

Certificate of Calibration

THIS IS TO CERTIFY THAT UNITED TESTING SYSTEMS CANADA LTD., HAS
CALIBRATED THE FOLLOWING HARDNESS TESTER IN ACCORDANCE
WITH ASTM-E92-XX/ASTM-E384-XX INDIRECT METHOD
AND UTS SOP-3135-Rev XX-XXX.

CERTIFICATION IS VALID FOR THE SCALE(S) LISTED BELOW AND MEETS THE
REQUIREMENTS OF ASTM-E92/ASTM-E384.

CERTIFICATE NUMBER: CR#0006
CERTIFICATE ISSUED: June 5, 2019

CALIBRATION DATE: June 5, 2019
REQUESTED DUE DATE: June 5, 2020

CALIBRATION & CUSTOMER INFORMATION:

COMPANY:	ANY COMPANY
ADDRESS:	123 ANY STREET
CITY/PROVINCE:	ANY CITY, ANY PROVINCE
SYSTEM LOCATION:	METALLURGICAL LAB
MANUFACTURER:	SHIMADZU
MODEL:	HMV-2T
SERIAL NO.:	XXXXX
ASSET NO.:	BBBB
INDICATOR:	OCULAR MEASURING SYSTEM
INDICATOR RESOLUTION:	0.1 μ m
INDENTER S/N:	XXXXX
OBJECTIVE MAGNIFICATION:	40X
TEMPERATURE / HUMIDITY:	23.0 $^{\circ}$ C 35%
SYSTEM CONDITION:	GOOD
READINGS AS FOUND:	IN TOLERANCE
READINGS AS LEFT:	IN TOLERANCE
CALIBRATION TECHNICIAN:	TECHNICIAN

CERTIFIED SCALES:

VICKERS 300 gf , 500 gf , 1000 gf

TRACEABILITY AND UNCERTAINTY:

THE REFERENCE BLOCKS USED FOR VERIFICATION ARE TRACEABLE TO DAVID L ELLIS CO INC. HARDNESS LABORATORY. UNCERTAINTIES EXPRESSED IN THIS CERTIFICATE USE A COVERAGE FACTOR OF 2 ($K = 2$). UNCERTAINTY ANALYSIS RESULTS ARE VALID ONLY FOR THE RESULTS OF THIS CALIBRATION.

HT-1 ENVIRONMENT RECORDER: LASCAR, S/N TH20124-283, TRACEABILITY NO. AC15121328-TH20124,
DUE DATE: Month Day, Year, $U_n = 0.3^{\circ}\text{C} / 2\% \text{RH}$.

CALIBRATED BY

United Testing Systems Canada Limited

21 - 225 Bradwick Drive, Concord, Ontario L4K 1K7

Tel.: (905) 669-5327 Fax: (905) 738-5051

E-mail: service@utscanada.com

AUTHORIZED SIGNATORY

ISO/IEC 17025

ANSI/NCSL Z540-1-1994; Part 1

Accredited by:



NVLAP Lab Code: 200311-0

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UNITED CALIBRATION GROUP

PAGE 1 OF 3

Calibration Report

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CALIBRATION & CUSTOMER INFORMATION:

COMPANY: ANY COMPANY
MODEL: HMV-2T
SERIAL NUMBER: XXXXX

ONSITE INDIRECT VERIFICATION OF READINGS VICKERS SCALE AS FOUND BEFORE MAINTENANCE:

APPLIED FORCE	TEST BLOCK S/N	NOMINAL VALUE(HV)	BLOCK TOL(HV)	BLOCK UC(HV)	READINGS (um)						
					D1-1	D1-2	D2-1	D2-2	D3-1	D3-2	AVG
300 gf	6306 300	510	20	13	33.1	33.6	32.6	33.6	32.9	33.6	33.2
500 gf	6305 500	193	8	4.0	68.9	68.7	69.1	69.2	69.4	68.5	69.0
1000 gf	6305 1000	194	8	4.3	98.3	98	98.3	97.8	98.6	97.8	98.1

ONSITE INDIRECT VERIFICATION OF READINGS VICKERS SCALE AS FOUND BEFORE MAINTENANCE:

APPLIED FORCE	TEST BLOCK S/N	NOMINAL VALUE(HV)	BLOCK TOL(HV)	BLOCK UC(HV)	READINGS (HV)			
					1	2	3	AVG
300 gf	6306 300	510	20	13	500	507	503	503.3
500 gf	6305 500	193	8	4.0	196	194	195	195.0
1000 gf	6305 1000	194	8	4.3	192	193	192	192.3

NOTES:

PAGE 2 OF 3

ISO/IEC 17025

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COMPANY: ANY COMPANY
MODEL: HMV-2T
SERIAL NUMBER: XXXXX

ONSITE INDIRECT VERIFICATION OF READINGS VICKERS SCALE AS LEFT AFTER MAINTENANCE:

APPLIED FORCE	TEST BLOCK S/N	NOMINAL VALUE(HV)	READINGS (um)									
			D1-1	D1 -2	D2-1	D2-2	D3-1	D3-2	D4-1	D4-2	D5-1	D5-2
300 gf	6306 300	510	32.9	32.9	32.6	33.6	32.9	33.4	32.6	33.4	32.9	33.4
500 gf	6305 500	193	68.6	69.2	69.1	69.9	69.4	69.2	68.9	69.6	69.6	68.7
1000 gf	6305 1000	194	98.8	97.6	98.8	97.8	97.6	97.1	97.8	97.1	98.3	98.0

ONSITE INDIRECT VERIFICATION OF READINGS VICKERS SCALE AS LEFT AFTER MAINTENANCE:

APPLIED FORCE	TEST BLOCK S/N	NOMINAL VALUE(HV)	BLOCK TOL(HV)	BLOCK UC(HV)	READINGS (HV)					AVG (HV)	BIAS (HV)	STD DEV
					1	2	3	4	5			
300 gf	6306 300	510	20	13	514	507	507	507	506	508.2	-1.8	3.2
500 gf	6305 500	193	8	4.0	195	192	193	193	194	193.4	0.4	1.2
1000 gf	6305 1000	194	8	4.3	192	192	196	195	192	193.4	-0.6	1.9

UNCERTAINTY ANALYSIS FOR ONSITE INDIRECT VERIFICATION VICKERS SCALE AS LEFT:

APPLIED FORCE	TEST BLOCK S/N	REPEAT TOL(um)%	REPEAT (um)%	ERROR TOL(um)%	ERROR (um)%	$U_{R\&N_u}$ (HV)	U_{Resol} (HV)	U_{Mach} (HV)
300 gf	6306 300	5	0.76	2	0.17	1.4	0.89	13
500 gf	6305 500	8	0.87	2	-0.10	0.52	0.16	4.1
1000 gf	6305 1000	8	0.97	2	0.15	0.87	0.11	4.6

NOTES:

PAGE 3 OF 3

ISO/IEC 17025

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