

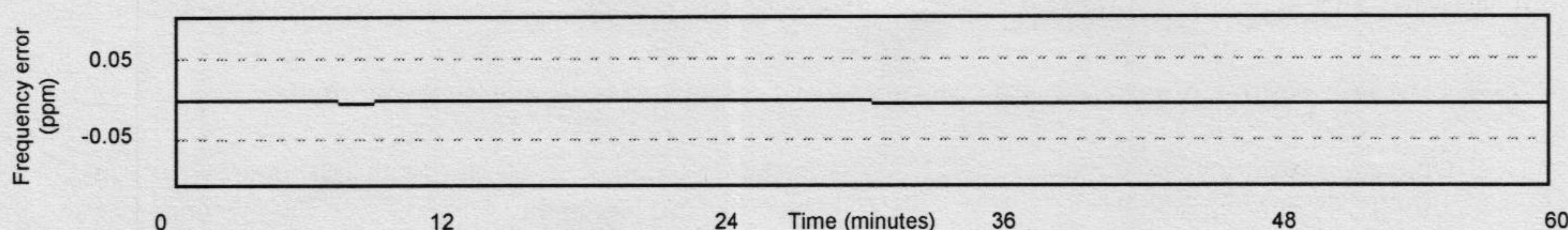
**Product** XL-80 laser  
**Serial number** 10T181  
**Date of calibration** 24<sup>th</sup> May 2018  
**Customer name** Starrag US  
**Customer address** 2379 Progress Drive., Hebron, KY 41048

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# Calibration certificate

**Specification**  
**Vacuum wavelength** 0.6329905770  $\mu\text{m} \pm 0.05$  ppm  
**Equivalent frequency** 473612829.2 MHz

## Measured values and uncertainties of calibration



Results	Value (MHz)	Value (ppm)
Laser frequency:	473612828.6	-
Laser frequency error:	-0.7	-0.001
Stability (peak-to-peak):	2.5	0.005
Maximum laser frequency error:	-1.9	-0.004
Uncertainty of measurement (95% confidence level, k=2):	$\pm 5.9$	$\pm 0.01$

Reference standards	Ref. no.	Lab	Certificate no.	Calibration date
Iodine stabilised HeNe laser	MTE/A197	NPL	2016050379-LL03	28 <sup>th</sup> June 2016
Frequency counter	MTE/A163	Nationwide	17-60305	27 <sup>th</sup> July 2017
Reference HeNe laser	XL80 REF5	Renishaw	H52176-180111-00	11 <sup>th</sup> January 2018
Test procedure	PT-50285			

**Laser measurement system accuracy:** When a Renishaw XL-80 laser is used with a Renishaw XC-80 compensator and a Renishaw air temperature sensor (*all within specification*) the laser measurement system accuracy (95% confidence level, k=2) in linear measurement mode will be within:  $\pm 0.5$  ppm (see the system manual for details).

Authorised signature	Signatory	Position	Issue date
	J. Pichon	Service Centre Manager	24 <sup>th</sup> May 2018

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**Renishaw Inc**  
 1001 Wesemann Drive  
 West Dundee  
 IL 60118

Tel (847) 286-9953



Calibration Cert # 2707.01

**Certificate number**  
 10T181-180524-00

L-9908-1146-05

calibrated by: Date: 5-24-18