GNSS calibration of SMD receiver with respect to ROA G1 (1201-2020)

Summary

In September 2020, a GNSS receiver owned by the Metrology Division of the Quality and Safety Department (Belgium Metrology Service, UTC acronym SMD) was installed at the ROA and calibrated against the Group1 reference station RO_9. The method of calibration is the "golden system calibration" which comprises just one period of data taking at the ROA.

The operation and report of measurements at the ROA are described in the report by the ROA.

- **Final results for the calibrated system**

The INTDLY values of the SD31 receiver given in Table 1 have been computed by the ROA based on the results of the 1001-2018 Group 1 trip for RO_9 and should not be updated to reflect later changes in the conventional INTDLY values of RO_9.

The uncertainty for a P3/E3/PPP link or a C1 link involving SD31 is U_{CAL0} = 4.0 ns at the time of calibration, as given conventionally to "golden system calibrations".

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/E1/E5a INTDLY values from the 1201-2020 trip. Values of REFDLY and CABDLY during the calibration are also indicated for reference, see note 1 (all values 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	INTDLY E1	INTDLY E5a	REFDLY	CABDLY	Note	Impl. date
SMDC	SD31	2020/09/02	**29.2**	**26.6**	**31.2**	**31.0**	**30.9**	10.1	407.8	(1,2,3)	59362

Notes:
(1) The REFDLY and CABDLY values represent the set-up during the measurements at the ROA.
(2) SD31 is a PolaRx5 operated in mode "Autocompensation ON".
(3) INTDLY values are slightly different from the one of ROA's report due to some calibrations errors spotted post calibration.

Version history

V1.0 2021/05/14: Publication of results from v2 of the ROA calibration report, to be implemented in SD31 receiver:
V1.1 2025/07/30: Publication of the result implemented in the SD31 receivers.