

GPS calibration of NRC equipment with respect to NIST G1 (1017-2016)

Summary

In June-August 2016, the NIST conducted a trip to calibrate GNSS equipment owned by NRC. The trip started and finished at NIST, providing closure with respect to NIST Group1 reference receiver NI00.

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

- **Final results for the calibrated equipment**

The INTDLY values given in Table 1 have been computed by NIST using INTDLY values of NI00 available at the time of the calibration. They should not be updated to reflect later changes in the conventional INTDLY values of NI00.

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 Calibration guidelines v3.2 in <ftp://ftp2.bipm.org/pub/tai/publication/gnss-calibration/guidelines/>.

Table 1. Final P1/P2 INTDLY values from the 1017-2016 trip. Values of REFDLY and CABDLY during the calibration and the resulting P3 Total delay TOTDLY are also indicated for reference (all values in ns).

System	BIPM	Date	INTDLY P1	INTDLY P2	REFDLY	CABDLY	Note	TOTDLY P3	ΔU_{CAL}
NRC4	NRC4	2016.5	65.7	68.9	144.8	266.3	(1)	182.3	0.0

Notes:

(1) REFDLY value is with respect to the reference clock, **not to UTC(NRC)**.

Version history

V1.1 2017/01/18: Final results from V6 of the Calibration report, to be implemented in NRC4