

Certificate of Calibration

Manufacturer: **Radian Research, Inc.**
Instrument Model: **RX-15 Xytronic Portable Standard**
Serial Number: XXXXXX
Firmware Revision: 12.01.01
Error Specification: 0.01% worst case



ISO 9001:2015 Certified Quality Management System
ISO/IEC 17025:2017 Accredited Laboratory

Customer Name: Radian Research, Inc.
Address: 3852 Fortune Drive
Lafayette, IN 47905

Calibration Lab Name: Radian Research, Inc.
Calibration Lab Address: 3852 Fortune Drive, Lafayette, IN 47905, USA
Calibration Date: 16-Oct-26
Report Issue Date: 16-Oct-26

Environmental Conditions

Temperature: 23°C +/- 2°C
Humidity: between 30% and 60%

CE Number:
P.O.Number:

CE1234
PO5678

Physical Condition: Undamaged

Note: If the device is out of tolerance, it will be adjusted, unless otherwise requested by the customer. Results are considered out of tolerance if at any measurement, the magnitude of measured error + measurement uncertainty + the guard band of 0.001% error (10 ppm) is greater than the published error specification.

Radian Research's As-Found Test Results showed this Instrument to be:

☒ New ☐ In Tolerance ☐ Out of Tolerance ☐ Inoperative ☐ Limited Calibration

Radian Research, Inc. certifies the instrument listed above meets or exceeds specifications and was calibrated in compliance with ANSI/NCSL Z540-1-1994. Identified results are accredited to ISO/IEC 17025:2017 "General Requirements for the Competence of Testing and Calibration laboratories", using applicable Radian Research procedures which meet the requirements of ISO 9001:2015 and ISO/IEC Guide 98-3 "Uncertainty of measurement - Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)".

This instrument was calibrated by a Radian Research RS-933 Syntron Automated Calibration System which is traceable to the National Institute of Standards and Technology (NIST) and/or other National Metrology Institute (NMI). The Automated Calibration system is cross checked and calibrated on a schedule which is adjusted to maintain required accuracies and traceability. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2.

Procedure used for Calibration: 9912408
Software used for Calibration: Radian Research RS-933 Control Application Version 2.6.8312.21655
RS-933 Tool Number: 9911149

Standards Used in This Calibration:

<u>Description</u>	<u>Serial Number(s):</u>	<u>Cal. Source</u>	<u>Cal. Number:</u>	<u>Cal. Due Date:</u>
RS-940B Data Collection Module	933159	Radian Research	933159-20260413	4/13/2027
RS-711 Syntron with RS-932 Boost Module (Phase A)	703187	Radian Research	703187-20260313	3/13/2027
RS-711 Syntron with RS-932 Boost Module (Phase B)	703179	Radian Research	703179-20260314	3/14/2027
RS-711 Syntron with RS-932 Boost Module (Phase C)	703142	Radian Research	703142-20260315	3/15/2027

Laboratory Technician Signature

Template 9903337.02
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Calibration Certificate Number:

Calibration Report

RX-15 Xytronic Portable Standard

Function..... Watt-hour 60 Hz

Date..... 16-Oct-26 Uncertainty at Unity..... 13

Serial Number..... XXXXXX Uncertainty at 60° Phase Angle.... 23

The following data was collected by a Radian Research RS-933 Automated Calibration System. The RS-933 watt-hour calibration is derived directly from (3) Radian RD-22-RTS Dytronic Transfer Standards, traceable to the SI through the National Institute of Standards and Technology (NIST) and the National Research Council of Canada (NRC) and/or other National Metrology Institute (NMI). Test time is 5 seconds and stabilization time in between points is 5 seconds. For lagging power factors the current lags the voltage. All results are listed as µWh/Wh. The RS-933 Automated Calibration System has at least a 2 times greater accuracy than the instrument under test. The results presented on this page are compliant with ANSI/NCSL Z540-1-1994. Results are accredited to ISO/IEC 17025:2017.

Voltage & Phase Angle

	120 Unity PF	120 0.5 Lag	120 0.5 Lead	240 Unity PF	240 0.5 Lag	240 0.5 Lead	480 Unity PF	480 0.5 Lag	480 0.5 Lead	600 Unity PF	600 0.5 Lag	600 0.5 Lead
Amps												
0.2	19.67	15.47	22.86	18.52	41.42	-13.78	16.86	7.86	18.35	18.24	7.31	16.85
0.25	23.44	22.34	32.22	23.30	48.16	-3.63	22.18	18.39	28.80	21.37	16.31	25.88
0.5	14.73	15.53	16.62	13.85	39.12	-17.22	10.49	6.03	16.18	9.52	3.91	13.02
1	13.74	6.09	23.44	12.53	31.99	-13.42	10.02	-1.52	19.33	8.62	-4.35	19.57
2.5	6.66	-4.15	10.97	1.46	18.69	-28.86	1.39	-14.65	8.02	0.10	-17.26	7.89
3	23.15	-7.65	14.84	15.53	15.91	-23.37	14.19	-17.66	12.00	12.84	-20.47	12.24
5	12.54	-0.80	20.66	8.82	23.87	-17.51	6.90	-8.81	15.71	6.29	-10.93	16.62
10	11.25	-4.85	21.95	7.63	20.62	-17.38	8.34	-11.10	18.21	6.96	-14.00	18.27
15	22.25	0.26	25.79	18.98	28.06	-12.34	17.70	-6.10	20.81	16.34	-8.79	20.91
20	8.43	-10.14	16.22	3.25	16.51	-21.11	2.74	-17.24	14.26	1.42	-19.85	14.33
30	18.57	-2.14	20.95	16.65	22.86	-16.68	13.27	-11.56	17.80	11.93	-14.25	17.90
40	9.60	-6.42	20.70	6.79	20.35	-18.27	5.06	-14.07	15.52	3.63	-16.67	15.69
50	30.76	-6.26	22.73	27.37	21.78	-15.98	25.25	-12.93	17.35	23.87	-15.42	17.61
60	22.89	-8.31	35.15	19.77	19.72	-4.04	18.05	-14.63	31.37	17.31	-16.39	28.51
100	40.03	-12.45	55.24	37.95	15.27	18.84	36.30	-18.13	53.55	37.95	-19.03	52.07
120	30.65	-15.45	59.79	29.61	12.20	21.80	26.97	-20.28	59.31	26.07	-21.90	56.38
180	26.84	-36.55	50.97	23.76	-5.86	14.23	22.37	-39.54	52.33	23.72	-40.60	53.29
200	40.40	-26.50	60.54	36.78	2.52	24.85	35.10	-29.36	62.71	36.93	-29.65	61.66

Average	20.87	-4.56	29.54	17.92	21.84	-7.99	16.29	-11.41	26.76	15.73	-13.45	26.04
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Minimum	6.66	-36.55	10.97	1.46	-5.86	-28.86	1.39	-39.54	8.02	0.10	-40.60	7.89
Maximum	40.40	22.34	60.54	37.95	48.16	24.85	36.30	18.39	62.71	37.95	16.31	61.66

Overall	Unity PF	0.5 Lag	0.5 Lead
Average	17.70	-1.89	18.58
Minimum	0.10	-40.60	-28.86
Maximum	40.40	48.16	62.71

Calibration Report

RX-15 Xytronic Portable Standard

Function..... Watts 60 Hz

Date..... 16-Oct-26 Uncertainty at Unity..... 13

Serial Number..... XXXXXX Uncertainty at 60° Phase Angle.... 23

The following data was collected by a Radian Research RS-933 Automated Calibration System. The RS-933 watt calibration is derived directly from (3) Radian RD-22-RTS Dytronic Transfer Standards, traceable to the SI through the National Institute of Standards and Technology (NIST) and the National Research Council of Canada (NRC) and/or other National Metrology Institute (NMI). Test time is 5 seconds and stabilization time in between points is 5 seconds. For lagging power factors the current lags the voltage. All results are listed as μW/W. The RS-933 Automated Calibration System has at least a 2 times greater accuracy than the instrument under test. The results presented on this page are compliant with ANSI/NCSL Z540-1-1994. Results are accredited to ISO/IEC 17025:2017.

Voltage & Phase Angle

	120	120	120	240	240	240	480	480	480	600	600	600
	Unity PF	0.5 Lag	0.5 Lead	Unity PF	0.5 Lag	0.5 Lead	Unity PF	0.5 Lag	0.5 Lead	Unity PF	0.5 Lag	0.5 Lead
Amps												
0.2	19.72	15.52	22.60	18.52	41.47	-13.89	16.78	8.18	18.13	18.16	7.63	16.63
0.25	23.27	21.72	31.71	23.45	48.35	-3.95	22.04	18.66	28.95	21.23	16.58	26.03
0.5	14.70	14.67	16.62	13.74	38.34	-17.35	10.04	5.24	15.80	9.07	3.12	12.64
1	13.96	6.73	24.08	12.78	32.63	-12.75	10.44	-1.05	19.94	9.04	-3.88	20.18
2.5	6.39	-4.34	11.07	1.41	18.64	-29.02	1.50	-14.79	7.85	0.21	-17.40	7.72
3	21.98	-7.32	15.38	15.76	16.29	-23.11	14.47	-17.83	12.19	13.12	-20.64	12.43
5	12.20	-0.54	20.36	8.81	24.03	-17.44	6.81	-8.75	15.37	6.20	-10.87	16.28
10	11.44	-4.79	21.90	7.70	20.75	-17.51	8.41	-10.95	18.40	7.03	-13.85	18.46
15	22.24	-0.16	27.23	18.84	27.77	-12.16	17.53	-6.19	21.20	16.17	-8.88	21.30
20	8.30	-10.24	16.37	3.34	16.79	-20.77	2.75	-16.94	14.03	1.43	-19.55	14.10
30	18.73	-2.06	20.88	16.97	23.20	-16.78	13.34	-11.75	18.08	12.00	-14.44	18.18
40	9.69	-6.48	20.18	6.71	20.33	-18.26	5.10	-13.96	15.31	3.67	-16.56	15.48
50	30.88	-5.95	22.73	27.60	22.01	-14.98	25.47	-13.07	17.63	24.09	-15.56	17.89
60	23.12	-8.29	35.32	19.93	19.99	-3.58	18.14	-14.47	31.43	17.40	-16.23	28.57
100	39.96	-12.64	55.70	37.76	15.29	19.73	36.33	-18.66	54.50	37.98	-19.56	53.02
120	30.79	-14.85	59.75	29.67	11.99	21.54	27.02	-19.85	59.63	26.12	-21.47	56.70
180	27.37	-36.46	50.53	24.02	-5.32	14.20	22.56	-39.05	52.27	23.91	-40.11	53.23
200	40.65	-26.95	60.59	36.84	3.01	24.55	35.10	-29.31	62.67	36.93	-29.60	61.62

Average	20.86	-4.58	29.61	17.99	21.98	-7.86	16.32	-11.36	26.85	15.76	-13.40	26.14
Minimum	6.39	-36.46	11.07	1.41	-5.32	-29.02	1.50	-39.05	7.85	0.21	-40.11	7.72
Maximum	40.65	21.72	60.59	37.76	48.35	24.55	36.33	18.66	62.67	37.98	16.58	61.62

Overall	Unity PF	0.5 Lag	0.5 Lead
Average	17.73	-1.84	18.68
Minimum	0.21	-40.11	-29.02
Maximum	40.65	48.35	62.67

Calibration Report

RX-15 Xytronic Portable Standard

Function..... VAR-hour 60 Hz

Date..... 16-Oct-26 Uncertainty 20

Serial Number..... XXXXXX

The following data was collected by a Radian Research RS-933 Automated Calibration System. The RS-933 VARh calibration is derived directly from (3) Radian RD-22-RTS Dytronic Transfer Standards, traceable to the SI through the National Institute of Standards and Technology (NIST) and the National Research Council of Canada (NRC) and/or other National Metrology Institute (NMI). Test time is 5 seconds and stabilization time in between points is 5 seconds. For lagging power factors the current lags the voltage. All results are listed as μ VARh/VARh. The RS-933 Automated Calibration System has at least a 2 times greater accuracy than the instrument under test. The results presented on this page are compliant with ANSI/NCSL Z540-1-1994. Results are accredited to ISO/IEC 17025:2017.

Voltage & Phase Angle

	120 90°Lag	120 30°Lag	240 90°Lag	240 30°Lag	480 90°Lag	480 30°Lag	600 90°Lag	600 30°Lag
Amps								
0.2	-12.23	-5.68	-15.36	-40.23	-23.07	-12.24	-18.60	-39.82
0.25	1.49	4.06	-1.88	-31.10	-11.73	-7.41	-6.77	-35.15
0.5	-4.14	-0.01	-8.06	-38.06	-17.57	-13.65	-10.01	-39.78
1	-16.73	-6.66	-20.68	-44.46	-29.89	-19.49	-25.08	-45.98
2.5	-22.12	-15.97	-27.05	-50.00	-36.21	-28.09	-31.66	-54.02
3	-20.68	-4.08	-24.49	-41.59	-34.51	-19.34	-31.42	-45.95
5	-16.59	-6.65	-20.87	-42.77	-29.90	-20.47	-25.08	-44.19
10	-20.14	-7.60	-23.85	-44.01	-35.31	-22.63	-29.67	-47.67
15	-6.62	5.20	-9.53	-27.91	-20.00	-7.61	-14.61	-30.79
20	-25.13	-16.47	-27.84	-48.65	-40.52	-29.50	-34.95	-51.36
30	-11.19	-1.42	-11.82	-30.20	-23.53	-11.06	-17.88	-32.95
40	-23.46	-16.83	-24.23	-47.15	-36.33	-30.21	-30.39	-46.65
50	-13.98	-0.02	-12.92	-26.91	-27.34	-11.88	-20.95	-29.09
60	-19.51	-6.17	-19.78	-31.35	-32.58	-15.22	-21.52	-31.39
100	-22.21	5.93	-19.54	-12.81	-35.93	-6.93	-21.05	-9.84
120	-23.24	5.28	-16.75	-11.68	-36.52	-6.70	-17.91	-7.13
180	-34.90	-6.81	-23.81	-9.59	-47.15	-15.36	-24.13	-2.17
200	-32.14	-0.17	-18.52	0.12	-44.84	-13.07	-18.54	7.21

Average	-17.97	-4.11	-18.16	-32.13	-31.28	-16.16	-22.23	-32.59
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Minimum	-34.90	-16.83	-27.84	-50.00	-47.15	-30.21	-34.95	-54.02
Maximum	1.49	5.93	-1.88	0.12	-11.73	-6.70	-6.77	7.21

<u>Overall</u>	90°Lag	30°Lag
Average	-22.41	-21.25
Minimum	-47.15	-54.02
Maximum	1.49	7.21

Calibration Certificate Number:

Calibration Report

RX-15 Xytronic Portable Standard

Function..... VAR 60 Hz

Date..... 16-Oct-26 Uncertainty 20

Serial Number..... XXXXXX

The following data was collected by a Radian Research RS-933 Automated Calibration System. The RS-933 VAR calibration is derived directly from (3) Radian RD-22-RTS Dytronic Transfer Standards, traceable to the SI through the National Institute of Standards and Technology (NIST) and the National Research Council of Canada (NRC) and/or other National Metrology Institute (NMI). Test time is 5 seconds and stabilization time in between points is 5 seconds. For lagging power factors the current lags the voltage. All results are listed as μ VAR/VAR. The RS-933 Automated Calibration System has at least a 2 times greater accuracy than the instrument under test. The results presented on this page are compliant with ANSI/NCSL Z540-1-1994. Results are accredited to ISO/IEC 17025:2017.

Voltage & Phase Angle

	120 90°Lag	120 30°Lag	240 90°Lag	240 30°Lag	480 90°Lag	480 30°Lag	600 90°Lag	600 30°Lag
Amps								
0.2	-12.19	-5.76	-15.39	-40.18	-22.87	-12.27	-18.54	-39.85
0.25	1.65	4.40	-1.56	-31.00	-11.72	-7.38	-6.71	-34.80
0.5	-3.99	0.01	-8.07	-37.90	-17.38	-13.65	-9.75	-39.71
1	-16.65	-6.52	-20.51	-44.34	-29.82	-19.22	-25.00	-45.94
2.5	-22.02	-15.99	-26.82	-50.01	-36.06	-28.23	-31.56	-53.86
3	-20.62	-4.01	-24.36	-41.62	-34.49	-19.36	-31.40	-45.95
5	-16.31	-6.63	-20.76	-42.78	-29.79	-20.20	-24.98	-44.10
10	-20.08	-7.81	-23.92	-43.73	-35.21	-22.37	-29.70	-47.66
15	-6.37	5.55	-9.35	-27.64	-19.95	-7.45	-14.46	-30.73
20	-25.11	-16.45	-27.85	-48.79	-40.40	-29.60	-34.99	-51.42
30	-11.05	-1.06	-11.62	-30.22	-23.43	-10.93	-17.77	-33.06
40	-23.48	-16.51	-24.39	-47.00	-36.29	-30.08	-30.19	-46.76
50	-13.91	0.25	-12.81	-26.67	-27.21	-12.09	-20.86	-28.90
60	-19.45	-6.12	-19.70	-30.97	-32.58	-15.10	-21.35	-31.27
100	-22.05	5.67	-19.34	-12.78	-35.85	-6.62	-20.99	-9.64
120	-23.10	5.71	-16.72	-11.66	-36.43	-6.75	-17.85	-7.15
180	-34.87	-6.51	-23.56	-9.63	-47.01	-15.23	-23.85	-1.92
200	-32.00	-0.18	-17.89	0.04	-44.77	-13.04	-18.31	7.29

Average	-17.87	-4.00	-18.03	-32.05	-31.18	-16.09	-22.13	-32.52
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Minimum	-34.87	-16.51	-27.85	-50.01	-47.01	-30.08	-34.99	-53.86
Maximum	1.65	5.71	-1.56	0.04	-11.72	-6.62	-6.71	7.29

<u>Overall</u>	90°Lag	30°Lag
Average	-22.30	-21.16
Minimum	-47.01	-53.86
Maximum	1.65	7.29

Calibration Certificate Number:

Calibration Report

RX-15 Xytronic Portable Standard

Function.....VA-hour RMS 60 Hz

Date..... 16-Oct-26 Uncertainty at Unity..... 13

Serial Number..... XXXXXX Uncertainty at 60° Phase Angle.... 23

The following data was collected by a Radian Research RS-933 Automated Calibration System. The RS-933 VAh calibration is derived directly from (3) Radian RD-22-RTS Dytronic Transfer Standards, traceable to the SI through the National Institute of Standards and Technology (NIST) and the National Research Council of Canada (NRC) and/or other National Metrology Institute (NMI). Test time is 5 seconds and stabilization time in between points is 5 seconds. For lagging power factors the current lags the voltage. All results are listed as μ VAh/VAh. The RS-933 Automated Calibration System has at least a 2 times greater accuracy than the instrument under test. The results presented on this page are compliant with ANSI/NCSL Z540-1-1994. Results are accredited to ISO/IEC 17025:2017.

Voltage & Phase Angle

	120 Unity PF	120 0.5 Lag	120 0.5 Lead	240 Unity PF	240 0.5 Lag	240 0.5 Lead	480 Unity PF	480 0.5 Lag	480 0.5 Lead	600 Unity PF	600 0.5 Lag	600 0.5 Lead
Amps												
0.2	25.04	0.05	18.79	25.45	-5.11	12.26	21.44	-9.29	14.13	27.79	0.79	19.61
0.25	27.82	9.35	24.19	27.86	4.43	18.65	24.68	-0.01	23.25	40.20	11.46	29.40
0.5	19.31	2.47	16.37	17.66	-1.23	8.49	15.07	-6.21	11.17	30.84	4.09	16.16
1	16.89	-5.52	21.52	15.63	-11.98	13.49	14.28	-15.61	15.47	28.58	-5.77	24.15
2.5	9.75	-11.30	6.52	5.80	-18.38	-2.19	5.38	-21.74	1.37	8.87	-14.95	2.43
3	24.70	-10.61	13.89	20.44	-15.57	6.59	18.74	-19.53	9.65	17.24	-12.46	13.95
5	16.30	-6.11	14.68	12.69	-10.47	6.04	11.46	-15.32	6.72	16.47	-8.66	8.61
10	15.59	-7.06	14.82	12.50	-12.93	8.09	11.42	-17.30	10.25	15.35	-11.42	11.64
15	25.37	1.50	23.56	22.41	-2.51	15.30	20.67	-7.09	17.62	35.66	1.19	24.99
20	12.70	-13.74	11.44	7.08	-18.18	3.99	7.29	-22.60	5.44	10.15	-16.05	7.00
30	21.34	-3.50	19.49	18.81	-5.37	11.59	16.50	-11.11	12.49	31.17	-2.42	19.06
40	15.73	-12.28	17.20	10.31	-14.24	6.65	10.47	-19.31	7.42	13.14	-12.02	8.72
50	35.30	-6.86	18.62	31.83	-7.33	8.60	30.79	-13.20	10.78	21.80	-3.70	15.85
60	26.43	-9.16	34.20	22.79	-10.04	23.76	22.02	-13.65	25.98	35.72	-4.06	29.06
100	44.31	-10.20	47.19	42.69	-5.93	35.30	42.16	-11.78	36.74	38.02	-1.65	40.73
120	35.59	-9.88	54.40	33.02	-5.43	40.70	32.60	-11.30	42.89	44.59	-1.15	46.36
180	32.28	-21.99	51.68	28.77	-12.70	31.72	28.96	-18.68	35.23	29.45	-9.53	38.17
200	44.76	-19.90	57.15	41.43	-6.90	33.99	43.07	-13.97	37.65	37.44	-3.11	43.44

Average	24.96	-7.49	25.87	22.07	-8.88	15.72	20.94	-13.76	18.01	26.80	-4.97	22.19
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Minimum	9.75	-21.99	6.52	5.80	-18.38	-2.19	5.38	-22.60	1.37	8.87	-16.05	2.43
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Maximum	44.76	9.35	57.15	42.69	4.43	40.70	43.07	-0.01	42.89	44.59	11.46	46.36
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<u>Overall</u>	Unity PF	0.5 Lag	0.5 Lead
Average	23.69	-8.77	20.45
Minimum	5.38	-22.60	-2.19
Maximum	44.76	11.46	57.15

Calibration Report

RX-15 Xytronic Portable Standard

Function..... VA RMS 60 Hz

Date..... 16-Oct-26 Uncertainty at Unity..... 13

Serial Number..... XXXXXX Uncertainty at 60° Phase Angle.... 23

The following data was collected by a Radian Research RS-933 Automated Calibration System. The RS-933 VA calibration is derived directly from (3) Radian RD-22-RTS Dytronic Transfer Standards, traceable to the SI through the National Institute of Standards and Technology (NIST) and the National Research Council of Canada (NRC) and/or other National Metrology Institute (NMI). Test time is 5 seconds and stabilization time in between points is 5 seconds. For lagging power factors the current lags the voltage. All results are listed as $\mu\text{VA}/\text{VA}$. The RS-933 Automated Calibration System has at least a 2 times greater accuracy than the instrument under test. The results presented on this page are compliant with ANSI/NCSL Z540-1-1994. Results are accredited to ISO/IEC 17025:2017.

Voltage & Phase Angle

	120 Unity PF	120 0.5 Lag	120 0.5 Lead	240 Unity PF	240 0.5 Lag	240 0.5 Lead	480 Unity PF	480 0.5 Lag	480 0.5 Lead	600 Unity PF	600 0.5 Lag	600 0.5 Lead
Amps												
0.2	24.93	0.01	18.87	25.38	-4.94	12.32	21.44	-9.25	14.21	27.86	0.92	19.60
0.25	27.71	9.29	24.39	27.94	4.49	18.71	24.75	0.13	23.35	39.82	11.47	29.71
0.5	19.27	2.26	16.43	17.08	-1.18	8.19	14.82	-6.05	11.05	30.64	4.28	15.96
1	17.23	-5.36	21.65	16.12	-11.73	13.61	14.70	-15.39	15.64	28.72	-5.50	24.26
2.5	9.63	-11.35	6.55	5.72	-18.45	-2.02	5.55	-21.69	1.53	9.06	-15.04	2.52
3	24.83	-10.51	13.90	20.57	-15.50	6.65	18.98	-19.45	9.72	17.38	-12.44	14.01
5	16.40	-6.13	14.80	12.86	-10.34	6.06	11.53	-15.20	6.69	16.51	-8.45	8.69
10	15.56	-7.01	14.84	12.61	-12.84	8.18	11.54	-17.23	10.43	15.46	-11.25	11.70
15	25.20	1.54	23.59	22.37	-2.35	15.40	20.60	-6.89	17.69	35.85	1.29	25.02
20	13.03	-13.68	11.56	7.17	-18.02	4.22	7.31	-22.52	5.58	10.37	-15.94	6.94
30	21.48	-3.50	19.57	18.87	-5.25	11.71	16.71	-11.09	12.47	31.34	-2.18	19.13
40	16.12	-12.10	17.33	10.36	-14.26	6.66	10.57	-19.35	7.52	13.12	-11.76	8.80
50	35.58	-6.73	18.88	31.92	-7.34	8.87	30.98	-13.04	10.79	21.95	-3.53	16.06
60	26.62	-9.12	34.34	22.86	-10.01	23.92	22.03	-13.48	26.02	35.81	-4.00	29.11
100	44.31	-10.13	47.47	42.80	-5.89	35.42	42.07	-11.69	36.98	38.52	-1.57	40.91
120	35.87	-9.85	54.46	33.08	-5.24	40.65	32.64	-11.14	42.90	44.82	-0.91	46.38
180	32.70	-21.71	51.83	29.02	-12.42	31.91	29.24	-18.45	35.36	29.69	-9.13	38.20
200	44.84	-19.80	57.28	41.53	-4.45	34.07	43.38	-13.26	37.63	37.68	-0.54	43.15

Average 25.07 -7.44 25.99 22.13 -8.65 15.81 21.05 -13.61 18.09 26.92 -4.68 22.23

Minimum 9.63 -21.71 6.55 5.72 -18.45 -2.02 5.55 -22.52 1.53 9.06 -15.94 2.52

Maximum 44.84 9.29 57.28 42.80 4.49 40.65 43.38 0.13 42.90 44.82 11.47 46.38

<u>Overall</u>	Unity PF	0.5 Lag	0.5 Lead
Average	23.79	-8.60	20.53
Minimum	5.55	-22.52	-2.02
Maximum	44.84	11.47	57.28

Calibration Report

RX-15 Xytronic Portable Standard

Function..... Qh RMS 60 Hz

Date..... 16-Oct-26

Serial Number..... XXXXXX

The following data was collected by a Radian Research RS-933 Automated Calibration System. The RS-933 Q-hour calibration is derived directly from (3) Radian RD-22-RTS Dytronic Transfer Standards, traceable to the SI through the National Institute of Standards and Technology (NIST) and the National Research Council of Canada (NRC) and/or other National Metrology Institute (NMI). Test time is 5 seconds and stabilization time in between points is 5 seconds. For lagging power factors the current lags the voltage. All results are listed as $\mu\text{Qh/Qh}$. The RS-933 Automated Calibration System has at least a 2 times greater accuracy than the instrument under test. The results presented on this page are compliant with ANSI/NCSL Z540-1-1994. They are not within Radian's 17025 scope of accreditation.

Voltage & Phase Angle

	120 Unity PF	120 0.5 Lag	120 0.5 Lead	240 Unity PF	240 0.5 Lag	240 0.5 Lead	480 Unity PF	480 0.5 Lag	480 0.5 Lead	600 Unity PF	600 0.5 Lag	600 0.5 Lead
Amps												
0.2	-1.50	-10.10	-20.16	-30.00	-11.22	13.59	-4.40	-13.79	-14.80	-4.40	-13.79	-14.80
0.25	8.87	5.30	-1.59	-19.56	5.48	29.17	9.05	5.21	1.27	9.05	5.21	1.27
0.5	-3.73	-7.04	-14.19	-31.18	-6.68	18.53	-4.54	-7.85	-14.19	-4.54	-7.85	-14.19
1	-7.04	-6.51	-14.46	-33.68	-6.15	17.28	-3.73	-6.06	-12.32	-3.73	-6.06	-12.32
2.5	-5.92	-13.57	-25.51	-36.38	-14.57	8.25	-4.70	-14.14	-24.15	-4.70	-14.14	-24.15
3	11.58	-9.16	-17.20	-24.00	-9.81	15.52	7.17	-10.41	-16.31	7.17	-10.41	-16.31
5	-4.48	-13.21	-24.30	-34.24	-12.71	7.32	-3.70	-12.64	-24.65	-3.70	-12.64	-24.65
10	-5.70	-14.00	-22.80	-33.17	-12.57	8.32	-0.69	-11.99	-23.80	-0.69	-11.99	-23.80
15	6.01	-4.77	-10.59	-19.55	-2.01	20.31	9.53	-2.01	-9.92	9.53	-2.01	-9.92
20	-8.06	-19.29	-25.44	-37.46	-15.00	2.67	-6.56	-17.93	-28.73	-6.56	-17.93	-28.73
30	2.00	-8.68	-9.63	-21.65	-4.77	17.93	6.29	-7.44	-13.54	6.29	-7.44	-13.54
40	-11.71	-19.43	-24.01	-32.81	-15.43	2.17	-5.27	-16.14	-27.23	-5.27	-16.14	-27.23
50	12.22	-14.21	-15.01	-10.66	-8.60	8.79	16.00	-11.24	-19.48	16.00	-11.24	-19.48
60	0.67	-9.73	-8.49	-19.08	-3.15	14.59	8.01	-5.63	-13.83	8.01	-5.63	-13.83
100	14.86	-15.47	-17.30	5.36	-4.83	-1.39	29.05	-9.18	-28.63	29.05	-9.18	-28.63
120	2.86	-12.21	-8.30	-2.96	-0.10	3.72	18.59	-4.87	-23.37	18.59	-4.87	-23.37
180	3.65	-24.38	-11.48	7.72	-4.80	-13.19	24.06	-12.88	-34.62	24.06	-12.88	-34.62
200	17.03	-23.60	-9.86	22.75	-1.62	-19.36	37.74	-9.98	-37.21	37.74	-9.98	-37.21

Average	1.76	-12.23	-15.57	-19.48	-7.14	8.57	7.33	-9.39	-20.31	7.33	-9.39	-20.31
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Minimum	-11.71	-24.38	-25.51	-37.46	-15.43	-19.36	-6.56	-17.93	-37.21	-6.56	-17.93	-37.21
Maximum	17.03	5.30	-1.59	22.75	5.48	29.17	37.74	5.21	1.27	37.74	5.21	1.27

Overall	Unity PF	0.5 Lag	0.5 Lead
Average	-0.77	-9.54	-11.90
Minimum	-37.46	-24.38	-37.21
Maximum	37.74	5.48	29.17

Calibration Report

RX-15 Xytronic Portable Standard

Function..... Watt-hour 60 Hz Pulse Output

Date..... 16-Oct-26 Uncertainty at Unity..... 13

Serial Number..... XXXXXX Uncertainty at 60° Phase Angle.... 23

The following data was collected by a Radian Research RS-933 Automated Calibration System. The RS-933 watt-hour calibration is derived directly from (3) Radian RD-22-RTS Dytronic Transfer Standards, traceable to the SI through the National Institute of Standards and Technology (NIST) and the National Research Council of Canada (NRC) and/or other National Metrology Institute (NMI). Test time is 5 seconds and stabilization time in between points is 5 seconds. For lagging power factors the current lags the voltage. All results are listed as µWh/Wh. The RS-933 Automated Calibration System has at least a 2 times greater accuracy than the instrument under test. The results presented on this page are compliant with ANSI/NCSL Z540-1-1994. Results are accredited to ISO/IEC 17025:2017.

Voltage & Phase Angle

	120 Unity PF	120 0.5 Lag	120 0.5 Lead	240 Unity PF	240 0.5 Lag	240 0.5 Lead	480 Unity PF	480 0.5 Lag	480 0.5 Lead	600 Unity PF	600 0.5 Lag	600 0.5 Lead
Amps												
0.2	21.78	17.80	25.16	20.84	43.62	-11.34	19.14	10.29	20.68	20.52	9.74	19.18
0.25	25.66	24.62	34.31	25.47	50.43	-1.45	24.34	20.82	31.13	23.53	18.74	28.21
0.5	17.02	17.98	18.82	16.26	41.45	-14.95	12.73	8.20	18.51	11.76	6.08	15.35
1	11.82	-4.37	21.85	6.42	18.04	-18.37	6.68	-15.37	18.87	11.06	-2.03	21.98
2.5	9.03	-1.70	13.35	3.67	21.01	-26.72	3.81	-12.41	10.42	2.52	-15.02	10.29
3	25.43	-5.16	17.18	17.85	18.25	-21.12	16.52	-15.50	14.34	15.17	-18.31	14.58
5	14.75	1.69	23.09	11.11	26.28	-15.25	9.09	-6.36	18.25	8.48	-8.48	19.16
10	13.68	-2.68	24.35	10.06	22.95	-15.16	10.79	-9.00	20.62	9.41	-11.90	20.68
15	24.57	2.57	28.05	21.23	30.43	-10.01	19.87	-3.79	23.12	18.51	-6.48	23.22
20	10.91	-7.83	18.41	5.53	18.92	-18.85	5.18	-14.98	16.44	3.86	-17.59	16.51
30	20.89	0.22	23.27	18.83	25.13	-14.29	15.68	-9.45	20.12	14.34	-12.14	20.22
40	12.12	-4.09	22.96	9.20	22.46	-16.03	7.42	-11.85	17.94	5.99	-14.45	18.11
50	32.95	-3.88	25.03	29.78	24.22	-13.59	27.71	-10.57	19.78	26.33	-13.06	20.04
60	25.17	-5.99	37.47	22.07	21.97	-1.71	20.51	-12.30	33.91	19.77	-14.06	31.05
100	42.26	-10.02	57.53	40.10	17.64	21.06	38.66	-15.90	55.77	40.31	-16.80	54.29
120	33.02	-13.04	62.05	32.01	14.62	24.21	29.27	-18.05	61.59	28.37	-19.67	58.66
180	29.21	-34.12	53.43	26.08	-3.41	16.41	22.61	-37.38	54.75	23.96	-38.44	55.71
200	42.58	-24.19	62.90	39.23	4.91	27.06	35.45	-26.92	65.18	37.28	-27.21	64.13
Average	22.94	-2.90	31.62	19.76	23.27	-6.12	18.08	-10.03	28.97	17.84	-11.17	28.41
Minimum	9.03	-34.12	13.35	3.67	-3.41	-26.72	3.81	-37.38	10.42	2.52	-38.44	10.29
Maximum	42.58	24.62	62.90	40.10	50.43	27.06	38.66	20.82	65.18	40.31	18.74	64.13
Overall				Unity PF	0.5 Lag	0.5 Lead						
Average				19.66	-0.21	20.72						
Minimum				2.52	-38.44	-26.72						
Maximum				42.58	50.43	65.18						

Calibration Report

RX-15 Xytronic Portable Standard

Function..... VAR

60 Hz

Pulse Output

Date..... 16-Oct-26

Uncertainty 20

Serial Number..... XXXXXX

The following data was collected by a Radian Research RS-933 Automated Calibration System. The RS-933 VARh calibration is derived directly from (3) Radian RD-22-RTS Dytronic Transfer Standards, traceable to the SI through the National Institute of Standards and Technology (NIST) and the National Research Council of Canada (NRC) and/or other National Metrology Institute (NMI). Test time is 2 seconds and stabilization time in between points is 5 seconds. For lagging power factors the current lags the voltage. All results are listed as μ VARh/VARh. The RS-933 Automated Calibration System has at least a 2 times greater accuracy than the instrument under test. The results presented on this page are compliant with ANSI/NC SL Z540-1-1994. Results are accredited to ISO/IEC 17025:2017.

Voltage & Phase Angle

	120 90°Lag	120 30°Lag	240 90°Lag	240 30°Lag	480 90°Lag	480 30°Lag	600 90°Lag	600 30°Lag
Amps								
0.2	-9.88	-3.56	-13.03	-37.91	-20.55	-9.88	-16.31	-37.42
0.25	3.66	6.26	0.46	-28.84	-9.47	-4.96	-4.41	-32.77
0.5	-1.87	2.38	-5.58	-35.76	-15.15	-11.39	-7.64	-37.30
1	-14.44	-4.37	-18.38	-42.09	-27.56	-17.29	-22.57	-43.68
2.5	-19.89	-13.74	-24.62	-47.67	-33.77	-25.78	-29.38	-51.60
3	-18.44	-1.77	-22.13	-39.20	-32.25	-17.05	-28.88	-43.72
5	-14.21	-4.50	-18.61	-40.58	-27.45	-18.17	-22.76	-41.86
10	-17.84	-5.31	-21.65	-41.63	-32.97	-20.16	-27.26	-45.24
15	-4.34	7.58	-7.17	-25.70	-17.55	-5.39	-12.21	-28.32
20	-22.90	-14.28	-25.51	-46.33	-38.26	-27.07	-32.70	-48.89
30	-8.92	0.89	-9.37	-27.97	-21.25	-8.78	-15.44	-30.46
40	-21.20	-14.65	-21.95	-44.98	-33.84	-27.75	-28.04	-44.33
50	-11.83	2.50	-10.66	-24.43	-24.93	-9.61	-18.66	-26.58
60	-17.27	-3.91	-17.51	-28.88	-30.37	-12.91	-19.11	-29.23
100	-19.97	8.26	-17.16	-10.72	-33.46	-4.53	-18.70	-7.31
120	-20.86	7.49	-14.41	-9.39	-34.07	-4.43	-15.64	-4.75
180	-32.53	-4.63	-21.52	-7.25	-44.75	-12.94	-21.67	0.19
200	-29.78	1.95	-16.29	2.39	-42.43	-10.70	-16.02	9.61

Average	-15.70	-1.86	-15.84	-29.83	-28.89	-13.82	-19.86	-30.20
Minimum	-32.53	-14.65	-25.51	-47.67	-44.75	-27.75	-32.70	-51.60
Maximum	3.66	8.26	0.46	2.39	-9.47	-4.43	-4.41	9.61

<u>Overall</u>	90°Lag	30°Lag
Average	-20.07	-18.93
Minimum	-44.75	-51.60
Maximum	3.66	9.61

Calibration Certificate Number:

Calibration Report

RX-15 Xytronic Portable Standard

Function..... VA-hour 60 Hz Pulse Output

Date..... 16-Oct-26 Uncertainty at Unity..... 13

Serial Number..... XXXXXX Uncertainty at 60° Phase Angle.... 23

The following data was collected by a Radian Research RS-933 Automated Calibration System. The RS-933 VAh calibration is derived directly from (3) Radian RD-22-RTS Dytronic Transfer Standards, traceable to the SI through the National Institute of Standards and Technology (NIST) and the National Research Council of Canada (NRC) and/or other National Metrology Institute (NMI). Test time is 5 seconds and stabilization time in between points is 5 seconds. For lagging power factors the current lags the voltage. All results are listed as μVAh/VAh. The RS-933 Automated Calibration System has at least a 2 times greater accuracy than the instrument under test. The results presented on this page are compliant with ANSI/NCSL Z540-1-1994. Results are accredited to ISO/IEC 17025:2017.

Voltage & Phase Angle

	120	120	120	240	240	240	480	480	480	600	600	600
	Unity PF	0.5 Lag	0.5 Lead	Unity PF	0.5 Lag	0.5 Lead	Unity PF	0.5 Lag	0.5 Lead	Unity PF	0.5 Lag	0.5 Lead
Amps												
0.2	27.48	2.31	21.38	27.74	-2.75	14.70	23.85	-6.82	16.48	30.19	3.14	21.92
0.25	30.30	11.80	26.59	30.23	6.77	21.10	26.92	2.49	25.62	42.48	13.74	31.62
0.5	21.58	4.80	18.73	20.07	1.02	10.85	17.29	-3.80	13.45	33.28	6.41	18.60
1	19.26	-3.05	23.86	18.07	-9.71	15.90	16.47	-13.21	17.71	30.77	-3.35	26.40
2.5	12.09	-8.93	8.95	8.10	-16.03	0.25	7.64	-19.17	3.72	11.33	-12.73	4.73
3	26.86	-8.26	16.24	22.88	-13.19	8.84	20.94	-17.15	11.95	19.60	-10.10	16.25
5	18.64	-3.66	16.97	14.97	-8.22	8.35	13.71	-12.98	9.06	18.85	-6.42	10.85
10	18.10	-4.68	17.24	14.71	-10.70	10.47	13.65	-14.95	12.58	17.51	-9.10	13.88
15	27.81	3.98	26.07	24.88	-0.17	17.58	22.95	-4.68	19.95	37.77	3.51	27.32
20	15.13	-11.41	13.78	9.56	-15.92	6.40	9.60	-20.16	7.67	12.54	-13.90	9.36
30	23.76	-1.21	21.80	21.27	-2.95	13.94	18.74	-8.67	14.95	33.40	-0.13	21.36
40	18.33	-9.96	19.51	12.67	-11.89	9.23	12.83	-16.82	9.85	15.46	-9.55	10.96
50	37.77	-4.53	20.89	34.32	-5.02	11.05	33.10	-10.79	13.06	24.28	-1.18	18.14
60	28.84	-6.72	36.55	25.10	-7.60	26.03	24.33	-11.37	28.23	38.04	-1.72	31.31
100	46.65	-7.77	49.53	45.10	-3.52	37.67	44.42	-9.39	39.06	40.35	0.75	43.08
120	38.05	-7.48	56.52	35.24	-3.06	43.16	34.92	-8.93	45.25	44.82	-0.80	46.58
180	34.68	-19.43	53.97	31.17	-10.17	34.00	29.11	-18.36	35.43	29.63	-9.25	38.35
200	47.34	-17.49	59.60	43.86	-4.61	36.33	43.35	-13.62	37.91	37.70	-2.83	43.63

Average	27.37	-5.09	28.23	24.44	-6.54	18.10	22.99	-11.58	20.11	28.78	-2.97	24.13
Minimum	12.09	-19.43	8.95	8.10	-16.03	0.25	7.64	-20.16	3.72	11.33	-13.90	4.73
Maximum	47.34	11.80	59.60	45.10	6.77	43.16	44.42	2.49	45.25	44.82	13.74	46.58

Overall	Unity PF	0.5 Lag	0.5 Lead
Average	25.89	-6.55	22.64
Minimum	7.64	-20.16	0.25
Maximum	47.34	13.74	59.60

Calibration Report

RX-15 Xytronic Portable Standard

Function..... Volts RMS 60 Hz

Date..... 16-Oct-26

Serial Number..... XXXXXX

The following data was collected by a Radian Research RS-933 Automated Calibration System. The RS-933 Volt calibration is derived directly from (3) Radian RD-22-RTS Dytronic Transfer Standards, traceable to the SI through the National Institute of Standards and Technology (NIST) and the National Research Council of Canada (NRC) and/or other National Metrology Institute (NMI). Test time is 2 seconds and the stabilization time in between points is 2 seconds. For lagging power factors the current lags the voltage. All results are listed as $\mu\text{V/V}$. The RS-933 Automated Calibration System has at least a 2 times greater accuracy than the Instrument under test. The results presented on this page are compliant with ANSI/NCSL Z540-1-1994. They are not within Radian's 17025 scope of accreditation.

Voltage

	V RMS	Vh RMS	V2h RMS
60	-37.64	-38.16	-76.27
80	-21.84	-22.20	-44.21
100	-15.76	-15.85	-31.64
120	-12.73	-12.90	-25.67
140	-4.77	-4.76	-9.52
160	-23.63	-23.79	-47.57
180	-21.04	-21.17	-42.27
200	-12.71	-12.76	-25.46
220	-10.99	-11.13	-22.21
240	-10.02	-10.22	-20.24
260	-5.94	-6.04	-12.04
280	-5.45	-5.52	-11.01
300	-3.42	-3.38	-6.74
320	-25.56	-25.64	-51.12
340	-23.97	-24.06	-47.99
360	-23.13	-23.18	-46.19
380	-20.66	-20.84	-41.57
400	-18.20	-18.33	-36.53
420	-17.42	-17.59	-35.05
440	-16.56	-16.56	-33.00
460	-15.25	-15.32	-30.59
480	-13.77	-13.90	-27.75
500	-12.82	-13.03	-25.94
520	-10.80	-10.89	-21.69
540	-9.68	-9.69	-19.41
560	-8.59	-8.68	-17.22
580	-5.83	-5.98	-11.87
600	-4.58	-4.63	-9.18
Average	-14.74	-14.86	-29.64
Minimum	-37.64	-38.16	-76.27
Maximum	-3.42	-3.38	-6.74

Calibration Certificate Number:

Calibration Report

RX-15 Xytronic Portable Standard

Function..... Amps RMS 60 Hz

Date..... 16-Oct-26

Serial Number..... XXXXXX

The following data was collected by a Radian Research RS-933 Automated Calibration System. The RS-933 Amp calibration is derived directly from (3) Radian RD-22-RTS Dytronic Transfer Standards, traceable to the SI through the National Institute of Standards and Technology (NIST) and the National Research Council of Canada (NRC) and/or other National Metrology Institute (NMI). Test time is 2 seconds and the stabilization time in between points is 2 seconds. For lagging power factors the current lags the voltage. All results are listed as $\mu\text{A/A}$. The RS-933 Automated Calibration System has at least a 2 times greater accuracy than the Instrument under test. The results presented on this page are compliant with ANSI/NCSL Z540-1-1994. They are not within Radian's 17025 scope of accreditation.

Amps

	A RMS	Ah RMS	A2h RMS
0.2	11.35	11.24	22.51
0.25	23.89	23.98	48.04
0.5	10.94	10.99	22.14
1	10.55	10.32	20.71
2.5	-2.11	-1.90	-3.81
3	10.68	11.69	23.46
5	-0.77	-0.63	-1.12
10	-0.95	-1.16	-2.20
15	14.53	14.51	29.08
20	-4.12	-4.05	-7.99
30	12.41	12.27	24.70
40	-3.29	-3.31	-6.59
50	11.17	11.00	22.11
60	13.01	12.81	25.84
100	13.03	13.04	26.09
120	14.99	14.86	29.85
180	8.19	7.65	15.50
200	13.73	13.47	27.12

Average	8.74	8.71	17.52
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Minimum	-4.12	-4.05	-7.99
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Maximum	23.89	23.98	48.04
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Calibration Certificate Number:

Calibration Report

RX-15 Xytronic Portable Standard

Mode..... Frequency

Date..... 16-Oct-26

Serial Number..... XXXXXX

The following data was collected by a Radian Research RS-933 Automated Calibration System. The RS-933 time base calibration is derived directly from a Keysight Technologies 53220A Universal Counter/Timer, traceable to the SI through the National Institute of Standards and Technology (NIST) and the National Research Council of Canada (NRC) and/or other National Metrology Institute (NMI). Test time is 2 seconds and the stabilization time in between points is 2 seconds. For lagging power factors the current lags the voltage. All results are listed as Hz/MHz. The RS-933 Automated Calibration System has at least a 2 times greater accuracy than the Instrument under test. The results presented on this page are compliant with ANSI/NCSL Z540-1-1994. They are not within Radian's 17025 scope of accreditation.

Frequency

45	-0.41
46	-0.39
47	-0.39
48	-0.40
49	-0.37
50	-0.38
51	-0.39
52	-0.37
53	-0.41
54	-0.40
55	-0.39
56	-0.38
57	-0.40
58	-0.38
59	-0.41
60	-0.38
61	-0.38
62	-0.40
63	-0.40
64	-0.39
65	-0.38

Average -0.39

Minimum -0.41

Maximum -0.37

Calibration Certificate Number:

Calibration Report

RX-15 Xytronic Portable Standard

Function..... Phase 60 Hz

Date..... 16-Oct-26

Serial Number..... XXXXXX

The following data was collected by a Radian Research RS-933 Automated Calibration System. The RS-933 phase calibration is derived directly from (3) Radian RD-22-RTS Dytronic Transfer Standards, traceable to the SI through the National Institute of Standards and Technology (NIST) and the National Research Council of Canada (NRC) and/or other National Metrology Institute (NMI). The test time is 2 seconds and the stabilization time in between points is 2 seconds. For lagging power factors the current lags the voltage. All results are listed as $\mu\text{rad}/\text{rad}$. The RS-933 Automated Calibration System has at least a 2 times greater accuracy than the instrument under test. The results presented on this page are compliant with ANSI/NCSL Z540-1-1994. They are not within Radian's 17025 scope of accreditation.

Voltage & Current

	120 1	120 5	120 15	120 30	120 50	240 1	240 5	240 15	240 30	240 50	480 1	480 5	480 15	480 30	480 50
Phase															
-180	0.36	0.04	-0.10	-0.75	-0.92	3.24	2.59	2.71	2.53	2.59	0.37	-0.53	-0.32	-0.51	-0.75
-150	1.15	1.05	0.17	-0.36	0.19	3.85	3.51	3.15	2.70	3.07	0.86	0.61	0.04	0.19	-0.53
-120	1.65	1.46	0.97	1.61	0.96	4.22	3.94	3.84	3.97	4.18	1.34	1.14	0.76	0.94	1.24
-90	1.73	2.13	1.19	0.29	1.13	4.48	4.61	3.90	3.56	4.07	1.69	1.79	1.24	1.31	1.44
-60	1.75	1.38	1.03	0.09	0.72	4.55	3.87	3.56	2.80	3.25	1.83	1.33	0.75	0.26	1.05
-30	1.14	0.65	0.54	0.86	0.68	3.73	3.30	3.06	2.79	2.68	1.10	0.66	0.46	0.11	0.12
0	0.81	0.25	0.15	0.51	0.64	3.40	2.90	2.82	2.73	2.47	0.63	0.13	-0.11	0.06	0.01
30	0.19	-0.28	-0.30	0.20	0.36	2.86	2.52	2.48	2.32	2.13	0.08	-0.46	-0.41	-0.70	-0.65
60	-0.72	-1.30	-0.88	-0.56	-0.72	2.04	1.49	1.79	2.57	1.84	-0.84	-1.43	-1.04	-1.58	-1.14
90	-0.75	-2.28	-1.47	-2.31	-1.70	2.10	0.82	1.48	2.20	0.42	-0.81	-2.17	-1.47	-2.20	-1.73
120	-0.58	-1.90	-1.55	-0.84	-2.19	2.18	1.16	1.37	1.49	1.50	-0.71	-2.03	-1.55	-1.37	-1.79
150	-0.25	-1.43	-0.83	-0.88	-1.52	2.63	1.59	2.29	1.94	1.78	-0.40	-1.54	-0.82	-1.15	-1.32
180	0.39	-0.42	-0.52	-0.60	-1.03	3.38	2.62	2.83	2.70	2.50	0.28	-0.58	-0.36	-0.54	-0.53
Average	0.53	-0.05	-0.12	-0.21	-0.26	3.28	2.69	2.71	2.64	2.50	0.42	-0.24	-0.22	-0.40	-0.35
Minimum	-0.75	-2.28	-1.55	-2.31	-2.19	2.04	0.82	1.37	1.49	0.42	-0.84	-2.17	-1.55	-2.20	-1.79
Maximum	1.75	2.13	1.19	1.61	1.13	4.55	4.61	3.90	3.97	4.18	1.83	1.79	1.24	1.31	1.44