



Number of certificate 000000

SAMPLE

Calibration Certificate

Client's name	○○○○
Client's address	○○○○○○○○
Article	Non-automatic electronic weighing instrument
Type	○○○○
Serial number	○○○○
Manufacturer	○○○○○○○○
Calibration item	Mass(balance)
Calibration method	Per our calibration manual (Document No.MJB-03)
Instruments used by calibration	Standard instruments(Refer to attached data sheet)
Date of acceptance	6 Jan. 2020
Date of calibrated	6 Jan. 2020
A place of calibration	○○○○ ○○○○○○○○
The place where the article used	○○○○○○○○
Ambient condition	As per attached data sheet

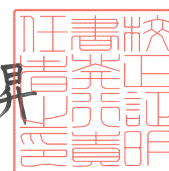
This is to certify that the calibration result of the above article are as shown in the attached sheets.

Date of issue : 6 Jan. 2020

10-31 Akagawa 2-chome Asahi-ku Osaka, Japan
MURAKAMI KOKI CO., LTD.

The calibration authority

村上 昇



This certificate is based on article 144 of the Measurement Act and indicates the result of calibration in accordance with measurement standards traceable to Primary Measurement Standards (National Standards) which realizes the physical units of measurement according to the International System of Units (SI). The accreditation symbol is attestation of which the result of calibration is traceable to Primary Measurement Standards (National Standards).
The certificate shall not be reproduced except in full, without the written approval of the issuing laboratory.
The calibration laboratory who issued this calibration certificate conforms to ISO/IEC 17025:2017.
This calibration certificate was issued by the calibration laboratory accredited by IAJapan who is a signatory to the Mutual Recognition Arrangement (MRA) of International Laboratory Accreditation Cooperation (ILAC) and Asia Pacific Accreditation Cooperation (APAC). This(These) calibration result(s) may be accepted internationally through ILAC/APAC MRA.



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1. Specification

Kind of balance	Single range instrument
Maximum capacity / Actual scale interval	120 g / 0.1 mg
Temperature characteristic	1.50 ppm/K
Accuracy class	----
Sensitivity adjustment	Built-in calibration weights.
Remarks 1	A preload is carried out.
Remarks 2	Indication before calibration 100.0106 g Indication after calibration 99.9999 g

2. Ambient condition

	Before	Middle 1	Middle 2	After	Change
Temperature	23.3 °C	23.4 °C	23.4 °C	23.5 °C	0.2 °C
Humidity	59.0 %			59.0 %	0.0 %
Atmospheric pressure	1004.0 hPa			1004.0 hPa	0.0 hPa

3. Uncertainty evaluation

a) Repeatability

No.	Load	Indication	Deviation
1	60 g	59.9999 g	-0.0001 g
2	60 g	59.9999 g	-0.0001 g
3	60 g	60.0000 g	0.0000 g
4	60 g	59.9999 g	-0.0001 g
5	60 g	59.9999 g	-0.0001 g
6	60 g	59.9999 g	-0.0001 g

Standard deviation 0.04 mg

Uncertainty dispersion v_w 0.0017 mg²

b) Rounded error

Uncertainty dispersion v_r 0.0017 mg²



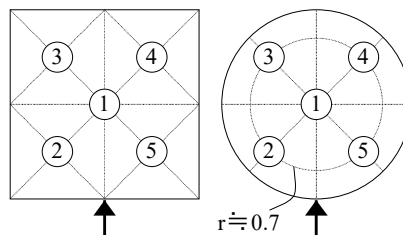
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c) Off-center loading

Load 60 g

Position	Indication	Difference
1.Center	59.9999 g	
2.Ahead on the left	59.9998 g	-0.0001 g
3.Rear on the left	59.9999 g	0.0000 g
4.Rear on the right	60.0001 g	0.0002 g
5.Ahead on the right	60.0001 g	0.0002 g



Maximum difference 0.0002 g

Relative uncertainty dispersion v_e 4.12E-13

d) Trueness

No.	Tare	Load	Correction value	Indication	Deviation
1	0 g	120 g	-0.194 mg	119.9999 g	+0.00009 g
2	0 g	30 g	-0.053 mg	29.9999 g	-0.00005 g
3	0 g	60 g	-0.106 mg	59.9999 g	+0.00001 g
4	0 g	90 g	-0.142 mg	89.9999 g	+0.00004 g
5	50 g	30 g	-0.053 mg	30.0000 g	+0.00005 g
6	50 g	60 g	-0.106 mg	59.9999 g	+0.00001 g

e) Temperature effect

Temperature change 0.2 °C

Ingredient of thermometer uncertainty 1.0 °C

Temperature characteristic 1.50 ppm/K

Relative uncertainty dispersion v_T 2.70E-13

f) Weight used by calibration

Load	Uncertainty dispersion v_s
120 g	2.62E-02 mg ²
30 g	9.26E-03 mg ²
60 g	1.21E-02 mg ²
90 g	3.19E-02 mg ²
30 g	9.26E-03 mg ²
60 g	1.21E-02 mg ²



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4. Calibration results

Tare	Nominal value W	Deviation	Expanded uncertainty U	Degrees of freedom	Coverage factor k
0 g	120 g	+0.09 mg \pm	0.40 mg	≥ 10	2
0 g	30 g	-0.05 mg \pm	0.23 mg	≥ 10	2
0 g	60 g	+0.01 mg \pm	0.27 mg	≥ 10	2
0 g	90 g	+0.04 mg \pm	0.41 mg	≥ 10	2
50 g	30 g	+0.05 mg \pm	0.23 mg	≥ 10	2
50 g	60 g	+0.01 mg \pm	0.27 mg	≥ 10	2



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Standard instruments

ID No. ○

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Nominal value	Mark	Conventional mass value	Expanded uncertainty	Uncertainty by buoyancy	Uncertainty by aging	Uncertainty by standard
100 g		-0.14 mg ±	0.14 mg	0.00 mg	0.08 mg	0.11 mg
50 g		-0.107 mg ±	0.090 mg	0.002 mg	0.052 mg	0.069 mg
20 g	1	-0.054 mg ±	0.072 mg	0.001 mg	0.042 mg	0.055 mg
20 g	2	0.019 mg ±	0.072 mg	0.001 mg	0.042 mg	0.055 mg
10 g		0.001 mg ±	0.054 mg	0.000 mg	0.031 mg	0.041 mg

The expanded uncertainty corresponds to a level of confidence of approximately 95 % with a coverage factor k being equal to 2.

End of the certificate.