

TC-L Chair Annual Report 2013-2014

12th May 2014

1. General Aspects

EURAMET TC-L has currently contact persons from 34 EURAMET members and 5 observers: 1 from a DI, 3 from liaison NMIs (EG, RSA and IL) and 1 from liaison organisation (BIPM). EURAMET TC-L will not anymore take care of the CMC-processes of EG and IL. In the last meeting TC-L had 33 participants.

2. Projects

In the period under review there were a total of 28 active projects with 12 being MRA comparisons. In last TC-L meeting 6 new project proposals were discussed.

3. Comparisons

Key comparisons

The current status of EURAMET length key comparisons, in line with the CCL-KC, is as follows. Changes since the last TCC meeting are shown in **red**.

Designation	Title	Status
EURAMET.L-K1.2011	Gauge blocks	In progress
EUROMET.L-K2	Long gauge blocks	Executive report, KCDB
EURAMET.L-K3.2009	Angle comparison using an autocollimator	In progress
EUROMET.L-K4.2005	Diameter standards	Final & executive reports, KCDB
EUROMET.L-K4.2005.1	Diameter standards, follow-up	In progress
EUROMET.L-K5.2004	Step gauge	Final & executive reports, KCDB
EUROMET.L-K6	2D-CMM artefacts	Final & executive reports, KCDB
EUROMET.L-K7.2006	Line scales	Final & executive reports, KCDB
EURAMET.L-K8	Surface texture - Roughness	Draft B
EURAMET.L-K8.2013	Surface texture - Roughness	In progress

Supplementary Comparisons

Three supplementary comparisons are currently running.

Designation	Title	Status
EURAMET.L-S20	Comparison of laser distance measuring instruments	Final report
EURAMET.L-S21	Comparison of parallel thread gauges	Draft A
EURAMET.L-S22	Calibration of gauge blocks by mechanical comparison	In progress
EURAMET.L-S23	High precision roundness by error separation technique	In progress
EURAMET.L-S24	Involute Gear Standards	Final report, KCDB

Corrective actions due to bad performance in KC/SC

CCL guidance is that so called executive reports are made after each KC/SC by pilot and accepted by participants and RMO/CCL. In these reports those laboratories with problems to demonstrate their CMC capability are listed and the nature of the problem is explained. If corrective actions have been performed they are also listed. In annual TC-L meetings we go through pending issues and update a table where problems are listed. The table can be found from here: <http://www.euramet.org/index.php?id=855>.

4. CMCs

An overview of the past (after 2011) and present CMC submission is given in the table below.

Red entries changed status during the period reported.

Designation	Comment	Status
EURAMET.L.10.2011	29 CMCs / 8 countries	published, 2011-08-18
EURAMET.L.11.2011	47 CMCs / 11 countries	published, 2012-10-12
EURAMET.L.12.2012	7 CMCs / 1 country	published, 2012-12-08
EURAMET.L.13.2012	11 CMCs / 3 countries	published, 2013-02-26
EURAMET.L.14.2013	14 CMCs / 3 countries	published, 2013-08-05
EURAMET.L.15.2014	collection started	Intra RMO collection & review

In the period reported a total of 2 CMC sets from other RMOs were treated by TC-L (APMP.L.22.2013 and SIM.L.10.2013).

5. Activities of the Sub-Committees

There are no sub-committees in TC-L.

6. EMRP/EMPIR

The 2013 EMR call Energy and Environment topics are clearly somewhat far away from the expertise of length metrology community. For that reason just small amount of PRTs and JRPs with length related content were proposed. However one JRP “Traceable measurement of drive train components for renewable energy systems” was selected for funding. Thanks to good success in reviews in previous years there are currently ~16 length and ~6 length related JRPs running.

In connection with EURAMET TC Length meeting also two different workshops were organised. First one was a workshop on EMRP open to all on 22nd October 2013. The workshop consisted of short presentations, an additional poster session and laboratory visits. It provided information about running EMRP JRPs with relation to TC-L and the results obtained so far. The workshop was also open to experts from outside the NMIs with an interest in dimensional and related metrology and provided an open information and discussion platform. The workshop had approximately 60 participants. Second workshop was closed session for EURAMET TC-L contact persons and observes with some additional experts from a few NMIs. The purpose of this workshop was to initiate PRT preparations and co-operation of length sections for EMRIR 2014 call. As result of discussions a table with 23 preliminary PRT ideas was drafted and circulated for all CP and observers for consideration.

Length related accepted JRPs of EMRP 2010, 2011, 2012 and 2013 calls are listed below:

Call	Project name	Status
EMRP 2010; Metrology for industry	Optical and tactile metrology for absolute form characterization	started
	Dynamic Mechanical Properties and Long-term Deformation Behaviour of Viscous Materials	started
	Thermal design and time-dependent dimensional drift behaviour of sensors, materials and structures	started
	Metrology of Small Structures for the Manufacturing of Electronic and Optical Devices	started
	Metrology to Assess the Durability and Function of Engineered Surfaces	started
	New generation of frequency standards for industry	started
EMRP 2011; SI broader scope	Traceability of sub-nm length measurements	started
EMRP 2011; New Technologies	Traceable measurement of mechanical properties of nano-objects	started
	Traceability for computationally-intensive metrology	started
EMRP 2012; Metrology for industry	Large volume metrology in industry	started
	Metrology for movement and positioning in six degrees of freedom	started
	Multi-sensor metrology for microparts in innovative industrial products	started
	Traceable in-process dimensional measurement	started
EMRP 2012; SI broader scope	Angle metrology	started
	Metrology for long distance surveying	started
	Crystalline and self-assembled structures as length standards	started
EMRP 2013; Energy II	Traceable measurement of drive train components for renewable energy systems	contract negotiation

There are approved projects with some length related research:

Call	Project name	Status
EMRP 2011; New Technologies	Traceable characterisation of nanostructured devices	started
	Metrology with/for NEMS	started
	Metrology of electro-thermal coupling for new functional materials technology	started
EMRP 2011; Health	Metrological characterisation of microvesicles from body fluids as non-invasive diagnostic biomarkers	started
EMRP 2012; Metrology for industry	Novel electronic devices based on control of strain at the nanoscale	started
	Metrology to enable high temperature erosion testing	started

7. Meetings

Previous meetings:

- 2011 TC-L CP meeting, 3-4 October 2011, METAS, Wabern, Switzerland
- TC-L EMRP 2012 Open workshop, 14-15 February 2012, PTB, Braunschweig, Germany
After open workshop the roadmap updating of TC-L was discussed and the needed steps for completion were agreed.
- 2012 TC-L CP meeting, 22-24 October 2012, GUM, Warsaw, Poland
The annual meeting of 2012 was followed by TC-L 2012 Workshop Open excellence. In workshop NMIs presented they latest research results.
- 2013 TC-L CP meeting, 21-22 October 2013, PTB, Braunschweig, Germany
The annual meeting of 2013 was followed by open EMRP workshop and EMPIR workshop

Next occasions:

- 2014 TC-L CP meeting, 27-28 October 2014, BEV, Wien, Austria
- Macroscale 2014, Conference, 28-30 October 2014, BEV, Wien, Austria
This conference is arranged by BEV and PTB in co-operation with CCL and EURAMET TC-L. During or around this conference many JRP's have their project meetings

8. Outlook for 2014

- First EMPIR call
- Last TC-L meeting for current chair
- Macroscale 2014 conference

Antti Lassila

TC-Length Chairman, May 12th, 2014