

## Calibration Certificate

Report No:1574939-2

Manufacturer: KEITHLEY  
Model Number: 2400  
Serial Number: 0788393

Calibration Date: 14 January 2014

Temperature: 24.2 °C

Relative Humidity: 46.3 %

Procedure: QSIW-637 REV. B

Condition as Received: **OUT OF TOLERANCE**

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- Keithley Instruments, a Tektronix Company, certifies that the above instrument meets its published measurement specifications.
  - This instrument has been calibrated using measurement standards traceable to the International System of Units (SI) through NIST or other National Metrology Institutes (such as NIM, NPL, PTB, etc.).
  - This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.
  - This calibration certificate shall not be reproduced, except in full, without the written approval of this calibration laboratory.

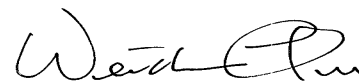
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### Calibration Facility

Tektronix Taiwan Ltd.  
3F, No. 89, Sec. 2  
Ti Ding A  
Taipei City, 114, Taiwan (ROC)

Engineer: \_\_\_\_\_

Approved By: \_\_\_\_\_



Weidar Chu

Title: Service Manager

Certificate Issue Date: 14-Jan-2014

## Standards Used

<u>Control Number</u>	<u>Description</u>	<u>Due Date</u>
5506	FLUKE 5700A CALIBRATOR	08-Apr-2014
7045	AGILENT 3458A 8-1/2 MULTIMETER	20-Mar-2014
8906	KEITHLEY 2400-756 10 OHM STANDARD	12-Apr-2014

# Measurement Report -

As-Received

Report Number:  
1574939-2

Test Description	Expected Value	Measured Value	Measurement Uncertainty	Lower Limit	Upper Limit	Test Status
<b>OUTPUT VOLTAGE ACCURACY</b>						
200.000 mV	200.000 mV	199.7594 mV		199.3600 mV	200.6400 mV	Pass
-200.000 mV	-200.000 mV	-200.3176 mV		-200.6400 mV	-199.3600 mV	Pass
2.00000 V	2.00000 V	1.999751 V		1.999000 V	2.001000 V	Pass
-2.00000 V	-2.00000 V	-2.000314 V		-2.001000 V	-1.999000 V	Pass
20.0000 V	20.0000 V	19.99787 V		19.99360 V	20.00640 V	Pass
-20.0000 V	-20.0000 V	-20.00145 V		-20.00640 V	-19.99360 V	Pass
200.000 V	200.000 V	199.9791 V		199.9360 V	200.0640 V	Pass
-200.000 V	-200.000 V	-200.0205 V		-200.0640 V	-199.9360 V	Pass
<b>VOLTAGE MEASUREMENT ACCURACY</b>						
200.000 mV	199.7619 mV	199.951 mV		199.438 mV	200.086 mV	Pass
-200.000 mV	-200.3172 mV	-200.120 mV		-200.641 mV	-199.993 mV	Pass
2.0000 V	1.99976 V	1.9999 V		1.9992 V	2.0003 V	Pass
-2.00000 V	-2.000317 V	-2.00009 V		-2.00086 V	-1.99978 V	Pass
20.0000 V	19.99795 V	19.9990 V		19.9935 V	20.0025 V	Pass
-20.0000 V	-20.00149 V	-20.0014 V		-20.0060 V	-19.9970 V	Pass
200.000 V	199.9791 V	199.995 V		199.939 V	200.019 V	Pass
-200.000 V	-200.0209 V	-200.009 V		-200.061 V	-199.981 V	Pass
<b>OUTPUT CURRENT ACCURACY</b>						
1.00000 µA	1.00000 µA	0.998371 µA		0.999050 µA	1.000950 µA	Fail
-1.00000 µA	-1.00000 µA	-0.998281 µA		-1.000950 µA	-0.999050 µA	Fail
10.0000 µA	10.0000 µA	9.99627 µA		9.99470 µA	10.00530 µA	Adjust
-10.0000 µA	-10.0000 µA	-9.99475 µA		-10.00530 µA	-9.99470 µA	Adjust
100.000 µA	100.000 µA	99.9895 µA		99.9490 µA	100.0510 µA	Pass
-100.000 µA	-100.000 µA	-99.9820 µA		-100.0510 µA	-99.9490 µA	Pass
1.00000 mA	1.00000 mA	0.999714 mA		0.999460 mA	1.000540 mA	Pass
-1.00000 mA	-1.00000 mA	-0.999786 mA		-1.000540 mA	-0.999460 mA	Pass
10.0000 mA	10.0000 mA	9.99539 mA		9.99350 mA	10.00650 mA	Adjust
-10.0000 mA	-10.0000 mA	-9.99619 mA		-10.00650 mA	-9.99350 mA	Pass
100.000 mA	100.000 mA	99.9605 mA		99.9140 mA	100.0860 mA	Pass
-100.000 mA	-100.000 mA	-99.9686 mA		-100.0860 mA	-99.9140 mA	Pass
1.0000 A	1.0000 A	0.99987 A		0.99640 A	1.00360 A	Pass
-1.0000 A	-1.0000 A	-1.00051 A		-1.00360 A	-0.99640 A	Pass
<b>CURRENT MEASUREMENT ACCURACY</b>						
1.00000 µA	0.998334 µA	0.99998 µA		0.99774 µA	0.99892 µA	Fail
-1.00000 µA	-0.998277 µA	-0.99995 µA		-0.99887 µA	-0.99769 µA	Fail
10.0000 µA	9.99617 µA	10.0003 µA		9.9928 µA	9.9996 µA	Fail
-10.0000 µA	-9.99478 µA	-9.9997 µA		-9.9982 µA	-9.9914 µA	Fail
100.000 µA	99.9890 µA	100.002 µA		99.958 µA	100.020 µA	Pass
-100.000 µA	-99.9818 µA	-99.997 µA		-100.013 µA	-99.951 µA	Pass
1.00000 mA	0.999712 mA	0.99998 mA		0.99938 mA	1.00004 mA	Adjust
-1.000000 mA	-0.9997859 mA	-0.999967 mA		-1.000116 mA	-0.999456 mA	Pass
10.0000 mA	9.99540 mA	9.9997 mA		9.9913 mA	9.9995 mA	Fail
-10.00000 mA	-9.996207 mA	-9.99963 mA		-10.00031 mA	-9.99211 mA	Adjust

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Test Description	Expected Value	Measured Value	Measurement Uncertainty	Lower Limit	Upper Limit	Test Status
100.000 mA	99.9609 mA	99.997 mA		99.900 mA	100.022 mA	Pass
-100.000 mA	-99.9692 mA	-99.996 mA		-100.030 mA	-99.908 mA	Pass
1.00000 A	0.999871 A	0.99996 A		0.99710 A	1.00264 A	Pass
-1.00000 A	-1.000505 A	-0.99982 A		-1.00328 A	-0.99774 A	Pass
<b>RESISTANCE MEASUREMENT ACCURACY</b>						
10.0000 Ω	10.00000 Ω	9.9989 Ω		9.9870 Ω	10.0130 Ω	Pass
190.000 Ω	189.9971 Ω	189.926 Ω		189.815 Ω	190.179 Ω	Pass
1.9000 kΩ	1.89999 kΩ	1.8996 kΩ		1.8984 kΩ	1.9016 kΩ	Pass
19.000 kΩ	18.9990 kΩ	18.998 kΩ		18.985 kΩ	19.013 kΩ	Pass
190.000 kΩ	189.9849 kΩ	189.920 kΩ		189.822 kΩ	190.148 kΩ	Pass
1.9000 MΩ	1.89987 MΩ	1.8968 MΩ		1.8975 MΩ	1.9023 MΩ	Fail
19.000 MΩ	18.9992 MΩ	18.967 MΩ		18.977 MΩ	19.021 MΩ	Fail
100.000 MΩ	99.9905 MΩ	99.868 MΩ		99.321 MΩ	100.660 MΩ	Pass

Comments:

\*\*\*\*\* End of Measurement Report \*\*\*\*\*