Laboratory	**61850 Innovation Centre Integration Laboratory, ABB Ltd., HSB 115, Special Type, III[rd] Cross, Peenya Industrial Estate (1st Stage), Bangalore, Karnataka**		
Accreditation Standard	**ISO/IEC 17025: 2005**		
Discipline	**Electro-Technical Calibration**	**Issue Date**	**03.02.2015**
Certificate Number	**C-0635**	**Valid Until**	**02.02.2017**
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	Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
I.	**SOURCE**			
1	**DC VOLTAGE**	10 mV to 320 mV 320 mV to 3 V 3 V to 1000 V	0.1% to 0.01% 0.01% to 0.02% 0.02% to 0.03%	Using Wavetek 9100 by Direct Method
2	**AC VOLTAGE**	**50 Hz to 1 kHz** 10 mV to 32 mV 32 mV to 320 mV 320 mV to 100 V 100 V to 1000 V	 4.5% to 0.4% 0.4% to 0.06% 0.06% 0.073	Using Wavetek 9100 by Direct Method
3	**DC CURRENT**	100 µA to 320 µA 0.32 mA to 0.32 A 0.32 A to 3.2 A 3.2 A to 20 A	0.03% to 0.02% 0.02% to 0.03% 0.03% to 0.08% 0.08% to 0.10%	Using Wavetek 9100 by Direct Method
4	**AC CURRENT**	**50 Hz to 1 kHz** 100 µA to 300 µA 0.3 mA to 320 mA 0.32 A to 3.2 A 3.2 A to 20 A	 1.2% to 0.2% 0.2% to 0.1% 0.1% to 0.2% 0.2% to 0.3%	Using Wavetek 9100 by Direct Method
5	**RESISTANCE**	1Ω to 40 Ω 40 Ω to 400 Ω 400 Ω to 400 kΩ 0.4 MΩ to 100 MΩ	0.2% to 0.07% 0.07% to 0.03% 0.03% to 0.04% 0.04% to 0.2%	Using Wavetek 9100 by Direct Method
		100 MΩ to 900 MΩ	2.5%	Using Decade Mega Ohm Box 8400 HV
6	**FREQUENCY**	10 Hz to 1 MHz	0.0032%	Using Wavetek 9100 by Direct Method

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	Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
MEASURE				
7	**DC VOLTAGE**	1 mV to 10 mV 10 mV to 1000 V	0.5% to 0.05% 0.05% to 0.01%	Using 6 ½ DMM Fluke 8646A by Direct Method
8	**AC VOLTAGE**	**10 Hz to 20 kHz** 100 mV to 100 V	0.2% to 0.12	Using 6 ½ DMM Fluke 8646A by Direct Method
		45 Hz to 1 kHz 100 V to 1000 V	0.12%	
		50 Hz 1 kV to 5 kV	7.8% to 6.7%	
9	**DC CURRENT**	100 µA to 100 mA 100 mA to 10 A	0.1% 0.1% to 0.3%	Using 6 ½ DMM Fluke 8646A by Direct Method
10	**AC CURRENT**	**10 Hz to 1 kHz** 100 µA to 400 mA	0.22% to 0.3%	Using 6 ½ DMM Fluke 8646A by Direct Method
		45 Hz to 1 kHz 400 mA to 10 A	0.3%	Using Yokogawa WT 3000 by Direct Method
		50 Hz 10 A to 30 A	0.09%	
11	**RESISTANCE**	1Ω to 10Ω 10Ω to 10 M Ω 10 MΩ to 100 MΩ	0.5% to 0.05% 0.05% 0.05% to 0.95%	Using 6 ½ DMM Fluke 8646A by Direct Method
12	**FREQUENCY**	10 Hz to 1 MHz	0.04%	Using 6 ½ DMM Fluke 8646A by Direct Method

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	Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
13	**PHASE ANGLE**	50 Hz 0º to 360º	0.12 °	Using Yokogawa WT 3000 by Direct Method

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

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Convenor

Avijit Das
Program Manager