Meeting of the CCTF GNSS Working group

Zoom, May 30, 2023, 12h00 UTC

The meeting was held as a videoconference.

These minutes and all material presented during the meeting are available at

https://www.bipm.org/en/committees/cc/cctf/wg/cctf-wggnss/2023-05-30

Pascale Defraigne (PD), chair of the WG, opens the meeting, and then presents the agenda.

1. G1 calibration status

Giulio Tagliaferro (GT) presents the status of the G1 calibration (see slides). The COOMET phase came to an end and the 2018 trip was finally completed. The values of the 2018 campaign were overall stable so no change to the G1 reference was decided; the reference remains realized by the BIPM receiver BP21. The 2022 trip started last summer and the APMP phase has completed with good misclosure values. The EURAMET phase is ongoing albeit some delays for problems at the BP2D traveling receivers.

PD asks about the computation of Beidou2 values. GT says there are being computed.

2. News from G1 labs

Ryuichi Ichikawa (RI) presents the G1 activities for NICT (see presentation). He reports logistical problem which might hinder the ability to carry out G2 trips outside Japan.

Calvin Lin (CL) presents the G1 activities for TL (see presentation). He reports problem about a cable shaft missing for the G2 trip to SG. He also expresses the need for CBKT document to explain measurement procedures to labs. GT says that the BIPM is working on producing such document.

Yuzhuo Wang (YW) reports of calibration activities at NIM is presented (see presentation).

Artem Karaush (AK) reports the G1 activities for SU (see presentation).

Carmen Velez (CV) reports the activities of ROA (see presentation).

Pierre Uhrich (PU) reports calibrations activity at OP (see presentation). He reports some differences between Galileo and GPS comparison using their calibration equipment to be investigated.

Florian Heinbach (FH) reports calibration activities at PTB (see presentation).

James Hanssen (JH) reports calibration activities at USNO. G2 calibration of both APL and NRL are being planned for summer 2023. Michael Coleman (MC) reports about the possibility to do absolute calibration at NRL.

SIM colleagues report of a new traveling equipment being prepared at NIST to speed up SIM G2 calibrations.

3. G1 requirements

GT presents the proposed requirements for G1 lab (see slides). No objection is made.

PU asks about BIPM workload in case of new labs become G1. GT reports that a further lab in APMP and other RMOs should be manageable. It is proposed that the rate of calibration pass from two years to three in case of increase of G1 labs. It is also noticed that EURAMET has a high ratio between G2 and G1 labs and would benefit from a further G1 lab.

4. Calibration for iono-free combinations

PD proposes (see slides) a taskforce to define guidelines on the way to determine the calibration uncertainties for the ionofree combinations . Juda Levine (JL) argues that this might lead to an increase of such uncertainties.

5. Long-term stability of HW delays

PD reports that many labs and herself have noticed variations of the receiver HW delays (see slides). Such variations has been noticed comparing receivers attached to the same UTC(k) signal. For this reason, she proposes a taskforce to study such variations and determine a way to mitigate their effects in the computation of UTC.

6. BeiDou 2 & 3 in CGGTTS

PD reports the about the extension of CGGTTS to BeiDou3, already disucssed at the last WG. The filename proposed will have the initial letter “C” for BeiDou 2 and the letter “B” for BeiDou 3. Also the pseudorange channels to be utilized for the ionofree combinations are reported (see slides).

7. PPP/IPPP

GT says the BIPM is evaluating new softwares for the PPP links.

Bin Jian (BJ) presents some IPPP link computed using the NRCAN online service (see slides). He discusses the problem of day boundaries and the way they are solved in the proposed solution.

GT remarks that the day boundary steps in the presented solution have a different “wavelenght” with respect to narrowlane ones.

Jérôme Delporte (JD) reminds the pioneering works done by the BIPM together with the CNES on IPPP, addressing many of the problem discussed.

GT clarifies that the BIPM is looking for a replacement of the PPP software using during Circular T and not for a replacement of the CNES software used for IPPP.

PD remarks that ORB is also doing some works on IPPP and suggest a comparison of BIPM, NRC and ORB solutions.

8. Section 4 of Circular T

Frédéric Meynadier (FM) presents the status of the new section 4 (see slides). The new section will introduce Galileo and BeiDou alongside GPS and Galileo. He introduces the novel processing chain which will use multiple receivers for all systems to ensure robustness in the computation. A comparison between the old method and the new one spanning six months is presented. The comparison shows good consistency between the old and new procedure. He reports about a paper in the process of being submitted to Metrologia which describes the procedure.

9. Traceability

PD provides a report regarding the taskforce on traceability (see slides), stating that the task has been successfully accomplished. She now proposes a follow-up Task Group for the additional measures to be taken in terms of educating and communicating the outcomes to NMIs and industrial stakeholders, and asking for some feedback from the accreditation bodies the different countries or regions.

The meeting was closed at 14h10 UTC.

Published on MMMM XX 2023 (P. Defraigne, G. Tagliaferro)

List of participants

Pascale Defraigne Chair, ORB

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WG Members:

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Calvin Lin TL
Carmen Velez ROA
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Judah Levine NIST
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Paul Koppang USNO
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Invited:

Bin Jian NRC
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Frédéric Meynadier BIPM
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Excused: Pierre Waller