

# GPS calibration of BY equipment with respect to SU G1 (1020-2021)

## Summary

Over September 2021, the VNIIFTRI, Russia (UTC acronym SU) conducted a trip to calibrate GNSS equipment owned by the Belarussian State Institute of Metrology (BelGIM, UTC acronym BY). The trip started and finished at the SU, providing closure with respect to SU Group1 reference receiver SU31.

The report of operations and measurements by SU are available [here](#).

- **Final results for the calibration trip**

The INTDLY values of the BY receivers given in Table 1 have been computed by SU based on the results of the [1001-2018](#) Group 1 trip for SU31 and should not be updated to reflect later changes in the conventional INTDLY values of the reference receivers.

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  $\Delta U_{CAL}$  (generally zero) is specified for each system.

For single frequency C1 links,  $U_{CAL0}$  is 2.5 ns but could be complemented by an additional component to represent systematic errors in the ionospheric model.

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 <https://webtai.bipm.org/ftp/pub/tai/publication/gnss-calibration/guidelines/>.

Table 1. Final P1/P2/C1 INTDLY values from the 1020-2021 trip. Values of REFDLY with respect to UTC(k) and of CABDLY during the calibration are also indicated for reference as available. All values are in ns. “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	INTDLY C1	REFDLY	CABDLY	Note	$\Delta U_{CAL}$	Impl. date
BY46	BY46	2021/09/24	<b>32.9</b>	<b>29.6</b>	<b>34.3</b>	40.8	144.1		0.0	59546
BY14	BY14	2021/09/24	<b>53.0</b>	<b>47.3</b>	<b>54.2</b>	40.3	140.6		0.0	59546

Notes:

(1)

### Version history

V1.0 2021/11/19: Publication of results from version dated 2021/11/17 of the Calibration report by SU, to be implemented in the receivers.