

Key comparison EURAMET.M.G-K1

MEASURAND : Free-fall acceleration

NOMINAL VALUE : 9.81 m/s²

Raw measurements from Absolutes Gravimeters are given in table 3 of the Final Report.

The data processing is explained in Section 7 of the Final Report and is based on a global weighted least-square adjustment of the measurements after correction for self-attraction, laser beam diffraction and Superconducting Gravimeter observations. This makes it possible to evaluate the gravity value G_j at each Station j , as well as the offset D_k for absolute gravimeter AG(k), and associated expanded uncertainties ($k = 2$).

G_j is the key comparison reference value for Station j . Its associated expanded uncertainty is denoted U_j . G_j and U_j are expressed in μGal with $1 \text{ Gal} = 10^{-2} \text{ m/s}^2$. The G_j 's values are the g -values minus the constant value 98 096 000.0 μGal .

The degree of equivalence of absolute gravimeter AG(k) is given by a pair of terms: D_k and U_k , its expanded uncertainty with coverage factor equal to 2, both expressed in μGal .

Station j	G_j / μGal	U_j / μGal
A1	4235.6	3.5
A2	4223.1	3.1
A3	4214.5	3.8
A4	4200.8	4.5
A5	4189.4	3.1
B1	4084.4	3.7
B2	4075.4	4.0
B3	4076.1	3.5
B4	4069.6	2.9
B5	4055.5	3.2
C1	3958.4	3.7
C2	3953.9	3.7
C3	3952.8	3.7
C4	3955.1	3.5
C5	3948.6	2.9

Lab k / AG(k)	D_k / μGal	U_k / μGal
LNE-SYRTE / CAG-01	4.5	5.2
METAS / FG5-209	-1.1	3.2
VUGTK/RIGTC / FG5-215	0.2	3.1
FGI / FG5-221	-0.9	3.5
BEV / FG5-242	-0.6	3.4
INRIM / IMGC-02	-2.2	5.4
Standard deviation	2.3	1.0

Comparison of these degrees of equivalence with those obtained in previous exercises is given in Section 9 of the Final Report. It shows good agreement.

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