.25 bar
2	Pneumatic Pressure Pressure Gauge (Digital /Analogue) indicator with Transmitter /Switches, Pressure Calibrators/Pressure Chart / Recorder with a pressure sensor.	Using Digital Pressure Gauge and Pressure Pump as per DKD R 6-1:2016 by Comparison Method	0 bar to 2 bar	0.0009 bar
3	Pneumatic Pressure Pressure Gauge (Digital /Analogue) indicator with Transmitter /Switches, Pressure Calibrators/Pressure Chart / Recorder with a pressure sensor.	Using Digital Pressure Gauge and Pressure Pump as per DKD R6 -1:2016 by Comparison Method	2 bar to 20 bar	0.06 bar
4	PRESSURE (Hydraulic) Pressure Gauge (Digital / Analogue)/ indicator with Transmitter/Switches, Pressure Calibrators with a pressure sensor.	Using Dead Weight Tester as per DKD R6 -1:2016 by Comparison Method	100 kPa to 15000 kPa	0.04 % rdg

Dealing Officer

SCOPE OF ACCREDITATION

(Annexure to Certificate of CL - 116)

Mechanical Calibration (Laboratory Based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *
5	PRESSURE (Hydraulic) Pressure Gauge (Digital / Analogue)/ indicator with Transmitter/Switches, Pressure Calibrator with pressure sensor.	Using Dead Weight Tester as per DKD R6-1:2016 by Comparison Method	15000 kPa to 70000 kPa	0.031 % rdg
6	Vacuum Pressure Gauge (Digital / Analogue) indicator with Transmitter	Using Digital Vacuum Gauge and Vacuum Pump By Comparison Method as per as per DKD R 6 -1:2016	(-)0.98 bar to 0 bar	0.0011 bar
Force				
1	Push Pull Gauge	Fixture, Frame, Hangers and Newtonian weights Based on VDI/VDE 2624-2.1:2018	10 N to 100 N	1.29 N
			100 N to 1000 N	3.27 N
Hardness				
1	Rubber Hardness Tester / Shore Hardness Tester/ Durometer (A)	Load Cell with Indicator & ASTM D 2240:2017	0 to 100 Shore A	0.48 Shore A
2	Rubber Hardness Tester / Shore Hardness Tester/ Durometer (D)	Load Cell with Indicator & ASTM D 2240:2017	0 to 100 Shore D	0.48 Shore D
Torque				
1	Torque Wrench/ Torque Screw Driver (Type I/Class B,C,D,E) (Type II/class A,B,D,E)	Using Digital Torque Indicator with sensor as per IS : 16906:2018	0.01 Nm to 3 Nm	12.87 %
2	Torque Wrench/ Torque Screw Driver (Type I/Class B,C,D,E) (Type II/class A,B,D,E)	Using Digital Torque Indicator with sensor as per IS : 16906:2018	2 Nm to 20 Nm	2.38 %

Dealing Officer

SCOPE OF ACCREDITATION

(Annexure to Certificate of CL - 116)

Mechanical Calibration (Laboratory Based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *
3	Torque Wrench/ Torque Screw Driver (Type I/Class B,C,D,E) (Type II/class A,B,D,E)	Using Digital Torque Indicator with Sensor as per IS : 16906:2018	20 Nm to 200 Nm	2.38 %
4	Torque Wrench/ Torque Screw Driver (Type I/Class B,C,D,E) (Type II/class A,B,D,E)	Using Digital Torque Indicator with Sensor as per IS : 16906:2018	200 Nm to 2000 Nm	0.06 %
Speed & Acceleration				
1	Non-contact type rpm measurement (Digital Tachometer /Tacho calibrator/RPM Source)	Digital Tachometer & Source By Comparison method with using motorized source with strip & SANASTR45-II-2017	10 rpm to 34000 rpm	0.17 %
2	Contact type rpm measurement (Digital Tachometer /Tacho calibrator/Rpm source)	Using Digital Tachometer & Source By Comparison method & SANASTR45-II-2017	10 rpm to 6000 rpm	0.32%

Vikendra Parmar

Dealing Officer

SCOPE OF ACCREDITATION

(Annexure to Certificate of CL - 116)

Mechanical Calibration (At Site)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *
Dimension				
1	Surface plate/Comparator base (Flatness Measurement)	Using Electronic Level, IS 12937,IS-2285 ,IS-7327	150x150 mm to 2000 x 2000 mm	13.31* Sqrt. (L+W) /100 µm/mtr
2	Comparator base (FlatnessMeasurement)	Using Electronic probe and Surface plate by comparison method	Up to 300 mm	2.60 µm
3	Measuring Tape and Scale Calibrator L.C. 0.01 mm	Using Gauge Blocks & Long Gauge Block set by Comparison Method	0 mm to 1000 mm	18.60 µm
4	Profile Projector/ Video measuring Machine/ Vision Measuring Machine/ Measuring Microscope (Linear Scale) L.C : 0.001 µm	Using Slip Gauge Block Set by comparison Method	100 mm X 150 mm	3 µm
5	Profile Projector/ Video measuring Machine/ Vision Measuring Machine/ Measuring Microscope (Magnification)	Using Digimatic Caliper & Gauge Blocks by Comparison Method	10X to 100X	11.20 µm
6	Profile Projector/ / Video Measuring Machine / Measuring Microscope (Angular Scale) L.C : 1"	Using Angle Gauge set by comparison method	0° to 360°	3.90' arc
Pressure & Vacuum				
1	Hydraulic Pressure-Pressure Gauge (Digital /Analogue) indicator with Transmitter/ Switches, Pressure Calibrators/Pressure Chart / Recorder with pressure sensor	Using Digital pressure Gauge and Pressure Pump as per DKD R6-1:2016 by Comparison Method	0 bar to 700 bar	0.25 bar

Dealing Officer

SCOPE OF ACCREDITATION

(Annexure to Certificate of CL - 116)

Mechanical Calibration (At Site)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *
2	Pneumatic Pressure- Pressure Gauge (Digital /Analogue) indicator with Transmitter /Switches, Pressure Calibrators/Pressure Chart / Recorder with a pressure sensor.	Using Digital Pressure Gauge and Pressure Pump as per DKD R 6-1:2016 by Comparison Method	0 bar to 2 bar	0.0009 bar
3	Pneumatic Pressure- Pressure Gauge (Digital /Analogue) indicator with Transmitter /Switches, Pressure Calibrators/Pressure Chart / Recorder with a pressure sensor.	Using Digital Pressure Gauge and Pressure Pump as per DKD R6 -1:2016 by Comparison Method	2 bar to 20 bar	0.06 bar
4	Vacuum Pressure Gauge (Digital / Analogue) indicator with Transmitter	Using Digital Vacuum Gauge and Vacuum Pump By Comparison Method as per as per DKD R 6 -1:2016	(-)0.98 bar to 0 bar	0.0011 bar
Force				
1	Force Uniaxial Testing Machine/ Load Testing Machine UTM/TTM/FTM/CBR /Marshal Triaxial/MOR) / Force Verification **(Compression mode)**	Using Force Proving Ring/ Load Cell Class (, 1 & 2) as per IS1828 Part-1-2022	20 N to 2000 kN	0.63 %
2	Force Static Uniaxial Testing Machine/ Load Testing Machine/ Tensile Testing Machine UTM/TTM/FTM/CBR /Marshal Triaxial/MOR) / Force Verification **(Tension mode)**	Using Proving Ring, Load Cell Class (1 & 2) as per IS:1828 Part-1-2022	20 N to 50 kN	0.61 %

Dealing Officer

SCOPE OF ACCREDITATION

(Annexure to Certificate of CL - 116)

Mechanical Calibration (At Site)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *
Speed & Acceleration				
1	RPM Measurement (centrifuge / rpm indicator/Vibrating M/c /Los Angles m/c /high speed starrier, Abrasion Testing M/C/ rotating shaker/ Washing & Drying M/c / & rpm measurement of equipment's)	Using Digital Tachometer Bydirect method with strip & SANASTR45-II-2017	10 rpm to 34000 rpm	0.17 %

Dealing Officer

SCOPE OF ACCREDITATION

(Annexure to Certificate of CL - 116)

Thermal Calibration (Laboratory Based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *
Temperature & Humidity				
1	RTD, Thermocouples, Withor Without Controller/ Indicator/Data logger /Recorder, Temperature Transmitter, Temperature Gauge, Temperature Switch, Glass Thermometer / Digital Thermometer	Using RTD PT-100 With Indicator Dry Well Bath/ Liquid Bath as a Source and Multifunctional Calibrator by comparison Method	-30 °C to 400 °C	0.63 °C
2	Thermocouples, With or without Controller/ Indicator/Data logger /Recorder, Temperature Transmitter, Digital Thermometer	Using S type Thermocouple with Indicator and Multifunctional Calibrator by Comparison Method	400 °C to 800 °C	2.28 °C
			800 °C to 1200 °C	2.28 °C
3	Temperature Indicator with sensor of Liquid Bath, Oven, GC Oven, Dry Block furnace, Refrigerator, Auto clave, Incubator, BOD, COD, Environmental Chamber (Single Position Calibration)- Temperature Measurement	Using RTD PT-100 With Indicator Dry Well Bath/ Liquid Bath as a Source and Multifunctional Calibrator by comparison Method	-30 °C to 50 °C	0.62 °C
			50 °C to 400 °C	1.06 °C
4	Temperature Indicator with sensor of Dry Block Furnace/ Muffle Furnace (Single Position calibration)	Digital Temperature Indicator with S- Type TC by Comparison Method	400 °C to 1200 °C	2.29 °C

Dealing Officer

SCOPE OF ACCREDITATION

(Annexure to Certificate of CL - 116)

Thermal Calibration (Laboratory Based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *
5	Non-Contact Type Thermometer (Infrared Thermometer / Digital Pyrometer)	Using Std. Non-Contact Pyrometer & Black Body Source by Comparison Method	50 °C to 500 °C	3.36 °C
6	Thermo Hygrometer, Humidity Meter with Sensor, Data Logger within built Sensor, RH Sensor with Indicator	Using RH Sensor with Indicator with RH & Temperature Generator/ Chamber (Comparison Method)	10°C to 50 °C @~50%RH	0.89°C
7	Thermo Hygrometer, Humidity Meter with Sensor, Data Logger within built Sensor, RH Sensor with Indicator	Using RH Sensor with Indicator with RH/Temperature Generator /Chamber (Comparison Method)	20 %RH to 95 %RH @~25 °C	1.70 % RH
8	Humidity / Temperature Indicator with Sensor of Environmental Chamber / Generator / Stability Chamber /Room (Single Position Calibration)	Using Temperature / RH Sensor with Indicator (Single Position Calibration)	10°C to 50 °C @~50 % RH	0.80°C
9	Humidity / Temperature Indicator with Sensor of Environmental Chamber / Generator / Stability Chamber /Room (Single Position Calibration)	Using Temperature / RH Sensor with Indicator (Single Position Calibration)	20 %RH to 95 % RH @~25 °C	1.70 %RH

Dealing Officer

SCOPE OF ACCREDITATION

(Annexure to Certificate of CL – 116)

Thermal Calibration (At Site)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *
Temperature & Humidity				
1	RTD, Thermocouples, With or Without Controller/ Indicator/ Data logger /Recorder, Temperature Transmitter, Temperature Gauge, Temperature Switch, Glass Thermometer / Digital Thermometer	Using RTD PT-100 With Indicator Dry Well Bath/ Liquid Bath as a Source and Multifunctional Calibrator by comparison Method	-30 °C to 400 °C	0.63 °C
2	Thermocouples, With or without Controller/ Indicator/Data logger /Recorder, Temperature Transmitter, Digital Thermometer	Using S type Thermocouple with Indicator and Multifunctional Calibrator by Comparison Method	400 °C to 800 °C	2.28 °C
			800 °C to 1200 °C	2.28 °C
3	Temperature Indicator with sensor of Liquid Bath, Oven, GC Oven, Dry Block furnace, Refrigerator, Auto clave, Incubator, BOD, COD, Environmental Chamber (Single Position Calibration)- Temperature Measurement	Using RTD PT-100 With Indicator Dry Well Bath/ Liquid Bath as a Source and Multifunctional Calibrator by comparison Method	-30 °C to 50 °C	0.62 °C
			50 °C to 400 °C	1.06 °C
4	Temperature Indicator with sensor of Dry Block Furnace/ Muffle Furnace (Single Position calibration)	Digital Temperature Indicator with S- Type TCby Comparison Method	400 °C to 1200 °C	2.29 °C

Dealing Officer

SCOPE OF ACCREDITATION

(Annexure to Certificate of CL – 116)

Thermal Calibration (At Site)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *
5	Humidity / Temperature Indicator with Sensor of Environmental Chamber / Generator / Stability Chamber /Room (Single Position Calibration)	Using Temperature / RH Sensor with Indicator (Single Position Calibration)	10°C to 50°C @~50 % RH	0.80 °C
6	Humidity / Temperature Indicator with Sensor of Environmental Chamber / Generator / Stability Chamber /Room (Single Position Calibration)	Using Temperature / RH Sensor with Indicator (Single Position Calibration)	20 %RH to 95 % RH @~25 °C	1.70 %RH

***Expanded uncertainty expressed in coverage probability of approximately 95 % (coverage factor k=2)**

Dealing Officer