

GPS calibration of NTSC equipment with respect to NIM G1 (1014-2016)

Summary

In March 2016, the NIM conducted a trip to calibrate GPS equipment owned by NTSC. The trip started and finished at the NIM, providing closure with respect to NIM Group1 reference receiver IMEJ.

The operations and report of measurements are described in the [report by NIM](#).

- **Final results for the calibrated equipment**

The INTDLY values given in Table 1 have been computed by NIM using INTDLY values of IMEJ from the Group 1 trip [1001-2014](#). These INTDLY values should not be updated to reflect later changes in the conventional INTDLY values of IMEJ.

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.

Calibration results in Table 1 correspond to the set-up during the measurements, from the date indicated as “Meas. Date”. Changes in the set-up of the receivers after the calibration 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 P3 INTDLY values from the 1014-2016 trip. Values of REFDLY (with respect to the indicated REF) and CABDLY during the calibration and the resulting P3 Total delay TOTDLY are also indicated for reference (all values in ns). “Meas. Date” refers to the first day of the differential calibration, to which the calibration results can be applied.

System	BIPM	Meas. date	INTDLY P3	REF	REFDLY	CABDLY	Note	TOTDLY P3	ΔU_{CAL}
NTP1	NTP1	2016/03/25	58.3	UTC(NTSC)	372.4	209.0	(1)	-105.1	0.0
NTP2	NTP2	2016/03/25	59.0	UTC(NTSC)	376.7	221.0	(1)	-96.7	0.0
NTP4	NTP4	2016/03/25	58.2	UTC(NTSC)	330.9	208.0	(1)	-64.7	0.0

Notes:

(1) REFDLY values measured at the time of the calibration, corresponding to the calibration set-up.

Version history

V1.0 2017/07/04: Final results from Version 2.7 of the NIM Calibration report. Results for NTP1 and NTP2 were superseded by those obtained in the Group 1 trip [1001-2016](#) and have not been implemented in the receivers.