

Annual Report of the EUROMET PHORA TC for the 17th EUROMET General Assembly

1. General Aspects

The largest amount of work done in the EUROMET PHORA TC during the last year has been focused in the proposal and analysis of the CMCs declared by the EUROMET NMIs and by the NMIs of other RMOs.

The 3rd set of EUROMET PHORA CMCs was successfully finished and also the analysis of other RMOs CMCs to be included in the BIPM KCDB in October 2002.

Simultaneously a significant workload has been caused by the various EUROMET PHORA Projects, mainly those classified as comparison and traceability projects.

The closure in 2002 of the Photometry and Radiometry laboratories of the BIPM has been an important item for discussion between the PHORA CPs. Another subject of discussion is the new situation that can arise due to the MERA project; the proposals of this project could affect the EUROMET NMIs relations with respect to traceability and duplication of efforts.

A classification of research subject field has been discussed.

2. Meetings

The annual meeting of EUROMET Photometry and Radiometry Technical Committee was organized by the Hellenic Institute of Metrology in Thessaloniki, Greece, during April 3-4, 2003.

There were participating 26 persons from 23 NMIs.

In the meeting they were studied:

- The status of CMCs.
- The status of Q.S. Forum.
- Closure of the PR laboratory of BIPM.

- The extension of the CCPR PR VIM vocabulary for CMCs.
- The maintenance of EUROMET PR CMCs.
- Reports of the NMIs activities.
- The MERA project in relation to the P&R. It was nominated a study group to draft a document to send it to MERA project chairman.
- The status of the CCPR Key and supplementary comparisons.
- The status of the EUROMET Key comparisons.
- The status of the EUROMET PHORA projects.
- Nominations for PHORA TC Chairpersons. Dr. María Luisa Rastello, from IEN (Italy) was nominated candidate to be Chairperson of the EUROMET PR TC for the term from May 2003 to May 2005.

The next meeting will be held at NPL (United Kingdom) during May 6-7, 2004.

3. Projects

At present time there are 27 EUROMET PHORA Projects.

Agree Projects

- Comparisons 7
- Consultation 2
- Cooperation 3
- Traceability 10

Proposed Projects

- Comparisons 4
- Cooperation 1

Project	Title	Co-ordinator	progress reports (restricted access)
<u>6</u>	Reflectance of diffusing materials	Dr W Moller , PTB	<u>2000, 2001, 2002, 2003</u>
<u>36</u>	UV radiometric scales and calibration services	Miss T M Goodman, NPL	<u>2001, 2003,</u>
<u>37</u>	Transfer standards for spectrophotometry and colorimetry	Chris Chunnillall , NPL	<u>2001, 2003</u>
<u>38</u>	Fibre Optic standards	Tim Jones, NPL	<u>2001, 2003</u>
<u>40</u>	Traceability of spectral irradiance	Miss T M Goodman ,	<u>2001, 2003</u>

	scales	NPL	
<u>156</u>	Intercomparison of high laser power	Dr K Möstl, PTB	<u>2001, 2002, 2003</u>
<u>204</u>	Measurement of diffusion of retroreflectors & ref. standards	Maria Luisa Rastello, IEN	<u>2002, 2003</u>
<u>353</u>	Transmittance measurements on V(λ) filters	Leif Liedquist, SP	<u>2000</u>
<u>359</u>	Wavelength Standards for Optical Communication	Jan C. Petersen , DFM	<u>2000, 2001, 2002, 2003</u>
<u>374</u>	Spectral Responsivity Scales	N P Fox, NPL	<u>2001, 2003</u>
<u>375</u>	Comparison of characterisation techniques for filter radiometry	N P Fox, NPL	<u>2003</u>
<u>437</u>	Evaluation of the radiometric performance of UV photodetectors	Dr. Hans Rabus, PTB	<u>1999, 2000, 2001, 2002</u>
<u>443</u>	Comparison of Ultraviolet Power Meters	N P Fox, NPL	<u>2003</u>
<u>444</u>	Comparison of luminance meters	Miss T M Goodman, NPL	<u>2003</u>
<u>538</u>	EUROMET key Comparison of spectral regular transmittance	Jean Bastie, BNM-INM	<u>2000, 2001, 2003</u>
<u>539</u>	Radiometric calibration of French UV and VUV source standards	Jean Bastie, BNM-INM	<u>2000, 2001, 2003</u>
<u>562</u>	Two photon metrology	Maria Luisa Rastello, IEN	<u>2000, 2001, 2002, 2003</u>
<u>569</u>	Key comparisons of luminous intensity (EUROMET.PR-K3.a) and luminous flux (EUROMET.PR-K4)	Georg Sauter , PTB	<u>2000, 2001, 2002, 2003</u>
<u>581</u>	Fibre optic consultation working group	Anne Andersson Faldt, SP	<u>2001, 2003</u>
<u>582</u>	Investigation into the differences between diffuse reflectance measured (by conventional sphere based and goniophotometric tech)	Chris Chunnillall, NPL	<u>2001, 2003</u>
<u>583</u>	Comparison of NIR diffuse reflectance scales	Chris Chunnillall, NPL	<u>2001, 2003</u>
<u>587</u>	EUROMET key Comparison on spectral responsivity (EUROMET, PR-K2.b)	Joaquin Campos Acosta, CSIC	<u>2001, 2003</u>
<u>603</u>	Traceability of spectral irradiance scales using detector based standard lamps	Michael Matus, BEV	<u>2003</u>
<u>619</u>	Key-Comparison of Spectral Diffuse Reflectance (EUROMET.PR-K5)	György Andor, OMH	<u>2003</u>
<u>666</u>	Intercomparison of Chromatic Dispersion Reference Fibres	Dr. J. Morel, METAS	<u>2003</u>

<u>694</u>	Traceability of spectral transmittance	Farshid Manoocheri, HUT	<u>2002, 2003</u>
<u>695</u>	Development of a transportable irradiance scale for solar ultraviolet radiation measurements.	Dr. Julian Gröbner, JRC	<u>2003</u>

A complete information of these projects and the annual progress reports can be seen at PHORANET, <http://www.metas.ch/euromet/phora/projects.html>, and in <http://www.euromet.ie/pages/projects/proj.html>.

There are not new projects planned.

4. Mutual Recognition Arrangement

Key Comparisons

CCPR Key & Supplementary Comparisons

- CCPR-K1a. “Spectral irradiance from 250 to 2500 nm” (GB). In progress. Problems with blackbody and lamps. Measurements completed in June, 2003.
- CCPR-K1b. “Spectral irradiance from 200 to 400 nm” (DE). In progress. Measurements will start in July, 2003.
- CCPR-K2a. “IR spectral responsivity” (US). Measurement completed. Draft A ready.
- CCPR-K2b. “Visible spectral responsivity” (BIPM). Draft A ready.
- CCPR-K2c. “UV spectral responsivity” (DE). Detector are available. Writing new protocol.
- CCPR-K5. “Spectral diffuse reflectance” (US). In progress. Some measurements done.
- CCPR-K6. “Spectral regular transmittance” (FR). Measurement completed. Waiting for Draft A.
- CCPR-S1. “Spectral radiance” (RU). In progress.
- CCPR-S2. “Aperture area measurements” (US). Waiting for Draft A.

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Key & Supplementary Comparisons

In the underlined countries are the pilot NMIs

In progress:

538 EUROMET Key comparison (**EUROMET. PR-K6**) of spectral regular transmittance. (FR AT CZ SE RO CH HU NL TR FI IT ES GB DE SK). Filters measured by the NMIs already.

569 EUROMET Key comparisons of luminous intensity (**EUROMET PR-K3a**) and luminous flux (**EUROMET PR-K4**) (DE FR IT AT CZ FI GB NL PL SE TR CZ). Start during the year 2002. Completion by the end of 2003.

587 EUROMET Key comparison spectral responsivity (**EUROMET.PR.K2b**) (ES AT NL NO PL SE TR CH CZ). In progress. The photodetectors are being calibrated at the pilot (IFA) laboratory

Planned:

619 EUROMET Key comparison of spectral diffuse reflectance (**EUROMET.PR-K5**) (HU DE FR CZ SE PL CH). Will start after being completed the CCPR-K5.

EUROMET. PR-K1a. Spectral Irradiance. Will be registered by NPL.

EUROMET. PR-BK2 a 1 and BK2 a 2. Spectral responsivity. Will be registered by NMi-VSL.

Supplementary comparisons

443 Supplementary Comparison of UV power meters (GB FR DE IT NL SE). Planned

444 Supplementary Comparison of luminance meters (GB DE ES FI FR HU IT SE PL NL). Planned.

156 Comparison of high laser power (DE GB, FR, SE, DK, PL, UA, NL, CH RO, US). Active. Planned. Change of chair.

Other intercomparisons

375 Comparison of characterisation techniques for filter radiometry (GB DE FR HU SK FI CH). Proposed.

666 Intercomparison of Chromatic Dispersion Reference Fibres (CH, FI, ES). In progress. Protocol documents are agreed.

Calibration and Measurement Capabilities

Before starting the CMCs review process, the Committee Consultive for the Photometry and Radiometry (CCPR) of the BIPM agrees a list of Photometry and Radiometry magnitudes services categories from the P&R vocabulary (Document CMC PR VIM) to be included in the CMCs (Classification of services in Photometry and Radiometry document). CCPR agrees the criteria to make the review with only those quantities and it should be applied for every RMOs.

The study of those magnitudes has been done in three groups or rounds.

The first group of EUROMET PR CMCs were reviewed following the EUROMET acceptance criteria in P&R approved by the CPs. The CMCs were approved by the JCRB and included in the Appendix C of KCDB of the BIPM in March 2001.

The second group of EUROMET PR CMCs were studied and approved by the CPs in May 2001, and they were approved by the JCRB and included in the KCDB on October 2001.

During 2002 the EUROMET PR TC was working on the third group of CMCs proposals. The final CMCs document, EUROMET.PR.2.2002, includes 137 new entries from 13 countries and it was approved by the JCRB on October 2002 and included in the KCDB of the BIPM.

In summary,

First round: approved 04/2001 – 14 countries – 184 entries

Second round: approved 10/2001 – 16 countries – 131 entries

Third round: approved 10/2002 – 13 countries – 137 entries.

And so there are 416 entries from 20 NMIs of 20 countries. All of them are included in the KCDB.

Review of EUROMET PR CMCs by other RMDs

During the inter-regional review of the third set of EUROMET CMCs some comments and suggestions were received from the APMP PR TC and the SIM PR TC. The necessary modifications of the CMC tables were agreed with them before the October 2002 JCRB Meeting.

Review of the CMC's of other RMOs by EUROMET

The EUROMET PR inter-regional review team did the analysis of the PR CMCs submitted by APMP and SIM during 2002. After several e-mail discussions with APMP PR TC it was found an agreement and the CMCs were sent to the JCRB and published in October 2002. The discussion with SIM PR TC has not been finished yet.

SADCMET PR TC also sent a set of CMC and the EUROMET TC inter-regional review team did the analysis and sent them the conclusions. Consequently SADCMET PR TC have sent us a new set of CMCs and it has been approved by the Euromet PR review team.

The CCPR will decide whether the PR CMCs entries are completed or should be extended. In the last case EUROMET PR TC should start to study and create a 4th group of CMCs.

Madrid, April, 9th, 2003.

Antonio Corróns
EUROMET PR TC Chairman