

# CERTIFICATE OF CALIBRATION



0233

ISSUED BY  
DATE OF ISSUE

**OPUS METROLOGY LTD.**

12 April 2011

CERTIFICATE NUMBER



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APPROVED SIGNATORY

*J.L.G. Tomlinson*  
J.L.G. Tomlinson

**CUSTOMER:** Inspecvision Limited  
Larne, Co. Antrim BT40 2SF

**ORDER NUMBER:**

**SERIAL NUMBER:**

**DATE OF CALIBRATION:** 11 April 2011

**DESCRIPTION:** An ISO Etalon Disc

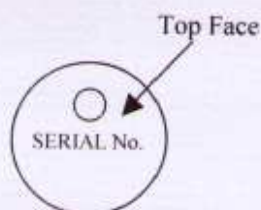
**BASIS OF TEST:** In accordance with customer requirements and supplied drawing PCC0167 Revision E

**TEST CONDITIONS:** Ambient Temperature  $20^{\circ}\text{C} \pm 1^{\circ}\text{C}$   
Relative Humidity  $< 55\%$

**METHOD:** Diameter and Parallelism measurements were made using a Zeiss ULM 600D measuring machine. Flatness measurements were determined using an Electronic Probe and Millitron Meter in conjunction with a Grade 0 Surface Table. Squareness was determined using an Electronic Probe and Millitron Meter in conjunction with a Grade 0 Surface Plate and a Grade AA Cylindrical Square.

**REPORT:** The features examined together with their associated measured values are reported in the table below.

Identification numbers of Laboratory equipment used: A040,A012,A021,A023,A010,A231



FEATURE	TOLERANCE	MEASURED RESULT
Mean Measured Length 3.000mm	$\pm 0.005\text{mm}$	3.004 7mm
Flatness of Top Face	0.005mm	0.002 6mm
Flatness of Bottom Face	0.005mm	0.001 2mm
Parallelism of Lapped Faces (A-B)	0.005mm	0.004 6mm
Diameter 25.000mm	$\pm 0.005\text{mm}$	25.003 8mm
Parallelism of Diameter	0.005mm	0.000 8mm
Squareness of Diameter to Lapped Face $270.00^{\circ}$	$\pm 1^{\circ}$	$270^{\circ} 03' 51''$
Roundness (Variation of 4 measurements)	0.005mm	0.001 4mm

## UNCERTAINTY OF MEASUREMENT:

Squareness:  $\pm 1$  minute of Arc  
Flatness:  $\pm 0.003\text{mm}$   
Parallelism of Faces:  $\pm 0.003\text{mm}$   
Linear:  $\pm 0.001\text{mm}$   
Parallelism of Diameter:  $\pm 0.001\text{mm}$

THIS CERTIFICATE IS SUPPLEMENTARY TO AND REPLACES CERTIFICATE NUMBER 103866 DATED 22 MARCH 2011. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k=2$ , providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

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