

TC – Time and Frequency

2022-2023 HIGHLIGHTS

Joseph Achkar
TC-TF Chair
May 2023



- Current status:
 - 31 contact persons
 - 2 contacts with observer status
 - No sub-committees
 - Working group for CMC reviews (8 members)
 - A Representative from TC-TF in TC-IM project 1448 on DCC
 - 4 active TC projects (3 research, 1 comparison)
 - GPS link calibrations in support of CCTF-K001.UTC (Project coordinates calibrations of G2 laboratories within EURAMET)
 - New TC project (comparison) – May 2023
 - Comparison of Phase Noise Measurements – pilot study
 - With TC-EM involvement

TC-TF Annual Meeting



✓ **22-23 March 2023 at PTB**

Braunschweig (+ remote participation)

~60 people participated, half in person

➤ **Guests**

EMPIR/EPM projects coordinators, EMN chairs, speakers on other projects, observers, RMO delegates from APMP, SIM & GULFMET, representatives from BIPM (Time Dep. & JCRB) and ITU-R WP 7A



❖ **Main topics covered:**

- Reports on TC-TF; new CPs; CMCs changes & reviews
- Reports on ongoing EMPIR/EPM projects; Update on EMNs
- EURAMET, BIPM/CCTF and ITU information
- Laboratory news and any other projects; new TC-TF project
- New Draft EURAMET Technical Guide under review
- WG for updating Roadmaps is being set up

EMPIR / EPM projects



Completed

- ✓ **18SIB05** - ROCIT Robust optical clocks for international time scales (NPL)
- ✓ **18SIB06** - TiFOON Time and frequency over optical networks (PTB)

In progress

- ❑ **EMPIR: 20FUN01** - TSCAC
Two-species composite atomic clocks (PTB)
- ❑ **EPM: 21NRM02** Digital-IT
Metrology for digital substation instrumentation (MIKES)
→ power grid timing

Update on EMNs & TF involvement



- EMN for Quantum technologies (INRiM)
 - Current status presented

How can the EMN-Q support the TF community and vice versa?

One idea is using the EMN-Q website as a repository for previous projects results
- EMN for Smart Electricity Grids (PTB)
 - Although TF is not explicitly mentioned in the activities, it is an important underlying technology in the field of electricity grids
- Present status of EMN for Autonomous transport (RISE)
 - Initiative taken to create an EMN-AutoTrap
 - Currently, investigation is done for potential European stakeholders

Thank you!

