Certificate of Calibration

Issued By Trescal Ltd

Date of Issue: 15 May 2019 Certificate Number: 3003790002

UKAS CALIBRATION
0013

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APPROVED SIGNATORY

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David Gresty

Customer:
Mecmesin Ltd, Spring Copse Business Park
Slinfold, West Sussex, RH20 3LZ

Equipment Details

Description:	Speed Verification Tool		
Manufacturer:	ELV		
Type No:	LSU 100	Date of Receipt:	03/May/2019
Range:		Order No:	260933
Serial No:	TM0408	Our Reference:	00527564
Engineer:	Joe Williams	**Date:**	14/May/2019

Calibration Summary

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Ambient Conditions Temperature: 20°C ± 2 °C

Date of next calibration:

The results given within this certificate only relate to the item calibrated. The uncertainty limits quoted refer to the measured values only, with no account being taken of the instruments ability to maintain its calibration. The reported expanded uncertainty is based upon a standard uncertainty multiplied by a coverage factor *k*=2 providing a confidence level of approximately 95%. The uncertainty evaluation has been derived from EA-4/02 M:2013 "Evaluation of the Uncertainty of Measurement In Calibration".

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Instrument Status:	In Tolerance	Out of Tolerance	Malfunctioning	Operational	Damaged
As Received				x	
As Returned				x	

	Full Calibration	Special Calibration	Operational Verification	Adjusted	Repaired	Returned As Received
Action Taken	x					

Receipt Comments:

Technical Remarks:

Calibration Equipment Used

Asset No	Due Date
121580	31/07/2019
121843	31/01/2020
122119	30/09/2019
FC160	31/07/2019
FC552	30/09/2019

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Basis of Test: Measured Results.

This speed verification instrument has been measured using laboratory standards for the distance between the laser sensors operating the stopwatch, with the datum laser being at the bottom of the column . Repeat readings were taken to determine the accuracy and the measured results reported in the following tables:

Reading Ref	Nominal Length (mm)	Start Position (mm)	Stop Position (mm)	Measured Length (mm)
1	21	141.8427	162.8169	20.9742
2	21	141.8474	162.8134	20.9660
3	21	141.8467	162.8123	20.9656
4	21	141.8464	162.8130	20.9666
5	21	141.8419	162.8128	20.9709
Mean		141.8450	162.8137	20.9687
Maximum variation		0.0055	0.0046	0.0086

Reading Ref	Nominal Length (mm)	Start Position (mm)	Stop Position (mm)	Measured Length (mm)
1	100	141.8403	241.8385	99.9982
2	100	141.8422	241.8298	99.9876
3	100	141.8395	241.8306	99.9911
4	100	141.8407	241.8310	99.9903
5	100	141.8404	241.8319	99.9915
Mean		141.8406	241.8324	99.9917
Maximum variation		0.0027	0.0087	0.0106

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The dovetail bracket was measured for the distance between faces with the following results:

Feature	Position	Nominal Distance (mm)	Measured Results (mm)	Mean Value (mm)	Parallelism (mm)
Upwards Distance	1	20	19.909	19.897	0.023
	2		19.907		
	3		19.895		
	4		19.886		
	5		19.889		

Feature	Position	Nominal Distance (mm)	Measured Results (mm)	Mean Value (mm)	Parallelism (mm)
Downwards Distance	1	20	19.967	19.968	0.015
	2		19.967		
	3		19.976		
	4		19.961		
	5		19.971		

Note! The Position 1 is located next to the body of the dovetail bracket.

Uncertainty of measurement : ±0.003 mm Linear
±0.005 mm Laser Displacement

Calibration Procedure : QCD/CALP/18
Our Reference : AFD300379

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UKAS Accredited Calibration Laboratory No. 0013

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3003790002

Calibration Procedure: The instrument was placed in the Laboratory for 24 hours prior to calibration for stabilisation purposes. Tests were made by comparison with a standard counter at the given indications. The equipment was calibrated in a controlled environment using devices having known and traceable values. The uncertainties reported refer to the measured values only with no account being taken of the instrument ability to maintain its calibration.

Equipment Calibrated - Refer to Results

Time Checks

UUT Indication	Standard Indication	Standard Equivalent
00 hr 00 min 05.055 sec	5.071 sec	0 min 05.071 sec
00 hr 00 min 10.026 sec	10.024 sec	0 min 10.024 sec
00 hr 00 min 30.027 sec	30.008 sec	0 min 30.008 sec
00 hr 00 min 59.856 sec	59.790 sec	0 min 59.790 sec
00 hr 05 min 00.079 sec	300.053 sec	5 min 00.053 sec
00 hr 09 min 59.908 sec	599.851 sec	9 min 59.851 sec

The overall uncertainty in the measurement was:

± (0.01 seconds of indication)

Specification taken from:

No specification available, results as found.

End of Results