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

SUDUTT ELECTRICAL TESTING LABORATORY (OPC) PVT. LTD

Shed no-11,12 Survey no 35 Gotri Road, Near Gayatri
Party Plot, Gotri, Vadodara Pin-390021 (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- 139

Issue Date: 29.11.2024 **Valid Until:** 28.11.2026

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).

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 - 139)

Laboratory Name: M/s SUDUTT ELECTRICAL TESTING LABORATORY (OPC) PVT. LTD.
Shed No-11,12, Survey No. 35, Gotri Road, Near
gayatri Party Plot ,Gotri Vadodara Gujarat-390021.

Validity: 29.11.2024 to 28.11.2026 **Amended on** N/A

S.No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *

Electro-Technical Calibration (Laboratory Based)

Group: Measure Mode				
01	Ratio of impulse measuring System(Impulse Voltage Divider/Probe)	Using Impulse Calibration Generator (RIG 1000) with oscilloscope by Comparison method as per IEC 60060-2 : 2010	50 Vp to 1000 Vp 1 to 10000 Ratio	0.6%
02	Capacitance Up to 10kV (50HZ)	Using Capacitance and Tan Delta Bridge By Direct/Comparison Method	50 pF to 10000 pF	0.27%
03	AC High Voltage @ 50 HZ	Using HV Divider with kV Meter by Direct Method as per IEC 60060-2 : 2010	1kV AC to 30 kV AC	2.19%
04	DC High Voltage	Using HV Divider with kV Meter by Direct method as per IEC 60060-2 : 2010	1 kV DC to 40 kV DC	2.3%
05	PD Calibrator	Using Resistance Box with Digital Oscilloscope by Voltage & rise time Method as per IS/IEC 60270 : 2000/AMD1:2015	1 pC to 10000 pC	2.25%
06	Tan Delta Upto 10kV @50HZ	Using Capacitance and Tan Delta Bridge By Comparison Method	0.0001 to 0.05 tan delta	0.000091

Dealing Officer

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Validity: 29.11.2024 to 28.11.2026 **Amended on** N/A

S.No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *

Electro-Technical Calibration (Laboratory Based)

Group: Source Mode				
01	Scale Factor(ratio) of Impulse Voltage Divider/ Probe (for Lightning impulse, Chopping Impulse, Switching Impulse Waveform)	Using Reference Impulse Calibrator with oscilloscope by Direct method as per IEC 60060 (2):2010, IEC 61180: 2016-06, IS 2071 Part 1: 2016	@50Vp to 1000Vp 1 Ratio to 10000 Ratio	0.9%
02	Impulse Voltage Measuring System/Impulse Analyzer (Chopped Lightning Impulse LIC 0.5 µs)	Using Reference Impulse Calibrator by Direct Method as per 61083:2021-01 ,60060-2 :- 2010	LIC :-70 Vp to 1000Vp Chopped Time :- 0.5 µs	V:- 0.76 % Chopped Time :- 1.7 %
03	Impulse Voltage Measuring System/Impulse Analyzer (Full Wave Lightning Impulse LI 0.84/60 µs)	Using Reference Impulse Calibrator By Direct Method As per 61083 :- 2021-01 ,60060-2 :- 2010	LI: 50Vp to 1000Vp T1:0.84 µs T2:60 µs	V:- 0.74% T1:- 1.7% T2:- 1.7%
04	Impulse Voltage Measuring System/Impulse Analyzer (Switching Impulse SI 20/4000 µs)	Using Reference Impulse Calibrator By Direct Method As per 61083 :- 2021-01 ,60060-2 :- 2010	SI: 50Vp to 1000Vp T1:-20 µs T2:- 4000µs	Vp: 0.74% T1:- 1.7% T2:-1.7 %

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Validity: 29.11.2024 to 28.11.2026 **Amended on** N/A

S.No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *

Electro-Technical Calibration (At Site)

Group: Measure Mode				
01	Ratio of impulse measuring System(Impulse Voltage Divider/Probe)	Using Impulse Calibration Generator (RIG 1000) with oscilloscope by Comparison method as per IEC 60060-2 : 2010	50 Vp to 1000 Vp 1 to 10000 Ratio	0.6%
02	Capacitance Up to 10kV (50HZ)	Using Capacitance and Tan Delta Bridge By Direct/Comparison Method	50 pF to 10000 pF	0.27%
03	AC High Voltage @ 50 HZ	Using HV Divider with kV Meter by Direct Method as per IEC 60060-2 : 2010	1kV AC to 30 kV AC	2.19%
04	DC High Voltage	Using HV Divider With kV Meter by Direct method as per IEC 60060-2 : 2010	1 kV DC to 40 kV DC	2.3%
05	PD Calibrator	Using Resistance Box with Digital Oscilloscope By Voltage & rise time Method as per IS/IEC 60270 : 2000/AMD1:2015	1 pC to 10000 pC	2.25%
06	Tan Delta Upto 10kV @50HZ	Using Capacitance and Tan Delta Bridge By Comparison Method	0.0001 to 0.05 tan delta	0.000091

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S.No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *

Electro-Technical Calibration (At Site)

Group: Source Mode				
01	Scale Factor(ratio) of Impulse Voltage Divider/ Probe (for Lightning impulse, Chopping Impulse, Switching Impulse Waveform)	Using Reference Impulse Calibrator with oscilloscope by Direct method as per IEC 60060- 2: - 2010, IEC 61180: - 2016-06, IS 2071 Part 1: 2016	@50Vp to 1000Vp 1 Ratio to 10000 Ratio	0.9%
02	Impulse Voltage Measuring System/Impulse Analyzer (Chopped Lightning Impulse LIC 0.5 µs)	Using Reference Impulse Calibrator By Direct Method As per 61083 :- 2021-01 ,60060-2 :- 2010	LIC :-70 Vp to 1000Vp Chopped Time :- 0.5 µs	V:- 0.76 % Chopped Time :- 1.7 %
03	Impulse Voltage Measuring System/Impulse Analyzer (Full Wave Lightning Impulse LI 0.84/60 µs)	Using Reference Impulse Calibrator By Direct Method As per 61083 :- 2021-01 ,60060-2 :- 2010	LI: 50Vp to 1000Vp T1:0.84 µs T2:-60 µs	V:- 0.74% T1:- 1.7% T2:- 1.7%
04	Impulse Voltage Measuring System/Impulse Analyzer (Switching Impulse SI 20/4000 µs)	Using Reference Impulse Calibrator By Direct Method As per 61083:- 2021-01 ,60060-2 :- 2010	SI: 50Vp to 1000Vp T1:-20 µs T2:- 4000µs	Vp: 0.74% T1:- 1.7% T2:-1.7 %

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S.No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (±) *
		Electro-Technical Calibration (At Site)		
05	Divider Ratio (Impulse Measuring System)	Using Impulse Analyzer with Impulse Voltage Divider by Direct Method As per IEC 60060-2:- 2010, IEC 61180: - 2016-06, IS 2071 Part 1:2016	1 kVp to 500kVp	1.4%
			Linearity test 07Linearity Test @20% of System amplitude (Upto 2500 kVp)	Linearity 1.5%
06	AC HIGH Voltage @ 50HZ	Using standard HV Divider with kV meter by Direct Method IEC 60060-2 : 2010	1 kV to 200 kV	1.8%
			Assigned Scale Factor @20% of system amplitude :- 1 to 1.5 (Up to 1000 kV)	1.4%
			Linearity Test @20% of system amplitude (upto 1000kV)	1.5%

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