

GPS calibration of NRC equipment with respect to NIST G1 (1019-2017)

Summary

In summer 2017, the NIST conducted a trip to calibrate GPS equipment owned by the National Research Council (UTC acronym NRC). The trip started and finished at the NIST, providing closure with respect to 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 NRC receiver given in Table 1 have been computed by NIST based on the results of the [1001-2016](#) Group 1 trip for NIST and should not be updated to reflect later changes in the conventional INTDLY values of NIST.

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 most recent Calibration guidelines in [ftp://ftp2.bipm.org/pub/tai/publication/gnss-calibration/guidelines/](http://ftp2.bipm.org/pub/tai/publication/gnss-calibration/guidelines/).

Table 1. Final P1/P2 INTDLY values from the 1019-2017 trip. Values of REFDLY (with respect to the indicated REF) and of CABDLY during the calibration are also indicated for reference. “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 P1 | INTDLY P2 | REF | REFDLY | CABDLY | Note | ΔU_{CAL} | Impl. date |
|--------|------|------------|--------------|--------------|-------|--------|--------|------|------------------|------------|
| | | | | | | | | | | |
| NRC4 | NRC4 | 2017/08/01 | 62.4 | 65.5 | Clock | 144.0 | 266.6 | (1) | 0.0 | 58206 |
| NRCA | NRCA | 2017/08/01 | 296.2 | 318.3 | Clock | 57.0 | 264.6 | (1) | 0.0 | 58206 |
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Notes:

(1) The reference used in the calibration is not UTC(NRC) but a local clock, see the report by NIST.

Version history

V1.0 2018/07/06: Publication of results from Version 4 of the NIST calibration report, implemented in the NRC receivers: