

GPS calibration of AGGO, ONBA and INTI receivers with respect to NIST G1 (1014-2021)

Summary

From June 2021 to April 2022, the National Institute of Standards and Technology (NIST) conducted a trip to calibrate GPS equipment owned by the Argentinian-German Geodetic Observatory (AGGO), the Observatorio Naval Buenos Aires (ONBA) and the Instituto Nacional de Tecnología Industrial (INTI). The trip started and finished at the NIST, providing closure with respect to the NIST Group1 reference receiver NIST.

The operations and report of measurements are described in the [report by NIST](#).

- **Final results for the calibrated systems**

The INTDLY values of the receivers given in Table 1 have been computed by NIST based on the results of the Group 1 trip [1001-2020](#) for NIST and should not be updated to reflect later changes in the conventional INTDLY values of the reference receiver.

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 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 P1/P2/C1 INTDLY values from the 1014-2021 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 ID	Meas. date	INTDLY C1	INTDLY P1	INTDLY P2	REF DLY	CAB DLY	Note	ΔU_{CAL}	Impl. date
TC_2	TC_2	2021/10/16	31.9	30.1	28.3	12.3	207.9		0.0	59850
ON__	ON__	2021/11/07	73.7	-	-	48.9	160.4	(1)	1.5	59850
INTI	INTI	2022/02/14	-37.3	-38.0	-23.0	8.0	129.3	(1)	1.5	59850

Notes:

- (1) Significant systematics errors in the differential measurements

Version history

V1.0 2022/09/27: Publication of results from V1 of the NIST report.