GPS transfer of calibration at TL (1202-2019)

Summary

In August 2019, the Telecommunication Laboratories, Chines Taipei (UTC acronym TL) conducted a transfer of calibration from its G1-calibrated GPS receiver TLT1 to another receiver which calibration was lost after an upgrade.

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

- **Final results for the calibrated systems**

The TOTDLY values of the receiver TLT2 given in Table 1 have been computed by TL based on the results of the 1001-2018 Group 1 trip for TLT1 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} = 1.9 ns at the time of transfer of calibration, is composed of the conventional Group 1 value (1.5 ns), the aging of the reference TLT1 (1.0 ns) and the uncertainty of the transfer (0.7 ns), and where ΔU_{CAL} (generally zero) is specified for each system.

For single frequency C1 links, U_{CAL0} is 1.9 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 TOTDLY values from the 1202-2019 exercise.. 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	**TOTDLY P1**	**TOTDLY P2**	**TOTDLY C1**	REFDLY	CABDLY	Note	**ΔU_{CAL}**	Impl. date
TLT2	TLT2	2019/08/01	**171.9**	**171.4**	**173.7**	N/A	N/A		0.0	58756

Notes:

(1)

Version history

V1.0 2019/10/07: Publication of results from the TL local differential calibration report, to be implemented in the TLT2 receiver.