

GPS calibration of DTAG equipment with respect to PTB G1 (1012-2019)

Summary

In Summer 2019, the Physikalisch-Technische Bundesanstalt (PTB) conducted a trip to calibrate GNSS equipment owned by Deutsche Telekom AG (DTAG). The trip started and finished at the PTB, providing closure with respect to PTB Group1 reference receiver PT09. The operations and report of measurements are described in in the [report by PTB](#).

- **Final results for the calibrated systems**

The INTDLY values of the DTAG receivers given in Table 1 have been computed by PTB based on the results of the [1001-2018](#) Group 1 trip for PT09 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

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

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/](http://ftp2.bipm.org/pub/tai/publication/gnss-calibration/guidelines/).

Table 1. Final P1/P2 INTDLY values from the 1012-2019 trip. Values of REFDLY with respect to UTC(DTAG) 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
DT04	DT04	2019/08/02	34.6	32.2	25.3	506.1	(1)	0.7	58786
DT05	DT05	2019/08/02	32.2	30.6	25.3	530.7	(1)	0.7	58786

Notes:

(1) $\Delta U_{CAL} = 0.7$ ns reflects the fact that the traveling receiver had a different antenna cable at PTB and at DTAG.

Version history

V1.0 2019/10/22: Publication of results from Issue 1.0 of the Calibration report, to be implemented in the receivers.