

Appendix A – Example Certificate

COMPLIANT CALIBRATION LABORATORY
 123 Some Ave.
 City, State Mail code
 XYZ Accreditation Body: 1234567890

CALIBRATION CERTIFICATE

FOR
1 kg to 10 mg kit
 (Twenty-one weights)

Manufacturer: DENTROM LAKE

Serial No.: 27269

SUBMITTED BY:
 YOUR CUSTOMER, INC.
 Customer's Address
 City, State Zip code
 Phone/Email

Nominal (g)	Conventional Mass (g)	Conventional Mass ³ Correction (mg)	Expanded Uncertainty (mg)	ASTM Class 4 Tolerances (mg)
1000	1000.000 82	0.82	0.92	20
500	500.000 71	0.71	0.53	10
300	299.999 87	- 0.13	0.27	6.0
200	200.000 67	0.67	0.18	4.0
100	100.000 411	0.411	0.091	2.0
50	50.000 318	0.318	0.051	1.2
30	30.000 117	0.117	0.028	0.90
20	19.999 987	- 0.013	0.023	0.70
10	10.000 011	0.011	0.018	0.50
5	5.000 022	0.022	0.015	0.36
3	3.000 112	0.112	0.013	0.30
2	1.999 965	- 0.035	0.012	0.26
1	1.000 117	0.117	0.010	0.20
0.500	0.500 013 2	0.013 2	0.005 1	0.16
0.300	0.300 022 3	0.022 3	0.004 8	0.14
0.200	0.200 001 7	0.001 7	0.004 3	0.12
0.100	0.100 001 3	0.001 3	0.004 2	0.10
0.050	0.050 001 8	0.001 8	0.004 0	0.085
0.030	0.030 001 1	0.001 1	0.003 7	0.075
0.020	0.020 000 9	0.000 9	0.003 3	0.070
0.010	0.009 999 7	- 0.000 3	0.003 1	0.060

The data in the above table applies only to those items specifically listed on this calibration certificate.

Uncertainty Statement:

The combined standard uncertainty includes the standard uncertainty reported for the standard, the standard uncertainty for the measurement process, the standard uncertainty for any uncorrected errors associated with buoyancy corrections, and a component of uncertainty to account for any observed deviations from NIST values that are less than surveillance limits. The combined standard uncertainty is multiplied by a coverage factor (k) of 2 to provide an expanded uncertainty, which defines a level of confidence of approximately 95 percent (95.45 %). The expanded uncertainty presented in this report is consistent with the ISO/IEC

³ Conventional Mass: The conventional value of the result of weighing a body in air is equal to the mass of a standard, at reference density 8.0 g/cm³, at a reference temperature 20 °C, which balances this body at this reference temperature in normal air density 0.0012 g/cm³. See OIML D28 (2004), "Conventional value of the result of weighing in air."

Guide to the Expression of Uncertainty in Measurement (2008). The expanded uncertainty is not to be confused with a tolerance limit for the user during application.

Traceability Statement:

The Standards of the Compliant Calibration Laboratory are traceable to the International System of Units (SI) through the National Institute of Standards and Technology, and are part of a comprehensive measurement assurance program for ensuring continued accuracy and measurement traceability within the level of uncertainty reported by this laboratory. The unique laboratory calibration number identified above shall be used in referencing metrological traceability for artifacts identified only in this certificate.

Conformity Assessment:

The weights submitted for this calibration were marked as ASTM Class 4. ASTM E617 (2018), Standard Specification for Laboratory Weights and Precision Mass Standards, was used to evaluate these weights. Weights fully comply with all requirements (both specifications and tolerances) of this documentary standard. Stated expanded uncertainties are less than one-third of the specified tolerances (maximum permissible errors, m.p.e.) and the mass value plus or minus the expanded uncertainty is within the stated tolerances.

Supplemental Information:

Description of Artifacts Submitted for Calibration:

Twenty one weights from 1 kg to 10 mg, marked ASTM E617 Class 4. Weights from 1 kg to 1 g: two-piece weights, with assumed density of 8.0 g/cm³. Weights from 500 mg to 50 mg: sheet weights, with assumed density of 16.6 g/cm³. Weights from 30 mg to 10 mg: sheet weights, with assumed density of 2.7 g/cm³.

Conditions of Artifacts Submitted for Calibration:

Artifacts showed evidence of improper handling. Fingerprints and dents were visible on the surface of the weights.

Treatment of Artifacts Prior to Calibration:

Artifacts were cleaned with cheesecloth and ethyl alcohol. Thermal equilibrium time/conditions: seven days next to balances in mass laboratory.

Procedure Used:

Double Substitution (NISTIR 6969, SOP 4, 2019)

Environmental Conditions at Time of Calibration:

Temperature: 20.1 °C to 20.2 °C Barometric Pressure: 752.7 mmHg Relative Humidity: 43.35 % to 43.40 %

Date Artifacts Received: January 5, 2019

Date Certificate Issued: January 13, 2019

Date of Calibration: January 12, 2019

Due Date (Requested by Customer): January 15, 2019

Josh Balani II

Calibration Performed by: Josh Balani II, Metrologist

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