GNSS calibration of DEF-NAT receivers with respect to ROA G1 (1015-2024)

Summary

From February to April 2023, the Real Instituto y Observatorio de la Armada (ROA) conducted a trip to calibrate GNSS equipment owned by the Laboratoire de Métrologie de la Direction Générale des Transmissions et de l'Informatique (DEF-NAT). The trip started and finished at ROA, providing closure with respect to the ROA Group1 reference receiver RO_7. The operations and report of measurements are described in the report by ROA.

- **Final results for the calibrated systems**

The INTDLY values of the receivers given in Table 1 have been computed by ROA based on the results of the Group 1 trip 1001-2022 for ROA (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.

Table 1. Final P1/P2/E1/E5a INTDLY values from the 1015-2024 exercise. 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	CABD LY	Note	ΔU_{CAL}	Impl. date
DN__	DN__	2024/03/14	-27.9	-29.7	-30.2	-27.4	-14.7	-70.4	200.8		0.0	60460

Notes:

Version history
V1.0 2024/05/28: Publication of results from V1.0 of the ROA report.