



Certificate of Calibration

CUSTOMER: DJB LABCARE LTD JOB No: 0541039

ORDER NO: 258108 CUST. REF: 513815-1

MAKE: TTI TYPE: PFM3000

DESCRIPTION: HIGH RES FREQUENCY COUNTER SERIAL No: 539276

AMBIENT TEMPERATURE*: 20 ± 3 °C HUMIDITY: 50 ± 25 %RH

This is to certify the above instrument has been calibrated in accordance with a relevant specification and at those points tested the result(s) were*:

| | | | |
|--|---|---|--|
| Found to meet that specification on receipt [✓] | Found to meet that specification after adjustment/repair [] | Measurements recorded in absence of relevant specification [] | Found NOT to meet that specification – Calibration restrictions apply [] |
| Pre-Calibration repair performed [] | Optimising adjustment performed [] | Calibration performed away from laboratory* [] | Calibration performed by subcontractor* [] |

Absolute Calibration Complies with BS EN ISO 17025 and BS EN ISO 9001

*For calibration performed away from our laboratory or by a subcontractor please see the attached certificate for environmental conditions and calibration/measurement details.

The above statement of conformity (e.g. Pass/Fail) to specification is made without taking measurement uncertainty into account unless stated otherwise in the report.

In order to comply with the above standards Absolute Calibration has to ensure that all measurements carried out in its laboratories are traceable to national standards.

Approved Signatory

DATE: 28-5-2024

Absolute Calibration Limited

14 Murrills Estate, Portchester, Hampshire, England, PO16 9RD
T: 023 9232 1712 | W: absolutecal.co.uk | E: calit@absolute-cal.co.uk

CERTIFICATE OF CALIBRATION

Issued By

ABSOLUTE CALIBRATION LIMITED



0078

DATE OF ISSUE 29 May 2024

CERTIFICATE NO. 0541039



Absolute Calibration Limited

14 Murrills Estate, Portchester
Hampshire, England PO16 9RD

Telephone: 023 9232 1712

www.absolutecal.co.uk

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Approved Signatory

D Kingswell

G Mills

S Patabendi

A Watson

Manufacturer: TTI
Type Number: PFM3000
Description: High Resolution Frequency Counter
Serial Number: 539276
Customer Reference: 513815-1
Customer Code: PUL001
Customer: Pullman Instruments (UK) Limited
ESG House
Chatsworth Road
Harrogate
North Yorkshire

On Behalf Of: DJB Labcare Limited
Order Number: 258108
Instrument Receipt Date: 15 May 2024
Laboratory Temperature: 20.0 °C ± 3.0 °C
Laboratory Humidity: 50 %rh ± 25 %rh
Unit Stabilisation Time: Twenty-Four Hours
Calibration Procedure: CP2006
Calibration Engineer: J. Perkis
Calibration Date: 28 May 2024

This report contains: Recorded results with no adjustments
Pre and post adjustment results
Post repair results
Results recorded at Customer site

The following calibration results relate to the items defined above or uniquely identified in the following pages.

CERTIFICATE OF CALIBRATION

CERTIFICATE NUMBER

0541039

UKAS Accredited Calibration Laboratory No. 0078

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PARAMETER TESTED

'X' Tal Accuracy

| <u>Applied</u> <u>Frequency</u> | <u>Uncertainty ± of</u> <u>Applied Value</u> | <u>Deviation from</u> <u>Applied Frequency</u> |
|------------------------------------|---|---|
| 10.000 000 000 MHz | 2 in 10 ⁹ | < 2 in 10 ⁷ |

The internal 'X' Tal oscillator was checked by applying a standard 10 MHz signal to the input of the counter and evaluating the resultant reading.

Timebase Accuracy

| <u>Applied</u> <u>Input</u> | <u>Uncertainty ± of</u> <u>Applied Input</u> | <u>Gate</u> <u>Time</u> | <u>PFM3000</u> <u>Display</u> |
|--------------------------------|---|----------------------------|----------------------------------|
| 10.000 00 MHz | 2 in 10 ⁹ | 0.3 S | 10.000000 MHz |
| 10.000 000 | | 1 | 10.000000 |
| 10.000 000 0 | | 10 | 10.0000000 |

Frequency Response Channel A

| <u>PFM3000 Setting</u> | <u>Applied</u> <u>Input</u> | <u>Uncertainty ± of</u> <u>Applied Input</u> | <u>PFM3000 Display</u> <u>Display</u> |
|------------------------|--------------------------------|---|--|
| 1 s | 10.000 000 Hz | 2 in 10 ⁹ | 10.000004 Hz |
| | 50.000 000 | | 50.00002 |
| | 100.000 000 | | 100.00005 |
| | 300.000 000 | | 300.0002 |
| | 500.000 000 | | 500.0002 |
| | 700.000 000 | | 700.0004 |
| 0.3 s | 1.000 000 MHz | 2 in 10 ⁹ | 1.000001 MHz |
| | 5.000 00 | | 5.00000 |
| | 10.000 00 | | 10.00001 |
| | 100.000 0 | | 100.0001 |

Frequency Response Channel B

| <u>PFM3000 Setting</u> | <u>Applied</u> <u>Input</u> | <u>Uncertainty ± of</u> <u>Applied Input</u> | <u>PFM3000 Display</u> <u>Display</u> |
|------------------------|--------------------------------|---|--|
| 0.3 s 80 MHz | 80.000 00 MHz | 2 in 10 ⁹ | 80.0001 MHz |
| 0.3 s 3 GHz | 3000.00 MHz | 2 in 10 ⁹ | 3000.00 MHz |

An additional uncertainty of 1 lsd for the resolution of the display should be calculated using summation in quadrature.

The uncertainties reported after measured values only, with no account being taken of the instrument's ability to maintain its calibration.

--- End ---