



MICRO PRECISION CALIBRATION PTE LTD
BLOCK 5008 ANG MO KIO AVENUE 5 #07-02/03
TECHPLACE II SINGAPORE 569874
65 67484384



Certificate of Calibration

Date: October 09, 2019

Cert No. 551220083252078

Customer:

WATERS PACIFIC PTE LTD

1 SCIENCE PARK ROAD, #02-08 THE CAPRICORN
SINGAPORE SCIENCE PARK II
SINGAPORE 117528

Work Order #: SG-11012232

MPC Control #: 09M1035A

Serial Number: 09M1035A

Asset ID: 95163

Department: N/A

Gage Type: POWER SUPPLY

Performed By: DIVIEERNRAJ CHANDRAN

Manufacturer: TDK LAMBDA

Received Condition: IN TOLERANCE

Model Number: GENH60-12.5-LAN

Returned Condition: IN TOLERANCE

Size: 60 V, 12.5 A

Cal. Date: October 09, 2019

Temp/RH: 22°C / 50 %

Cal. Interval: 12 MONTHS

Location: Calibration performed at MPC facility

Cal. Due Date: October 09, 2020

Calibration Notes:

- Performance test passed.
- Refer attachment (1 Page).

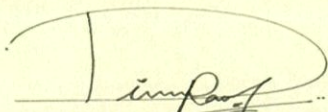
Standards Used to Calibrate Equipment

I.D.	Description.	Model	Serial	Manufacturer	Cal. Due Date	Traceability #
CH2324	CURRENT SHUNT	34330A	0804	AGILENT	Sep 7, 2020	551220083200927
CA8094	MULTIMETER	3458A	2823A25888	HEWLETT PACKARD	Dec 19, 2019	1-10689054280-1

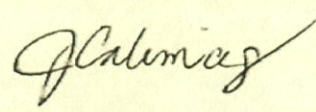
Procedures Used in this Event

Procedure Name	Description
MPC-00060 Rev. 02	Power Supply, General, 3-4-2016 rev02

Calibrating Technician:


DIVIEERNRAJ CHANDRAN

QC Approval:


JUN CALIMAG

Statements of Pass or Fail Conformance: The uncertainty of measurement has been taken into account when determining compliance with specification, as per ILAC-G8:03/2009. All measurements and test results guard banded to ensure the probability of false-accept does not exceed 2% in compliance with ANSI/NCCL Z540.3-2006.

The status of compliance with the acceptance criteria is reported as:

PASS - Compliant with specification.

FAIL - Not compliant with specification.

FAIL¹ - The measured value is not within the acceptance limits. However, a portion of the expanded uncertainty of measurement at 95% is within the specified tolerance.

PASS² - The measured value is within acceptance limits. However, a portion of the expanded uncertainty of measurement at 95% exceeds the specified tolerance.

The expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%, unless otherwise stated. This calibration report complies with ISO/IEC 17025:2017 and ANSI/NCCL Z540.3 Method 6-Guard Bands based on Test Uncertainty Ratio. Calibration cycles and resulting due dates were submitted/approved by the customer. Any number of factors may cause an instrument to drift out of tolerance before the next scheduled calibration. Recalibration cycles should be based on frequency of use, environmental conditions and customer's established systematic accuracy. All standards are traceable to SI through the National Institute of Standards and Technology (NIST) and/or recognized national or international standards laboratories. Services rendered include proper manufacturer's service instruction and are warranted for no less than thirty (30) days. The information on this report pertains only to the instrument identified, this may not be reproduced in part or in a whole without the prior written approval of the issuing MP Calibration Laboratory.



Calibration Report of TDK Lambda GENH 60-12.5 Power Supply

MPC Control #:	09M1035A	Serial Number:	09M1035A
Asset ID:	95163	Calibration Date:	October 09, 2019

DC Voltage Accuracy

Function Tested	Nominal	Lower Limit	As Found	As Left	Upper Limit	Result	Uncertainty ($\pm$)
0 to 60 V	1.000000 V	0.995000 V	1.000819 V	1.000819 V	1.005000 V	PASS	0.000053 V
0 to 60 V	5.000000 V	4.975000 V	5.009084 V	5.009084 V	5.025000 V	PASS	0.000026 V
0 to 60 V	10.00000 V	9.95000 V	10.00052 V	10.00052 V	10.05000 V	PASS	0.000051 V
0 to 60 V	15.00000 V	14.92500 V	15.00241 V	15.00241 V	15.07500 V	PASS	0.00014 V
0 to 60 V	20.00000 V	19.90000 V	20.00224 V	20.00224 V	20.10000 V	PASS	0.00018 V
0 to 60 V	25.00000 V	24.87500 V	25.00169 V	25.00169 V	25.12500 V	PASS	0.00021 V
0 to 60 V	30.00000 V	29.85000 V	30.00168 V	30.00168 V	30.15000 V	PASS	0.00025 V
0 to 60 V	60.00000 V	59.70000 V	59.99912 V	59.99912 V	60.30000 V	PASS	0.00047 V

DC Current Accuracy

Function Tested	Nominal	Lower Limit	As Found	As Left	Upper Limit	Result	Uncertainty ($\pm$)
0 to 12.5 A	1.000000 A	0.990000 A	0.997770 A	0.997770 A	1.010000 A	PASS	0.00013 A
0 to 12.5 A	5.000000 A	4.950000 A	4.993480 A	4.993480 A	5.050000 A	PASS	0.00070 A
0 to 12.5 A	10.00000 A	9.90000 A	9.99670 A	9.99670 A	10.10000 A	PASS	0.0014 A
0 to 12.5 A	12.50000 A	12.37500 A	12.50050 A	12.50050 A	12.62500 A	PASS	0.0018 A

Statements of Pass or Fail Conformance

The uncertainty of measurement has been taken into account when determining compliance with specification, as per ILAC-G8:03/2009.

All measurements and test results guard banded to ensure the probability of false-accept does not exceed 2% in compliance with ANSI/NCSL Z540.3-2006.

The status of compliance with the acceptance criteria is reported as:

- PASS** - Compliant with specification
- FAIL** - Not compliant with specification.
- FAIL^z** - The measured value is not within the acceptance limits. However, a portion of the expanded uncertainty of measurement at 95% is within the specified tolerance.
- PASS^z** - The measured value is within acceptance limits. However, a portion of the expanded uncertainty of measurement at 95% exceeds the specified tolerance.

The expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%, unless otherwise stated.

This calibration report complies with ISO/IEC 17025:2017 and ANSI/NCSL Z540.3 Method 6-Guard Bands based on Test Uncertainty Ratio.

- End of Calibration Report -