BILATERAL COMPARAISON of DC Resistance 100 MΩ

LEr 28/1/2013

TECHNICAL PROTOCOL

1. INTRODUCTION

The comparison is organised within the EU-Indonesia Trade Support Programme II, Sub-project Number APE12-06b, “Improvement of traceability of Metrology and Calibration measurements of Puslit KIM”.
The comparison is linked to the corresponding CCEM comparison CCEM-K2
Two National Metrology Institutes take part in this comparison: LNE (France) and KIM-LIPI (Indonesia).
LNE is acting as the pilot laboratory and in this function is responsible for providing the travelling standard, the evaluation of the measurement results and the final report.
The comparison will be accomplished in accordance with the EURAMET Guidelines on Conducting Comparisons and CCEM Guidelines for Planning, Organising, Conducting and Reporting Key, Supplementary and Pilot Comparisons.

2. TRAVELLING STANDARDS

2.1. The travelling standard is a resistance (Guildline 9930) having the nominal value of 100 MΩ.

2.2. Specifications

Nominal value of the resistance	100 MΩ
Dimensions of the case:	40 mm x 30 mm x 20 mm
Total mass Approx. :	3 kg

3. Quantities to be measured

- ***R:*** resistance of the standard (three terminals);
- ***V:*** test voltage;
- T_{ext}***:*** the temperature (°C) of the environment where the standard is measured;
- RH_{ext}: relative humidity of the environment.

4. Measurement instructions

The measurements should be performed under the following conditions:

- Test voltage: $V_{test} \leq 100$ V, preferably 100 V;
- Temperature of the environment : 23°C ± 2°C;
- Relative humidity of air: between 30 % and 70 %.

5. Reporting of results

A report should be sent to the pilot laboratory within one month after the measurements are completed. The report should include:
– Description of the measurement method;
– The reference standard;

– The traceability to the SI;
– The results of the quantities to be measured (list of section 3);
– The associated standard uncertainties, the effective degrees of freedom and the expanded uncertainties;

The measurement of the DC current and the temperature of the oil bath must also be recorded and reported.

6. Uncertainty of measurement

The uncertainty must be calculated following the ISO "Guide to the expression of uncertainty in measurement" (GUM) and the complete uncertainty budget must be reported.

7. Transportation

The travelling standard must be transported in the original case and protected from mechanical loads, vibration etc. for transport by plane.
The travel box contains the following items:
– Resistance standard,
– Operating instructions of the travelling standard (this document).

8. CONTACT

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