

West Caldwell Calibration Laboratories Inc.

# Certificate of Calibration

for  
Calibration Exciter

Manufactured By: Bruel & Kjaer  
Model No: 4294  
Serial No: 1535213  
Calibration Recall No: 32421

Submitted by:

Customer:

Company:  
Address: 1575 State Rt 96

Victor, NY 14564

The subject instrument was calibrated to the indicated specification using standards traceable to the SI through National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Specification No. 4294 B&K

Upon receipt for calibration, the instrument was found to be:

Within ( X )

tolerance of the indicated specification. See attached Report of Calibration.

The information supplied certifies that the item listed above meets acceptance criteria under the decision rule:  $A = (L - (U95))$ , where A is the acceptance criteria, L is manufacturer specifications and U95 is confidence level of 95% at  $K=2$ . The decision rule has been communicated and approved by customer during contract review. Measurements marked with (\*) are not covered by the scope of of current A2LA accreditation.

West Caldwell Calibration Laboratories' calibration control system meets the requirements, ANSI/NCSL Z540-1, ISO 9001, and ISO 17025.

Note: With this Certificate, Report of Calibration is Included

Approved by:

  
James Zhu

Calibration Date: 12-Oct-21  
Certificate Issue Date: 12-Oct-21

Certificate No: 32421-4

Quality Manager  
ISO/IEC 17025:2017

QA Doc. #1051 Rev 2.1 12/20/19

  
uncompromised calibration  
1575 State Route 96, Victor, NY 14564, U.S.A.



Calibration Lab. Cert. # 1533.01

# REPORT OF CALIBRATION

for

**Brüel & Kjær Calibration Exciter Company:**

**Model No.: 4294**

**Serial No.: 1535213  
 ID No.: XXXX**

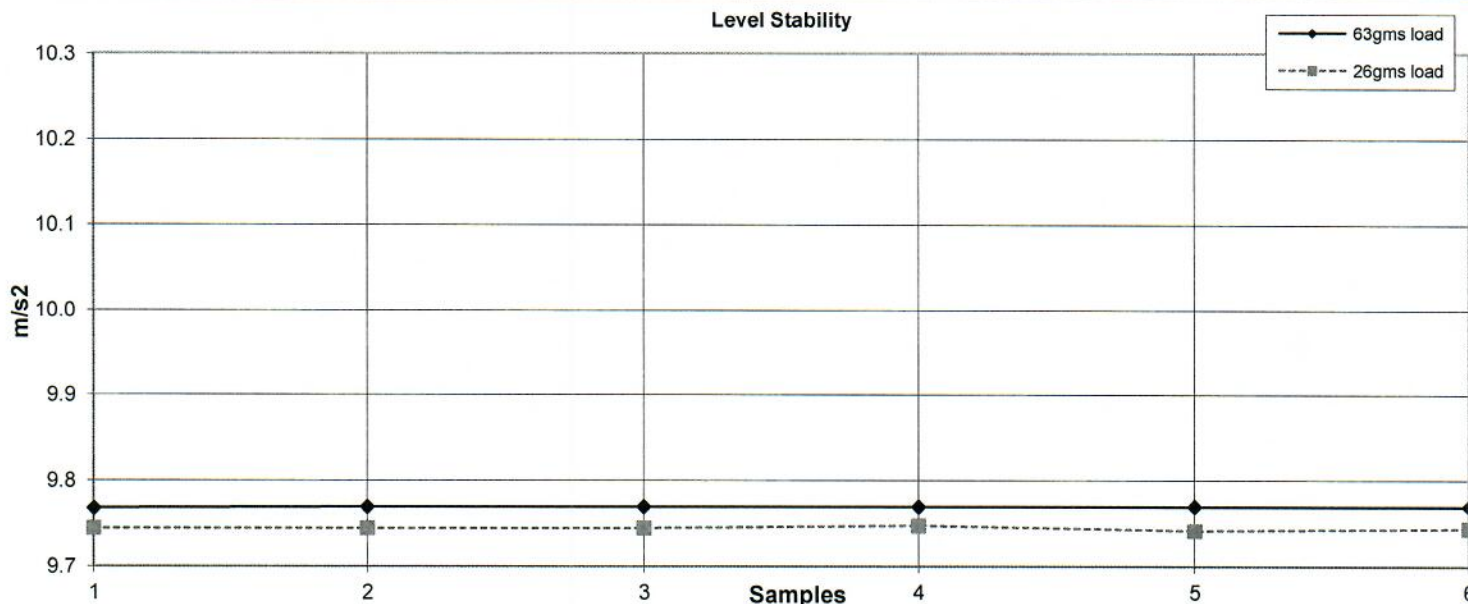
Calibration results:					
Before data: .....	After data: .....				
Before & after data same: ...X...					
Vibration Level was	9.77 m/s <sup>2</sup> RMS at	159.17 Hz	Laboratory Environment:		
Measured with 63 g Load		Ambient Temperature: 21.5 °C			
		Ambient Humidity: 56.8 % RH			
		Ambient Pressure: 99.472 kPa			
Vibration Level:	Pass	Calibration Date: 12-Oct-2021			
Frequency:	Pass	Calibration Due: 12-Oct-2022			
Distortion:	Pass	Report Number: 32421 -4			
Stability:	Pass	Control Number: 32421			
All tested parameters:	Pass				

The above listed instrument meets or exceeds the tested manufacturer's specifications.

This Calibration is traceable through NIST test numbers: 683/O-0000000925-20


The absolute uncertainty of calibration: See last page. Unless otherwise noted, the reported values are both "as found" and "as left" data.

Graph represents six samples of Vibration Level measured at 5 sec. interval.



The above listed instrument was checked using calibration procedure documented in West Caldwell Calibration Laboratories Inc. procedure : **Rev. 7.0 Jan. 24, 2014 Doc. # 1038 4294B&K**  
 Calibration was performed by West Caldwell Calibration Laboratories Inc. under Operating Procedures intended to implement the requirements of ANSI/NCSL Z540-1, ISO 9001, and ISO 17025.

Cal. Date: 12-Oct-2021

Measurements performed by: 

Calibrated on WCCL system type 9700

**James Zhu**



## West Caldwell Calibration Laboratories Inc.

1575 State Route 96, Victor NY 14564  
Tel. (585) 586-3900 FAX (585) 586-4327

*Calibration Data Record*

Brüel & Kjær Calibration Exciter  
Company: Venture Products

for  
Model No.: 4294

Serial No.: 1535213

All tested parameters: Pass

## Measured Level ( Six samples measured at 5 sec. interval)

Sample	1	9.768 m/s <sup>2</sup> RMS (63 g Load)	9.745 m/s <sup>2</sup> RMS (26 g Load)
	2	9.769	9.745
	3	9.769	9.745
	4	9.769	9.747
	5	9.769	9.742
	6	9.769	9.744
<b>Average</b>		<b>9.769</b> m/s <sup>2</sup>	<b>9.744</b> m/s <sup>2</sup> Spec. 10 m/s <sup>2</sup> ± 3%

## Frequency measured (Three samples at 15 sec. interval)

Sample	1	159.17 Hz	
	2	159.17	
	3	159.17	
<b>Average</b>		<b>159.17</b> Hz	Spec. 159.15 ± 0.02%

Distortion measured -47 dB Spec. ≤ -30.5 dB

The expanded uncertainty of calibration at 95% confidence level with a coverage factor of k=2.

Parameter	Test Instrumentation Uncertainty	DUT Uncertainty	Total DUT Uncertainty
Accelerometers-Charge Sensitivity	1.3%		
Calibration Exciters-Acceleration Level	1.3%		
Frequency Measure (DC to 10 MHz)	6.0 parts in [10 <sup>6</sup> ] Hz		

Instruments used for calibration:	Date of Cal.	Traceability No.	Re-cal. Due Date
Brüel & Kjær 8305 S/N 1687744	9-Jul-2021	683/O-0000000925-20	9-Jul-2022
Brüel & Kjær 2635 S/N 1554679	9-Jul-2021	683/O-0000000925-20	9-Jul-2022
HP 34401A S/N US360980	29-Jun-2021	,610119	29-Jun-2022
Brüel & Kjær 2636 S/N 1323964	29-Jun-2021	684.07/O-0000001126-20	29-Jun-2022

Cal. Date: 12-Oct-2021

Tested by: James Zhu

Calibrated on WCCL system type 9700

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Rev. 7.0 Jan. 24, 2014 Doc. # 1038 4294B&amp;K