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| Laboratory | Electrical & Electronic Measuring Instruments Laboratory, CPL, B.H.E.L., CPL Building, BHEL Haridwar, Uttarakhand | | |
| Accreditation Standard | ISO/IEC 17025: 2005 | | |
| Discipline | Electro-Technical Calibration | Issue Date | 14.02.2014 |
| Certificate Number | C-0097 | Valid Until | 13.02.2016 |
| Last Amended on | - | Page | 1 of 3 |

| Quantity Measured/ Instrument | Range / Frequency | *Calibration Measurement Capability (\pm) | Remarks |
|-------------------------------------|---|--|---|
| MEASURE | | | |
| 1. DC VOLTAGE^s | 10mV to 100 mV | 0.014% to 0.0015% | Using Fluke 8508 DMM, 8508A By Direct Method |
| | 100 mV to 10 V | 0.0015% to 0.001% | |
| | 10 V to 100 V | 0.001% | |
| | 100V to 1000V | 0.001% | |
| | 5kV | 5.0% | Using HV Probe |
| 2. DC CURRENT^s | 30 μ A to 20mA | 0.02% to 0.004% | Using Fluke 8508 DMM, 8508A By Direct Method |
| | 20mA to 200mA | 0.004% to 0.17% | |
| | 200mA to 2A | 0.17% | |
| | 2A to 10A | 0.11% | |
| 3. DC RESISTANCE^s | 1 Ω to 10 Ω | 0.12% | Using Fluke 8.5 DMM, 8508A |
| | 10.0 Ω to 100 Ω | 0.12% to 0.33% | |
| | 100 Ω to 1k Ω | 0.33% to 0.09% | |
| | 1k Ω to 10 M Ω | 0.09% to 0.02% | |
| | 10 M Ω to 100 M Ω | 0.02% to 0.33% | |
| | 100 M Ω to 1G Ω | 0.33% to 0.8% | |
| 4. CURRENT RATIO^s | 50 Hz 1 A to 1000 A / 1A | 0.5% | Using Tettex 4701 + HP 34401 DMM By Direct Method |
| 5. AC VOLTAGE^s | 50 Hz to 1kHz 10mV to 200 mV | 0.57% to 0.20% | Using Fluke 8.5 DMM, 8508A HP 6.5 34401A DMM. By Direct Method |
| | 200 mV to 200 V | 0.20% | |
| | 10 V to 1000 V | 0.20% to 0.03% | |
| 6. AC CURRENT^s | 50 Hz 30 μ A to 100 μ A | 0.3% to 0.20 % | Using Fluke 8508A DMM. By Direct Method |
| | 100 μ A to 10 mA | 0.20 % to 0.08 % | |
| | 10 mA to 1 A | 0.08 % to 0.10 % | |
| | 1A to 10A | 0.10 % to 0.11 % | |
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| | Quantity Measured/ Instrument | Range / Frequency | *Calibration Measurement Capability (\pm) | Remarks |
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| 7. | AC POWER^S (1 \emptyset) | 20 V to 700 V 10 mA to 11 A 200 mW to 20 W (P.F. 0.2 lag to 0.2 lead) 20 W to 6 kW (P.F. 0.5 lag to 0.5 lead) | 0.5% 0.2 % | Using Yokogawa WT 230 RFL 636 By Direct Method |
| 8. | PHASE ANGLE^S | 40 Hz to 70 Hz to 99.9° to + 99.9° to 180 ° to + 100° + 100° to + 180° | 0.45% 0.45% 0.45% | Using Yokogawa WT 230 RFL 636 By Direct Method |
| 9. | AC POWER^S 3 \emptyset | 50 Hz 50V to 600 V 0.2 A to 20 A 10 W to 3kW (P.F. 0.5 lag to 0.5 lead) | 1.0% | Using Yokogawa WT 230 By Direct Method |
| 10. | FREQUENCY^S | 50 Hz to 100 kHz | 0.81% | Using HP 34401A DMM By Direct Method |
| | SOURCE | | | |
| 11. | DC VOLTAGE^S | 1mV to 30V 30 V to 1000 V | 0.12% to 0.004% 0.004% to 0.02 % | Using Fluke 5520A Calibrator By Direct Method |
| 12. | DC CURRENT^S | 30 μ A to 300 mA 300mA to 1A 1 A to 10A 10A to 20A | 0.27%to0.10 % 0.10% to 0.03% 0.03% to 0.010% 0.010% to 0.18 % | |
| 13. | DC RESISTANCE^S | 0.1 Ω to 1 Ω 1.0 Ω to 100 k Ω 100k Ω to 1 M Ω 1 M Ω to 1000 M Ω 1G Ω to 500G Ω | 0.76% 0.76% 0.76% 0.76% to 1.13 % 1.13% to 2.30% | Using Fluke 5520A P310T P321T P331T 4720 to Tinsley. By Direct Method |

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|---|---|--|---|
| 14. DC POWER ^S | 15 W to 1800W (15 to 600V / 1to3 A) | 0.20% | Using Fluke 5520A By Direct Method |
| 15. AC VOLTAGE ^S | 50 Hz to 10kHz 10mV to 300 mV 300 mV to 30 V 30 V to 1000 V | 0.14% to 0.024% 0.024 % to 0.19% 0.19 % to 0.11 % | Using Fluke 5520A & Rotek 8000. By Direct Method |
| 16. AC CURRENT ^S | 50 Hz 300 μ A to 300 mA 300 m A to 1 A 1A to 10A 10 A to 20 A | 1.96%to0.3% 0.3% to 0.36 % 0.36 % to 0.30 % 0.30% | Using Fluke 5520A & Rotek 8000 By Direct Method |
| 17. AC POWER ^S (1 \emptyset) | 50 Hz 20 V to 700 V 10 mA to 11 A 200 mW to 20 W P.F. 0.2 lag to 0.2 lead 20 W to 6 kW P.F. 0.5lag to 0.5 lead | 0.5 % 0.3 % | Using Fluke 5520A By Direct Method |
| 18. PHASE ANGLE ^S | 50 Hz to 99.9° to + 99.9° to 180 ° to + 100° + 100° to + 180° | 0.10 % 0.10 % 0.10 % | Using Fluke 5520A By Direct Method |
| 19. FREQUENCY ^S | 50 Hz to 1 MHz | 0.02% to 0.04 % | Using Fluke 5520A Rotek 8000 By Direct Method |

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

^SOnly in Permanent Laboratory