



Certificate of Calibration

Certificate No. : HeCAL-MY2145P037
Manufacturer : Agilent Technologies LDA Malaysia Sdn. Bhd.
Bayan Lepas FTZ 11900 Penang, Malaysia
Description : VS Calibrated Leak
Part No. : R2015301
Serial No. : MY2145P037
Options Installed With Specifications : N/A
Date of Calibration : 12-Nov-2021
Temperature : (23 ± 3) °C
Humidity : (< 50)% RH
Procedure : LDVS-TEST007

This certifies that the above product was calibrated in accordance with procedures approved by Agilent Technologies.

As Shipped Conditions : At the completion of the calibration, measured values were IN SPECIFICATION at the points tested. These calibration procedures and test points are those recommended in a procedure developed by Agilent.

Calibration Equipment Used :

Model Number	Model Description	Trace Number	Report No.	Calibration Date	Calibration Due Date
DSOX3014A	4 Channels 100MHz Oscilloscope	MY53280249	EP/21-0075	10-Feb-2021	10-Feb-2022
34980A	Multifunction Switch/Measure Unit	MY53150897	EP/21-4637	30-Jul-2021	30-Jul-2022
F8473SPL	Varian -7 Range Helium Leak	TL5001	O-0000034270	06-Apr-2021	06-Apr-2022

Calibration Data :

Test Description	Reading	Units
Calibration Date	12-Nov-2021	DD-MMM-YYYY
Helium Leak Rate	1.2E-07	std.cc/sec
Temperature	23.9	°C
Factor	-1.1	-
Calibration Due Date	12-May-2023	DD-MMM-YYYY

Teoh Ping Hooi
Calibration Technician

Chong Ai Ping
Quality Assurance Engineer



Traceability Information

This calibration was performed by comparison to a primary transfer standard which is directly traceable to National Institute of Standards and Technology (NIST). This calibration was performed in compliance with the latest revision of Agilent Enterprise Quality Management System Manual (AQM01), Calibration of Measuring and Test Equipment, LDVS-TEST007 - Calibrated Leak Test Procedure, ANSI/NCSL Z540-1, ISO 10012-1, ISO 9001, and 10CFR21.

The present estimate of the expanded uncertainty in the measured leak rate of this artifact at 23°C at the time of calibration is $\pm 5.7\%$, with a 95% confidence level, coverage factor, $k=2$. With a tolerance of 20%, this equates to a TUR of 3.5:1. (For a TUR of 4:1, the confidence level is 92%, coverage factor, $k=1.76$)

The measured helium leak rate stated on this certificate is the leak rate at the time of calibration under the environmental conditions indicated. The leak rate will increase or decrease in direct correlation to changes in temperature. Humidity has no effect on leak rate. A temperature correction factor of 3.8% per °C can be used to extrapolate the leak rate at other temperatures and was used to determine the normalized helium leak rate at 23°C.

All helium leaks should be stored at ambient conditions: RH from 0% to 95%, non-condensing, temperature: -20°C to +60°C and protected from impact damage and thermal shock. Helium leaks are fragile and should be handled with care.

This certificate shall not be reproduced, except in full, without prior written approval of Agilent Technologies Vacuum Products Division. The results above relate only to the item(s) calibrated. Unless otherwise stated, a minimum TUR of 4:1 was used. The signature in Page 1 of this document signifies responsibility for the quality system.

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