

RECOMMENDATION CCTF 24-5 (2025)

On the monitoring of GNSS hardware delays variations

The Consultative Committee for Time and Frequency (CCTF), at its 24th session (2025).

Considering that

- GNSS measurements from calibrated stations are fundamental to transfer clock data in the computation of UTC,
- Instability in the GNSS hardware delays affects the GNSS time transfer results which can impact the stability of UTC

Noting that

- Recommendation CCTF 4(2017) encourages the laboratories contributing to UTC to maintain redundant time transfer equipment and monitor their Common Clock Differences (CCD)

Recommends that

laboratories contributing to UTC:

- provide to the BIPM data from 3 and only 3 independent (different antenna/receiver) GNSS stations;
- ensure a regular calibration (every three years) of the GNSS stations following the BIPM guidelines
- continuously monitor the consistency between the clock solutions measured from these 3 receivers to allow rapid identification of problems;
- take the necessary actions to identify and rectify where possible the cause(s) of inconsistency between the clock solutions measured from these 3 GNSS receivers;
- inform the BIPM when a problem is observed with one receiver, or when a discrepancy appears between the clock solutions obtained from the 3 receivers;

The BIPM

- Study how an extra component in the UTC link uncertainty could be calculated and incorporated to account for an unexplained offset between the receivers

The BIPM and the NMIs

- consider putting in place common efforts to help the continuous monitoring of the receiver by ensuring a secondee at the BIPM to develop some monitoring tools and a possible CBKT course