



MICRO PRECISION CALIBRATION PTE LTD
BLOCK 5008 ANG MO KIO AVENUE 5 #07-02/03
TECHPLACE II SINGAPORE 569874
65 67484384



Certificate of Calibration

Date: Apr 17, 2020

Cert No. 551220083573697

Customer:

WATERS PACIFIC PTE LTD
1 SCIENCE PARK ROAD, #02-08 THE CAPRICORN
SINGAPORE SCIENCE PARK II
SINGAPORE 117528

Work Order #: SG-11014032

MPC Control #: 12333730
Asset ID: 93370
Gage Type: ANALYTICAL BALANCE
Manufacturer: A&D
Model Number: HR-200
Size: N/A
Temp/RH: 22.2°C / 47.1%
Location: Calibration performed at Customer's facility

Serial Number: 12333730
Department: N/A
Performed By: ZHIYUAN LIM
Received Condition: IN TOLERANCE
Returned Condition: IN TOLERANCE
Cal. Date: April 17, 2020
Cal. Interval: 6 MONTHS
Cal. Due Date: October 17, 2020

Calibration Notes:

Performance Test Passed. See attached data (2 Pages).

Calibration performed at GES SINGAPORE PTE LTD.

Standards Used to Calibrate Equipment

I.D.	Description.	Model	Serial	Manufacturer	Cal. Due Date	Traceability #
CC6564	WEIGHT SET	CLASS F1	CC6564	TRUEMASS	Oct 10, 2021	M1910081S
AW9382	WEIGHT SET	CLASS 1	10X7	RICE LAKE WEIGHING SYSTEMS	Jun 7, 2020	551220083057969

Procedures Used in this Event

Procedure Name	Description
MPC-WEI-001 Rev. 04	Weighing Instruments, General, rev04, Jan-23-2020

Calibrating Technician:

ZHIYUAN LIM

QC Approval:

JUN CALIMAG

22 APR 2020

Statements of Pass or Fail Conformance: The uncertainty of measurement has been taken into account when determining compliance with specification, as per ILAC-G8-03/2009. All measurements and test results guard banded to ensure the probability of false-accept does not exceed 2% in compliance with ANSI/NCCL Z540.3-2006.

The status of compliance with the acceptance criteria is reported as:

PASS - Compliant with specification.

FAIL - Not compliant with specification.

FAIL* - The measured value is not within the acceptance limits. However, a portion of the expanded uncertainty of measurement at 95% is within the specified tolerance.

PASS* - The measured value is within acceptance limits. However, a portion of the expanded uncertainty of measurement at 95% exceeds the specified tolerance.

The expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%, unless otherwise stated. This calibration report complies with ISO/IEC 17025:2017 and ANSI/NCCL Z540.3 Method 6-Guard Bands based on Test Uncertainty Ratio. Calibration cycles and resulting due dates were submitted/approved by the customer. Any number of factors may cause an instrument to drift out of tolerance before the next scheduled calibration. Recalibration cycles should be based on frequency of use, environmental conditions and customer's established systematic accuracy. All standards are traceable to SI through the National Institute of Standards and Technology (NIST) and/or recognized national or international standards laboratories. Services rendered include proper manufacturer's service instruction and are warranted for no less than thirty (30) days. The information on this report pertains only to the instrument identified; this may not be reproduced in part or in a whole without the prior written approval of the issuing MP Calibration Laboratory.



Calibration Report of A&D HR-200 Analytical Balance

MPC Control #:	12333730	Serial Number:	12333730
Asset ID:	93370	Calibration Date:	April 17, 2020

Repeatability Test

Range	Nominal	Lower Limit	As Found	As Left	Upper Limit	Result	Uncertainty ($\pm$)
210.0000 g	5.0000 g	4.9999 g	5.0000 g	5.0000 g	5.0001 g	PASS	NA
210.0000 g	75.0000 g	74.9999 g	75.0000 g	75.0000 g	75.0001 g	PASS	NA

The standard deviation was found to be: 0.0000 g

Linearity Test or Test for Errors of Indication

Range	Nominal	Lower Limit	As Found	As Left	Upper Limit	Result	Uncertainty ($\pm$)
210.0000 g	0.2000 g	0.1998 g	0.2000 g	0.2000 g	0.2002 g	PASS	0.000070 g
210.0000 g	0.5000 g	0.4998 g	0.5000 g	0.5000 g	0.5002 g	PASS	0.000070 g
210.0000 g	1.0000 g	0.9998 g	1.0000 g	1.0000 g	1.0002 g	PASS	0.000070 g
210.0000 g	2.0000 g	1.9998 g	2.0000 g	2.0000 g	2.0002 g	PASS	0.000070 g
210.0000 g	3.0000 g	2.9998 g	3.0000 g	3.0000 g	3.0002 g	PASS	0.000074 g
210.0000 g	4.0000 g	3.9998 g	4.0000 g	4.0000 g	4.0002 g	PASS	0.000074 g
210.0000 g	5.0000 g	4.9998 g	5.0000 g	5.0000 g	5.0002 g	PASS	0.000074 g
210.0000 g	6.0000 g	5.9998 g	6.0000 g	6.0000 g	6.0002 g	PASS	0.000082 g
210.0000 g	10.0000 g	9.9998 g	10.0000 g	10.0000 g	10.0002 g	PASS	0.000082 g
210.0000 g	50.0000 g	49.9998 g	50.0000 g	50.0000 g	50.0002 g	PASS	0.00011 g
210.0000 g	100.0000 g	99.9998 g	100.0000 g	100.0000 g	100.0002 g	PASS	0.00017 g
210.0000 g	200.0000 g	199.9998 g	200.0000 g	200.0000 g	200.0002 g	PASS	0.00031 g

Eccentricity Test

Function Tested	Nominal	Lower Limit	As Found	Deviation from Center	Upper Limit	Result	Uncertainty ($\pm$)
Center	70.0000 g	69.9998 g	70.0000 g	0.0000 g	70.0002 g	PASS	NA
Front Left	70.0000 g	69.9998 g	70.0000 g	0.0000 g	70.0002 g	PASS	NA
Back Left	70.0000 g	69.9998 g	70.0000 g	0.0000 g	70.0002 g	PASS	NA
Back Right	70.0000 g	69.9998 g	70.0000 g	0.0000 g	70.0002 g	PASS	NA
Front Right	70.0000 g	69.9998 g	70.0000 g	0.0000 g	70.0002 g	PASS	NA

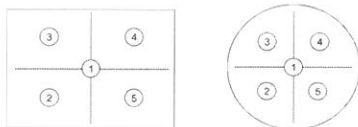
22 APR 2020

Calibration Report of A&D HR-200 Analytical Balance

MPC Control #:	12333730	Serial Number:	12333730
Asset ID:	93370	Calibration Date:	April 17, 2020

Positions of Load for Test of Eccentricity

- 1 Center
- 2 Front Left
- 3 Back Left
- 4 Back Right
- 5 Front Right



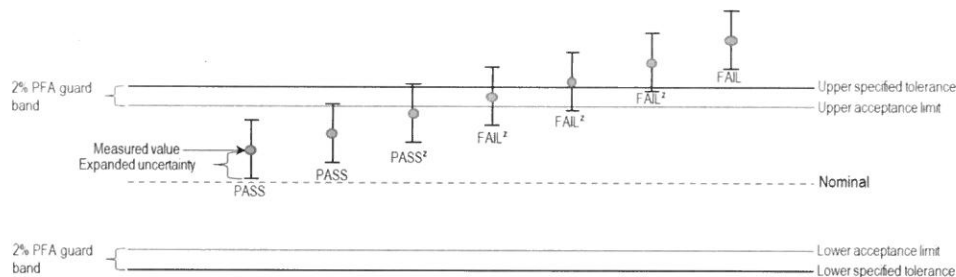
Statements of Pass or Fail Conformance

The uncertainty of measurement has been taken into account when determining compliance with specification, as per ILAC-G8:03/2009.

All measurements and test results guard banded to ensure the probability of false-accept does not exceed 2% in compliance with ANSI/NCCL Z540.3-2006.

The status of compliance with the acceptance criteria is reported as:

- PASS** - Compliant with specification
- FAIL** - Not compliant with specification.
- FAIL^z** - The measured value is not within the acceptance limits. However, a portion of the expanded uncertainty of measurement at 95% is within the specified tolerance.
- PASS^z** - The measured value is within acceptance limits. However, a portion of the expanded uncertainty of measurement at 95% exceeds the specified tolerance.



Acceptance limits for ≤ 2 % probability of false accept (PFA) guard band

The expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%, unless otherwise stated.

This calibration report complies with ISO/IEC 17025:2017 and ANSI/NCCL Z540.3 Method 6-Guard Bands based on Test Uncertainty Ratio.

- End of Calibration Report -

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