



NABL

National Accreditation Board for Testing and Calibration Laboratories

(An Autonomous Body under Department of Science & Technology, Govt. of India)

CERTIFICATE OF ACCREDITATION

CALITRON CALIBRATION LABORATORY

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2005

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

for its facilities at

U1: 207, Kohinoor Arcade, Tilak Chowk, Nigdi, Pune, Maharashtra

in the discipline of

ELECTRO-TECHNICAL CALIBRATION

(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Certificate Number C-0433

Issue Date 13/07/2016



Valid Until 12/07/2018

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the additional requirements of NABL.

Signed for and on behalf of NABL

Avijit Das
Program Manager

Anil Relia
Director

Prof. S. K. Joshi
Chairman



रा.प्र.प्र.बो.

राष्ट्रीय परीक्षण और अंशशोधन प्रयोगशाला प्रत्यायन बोर्ड

(विज्ञान एवं प्रौद्योगिकी विभाग, भारत सरकार के अधीन स्वायत्तशासी निकाय)

प्रत्यायन प्रमाण-पत्र

केलिट्रॉन कैलिब्रेशन लेबोरेटरी

का मूल्यांकन और प्रत्यायन निम्न मानक के अनुसार

आई.एस.ओ./आई.ई.सी. 17025:2005

“परीक्षण एवं अंशशोधन प्रयोगशालाओं की सक्षमता की सामान्य अपेक्षाएँ”

पुणे, महाराष्ट्र

में स्थित इसकी सुविधाओं के लिए

विद्युत तकनीकी अंशशोधन

के विषय क्षेत्र में किया गया।

(इस प्रयोगशाला के प्रत्यायन के विषय क्षेत्र की जानकारी एन ए बी एल वेबसाइट www.nabl-india.org से भी प्राप्त कर सकते हैं।)

प्रमाण-पत्र संख्या अ-0433
जारी करने की तिथि 13/07/2016



वैधता की तिथि 12/07/2018

यह प्रमाण-पत्र उपर्युक्त मानक तथा राष्ट्रीय परीक्षण और अंशशोधन प्रयोगशाला प्रत्यायन बोर्ड की अतिरिक्त अपेक्षाओं का निरंतर संतोषप्रद अनुपालन किए जाने पर अनुबंध में निर्दिष्टानुसार प्रत्यायन के क्षेत्र के लिए वैध रहेगा।

रा.प्र.प्र.बो. की ओर से हस्ताक्षरित

अ. वृत्त

अविजीत दास
कार्यक्रम प्रबन्धक

अनिल रेलिया

अनिल रेलिया
निदेशक

श्रीकृष्ण जोशी

श्री. श्रीकृष्ण जोशी
अध्यक्ष



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SCOPE OF ACCREDITATION

Laboratory	Calitron Calibration Laboratory, U1: 207, Kohinoor Arcade, Tilak Chowk, Nigdi, Pune, Maharashtra U2: 238, Kohinoor Majestic, MIDC Chinchwad, Pune, Maharashtra	
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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
LOCATION - 2			
<u>SOURCE</u>			
1. DC VOLTAGE [#]	100 μ V to 1 mV	1.33 % to 0.23 %	Using Fluke 5522A MFC by Direct Method
	1 mV to 10 mV	0.23 % to 0.02 %	
	10 mV to 300 mV	0.02 % to 0.008 %	
	300 mV to 1000V	0.008 %	
2. DC CURRENT [#]	1 μ A to 100 μ A	2.4 % to 0.088 %	Using Fluke 5522A MFC By Direct Method
	100 μ A to 10 mA	0.088 % to 0.015 %	
	10 mA to 300 mA	0.015%	
	300 mA to 1 A	0.015 % to 0.029 %	Using Current coil by Direct Method
	1 A to 20 A	0.029 % to 0.12 %	
	(20 A to 1000 A)	0.26 %	
3. DC RESISTANCE [#] 2 wire	1 Ω to 300 Ω	1.2 % to 0.004 %	Using Fluke 5522A MFC by Direct Method
	300 Ω to 3 k Ω	0.004 % to 0.01%	
	3 k Ω to 1.0 M Ω	0.01 % to 0.021%	
	1 M Ω to 1000 M Ω	0.021 % to 1.9 %	
4. DC RESISTANCE [#] 4 wire	10 m Ω to 1 Ω	2.2 % to 0.06 %	Using Precision Decade Box by Direct Method
5. DC HIGH RESISTANCE [#] 2 wire	100 M Ω to 100 G Ω	3.5 % to 3.7 %	Using High resistance decade box by Direct Method
6. CAPACITANCE [#]	@1 kHz (40 pF to 900 pF)	3.9 % to 2.5 %	Using Capacitance box by Direct Method
	@1 kHz (1 nF to 1 mF)	1.73 % to 1.3 %	Using Fluke 5522A MFC by Direct Method
7. AC CURRENT [#]	@50 Hz 30 μ A to 300 mA	0.74 % to 0.11 %	Using Fluke 5522A MFC by Direct Method (Using Current Coil)
	300 mA to 20A	0.11 % to 0.18 %	
	(>20 A to 1000 A)	0.34 %	

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Quantity Measured/ Instrument	Range / Frequency	Calibration Measurement Capability (\pm)	Remarks
LOCATION - 2			
8. AC VOLTAGE [#]	@50 Hz to 10 kHz 10 mV to 300 V 300 V to 1000 V	0.19 % to 0.03 % 0.03 % to 0.04 %	Using Fluke 5522A MFC by Direct Method
9. INDUCTANCE [#]	@1 kHz 100 μ H to 10 H	2.6 % to 2.4 %	Using Decade Inductance box by Direct Method
10. TEMPERATURE BY SIMULATION METHOD [#] OF THERMOCOUPLE (K & J type) (R & S type) (T type) PRT mode	(-) 200 °C to 1200 °C 0 to 1750 °C (-) 250 °C to 400 °C (-) 250 °C to 800 °C	0.3 °C 0.67 °C to 0.5 °C 0.72 °C to 0.16 °C 0.09 °C to 0.26 °C	Using Fluke 5522A MFC by Direct Method Using Fluke 5522A MFC by Direct Method
11. OSCILLOSCOPE [#] a>Vertical Deflection (DC function) b>Horizontal deflection (time base)	10 mV to 50 V 2 ns to 1 s	2.5 % to 0.012 % 0.08 %	Using Fluke 5522A MFC, Frequency Generator by Direct/Comparison Method
12. FREQUENCY [#]	400 mHz to 1 MHz	0.14 % to 0.006%	Using Fluke 5522A MFC by Direct Method
13. DC POWER [#]	10 V to 600 V 100m A to 20.5 A	0.21 % to 0.13 %	Using Fluke 5522A MFC by Direct Method
14. AC POWER/ENERGY [#]	(30 V to 300 V 3.3 mA to 20.5 A) UPF to 0.1 PF	0.6 % to 3.4 %	Using Fluke 5522A MFC & Stop Watch by Direct Method

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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
LOCATION - 2			
<u>MEASURE</u>			
1. DC VOLTAGE ^S	100 μ V to 100 mV 100 mV to 1000 V	0.5 % to 0.002 % 0.002 % to - 0.001 %	Using 8 1/2 digit DMM (Transmille 8081) by Direct Method
2. DC CURRENT ^S	10 nA to 10 μ A >10 μ A to 1 A 1 A to 20 A	1.4% to 0.006% 0.006% to 0.03% 0.03% - 0.1%	Using Std resistance by V-I method with 8 1/2 digit DMM (Transmille 8081) by Direct Method
3. AC VOLTAGE ^S	@ 50 Hz to 1 kHz 10 mV to 10 V 10 V to 1000 V	0.18 % to 0.29 % 0.29 % to 0.07 %	Using 8 1/2 digit DMM (Transmille 8081) by Direct Method
	@ 2 kHz 100 mV to 1000 V	0.05 % to 0.07 %	Using 8 1/2 digit DMM by Direct Method
	@ 20 kHz 100 mV to 100 V	0.16 %	Using 8 1/2 digit DMM by Direct Method
	@ 100 kHz 1 V to 10 V	0.27 %	By Using 8 1/2 digit DMM by Direct Method
	@ 50 Hz to 1 kHz 30 μ A to 100 mA 100 mA to 1 A 1 A to 20 A	0.15 % 0.15 % to 0.083 % 0.08 % 0.18 %	Using 8 1/2 digit DMM (Transmille 8081) by Direct Method
4. DC RESISTANCE ^S (4 Wire) (2 Wire)	10 m Ω to 1 Ω 1 Ω to 100 k Ω 100 k Ω to 100 M Ω 100 M Ω to 100 G Ω	0.10 % to 0.004 % 0.004 % to 0.002 % 0.002 % to 0.03 % 0.0 3% to 1.0 %	Using 8 1/2 digit DMM (Transmille 8081) by Direct Method Using 8 1/2 digit DMM(Transmille 8081)by V/I method by Direct Method

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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
LOCATION - 2			
5. FREQUENCY & PERIOD ^S	1 Hz to 1 GHz 1ns to 1s	0.08 % to 0.0011 %	Using High Resolution Counter (HTC - FC3165) by Direct/Comparison Method
6. DC HIGH VOLTAGE ^S	2 kV to 30 kV	3.6 %	Using HV Probe and 5 4/5 digit DMM by Direct/Comparison Method
7. AC HIGH VOLTAGE [#]	50 Hz 2 kV to 10 kV	4.1 %	Using HV Probe and 5 4/5 digit DMM by Direct/Comparison Method
8. POWER FACTOR [#]	50 Hz (-) 1 Φ to 1 Φ	0.007 PF	Using Power Analyser (Voltech PM 1000+) by Direct/Comparison Method
9. TIME [#]	5 secs to 1 hr	0.34 sec to 4.8 sec	Using Stop Watch by Direct/Comparison Method
10. AC POWER ^S	@UPF 50 W - 6 kW (50 V-300 V 1A-20 A), 50 Hz	0.35 %	Using Power analyzer by Direct/Comparison Method
11. DC POWER ^S	10 W -12 kW (10 V-600 V 1A-20 A)	0.75 %	Using Power analyzer by Direct/Comparison Method
12. CAPACITANCE [#]	1 kHz 20 pF to 1 mF	1.1 % to 0.75 %	Using Agilent LCR meter (U1732C) by Direct/Comparison Method

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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
LOCATION - 2			
13. INDUCTANCE*	1 kHz 100 μ H to 10 H	1.3% to 0.6%	Using Agilent LCR meter (U11732C) by Direct/Comparison Method
14. TEMPERATURE MEASUREMENT T/cⁿ			
K-Type			
J-Type	(-) 140 to 1340 °C	0.6 °C	Using 8 1/2 digit DMM (Transmille 8081) by Direct/Comparison Method
R-Type	(-) 180 to 750 °C	0.5 °C	
S-Type	50 to 1700 °C	1.2 °C	
T-Type	50 to 1700 °C	1.2 °C	
	0 to 400 °C	0.4 °C	
PRT-Type	(-) 100 to 400 °C	0.09 °C to 0.36 °C	Using 8 1/2 digit DMM
15. DC VOLTAGE*	1 mV to 100 mV 100 mV to 1000 V	0.4 % to 0.01% 0.01 %	Using 6 & 1/2 DMM by Direct Method
16. AC VOLTAGE*	@60 Hz to 50 kHz 10 mV to 100mV @1 kHz to 50 kHz 100 mV to 700 V	0.6% to 0.13% 0.13 % to 0.12 %	v6 & 1/2 DMM by Direct Method
17. RESISTANCE*	1 Ω to 100 M Ω	0.75 % to 1 %	Using 6 & 1/2 DMM by Direct Method
18. DC CURRENT*	100 μ A to 2A 2A to 10A	1.13 % to 0.15 % 0.15 % to 1.37 %	Using 6 & 1/2 DMM & 5 & 4/5 DMM by Direct Method
19. AC CURRENT*	@50 Hz 100 μ A to 10 A	1.5 % to 1.4 %	Using 6 & 1/2 DMM & 5 & 4/5 DMM by Direct Method
20. FREQUENCY & PERIOD*	1 Hz to 1 GHz	0.08 % to 0.0011 %	Using High Resolution Counter (HTC - FC3165) by Direct Method

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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
21. DC HIGH VOLTAGE *	1 kV to 30 kV	3.6 %	Using HV probe and 5 $\frac{1}{2}$ digit DMM by Direct Method.

*Measurement Capability is expressed as an uncertainty (\pm) at a confidence probability of 95%

*Only in Permanent Laboratory

*Only for Site Calibration

* The laboratory is also capable for site calibration however, the uncertainty at site depends on the prevailing actual environmental conditions and master equipment used.

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