

# 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 WAGA Calibration Services (PVT) Ltd.**

173, High Level Road, Maharagama, Sri Lanka

### Calibration Laboratory

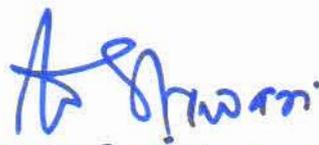
has demonstrated compliance with ISO/IEC Standard 17025:2017, General requirements for the competence of testing and calibration laboratories and supplementary criteria for Calibration laboratories.

**Certificate Number:** CL-123

**Issue Date:** 04.05.2024

**Valid Until:** 03.05.2026

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](http://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 - 123)

**Laboratory Name:** M/s WAGA Calibration Services Pvt. Ltd.  
173, High Level Road, Maharagama, Sri Lanka

**Validity:** 04.05.2024 to 03.05.2026 **Amended on** N/A

S.No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement ( $\pm$ ) *
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### Electro - Technical Calibration (Laboratory based)

Source Mode				
1	DC Voltage – Generate (Analog and digital equipment/indicator, multimeter, Clamp meter, pH meter indicator)	WAGA / CM/030, WAGA/CM/017 Using Multifunction Calibrator Direct method	1 mV to 200 mV	0.15 $\mu$ V to 1.8 $\mu$ V
			0.2 V to 1000 V	1.8 $\mu$ V to 8.2 mV
2	DC Current – Generate (Analog and digital equipment/indicator, multimeter, Clamp meter, leakage current clamp meter)	WAGA / CM/030, WAGA/CM/017 Using Multifunction Calibrator Direct method WAGA/CM/027 Using clamp coil	1 $\mu$ A to 200 mA	0.82 $\mu$ A to 0.015 mA
			0.2 A to 20 A	0.015 mA to 2.3 mA
			20 A to 1000 A	0.12 A to 5.8 A
3	DC resistance Generate(Analog and digital equipment /indicator, multimeter Clamp meter)	WAGA / CM/030, WAGA/CM/017 Using Multifunction Calibrator Direct method	1 $\Omega$ to 1000 $\Omega$	0.59 m $\Omega$ to 0.59 $\Omega$
			1 k $\Omega$ to 1000 k $\Omega$	0.59 $\Omega$ to 0.11 k $\Omega$
			1 M $\Omega$ to 120 M $\Omega$	0.11 k $\Omega$ to 0.026 M $\Omega$
	Discrete resistance Generate		1, 10, 100 $\Omega$ 1, 10, 100 k $\Omega$ 1, 10, 100 M $\Omega$ 1 G $\Omega$	2.1 m $\Omega$ 2.1 $\Omega$ 2.1 k $\Omega$ 0.002 G $\Omega$

*Jikendra Parmar*

Dealing Officer

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### Electro - Technical Calibration (Laboratory based)

4	AC Voltage Generate (Analog and digital equipment/indictor, multimeter, Clamp meter)	WAGA / CM/030 & WAGA/CM/017 Using Multifunction Calibrator Direct method	1 mV to 200 mV @ (50 Hz to 100 kHz)	0.0053 mV to 0.031 mV
			0.2 V to 1000 V (@ 50 Hz to 1kHz)	0.031 mV to 0.17 V
5	AC Current Generate (Analog and digital equipment/indictor, multimeter, Clamp meter) Inductance Generate	WAGA / CM/030 & WAGA/CM/017 Using Multifunction Calibrator Direct method	10 $\mu$ A to 200 $\mu$ A @( 50 Hz to 1 kHz)	0.03 $\mu$ A to 0.039 $\mu$ A
			0.2 mA to 200 mA @ (50 Hz to 1kHz)	0.039 $\mu$ A to 0.041 mA
			0.2 A to 20 A @ (50 Hz to 1 kHz)	0.041 mA to 6.9 mA
		WAGA/CM/027 Using Clamp coil	20 A to 1000 A @( 50 Hz)	0.12 A to 5.8 A
6	Inductance Generate (Analog and digital equipment/indictor, multimeter, LCR meter)	WAGA / CM/030 & WAGA/CM/017 Using Multifunction Calibrator Direct method	1 mH to 10 H	0.0016 mH to 0.016H
7	Capacitance Generate(Analog and digital equipment /indictor,multimeter, LCR meter)	WAGA / CM/030 & WAGA/CM/017 Using Multifunction Calibrator Direct method	1 nF to 100 $\mu$ F	0.0011 nF to 0.11 $\mu$ F

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### Electro - Technical Calibration (Laboratory based)

8	Power Factor Generate (Analog and digital equipment/inductor, power analyzer)	WAGA / CM/030 Using Multifunction Calibrator Direct method	0.2 to 1 (Lag & Lead)	0.006%
9	Frequency Generate (Analog and digital equipment/inductor, multimeter, Clamp meter)	WAGA / CM/030 & WAGA/CM/017 Using Multifunction Calibrator Direct method	1 Hz to 100 MHz	5.8 mHz to 2.4 kHz
<b>Measure Mode</b>				
1	DC Voltage Measure (Analog and Digital Electrical Equipment with sources/power supply, multiproduct calibrator)	WAGA/CM/030 using Multimeter as per direct measurement of electrical parameter	1 mV to 100 mV 100 mV to 10 V 10 V to 100 V 100 V to 1000 V	0.0093 mV to 0.013 mV 0.013 mV to 0.47 mV 0.47 mV to 6.0 mV 6.0 mV to 0.067 V
2	AC Voltage Measure (Analog and Digital Electrical Equipment with sources/power supply, multiproduct calibrator)	WAGA/CM/030 using Multimeter as per direct measurement of electrical parameter	@50 Hz to 1 kHz 10 mV to 100 mV 100 mV to 10 V 10 V to 100 V 100 V to 750 V	0.054 mV to 0.12 mV 0.12 mV to 0.011 V 0.011 V to 0.11 V 0.33 V to 0.79 V

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### Electro - Technical Calibration (Laboratory based)

3	DC Current Measure (Analog and Digital Electrical Equipment with sources/power supply, multiproduct calibrator)	WAGA/CM/030 using Multimeter as per direct measurement of electrical parameter	10 mA to 100 mA 100 mA to 1 A 1 A to 3 A 3 A to 10 A	0.0024 mV to 0.065 mA 0.065 mA to 1.3 mA 1.3 mA to 5.4 mA 0.039 A to 0.14 A
4	AC Current Measure (Analog and Digital Electrical Equipment with sources/power supply, multiproduct calibrator)	WAGA/CM/030 using Multimeter as per direct measurement of electrical parameter	<b>50 Hz to 500 Hz</b> 0.1 A to 1 A 1 A to 3 A 3 A to 10 A	0.59 mA to 1.8 mA 1.8 mA to 8.6 mA 8.6 mA to 0.20 A
5	Frequency Measure (Analog and Digital Electrical Equipment with sources/power supply, multiproduct calibrator)	WAGA/CM/030 using Multimeter as per direct measurement of electrical parameter	3 Hz to 1 kHz 1 kHz to 100 kHz 100 kHz to 300 kHz	3.5 mHz to 0.011Hz 0.011 Hz to 0.016 kHz 0.016 Hz to 0.037 kHz
6	DC Resistance Measure (Analog and Digital Electrical Equipment with sources/power supply, multiproduct calibrator)	WAGA/CM/030 using Multimeter as per direct measurement of electrical parameter	0 $\Omega$ to 0.1 k $\Omega$ 0.1 k $\Omega$ to 10 k $\Omega$ 10 k $\Omega$ to 100 k $\Omega$ 0.1 M $\Omega$ to 10 M $\Omega$ 10 M $\Omega$ to 100 M $\Omega$	0.0047 $\Omega$ to 0.017 $\Omega$ 0.017 $\Omega$ to 0.0014 k $\Omega$ 0.0014 k $\Omega$ to 0.014 $\Omega$ 0.014 k $\Omega$ to 5.0 k $\Omega$ 5.0 k $\Omega$ to 0.94 M $\Omega$

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### Electro - Technical Calibration (Laboratory based)

7	Capacitance Measure (Analog and Digital Electrical Equipment with sources/power supply, multiproduct calibrator)	WAGA/CM/030 using Multimeter as per direct measurement of electrical parameter	10 pF to 100 pF 100 pF to 100 nF 100 nF to 1 $\mu$ F 1 $\mu$ F to 1000 $\mu$ F	0.016 pF to 0.14 pF 0.14 pF to 0.14 nF 0.14 nF to 1.8 nF 1.8 nF to 5.2 $\mu$ F
8	Inductance Measure (Analog and Digital Electrical Equipment with sources/power supply, multiproduct calibrator)	WAGA/CM/030 using Multimeter as per direct measurement of electrical parameter	100 $\mu$ H to 1 mH 1 mH to 100 mH 100 mH to 1 H	0.15 $\mu$ H to 1.4 $\mu$ H 1.4 $\mu$ H to 0.14 mH 0.14 mH to 1.4 mH
9	Insulation Testers	WAGA/CM/028 using Insulation Tester Calibration System as source for generation of electrical parameter	100 k $\Omega$ to 5 M $\Omega$ 5 M $\Omega$ to 50 M $\Omega$ 50 M $\Omega$ to 100 M $\Omega$ 100 M $\Omega$ to 1 G $\Omega$ 1 G $\Omega$ 10 G $\Omega$ 10 G $\Omega$ to 100 G $\Omega$	1.2 k $\Omega$ to 5.8 k $\Omega$ 0.058 M $\Omega$ to 0.58 M $\Omega$ 0.58 M $\Omega$ to 1.2 M $\Omega$ 1.2 M $\Omega$ to 0.024 G $\Omega$ 0.024 G $\Omega$ to 0.59 G $\Omega$ 0.59 G $\Omega$ to 5.8 G $\Omega$
		WAGA/CM/028 Open circuit voltage using Insulation Tester Calibration System as per direct measurement of electrical parameter	0 kV to 2 kV 2 kV to 10 kV	0.024 kV 0.024 kV to 0.31 kV

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### Electro - Technical Calibration (Laboratory based)

		WAGA/CM/028 Short Circuit current using Insulation Tester Calibration System as per direct measurement of electrical parameter	0.5 mA to 2 mA 2 mA to 20 mA	0.025 mA to 0.037mA 0.037 mA to 0.37 mA
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### Temperature Simulation (Source Mode)

1	Temperature Indicators and Simulators by Electrical Simulation and Measurement (Temperature <b>simulator intended</b> to be used with thermocouple)	WAGA/CM/023 Using multifunction calibrator as per EURAMET cg-11(2011) Guideline on the Calibration of Temperature Indicators and Simulators by Electrical Simulation and Measurement	K	-200 °C to 1350 °C	0.14 °C
			T/C		
			J	-200 °C to 1200 °C	0.13 °C
			T/C		
			T	-200 °C to 400 °C	0.13 °C
			T/C		
			R	-50 °C to 1750 °C	0.14 °C
			T/C		
			S	-50 °C to 1750 °C	0.14 °C
T/C					
B	600 °C to 1800 °C	0.16 °C			
T/C					
E	-200 °C to 1000 °C	0.13 °C			
T/C					
N	-200 °C to 1300 °C	0.13 °C			
T/C					
PT	-180 °C to 850 °C	0.09 °C			
100					

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### Electro - Technical Calibration (Laboratory based)

Temperature Simulation (Measure Mode)					
1	Temperature Indicators and Simulators by Electrical Simulation and Measurement (Temperature <b>simulator intended</b> to be used with thermocouple)	WAGA/CM/023 Using process calibrator calibrator as per EURAMET cg-11 Guideline on the Calibration of Temperature Indicators and Simulators by Electrical Simulation and Measurement	K T/C	-200 °C to 1350 °C	0.36 °C
			J T/C	-210 °C to 1200 °C	0.36 °C
			T T/C	-200 °C to 400 °C	0.36 °C
			R T/C	-50 °C to 1750 °C	0.36 °C
			S T/C	-50 °C to 1750 °C	0.36 °C
			B T/C	600 °C to 1800 °C	0.37 °C
			E T/C	-200 °C to 1000 °C	0.36 °C
			N T/C	-200 °C to 1300 °C	0.36 °C
			PT 100	-180 °C to 850 °C	0.012 °C
<b>Time</b>					
1	Stop watch/Timers	WAGA/CM/055 using stopwatch calibrator as per direct comparison	1 s to 18000 s 18000 s to 86400 s	0.18 sec 0.22 sec	

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### Electro - Technical Calibration (At Site)

Source Mode				
1	DC Voltage Generate (Analog and Digital Electrical Measuring Equipment/Indicator, pH meter)	WAGA/CM/030 using Multifunction Process Calibrator as per direct method	1 mV to 10 mV 10 mV to 75 mV 75 mV to 12 V	0.6 $\mu$ V to 0.77 $\mu$ V 0.77 $\mu$ V to 3.8 $\mu$ V 3.8 $\mu$ V to 0.61 mV
2	DC Current Generate (Analog and Digital Electrical Measuring Equipment/Indicator)		0 mA to 22 mA	0.58 $\mu$ V to 4.5 $\mu$ V
3	Digital Frequency Generate (Analog and Digital Electrical Measuring Equipment /Indicator)		100 Hz to 50 kHz	0.063 Hz to 0.51 Hz
4	Resistance Generate (Analog and Digital Electrical Measuring Equipment/Indicator)		1 $\Omega$ to 400 $\Omega$ 400 $\Omega$ to 4.0 k $\Omega$	0.0059 $\Omega$ to 0.021 $\Omega$ 0.021 $\Omega$ to 0.21 $\Omega$
Measure Mode				
1	DC Voltage Measure (Analog and Digital Electrical Equipment with sources)	WAGA/CM/030 using Multimeter as per direct measurement of electrical parameter	1 mV to 100 mV 100 mV to 10 V 10 V to 100 V 100 V to 1000 V	0.0093 mV to 0.013 mV 0.013 mV to 0.47 mV 0.47 mV to 6.0 mV 6.0 mV to 0.067 V

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### Electro - Technical Calibration (At Site)

2	AC Voltage Measure (Analog and Digital Electrical Equipment with sources)	WAGA/CM/030 using Multimeter as per direct measurement of electrical parameter	<b>50 Hz to 1 kHz</b> 10 mV to 100 mV 100 mV to 10 V 10 V to 100 V 100 V to 750 V	0.054 mV to 0.12 mV 0.12 mV to 0.011 V 0.011 V to 0.11 V 0.33 V to 0.79 V
3	DC Current Measure (Analog and Digital Electrical Equipment with sources)	WAGA/CM/030 using Multimeter as per direct measurement of electrical parameter	10 mA to 100 mA  100 mA to 1 A 1 A to 3 A 3 A to 10 A	0.0024 mV to 0.065 mA 0.065 mA to 1.3 mA 1.3 mA to 5.4 mA 0.039 A to 0.14 A
4	AC Current Measure (Analog and Digital Electrical Equipment withsources)	WAGA/CM/030 using Multimeter as per direct measurement of electricalparameter	<b>50 Hz to 500 Hz</b> 0 A to 1 A 1 A to 3 A 3 A to 10 A	0.59 mA to 1.8 mA 1.8 mA to 8.6 mA 8.6 mA to 0.2 A
5	Frequency Measure (Analog and Digital Electrical Equipment withsources)	WAGA/CM/030 using Multimeter as per direct measurement of electricalparameter	1 Hz to 1 kHz 1 kHz to 100 kHz 100 kHz to 300 kHz	3.5 mHz to 0.12 Hz 0.12 Hz to 0.011 kHz 0.011 Hz to 0.037 kHz
6	Resistance Measure (Analog and Digital Electrical Equipment withsources)	WAGA/CM/030 using Multimeter as per direct measurement of electricalparameter	0 $\Omega$ to 0.1 k $\Omega$ 0.1 k $\Omega$ to 10 k $\Omega$ 10 k $\Omega$ to 100 k $\Omega$ 0.1 M $\Omega$ to 10 M $\Omega$ 10 M $\Omega$ to 100 M $\Omega$	0.0047 $\Omega$ to 0.017 $\Omega$ 0.017 $\Omega$ to 0.0014 k $\Omega$ 0.0014 k $\Omega$ to 0.014 $\Omega$ 0.014 k $\Omega$ to 5.0 k $\Omega$ 5.0 k $\Omega$ to 0.94 M $\Omega$

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### Electro - Technical Calibration (At Site)

7	Inductance Measure (Analog and Digital Electrical Equipment with sources/power supply, multiproduct calibrator)	WAGA/CM/030 using Multimeter as per direct measurement of electricalparameter	100 $\mu$ H to 1 mH 1 mH to 100 mH 100 mH to 1 H	0.15 $\mu$ H to 1.4 $\mu$ H 1.4 $\mu$ H to 0.14 mH 0.14 mH to 1.4 mH
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### Temperature Simulation (Source Mode)

1	Temperature Indicators and Simulators by Electrical Simulation and Measurement (Temperature <b>indicators/controllers</b> )	WAGA/CM/023 Using multifunction calibrator as per EURAMET cg- 11(2011) Guideline on the Calibration of Temperature Indicators and Simulators by Electrical Simulation and Measurement	K	-200 °C to	0.14 °C
			T/C	1370 °C	
			J	-210 °C to	0.13 °C
			T/C	1200 °C	
			T	-200 °C to	0.13 °C
			T/C	400 °C	
			R	-50 °C to	0.14 °C
			T/C	1765 °C	
			S	-50 °C to	0.14 °C
T/C	1760 °C				
B	300 °C to	0.16 °C			
T/C	1800 °C				
E	-200 °C to	0.13 °C			
T/C	1000 °C				
N	-200 °C to	0.13 °C			
T/C	1300 °C				
PT 100	-180 °C to	0.09 °C			
		850 °C			

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### Electro - Technical Calibration (At Site)

Temperature Simulation (Measure Mode)					
1	Temperature Indicators and Simulators by Electrical Simulation and Measurement (Temperature <b>simulator intended</b> to be used with thermocouple)	WAGA/CM/023 Using multifunction calibrator as per EURAMET cg-11(2011) Guideline on the Calibration of Temperature Indicators and Simulators by Electrical Simulation and Measurement	K T/C	-200 °C to 1370 °C	0.36 °C
			J T/C	-210 °C to 1200 °C	0.36 °C
			T T/C	-200 °C to 400 °C	0.36 °C
			R T/C	-50 °C to 1765 °C	0.36 °C
			S T/C	-50 °C to 1760 °C	0.36 °C
			B T/C	200 °C to 1800 °C	0.37 °C
			E T/C	-200 °C to 1000 °C	0.36 °C
			N T/C	-200 °C to 1300 °C	0.36 °C
			P T100	-180 °C to 850 °C	0.012 °C

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### Mechanical Calibration (Laboratory based)

<b>Group: Dimension</b>				
1	Dial gauge	WAGA/CM/035 Using 0 grade gauge block as per the USBR 1007-89- Procedure for Calibrating dialindicators	0 to 25 mm 25 mm to 50 mm	0.9 $\mu$ m 5.8 $\mu$ m
2	Steel Ruler	WAGA/CM/014 using rulercomparator as per Linear measurement by direct comparison	0 to 1000 mm	0.58 mm
3	Vernier Caliper	WAGA/CM/036 Using 0 grade gauge block as per the - IS:16491:2021 Speciation for Vernier Caliper	0 mm to 300 mm 300 mm to 500 mm 500 mm to 1000 mm (External calibration/Depth calibration)	12 $\mu$ m 12 $\mu$ m 12 $\mu$ m
4	External Micrometer	WAGA/CM/013 Using 0 grade gauge block as per - IS:2967 :1983 Specificationfor external Micrometer	0.5 mm to 100 mm 100 mm to 500 mm 500 mm to 1000 mm	1.4 $\mu$ m 1.8 $\mu$ m 10 $\mu$ m

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### Mechanical Calibration (Laboratory based)

5	Height Gauge	WAGA/CM/037 Using 0 grade gauge block as per IS 2921:2016 Vernier Height Gauges	0.5 mm to 100 mm	7.0 $\mu$ m
			100 mm to 300 mm	7.0 $\mu$ m
			300 mm to 500 mm	7.9 $\mu$ m
6	Feeler Gauge	WAGA/CM/043 Using micrometer as per Linear measurement by direct comparison	0.05 mm to 1 mm	2.7 $\mu$ m
7	Test sieve	WAGA/CM/048 Using vision measuring system as per ASTM E 11-22 Standard specification for wire cloth and sieves for testing purposes -	20 $\mu$ m – 100 mm	3.1 $\mu$ m
8	Shrinkage Ruler	WAGA/CM/053 Using ruler compactor as Per the ISO 3759:2011 Determination of dimensional change	1 mm to 600 mm	0.013 mm
			0.1 inch to 18 inch	0.037 inch

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# 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 - 123)

**Laboratory Name:** M/s WAGA Calibration Services Pvt. Ltd.  
173, High Level Road, Maharagama, Sri Lanka

**Validity:** 04.05.2024 to 03.05.2026 **Amended on** N/A

S.No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement ( $\pm$ ) *
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### Mechanical Calibration (Laboratory based)

9	Shrinkage template	WAGA/CM/053 Using Steel ruler as per the ISO-3759: 2011 Determination of dimensional change	1 mm to 600 mm	0.87 mm
			0.1 inch to 18 inch	0.037 inch
<b>Group: Pressure &amp; Vacuum</b>				
1	Pressure Gauges / Pressure Transmitters with/Without Indicator / Pressure Transducers with/ Without Indicator (Pneumatic / Hydraulic)	WAGA/CM/011 and WAGA/CM/021 Using Digital Pressure Transducer and Digital Multimeter by Direct / Comparison Method based on DKD-R6-1:2014	0 to 40 bar	0.024 bar
			0 to 700 bar	0.12 bar
			0 to 1000 bar	0.27 bar
2	Differential Pressure Gauges / Pressure Transmitters with/ Without Indicator / Pressure Transducers with/ Without Indicator	WAGA/CM/011 and WAGA/CM/021 Using Digital Pressure Transducer and Digital Multimeter by Direct / Comparison Method based on DKD-R6-1:2014	-0.75 mbar to 0 mbar	0.23 mbar
			0 mbar to 75 mbar	0.24 mbar

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### Mechanical Calibration (Laboratory based)

<b>Group: Mass</b>				
1	Weights F2 class & Coarser	WAGA/CM/003 Using E1, E2, F1 class weights as per double substitution method (ABBA) OIML R 111:2004 and MSL Technical Guide 7	1 g	0.1 mg
			2 g	0.1 mg
			5 g	0.1 mg
			10 g	0.1 mg
			20 g	0.1 mg
			50 g	0.1 mg
			100 g	0.1 mg
			200 g	0.1 mg
	M3 Class & Coarser		500 g	10 mg
	M1 Class & Coarser		1000 g	10 mg
	F2 Class & Coarser		2000 g	10 mg
	F2 Class & Coarser		5000 g	10 mg
	F2 Class & Coarser		10 kg	10 mg
M1 Class & coarser	20 kg	0.20 g		

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### Mechanical Calibration (Laboratory based)

<b>Group: Volume</b>				
1	Laboratory glassware - One-mark pipette Graduated pipette Burette Volumetric Flask Graduated measuring cylinder Graduated beaker Conical flask	WAGA/CM/038 Using standard balance as per ISO 4787:2021 Laboratory glassware- Volumetric instruments- methods for testing of capacity and for use	0 to 10 ml	0.003 ml
			10 to 100 ml	0.009 ml
			1000 to 2000 ml	0.65 ml
2	Piston operated volumetric apparatus - Micropipette , piston operated dispensers	WAGA/CM/222 Using standard balance as per ISO 8655-6:2022 Piston- operated volumetric apparatus —Part 6: Gravimetric reference measurement procedure for the determination of volume	200 $\mu$ l to 100 ml	0.61 $\mu$ l
<b>Group: Force-Torque</b>				
1	Torque Generating Devices	WAGA/CM/040 Using torque transducer as per IS 16906:2018 Guidelines on the calibration of static torque measuring device	0 to 50 Nm	2.1%
			50 to 220 Nm	2.4%
			220 to 2200 Nm	1.9%

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### Mechanical Calibration (Laboratory based)

Group: Acceleration and Speed				
1	Tachometers	WAGA/CM/019 using multifunction calibrator/ tacho- adaptor as per direct comparison of Non-Contact Type by ElectricalPulse	60 rpm to 6000 rpm 6000 rpm to 60000 rpm 60000 rpm to 100000 rpm	0.35 rpm 0.79 rpm 7.1 rpm
2	Tachometer (Contact type)	WAGA/CM/058 using RPM calibrator as per direct comparison	10 rpm to 10000 rpm	2.6 rpm
3	Rotating Machines (including centrifuges)	WAGA/CM/018 using tachometer as per the direct measurement of the speed	6 rpm to 1000 rpm 1000 rpm to 20,000 rpm	0.99 rpm 1.9 rpm

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### Mechanical Calibration (At Site)

<b>Group: Dimension</b>				
1	Shrinkage Ruler/ Shrinkagetemplate	WAGA/CM/053 Using Steel ruler as per the ISO-3759:2011 Determination of dimensional change	1 mm to 600 mm	0.87 mm
			0.1 inch to 18 inch	0.037 inch
<b>Group: Pressure &amp; Vacuum</b>				
1	Pressure Gauges / Pressure Transmitters with/Without Indicator / Pressure Transducers with/Without Indicator (Pneumatic / Hydraulic)	WAGA/CM/011 and WAGA/CM/021 Using Digital Pressure Transducer and Digital Multimeter by Direct / Comparison Method based on DKD-R6-1:2014	0 to 40 bar	0.024 bar
			0 to 700 bar	0.12 bar
			0 to 1000 bar	0.27 bar
2	Differential Pressure Gauges / Pressure Transmitters with/ WithoutIndicator / Pressure Transducers with/ WithoutIndicator	WAGA/CM/011 Using Digital Pressure Transducer by Direct / Comparison Method based on DKD-R6-1:2014	-0.75 mbar to 0 mbar	0.23 mbar
			0 mbar to 75 mbar	0.24 mbar

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### Group: Mass

1	Analytical balances, Digitalelectronic top loading balances, Analogue top loading balances	WAGA/CM/004 Using, E1,E2, F1 class weights as per the MSL Technical Guide 25 Calibrating Balances & OIML R 76:2006	0 to 50 g d= 0.001 mg & coarser	0.01 mg
			0 to 200 g d=0.01 mg & coarser	0.03 mg
			0 g to 1000 g d= 1 mg & coarser	3.6 mg
			0 to 30 kg d= 10 mg & coarser	0.12 g
			0 to 50 kg d=1 g and coarser	0.63 g
2	Weighing Scales	WAGA/CM/044 using standard F1, M1 class weight set as per Linearity check with conventional mass values	0 kg to 100 kg 100 kg to 200 kg 200 kg to 500 kg	0.72 g 14 g 20 g

### Group: Force

1.	Uniaxial force testing machine	WAGA/CM/012 using 0.5 &1 load cell as per the Measurement of static force in tensile and compression modes as per the ISO 7500-1:2018	100 N to 100 kN	0.6 to 2.0 %
		Measurement of staticforce in compression modes as per the ISO 7500-1:2018	100 kN to 2000 kN	0.3 to 0.5 %

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### Mechanical Calibration (At Site)

<b>Group: Acceleration and Speed</b>				
1	Rotating Machines (including centrifuges)	WAGA/CM/018 using tachometer as per the direct measurement of the speed	6 rpm to 1000 rpm	0.65 rpm
			1000 rpm to 20,000 rpm	1.3 rpm

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### Optical & Photometry Calibration (Laboratory based)

Group: Illuminance					
1	Illuminance Meters	WAGA/CM/039 using lux measuring system as per direct comparison of illuminance measurement	2 to 10 Lux	5.6 %	
			10 Lux to 10000 Lux	3.7 %	
			10000 Lux to 20000 Lux	7.3 %	
2	Color assessment cabinet	WAGA/CM/002 using Spectro radiometer direct measurement of Colour temperature/ illuminance	D65	6200 - 6800 K	68 K
			CWF	3700-4430 K	45 K
			Inca A	2600-3150 K	32 K
			T84	2700-4300 K	43 K
			U35	3200-3800 K	38 K
			D65 with UV	6200 - 6800 K	68 K
			U30	2700-3300 K	33 K
			TL 83	2700-3300 K	33 K
			F	2600-2800 K	28 K
			D50	4703-5303 K	54 K

*Jitendra Parmar*

Dealing Officer

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S.No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement ( $\pm$ ) *
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### Optical & Photometry Calibration (Laboratory based)

S.No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement ( $\pm$ ) *
	Illuminance	D65	900 - 2600 Lx	31 Lx
		CWF	1200– 3100 Lx	37 Lx
		Inca A	900 -2850 Lx	35 Lx
		TL84	1600-3900 Lx	47 Lx
		U35	2200-3400 Lx	41 Lx
		Horiz on	500-1700 Lx	21 Lx
		D65 with UV	900 - 2600 Lx	31 Lx
		U30	1700-3700 Lx	45 Lx
		TL 83	1700-3700 Lx	45 Lx
		F	400-2300 Lx	28 Lx
		D50	1400-3100 Lx	37 Lx

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S.No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement ( $\pm$ ) *
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### Optical & Photometry Calibration (At Site)

Group: Illuminance					
1	Color assessment cabinet	WAGA/CM/002 using Spectro radiometer direct measurement of Colour temperature/illumiance	D65	6200 - 6800 K	68 K
			CWF	3700-4430 K	45 K
			Inca A	2600-3150 K	32 K
			T84	2700-4300 K	43 K
			U35	3200-3800 K	38 K
			D65 with UV	6200 - 6800 K	68 K
			U30	2700-3300 K	33 K
			TL 83	2700-3300 K	33 K
			F	2600-2800 K	28 K
			D50	4703-5303 K	54 K
		Illuminance	D65	900 - 2600 Lx	31 Lx
		CWF	1200– 3100 Lx	37 Lx	
		Inca A	900 -2850 Lx	35 Lx	

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### Optical & Photometry Calibration (At Site)

			TL84	1600-3900 Lx	47 Lx
			U35	2200-3400 Lx	41 Lx
			Horizo n	500-1700 Lx	21 Lx
			D65 with UV	900 - 2600 Lx	31 Lx
			U30	1700-3700 Lx	45 Lx
			TL 83	1700-3700 Lx	45 Lx
			F	400-2300 Lx	28 Lx
			D50	1400-3100 Lx	37 Lx

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### Thermal Calibration (Laboratory based)

<b>Group: Temperature &amp; Humidity</b>				
1	Digital Thermometer with probe, Dial Thermometer	WAGA/CM/005 and WAGA/CM/029 using PRT as per Direct comparison under controlled conditions	-30 °C to 150 °C 150 °C to 600 °C	0.09 °C 0.14 °C
2	Thermocouples	WAGA/CM/015 using S type thermocouple as per EURAMAT Calibration Guide No.8 :2020 Guidelines on the Calibration of Thermocouples	150°C to 700 °C 700 °C to 1200 °C	1.8 °C 2.2 °C
3	Temperature Enclosures –Nine Point	WAGA/CM/020 using t thermocouple as per AS 2853:1986 Enclosures- Temperature-controlled- performance testing and grading multipoint temperature verification	-30°C to 300 °C	0.93 °C
4	Temperature Enclosures –Three Pont	WAGA/CM/041 using thermocoupleas per the Three-point temperature verification	-30 °C to 300 °C	0.93 °C

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### Thermal Calibration (Laboratory based)

5	Liquid Baths	WAGA/CM/042 using PRT/PT100 as per the Performance verification in temperature at 5 locations	25 °C to 100°C	0.51 °C
6	Autoclave	WAGA/CM/050 using temperature data logger as per Temperature Measurement Time Measurement Pressure Measurement	20 °C – 140 °C	0.71 °C
			1 min - 60 min	1.3 sec
			0 to 2 bar	0.050 bar
7	Muffle/Tube Furnace	WAGA/CM/045 using thermocouple as per Temperature verification	100 °C to 700 °C	1.7 °C
			700 °C to 1100 °C	2.2 °C
8	Hygrometers	WAGA/CM/047 using standard temperature /humidity meter as per Direct comparison under controlled conditions Temperature Humidity	10°C to 45 °C @ (40 %, 50 %, 60 %)	0.61 °C
			30 % to 90 % @ (20, 25,30 °C)	2.7 %
9	Humidity Chambers	WAGA/CM/016 using temperature/humidity meter as per IEC 60068-3-6:2018 Confirmation of the performance of temperature/humidity chambers	10 °C - 50 °C @ (50 %)	0.30 °C
			10 % - 90 % @ (25%)	1.2 %

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### Thermal Calibration (At Site)

<b>Group: Temperature &amp; Humidity</b>				
1	Digital Thermometer with probe, Dial Thermometer	WAGA/CM/005 and WAGA/CM/029 using PRT as per Direct comparison under controlled conditions	-30 °C to 150 °C 150 °C to 600 °C	0.09 °C 0.14 °C
2	Muffle/Tube Furnace	WAGA/CM/045 using thermocouple as per Temperature verification	100 °C to 700 °C 700 °C to 1100 °C	0.23 °C 1.4 °C
3	Temperature Enclosures – Nine Point	WAGA/CM/020 using thermocouple as per AS 2853:1986 Enclosures- Temperature-controlled- performance testing and grading Multi point temperature verification	-30°C to 300 °C	0.93°C
4	Temperature Enclosures – Three Pont	WAGA/CM/041 using thermocouple as per the Three-point temperature verification	-30°C to 300 °C	0.93 °C
5	Liquid Baths	WAGA/CM/042 using PRT/PT100 as per the Performance verification in temperature at 5 location	25 °C to 100 °C	0.51 °C

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### Thermal Calibration (At Site)

6	Humidity Chambers	WAGA/CM/016 using temperature/humidity meter as per IEC 60068-3-6:2018 Confirmation of the performance of temperature/humidity chambers	10 °C - 50 °C @ 50% RH	0.30 °C
			10 % - 90 % RH @ 25 °C	1.2 %
7	Autoclave	WAGA/CM/050 using temperature data logger as per Temperature Measurement	20 °C – 140 °C	0.71 °C
			1 min - 60 min	1.3 sec
			0 to 2 bar	0.050 bar

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### Textile Testing Machinery Calibration (Laboratory based)

<b>Sample cutter</b>				
1	Linear measurement (Area calculation)	WAGA/CM/006 using Vernier caliper	0 to 150 mm	0.015 mm
<b>Crock Meter</b>				
1	Force measurement	WAGA/CM/001 using Load cell /vernier caliper/ tachometer	8 N to 11 N	0.01 N
2	Linear measurement		5 mm to 110 mm (stroke)	0.02 mm
			5 to 20 mm (peg dia.)	0.02 mm
3	Speed measurement		10 to 100 rpm	0.90 rpm
<b>Perspiration tester</b>				
1	Mass Measurement	WAGA/CM/022 using balance	0.4 kg – 6 kg	0.19 g
<b>Moisture Balance</b>				
1	Mass Measurement	WAGA/CM/065 using E2 weight set/PT100/ stop watch as per MSL Technical Guide 25	1 mg to 100 g 100 g to 200 g	1 mg 6 mg
2	Temperature Measurement		4 °C to 200 °C	0.54 °C
3	Time Measurement		1 min – 30 min	0.6 sec

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### Textile Testing Machinery Calibration (At Site)

<b>Reference washing machines(including wascator)</b>				
1	Temperature measurement	WAGA/CM/010 using thermocouple/water level ruler/stop watch/tachometer asper the	0 °C to 100 °C	0.54 °C
2	Linear measurement		50 mm to 200 mm	0.93 mm
3	Time measurement		1 sec. to 300 min.	0.70 sec
4	Speed measurement		20 rpm to 2500 rpm	0.70 rpm
<b>Tumble Dryers</b>				
1	Temperature measurement	WAGA/CM/009 using thermocouple/stop watch/tachometer	10 °C to 100 °C	0.54 °C
2	Time measurement		1 sec to 300 min	0.90 sec
3	Speed measurement		10 rpm to 1000 rpm	0.70 rpm
<b>Pilling &amp; Snagging Tester (Box&amp; Drum)</b>				
1	Linear measurement	WAGA/CM/008 using Vernier caliper/tachometer/stop watchas	5 mm to 320 mm	0.02 mm
2	Speed measurement		6 rpm to 5000 rpm	0.70 rpm
3	Time measurement		1 sec to 45 min	0.91 sec
4	Pressure		0 to 10 bar	0.06 bar
<b>Abrasion Machine (IncludingMartindale)</b>				
1	Mass	WAGA/CM/007 using vernier caliper /tachometer	100 g to 3000 g	0.30 g
2	Linear measurement		0.5 mm to 150 mm	0.012 mm
3	Speed measurement		20 rpm to 100 rpm	0.70 rpm

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### Textile Testing Machinery Calibration (At Site)

<b>Colour Fastener Testers</b>				
1	Temperature measurement	WAGA/CM/032 using thermocouple/ /tachometer/stopwatch/ vernier caliper	30 °C to 100 °C	0.39 °C
2	Speed		30 rpm to 100 rpm	0.7 rpm
3	Time		15 min to 90 min	0.7 sec
4	Volume		500 ml to 1500 ml	2.0 ml
<b>Heat Transfer Press Machines</b>				
1	Direct Measurement Temperature	WAGA/CM/031 using thermocouple/ /pressure gauge/stop watch	100 °C to 200 °C	0.15 °C
2	Pressure		0 bar to 20 bar	0.01 bar
3	Time		5 sec to 30 sec	0.6 sec
<b>Sample cutter</b>				
1	Linear measurement (Area calculation)	WAGA/CM/006 using vernier caliper as per	0 to 150 mm	0.015 mm

*Jikendra Parmar*

Dealing Officer

# 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 - 123)

**Laboratory Name:** M/s WAGA Calibration Services Pvt. Ltd.  
173, High Level Road, Maharagama, Sri Lanka

**Validity:** 04.05.2024 to 03.05.2026 **Amended on** N/A

S.No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement ( $\pm$ ) *
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### Textile Testing Machinery Calibration (At Site)

<b>Crock Meter</b>				
1	Force measurement	WAGA/CM/001 using Load cell/vernier caliper/ tachometer	8 N to 11 N	0.01 N
2	Linear measurement as per the		5 mm to 110 mm (stroke)	0.02 mm
			5 to 20 mm (peg dia.)	0.02 mm
3	Speed measurement		10 to 100 rpm	0.90 rpm
<b>Perspiration Tester</b>				
1	Mass Measurement	WAGA/CM/022 using balanceas	0.4 kg – 6 kg	0.19 g
<b>Moisture Balance</b>				
1	Mass Measurement	WAGA/CM/065 using E2 weight set/PT100/ stop watch as per MSL Technical Guide 25	1 mg to 100 g 100 g to 200 g	1 mg 6 mg
2	Temperature Measurement		4 °C to 200 °C	0.54 °C
3	Time Measurement		1 min – 30 min	0.6 sec

*Jikendra Parmar*

Dealing Officer