# National Association for Proficiency Testing

*A Non-Profit Organization Dedicated to Excellence in Metrology and Test Measurement*


## PRELIMINARY REPORT

**Preliminary Results Reported To:**

Digital Measurement Metrology Inc
Attention: Raj Sharma
26 Automatic Road, Unit 4
Brampton, ON L6S 4S8

**Date Of Proficiency Report:** 13 August 2002

**Date Of Participation In Proficiency Test:** 08 August 2002

This preliminary report documents the results for the proficiency test listed below, covering all data presented to NAPT for evaluation by your organization. The artifact(s) listed in this report is currently being distributed to other organizations for evaluation. A Final Report will be issued after all participants have reviewed their Preliminary Reports. The Final Report will include a graphical representation of participants' values compared to the artifact mean and the values reported by the other participants.

**PROFICIENCY TEST NAME:** NAPT-DMM-001

**Artifact Information:**

Digital Multimeter
Mfgr: Keithley
Model: 197A
SN: 057746
5 1/2 Digit DMM

Data analysis of your reported values indicates that your organization performed 9 out of 9 measurements satisfactorily. If any data reported in this Preliminary Report does not match the values you originally reported to NAPT, please contact us within 30 days.

All NAPT programs are conducted in accordance with ISO/IEC Guide 43-1 requirements for proficiency testing providers. Please contact NAPT with any questions regarding this Preliminary Report.




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Preliminary analysis of the data your organization submitted to NAPT is shown below. Reported values are compared against the reference value only. In the Final Report, your reported values will also be analyzed against the values reported by other participants enrolled in this proficiency test.

| *Description of Measurement (Discipline)* | *Reported / Reference Value* | *Reported / Reference Uncertainty* | *En* | *S/U* | *IWO* |
|---|---|---|---|---|---|
| ***Current AC*** | | | | | |
| 100 mA rms - 9) 100 mA on 200 mA Scale @ 50 Hz | 99.903 **mA rms**<br>*99.916* | 1.27<br>*0.022* | 0.01 | **S** | **I** |
| ***Current DC*** | | | | | |
| 1 mA DC - 7) 1 mA on 2 mA Scale | 0.99992 **mA DC**<br>*0.99993* | 0.0013<br>*0.015* | 0 | **S** | **I** |
| 1000 mA DC - 8) 1000 mA on 2000 mA Scale | 999.81 **mA DC**<br>*999.82* | 2.48<br>*0.13* | 0.01 | **S** | **I** |
| ***Ohms*** | | | | | |
| 1 M Ohm - 6) 1 M Ohm on 2 M Ohm scale | 1.00000 **M ohm**<br>*0.99994* | 0.00043<br>*0.00013* | 0.13 | **S** | **I** |
| 100 Ohm - 5) 100 Ohm on 200 Ohm scale | 99.983 **Ohms**<br>*99.990* | 0.024<br>*0.004* | 0.3 | **S** | **W** |
| ***Voltage AC*** | | | | | |
| 100 mV - 3) 100 mV on 200 mV scale @ 50 Hz | 99.852 **mVrms**<br>*99.855* | 1.27<br>*0.021* | 0 | **S** | **I** |
| 300 V - 4) 300 V on 750 V scale @ 10 kHz | 299.81 **Vrms**<br>*299.66* | 2.89<br>*0.11* | 0.05 | **S** | **W** |
| ***Voltage DC*** | | | | | |
| 100 mV DC - 1) 100 mV on 200 mV Scale | 99.989 **mV DC**<br>*99.985* | 0.022<br>*0.003* | 0.18 | **S** | **W** |
| 10 V DC - 2) 10 V on 20 V Scale | 9.9984 **V DC**<br>*9.9984* | 0.0021<br>*0.0008* | 0 | **S** | **I** |

All uncertainties at (or normalized to) K=2 (coverage factor associated with a 2 sigma (95.45%) normal distribution)

En = (Lab Mean -Ref Value) / SQRT(Lab Uncert^2 + Ref Uncert^2)
S: denotes Lab's Computed En within range + 1 to -1
U: denotes Lab's Computed En outside range of +1 to -1

I: denotes Lab's Mean and (Mean +/- Uncertainty) fall within Reference Uncertainty
W: denotes Lab's Mean and/or (Mean +/- Uncertainty) overlaps Reference Uncertainty
O: denotes neither the Lab's Mean nor any Uncertainty fall within Reference Uncertainty



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