GPS calibration of SASO equipment with respect to ROA G1 (1020-2017)

Summary

In November 2017, the ROA conducted a trip to calibrate GPS equipment owned owned by the Saudi Standards Metrologuy and Quality Organization (UTC acronym SASO). The trip started and finished at the ROA, providing closure with respect to ROA Group1 reference receiver RO_5.

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

- **Final results for the calibrated systems**

The INTDLY values of the SASO receivers given in Table 1 have been computed by the ROA based on the results of the 1001-2016 Group 1 trip for RO_5 and should not be updated to reflect later changes in the conventional INTDLY values of RO_5.

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

$$U_B(A\text{-}B) = (U_{CAL0}^2 + \Delta U_{CAL}(A)^2 + \Delta U_{CAL}(B)^2)^{1/2} \quad (1)$$

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.

For single frequency 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 ftp://ftp2.bipm.org/pub/tai/publication/gnss-calibration/guidelines/.

Table 1. Final P1/P2/C1 INTDLY values from the 1020-2017 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	INTDLY C1	REF	REFDLY	CABDLY	Note	ΔU_{CAL}	Impl. date
SAS0	SAS0	2017/11/23	**-38.9**	**-41.1**	**-37.5**	UTC(SASO)	17.8	140.0		0.0	58151
SAS1	SAS1	2017/11/23	**-37.4**	**-40.8**	**-36.1**	UTC(SASO)	17.3	143.4		0.0	58151

Notes:

Version history

V1.0 2018/02/01: Publication of results from V1.0 of the ROA calibration report, to be implemented in the SASO receivers: IMPLEMENTATION DATE = MJD 58151.