

Laboratory **Bharat Electronics Ltd. (Calibration Laboratory), Plot No-405, Industrial Area, Phase-III, Panchkula, Haryana**

Accreditation Standard **ISO/IEC 17025:2005**

Discipline **Electro-Technical Calibration** Issue Date **22.09.2016**

Certificate Number **C-0384** Valid Until **21.09.2018**

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Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (\pm)	Remarks
<u>SOURCE</u>			
1. RF POWER \$ at 50 Ω	5 MHz to 1 GHz 20 dBm to 60 dBm (100mW to 1nW)	5.0 % to 15 %	Using RF Reference Source by Direct Method
	1GHz to 4 GHz 14dBm to -60dBm (25.11mW to 1nW)	9.5 % to 17 %	
2. RF FREQUENCY \$	1MHz to 4 GHz	0.0001 % to 0.000012 %	Using RF Reference Source by Direct Method
3. MODULATION \$			
AM MODULATION	CW:10 MHz to 1 GHz Modulation Rate:1 kHz to 50 kHz Modulation Depth: 10% to 90%	5.0 %	Using RF Reference Source by Direct Method
FM MODULATION	CW : 125MHz to 1GHz Modulation : 400 Hz to 100 KHz FM Deviation : 1kHz to 100 kHz	4.5 %	
4. OSCILLOSCOPE \$			
PULSE AMPLITUDE	50 Ω Load Sine Wave 1 kHz to 45 kHz 2 V to 5 V p-p	2.3 %	Using Scope Calibrator by Direct Method
	1 MΩ Load Square Wave 1 kHz 6 mV to 50 V	2.3 %	
BANDWIDTH	50 kHz to 500 MHz	6.5 %	
TIME MARKER	10 ns to 10 ms	0.0083 % to 0.0088 %	

Sangeeta Kunwar
Convenor

Avijit Das
Program Manager

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Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (\pm)	Remarks
5. INDUCTANCE ^{\$}	1 kHz 100 μ H, 1 mH, 10 mH	0.32 %	Using Standard Inductors by Direct Method
6. CAPACITANCE ^{\$}	1 kHz 100 pF, 1000 pF, 0.01 μ F, 0.1 μ F & 1 μ F	1.2 %	Using Standard Capacitors by Direct Method
7. DC VOLTAGE ^{\$}	1 mV to 1000 V	0.4 % to 0.01 %	Using Meter Calibrator
8. AC VOLTAGE ^{\$}	50 Hz to 1 kHz 10 mV to 1 V	0.4 % to 0.1 %	Using Meter Calibrator
	1 V to 1000 V	0.4 % to 0.1 %	
	1 kHz to 100 kHz 10 mV to 10 V	2 % to 0.5 %	
9. DC CURRENT ^{\$}	100 μ A to 1 mA 1 mA to 100 mA 100 mA to 1 A 1 A to 10 A	0.12 % 0.12 % 0.12 % 0.12 %	Using Meter Calibrator by Direct Method
10. AC CURRENT ^{\$}	50 Hz to 1 kHz 100 μ A to 100 mA 100 mA to 1 A 1 A to 10 A	0.5 % to 0.1 % 0.1 % 0.1 %	Using Meter Calibrator by Direct Method
	1 kHz to 5 kHz 100 μ A to 100 mA 100 mA to 1 A	2 % to 1 % 2 % to 1 %	
11. RESISTANCE ^{\$}	1 Ω to 10 Ω > 10 Ω to 10 k Ω > 10 k Ω to 100 M Ω 110 k Ω to 100 M Ω	0.9 % 0.9 % 0.9 % 0.9 %	Using Meter Calibrator by Direct Method

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Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (\pm)	Remarks
<u>MEASURE</u>			
1. DC VOLTAGE ^{\$}	1 mV to 100 mV	0.052 % to 0.001 %	Using Reference Multimeter by Direct Method
	100 mV to 1000 V	0.001 %	
2. DC CURRENT ^{\$}	100 μ A to 100 mA	0.006 % to 0.051 %	Using Reference Multimeter by Direct Method
	100 mA to 10 A	0.051 %	
3. AC VOLTAGE ^{\$}	50 Hz to 1 kHz		Using Reference Multimeter by Direct Method
	10 mV to 1 V	0.07 % to 0.016 %	
	1 V to 100 V	0.016 %	
	100 V to 1000 V	0.016 %	
	100 kHz		
	10 mV to 10 V	0.33 % to 0.09 %	
4. AC CURRENT ^{\$}	50 Hz to 1 kHz		Using Reference Multimeter by Direct Method
	100 μ A to 1 mA	0.083 % to 0.12 %	
	1 mA to 10 A	0.12 %	
	5 kHz		
	100 μ A to 1 A	0.083 % to 0.12 %	
5. RESISTANCE ^{\$}	1 Ω to 10 Ω	0.03 % to 0.04 %	Using Reference Multimeter by Direct Method
	100 Ω to 100 k Ω	0.04 %	
	100 k Ω to 1 M Ω	0.04 %	
	1 M Ω to 100 M Ω	0.04 %	

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

^{\$}Only in Permanent Laboratory

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