

# GNSS calibration of IMBH receivers with respect to PTB G1 (1013-2022)

## Summary

From March to May 2022, the Physikalisch-Technische Bundesanstalt (PTB) conducted a trip to calibrate GNSS equipment owned by the Institute of Metrology of Bosnia and Herzegovina (IMBH). The trip started and finished at the PTB, providing closure with respect to the PTB Group1 reference receiver 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 [1001-2020](#) 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

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

where  $U_{CAL0} = 2.5$  ns is the conventional Group 2 value, and where  $\Delta U_{CAL}$  (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/E1/E5a INTDLY values from the 1013-2022 exercise. Values of REF DLY 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	CABDLY	Note	$\Delta U_{CAL}$	Impl. date
BH01	BH01	2022/05/26	54.8	53.3	49.6	40.1	33.1	10.8	160.6		0.0	59823
BH02	BH02	2022/05/26	26.9	26.9	27.3	28.7	26.1	7.6	131.3		0.0	59823
BH03	BH03	2022/05/26	10.3	9.6	8.2	10.2	9.5	10.5	148.0		0.0	59823

Notes:

Version history

V1.0 2022/08/02: Publication of results from V0.2 of the PTB report.