GNSS calibration of NPL receivers with respect to PTB G1 (1015-2025)

Summary

From October 2026 to February 2026, PTB conducted a trip to calibrate GNSS equipment owned by NPL. The trip started and finished at PTB, providing closure with respect to the PTB Group1 reference receivers PT13.
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 Group 1 trip 1001-2025 for PT13 (GPS and Galileo) and should not be updated to reflect later changes in the conventional INTDLY values of the reference receiver.

For a P3/E3/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 is the conventional Group 2 value, 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 C1/P1/P2/E1/E5a INTDLY value. Values of REFDLY and CABDLY during the calibration are also indicated for reference. All values are in ns date in YYYY/MM/DD format. “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 C1	INTDLY P1	INTDLY P2	INTDLY E1	INTDLY E5a	REF DLY	CAB DLY	Note	ΔU_{CAL}	Impl. date
NP01	NP01	2026/02/26	26.23	23.81	21.81	26.51	25.38	82.8	278.7		0.0	
NP02	NP02	2026/02/26	29.17	26.97	24.33	29.35	28.59	82.6	280.4		0.0	
NP03	NP03	2026/02/26	18.26	17.16	15.30	17.82	18.03	80.1	282.6		0.0	
NP04	NP04	2026/02/26	17.71	16.60	15.49	17.21	17.57	80.0	282.5		0.0	

Notes:

Version history
V1.0 2026/11/02: Publication of results from V1.0 of the PTB report.