



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



WATERS ETS1

Certificate of Calibration

Date: Apr 22, 2020

Cert No. 551220083579112

Customer:

WATERS PACIFIC PTE LTD

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

Work Order #: SG-11014090

MPC Control #: 1450264
Asset ID: 91746
Gage Type: SOURCE MEASURE UNIT
Manufacturer: NATIONAL INSTRUMENTS
Model Number: PXI-4130
Size: N/A
Temp/RH: 22.0°C / 50.0%
Location: Calibration performed at MPC facility

Serial Number: 1450264
Department: N/A
Performed By: DIVIEERNRAJ CHANDRAN
Received Condition: IN TOLERANCE
Returned Condition: IN TOLERANCE
Cal. Date: April 21, 2020
Cal. Interval: 12 MONTHS
Cal. Due Date: April 21, 2021

Calibration Notes:

Please refer to the attached calibration data. (11 pages).

Calibration performed for PT Surya Teknologi.

Standards Used to Calibrate Equipment

I.D.	Description.	Model	Serial	Manufacturer	Cal. Due Date	Traceability #
CA8156	REGULATED DC POWER SUPPLY	HPD30-10	E00114193	XANTREX	Jul 3, 2020	551220083111531
DC8376	DIGITAL MULTIMETER	PXI-4071	EC2663	NATIONAL INSTRUMENTS	Mar 21, 2021	551220082875809
FA3467	CALIBRATOR	5720A/ WIDEBAND OPTION	4665018	FLUKE	May 13, 2020	551220083009554

Procedures Used in this Event

Procedure Name

NI PXI-4130

Description

Programmable and High-Power Source Measure Unit, National Instruments
PXI-4130, Jul-01-2008

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 and in case without guard banded the probability of false-accept depending on test uncertainty ratio.

THE CALIBRATION REPORT STATUS:

PASS- Term used when compliance statement is given, and the measurement result is PASS.

PASS²- Term used when compliance statement is given, and the measurement result is conditional passed or PASS².

FAIL- Term used when compliance statement is given, and the measurement result is FAIL.

FAIL²- Term used when compliance statement is given, and the measurement result is conditional failed or FAIL².

REPORT OF VALUE - Term used when reported measurement is not requiring compliance statement in report.

ADJUSTED- When adjustments are made to an instrument which changes the value of measurement from what was measured as found to new value as left.

LIMITED - When an instrument fails calibration but is still functional in a limited manner.

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. 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 PERFORMANCE TEST DATA

DUT Information		Operator Information		Customer Information	
Type	PXI-4130	Operator	Diveenraj Chandran	Name	Waters Pacific Pte Ltd
Tracking number	91746	Calibration Date	21 April 2020 16:42:05	Work Order	SG-11014090
Serial Number	1450264	Notes		Address	1 Science Park Road, #02-08 The Caparicorn Singapore Science Park II, Singapore 117528
Notes	Load/Line Regulation is dependent upon measurement accuracy. Any Voltage/Current Measurement Verification failure may result in a failure of Load/Line Regulation Verification. Verification and adjustment were performed.				
		Environmental Conditions		Notes	In-Lab Calibration
		Temperature	22.0 C		
		Humidity	50.0 %		

Version Information	
Calibration Executive Version	3.6.1
Procedure Version	3.6.0.0
NI-DCPower	1.9.0

Standard Information

Type	Tracking Number	Calibration Due Date	Notes
Fluke 5700A Multifunction Calibrator	FA3467	5/13/2020	
National Instruments PXI-4071 Digital Multimeter	DC8376	3/21/2021	
Xantrex HPD30-10 Regulated DC Power Supply	CA8156	7/3/2020	

Calibration Results

Current Line Regulation

Calibration			As Found				As Left				Uncertainty (±)
Channel	Current Range	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
1	0.2 mA	0.200 mA	-0.270 uA	0.006 uA	0.270 uA	Passed	-0.270 uA	0.004 uA	0.270 uA	Passed	0.00060 mA
1	2 mA	2.000 mA	-2.699 uA	0.063 uA	2.699 uA	Passed	-2.700 uA	0.068 uA	2.700 uA	Passed	0.00060 mA
1	20 mA	20.000 mA	-26.994 uA	0.637 uA	26.994 uA	Passed	-27.011 uA	0.438 uA	27.011 uA	Passed	0.0013 mA
1	200 mA	200.000 mA	-269.936 uA	-9.567 uA	269.936 uA	Passed	-269.992 uA	5.424 uA	269.992 uA	Passed	0.034 mA
1	2000 mA	2000.000 mA	-2.699 mA	0.067 mA	2.699 mA	Passed	-2.701 mA	0.079 mA	2.701 mA	Passed	0.28 mA

Current Load Regulation

Calibration			As Found				As Left				Uncertainty (±)
Channel	Current Range	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
0	1000 mA	500.000 mA	-0.615 mA	0.350 mA	0.615 mA	Passed	-0.610 mA	0.343 mA	0.610 mA	Passed	0.070 mA
1	0.2 mA	0.100 mA	-0.320 uA	0.006 uA	0.320 uA	Passed	-0.320 uA	-0.003 uA	0.320 uA	Passed	0.00060 mA
1	2 mA	1.000 mA	-3.185 uA	0.261 uA	3.185 uA	Passed	-3.185 uA	0.013 uA	3.185 uA	Passed	0.00060 mA
1	20 mA	10.000 mA	-32.039 uA	0.034 uA	32.039 uA	Passed	-32.037 uA	0.109 uA	32.037 uA	Passed	0.00090 mA
1	200 mA	100.000 mA	-0.319 mA	0.006 mA	0.319 mA	Passed	-0.319 mA	-0.004 mA	0.319 mA	Passed	0.022 mA
1	2000 mA	1000.000 mA	-3.194 mA	-0.004 mA	3.194 mA	Passed	-3.195 mA	-0.041 mA	3.195 mA	Passed	0.13 mA

Current Meas Accuracy - Part 1. (1A Range)

Calibration			As Found				As Left				Uncertainty (±)	
Channel	As Found DMM Reading	As Left DMM Reading	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit		Pass/Fail
0	0 A	0 A	0.000000 A	-0.004000 A	0.000012 A	0.004000 A	Passed	-0.004000 A	-0.000001 A	0.004000 A	Passed	0.0000057 A
0	0.35013 A	0.350346 A	0.350000 A	0.345605 A	0.350173 A	0.354655 A	Passed	0.345620 A	0.350091 A	0.354871 A	Passed	0.000042 A
0	0.700071 A	0.700109 A	0.700000 A	0.694320 A	0.700833 A	0.705821 A	Passed	0.694358 A	0.700200 A	0.705859 A	Passed	0.000070 A

Current Meas Accuracy - Part 2. (200uA Range)

Calibration				As Found				As Left				Uncertainty (±)
Channel	As Found DMM Reading	As Left DMM Reading	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
1	0 uA	0 uA	0.00000 uA	-0.02000 uA	0.00253 uA	0.02000 uA	Passed	-0.02000 uA	0.00005 uA	0.02000 uA	Passed	0.0070 uA
1	50.002615 uA	50.001747 uA	50.00000 uA	49.9676 uA	50.0080 uA	50.0376 uA	Passed	49.9667 uA	50.0052 uA	50.0367 uA	Passed	0.0091 uA
1	99.9937 uA	99.993437 uA	100.00000 uA	99.9437 uA	100.0002 uA	100.0437 uA	Passed	99.9434 uA	99.9963 uA	100.0434 uA	Passed	0.011 uA
1	150.002558 uA	149.995898 uA	150.00000 uA	149.9376 uA	150.0004 uA	150.0676 uA	Passed	149.9309 uA	150.0008 uA	150.0609 uA	Passed	0.013 uA
1	200.008763 uA	199.99324 uA	200.00000 uA	199.9288 uA	199.9980 uA	200.0888 uA	Passed	199.9132 uA	199.9865 uA	200.0732 uA	Passed	0.015 uA
1	-49.993827 uA	-49.994785 uA	-50.00000 uA	-50.0288 uA	-49.9850 uA	-49.9588 uA	Passed	-50.0298 uA	-49.9923 uA	-49.9598 uA	Passed	0.0091 uA
1	-99.995022 uA	-99.999133 uA	-100.00000 uA	-100.0450 uA	-99.9851 uA	-99.9450 uA	Passed	-100.0491 uA	-99.9970 uA	-99.9491 uA	Passed	0.011 uA
1	-149.995949 uA	-149.998862 uA	-150.00000 uA	-150.0609 uA	-149.9833 uA	-149.9309 uA	Passed	-150.0639 uA	-149.9986 uA	-149.9339 uA	Passed	0.013 uA
1	-199.9963 uA	-200.002886 uA	-200.00000 uA	-200.0763 uA	-199.9840 uA	-199.9163 uA	Passed	-200.0829 uA	-200.0034 uA	-199.9229 uA	Passed	0.015 uA

Current Meas Accuracy - Part 3. (2mA Range)

Calibration			As Found				As Left				Uncertainty (±)	
Channel	As Found DMM Reading	As Left DMM Reading	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit		Pass/Fail
1	0 mA	0 mA	0.000000 mA	-0.000200 mA	0.000012 mA	0.000200 mA	Passed	-0.000200 mA	-0.000010 mA	0.000200 mA	Passed	0.000080 mA
1	0.500029 mA	0.500019 mA	0.500000 mA	0.499679 mA	0.500029 mA	0.500379 mA	Passed	0.499669 mA	0.500026 mA	0.500369 mA	Passed	0.000025 mA
1	0.999987 mA	0.999942 mA	1.000000 mA	0.999487 mA	0.999978 mA	1.000487 mA	Passed	0.999442 mA	0.999911 mA	1.000442 mA	Passed	0.000042 mA
1	1.499993 mA	1.500049 mA	1.500000 mA	1.499343 mA	1.499972 mA	1.500643 mA	Passed	1.499399 mA	1.500047 mA	1.500699 mA	Passed	0.000059 mA
1	2.000149 mA	1.99996 mA	2.000000 mA	1.999349 mA	2.000086 mA	2.000949 mA	Passed	1.999160 mA	1.999866 mA	2.000760 mA	Passed	0.000076 mA
1	-0.499958 mA	-0.499988 mA	-0.500000 mA	-0.500308 mA	-0.499926 mA	-0.499608 mA	Passed	-0.500338 mA	-0.500001 mA	-0.499638 mA	Passed	0.000025 mA
1	-0.999953 mA	-0.999968 mA	-1.000000 mA	-1.000453 mA	-0.999902 mA	-0.999453 mA	Passed	-1.000468 mA	-0.999985 mA	-0.999468 mA	Passed	0.000042 mA
1	-1.499957 mA	-1.499983 mA	-1.500000 mA	-1.500607 mA	-1.499884 mA	-1.499307 mA	Passed	-1.500633 mA	-1.499993 mA	-1.499333 mA	Passed	0.000059 mA
1	-1.999997 mA	-2.000002 mA	-2.000000 mA	-2.000797 mA	-1.999886 mA	-1.999197 mA	Passed	-2.000802 mA	-2.000012 mA	-1.999202 mA	Passed	0.000076 mA

Current Meas Accuracy - Part 4. (20mA Range)

Calibration				As Found				As Left				Uncertainty (±)
Channel	As Found DMM Reading	As Left DMM Reading	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
1	0 mA	0 mA	0.000000 mA	-0.002000 mA	0.000199 mA	0.002000 mA	Passed	-0.002000 mA	-0.000019 mA	0.002000 mA	Passed	0.000045 mA
1	5.000281 mA	5.000571 mA	5.000000 mA	4.99678 mA	5.00043 mA	5.00378 mA	Passed	4.99707 mA	5.00077 mA	5.00407 mA	Passed	0.00022 mA
1	9.999842 mA	10.000218 mA	10.000000 mA	9.99484 mA	9.99978 mA	10.00484 mA	Passed	9.99522 mA	10.00070 mA	10.00522 mA	Passed	0.00040 mA
1	15.000819 mA	14.999763 mA	15.000000 mA	14.99432 mA	15.00077 mA	15.00732 mA	Passed	14.99326 mA	15.00036 mA	15.00626 mA	Passed	0.00057 mA
1	20.001738 mA	19.999411 mA	20.000000 mA	19.99374 mA	20.00129 mA	20.00974 mA	Passed	19.99141 mA	20.00062 mA	20.00741 mA	Passed	0.00075 mA
1	-4.999498 mA	-4.999486 mA	-5.000000 mA	-5.00300 mA	-4.99916 mA	-4.99600 mA	Passed	-5.00299 mA	-4.99949 mA	-4.99599 mA	Passed	0.00022 mA
1	-9.99949 mA	-9.999657 mA	-10.000000 mA	-10.00449 mA	-9.99920 mA	-9.99449 mA	Passed	-10.00466 mA	-9.99985 mA	-9.99466 mA	Passed	0.00040 mA
1	-14.999322 mA	-14.999381 mA	-15.000000 mA	-15.00582 mA	-14.99876 mA	-14.99282 mA	Passed	-15.00588 mA	-14.99950 mA	-14.99288 mA	Passed	0.00057 mA
1	-19.999143 mA	-19.999599 mA	-20.000000 mA	-20.00714 mA	-19.99857 mA	-19.99114 mA	Passed	-20.00760 mA	-19.99949 mA	-19.99160 mA	Passed	0.00075 mA

Current Meas Accuracy - Part 5. (200mA Range)

Calibration			As Found				As Left				Uncertainty (±)	
Channel	As Found DMM Reading	As Left DMM Reading	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit		Pass/Fail
1	0 mA	0 mA	0.00000 mA	-0.04000 mA	0.00177 mA	0.04000 mA	Passed	-0.04000 mA	0.00049 mA	0.04000 mA	Passed	0.00080 mA
1	50.006725 mA	50.002926 mA	50.00000 mA	49.9517 mA	50.0075 mA	50.0617 mA	Passed	49.9479 mA	50.0040 mA	50.0579 mA	Passed	0.0031 mA
1	100.001918 mA	100.000941 mA	100.00000 mA	99.9319 mA	100.0012 mA	100.0719 mA	Passed	99.9309 mA	100.0026 mA	100.0709 mA	Passed	0.0054 mA
1	150.01496 mA	150.008392 mA	150.00000 mA	149.9300 mA	150.0147 mA	150.1000 mA	Passed	149.9234 mA	150.0102 mA	150.0934 mA	Passed	0.0077 mA
1	200.023509 mA	199.995679 mA	200.00000 mA	199.9235 mA	200.0201 mA	200.1235 mA	Passed	199.8957 mA	199.9934 mA	200.0957 mA	Passed	0.010 mA
1	-49.992084 mA	-49.992008 mA	-50.00000 mA	-50.0471 mA	-49.9896 mA	-49.9371 mA	Passed	-50.0470 mA	-49.9922 mA	-49.9370 mA	Passed	0.0031 mA
1	-99.987189 mA	-99.990829 mA	-100.00000 mA	-100.0572 mA	-99.9845 mA	-99.9172 mA	Passed	-100.0608 mA	-99.9915 mA	-99.9208 mA	Passed	0.0054 mA
1	-149.987222 mA	-149.990668 mA	-150.00000 mA	-150.0722 mA	-149.9839 mA	-149.9022 mA	Passed	-150.0757 mA	-149.9914 mA	-149.9057 mA	Passed	0.0077 mA
1	-199.994475 mA	-199.998749 mA	-200.00000 mA	-200.0945 mA	-199.9904 mA	-199.8945 mA	Passed	-200.0987 mA	-199.9977 mA	-199.8987 mA	Passed	0.010 mA

Current Meas Accuracy - Part 6. (2A Range)

Calibration			As Found				As Left				Uncertainty (±)	
Channel	As Found DMM Reading	As Left DMM Reading	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit		Pass/Fail
1	0 A	0 A	0.000000 A	-0.000200 A	0.000012 A	0.000200 A	Passed	-0.000200 A	-0.000001 A	0.000200 A	Passed	0.000013 A
1	0.499871 A	0.500043 A	0.500000 A	0.49907 A	0.50004 A	0.50067 A	Passed	0.49924 A	0.49999 A	0.50084 A	Passed	0.000054 A
1	0.999624 A	1.000012 A	1.00000 A	0.99772 A	0.99998 A	1.00152 A	Passed	0.99811 A	0.99994 A	1.00191 A	Passed	0.000095 A
1	1.49947 A	1.500149 A	1.50000 A	1.49560 A	1.50007 A	1.50334 A	Passed	1.49627 A	1.50013 A	1.50402 A	Passed	0.00014 A
1	1.999491 A	2.000343 A	2.00000 A	1.99189 A	2.00042 A	2.00709 A	Passed	1.99274 A	2.00044 A	2.00794 A	Passed	0.00018 A
1	-0.499661 A	-0.499914 A	-0.50000 A	-0.50046 A	-0.49985 A	-0.49886 A	Passed	-0.50071 A	-0.49990 A	-0.49911 A	Passed	0.000054 A
1	-0.999434 A	-0.999923 A	-1.00000 A	-1.00133 A	-0.99987 A	-0.99754 A	Passed	-1.00182 A	-0.99996 A	-0.99802 A	Passed	0.000095 A
1	-1.499252 A	-1.499925 A	-1.50000 A	-1.50312 A	-1.50007 A	-1.49538 A	Passed	-1.50380 A	-1.50015 A	-1.49605 A	Passed	0.00014 A
1	-1.999122 A	-1.999948 A	-2.00000 A	-2.00672 A	-2.00043 A	-1.99153 A	Passed	-2.00755 A	-2.00046 A	-1.99235 A	Passed	0.00018 A

Current Prog Accuracy - Part 1. (1A Range)

Calibration		As Found				As Left				Uncertainty (±)
Channel	Voltage Level	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail
0	6 V	0.050000 A	0.045920 A	0.050503 A	0.054080 A	Passed	0.045920 A	0.050492 A	0.054080 A	Passed
0	6 V	0.350000 A	0.345470 A	0.349816 A	0.354530 A	Passed	0.345470 A	0.349990 A	0.354530 A	Passed
0	6 V	0.700000 A	0.694250 A	0.700118 A	0.705750 A	Passed	0.694250 A	0.700050 A	0.705750 A	Passed

Current Prog Accuracy - Part 2. (200uA Range)

Calibration		As Found				As Left				Uncertainty (±)
Channel	Voltage Level	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail
1	20 V	4.000 uA	3.899 uA	3.995 uA	4.101 uA	Passed	3.899 uA	3.996 uA	4.101 uA	Passed
1	20 V	50.000 uA	49.885 uA	50.006 uA	50.115 uA	Passed	49.885 uA	50.002 uA	50.115 uA	Passed
1	20 V	100.000 uA	99.870 uA	100.001 uA	100.130 uA	Passed	99.870 uA	99.990 uA	100.130 uA	Passed
1	20 V	150.000 uA	149.855 uA	150.020 uA	150.145 uA	Passed	149.855 uA	150.001 uA	150.145 uA	Passed
1	20 V	200.000 uA	199.840 uA	200.033 uA	200.160 uA	Passed	199.840 uA	199.994 uA	200.160 uA	Passed
1	-20 V	-4.000 uA	-4.101 uA	-3.998 uA	-3.899 uA	Passed	-4.101 uA	-4.001 uA	-3.899 uA	Passed
1	-20 V	-50.000 uA	-50.115 uA	-49.993 uA	-49.885 uA	Passed	-50.115 uA	-49.996 uA	-49.885 uA	Passed
1	-20 V	-100.000 uA	-100.130 uA	-99.994 uA	-99.870 uA	Passed	-100.130 uA	-100.000 uA	-99.870 uA	Passed
1	-20 V	-150.000 uA	-150.145 uA	-149.993 uA	-149.855 uA	Passed	-150.145 uA	-150.000 uA	-149.855 uA	Passed
1	-20 V	-200.000 uA	-200.160 uA	-199.994 uA	-199.840 uA	Passed	-200.160 uA	-200.004 uA	-199.840 uA	Passed

Current Prog Accuracy - Part 3. (2mA Range)

Calibration			As Found				As Left				Uncertainty (±)
Channel	Voltage Level	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
1	20 V	0.04000 mA	0.03899 mA	0.03998 mA	0.04101 mA	Passed	0.03899 mA	0.03998 mA	0.04101 mA	Passed	0.0050 mA
1	20 V	0.50000 mA	0.49885 mA	0.50006 mA	0.50115 mA	Passed	0.49885 mA	0.50000 mA	0.50115 mA	Passed	0.0050 mA
1	20 V	1.00000 mA	0.99870 mA	1.00002 mA	1.00130 mA	Passed	0.99870 mA	0.99998 mA	1.00130 mA	Passed	0.0050 mA
1	20 V	1.50000 mA	1.49855 mA	1.50008 mA	1.50145 mA	Passed	1.49855 mA	1.50007 mA	1.50145 mA	Passed	0.0050 mA
1	20 V	2.00000 mA	1.99840 mA	2.00028 mA	2.00160 mA	Passed	1.99840 mA	2.00003 mA	2.00160 mA	Passed	0.0051 mA
1	-20 V	-0.04000 mA	-0.04101 mA	-0.04000 mA	-0.03899 mA	Passed	-0.04101 mA	-0.03999 mA	-0.03899 mA	Passed	0.0050 mA
1	-20 V	-0.50000 mA	-0.50115 mA	-0.49996 mA	-0.49885 mA	Passed	-0.50115 mA	-0.49999 mA	-0.49885 mA	Passed	0.0050 mA
1	-20 V	-1.00000 mA	-1.00130 mA	-0.99994 mA	-0.99870 mA	Passed	-1.00130 mA	-0.99997 mA	-0.99870 mA	Passed	0.0050 mA
1	-20 V	-1.50000 mA	-1.50145 mA	-1.49995 mA	-1.49855 mA	Passed	-1.50145 mA	-1.49998 mA	-1.49855 mA	Passed	0.0050 mA
1	-20 V	-2.00000 mA	-2.00160 mA	-1.99998 mA	-1.99840 mA	Passed	-2.00160 mA	-1.99999 mA	-1.99840 mA	Passed	0.0051 mA

Current Prog Accuracy - Part 4. (20mA Range)

Calibration			As Found				As Left				Uncertainty (±)
Channel	Voltage Level	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
1	20 V	0.4000 mA	0.3899 mA	0.4000 mA	0.4101 mA	Passed	0.3899 mA	0.3999 mA	0.4101 mA	Passed	0.0050 mA
1	20 V	5.0000 mA	4.9885 mA	5.0007 mA	5.0115 mA	Passed	4.9885 mA	5.0001 mA	5.0115 mA	Passed	0.0051 mA
1	20 V	10.0000 mA	9.9870 mA	10.0003 mA	10.0130 mA	Passed	9.9870 mA	10.0003 mA	10.0130 mA	Passed	0.0053 mA
1	20 V	15.0000 mA	14.9855 mA	15.0008 mA	15.0145 mA	Passed	14.9855 mA	15.0003 mA	15.0145 mA	Passed	0.0056 mA
1	20 V	20.0000 mA	19.9840 mA	20.0021 mA	20.0160 mA	Passed	19.9840 mA	20.0006 mA	20.0160 mA	Passed	0.0058 mA
1	-20 V	-0.4000 mA	-0.4101 mA	-0.4001 mA	-0.3899 mA	Passed	-0.4101 mA	-0.4000 mA	-0.3899 mA	Passed	0.0050 mA
1	-20 V	-5.0000 mA	-5.0115 mA	-4.9996 mA	-4.9885 mA	Passed	-5.0115 mA	-4.9998 mA	-4.9885 mA	Passed	0.0051 mA
1	-20 V	-10.0000 mA	-10.0130 mA	-9.9996 mA	-9.9870 mA	Passed	-10.0130 mA	-9.9999 mA	-9.9870 mA	Passed	0.0053 mA
1	-20 V	-15.0000 mA	-15.0145 mA	-14.9994 mA	-14.9855 mA	Passed	-15.0145 mA	-14.9997 mA	-14.9855 mA	Passed	0.0056 mA
1	-20 V	-20.0000 mA	-20.0160 mA	-19.9993 mA	-19.9840 mA	Passed	-20.0160 mA	-19.9997 mA	-19.9840 mA	Passed	0.0058 mA

Current Prog Accuracy - Part 5. (200mA Range)

Calibration			As Found				As Left				Uncertainty (±)
Channel	Voltage Level	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
1	20 V	4.000 mA	3.899 mA	4.001 mA	4.101 mA	Passed	3.899 mA	3.997 mA	4.101 mA	Passed	0.0051 mA
1	20 V	50.000 mA	49.885 mA	50.007 mA	50.115 mA	Passed	49.885 mA	50.002 mA	50.115 mA	Passed	0.0063 mA
1	20 V	100.000 mA	99.870 mA	100.002 mA	100.130 mA	Passed	99.870 mA	100.001 mA	100.130 mA	Passed	0.0090 mA
1	20 V	150.000 mA	149.855 mA	150.016 mA	150.145 mA	Passed	149.855 mA	150.004 mA	150.145 mA	Passed	0.028 mA
1	20 V	200.000 mA	199.840 mA	200.024 mA	200.160 mA	Passed	199.840 mA	200.002 mA	200.160 mA	Passed	0.034 mA
1	-20 V	-4.000 mA	-4.101 mA	-3.999 mA	-3.899 mA	Passed	-4.101 mA	-4.003 mA	-3.899 mA	Passed	0.0051 mA
1	-20 V	-50.000 mA	-50.115 mA	-49.993 mA	-49.885 mA	Passed	-50.115 mA	-49.995 mA	-49.885 mA	Passed	0.0063 mA
1	-20 V	-100.000 mA	-100.130 mA	-99.989 mA	-99.870 mA	Passed	-100.130 mA	-99.994 mA	-99.870 mA	Passed	0.0090 mA
1	-20 V	-150.000 mA	-150.145 mA	-149.988 mA	-149.855 mA	Passed	-150.145 mA	-149.992 mA	-149.855 mA	Passed	0.028 mA
1	-20 V	-200.000 mA	-200.160 mA	-199.996 mA	-199.840 mA	Passed	-200.160 mA	-200.000 mA	-199.840 mA	Passed	0.034 mA

Current Prog Accuracy - Part 6. (2A Range)

Calibration			As Found				As Left				Uncertainty (±)
Channel	Voltage Level	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
1	20 V	0.04000 A	0.03895 A	0.03998 A	0.04105 A	Passed	0.03895 A	0.03997 A	0.04105 A	Passed	0.000015 A
1	20 V	0.50000 A	0.49840 A	0.49987 A	0.50160 A	Passed	0.49840 A	0.50006 A	0.50160 A	Passed	0.000070 A
1	20 V	1.00000 A	0.99730 A	0.99958 A	1.00270 A	Passed	0.99730 A	1.00005 A	1.00270 A	Passed	0.00013 A
1	20 V	1.50000 A	1.49532 A	1.49951 A	1.50468 A	Passed	1.49532 A	1.50022 A	1.50468 A	Passed	0.00021 A
1	20 V	2.00000 A	1.99160 A	1.99947 A	2.00840 A	Passed	1.99160 A	2.00032 A	2.00840 A	Passed	0.00028 A
1	-20 V	-0.04000 A	-0.04105 A	-0.03990 A	-0.03895 A	Passed	-0.04105 A	-0.04001 A	-0.03895 A	Passed	0.000015 A
1	-20 V	-0.50000 A	-0.50160 A	-0.49972 A	-0.49840 A	Passed	-0.50160 A	-0.49998 A	-0.49840 A	Passed	0.000070 A
1	-20 V	-1.00000 A	-1.00270 A	-0.99947 A	-0.99730 A	Passed	-1.00270 A	-0.99997 A	-0.99730 A	Passed	0.00013 A
1	-20 V	-1.50000 A	-1.50468 A	-1.49930 A	-1.49532 A	Passed	-1.50468 A	-1.49995 A	-1.49532 A	Passed	0.00021 A
1	-20 V	-2.00000 A	-2.00840 A	-1.99912 A	-1.99160 A	Passed	-2.00840 A	-1.99998 A	-1.99160 A	Passed	0.00028 A

Remote Sense Output

Calibration			As Found				As Left				Uncertainty (±)	
Voltage Range	Current Range	Current Limit	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit		Pass/Fail
20 V	200 mA	100 mA	10.00000 V	9.99468 V	9.99953 V	10.00532 V	Passed	9.99468 V	9.99922 V	10.00532 V	Passed	0.000051 V

Voltage Line Regulation

Calibration			As Found				As Left				Uncertainty (±)
Channel	Voltage Range	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
1	20 V	10.000 V	-8.994 mV	0.088 mV	8.994 mV	Passed	-9.000 mV	-0.026 mV	9.000 mV	Passed	0.00057 V

Voltage Load Regulation

Calibration			As Found				As Left				Uncertainty (±)
Channel	Voltage Range	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
0	6 V	6.0 V	-21.2 mV	9.9 mV	21.2 mV	Passed	-6.1 mV	4.1 mV	6.1 mV	Passed	0.056580 V
1	20 V	10.0 V	-32.7 mV	21.8 mV	32.7 mV	Passed	-21.2 mV	13.0 mV	21.2 mV	Passed	0.056580 V

Voltage Measurement Accuracy

Channel	Calibration			As Found				As Left			
	As Found DMM Reading	As Left DMM Reading	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail
0	-0.002318 V	-0.002327 V	0.00000 V	-0.00632 V	-0.00231 V	0.00168 V	Passed	-0.00632 V	-0.00232 V	0.00167 V	Passed
0	1.498808 V	1.49879 V	1.50000 V	1.49406 V	1.49882 V	1.50356 V	Passed	1.49404 V	1.49880 V	1.50354 V	Passed
0	2.99987 V	2.999849 V	3.00000 V	2.99437 V	3.00003 V	3.00537 V	Passed	2.99435 V	3.00001 V	3.00535 V	Passed
0	4.499956 V	4.499928 V	4.50000 V	4.49371 V	4.50015 V	4.50621 V	Passed	4.49368 V	4.50011 V	4.50618 V	Passed
0	5.99957 V	5.999537 V	6.00000 V	5.99257 V	5.99991 V	6.00657 V	Passed	5.99254 V	5.99984 V	6.00654 V	Passed
1	-0.000109 V	-0.000058 V	0.00000 V	-0.00161 V	-0.00014 V	0.00139 V	Passed	-0.00156 V	-0.00017 V	0.00144 V	Passed
1	4.999633 V	4.999622 V	5.00000 V	4.99663 V	4.99977 V	5.00263 V	Passed	4.99662 V	4.99973 V	5.00262 V	Passed
1	9.999856 V	9.999824 V	10.00000 V	9.99536 V	10.00001 V	10.00436 V	Passed	9.99512 V	9.99963 V	10.00412 V	Passed
1	14.999844 V	14.999805 V	15.00000 V	14.99384 V	14.99991 V	15.00584 V	Passed	14.99381 V	14.99984 V	15.00581 V	Passed
1	19.999876 V	19.999837 V	20.00000 V	19.99218 V	19.99972 V	20.00718 V	Passed	19.99214 V	19.99962 V	20.00714 V	Passed
1	-4.999911 V	-4.999942 V	-5.00000 V	-5.00291 V	-4.99994 V	-4.99691 V	Passed	-5.00294 V	-4.99992 V	-4.99694 V	Passed
1	-9.999921 V	-9.999844 V	-10.00000 V	-10.00442 V	-9.99991 V	-9.99542 V	Passed	-10.00434 V	-9.99988 V	-9.99534 V	Passed
1	-14.999918 V	-14.999864 V	-15.00000 V	-15.00592 V	-14.99993 V	-14.99392 V	Passed	-15.00586 V	-14.99984 V	-14.99386 V	Passed
1	-19.999765 V	-19.999733 V	-20.00000 V	-20.00727 V	-19.99985 V	-19.99227 V	Passed	-20.00723 V	-19.99972 V	-19.99223 V	Passed

Voltage Programming Accuracy

Calibration			As Found				As Left				Uncertainty (±)
Channel	Voltage Level Range	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
0	6 V	0.00000 V	-0.00400 V	-0.00232 V	0.00400 V	Passed	-0.00400 V	-0.00232 V	0.00400 V	Passed	0.0000057 V
0	6 V	1.50000 V	1.49525 V	1.49880 V	1.50475 V	Passed	1.49525 V	1.49881 V	1.50475 V	Passed	0.0000080 V
0	6 V	3.00000 V	2.99450 V	2.99987 V	3.00550 V	Passed	2.99450 V	2.99986 V	3.00550 V	Passed	0.000016 V
0	6 V	4.50000 V	4.49375 V	4.49995 V	4.50625 V	Passed	4.49375 V	4.49995 V	4.50625 V	Passed	0.000023 V
0	6 V	6.00000 V	5.99300 V	5.99956 V	6.00700 V	Passed	5.99300 V	5.99955 V	6.00700 V	Passed	0.000031 V
1	6 V	0.00000 V	-0.00150 V	-0.00009 V	0.00150 V	Passed	-0.00150 V	-0.00009 V	0.00150 V	Passed	0.0000057 V
1	6 V	1.50000 V	1.49799 V	1.50002 V	1.50201 V	Passed	1.49799 V	1.50003 V	1.50201 V	Passed	0.0000080 V
1	6 V	3.00000 V	2.99748 V	2.99994 V	3.00252 V	Passed	2.99748 V	2.99995 V	3.00252 V	Passed	0.000016 V
1	6 V	4.50000 V	4.49697 V	4.50001 V	4.50303 V	Passed	4.49697 V	4.50001 V	4.50303 V	Passed	0.000023 V
1	6 V	6.00000 V	5.99646 V	5.99994 V	6.00354 V	Passed	5.99646 V	5.99995 V	6.00354 V	Passed	0.000031 V
1	6 V	-1.50000 V	-1.50201 V	-1.50002 V	-1.49799 V	Passed	-1.50201 V	-1.50000 V	-1.49799 V	Passed	0.0000080 V
1	6 V	-3.00000 V	-3.00252 V	-2.99998 V	-2.99748 V	Passed	-3.00252 V	-2.99996 V	-2.99748 V	Passed	0.000016 V
1	6 V	-4.50000 V	-4.50303 V	-4.49995 V	-4.49697 V	Passed	-4.50303 V	-4.49994 V	-4.49697 V	Passed	0.000023 V
1	6 V	-6.00000 V	-6.00354 V	-5.99990 V	-5.99646 V	Passed	-6.00354 V	-5.99999 V	-5.99646 V	Passed	0.000031 V
1	20 V	0.00000 V	-0.00180 V	-0.00111 V	0.00180 V	Passed	-0.00180 V	-0.00009 V	0.00180 V	Passed	0.0000057 V
1	20 V	5.00000 V	4.99650 V	4.99966 V	5.00350 V	Passed	4.99650 V	4.99971 V	5.00350 V	Passed	0.000026 V
1	20 V	10.00000 V	9.99480 V	9.99989 V	10.00520 V	Passed	9.99480 V	9.99953 V	10.00520 V	Passed	0.000051 V
1	20 V	15.00000 V	14.99310 V	14.99981 V	15.00690 V	Passed	14.99310 V	14.99976 V	15.00690 V	Passed	0.000076 V
1	20 V	20.00000 V	19.99140 V	19.99966 V	20.00860 V	Passed	19.99140 V	19.99967 V	20.00860 V	Passed	0.00010 V
1	20 V	-5.00000 V	-5.00350 V	-4.99989 V	-4.99650 V	Passed	-5.00350 V	-4.99993 V	-4.99650 V	Passed	0.000026 V
1	20 V	-10.00000 V	-10.00520 V	-9.99991 V	-9.99480 V	Passed	-10.00520 V	-9.99983 V	-9.99480 V	Passed	0.000051 V
1	20 V	-15.00000 V	-15.00690 V	-14.99990 V	-14.99310 V	Passed	-15.00690 V	-14.99989 V	-14.99310 V	Passed	0.000076 V
1	20 V	-20.00000 V	-20.00860 V	-19.99980 V	-19.99140 V	Passed	-20.00860 V	-19.99977 V	-19.99140 V	Passed	0.00010 V