Laboratory	**Calibration & Standards Laboratory, Controllerate of Quality Assurance (Electronics), JC Nagar Post, Bangalore, Karnataka**		
Accreditation Standard	**ISO/IEC 17025:2005**		
Discipline	**Electro-Technical Calibration**	**Issue Date**	**30.07.2014**
Certificate Number	**C-0838**	**Valid Until**	**29.07.2016**
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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
SOURCE[$]			
1. DC Voltage	1mV to 100mV	0.047% to 0.0014%	Using Fluke5720A By Direct Method
	100 mV to 1 V	0.0014% to 0.0007%	
	1 V to 10 V	0.0007% to 0.0005%	
	10 V to 1000 V	0.0005% to 0.0008%	
2. DC Current	10 µA to 100 µA	0.051% to 0.012%	Using Fluke5720A By Direct Method
	100 µA to 1 mA	0.012% to 0.005%	
	1 mA to 10 mA	0.005% to 0.0045%	
	10 mA to 100 mA	0.0045% to 0.006%	
	100 mA to 1 A	0.006% to 0.011%	
	1A to 2A	0.011% to 0.010%	
	2A to 100A	0.010% to 0.047%	Using Multi Function calibrator, Fluke 5720A , Trans conductance Amplifier, DMM / Keithley 2002, Std Resistor L & N 0.0001Ω by Indirect Method
3. AC Voltage	**20 Hz to 40 Hz**		
	20 mV to 20 V	0.058% to 0.031%	Using Fluke5720A by Direct Method
	40 Hz to 1 kHz		
	2 mV to 20 mV	0.61% to 0.036%	
	20 mV to 200 mV	0.036% to 0.017%	
	200 mV to 2 V	0.017% to 0.013%	
	2 V to 200 V	0.01%	

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	Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
	AC Voltage	**50 Hz to 1 kHz** 200 V to 750 V	0.011% to 0.038%	Using Fluke5720A By Direct Method
		1 kHz to 50 kHz 2 mV to 20 mV	0.63% to 0.10%	
		50 kHz to 300 kHz 200 mV to 20 V	0.12% to 0.042%	
		300 kHz to 1 MHz 2 V to 20 V	0.26% to 0.25%	
4.	**AC Current**	**40 Hz to 1 kHz** 10 µA to 200 µA 200 µA to 100 mA 100 mA to 1 A 1 A to 2 A	 0.14% to 0.025% 0.025% 0.025% to 0.04% 0.04% to 0.035%	 Using Fluke5720A By Direct Method
		1 kHz 2 A to 20 A	0.35% to 0.12%	Using Multi Function calibrator, Fluke 5720A , Trans conductance Amplifier by Indirect Method

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	Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
5.	**Resistance**	1 Ω to 1.9 Ω 1.9 Ω to 10 Ω 10 Ω to 19 kΩ 19 kΩ to 1 MΩ	0.012% 0.012% to 0.0027% 0.0027% to 0.0011% 0.0011% to 0.0046%	Using DMM/ Keithley 2002, Std. Resistor L & N Tinsley 0.01 Ω by Indirect Method
6.	**Oscilloscope**			
	Vertical channel **a) DC Voltage**	3mV to 50V (1MΩ) 3mV to 5V (50Ω)	1.20% 1.20%	Using Oscilloscope Calibrator Fluke 9500 by Direct Method
		1 kHz		
	b) Square wave	6mV to 60V (1MΩ) 6mV to 5V (50Ω)	1.20% 1.20%	
	Time Base	10 ns to 1 s	46ppm to 126ppm	
	Band Width	10MHz to 1GHz	4% to 5%	
	MEASURE			
7.	**DC Voltage$**	190 mV to 1.9 V 1.9 V to 19 V 19 V to 1000 V	0.0039% to 0.0015% 0.0015% 0.0015% to 0.0028%	Using DMM Keithley 2002 by Direct Method
8.	**DC Current$**	190 µA to 1.9 mA 1.9 mA to 190 mA 190 mA to 1.9 A	0.045% to 0.043% 0.045% to 0.069% 0.069% to 0.11%	Using DMM Keithley 2002 by Direct Method

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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
DC Current[$]	2 A to 100 A	0.017% to 0.031%	DMM / Keithley 2002, Std Resistor L & N 0.01Ω, 0.001 Ω, 0.0001 Ω by Indirect Method
9. AC Voltage[$]	**50 Hz to 1 kHz**		
	190 mV to 19 V	0.05% to 0.10%	Using DMM, Keithley 2002 by Direct Method
	19 V to 190 V	0.10%	
	190 V to 750 V	0.10% to 0.14%	
	1 kHz to 50 kHz		
	190 mV to 19 V	0.08% to 0.10%	
	5kHz to 50 kHz		
	19 V to 100 V	0.010% to 0.12%	
10. AC Current[$]	**40 Hz to 100 Hz**		
	190 µA to 1.9 mA	0.43% to 0.37%	Using DMM, Keithley 2002 & DMM Fluke 289 by Direct Method
	1.9 mA to 190 mA	0.37%	
	190 mA to 1.9 A	0.37% to 0.43%	
	100 Hz to 1 kHz		
	1.9 mA to 190 mA	0.20%	

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	Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
	AC Current[$]	**50 Hz**		
		2 A to 10 A	1.05% to 0.99%	Using DMM, Keithley 2002 by Indirect Method
		10 A to 20 A	0.12% to 0.098%	
11.	**Resistance[$]**	1Ω to 10 Ω	0.041% to 0.007%	Using DMM, Keithley 2002 by Direct Method
		10 Ω to 100 Ω	0.007% to 0.0051%	
		100 Ω to 1kΩ	0.0051% to 0.0019%	
		1 kΩ to 10 kΩ	0.0019% to 0.002%	
		10 kΩ to 100 kΩ	0.002% to 0.0051%	
		100 kΩ to 1MΩ	0.0051% to 0.010%	
12.	**DC Current [♣]**	1 A to 100 A	0.15% to 0.035%	Using DMM Fluke 289, Std Resistor L & N 0.01 Ω, 0.001 Ω & 0.0001 Ω,

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

[$]Only in Permanent Laboratory
[♣]Only for Site Calibration

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