

GPS calibration of CNES equipment with respect to OP G1 (1101-2016)

Summary

In April 2016, GNSS equipment owned by CNES was installed at OP and calibrated against OP's permanently installed reference station OPMT, a Group1 reference system. The method of calibration is the “golden system calibration” which comprises just one period of data taking at OP. The operation and report of measurements at OP are described in the [report by OP](#).

In June 2017, the CNES conducted a transfer of calibration from the receiver CS22, originally calibrated, to a new receiver CS21. The operations and report of measurements are described in the [report by CNES](#).

- **Final results for the equipment calibrated in the original trip**

The INTDLY values of the CS22 receiver given in Table 1 have been computed by OP using INTDLY values of OPMT available at the time of the calibration. They should not be updated to reflect later changes in the conventional INTDLY values of OPMT.

The uncertainty for a P3/PPP link involving CS22 is $U_{CAL0} = 4.0$ ns at the time of calibration, as given conventionally to “golden system calibrations”. This uncertainty accounts for the change of set-up between the calibration measurements and the initial operation of the receiver.

Future changes in the set-up of the receivers 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 1101-2016 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
CS22	CS22	2016.3	60.3	66.4	240.6	204.8	(1)	15.1

Notes:

(1) The REFDLY and CABDLY values represent the set-up during the measurements at OP.

- **Transfer of calibration performed by CNES in June 2017**

The INTDLY values given in Table 2 have been computed by the CNES using INTDLY values for the receiver CS22 taken in Table 1. ΔU_{CAL} is computed from the report by CNES, excluding terms relating to the antenna cable delay measurements.

Table 2. Final P1/P2 INTDLY values for CS21. 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 were implemented in the receiver.

System	BIPM	Meas. date	INTDLY P1	INTDLY P2	REF	REFDLY	CABDLY	Note	ΔU_{CAL}	Impl. date
CS21	CS21	2017/06/07	58.0	55.7	UTC(CNES)	149.0	166.2		0.9	58176

Version history

V1.1 2016/06/24: Publication of results from Issue 1 of the Calibration report, to be implemented.

V1.2 2016/09/15: Correction to the link to the OP report.

V2.0 2018/03/28: Added the transfer of calibration from CS22 to CS21 performed by the CNES, see the report by CNES.