GPS calibration of equipment at AOS, GUM, LT with respect to PTB G1 (1014-2018)

Summary

In Summer 2018, the PTB conducted a trip to calibrate GPS equipment owned by the Astrogeodynamical Observatory, Borowiec (UTC acronym AOS), the Central Office of Measures, Warsaw (UTC acronym PL) and the Center for Physical Science and Technology, Lithuania (UTC acronym LT). The trip started and finished at the PTB, providing closure with respect to PTB Group1 reference receivers PT02 and PT07.

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

- **Final results for the calibrated systems**

The INTDLY values of the receivers given in Table 1 have been computed by PTB based on the results of the 1001-2016 Group 1 trip. P1 and P2 values are referenced to PT02 and C1 values are referenced to PT07. These values 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, $U_B(A\text{-}B)$, is computed as

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

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.

For single frequency C1 links, U_{CAL0} is 2.5 ns but could be complemented by an additional component to represent systematic errors in the ionospheric model.

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/C1 INTDLY values from the 1014-2018 trip. Values of REFDLY 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	INTDLY C1	REFDLY	CABDLY	Note	ΔU_{CAL}	Impl. date
LT02	LT02	2018/07/04	**38.0**	**33.8**	**39.5**	36.8	160.6	(1)	0.0	58392
PL_3	PL_3	2018/07/26	**761.7**	**738.6**	**763.1**	73.5	138.5	(1)	0.0	58392
AO_4	AO_4	2018/08/12	**-9.4**	**-15.4**	**-8.0**	58.8	165.7	(1)	0.0	58392

Notes:

(1) REFDLY and CABDLY values corresponding to the calibration set-up, measured before the calibration.

Version history
V1.0 2018/09/26: Publication of results from Version 1.1 of the PTB calibration report, to be implemented in the receivers: