

EUROMET PROJECT

FINAL REPORT

1. Ref. No.: 633	2. Subject Field: Electricity and Magnetism
3. Type of collaboration: COMPARISON	
4A. Partners: NMI VSL, NPL, IEN, METAS, NRC, SMU, SP	4B. CEC funded? No
5. Participating countries: NL, UK, IT, CH, CA (non-Euramet), SK, SE	
6. Title: Comparison on determining calibration factor of thermistor mounts (up to 18 GHz)	
<p>7. Progress:</p> <p>The main object of this comparison was to investigate potential problems in Euramet project 393 as discussed during the Euramet HF experts meeting in 2000. Initial participators were NMI VSL, NPL, IEN, and METAS; later the participation was extended to SMU, SP, and NRC. The project subsequently was given the status of a Euramet key comparison (KCDB-code EUROMET.EM.RF-K8.CL).</p> <p>The measurements on two traveling standards were performed in two loops, from August 2001 to July 2002. The last report from the participants was received in December 2002. The final draft B report was completed in September 2006 and published in the KCDB together with a report for the linkage to the corresponding CCEM comparison, CCEM.RF-K8.CL (see http://kcdb.bipm.org).</p> <p>The results at all selected frequencies in the range from 10 MHz to 18 GHz show a good agreement between the participants. The maximum stated uncertainty for the calibration factor ranges from 0.3 % at 50 MHz to more than 4.0 % at 18 GHz, independent of the type of connector on the DUT. The uncertainty stated for the reflection coefficient was up to 0.03 in almost all cases. Almost all results are consistent within the claimed uncertainty. SP did not measure at 10 MHz; NRC and IEN got results at 10 MHz that significantly deviated from the other participants. Both laboratories took correcting actions after the distribution of the Draft A report. The graph below shows the results obtained at 4 GHz, linked together with the results of the CCEM.RF-K8.CL comparison.</p> <div style="text-align: center;"> <p>CCEM.RF-K8.CL, EUROMET.EM.RF-K8.CL and EUROMET.EM.RF-K8.1.CL</p> <p>Travelling standards: Type-N</p> <p>Degrees of equivalence, D_i and expanded uncertainty U_i ($k = 2$), for frequency 4 GHz</p> </div>	
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9. Completion date: September 2006	<p>10. Coordinator's signature:</p>
11. Date: October 2008	