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|---|---|---|---|
| **Laboratory** | **Rectifier Station Laboratory, Hindalco Industries Limited, P.O.Renukoot, Dist Sonbhadra, Uttar Pradesh** | | |
| **Accreditation Standard** | **ISO/IEC 17025:2005** | | |
| **Discipline** | **Electro Technical Calibration** | **Issue Date** | **22.05.2014** |
| **Certificate Number** | **C-0228** | **Valid Until** | **21.05.2016** |
| **Last Amended on** | **-** | **Page** | **1 of 3** |

| | Quantity Measured/ Instrument | Range / Frequency | *Calibration Measurement Capability (±) | Remarks |
|---|---|---|---|---|
| | **SOURCE** | | | |
| **1.** | **DC VOLTAGE$** | 1mV - 300mV<br>300mV - 3V<br>3V - 30V<br>30V - 300V<br>300V - 1kV | 1% - 0.02%<br>0.02% - 0.03%<br>0.03% - 0.1%<br>0.1% - 0.015%<br>0.015% - 0.015% | Wavetek Calibrator 9100 Direct Method |
| **2.** | **AC VOLTAGE$** | **50 Hz**<br>30mV - 300mV<br>300mV - 3V<br>3V - 300V<br>300V - 700V | <br>0.45% - 0.16%<br>0.16%<br>0.16% - 0.1%<br>0.1% - 0.30% | Wavetek Calibrator 9100 Direct Method |
| **3.** | **DC CURRENT$** | 3mA - 30mA<br>30mA - 300mA<br>300mA - 3A<br>3A -10A | 0.35% - 0.10%<br>0.10 %<br>0.10% - 0.11%<br>0.11% | Wavetek Calibrator 9100 Direct Method |
| **4.** | **AC CURRENT$** | **50 Hz**<br>3mA-30mA<br>30mA -300mA<br>300mA -3A<br>3A -10A | <br>0.35% - 0.11%<br>0.11%<br>0.11% - 0.15%<br>0.15 - 0.30% | Wavetek Calibrator 9100 Direct Method |
| **5.** | **FREQUENCY$** | 10Hz -1MHz | 0.07% - 0.03% | Wavetek Calibrator 9100 Direct Method |
| **6.** | **RESISTANCE$** | 40Ω - 400Ω<br>400Ω - 4kΩ<br>4kΩ - 400kΩ<br>400kΩ - 4MΩ<br>4MΩ - 40MΩ<br>40MΩ - 300MΩ | 0.07% - 0.03%<br>0.03%<br>0.03% - 0.13%<br>0.13% - 0.085%<br>0.085% - 0.24%<br>0.24% - 1.60% | Wavetek Calibrator 9100 Direct Method |

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| **Discipline** | **Electro Technical Calibration** | **Issue Date** | **22.05.2014** |
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| **Last Amended on** | **-** | **Page** | **2 of 3** |

| | Quantity Measured/ Instrument | Range / Frequency | *Calibration Measurement Capability (±) | Remarks |
|---|---|---|---|---|
| | **MEASURE** | | | |
| **7.** | **AC Active & Reactive ENERGY/ POWER$ at 40 – 70Hz & Pf: + 0.5 to - 0.866** | 60 V – 240 V<br>&<br>10 mA – 5 A | | Percision Mesuring Instrument Make::ZERA MODEL:TOPZ303 By comparison method |
| | | ACTIVE<br>1-Phase<br>0.3W – 4.8kW | 0.08% | |
| | | 3- Phase<br>0.9W – 14.4kW | 0.08% | |
| | | REACTIVE<br>1-Phase<br>0.3W – 4.8kW | 0.085% | |
| | | 3- Phase<br>0.9W – 14.4kW | 0.085% | |
| **8.** | **AC VOLTAGE$** | **50Hz**<br>40V- 320V $ | 0.035% | Percision Mesuring Instrument Make::ZERA MODEL:TOPZ303 By comparison method |
| **9.** | **AC CURRENT$** | 50 Hz<br>5 mA – 20 A | 0.055 – 0.035 % | Percision Mesuring Instrument Make::ZERA MODEL:TOPZ303 By comparison method |

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| **Discipline** | **Electro Technical Calibration** | **Issue Date** | **22.05.2014** |
| **Certificate Number** | **C-0228** | **Valid Until** | **21.05.2016** |
| **Last Amended on** | **-** | **Page** | **3 of 3** |

| Quantity Measured/ Instrument | Range / Frequency | *Calibration Measurement Capability (±) | Remarks |
|---|---|---|---|
| **10. FREQUENCY$** | **60 V**<br>40Hz - 70Hz | 0.075% | Percision<br>Mesuring Instrument<br>Make::ZERA<br>MODEL:TOPZ303<br>By comparison method |

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

**$Only in Permanent Laboratory**