

Certificate of Calibration



Keysight Calibration

Certificate Number 1-12823742855-1

Model Number 34410A
Manufacturer Keysight Technologies Inc
Description Digital multimeter, 6.5 digit
Serial Number MY53004023
Options Installed 220

Customer
Russian Federation
300044 TULA
Arsenalnaya St 3
Micron Service OOO

Date of Calibration 16 Jun 2020
Procedure AGT_3441XA, 5011-4409
Temperature (23 ± 5) °C
Humidity (50 ± 30) %RH

Location of Calibration
RUSSIAN FEDERATION
115054 Moscow
KOSMODAMIANSKAYA NABEREZHANAYA
52/3
Keysight Technologies OOO

This certifies that the equipment has been calibrated using applicable Keysight Technologies procedures in compliance with a quality management system registered to ISO 9001:2015.

As Received Conditions

One or more measured values of the equipment were observed out of specification at the points tested.

Action Taken

- The equipment was adjusted.

As Completed Conditions

The measured values of the equipment were observed in specification at the points tested.

Keysight considers the uncertainties of measurements during the development of performance tests. In this report, conformance statements of "Passed" or "Failed" are determined by simple comparison of observed measurements to the warranted specifications.

Remarks or Special Requirements

This calibration report shall not be reproduced, except in full. The documented results relate to the equipment calibrated only.

The test limits stated in the report correspond to the published specifications of the equipment, at the points tested.
This calibration report may refer to equipment manufactured by HP, Agilent and Keysight as being manufactured by Keysight Technologies.

Based on the customer's request, the next calibration is due on 16 Jun 2021.

Денисов П.В.
Главный метролог
ООО «Кейсайт Текнолоджиз»

RUSSIAN FEDERATION
115054 Moscow
KOSMODAMIANSKAYA
NABEREZHANAYA 52/3
Keysight Technologies OOO

Edgar Leckel - European Operations Manager

Certificate of Calibration



Keysight Calibration

Certificate Number 1-12823742855-1

Traceability Information

Technician ID Number 00826312

Measurements are traceable to the International System of Units (SI) via national metrology institutes (www.keysight.com/find/NMI) that are signatories to the CIPM Mutual Recognition Arrangement.

Calibration Equipment Used

<u>Model Number</u>	<u>Model Description</u>	<u>Equipment ID</u>	<u>Cal Due Date</u>	<u>Certificate Number</u>
16380C	C Standard Set	RU0112	9 Dec 2020	1-12438230093-1
33250A	Function/Arbitrary Waveform Generator, 80 MHz	RU0117	29 Aug 2020	1-11570879934-1
5720A	Calibrator	RU0104	16 Feb 2022	1-12185301472-1

Measurement Report

Keysight Technologies OOO
KOSMODAMIANSKAYA NABEREZHANAYA 52/3
Moscow
Russia 115054

As Received and As Completed Data

Report Number: 1-12823742855-1
Customer: MICRON SERVICE OOO

Test Date: 16 Jun 2020

Model Number: 34410A
Installed Options:
Firmware Version: 2.43-2.40-0.09-46-09

Serial Number: MY53004023

Temperature: (23.0 ± 5) °C
Tested By: Paul Denisov

Humidity: 20 to 80 % RH

Test Program Name: AGT_3441XA, 5011-4409
Test Program Version: B.02.01
Test Executive: STE/9000, C.09.06W
Test Subsystem: MENDOR, B.06.34

Specification Limits:

Unless otherwise indicated, the units for minimum and/or maximum specification limits are the same as the units stated for the measured value.

Uncertainties:

Unless otherwise indicated, the uncertainties shown are calculated using the process defined in the Guide to the expression of Uncertainty in Measurement (GUM).

Uncertainties are evaluated at the specification limits and may not be accurate expressions of the uncertainty for the stated measured result.

Unless otherwise indicated, expanded uncertainties are stated with a coverage factor of 2 (k=2). This represents a coverage probability of approximately 95% for a normal distribution.

Unless otherwise indicated, uncertainty value units are the same as the measured value units. Uncertainties stated with units of parts per million (ppm) are given relative to fundamental units.

Result Status Flags:

Within each section of the measurement report, measurement results are printed with a status flag in the last column on the page. The status flag gives an indication of the status for each measurement point.

PASS	The reported value is within specification.
PASS #	The value falls within the measurement uncertainty guardband.
FAIL	The reported value is outside the specification.
DONE	The reported value is a functional test only.

Calibration Standards Used for this Calibration

<u>Model (Serial)</u>	<u>Trace Number</u>	<u>Cal Due Date</u>
AGT 16380C (MY44100236)	RU0112	09 Dec 2020
AGT 33250A (MY00026673)	RU0117	29 Aug 2020
FLU 5720A (1502201)	RU0104	16 Feb 2022

Measurement Report

Report Number: 1-12823742855-1

Test Date: 16 Jun 2020

Model Number: 34410A

Serial Number: MY53004023

PERFORMANCE TEST RESULTS SUMMARY

<u>Test Name</u>	<u>As Received</u>	<u>As Completed</u>
INITIAL SETUP	DONE	DONE
ZERO OFFSET - FRONT TERMINALS	PASSED	PASSED
ZERO OFFSET - REAR TERMINALS	FAILED	PASSED
DC VOLTS	PASSED	PASSED
AC VOLTS	PASSED	PASSED
FREQUENCY	PASSED	PASSED
OHMS	PASSED	PASSED
DC CURRENT	PASSED	PASSED
AC CURRENT	PASSED	PASSED
CAPACITANCE	PASSED	PASSED

Measurement Report

Report Number: 1-12823742855-1
 Model Number: 34410A
 Serial Number: MY53004023

Test Date: 16 Jun 2020

ZERO OFFSET - FRONT TERMINALS (As Received)

PASSED

TEST CONDITIONS		MINIMUM	MEASURED	MAXIMUM	UNCERT.	
Range	Input					
DC Volts Zero Offset						
100 mV	0 V	-3.5	-0.7 uV	3.5	0.53 uV	PASS
1 V	0 V	-7	-1 uV	7	0.95 uV	PASS
10 V	0 V	-0.05	0.00 mV	0.05	5.9 uV	PASS
100 V	0 V	-0.6	0.0 mV	0.6	82 uV	PASS
1000 V	0 V	-6	0 mV	6	0.61 mV	PASS
4-Wire Ohms Zero Offset						
100 Ohm	0 Ohm	-4.0	1.1 mOhm	4.0	0.37 mOhm	PASS
1 kOhm	0 Ohm	-10	1 mOhm	10	0.80 mOhm	PASS
10 kOhm	0 Ohm	-0.10	0.01 Ohm	0.10	7.1 mOhm	PASS
100 kOhm	0 Ohm	-1.0	0.1 Ohm	1.0	0.11 Ohm	PASS
1 MOhm	0 Ohm	-10	0 Ohm	10	0.60 Ohm	PASS
10 MOhm	0 Ohm	-0.10	0.00 kOhm	0.10	6.2 Ohm	PASS
100 MOhm	0 Ohm	-1.0	0.0 kOhm	1.0	58 Ohm	PASS
2-Wire Ohms Zero Offset						
100 Ohm	0 Ohm	-204.0	2.2 mOhm	204.0	4.2 mOhm	PASS
1 kOhm	0 Ohm	-210	3 mOhm	210	3.9 mOhm	PASS
10 kOhm	0 Ohm	-0.30	0.00 Ohm	0.30	12 mOhm	PASS
100 kOhm	0 Ohm	-1.2	0.0 Ohm	1.2	88 mOhm	PASS
1 MOhm	0 Ohm	-10.2	0.0 Ohm	10.2	0.61 Ohm	PASS
10 MOhm	0 Ohm	-0.10	0.00 kOhm	0.10	6.2 Ohm	PASS
100 MOhm	0 Ohm	-1.0	0.0 kOhm	1.0	58 Ohm	PASS
DC Current Zero Offset						
100 uA	0 A	-25.0	-1.1 nA	25.0	1.9 nA	PASS
1 mA	0 A	-0.060	-0.001 uA	0.060	0.58 nA	PASS
10 mA	0 A	-2.00	-0.08 uA	2.00	0.25 uA	PASS
100 mA	0 A	-5.0	-0.1 uA	5.0	0.32 uA	PASS
1 A	0 A	-100	0 uA	100	4.8 uA	PASS
3 A	0 A	-0.60	0.00 mA	0.60	9.4 uA	PASS

Measurement Report

Report Number: 1-12823742855-1
 Model Number: 34410A
 Serial Number: MY53004023

Test Date: 16 Jun 2020

ZERO OFFSET - REAR TERMINALS (As Received)

FAILED

TEST CONDITIONS		MINIMUM	MEASURED	MAXIMUM	UNCERT.	
Range	Input					
DC Volts Zero Offset						
100 mV	0 V	-3.5	-3.9 uV	3.5	1.1 uV	FAIL
1 V	0 V	-7	-4 uV	7	1.5 uV	PASS
10 V	0 V	-0.05	0.00 mV	0.05	6.1 uV	PASS
100 V	0 V	-0.6	0.1 mV	0.6	80 uV	PASS
1000 V	0 V	-6	0 mV	6	0.60 mV	PASS
4-Wire Ohms Zero Offset						
100 Ohm	0 Ohm	-4.0	1.2 mOhm	4.0	0.34 mOhm	PASS
1 kOhm	0 Ohm	-10	1 mOhm	10	0.75 mOhm	PASS
10 kOhm	0 Ohm	-0.10	0.02 Ohm	0.10	7.0 mOhm	PASS
100 kOhm	0 Ohm	-1.0	0.1 Ohm	1.0	73 mOhm	PASS
1 MOhm	0 Ohm	-10	0 Ohm	10	0.59 Ohm	PASS
10 MOhm	0 Ohm	-0.10	0.00 kOhm	0.10	7.2 Ohm	PASS
100 MOhm	0 Ohm	-1.0	0.0 kOhm	1.0	58 Ohm	PASS
2-Wire Ohms Zero Offset						
100 Ohm	0 Ohm	-204.0	30.9 mOhm	204.0	4.6 mOhm	PASS
1 kOhm	0 Ohm	-210	31 mOhm	210	4.5 mOhm	PASS
10 kOhm	0 Ohm	-0.30	0.06 Ohm	0.30	9.5 mOhm	PASS
100 kOhm	0 Ohm	-1.2	0.4 Ohm	1.2	80 mOhm	PASS
1 MOhm	0 Ohm	-10.2	0.7 Ohm	10.2	0.60 Ohm	PASS
10 MOhm	0 Ohm	-0.10	0.01 kOhm	0.10	6.6 Ohm	PASS
100 MOhm	0 Ohm	-1.0	0.0 kOhm	1.0	58 Ohm	PASS
DC Current Zero Offset						
100 uA	0 A	-25	0 nA	25	2.0 nA	PASS
1 mA	0 A	-0.060	0.001 uA	0.060	0.58 nA	PASS
10 mA	0 A	-2.00	0.09 uA	2.00	0.19 uA	PASS
100 mA	0 A	-5.0	0.1 uA	5.0	0.24 uA	PASS
1 A	0 A	-100	0 uA	100	3.7 uA	PASS
3 A	0 A	-0.60	0.00 mA	0.60	6.7 uA	PASS

Measurement Report

Report Number: 1-12823742855-1
 Model Number: 34410A
 Serial Number: MY53004023

Test Date: 16 Jun 2020

DC VOLTS (As Received)

PASSED

TEST CONDITIONS		MINIMUM	MEASURED	MAXIMUM	UNCERT.	
Range	Input					
100 mV	100 mV	99.9915	99.9976 mV	100.0085	1.9 uV	PASS
100 mV	-100 mV	-100.0085	-100.0036 mV	-99.9915	1.8 uV	PASS
1 V	1 V	0.999958	0.999995 V	1.000042	6.7 uV	PASS
10 V	10 V	9.99965	9.99998 V	10.00035	47 uV	PASS
10 V	-10 V	-10.00035	-9.99999 V	-9.99965	50 uV	PASS
100 V	100 V	99.9954	99.9992 V	100.0046	0.86 mV	PASS
1000 V	1000 V	999.944	999.978 V	1000.056	9.5 mV	PASS

AC VOLTS (As Received)

PASSED

TEST CONDITIONS		MINIMUM	MEASURED	MAXIMUM	UNCERT.	
Input	Freq.					
100 mV Range						
100 mV	1 kHz	99.9100	99.9985 mV	100.0900	16 uV	PASS
100 mV	50 kHz	99.8500	100.0217 mV	100.1500	29 uV	PASS
100 mV	300 kHz	98.3000	100.0438 mV	101.7000	0.12 mV	PASS
1 V Range						
1 V	10 Hz	0.999070	1.000038 V	1.000930	0.30 mV	PASS
1 V	1 kHz	0.999100	0.999979 V	1.000900	56 uV	PASS
1 V	20 kHz	0.999100	0.999982 V	1.000900	56 uV	PASS
1 V	50 kHz	0.998500	1.000185 V	1.001500	0.11 mV	PASS
1 V	100 kHz	0.995200	1.000325 V	1.004800	0.18 mV	PASS
1 V	300 kHz	0.983000	1.000658 V	1.017000	0.66 mV	PASS
10 V Range						
10 V	10 Hz	9.99097	10.00021 V	10.00903	2.9 mV	PASS
0.1 V	1 kHz	0.09694	0.10000 V	0.10306	18 uV	PASS
1 V	1 kHz	0.99640	1.00002 V	1.00360	56 uV	PASS
10 V	1 kHz	9.99100	9.99972 V	10.00900	0.53 mV	PASS
10 V	50 kHz	9.98500	10.00191 V	10.01500	0.91 mV	PASS
10 V	300 kHz	9.83000	10.00375 V	10.17000	5.2 mV	PASS
100 V Range						
100 V	1 kHz	99.9100	100.0003 V	100.0900	6.2 mV	PASS

Measurement Report

Report Number: 1-12823742855-1
 Model Number: 34410A
 Serial Number: MY53004023

Test Date: 16 Jun 2020

AC VOLTS
(As Received)

(continued)

<u>TEST CONDITIONS</u>		<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
100 V	50 kHz	99.8500	100.0191 V	100.1500	9.7 mV	PASS
50 V	300 kHz	48.9000	50.0393 V	51.1000	92 mV	PASS
750 V Range						
750 V	1 kHz	749.010	749.869 V	750.990	63 mV	PASS
210 V	50 kHz	209.415	210.040 V	210.585	23 mV	PASS
70 V	300 kHz	65.410	70.018 V	74.590	0.11 V	PASS

FREQUENCY
(As Received)

PASSED

<u>TEST CONDITIONS</u>		<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
Input	Freq.					
100 mV Range						
10 mV	40 Hz	39.97200	39.99977 Hz	40.02800	3.0 mHz	PASS
10 V Range						
10 V	10 kHz	9.99930	10.00000 kHz	10.00070	35 mHz	PASS

OHMS
(As Received)

PASSED

Note: The 1 GOhm range is verified by testing the 100 MOhm range.

<u>TEST CONDITIONS</u>		<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
Range	Input					
100 Ohm	100 Ohm	99.9860	100.0116 Ohm	100.0140	1.2 mOhm	PASS
1 kOhm	1 kOhm	0.999890	1.000076 kOhm	1.000110	8.6 mOhm	PASS
10 kOhm	10 kOhm	9.99890	10.00035 kOhm	10.00110	86 mOhm	PASS
100 kOhm	100 kOhm	99.9890	100.0004 kOhm	100.0110	1.2 Ohm	PASS
1 MOhm	1 MOhm	0.999870	0.999937 MOhm	1.000130	21 Ohm	PASS
10 MOhm	10 MOhm	9.99590	9.99961 MOhm	10.00410	0.41 kOhm	PASS
100 MOhm	100 MOhm	99.1990	99.9464 MOhm	100.8010	21 kOhm	PASS

Measurement Report

Report Number: 1-12823742855-1
 Model Number: 34410A
 Serial Number: MY53004023

Test Date: 16 Jun 2020

DC CURRENT (As Received)

PASSED

TEST CONDITIONS		MINIMUM	MEASURED	MAXIMUM	UNCERT.	
Range	Input					
100 uA	100 uA	99.9250	99.9973 uA	100.0750	11 nA	PASS
1 mA	1 mA	0.999440	0.999979 mA	1.000560	44 nA	PASS
10 mA	10 mA	9.99300	10.00003 mA	10.00700	0.44 uA	PASS
100 mA	100 mA	99.9450	100.0007 mA	100.0550	5.3 uA	PASS
1 A	1 A	0.998900	0.999975 A	1.001100	99 uA	PASS
3 A	2 A	1.99640	1.99993 A	2.00360	0.29 mA	PASS

AC CURRENT (As Received)

PASSED

TEST CONDITIONS		MINIMUM	MEASURED	MAXIMUM	UNCERT.	
Input	Freq.					
100 uA Range						
100 uA	1 kHz	99.8600	99.9830 uA	100.1400	22 nA	PASS
100 uA	5 kHz	99.8600	99.9907 uA	100.1400	41 nA	PASS
1 mA Range						
1 mA	10 Hz	0.998600	1.000008 mA	1.001400	0.30 uA	PASS
1 mA	1 kHz	0.998600	0.999958 mA	1.001400	0.17 uA	PASS
1 mA	5 kHz	0.998600	0.999977 mA	1.001400	0.32 uA	PASS
10 mA Range						
10 mA	1 kHz	9.98600	9.99954 mA	10.01400	1.7 uA	PASS
10 mA	5 kHz	9.98600	9.99968 mA	10.01400	2.7 uA	PASS
100 mA Range						
1 mA	1 kHz	0.9590	1.0002 mA	1.0410	0.20 uA	PASS
10 mA	1 kHz	9.9500	9.9999 mA	10.0500	1.7 uA	PASS
100 mA	1 kHz	99.8600	100.0005 mA	100.1400	16 uA	PASS
100 mA	5 kHz	99.8600	100.0027 mA	100.1400	25 uA	PASS
1 A Range						
1 A	1 kHz	0.998600	0.999965 A	1.001400	0.32 mA	PASS
1 A	5 kHz	0.998600	1.000124 A	1.001400	0.55 mA	PASS
3 A Range						

Measurement Report

Report Number: 1-12823742855-1
Model Number: 34410A
Serial Number: MY53004023

Test Date: 16 Jun 2020

AC CURRENT (As Received)

(continued)

<u>TEST CONDITIONS</u>		<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
2 A	1 kHz	1.99520	1.99992 A	2.00480	0.60 mA	PASS
2 A	5 kHz	1.99520	2.00018 A	2.00480	1.2 mA	PASS

CAPACITANCE (As Received)

PASSED

The Input value under TEST CONDITIONS column is the Nominal input.

The test limits for each Test point are calculated based on real expected value. Expected value can be extracted from below formula,
Expected Value=(Minimum+Maximum)/2

<u>TEST CONDITIONS</u>		<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
Range	Input					
1 uF	1 uF	0.9950	1.0002 uF	1.0050	0.57 nF	PASS
10 uF	1 uF	0.986	1.000 uF	1.014	0.75 nF	PASS

Measurement Report

Report Number: 1-12823742855-1
Model Number: 34410A
Serial Number: MY53004023

Test Date: 16 Jun 2020

ZERO OFFSET - FRONT TERMINALS

PASSED

ZERO OFFSET - FRONT TERMINALS Adjustments DONE
Post-Repair/Adjustment Data:

TEST CONDITIONS		MINIMUM	MEASURED	MAXIMUM	UNCERT.	
Range	Input					
DC Volts Zero Offset						
100 mV	0 V	-3.5	0.0 uV	3.5	0.53 uV	PASS
1 V	0 V	-7	0 uV	7	0.95 uV	PASS
10 V	0 V	-0.05	0.00 mV	0.05	5.9 uV	PASS
100 V	0 V	-0.6	0.0 mV	0.6	82 uV	PASS
1000 V	0 V	-6	0 mV	6	0.61 mV	PASS
4-Wire Ohms Zero Offset						
100 Ohm	0 Ohm	-4.0	1.2 mOhm	4.0	0.37 mOhm	PASS
1 kOhm	0 Ohm	-10	1 mOhm	10	0.80 mOhm	PASS
10 kOhm	0 Ohm	-0.10	0.01 Ohm	0.10	7.1 mOhm	PASS
100 kOhm	0 Ohm	-1.0	0.1 Ohm	1.0	0.11 Ohm	PASS
1 MOhm	0 Ohm	-10	0 Ohm	10	0.60 Ohm	PASS
10 MOhm	0 Ohm	-0.10	0.00 kOhm	0.10	6.2 Ohm	PASS
100 MOhm	0 Ohm	-1.0	0.0 kOhm	1.0	58 Ohm	PASS
2-Wire Ohms Zero Offset						
100 Ohm	0 Ohm	-204.0	0.7 mOhm	204.0	4.2 mOhm	PASS
1 kOhm	0 Ohm	-210	0 mOhm	210	3.9 mOhm	PASS
10 kOhm	0 Ohm	-0.30	0.01 Ohm	0.30	12 mOhm	PASS
100 kOhm	0 Ohm	-1.2	0.0 Ohm	1.2	88 mOhm	PASS
1 MOhm	0 Ohm	-10.2	0.1 Ohm	10.2	0.61 Ohm	PASS
10 MOhm	0 Ohm	-0.10	0.00 kOhm	0.10	6.2 Ohm	PASS
100 MOhm	0 Ohm	-1.0	0.0 kOhm	1.0	58 Ohm	PASS
DC Current Zero Offset						
100 uA	0 A	-25.0	-1.0 nA	25.0	1.9 nA	PASS
1 mA	0 A	-0.060	-0.002 uA	0.060	0.58 nA	PASS
10 mA	0 A	-2.00	-0.06 uA	2.00	0.25 uA	PASS
100 mA	0 A	-5.0	0.0 uA	5.0	0.32 uA	PASS
1 A	0 A	-100	0 uA	100	4.8 uA	PASS
3 A	0 A	-0.60	0.00 mA	0.60	9.4 uA	PASS

ZERO OFFSET - REAR TERMINALS

PASSED

ZERO OFFSET - REAR TERMINALS Adjustments DONE
Post-Repair/Adjustment Data:

TEST CONDITIONS		MINIMUM	MEASURED	MAXIMUM	UNCERT.	
Range	Input					
DC Volts Zero Offset						
100 mV	0 V	-3.5	1.2 uV	3.5	1.1 uV	PASS
1 V	0 V	-7	2 uV	7	1.5 uV	PASS

Measurement Report

Report Number: 1-12823742855-1
 Model Number: 34410A
 Serial Number: MY53004023

Test Date: 16 Jun 2020

ZERO OFFSET - REAR TERMINALS

(continued)

TEST CONDITIONS		MINIMUM	MEASURED	MAXIMUM	UNCERT.	
10 V	0 V	-0.05	0.00 mV	0.05	6.1 uV	PASS
100 V	0 V	-0.6	0.0 mV	0.6	80 uV	PASS
1000 V	0 V	-6	0 mV	6	0.60 mV	PASS
4-Wire Ohms Zero Offset						
100 Ohm	0 Ohm	-4.0	2.3 mOhm	4.0	0.34 mOhm	PASS
1 kOhm	0 Ohm	-10	2 mOhm	10	0.75 mOhm	PASS
10 kOhm	0 Ohm	-0.10	0.02 Ohm	0.10	7.0 mOhm	PASS
100 kOhm	0 Ohm	-1.0	0.2 Ohm	1.0	73 mOhm	PASS
1 MOhm	0 Ohm	-10	0 Ohm	10	0.59 Ohm	PASS
10 MOhm	0 Ohm	-0.10	0.00 kOhm	0.10	7.2 Ohm	PASS
100 MOhm	0 Ohm	-1.0	0.0 kOhm	1.0	58 Ohm	PASS
2-Wire Ohms Zero Offset						
100 Ohm	0 Ohm	-204.0	2.0 mOhm	204.0	4.6 mOhm	PASS
1 kOhm	0 Ohm	-210	2 mOhm	210	4.5 mOhm	PASS
10 kOhm	0 Ohm	-0.30	0.02 Ohm	0.30	9.5 mOhm	PASS
100 kOhm	0 Ohm	-1.2	0.2 Ohm	1.2	80 mOhm	PASS
1 MOhm	0 Ohm	-10.2	0.3 Ohm	10.2	0.60 Ohm	PASS
10 MOhm	0 Ohm	-0.10	0.00 kOhm	0.10	6.6 Ohm	PASS
100 MOhm	0 Ohm	-1.0	0.0 kOhm	1.0	58 Ohm	PASS
DC Current Zero Offset						
100 uA	0 A	-25	0 nA	25	2.0 nA	PASS
1 mA	0 A	-0.060	-0.001 uA	0.060	0.58 nA	PASS
10 mA	0 A	-2.00	-0.08 uA	2.00	0.19 uA	PASS
100 mA	0 A	-5.0	0.0 uA	5.0	0.24 uA	PASS
1 A	0 A	-100	0 uA	100	3.7 uA	PASS
3 A	0 A	-0.60	0.00 mA	0.60	6.7 uA	PASS

DC VOLTS

PASSED

DC VOLTS Adjustments DONE
 Post-Repair/Adjustment Data:

TEST CONDITIONS		MINIMUM	MEASURED	MAXIMUM	UNCERT.	
Range	Input					
100 mV	100 mV	99.9915	99.9993 mV	100.0085	1.9 uV	PASS
100 mV	-100 mV	-100.0085	-100.0016 mV	-99.9915	1.8 uV	PASS
1 V	1 V	0.999958	1.000000 V	1.000042	6.7 uV	PASS
10 V	10 V	9.99965	10.00002 V	10.00035	47 uV	PASS
10 V	-10 V	-10.00035	-10.00001 V	-9.99965	50 uV	PASS
100 V	100 V	99.9954	100.0001 V	100.0046	0.86 mV	PASS
1000 V	1000 V	999.944	999.998 V	1000.056	9.5 mV	PASS

Measurement Report

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Model Number: 34410A
Serial Number: MY53004023

Test Date: 16 Jun 2020

AC VOLTS

PASSED

AC VOLTS Adjustments DONE
Post-Repair/Adjustment Data:

<u>TEST CONDITIONS</u>		<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
<u>Input</u>	<u>Freq.</u>					
100 mV Range						
100 mV	1 kHz	99.9100	99.9986 mV	100.0900	16 uV	PASS
100 mV	50 kHz	99.8500	99.9983 mV	100.1500	29 uV	PASS
100 mV	300 kHz	98.3000	99.9732 mV	101.7000	0.12 mV	PASS
1 V Range						
1 V	10 Hz	0.999070	1.000040 V	1.000930	0.30 mV	PASS
1 V	1 kHz	0.999100	0.999994 V	1.000900	56 uV	PASS
1 V	20 kHz	0.999100	0.999992 V	1.000900	56 uV	PASS
1 V	50 kHz	0.998500	1.000022 V	1.001500	0.11 mV	PASS
1 V	100 kHz	0.995200	1.000037 V	1.004800	0.18 mV	PASS
1 V	300 kHz	0.983000	0.999988 V	1.017000	0.66 mV	PASS
10 V Range						
10 V	10 Hz	9.99097	10.00047 V	10.00903	2.9 mV	PASS
0.1 V	1 kHz	0.09694	0.10005 V	0.10306	18 uV	PASS
1 V	1 kHz	0.99640	1.00003 V	1.00360	56 uV	PASS
10 V	1 kHz	9.99100	10.00006 V	10.00900	0.53 mV	PASS
10 V	50 kHz	9.98500	10.00040 V	10.01500	0.91 mV	PASS
10 V	300 kHz	9.83000	9.99272 V	10.17000	5.2 mV	PASS
100 V Range						
100 V	1 kHz	99.9100	99.9990 V	100.0900	6.2 mV	PASS
100 V	50 kHz	99.8500	99.9997 V	100.1500	9.7 mV	PASS
50 V	300 kHz	48.9000	49.9882 V	51.1000	92 mV	PASS
750 V Range						
750 V	1 kHz	749.010	749.851 V	750.990	63 mV	PASS
210 V	50 kHz	209.415	210.000 V	210.585	23 mV	PASS
70 V	300 kHz	65.410	69.966 V	74.590	0.11 V	PASS

FREQUENCY

PASSED

FREQUENCY Adjustments DONE
Post-Repair/Adjustment Data:

<u>TEST CONDITIONS</u>		<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
<u>Input</u>	<u>Freq.</u>					
100 mV Range						
10 mV	40 Hz	39.97200	39.99965 Hz	40.02800	3.0 mHz	PASS
10 V Range						
10 V	10 kHz	9.99930	10.00000 kHz	10.00070	35 mHz	PASS

Measurement Report

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Test Date: 16 Jun 2020

OHMS

PASSED

OHMS Adjustments DONE

Note: The 1 GOhm range is verified by testing the 100 MOhm range.
Post-Repair/Adjustment Data:

TEST CONDITIONS		MINIMUM	MEASURED	MAXIMUM	UNCERT.	
Range	Input					
100 Ohm	100 Ohm	99.9860	99.9987 Ohm	100.0140	1.2 mOhm	PASS
1 kOhm	1 kOhm	0.999890	1.000000 kOhm	1.000110	8.6 mOhm	PASS
10 kOhm	10 kOhm	9.99890	10.00000 kOhm	10.00110	86 mOhm	PASS
100 kOhm	100 kOhm	99.9890	99.9999 kOhm	100.0110	1.2 Ohm	PASS
1 MOhm	1 MOhm	0.999870	0.999999 MOhm	1.000130	21 Ohm	PASS
10 MOhm	10 MOhm	9.99590	10.00005 MOhm	10.00410	0.41 kOhm	PASS
100 MOhm	100 MOhm	99.1990	100.0098 MOhm	100.8010	21 kOhm	PASS

DC CURRENT

PASSED

DC CURRENT Adjustments DONE

Post-Repair/Adjustment Data:

TEST CONDITIONS		MINIMUM	MEASURED	MAXIMUM	UNCERT.	
Range	Input					
100 uA	100 uA	99.9250	99.9997 uA	100.0750	11 nA	PASS
1 mA	1 mA	0.999440	1.000002 mA	1.000560	44 nA	PASS
10 mA	10 mA	9.99300	10.00006 mA	10.00700	0.44 uA	PASS
100 mA	100 mA	99.9450	100.0001 mA	100.0550	5.3 uA	PASS
1 A	1 A	0.998900	0.999999 A	1.001100	99 uA	PASS
3 A	2 A	1.99640	2.00000 A	2.00360	0.29 mA	PASS

AC CURRENT

PASSED

AC CURRENT Adjustments DONE

Post-Repair/Adjustment Data:

TEST CONDITIONS		MINIMUM	MEASURED	MAXIMUM	UNCERT.	
Input	Freq.					
100 uA Range						
100 uA	1 kHz	99.8600	100.0017 uA	100.1400	22 nA	PASS
100 uA	5 kHz	99.8600	100.0043 uA	100.1400	41 nA	PASS
1 mA Range						
1 mA	10 Hz	0.998600	1.000057 mA	1.001400	0.30 uA	PASS
1 mA	1 kHz	0.998600	1.000001 mA	1.001400	0.17 uA	PASS
1 mA	5 kHz	0.998600	1.000024 mA	1.001400	0.32 uA	PASS

Measurement Report

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Model Number: 34410A

Serial Number: MY53004023

AC CURRENT

(continued)

<u>TEST CONDITIONS</u>		<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
10 mA Range						
10 mA	1 kHz	9.98600	10.00013 mA	10.01400	1.7 uA	PASS
10 mA	5 kHz	9.98600	10.00025 mA	10.01400	2.7 uA	PASS
100 mA Range						
1 mA	1 kHz	0.9590	0.9997 mA	1.0410	0.20 uA	PASS
10 mA	1 kHz	9.9500	9.9998 mA	10.0500	1.7 uA	PASS
100 mA	1 kHz	99.8600	99.9996 mA	100.1400	16 uA	PASS
100 mA	5 kHz	99.8600	100.0015 mA	100.1400	25 uA	PASS
1 A Range						
1 A	1 kHz	0.998600	1.000005 A	1.001400	0.32 mA	PASS
1 A	5 kHz	0.998600	1.000042 A	1.001400	0.55 mA	PASS
3 A Range						
2 A	1 kHz	1.99520	1.99999 A	2.00480	0.60 mA	PASS
2 A	5 kHz	1.99520	2.00003 A	2.00480	1.2 mA	PASS

CAPACITANCE

PASSED

The Input value under TEST CONDITIONS column is the Nominal input. The test limits for each Test point are calculated based on real expected value. Expected value can be extracted from below formula, Expected Value=(Minimum+Maximum)/2

<u>TEST CONDITIONS</u>		<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
<u>Range</u>	<u>Input</u>					
1 uF	1 uF	0.9950	1.0002 uF	1.0050	0.57 nF	PASS
10 uF	1 uF	0.986	1.000 uF	1.014	0.75 nF	PASS