

GPS calibration for AOS and GUM receivers (1101-2013)

Summary

In July 2013, the BIPM travelling calibrator equipped with 3 geodesic receivers visited GUM and AOS in Poland. Just before and after this tour, in June and in August 2013, it visited the PTB. This calibration trip provides correction to the Total Delay for P3 and PPP links between the calibrated receivers and the PTBB reference receiver.

The operation and report of measurements at PTB are described in [BIPM Technical Memorandum 216](#). The June 2013 visit to PTB is also described in the [report](#) of Phase 2 of the Group1 initial calibration trip.

The operation and report of measurements at AOS and GUM, as well as the computation of results, are described in [BIPM Technical Memorandum 217](#).

• Final results for the visited systems

At the time of calibration, the CGGTTS headers of the visited receivers (see Annex) are used to compute the values of TOTDLY(P3) indicated in Table 1. Links with PTBB yielded corrections DTOTDLY of 0.7 ns for AO_4 and -0.3 ns for GUM4, negligible with respect to the uncertainty of the calibration. Therefore the values of TOTDLY in Table 1 are to be considered resulting from the calibration.

The uncertainty for a P3/PPP link involving AO_4 or GUM4 is $U_{CAL0} = 2.5$ ns at the time of calibration, as given conventionally to the Group2 laboratories.

Changes in the set-up of the receivers after the calibration must be reported to the BIPM and accounted for so as to maintain consistency of the TOTDLY(P3) value, as described in section A.3.6 of the Calibration guidelines v3.2 in <http://ftp2.bipm.org/pub/tai/publication/gnss-calibration/guidelines/>.

Table 1. P3 TOTDLY values from the 1101-2013 trip (values in ns).

UTC Lab	System	BIPM Id	Date	TOTDLY(P3)	DTOTDLY with PTBB	Note
AOS	AO_4	AO_4	2013.5	88.0	0.7	(1)
PL	GUM4	PL_3	2013.5	19.5	-0.3	(1)

Notes:

(1) DTOTDLY values indicated for reference only, not to be applied.

ANNEX: CGGTTS headers at the time of calibration

AO_4:

```
CGGTTS GPS/GLONASS DATA FORMAT VERSION = 02
REV DATE = 1996-10-20
RCVR = ->¿@ r³äüs^À
CH = 116 (GPS-L1:16 GPS-L2:16 GPS-L5:16 Galileo-E1:16 Galileo-E5a:16 Glonass-L1:16 Glonass-L2:16
SBAS:4)
IMS = ->¿@ r³äüs^À
LAB = AOS
X = +3738358.42 m (GPS, GLONASS)
Y = +1148173.74 m (GPS, GLONASS)
Z = +5021815.79 m (GPS, GLONASS)
FRAME = ITRF, PZ-90->ITRF Dx = 0.0 m, Dy = 0.0 m, Dz = 2.0 m, ds = 0.0, Rx = 0.0, Ry = 0.0, Rz = -
0.000002
COMMENTS = NO COMMENTS
INT DLY = 4.29 ns (GPS), -214.89 ns (GLONASS)
CAB DLY = 165.65 ns (GPS), 165.65 ns (GLONASS)
REF DLY = 81.90 ns
REF = UTC(AOS) 10046
CKSUM = 03
```

GUM4 :

CGGTT5 GPS/GLONASS DATA FORMAT VERSION = 02

REV DATE = 1996-10-20

RCVR = Pãî¿ð+s?T-,À

CH = 116 (GPS-L1:16 GPS-L2:16 GPS-L5:16 Galileo-E1:16 Galileo-E5a:16 Glonass-L1:16 Glonass-L2:16 SBAS:4)

IMS = Pãî¿ð+s?T-,À

LAB = GUM

X = +3653846.98 m (GPS,GLONASS)

Y = +1402629.17 m (GPS,GLONASS)

Z = +5019465.09 m (GPS,GLONASS)

FRAME = ITRF, PZ-90->ITRF Dx = 0.0 m, Dy = 0.0 m, Dz = 2.0 m, ds = 0.0, Rx = 0.0, Ry = 0.0, Rz = -0.000002

COMMENTS = NO COMMENTS

INT DLY = [ns] GPS: L1C:-22.32 L2C:-22.32 L1P:-22.32 L2P:-22.32 L5P:-22.32, GLO: L1C:-22.32 L2C:-22.32 L1P:-22.32 L2P:-22.32

CAB DLY = 138.48 ns (GPS), 138.48 ns (GLONASS)

REF DLY = 96.65 ns

REF = UTC(PL)

CKSUM = F2

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