



1. General Aspects

The Charter TC-EM, approved in 2017, has been made operative in the TC and for all the SCs.

2. Projects

Detailed information about the EURAMET projects in the EM field is available from the EURAMET web-site and currently updated. An overview of the number of projects is given in the table below.

	EURAMET Comparison	Traceability	Research	EMRP/EMPIR
On-going	9	12	2	2015: 6 2016: 8 2017: 10 2018: 5

3. Comparisons

During 2018/2019, 4 EURAMET comparisons have been completed in the EM field. Besides this, EURAMET is or has been active in a number of CCEM comparisons.

4. CMCs

04.1 EURAMET EM CMCs

04.1.1 EURAMET.EM.15.2018

The intra-RMO review of the CMC set EURAMET.EM.15.2018 was carried out between September 2017 and Feb 2018.

17 NMIs submitted in total 276 entries. Of these, 74 are new entries, together with 48 matrices. 123 are improved existing entries, together with 83 matrices. For 79 rows and 68 matrices, minor changes were proposed: the scope was reduced, the uncertainty was increased or editorial modifications were applied. 28 entries are announced for removal from the KCDB. All the entries were reviewed by the members of the working group on the analysis of CMCs.

CH has proposed entries in Cat. 6 and a new classification ("Voltage Meter with IEC 61850-9-2 output"). The emergence of these instruments and their relevance has been discussed at the 30th Consultative Committee for Electricity and Magnetism. CCEM has approved a revision of the CMC Categories 8 and 9 proposed by EURAMET.

The full set of CMC entries, both those proposed in EURAMET.EM.15.2018 and those already published in the KCDB, have been reformatted to be consistent with the new CMC classification.

EURAMET.EM.15.2018 has been posted on the JCRB website on 2018.04.20 for the inter-RMO reviewing. A revised version was posted in 2019.01.30 and approved on 2019.02.23. It is now under publication by the JCRB.

04.2 Inter-regional review of CMCs

AFRIMETS.EM.3.2017 was posted on the JCRB website on 2017.05.26. The CCEM WGRMO Chair suggested EURAMET not to be involved in the reviewing, assigned to other RMOs. EURAMET turned down the reviewing.

5. Activities of the Subcommittees

The activities of the four subcommittees (DC and Quantum Metrology, Low Frequency, Radiofrequency and Microwave, Power and Energy) are largely dominated by R&D activities related to EMRP and EMPIR.

2018. Informal meetings were held at the Conference on Precision Electromagnetic Measurements, Paris, July 8-13, 2018:

SC-DC&QM Contact Person Meeting, Tue 10 Jul 2018;

SC-LF Contact Person Meeting, Tue 10 Jul 2018;

WGSP meeting, Tue 10 Jul 2018;

2019. Official meetings:

SC-DC&QM, 2019.05.20-21, Teddington, UK.

SC-LF, 2019.05.16-17, Ljubljana, Slovenia;

SC-P&E, 2019.05.14-15, Ljubljana, Slovenia;

SC-RF&MW, 2019.04.09-10, Madrid, Spain.

Workshop on the EMPIR 2019 Call

The EURAMET TC-EM Workshop in preparation for the EMPIR 2019 Call was held at PTB Berlin on 9-10 Jan 2019. About 42 people subscribed to the meeting. The meeting was structured with two plenary sessions at the beginning and the end of the meeting, and subgroups for the different subjects.

A summary of the PRT topic discussed is provided at the end of this report.

7. Capacity Building: Activities of the last year and future needs

No activity. Future needs will be discussed at the 2019 meeting.



8. Meetings

TC-EM Contact Person Meeting. The 12th EURAMET Electricity and Magnetism Technical Committee Contact Persons Meeting was held on 27 and 28 September 2018 in Cavtat-Dubrovnik, Croatia. 39 people including one person from BIPM and two from SASO Saudi Arabia, attended it.

WGSP meeting: 26 October 2018 in Cavtat, Dubrovnik, Croatia.

CPEM 2018. The Conference on Precision Electromagnetic Measurements Conference on Precision Electromagnetic Measurements took place in Paris, July 8-13, 2018, and was attended by a large number of participants from the TC-EM Community. The list of TC-EM satellite meetings is given in Sec. 5.

9. Issues

None.

10. Strategic Planning

Strategic Planning has been addressed by email with a draft proposal for organizing the forthcoming EURAMET comparisons. It was presented at the 2019 EURAMET BoD/TCC meeting and at the CCEM 2019 meeting, and will be discussed at the 2019 SC Meetings.

11. Outlook for 2019-2020

2019 TC-EM Contact Person Meeting and **WGSP meeting** are provisionally scheduled for INM Bucharest, Romania, October 2019.

TC-EM EMPIR 2020 meeting will take place in January 2019, place and date to be defined.

Luca Callegaro
TC-EM Chair

2019 Call		
	TP	Title
PRT01	ENG	Metrology of energy losses in electrical steels, motors and transformers
PRT02	ENG	Traceable Efficiency of Power Electronic Devices and Systems
PRT03	ENG	Metrology for High Pulsed Power (HPP)
PRT04	NRM	Measurement of composited and combined wave shapes
PRT05	ENG	Metrology for future HV energy transmission - testing of UHV grid components
PRT06	ENG	Metrology for DC grids
PRT07	NRM	Measurement methods and procedures for assessing accuracy performance of Instrument Transformers in Power Quality measurements
PRT08	ENG	2-500 kHz disturbance in LV electricity grids
PRT09	ENG	Grid Impedance Metrology for the All-Electric society
PRT10	NRM	Reference electrical conditions for measurement of LED products
PRT11	ENG	SI-traceable Electrochemical Impedance Spectroscopy for Battery, Fuel Cell and Electric vehicle industry
PRT12a	ENG	Measurements to Enable the Efficient Distribution of Electrical Energy.
PRT12b	ENG	Measurements to control the real time energy balance in smart grids
PRT12c	ENG	Grid sensor networks and data analytics
PRT12d	ENG	ns timing for improved grid monitoring and grid diagnostics
PRT13	ENG	Sensor Network Metrology for Demand Side Response Programmes in Building Management Systems
PRT14	NRM	Traceable emission measurement and immunity testing in reverberation chambers
PRT15	ENG	Metrology for energy-efficient communication in future networks
PRT16	RPT	Quantum power standards
PRT17	NRM	Stability and reliability of graphene: a measurement program of electrical key control characteristics to assess the degradation of graphene layers.

Workshop for the EMPIR 2019 Call.

List of the PRT summaries discussed and distributed after the Workshop.

