



Certificate of Calibration No 131-00835

Object **Swiss Committee Kilogram 1 kg**
Kilogramme
Conforme à la Loi du 18 Germinal an 3,
présenté le 4 Mess an 7.
Fortin F
Brass, in a leather box

Order Historical comparison of mass and conventional mass in the context of the exhibition:
Ferdinand Rudolf Hassler (1770-1843) – Swiss Pioneer for US Surveying, Mapping and Standards,
to be presented at METAS, July 8 – August 11, 2007.

Applicant **Federal Office of Metrology METAS**
Lindenweg 50
CH-3003 Bern-Wabern

Traceability The reported measurement values are traceable to national standards and thus to internationally supported realizations of the SI-units.

Date of Calibration 04-07.05.2007

Marking



CH-3003 Bern-Wabern, 08 May 2007

For the Measurements

Section Mechanics

Stefan Russi

Dr Henri Baumann, Head of Section



Mutual recognition

This certificate is consistent with Calibration and Measurement Capabilities (CMCs) that are included in Appendix C of the Mutual Recognition Arrangement (MRA) drawn up by the International Committee for Weights and Measures. Under the MRA, all participating institutes recognize the validity of each other's calibration certificates and measurement reports for the quantities, ranges and measurement uncertainties specified in Appendix C (for details see www.bipm.org).



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Extent of the Calibration

The mass and conventional mass of the Committee Kilogram has been determined, in accordance to the International Recommendation OIML R 111-1, "Weights of classes E₁, E₂, F₁, F₂, M₁, M₁₋₂, M₂, M₂₋₃ and M₃", edition 2004 (OIML: International Organization of Legal Metrology).

Measurement procedure

The mass and conventional mass of the Committee Kilogram was determined on the mass comparator M_One, by comparison with METAS reference standards sets number 4, number 14 and number 336 by substitution weighing.



Picture 1: Committee Kilogram inside the primary Mass Comparator of Metas



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Picture 2: Committee Kilogram within its original protection case



Picture 3: Imprint at the bottom of the weight



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Picture 4: Engraved label on the top of the leather coated container



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Measurement conditions

The average ambient conditions during the measurement were the following:

Air temperature: (20.39 ± 0.02) °C.

Air density: (1.111 ± 0.003) kg/m³

Measurement results

After having applied the air buoyancy correction to each series of substitution weighings, the following values for the mass deviation and for the conventional mass deviation has been evaluated:

Nominal value	Identification	Mass deviation (mg)	Conventional mass deviation (mg)	Uncertainty of measurement (mg)	Density (kg/m ³)
1 kg	1853	-90.37	-81.55	0.10	8500

Uncertainty of Measurement

The reported uncertainty of measurement is stated as the combined standard uncertainty multiplied by a coverage factor $k = 2$. The measured value (y) and the associated expanded uncertainty (U) represent the interval ($y \pm U$) which contains the value of the measured quantity with a probability of approximately 95%. The uncertainty was estimated following the guidelines of the ISO.

The measurement uncertainty contains contributions originating from the measurement standard, from the calibration method, from the environmental conditions and from the object being calibrated. The long-term characteristic of the object being calibrated is not included.