

# 2025 Group 1 GNSS calibration trip (Cal\_Id 1001-2025)

## Summary

The 2025 visit to Group 1 laboratories is the fifth Group 1 trip and started in June 2025. The trip is decomposed into several phases, each enclosed with closure at the BIPM.

- Phase 1 (June 2025-November 2025). BIPM-OP-ROA-PTB-INRIM-BIPM with the traveling receivers BP2G and BP2D;

Since phase 1 of the 2022 Group 1 trip, results are provided for the GPS codes P1, P2 and C1, the Galileo E1 and E5a codes, and the BDS B1C B5 code.

All files indexed in this report can be accessed [here](#)

- **Reports of operations and raw data processing (one for each phase)**

- [1001-2025-Phase1-cv.pdf](#)

- **Reports of differential calibration computations (one for each phase)**

- [1001-2025-Phase1-report.pdf](#)

- **Report on selecting reference values to compute final results of this trip**

See [TM266\\_Group1-followon-values.pdf](#)

- **Final results for the visited systems**

Table 1 lists the final values of GPS P1/P2/C1, Galileo E1/E5a INTDLY and BDS BC/B5 INTDLY values from the 1001-2025 Group 1 trip, along with information on the REF DLY and CAB DLY values used in the processing of the calibration results.

For any link A-B, the uncertainty resulting from the calibration,  $U_B(A-B)$ , is computed as

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

where  $U_{CAL0}$  is the conventional value chosen for the whole calibration trip and where  $\Delta U_{CAL}$  is generally zero, except for some systems for specific reasons. See the reports of differential calibration computations for all information on  $U_{CAL0}$  and  $\Delta U_{CAL}$ . The values  $\Delta U_{CAL}$  are indicated in Table 1.

For dual-frequency (P3, E3 or B3) links,  $U_{CAL0}$  is 1.5 ns.

For single frequency links,  $U_{CAL0}$  is 1.2 ns but should be complemented by an additional component to represent systematic errors in the ionospheric model.

Table 1. Final GPS P1/P2/C1, Galileo E1/E5a and BDS BC/B5 INTDLY values from the 1001-2025 Group 1 trip. Values of REFDLY and CABDLY at the epoch of calibration 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 code	Meas. Date	INTDLY C1	INTDLY P1	INTDLY P2	INTDLY E1	INTDLY E5	INTDLY BC	INTDLY B5	REFDLY	CABDLY	Note	Implem. Date	UCAL
BP21	BP21		30.60	28.40	27.30	30.70	30.90	30.40	30.30	43.34	140.8	(1)		
<b>PHASE 1 (OP,ROA,PTB,INRIM)</b>														
OP70	OP70	2025/07/03	29.7	27.5	26.2	29.8	30	29.6	29.4	90.6	128.7		61102	
OP73	OP73	2025/07/03	31.6	29.4	26	31.6	31.3	31.5	30.7	85.3	129.6		61102	
OP75	OP75	2025/07/03	32.4	30	25.3	32.4	31.3	32.2	30.7	85.3	129.6		61102	
OPM9	OPM9	2025/07/03	39.2	37.1	34.2	40.4	34.2			60.5	173.6		61102	
RO12	RO12	2025/08/09	31.2	29	28.2	31.4	30.9	31.2	30.3	39.8	190.5		61103	
RO13	RO13	2025/08/09	30.3	28.3	26.2	30.4	31.5	30.3	30.9	289	83		61103	
ROA9	RO_9	2025/08/09	56.6	55.1	54.2	56.1	65.2			451.8	59.7		61103	
RO_8	RO_8	2025/08/09	31.1	29	27.7	32.4	24.4			20.4	197.1		61103	
ROAP	RO_7	2025/08/09	55.9	54.6	54	55.5	64.2			452.4	89.9		61103	
ROAG	RO10	2025/08/09	30.7	28.9	25.4	30.9	29.8	30.7	29.2	5.1	200		61103	
RO_6	RO_6	2025/08/09	55.8	54.3	53.5					485.1	82		61103	
PTBB	PT13	2025/08/22	32.8	30.8	28.6	32.9	32.8	32.7	32.2	55.7	205.7		61102	
PT07	PT07	2025/08/22	-35.8	-37.1	-25.1					43.1	245.8		61102	
PT09	PT09	2025/08/22	56.5	55.1	54.6	56.1	65.1			182.1	198.7		61102	
PT10	PT10	2025/08/22	32.8	30.8	24.5	34.1	23			36.4	250		61102	
PT15	PT15	2025/08/22	38.9	35.7	28.7	39.4	32.1			11	205.5		61102	
IENG	IT07	2025/10/14	29.4	27	27.2	29.4	30.8	29.3	30.3	372.7	130.5		61102	
IT16	IT16	2025/10/14	29.5	27.3	25	29.6	27.7	29.3	27.1	161.1	355.5		61102	
IT11	IT11	2025/10/14	57.4	56	54.6	57	63.6			483.6	298.6		61102	
IT20	IT20	2025/10/14	30.8	28.3	26.2	30.9	30	30.5	29.4	151	119.4		61102	
IT21	IT21	2025/10/14	30.5	28.1	25.7	30.5	29.7	30.3	29.2	374.5	199.3		61102	

IT05	IT05	2025/10/14	28.3	25.8	24.1	28.3	30.1	28.2	29.5	373.5	254.7		61102	
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Notes:

(1) BP21 is included in order to provide reference for BIPM-led specific calibrations.

## Version history

V1.0 2026/05/03: First publication of the results.