GPS calibration of NMISA equipment with respect to PTB G1 (1018-2018)

Summary

In Autumn 2018, the PTB conducted a trip to calibrate GPS equipment owned by the National Metrology Institute of South Africa (UTC acronym ZA). The trip started and finished at the PTB, providing closure with respect to PTB Group1 reference receiver PT02.

The operations and report of measurements are described in the report by PTB.

- **Final results for the calibrated systems**

The INTDLY values of the ZA receiver given in Table 1 have been computed by PTB based on the results of the 1001-2016 Group 1 trip for PT02 and should not be updated to reflect later changes in the conventional INTDLY values of the reference receivers.

For a P3/PPP UTC link A-B involving any Group 1 and any receiver in this trip, the uncertainty resulting from the calibration, U_B(A-B), is computed as

$$U_B(A\text{-}B) = (U_{CAL0}^2 + \Delta U_{CAL}(A)^2 + \Delta U_{CAL}(B)^2)^{1/2} \quad (1)$$

where U_{CAL0} = 2.5 ns at the time of calibration, as given conventionally to Group 2, and where ΔU_{CAL} (generally zero) is specified for each system.

Changes in the set-up of the receivers after the calibration must be accounted for as described in section A.3.6 of the most recent Calibration guidelines in ftp://ftp2.bipm.org/pub/tai/publication/gnss-calibration/guidelines/.

Table 1. Final P1/P2 INTDLY values from the 1018-2018 trip. Values of REFDLY with respect to UTC(ZA) and of CABDLY during the calibration are also indicated for reference. All values are in ns. "Meas. Date" refers to the first day of the differential calibration, to which the calibration results can be applied. "Impl. Date" is the MJD when the results should be implemented in the receiver.

System	BIPM	Meas. date	**INTDLY P1**	**INTDLY P2**	REFDLY	CABDLY	Note	**ΔU_{CAL}**	Impl. date
ZA02	ZA02	2018/10/20	**48.4**	**51.7**	178.2	152.6		0.0	58511

Notes:

Version history

V1.0 2019/01/07: Publication of results from Version 1.0 of the PTB calibration report, to be implemented in the ZA receiver: