RxMS Tech Notes

12/14/2018

Site Certified ®

Customer Information

Bob Thomas
Rx Monitoring Services, Inc.
22A Eastman Ave
Bedford, NH 03110, US
603-930-3316

Site Information

Demo
22a Eastman Ave
Bedford, NH 03110, US

Rx Site #: 31098
Monitor S/N: 40446

Client Site Code:
Site Equipment:
Monitor Location: Output

Comments:

Frequent surges on L3 and high voltage (530 VAC) indicate that the power conditioner is malfunctioning and requires service. The voltage angle was 121 degrees and flat-topped phase-ground voltage waveforms point to a possible ground reference issue. Also, there were utility based low-frequency PFC events at 5:51AM daily. The power conditioner needs immediate repair and service to correct the surge events and high voltage conditions. Make sure that the system is properly grounded by checking all ground connections and tightening as necessary. Make sure that there is a full size ground wire running from the system directly to building steel. Note that utility based PFC events with multiple zero-crossings and momentary over voltages will degrade and damage system components. To prevent potential damage from PFC events consider upgrading the protection level to that of an on-line UPS. If there are questions about the data in this report contact RxMS.

This power quality survey was conducted by an independent power and environmental consulting firm, Rx Monitoring Services, Inc. (RxMS). The equipment used to perform the survey was provided by RxMS and calibrated prior to shipment and again upon return according to our internal procedures and national standards.

The client is only responsible for the installation of the equipment and has either no or limited access to the data. The data gathered at the site is compared to the original equipment's site specification guideline (supplied at the initial installation) and used to provide the recommendations found in the report. For technical assistance please contact, at no extra charge, Rx Tech Support at 1-603-666-6606. RxMS is not affiliated with any power conditioning manufacturer or distributor but will refer solutions for your convenience if no local source is available.

Executive Summary

12/14/2018

Rx Monitoring Services, Inc. - Demo

11/14/2018 - 11/28/2018

Site Certified ®

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22A Eastman Ave
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Site Information

Demo
22a Eastman Ave
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Rx Site #: 31098
Monitor S/N: 40446
Client Site Code:

Site Equipment:
Equipment Age:
Monitor Location: Output

Power Quality	Chan L1-L2	Chan L3-L1	Chan L2-L3	Chan L1-G	Rx Rating	Meets Specs	Comments
Power Failures	0	0	0	0	Good	Yes	
Sags	0	1	1	0	Minor	No	Unusual: Cond. may need adjustment
Surges	0	34	35	0	Minor	No	Power Conditioner needs repair
Transients	0	0	0	0	Good	Yes	
Impedance mΩ	N/A	N/A	N/A	N/A			

Data Logging	Actual Low	Actual High	Low Spec	High Spec	Rx Rating	Meets Specs	Comments
Chan L1-L2	467	509	456	504	Minor	No	Momentary Sags
Chan L3-L1	472	532	456	504	Moderate	No	Momentary surges
Chan L2-L3	467	532	456	504	Moderate	No	Repair/Adjust Conditioner
Chan L1-G	269	295	263	291	Minor	No	Possible PFC: remove PFC or add UPS
Frequency	59.8	60.2	59.0	61.0	Good	Yes	Within Spec.
Max V Imbalance	N/A	2.9%	N/A	3.0%	Good	Yes	Within Spec.
Temperature ºF	69	73	60	80	Good	Yes	Within Spec.
Humidity	24	58	15	80	Good	Yes	Within Spec.
L1 Current	3.6	95.4	N/A	N/A	N/A	N/A	L1 Current Peak RMS
L2 Current	N/A	91.1	N/A	N/A	N/A	N/A	L2 Current Peak RMS
L3 Current	N/A	88.3	N/A	N/A	N/A	N/A	L3 Current Peak RMS
Neutral	3.0	58.8	N/A	N/A	N/A	N/A	Neutral Peak Current
Ground	N/A	0.0	N/A	N/A	N/A	N/A	Not connected
DC Volts - CH 1							
DC Volts - CH 2							

Rx Ratings

Safety	Severe	Moderate	Minor	Good
NEC Violation or other Safety Hazard	Damage is likely. Disruption is Highly likely	Damage is possible. Disruption is likely	Damage unlikely. Disruption is possible	Within Manufacturer Specifications

Please email **Sales@rxms.com** or call **Rx Monitoring Services, Inc. at (603) 666-6606** for answers to any questions regarding this report.

Bedford, NH. USA - WWW.RXMS.COM

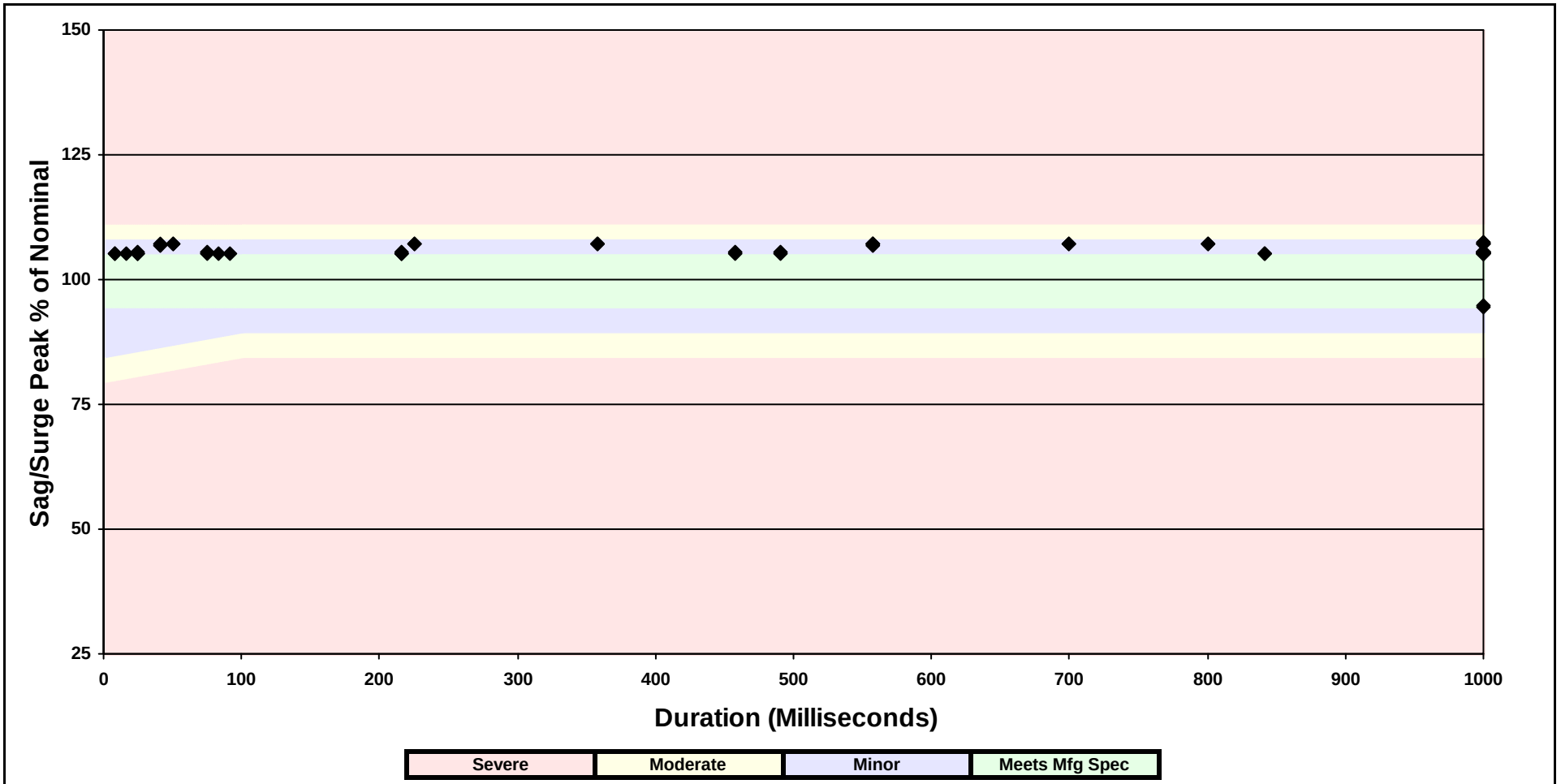
Sags-Surges vs. Duration

Site: 31098

Rx Monitoring Services, Inc. Demo

11/14/2018 - 11/28/2018

☐ Filter Good Events



Recommendations:

All sags are related to equipment use (step load and pulsing load) and output impedance / response time of power conditioner. Power conditioner or UPS may be undersized, improperly applied, or malfunctioning.

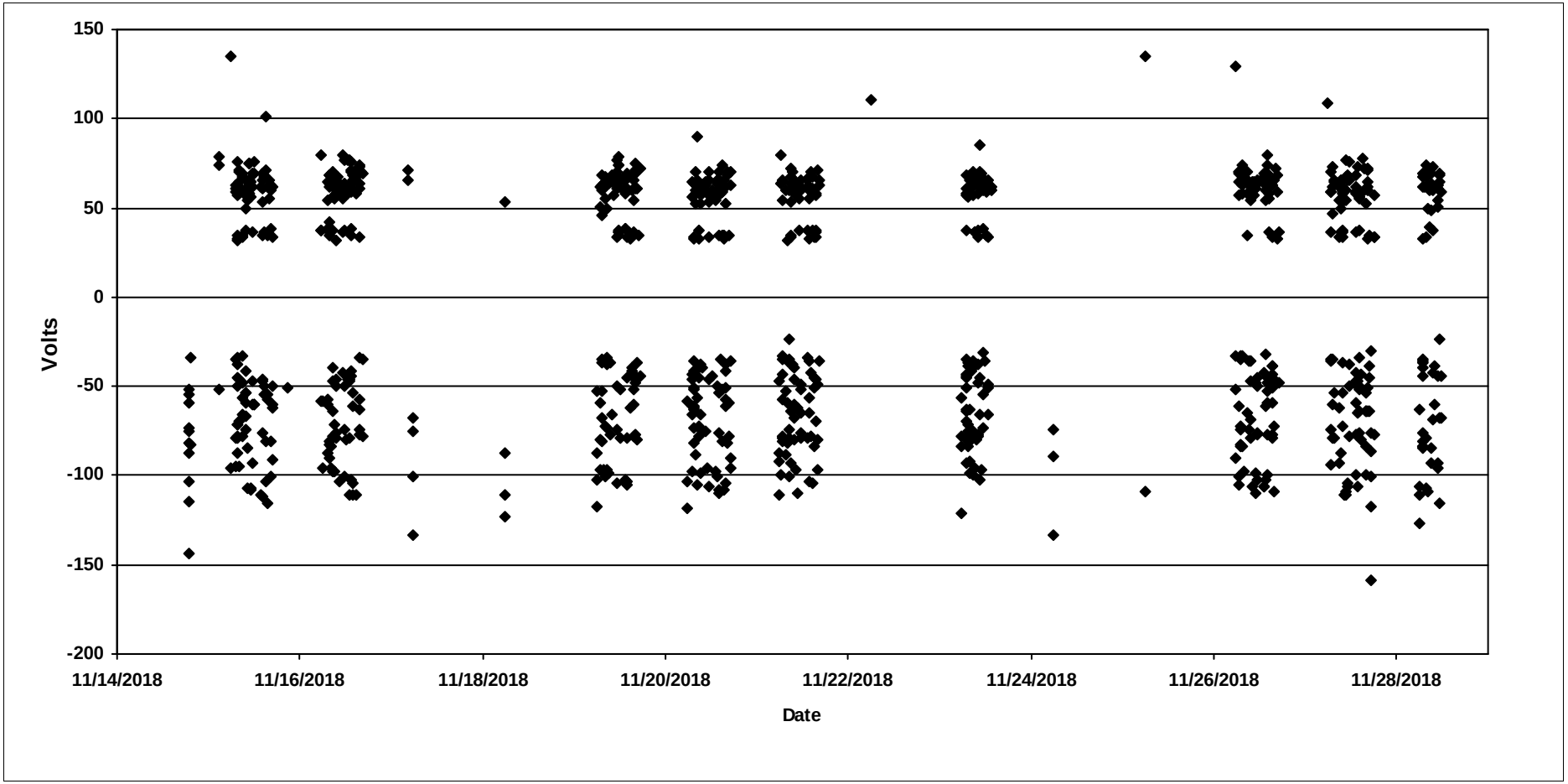
Transient (Additive/Subtractive)

Site: 31098

Rx Monitoring Services, Inc. Demo

11/14/2018 - 11/28/2018

☐ Filter Good Events



Recommendations:

Daily PFC capacitor impulses @5:51AM (as well as other times) and a number of minor subtractive impulses, possibly related to load switch-on: this requires that additonal power protection be added.

Detailed Event Log

Site: 31098

Rx Monitoring Services, Inc. Demo

☑ Filter Good Events

11/14/2018 - 11/28/2018

Date/Time	Event ID	Event Type	Chan	P 1	P 2	P3	Severity
Nov 14, 18 18:08:17	177	System Power-Up					
Nov 14, 18 18:08:19	178	Start					
Nov 14, 18 20:09:00.544	294	RMS Surge	L3-L1	529	358	493	Minor
Nov 14, 18 20:09:00.544	293	RMS Surge	L2-L3	530	358	495	Minor
Nov 15, 18 02:23:40.478	299	RMS Surge	L3-L1	531	225	496	Minor
Nov 15, 18 02:23:40.478	298	RMS Surge	L2-L3	531	225	495	Minor
Nov 15, 18 02:44:46.219	309	RMS Surge	L3-L1	532	76533	496	Minor
Nov 15, 18 02:44:46.219	310	RMS Surge	L2-L3	532	76533	495	Minor
Nov 15, 18 02:59:00.611	315	RMS Surge	L3-L1	530	800	495	Minor
Nov 15, 18 02:59:00.611	314	RMS Surge	L2-L3	530	800	494	Minor
Nov 15, 18 15:34:20.036	620	RMS Surge	L3-L1	522	558	488	Minor
Nov 15, 18 15:34:20.036	621	RMS Surge	L2-L3	522	558	487	Minor
Nov 15, 18 19:27:32.269	673	RMS Surge	L3-L1	521	75	495	Minor
Nov 15, 18 19:27:32.269	674	RMS Surge	L2-L3	523	75	496	Minor
Nov 16, 18 12:44:10.194	880	RMS Surge	L3-L1	523	41	489	Minor
Nov 16, 18 12:44:10.194	881	RMS Surge	L2-L3	521	41	486	Minor
Nov 17, 18 04:23:50.444	1045	RMS Surge	L3-L1	530	120000	493	Minor
Nov 17, 18 04:23:50.444	1046	RMS Surge	L2-L3	529	120000	493	Minor
Nov 17, 18 04:56:53.761	1071	RMS Surge	L2-L3	519	120000	492	Minor
Nov 17, 18 04:56:53.769	1072	RMS Surge	L3-L1	519	120000	493	Minor
Nov 17, 18 05:08:21.828	1098	RMS Surge	L3-L1	518	34400	491	Minor
Nov 17, 18 05:08:21.828	1099	RMS Surge	L2-L3	518	34400	491	Minor
Nov 20, 18 00:15:43.461	1524	RMS Surge	L3-L1	529	5791	494	Minor
Nov 20, 18 00:15:43.461	1523	RMS Surge	L2-L3	530	5791	494	Minor
Nov 20, 18 08:12:55.261	1653	RMS Surge	L3-L1	518	7541	491	Minor
Nov 20, 18 08:12:55.261	1654	RMS Surge	L2-L3	517	7541	490	Minor
Nov 20, 18 08:26:40.061	1688	RMS Surge	L3-L1	518	1975	492	Minor
Nov 20, 18 08:26:40.061	1689	RMS Surge	L2-L3	517	1975	490	Minor
Nov 20, 18 09:01:08.553	1741	RMS Surge	L3-L1	518	8625	492	Minor
Nov 20, 18 09:01:08.553	1740	RMS Surge	L2-L3	517	8625	491	Minor
Nov 20, 18 10:26:40.078	1804	RMS Surge	L3-L1	518	19575	491	Minor
Nov 20, 18 10:26:40.078	1805	RMS Surge	L2-L3	516	19575	489	Minor
Nov 20, 18 16:52:38.328	2035	RMS Surge	L3-L1	515	120000	489	Minor
Nov 20, 18 16:52:38.328	2036	RMS Surge	L2-L3	515	120000	489	Minor
Nov 21, 18 00:08:35.394	2080	RMS Surge	L2-L3	519	8033	492	Minor
Nov 21, 18 00:08:35.402	2079	RMS Surge	L3-L1	519	8024	493	Minor
Nov 21, 18 02:24:38.219	2102	RMS Surge	L3-L1	520	51291	494	Minor

Parameters

RMS Nominal	RMS Re-Nominal	HF Transient	HF Sensitivity	RMS Sag/Surge	Line Impedance
P1 = Nominal Volts	P1 = Prev Nom Volts	P1 = Peak Voltage	P1 = Sens Val	P1 = Peak Voltage	P1 = Impedance m Ω
	P2 = New Nom Volts	P2 = Duration uSec		P2 = Duration mSec	P2 = Nom Volts
		P3 = Phase Angle		P3 = Nom Voltage	

Comments:

All events related to load changes and output impedance characteristics of power conditioner. Severe sags and impulses. Conditioner may be undersized, or incompatible with the connected load current profile.

Detailed Event Log

Site: 31098

Rx Monitoring Services, Inc. Demo

☑ Filter Good Events

11/14/2018 - 11/28/2018

Date/Time	Event ID	Event Type	Chan	P 1	P 2	P3	Severity
Nov 21, 18 02:24:38.219	2103	RMS Surge	L2-L3	520	51291	493	Minor
Nov 21, 18 03:15:13.511	2122	RMS Surge	L3-L1	520	24350	493	Minor
Nov 21, 18 03:15:13.511	2123	RMS Surge	L2-L3	519	24350	492	Minor
Nov 21, 18 03:20:03.319	2137	RMS Sag	L3-L1	492	120000	519	Minor
Nov 21, 18 03:20:03.319	2138	RMS Sag	L2-L3	491	120000	519	Minor
Nov 21, 18 03:33:42.478	2152	RMS Surge	L3-L1	520	6558	493	Minor
Nov 21, 18 03:33:42.478	2153	RMS Surge	L2-L3	519	6558	493	Minor
Nov 21, 18 05:37:55.878	2193	RMS Surge	L3-L1	517	91	491	Minor
Nov 21, 18 05:37:55.878	2194	RMS Surge	L2-L3	517	83	491	Minor
Nov 23, 18 00:25:36.769	2569	RMS Surge	L3-L1	522	1541	495	Minor
Nov 23, 18 00:25:36.769	2570	RMS Surge	L2-L3	521	1541	495	Minor
Nov 23, 18 19:25:14.478	2843	RMS Surge	L3-L1	522	1983	495	Minor
Nov 23, 18 19:25:14.478	2844	RMS Surge	L2-L3	522	1983	495	Minor
Nov 24, 18 02:34:44.161	2860	RMS Surge	L3-L1	521	25	495	Minor
Nov 24, 18 02:34:44.161	2861	RMS Surge	L2-L3	521	25	494	Minor
Nov 24, 18 04:43:02.086	2873	RMS Surge	L3-L1	519	25	493	Minor
Nov 24, 18 04:43:02.086	2874	RMS Surge	L2-L3	518	25	492	Minor
Nov 24, 18 06:31:50.286	2885	RMS Surge	L3-L1	518	216	492	Minor
Nov 24, 18 06:31:50.286	2886	RMS Surge	L2-L3	517	216	491	Minor
Nov 25, 18 00:45:41.453	2903	RMS Surge	L3-L1	521	216	495	Minor
Nov 25, 18 00:45:41.453	2904	RMS Surge	L2-L3	521	216	494	Minor
Nov 25, 18 06:33:46.419	2915	RMS Surge	L3-L1	519	491	493	Minor
Nov 25, 18 06:33:46.419	2914	RMS Surge	L2-L3	519	491	492	Minor
Nov 25, 18 18:32:31.511	2923	RMS Surge	L3-L1	529	50	494	Minor
Nov 25, 18 18:32:31.511	2924	RMS Surge	L2-L3	531	50	495	Minor
Nov 26, 18 23:28:46.269	3323	RMS Surge	L2-L3	518	16	492	Minor
Nov 26, 18 23:28:46.277	3322	RMS Surge	L3-L1	518	8	493	Minor
Nov 27, 18 13:36:18.969	3573	RMS Surge	L3-L1	523	700	488	Minor
Nov 27, 18 13:36:18.969	3574	RMS Surge	L2-L3	523	700	488	Minor
Nov 27, 18 15:10:20.078	3641	RMS Surge	L3-L1	520	558	486	Minor
Nov 27, 18 15:10:20.078	3642	RMS Surge	L2-L3	520	558	485	Minor
Nov 27, 18 15:11:48.428	3647	RMS Surge	L3-L1	512	841	486	Minor
Nov 27, 18 15:11:48.428	3646	RMS Surge	L2-L3	512	841	486	Minor
Nov 27, 18 20:22:47.386	3753	RMS Surge	L3-L1	520	458	494	Minor
Nov 27, 18 20:22:47.386	3754	RMS Surge	L2-L3	521	458	494	Minor
Nov 27, 18 22:08:59.469	3763	RMS Surge	L2-L3	519	8	494	Minor
Nov 28, 18 12:08:09	3969	System Shutdown					

Parameters

RMS Nominal	RMS Re-Nominal	HF Transient	HF Sensitivity	RMS Sag/Surge	Line Impedance
P1 = Nominal Volts	P1 = Prev Nom Volts	P1 = Peak Voltage	P1 = Sens Val	P1 = Peak Voltage	P1 = Impedance m Ω
	P2 = New Nom Volts	P2 = Duration uSec		P2 = Duration mSec	P2 = Nom Volts
		P3 = Phase Angle		P3 = Nom Voltage	

Comments:

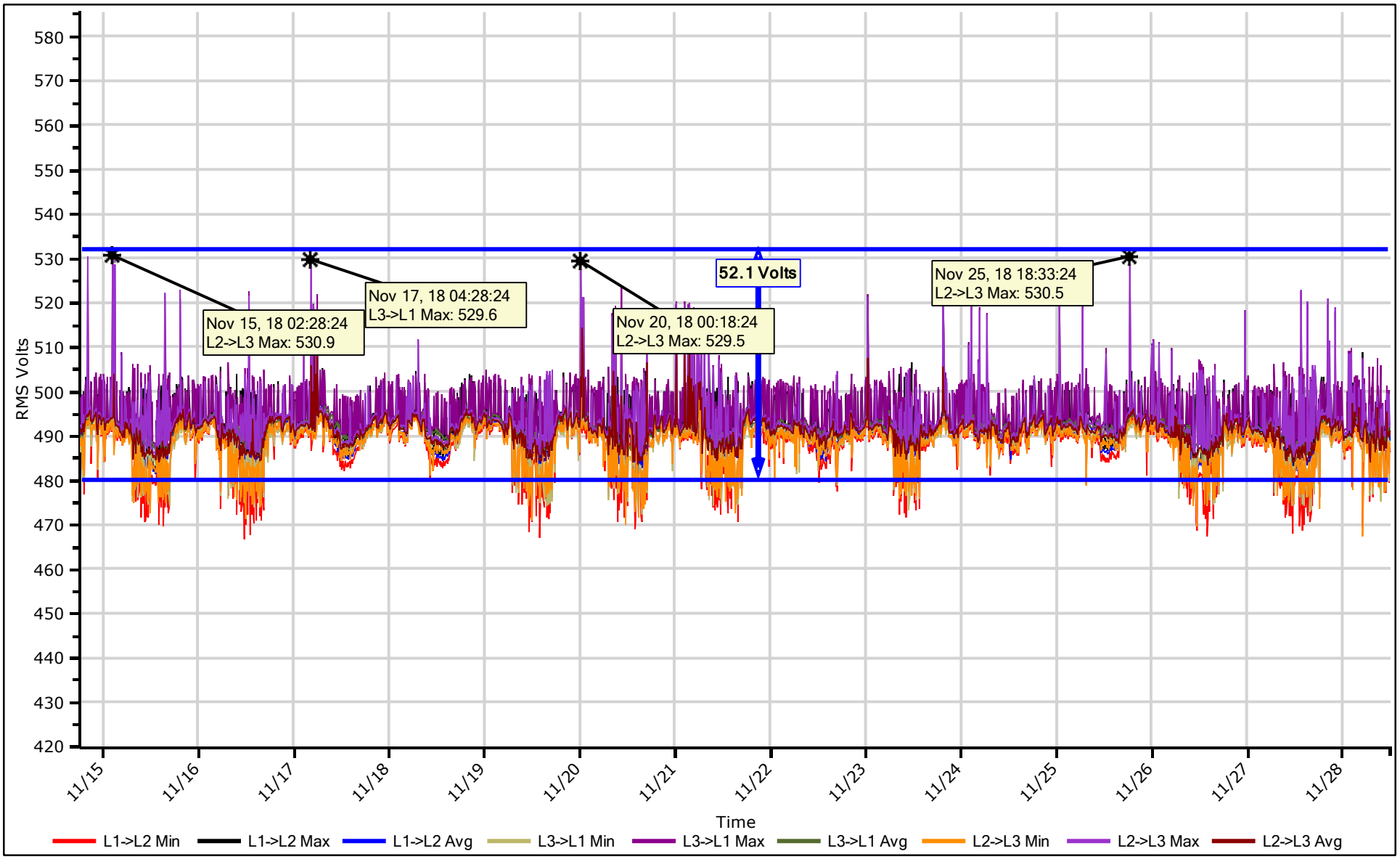
All events related to load changes and output impedance characteristics of power conditioner. Severe sags and impulses. Conditioner may be undersized, or incompatible with the connected load current profile.

RMS Voltage

Site: 31098
Rx Monitoring Services, Inc. Demo
Nov 14, 18 18:18 - Nov 28, 18 12:03

12/14/2018

Max Lo/Hi: 482/532
Avg Lo/Hi: 481/515
Min Lo/Hi: 467/509



RMS Voltage

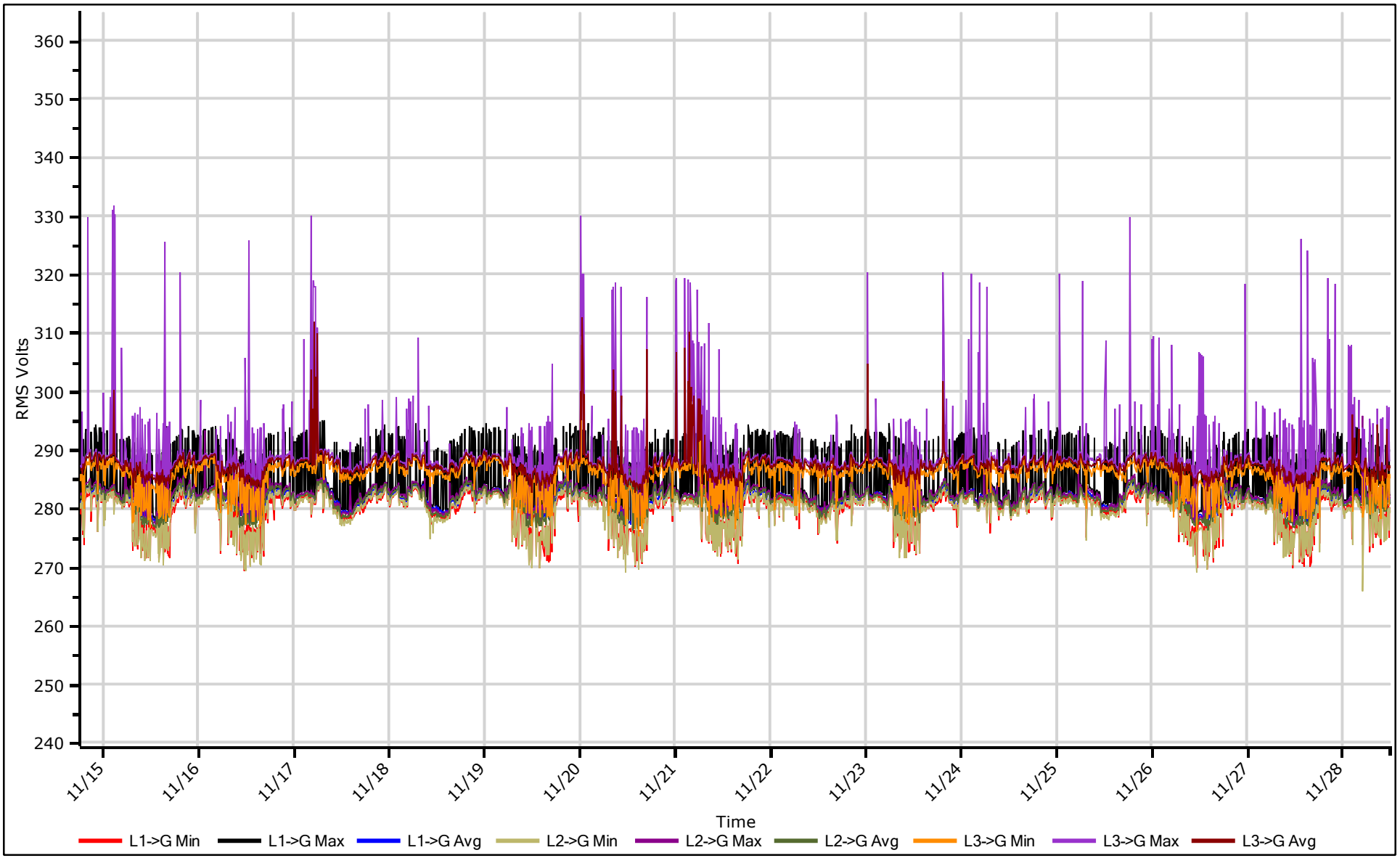
Site: 31098

Rx Monitoring Services, Inc. Demo

Nov 14, 18 18:18 - Nov 28, 18 12:03

12/14/2018

Max Lo/Hi: 277/332
Avg Lo/Hi: 276/313
Min Lo/Hi: 266/308



Phase Voltage Imbalance

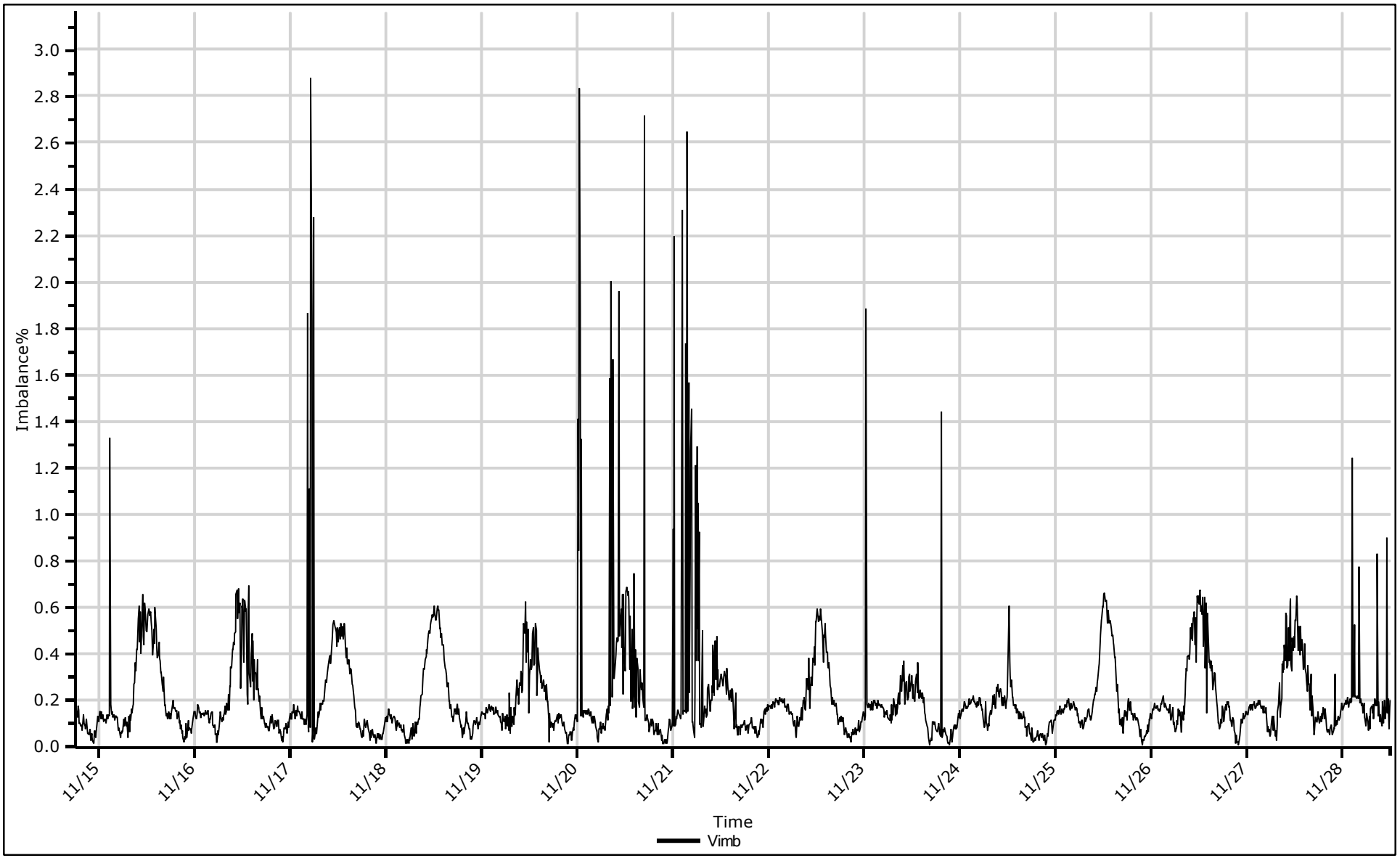
Site: 31098

Rx Monitoring Services, Inc. Demo

Nov 14, 18 18:18 - Nov 28, 18 12:03

12/14/2018

Peak Imbalance: 2.88%



RMS Current

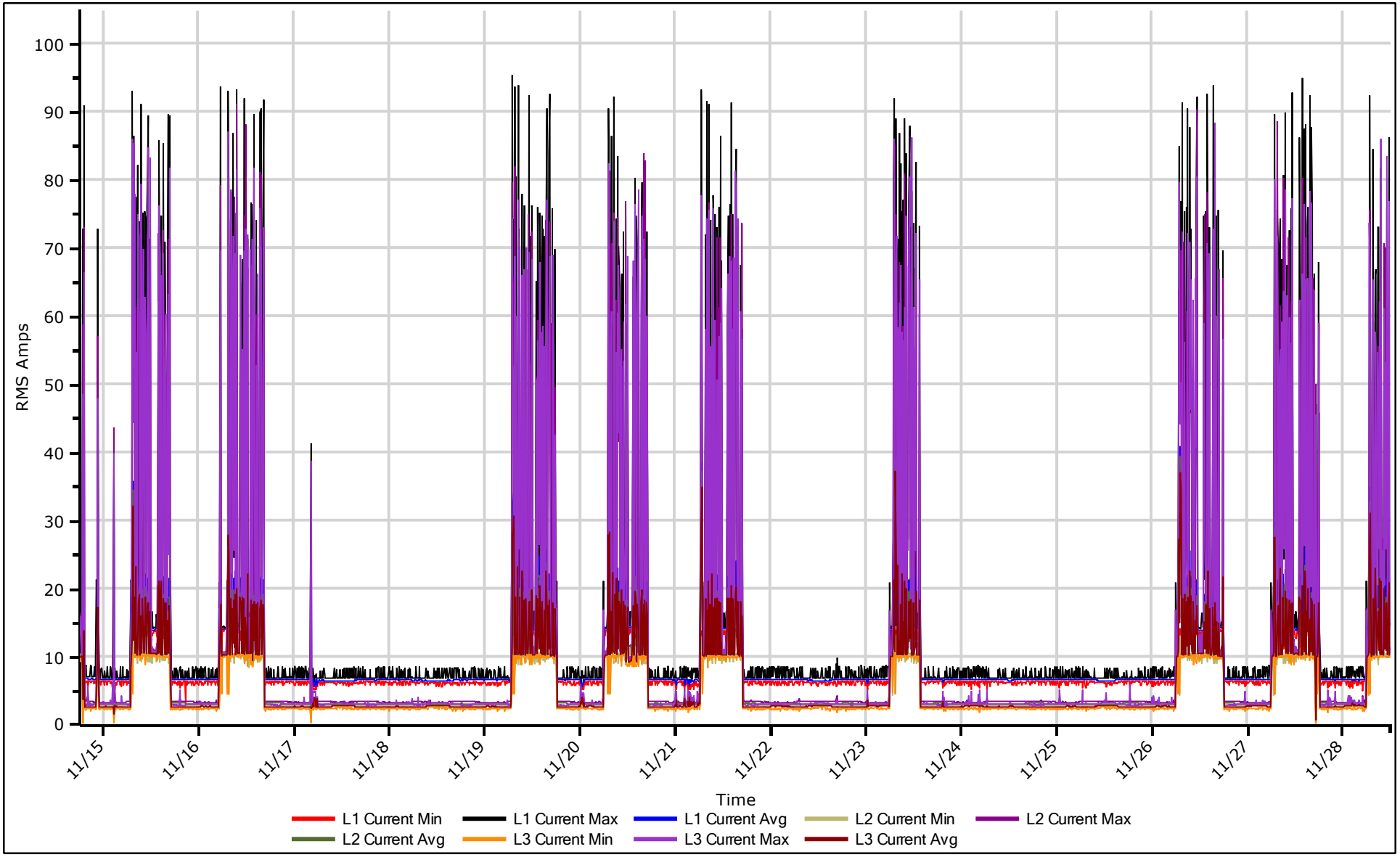
Site: 31098

Rx Monitoring Services, Inc. Demo

Nov 14, 18 18:18 - Nov 28, 18 12:03

12/14/2018

Max Lo/Hi: 3/95
Avg Lo/Hi: 0.7/41
Min Lo/Hi: 0.2/18



RMS Current

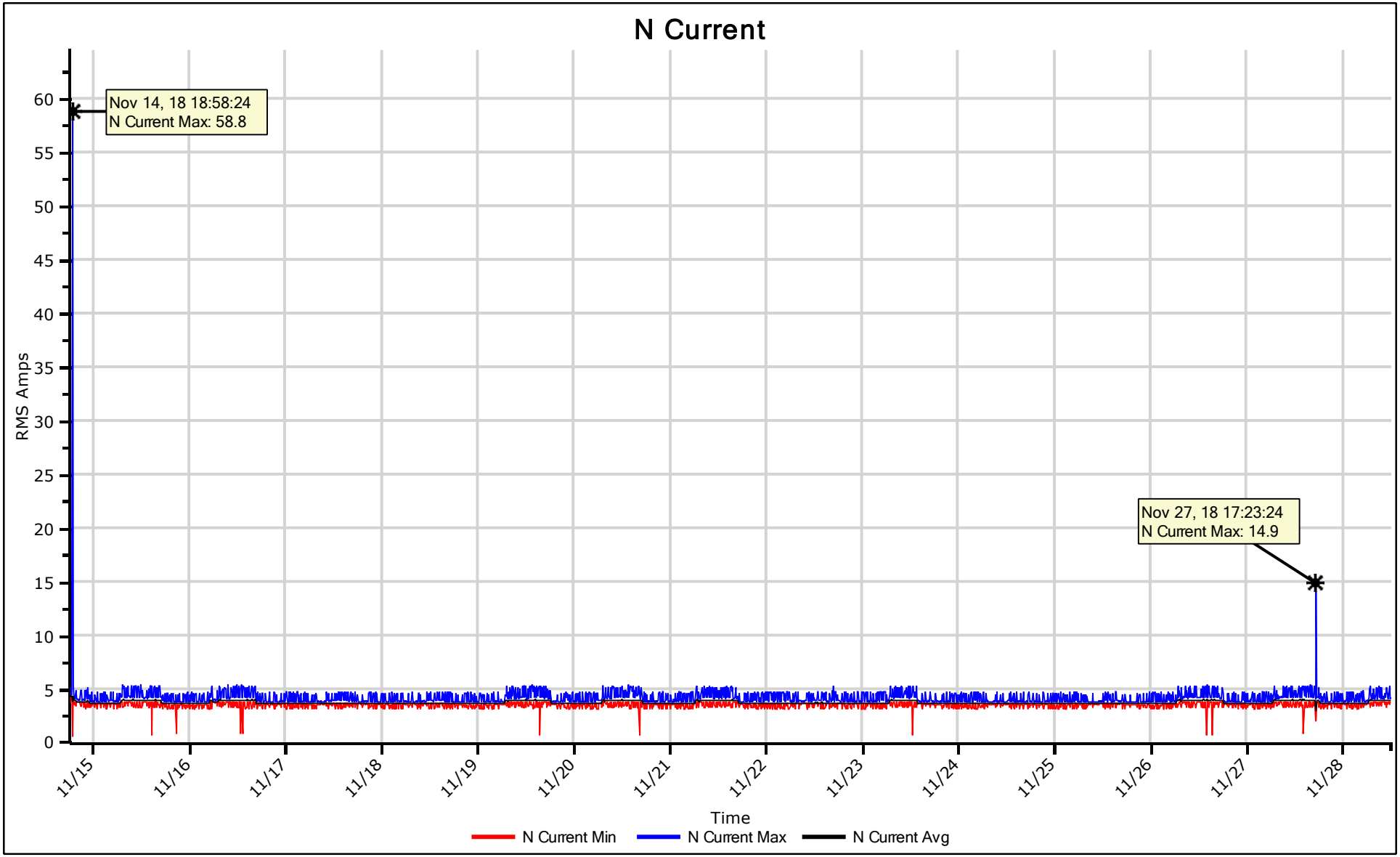
Site: 31098

Rx Monitoring Services, Inc. Demo

Nov 14, 18 18:18 - Nov 28, 18 12:03

12/14/2018

Max Lo/Hi: 4/59
Avg Lo/Hi: 3/4
Min Lo/Hi: 0.5/4

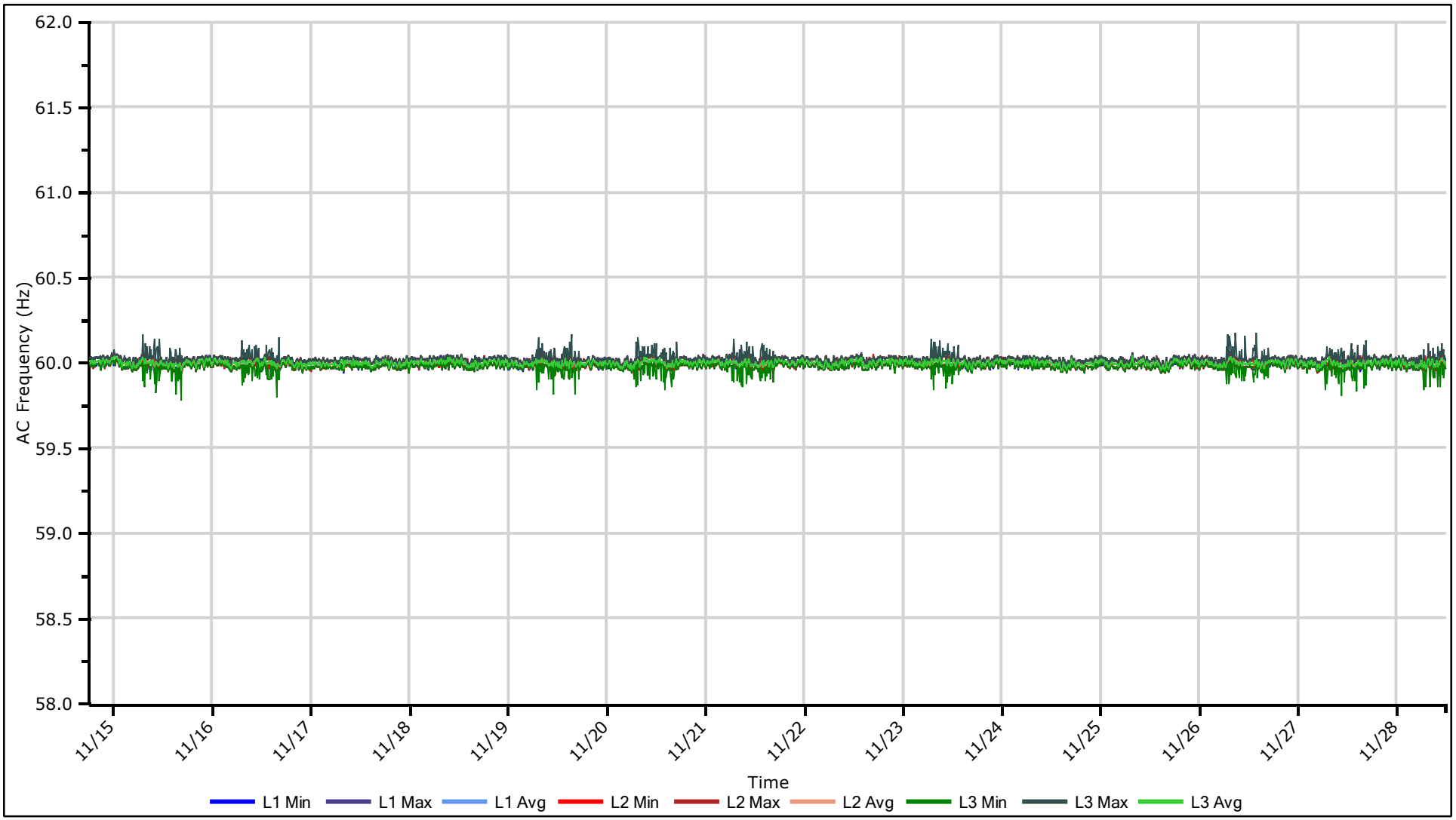


AC Frequency

Site: 31098

Rx Monitoring Services, Inc. Demo

Nov 14, 18 18:18 - Nov 28, 18 12:03



Comments:

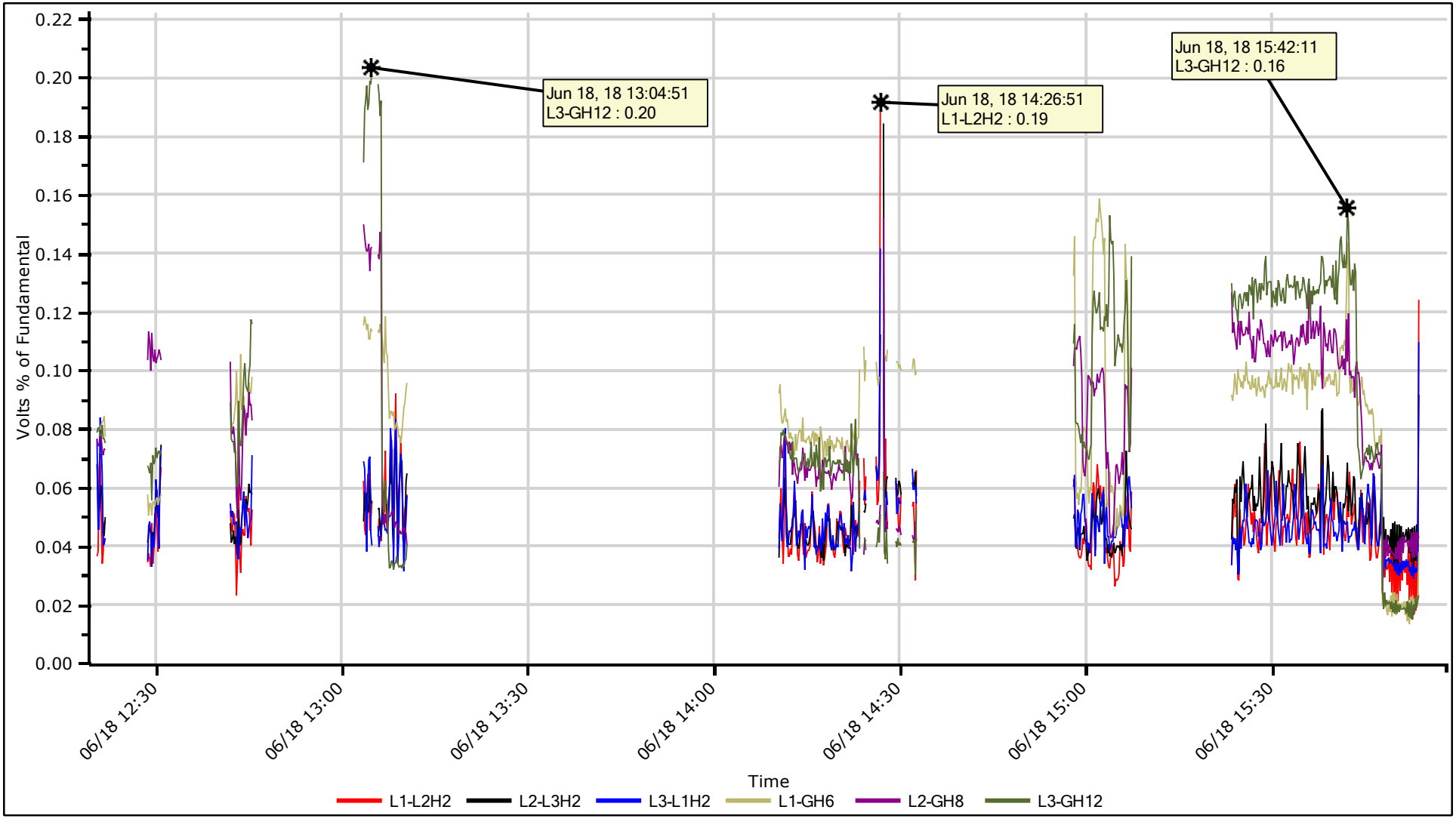
Frequency 20 Cycle Average

Harmonics

Site: 31098

Rx Monitoring Services, Inc. Demo

Jun 18, 18 12:19 - Jun 18, 18 15:58



Comments:

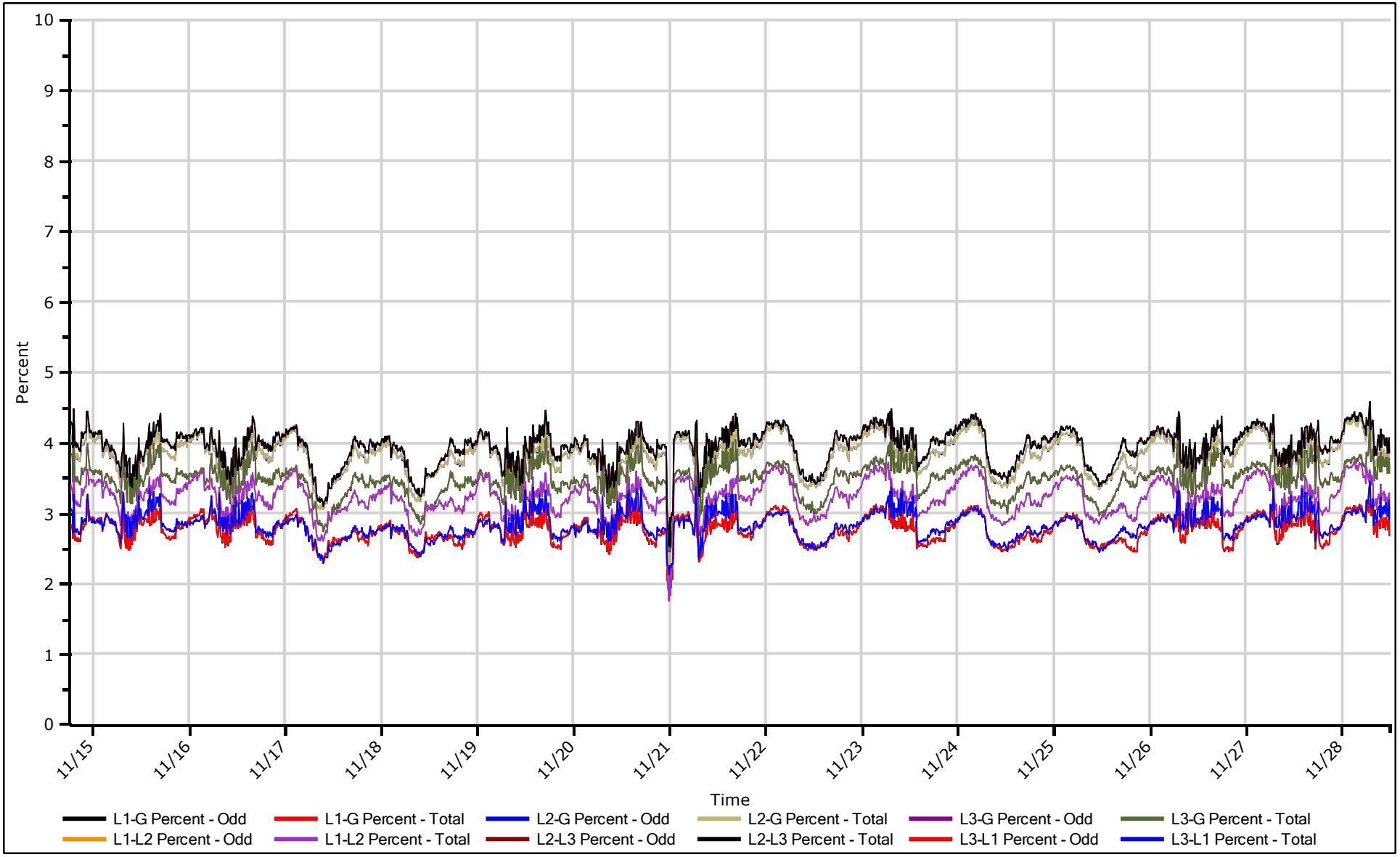
Harmonics are available upon request. Please make sure to request them when you place your order so we can enable this feature on the monitor.

THD Logs

Site: 31098

Rx Monitoring Services, Inc. Demo

Nov 14, 18 18:18 - Nov 28, 18 12:03

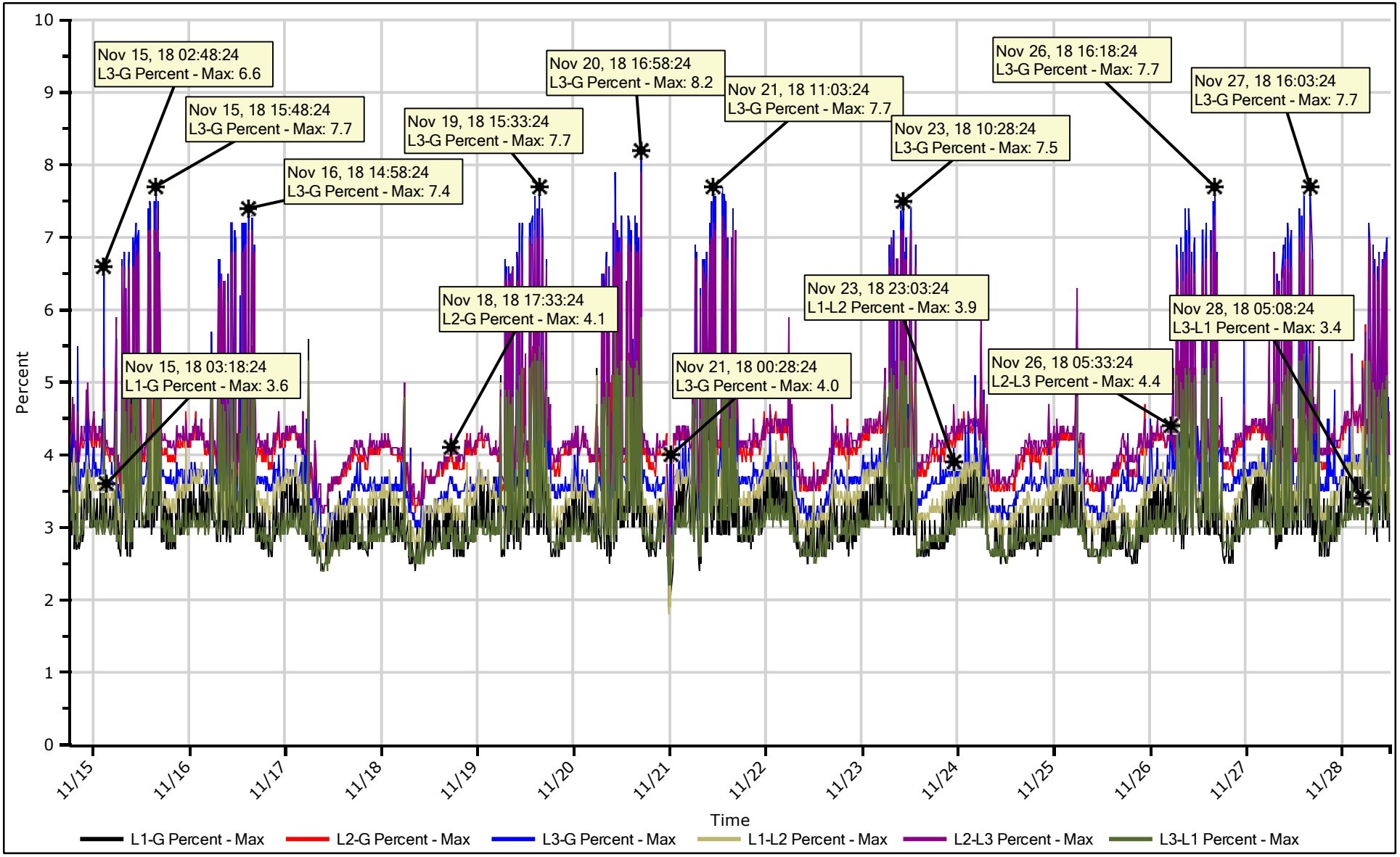


THD Logs

Site: 31098

Rx Monitoring Services, Inc. Demo

Nov 14, 18 18:18 - Nov 28, 18 12:03



Temperature °F / Humidity %

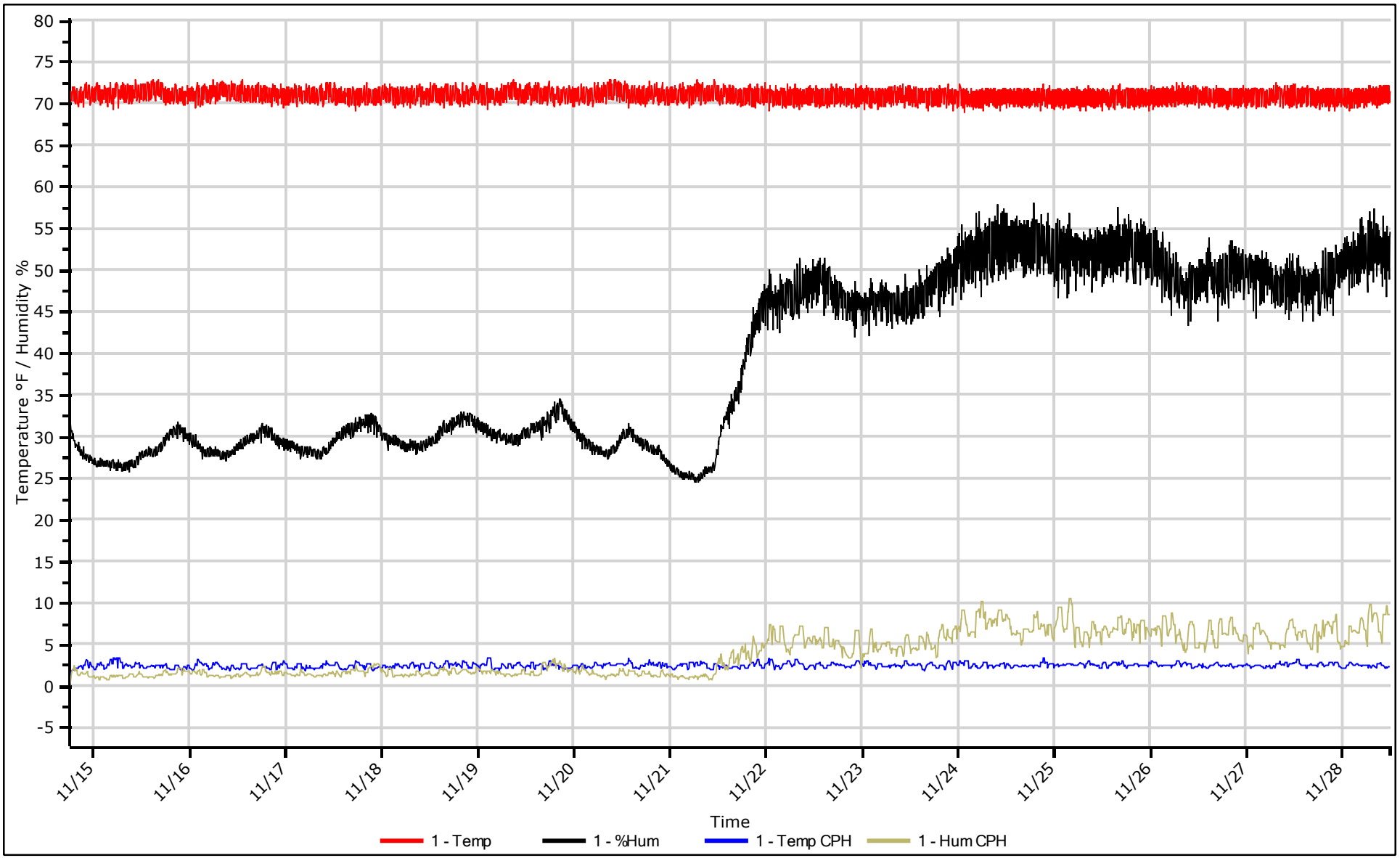
Site: 31098

Rx Monitoring Services, Inc. Demo

Nov 14, 18 18:13 - Nov 28, 18 12:03

12/14/2018

Temp Lo/Hi: 69/73
Hum Lo/Hi: 24/58
Max CPH T/H: 3/10



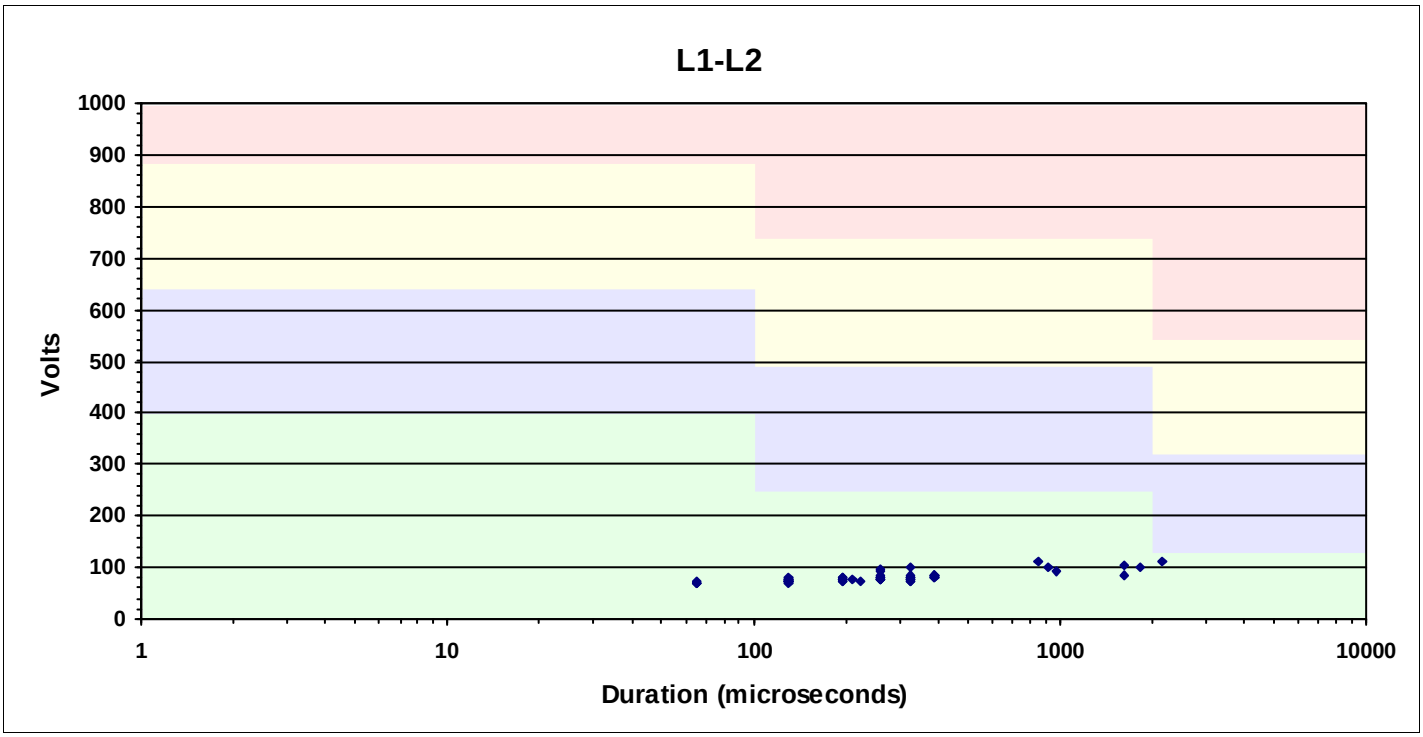
Transient Scatter Plot

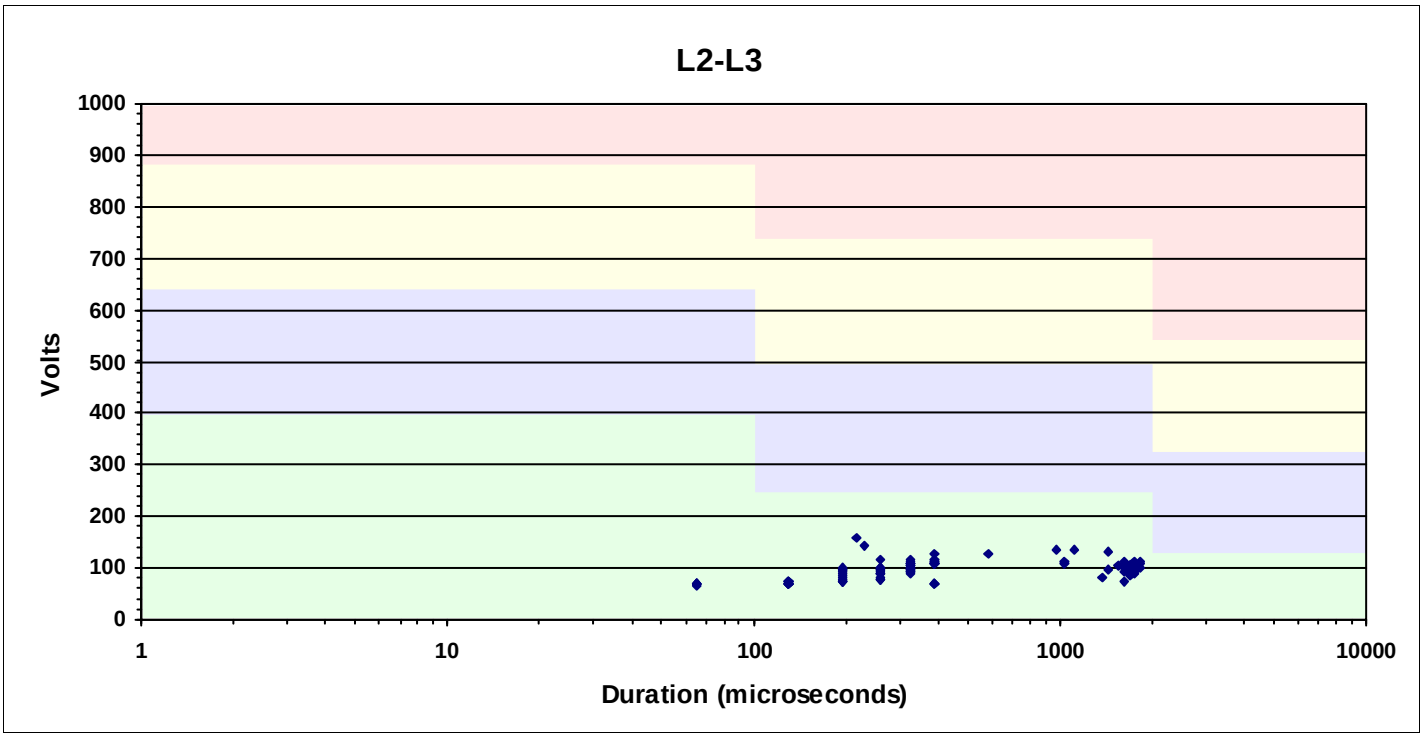
Site: 31098

Rx Monitoring Services, Inc. Demo

11/14/2018 - 11/28/2018

☐ Filter Good Events





Severe	Moderate	Minor	Good

12/14/2018

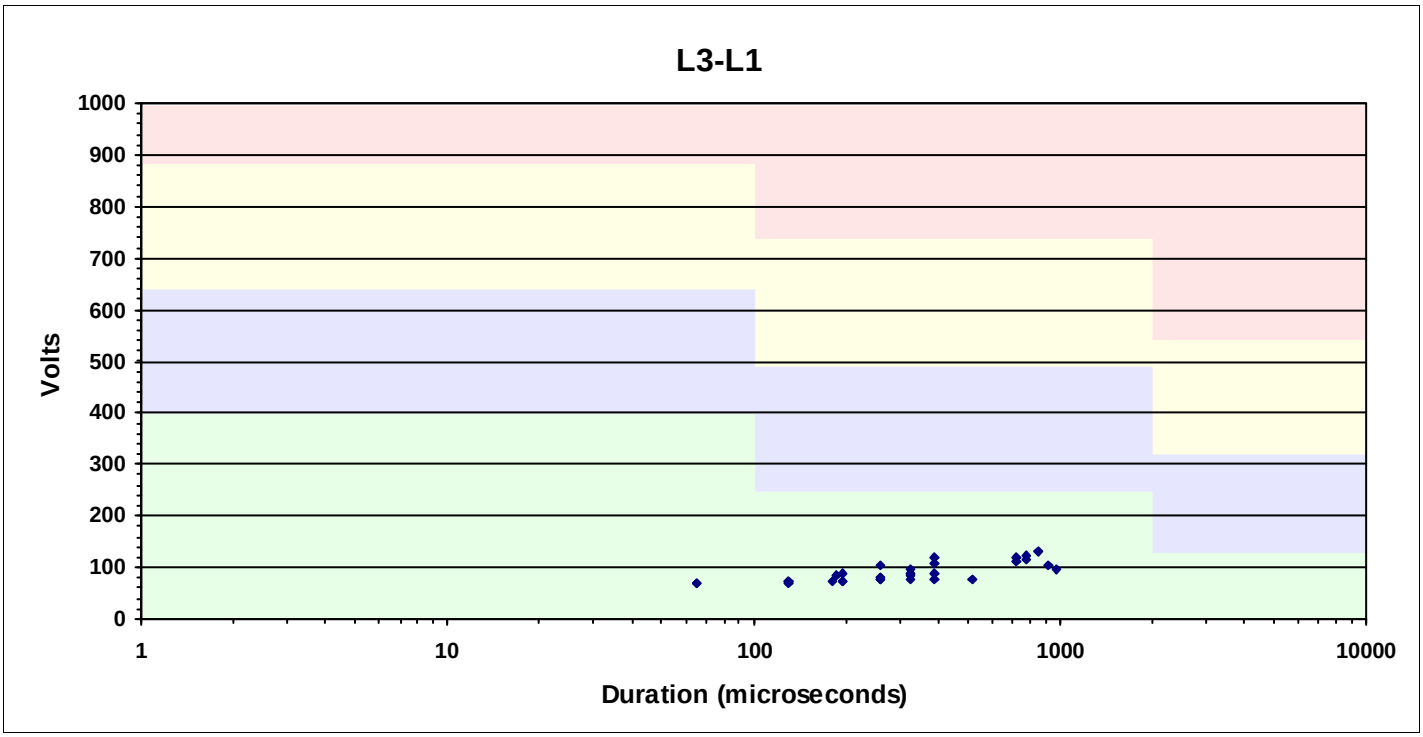
Transient Scatter Plot

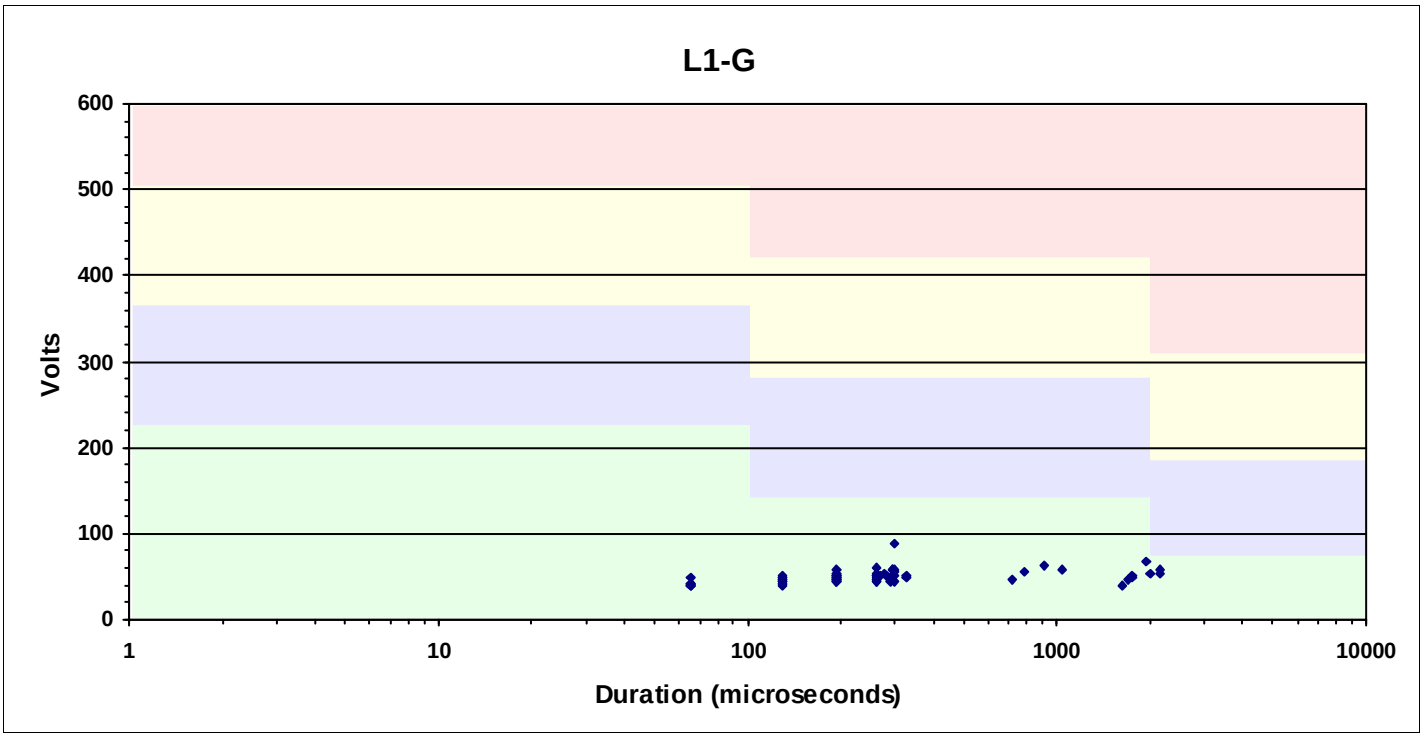
Site: 31098

Rx Monitoring Services, Inc. Demo

11/14/2018 - 11/28/2018

☐ Filter Good Events





Severe	Moderate	Minor	Good

12/14/2018

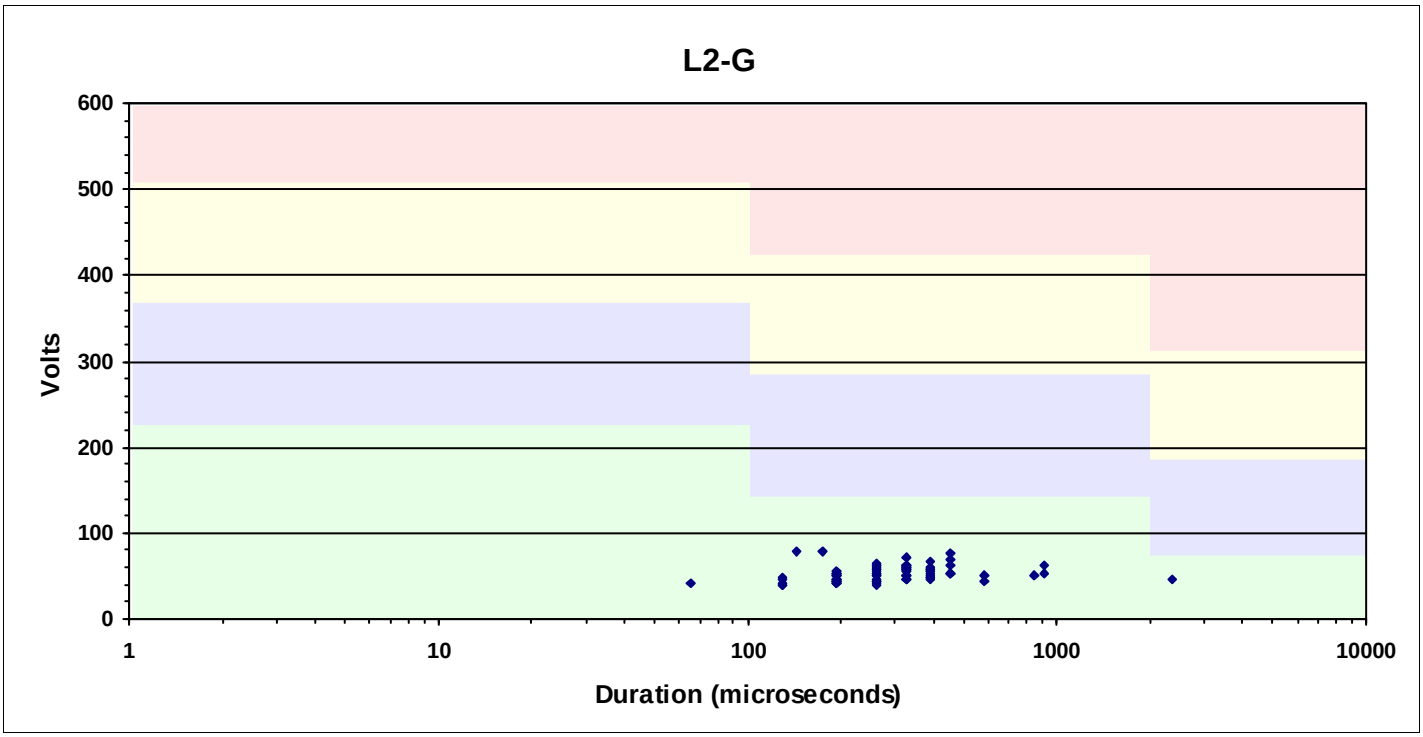
Transient Scatter Plot

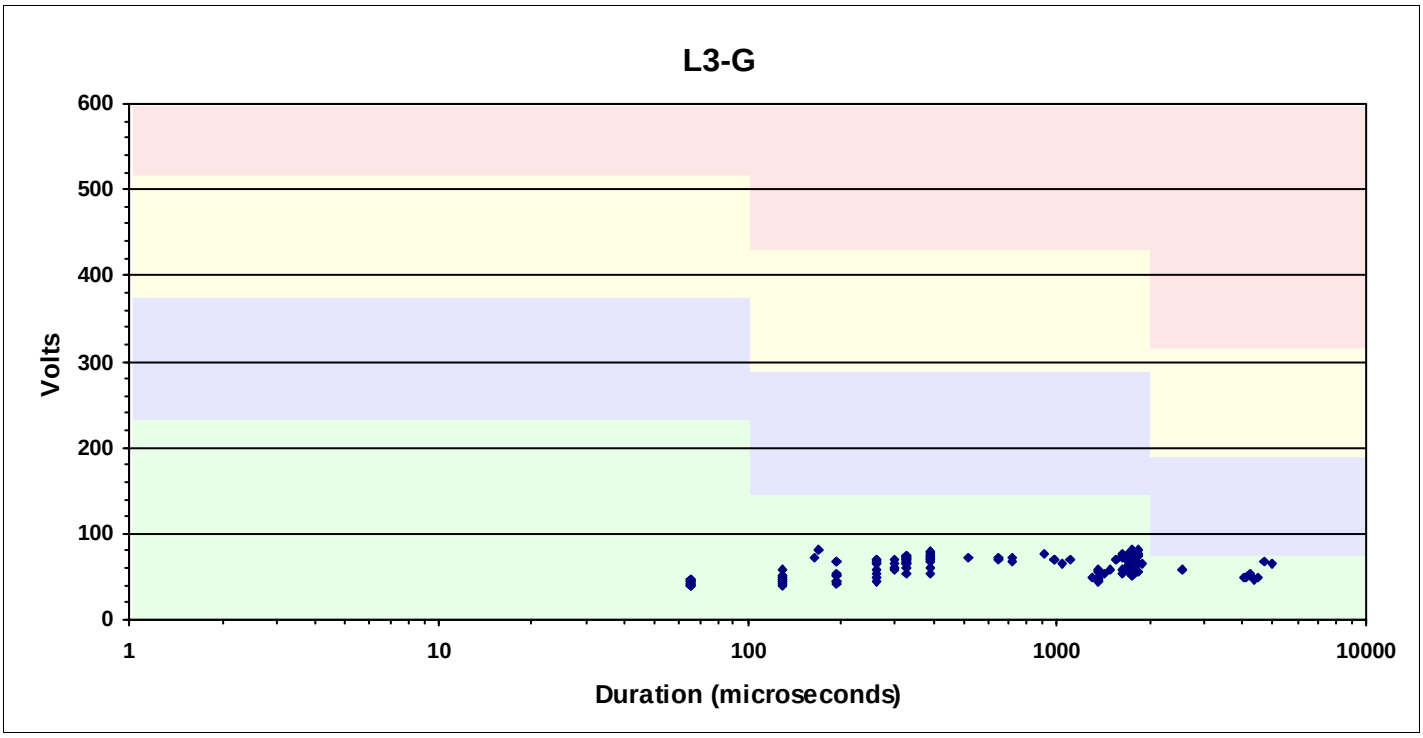
Site: 31098

Rx Monitoring Services, Inc. Demo

11/14/2018 - 11/28/2018

☐ Filter Good Events





Severe	Moderate	Minor	Good

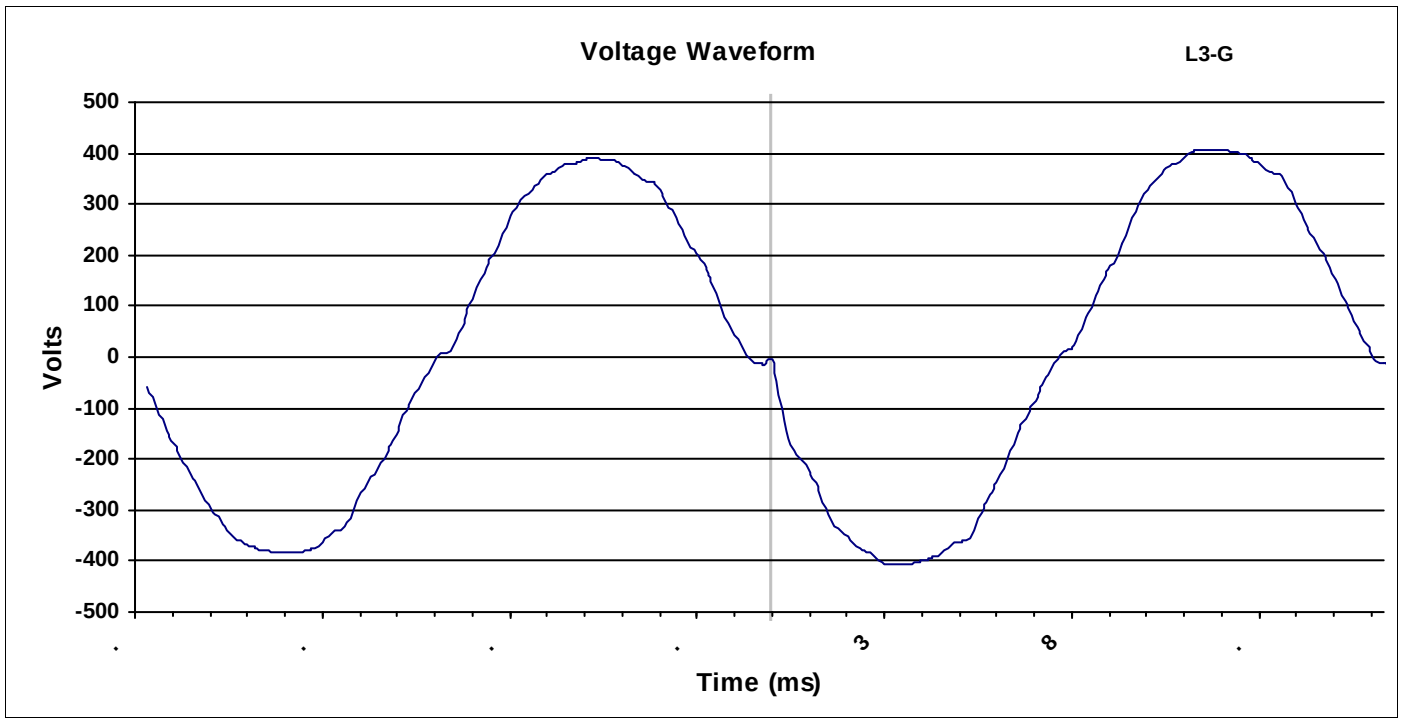
Transient

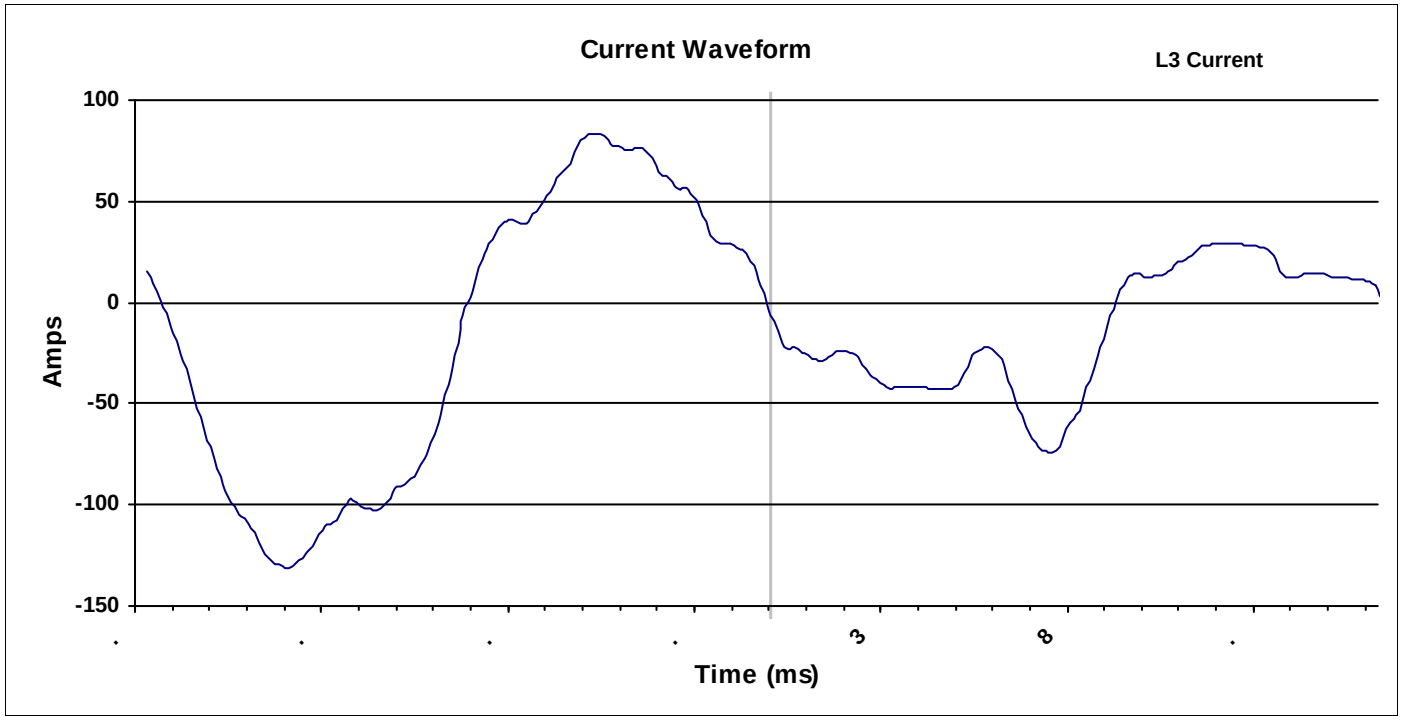
Site: 31098

Rx Monitoring Services, Inc. Demo

Event 992 - Nov 16, 18 15:32:17.170

Peak: -79
Duration: 391 uS
Severity: Good





Comments:

Load current is causing slight distortion of voltage waveform. This is normal system operation.

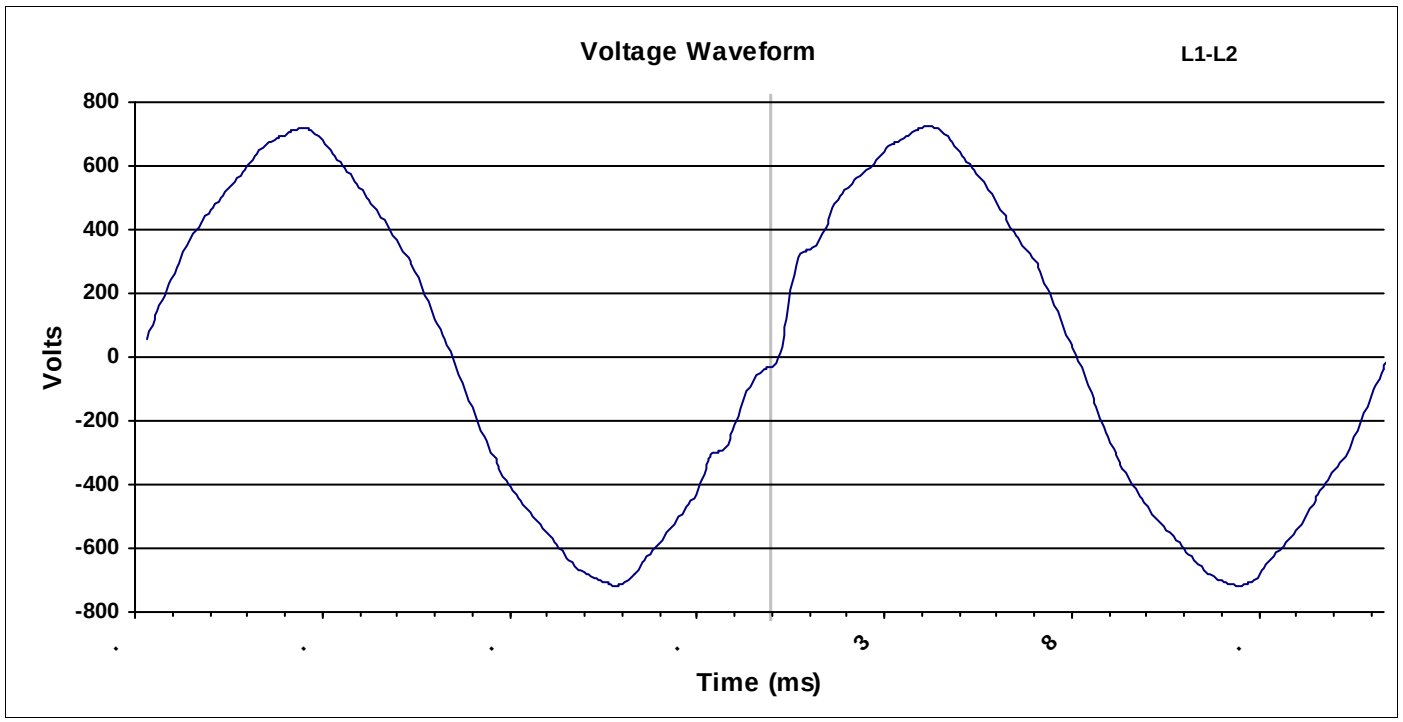
Transient

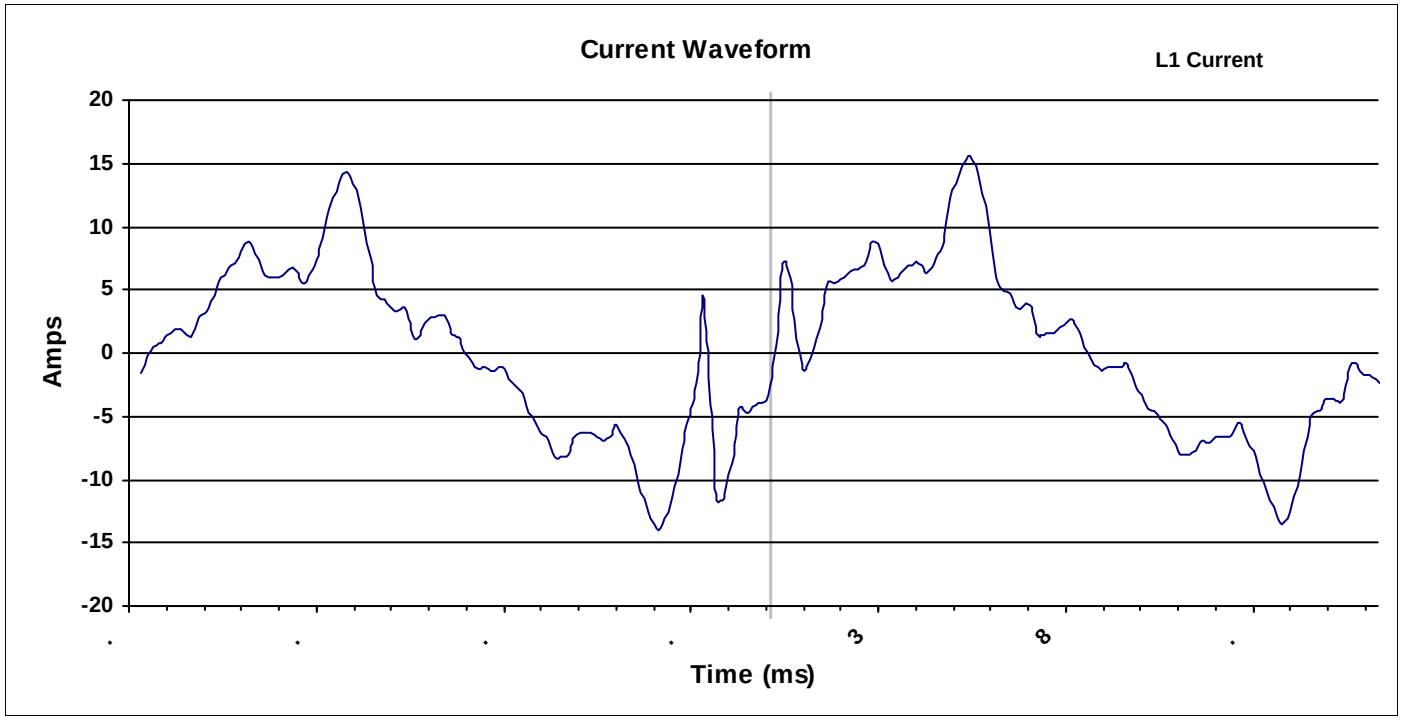
Site: 31098

Rx Monitoring Services, Inc. Demo

Event 1171 - Nov 18, 18 05:51:35.856

Peak: -111
Duration: 846 uS
Severity: Good





Comments:

Possible Power Factor Capacitor switching or switch-on of another load.

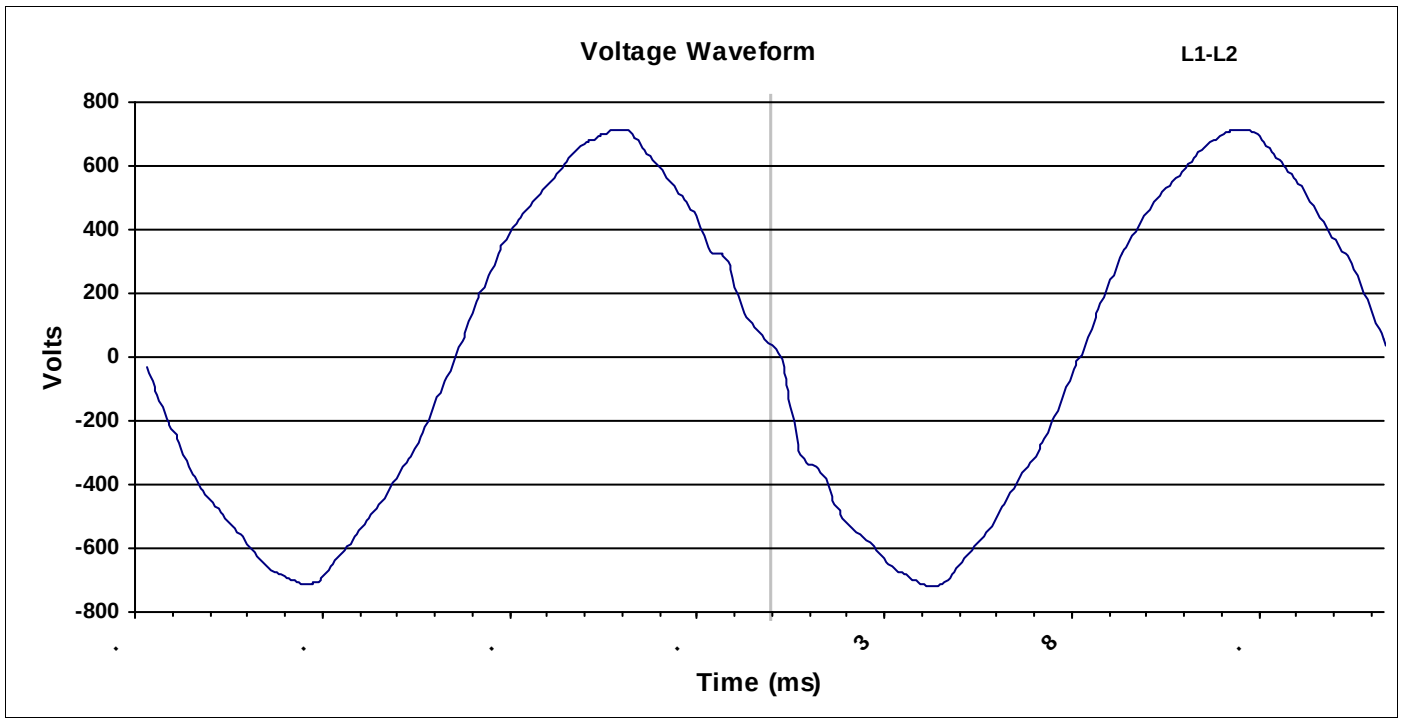
Transient

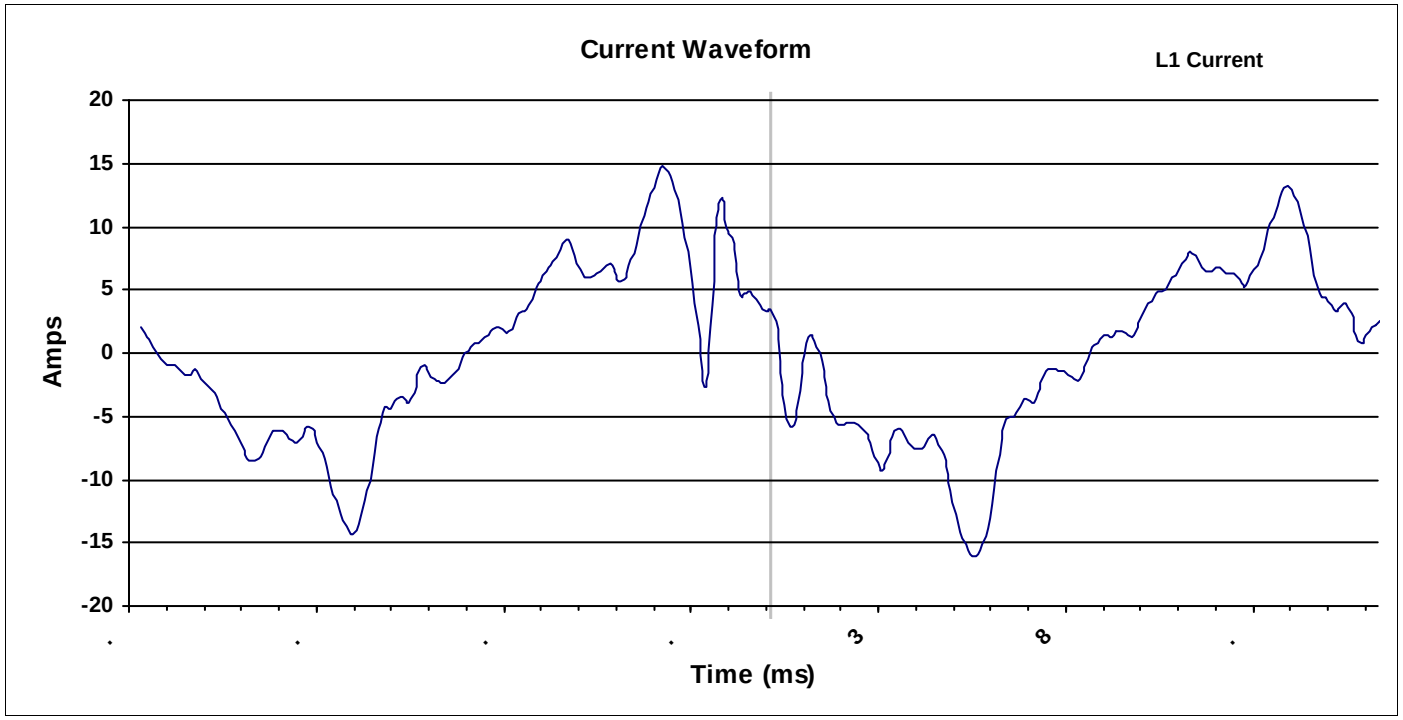
Site: 31098

Rx Monitoring Services, Inc. Demo

Event 1178 - Nov 19, 18 05:51:35.956

Peak: -102
Duration: 911 uS
Severity: Good





Comments:

Possible Power Factor Capacitor switching or switch-on of another load.

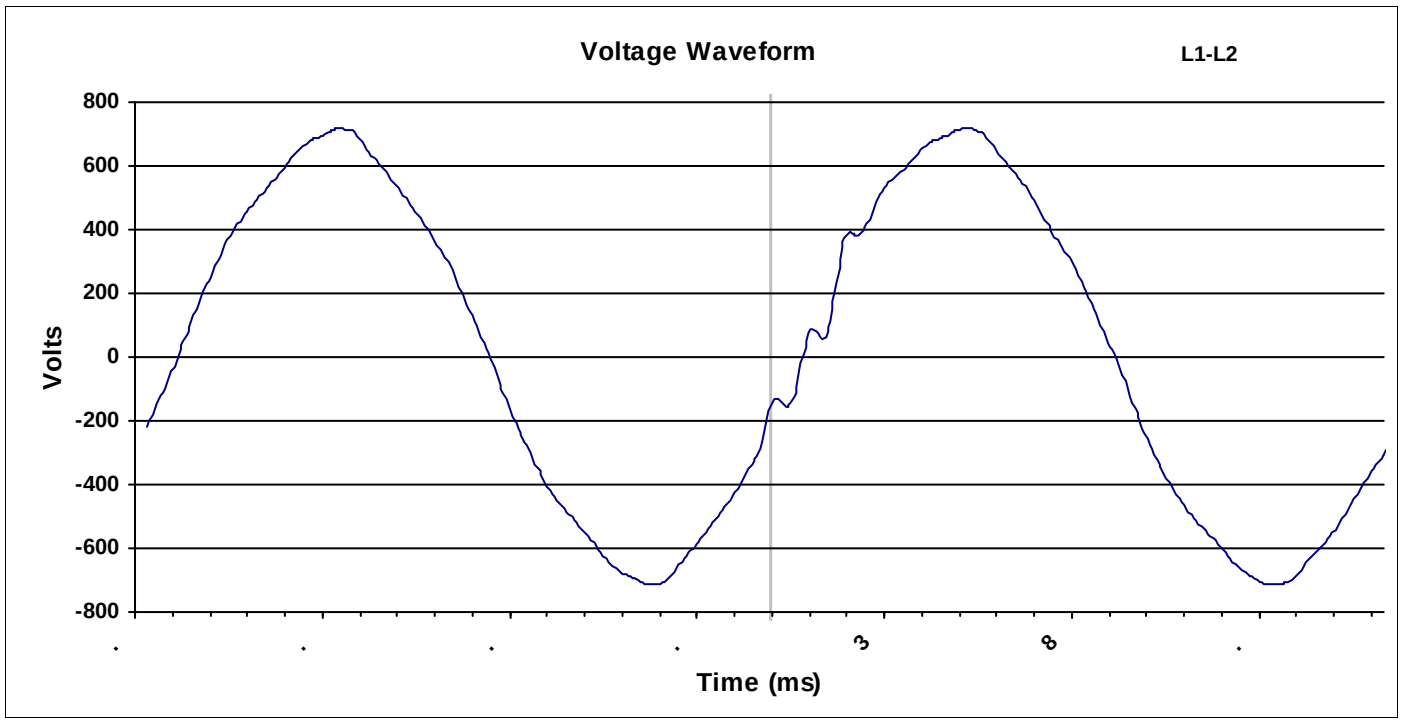
Transient

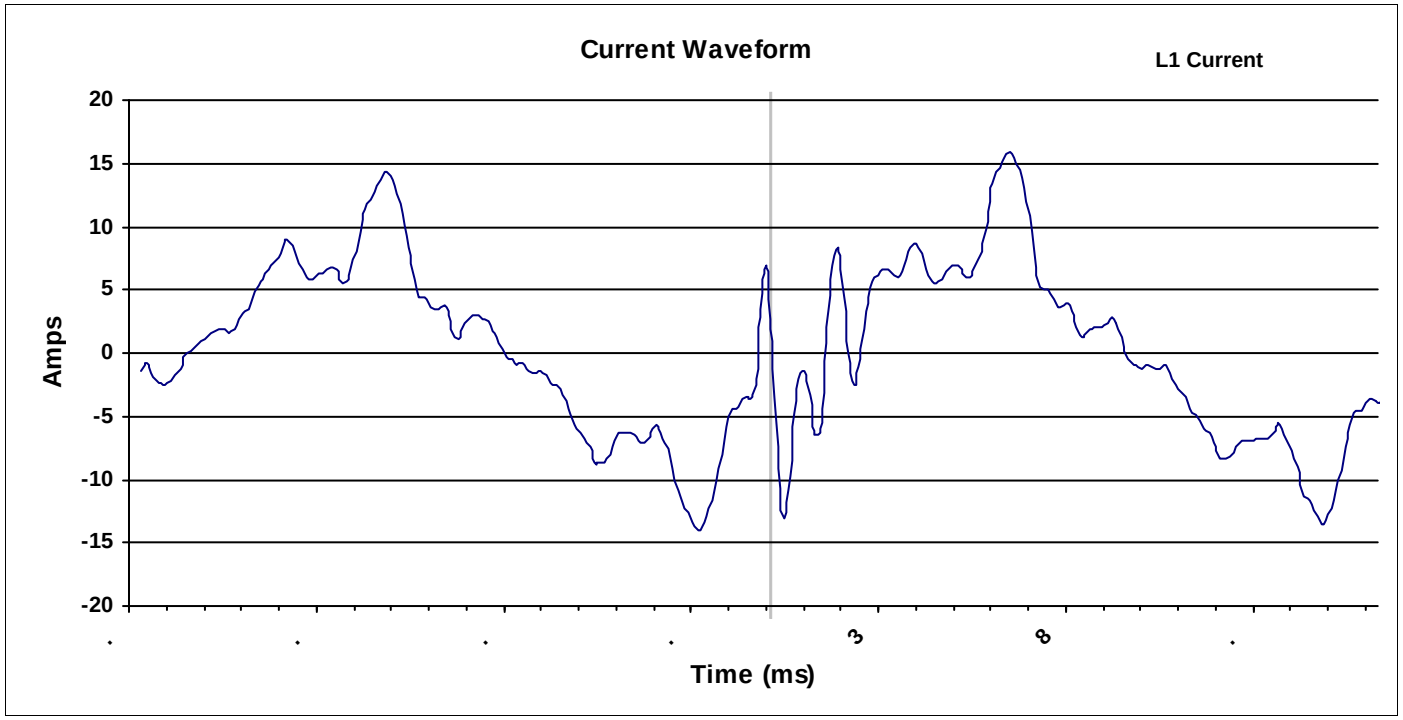
Site: 31098

Rx Monitoring Services, Inc. Demo

Event 1585 - Nov 20, 18 05:51:35.413

Peak: -103
Duration: 1628 uS
Severity: Good





Comments:

Possible Power Factor Capacitor switching or switch-on of another load.

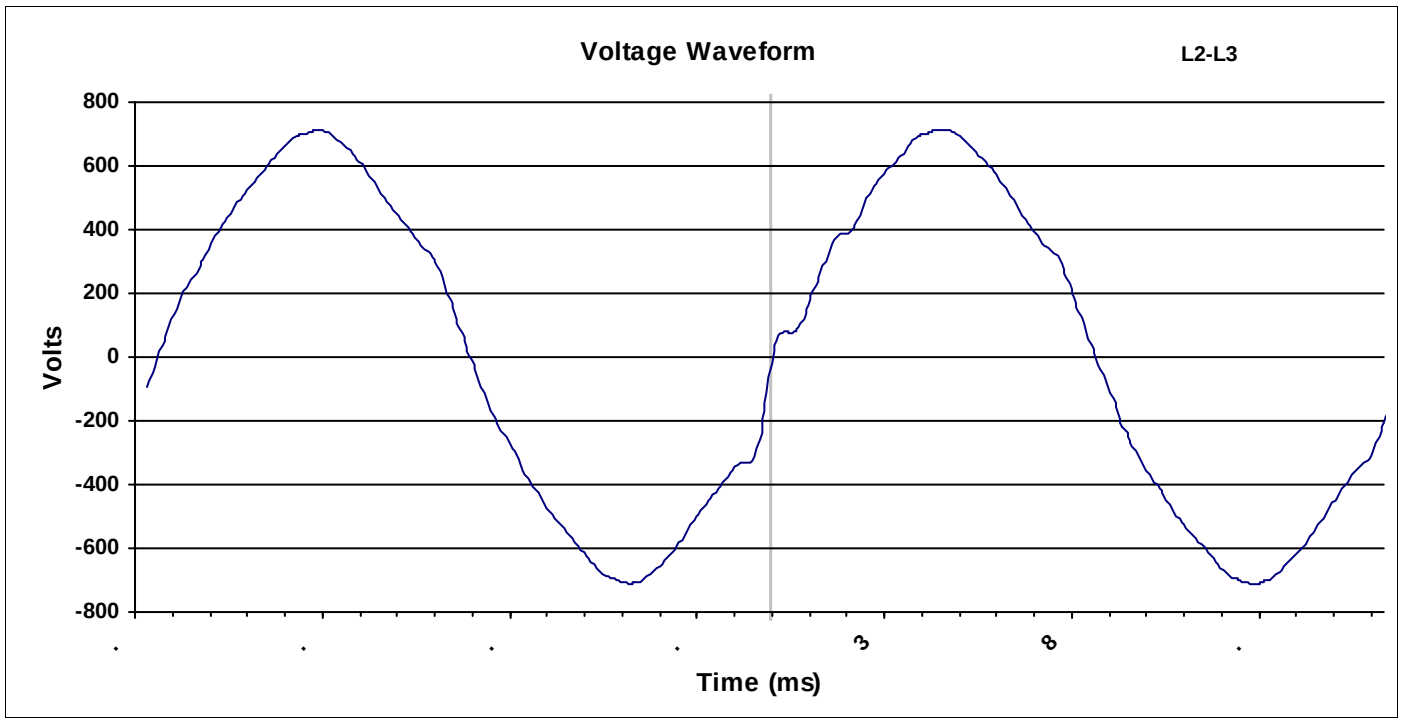
Transient

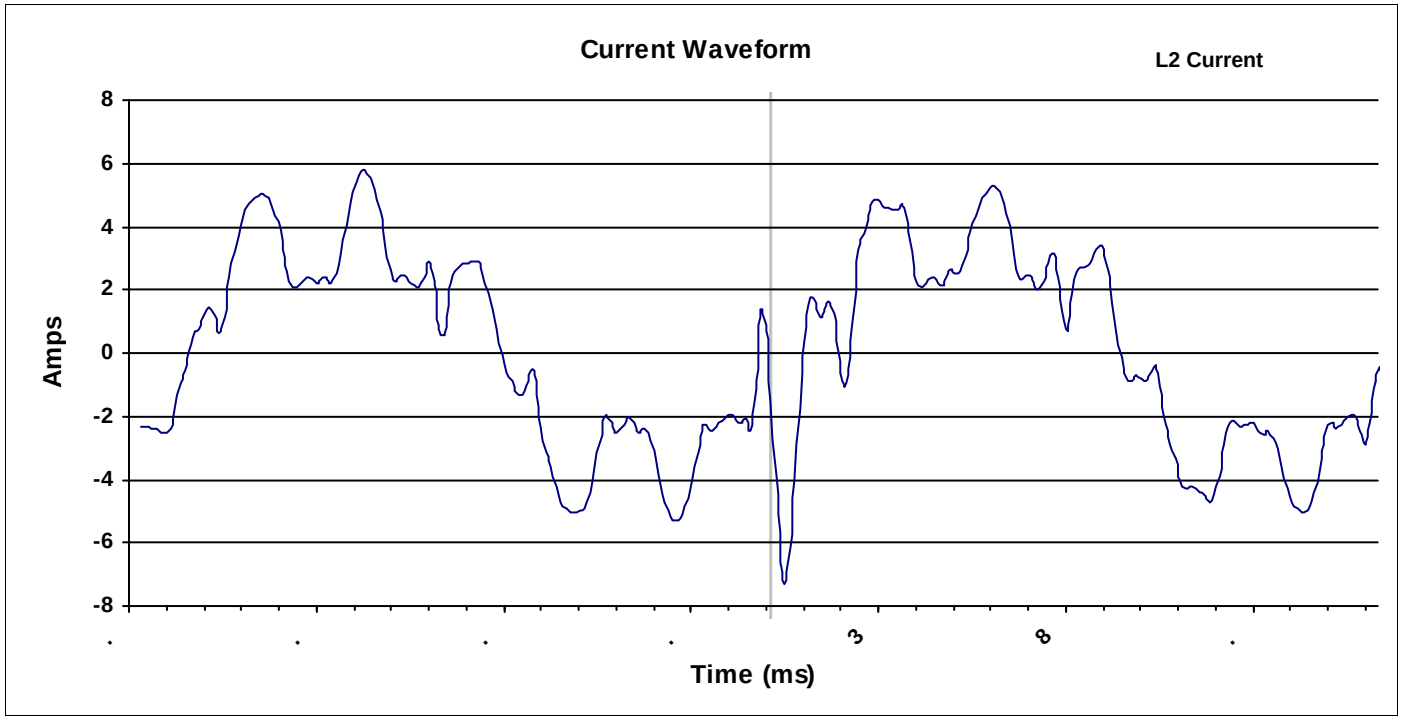
Site: 31098

Rx Monitoring Services, Inc. Demo

Event 2562 - Nov 22, 18 05:51:35.011

Peak: 111
Duration: 1042 uS
Severity: Good





Comments:

Possible Power Factor Capacitor switching or switch-on of another load.

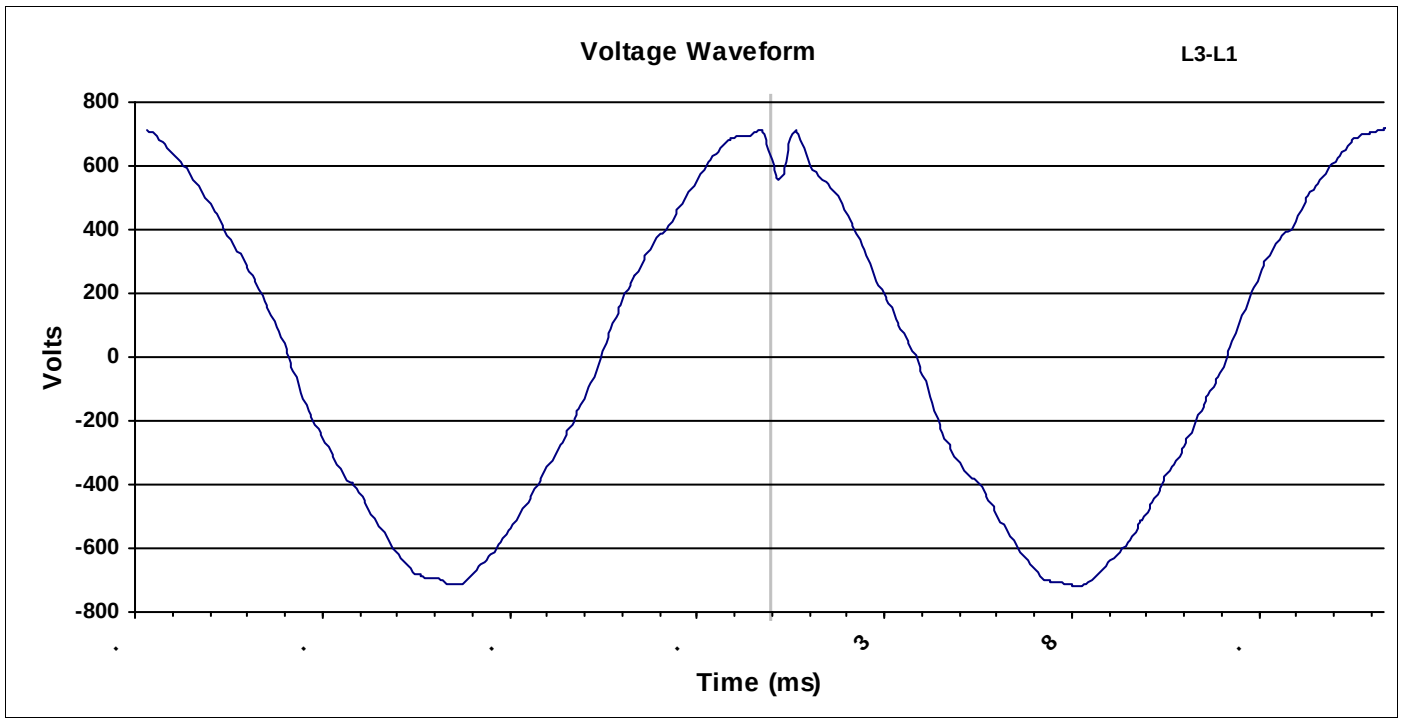
Transient

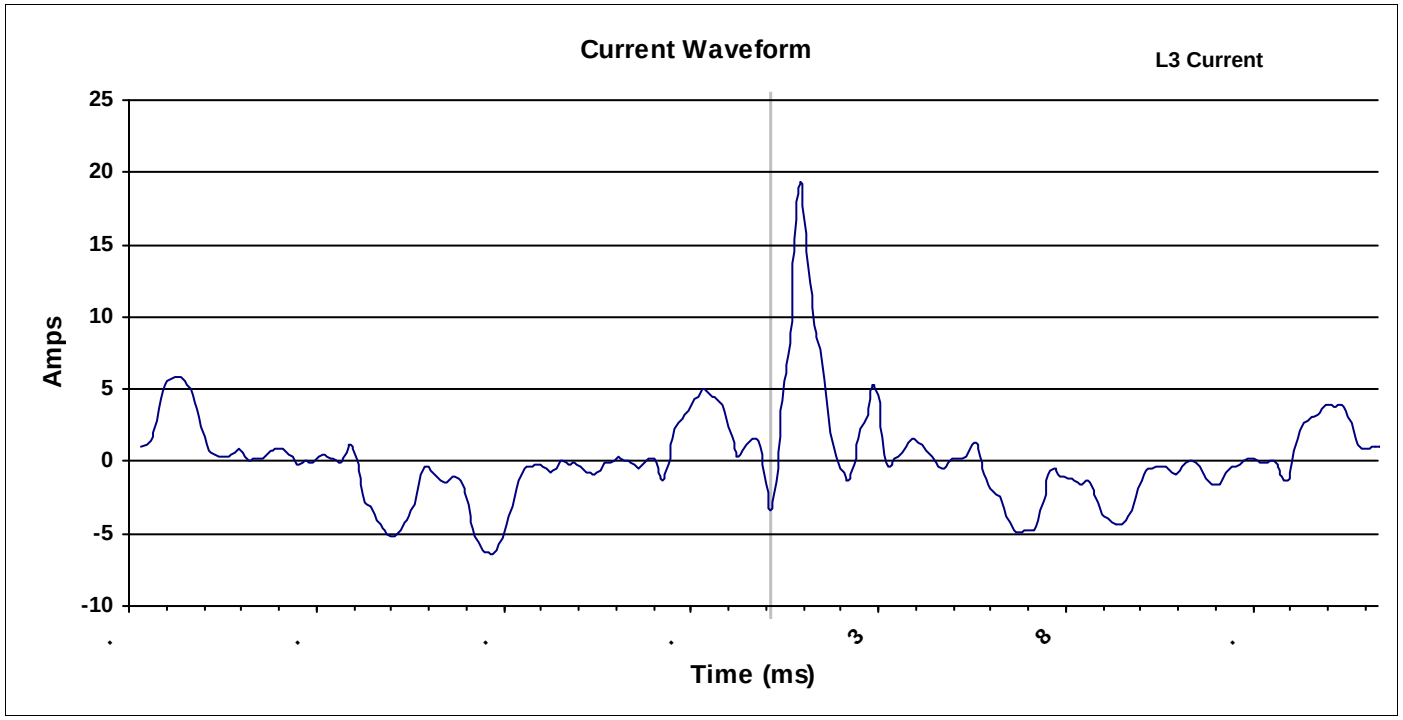
Site: 31098

Rx Monitoring Services, Inc. Demo

Event 2582 - Nov 23, 18 05:51:34.560

Peak: -121
Duration: 391 uS
Severity: Good





Comments:

Possible Power Factor Capacitor switching or switch-on of another load.

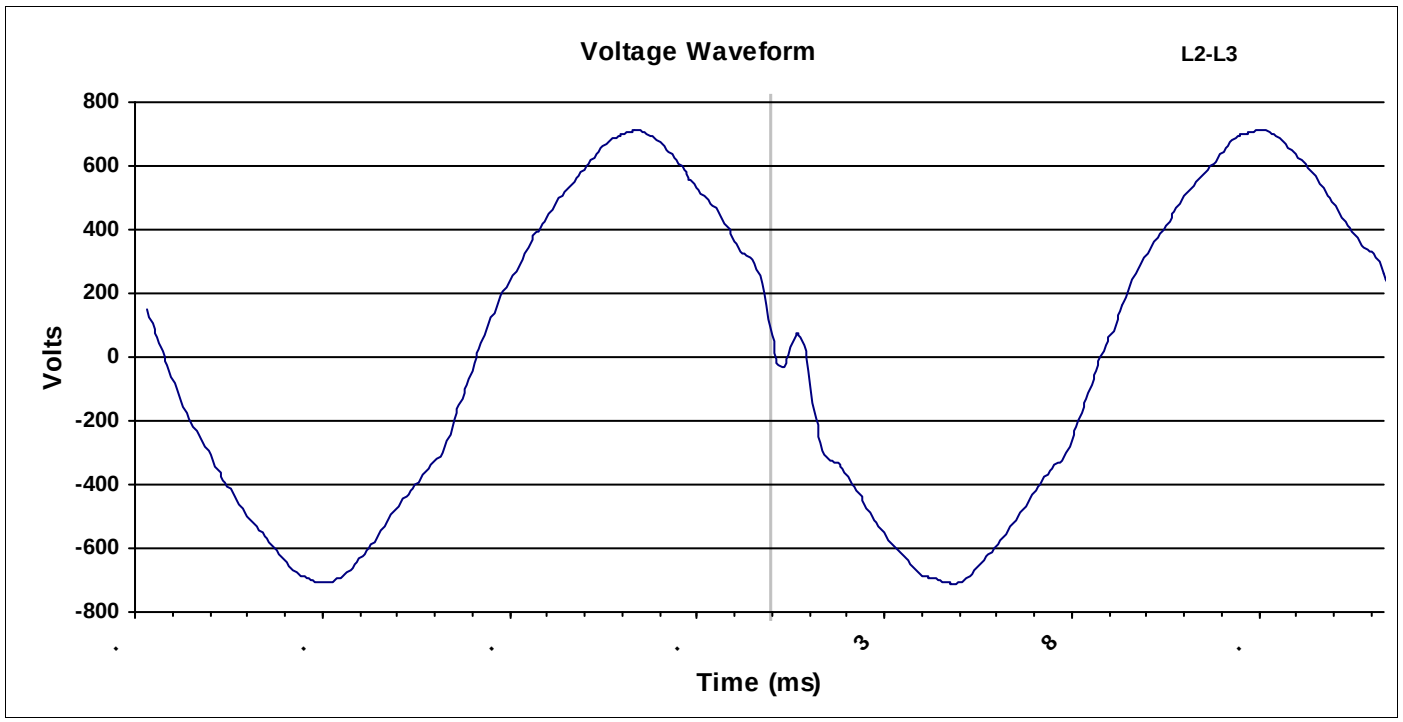
Transient

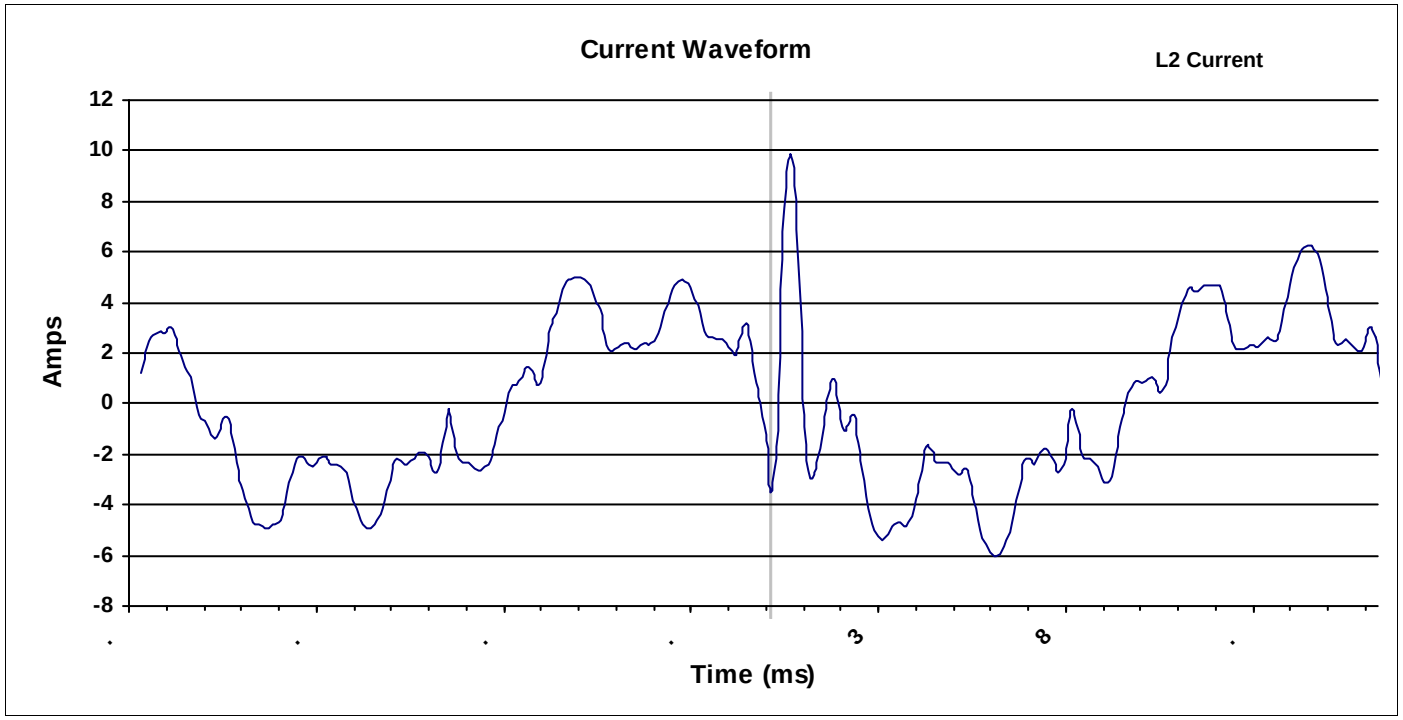
Site: 31098

Rx Monitoring Services, Inc. Demo

Event 2877 - Nov 24, 18 05:51:34.058

Peak: -133
Duration: 1432 uS
Severity: Good





Comments:

Possible Power Factor Capacitor switching or switch-on of another load.

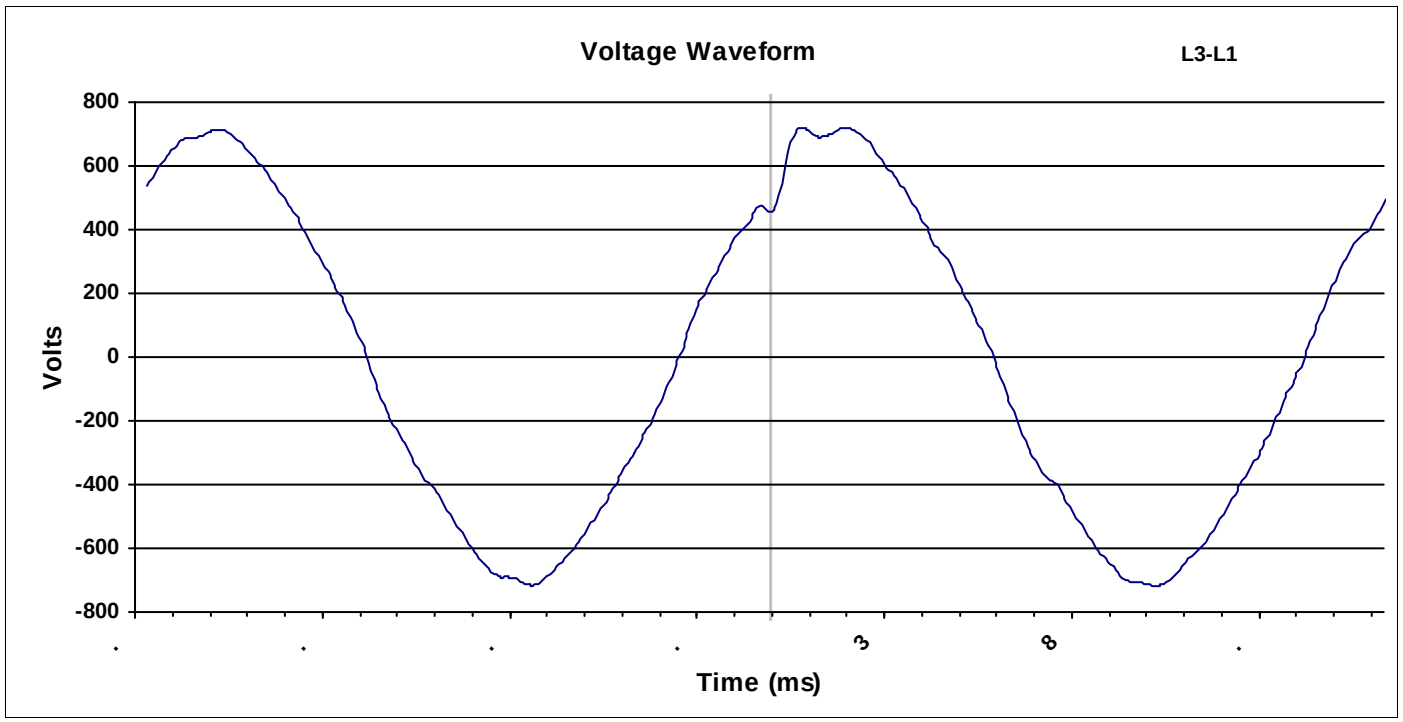
Transient

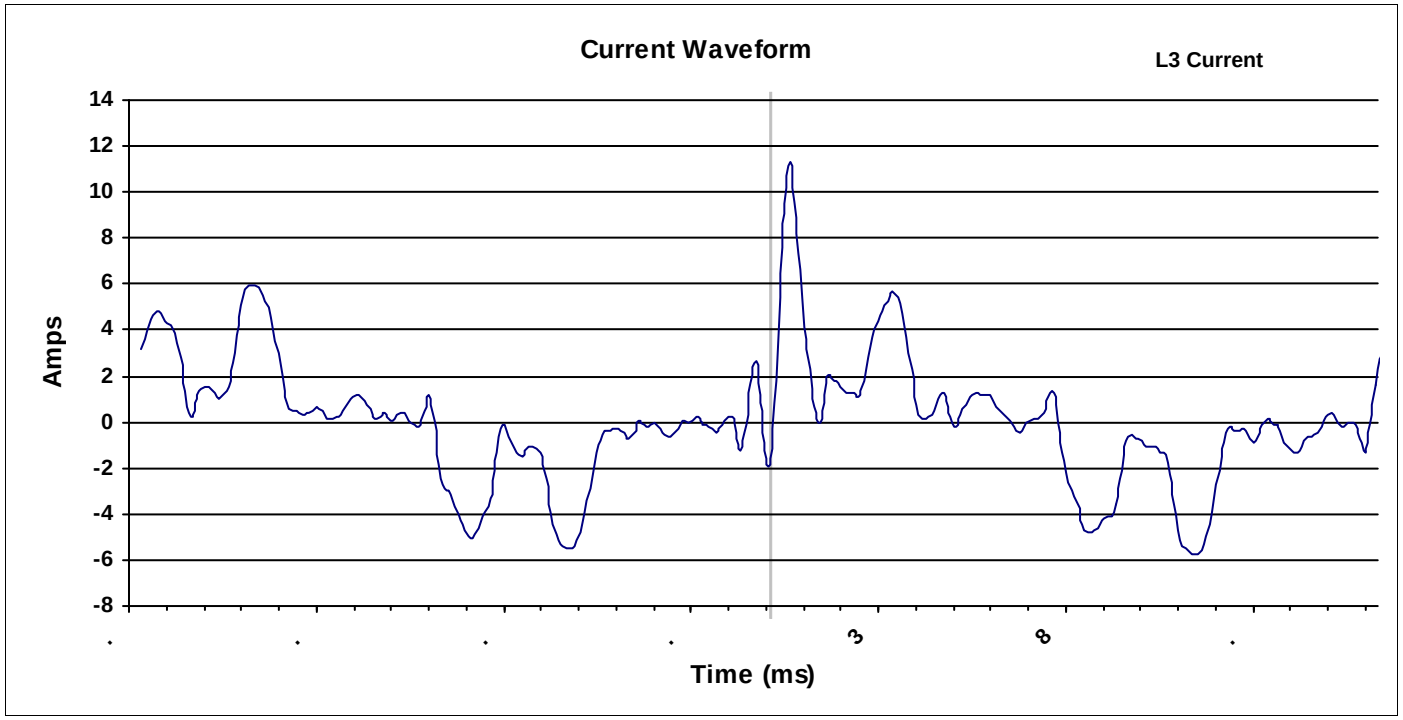
Site: 31098

Rx Monitoring Services, Inc. Demo

Event 2912 - Nov 25, 18 05:51:33.569

Peak: -109
Duration: 391 uS
Severity: Good





Comments:

Possible Power Factor Capacitor switching or switch-on of another load.

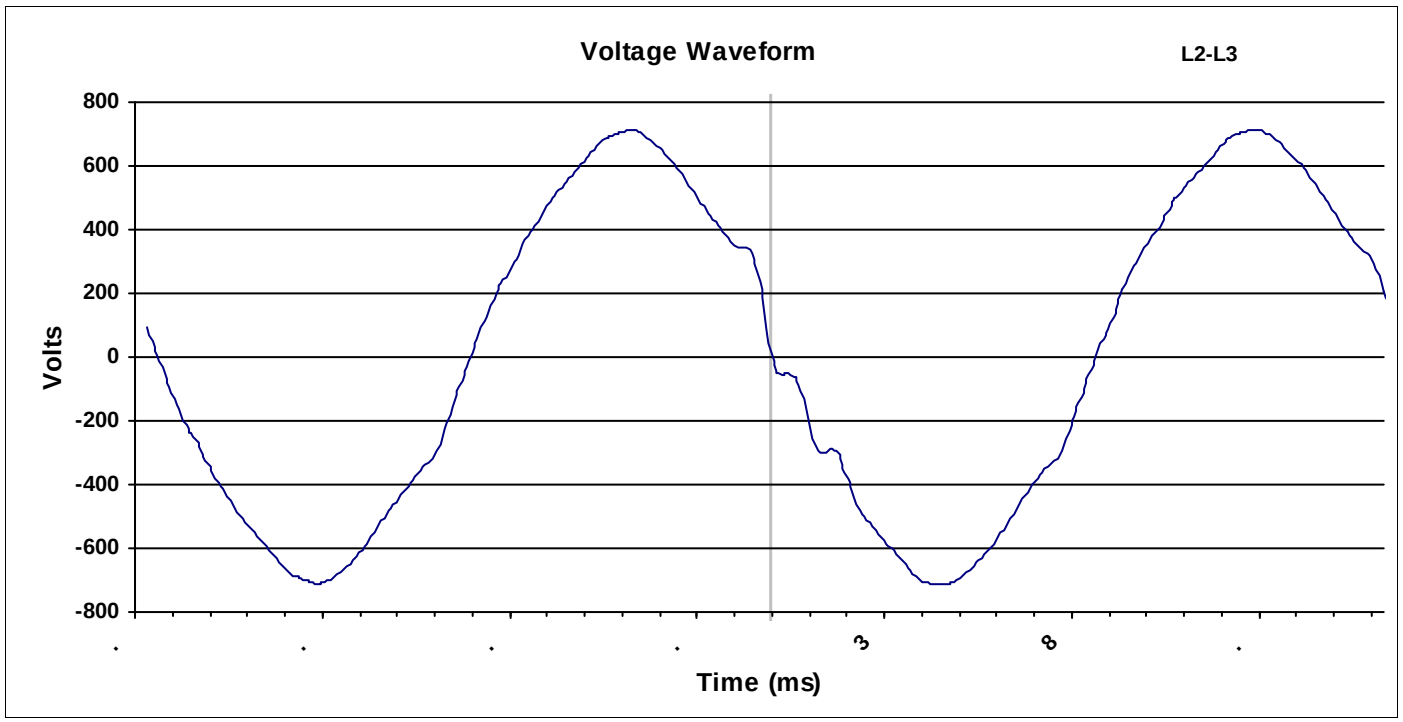
Transient

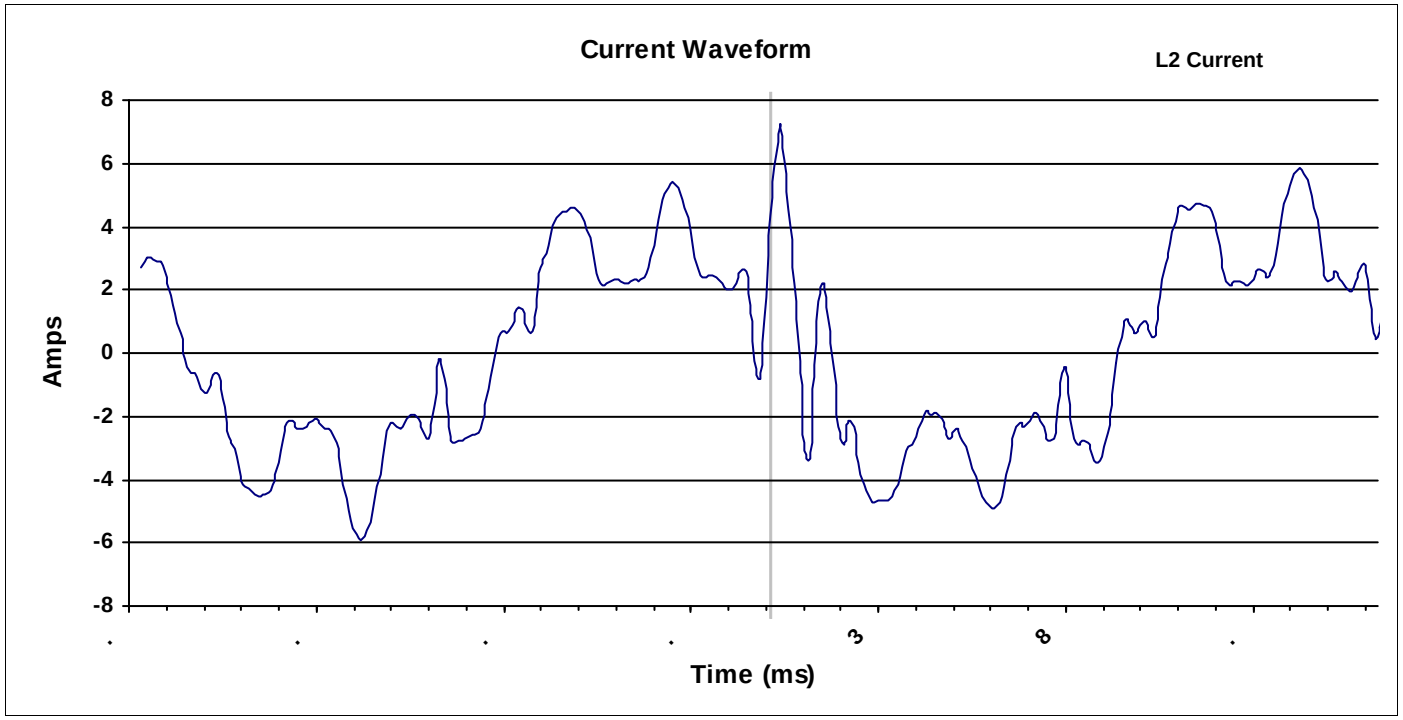
Site: 31098

Rx Monitoring Services, Inc. Demo

Event 3328 - Nov 27, 18 05:51:32.657

Peak: 109
Duration: 1042 uS
Severity: Good





Comments:

Possible Power Factor Capacitor switching or switch-on of another load.

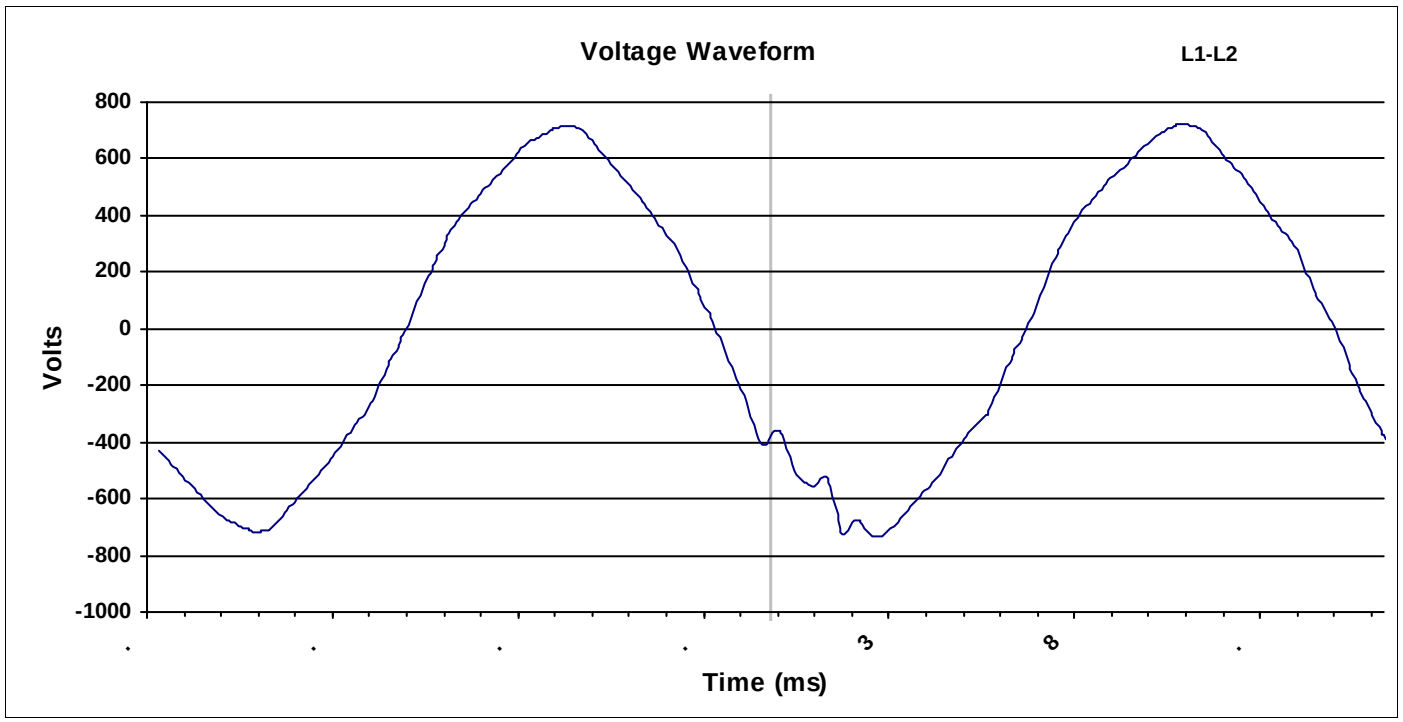
Transient

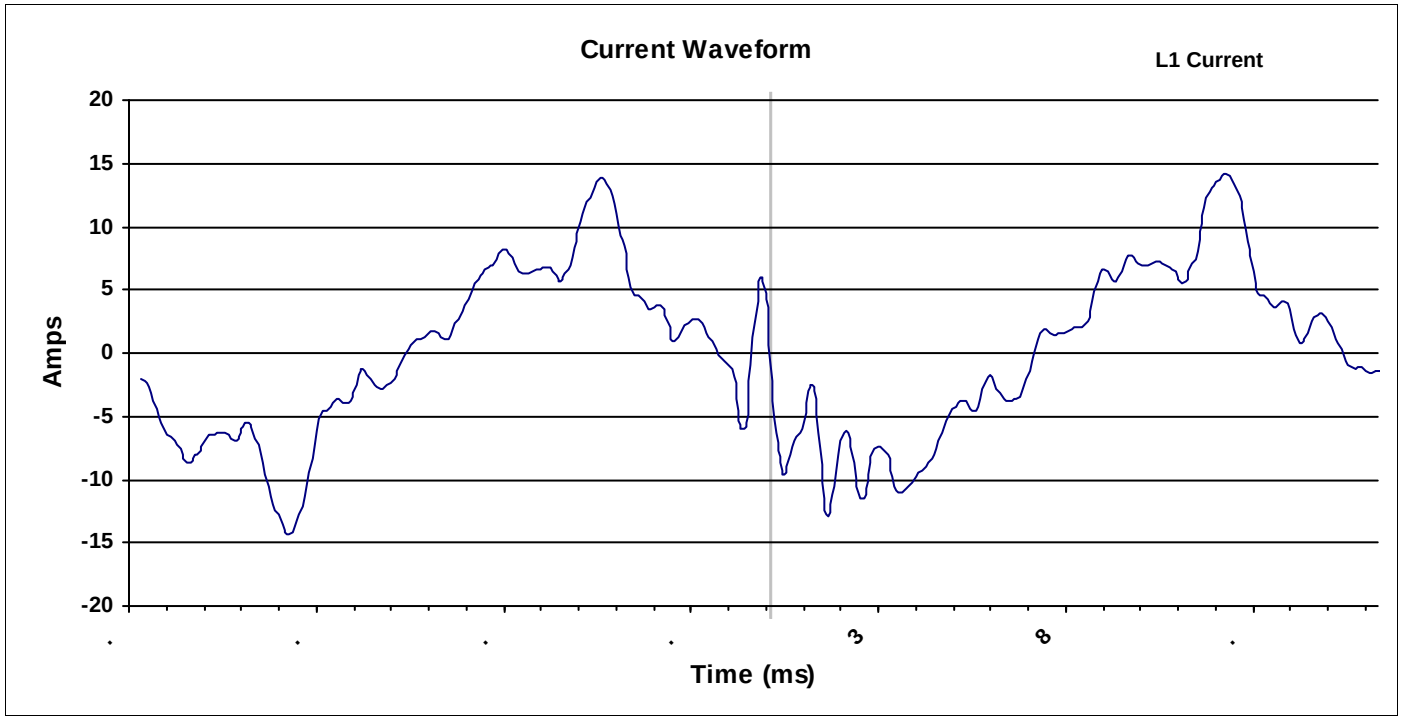
Site: 31098

Rx Monitoring Services, Inc. Demo

Event 3793 - Nov 28, 18 05:51:27.098

Peak: -111
Duration: 2148 uS
Severity: Good





Comments:

Possible Power Factor Capacitor switching or switch-on of another load.

Snapshot

Site: 31098

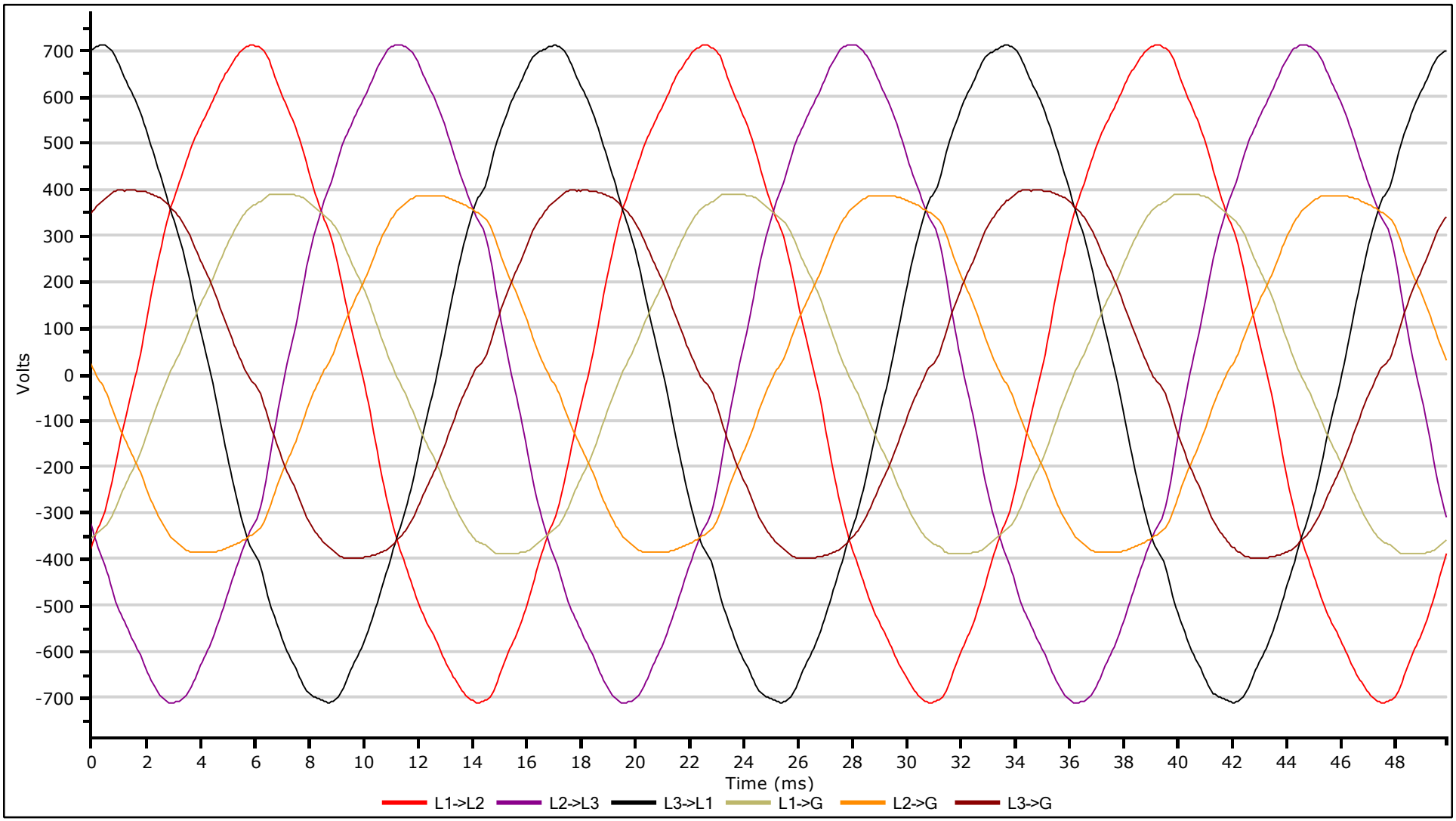
Rx Monitoring Services, Inc. Demo

Event 178 - Wednesday, Nov 14, 2018 18:08:19

12/14/2018

Volts Angle: 121.1

Phase Seq: CW(ABC)



Comments:

AC voltage during normal operating conditions. Notice how the Phase-to-Phase voltage is peaked but the Phase-to-Ground is flat-topped. This is an indication that the ground reference could be a problem.

Snapshot

Site: 31098

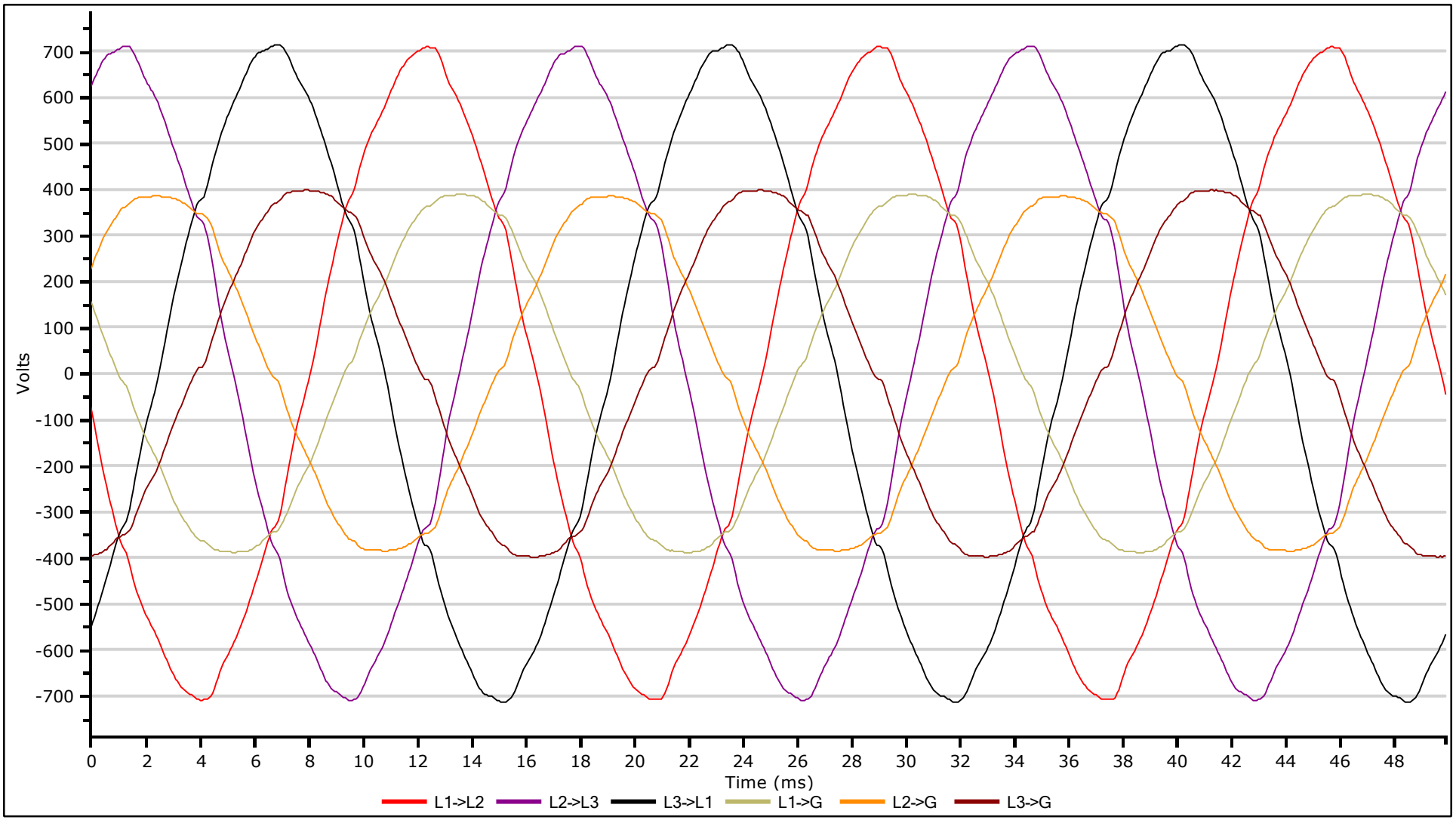
Rx Monitoring Services, Inc. Demo

Event 1283 - Monday, Nov 19, 2018 10:00:00

12/14/2018

Volts Angle: 121.1

Phase Seq: CW(ABC)



Comments:

AC voltage during normal operating conditions. Notice how the Phase-to-Phase voltage is peaked but the Phase-to-Ground is flat-topped. This is an indication that the ground reference could be a problem.

Snapshot

Site: 31098

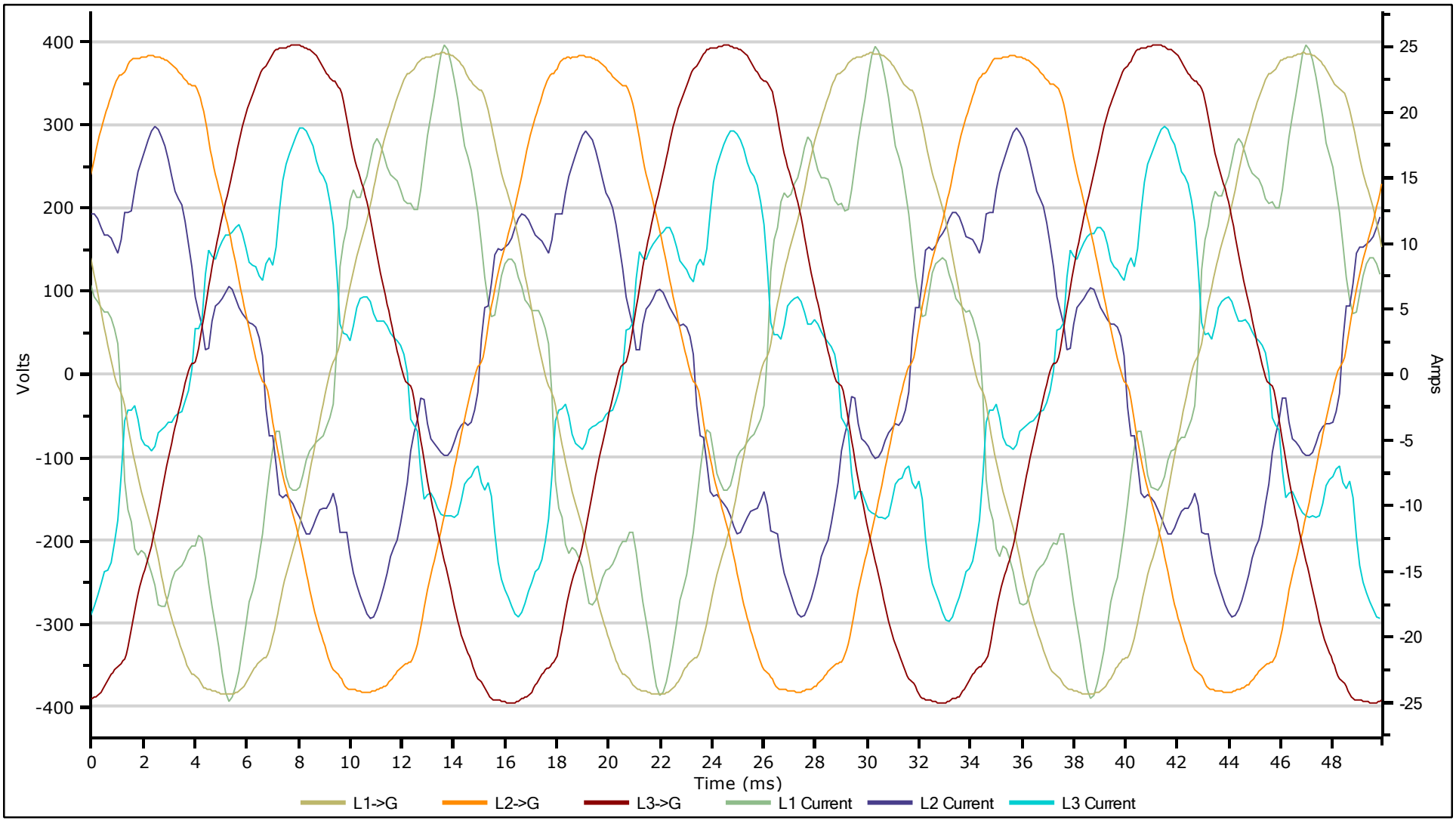
Rx Monitoring Services, Inc. Demo

Event 2724 - Friday, Nov 23, 2018 10:00:00

12/14/2018

Volts Angle: 121.0

Phase Seq: CW(ABC)



Comments:

AC voltage and current during normal operating conditions.

Snapshot

Site: 31098

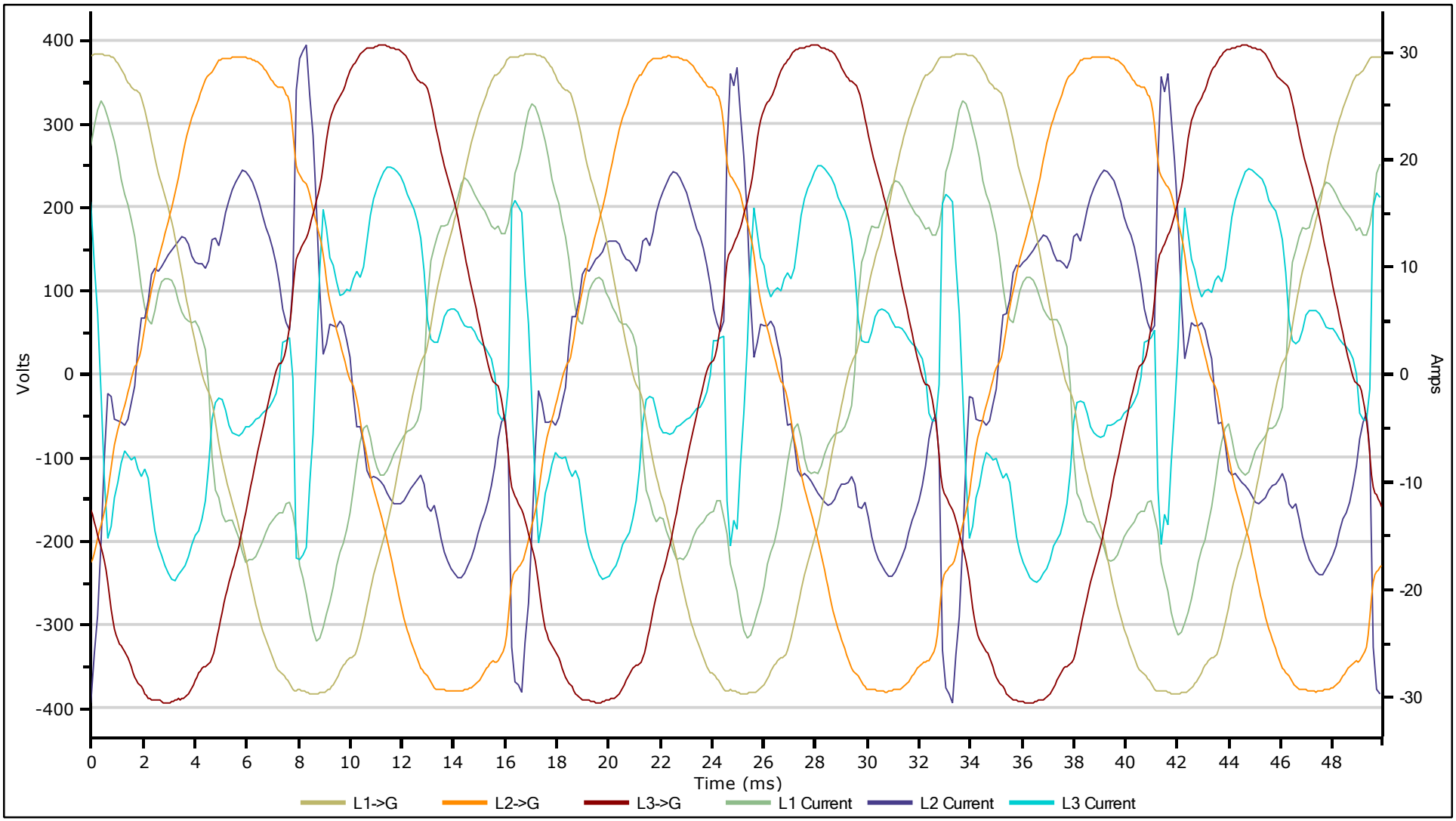
Rx Monitoring Services, Inc. Demo

Event 3454 - Tuesday, Nov 27, 2018 10:00:00

12/14/2018

Volts Angle: 120.8

Phase Seq: CW(ABC)



Comments:

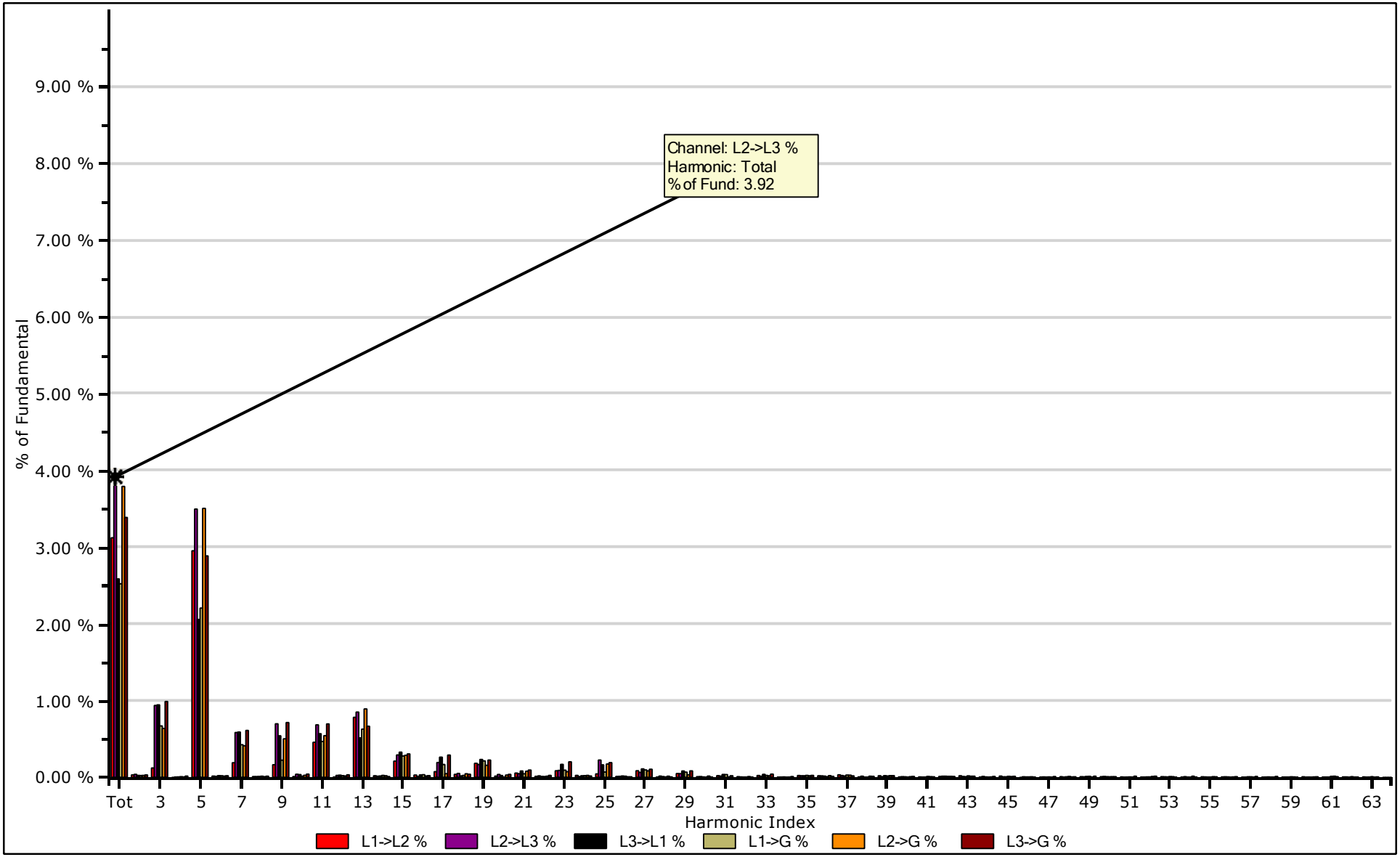
AC voltage and current during normal operating conditions.

Snapshot Harmonics

Site: 31098

Rx Monitoring Services, Inc. Demo

Event 178 - Wednesday, Nov 14, 2018 18:08:19

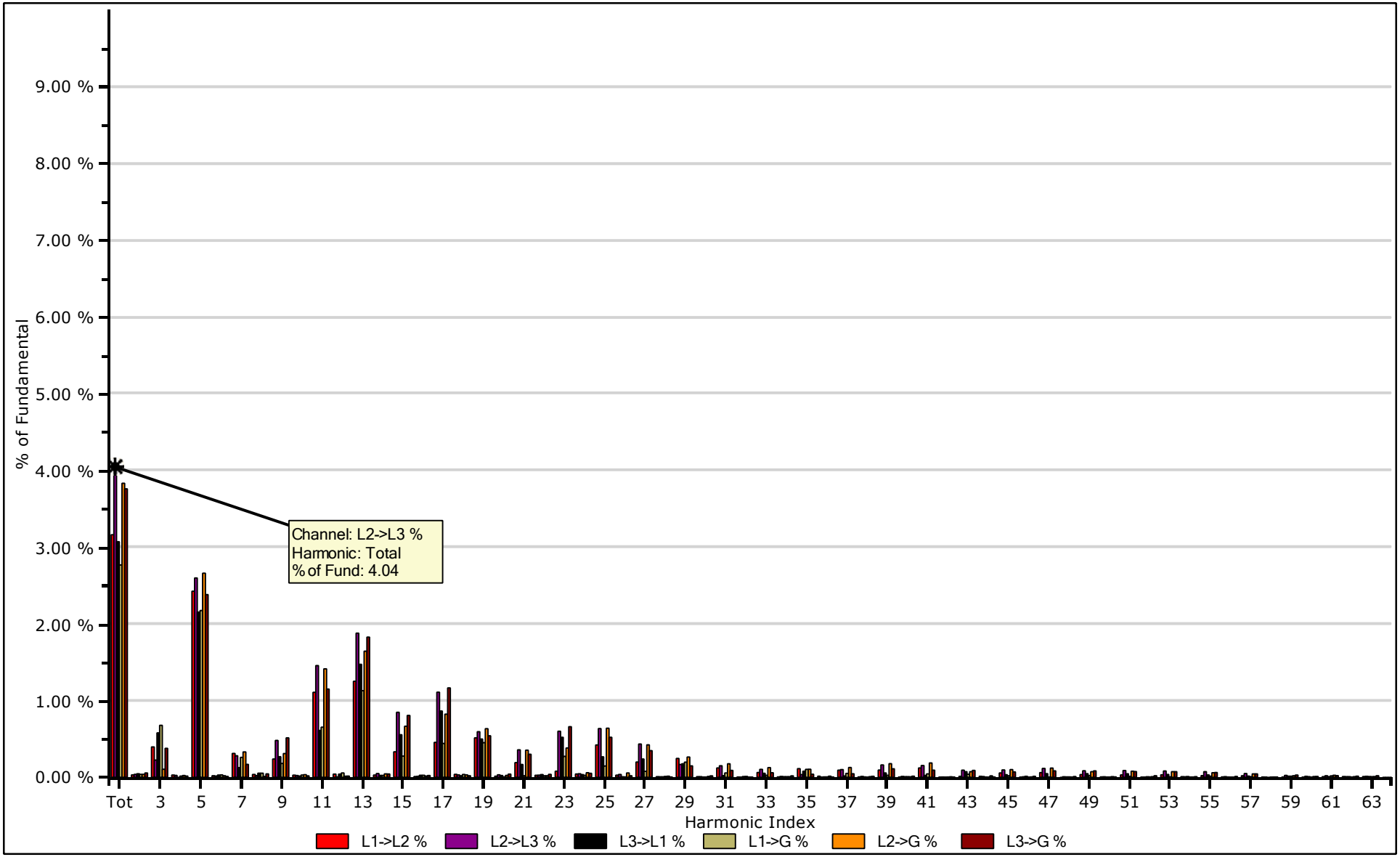


Snapshot Harmonics

Site: 31098

Rx Monitoring Services, Inc. Demo

Event 3454 - Tuesday, Nov 27, 2018 10:00:00

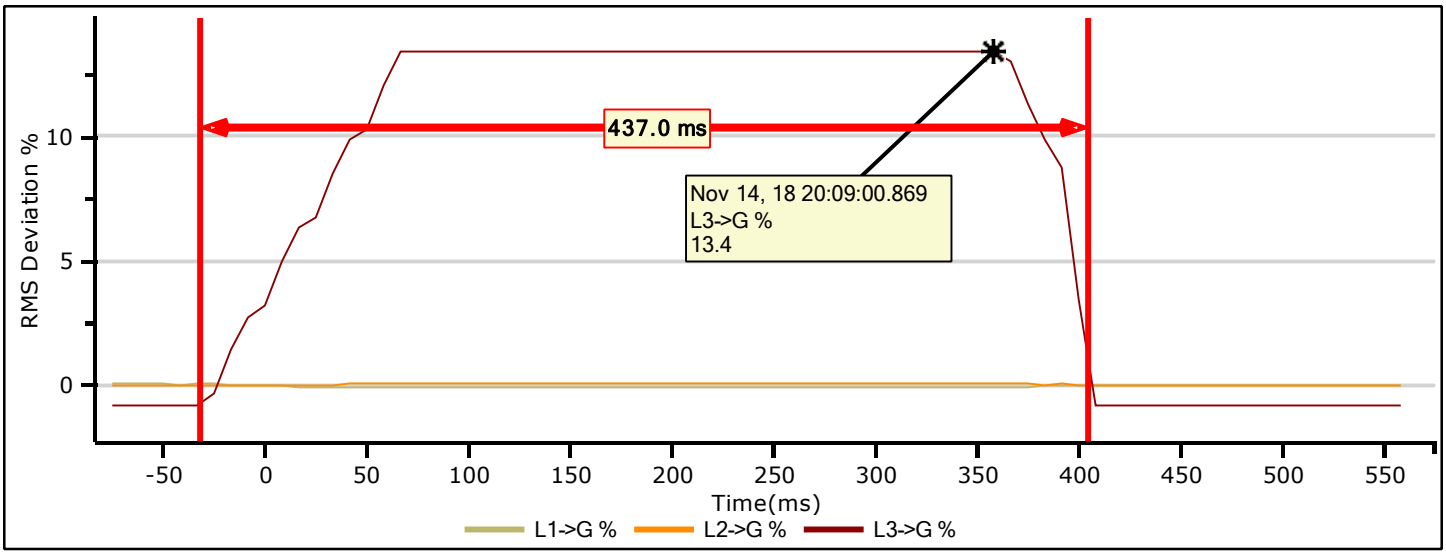


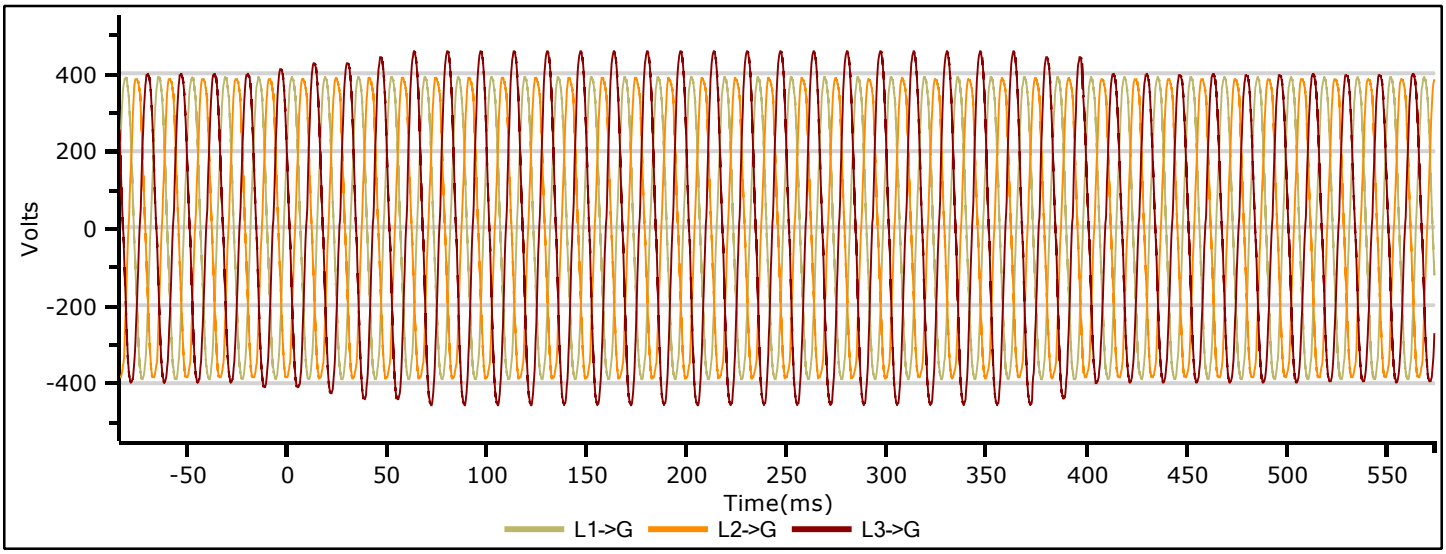
V & I + Voltage Deviation

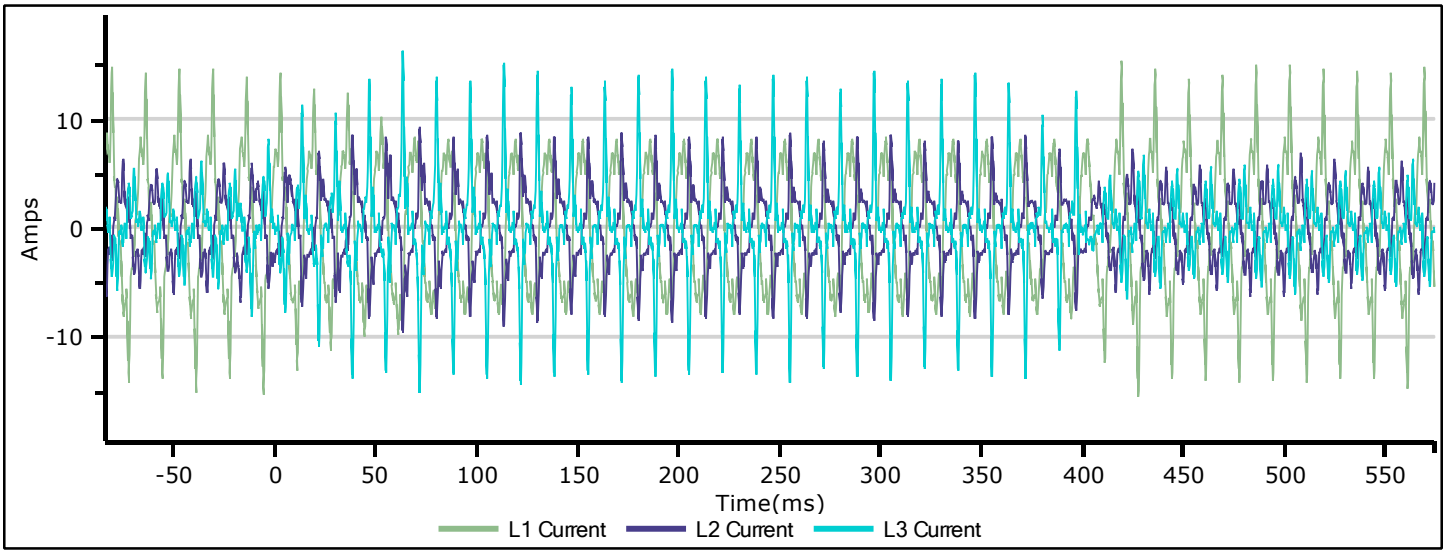
Site: 31098

Rx Monitoring Services, Inc. Demo

Event 290 - Wednesday, Nov 14, 2018 20:09:00





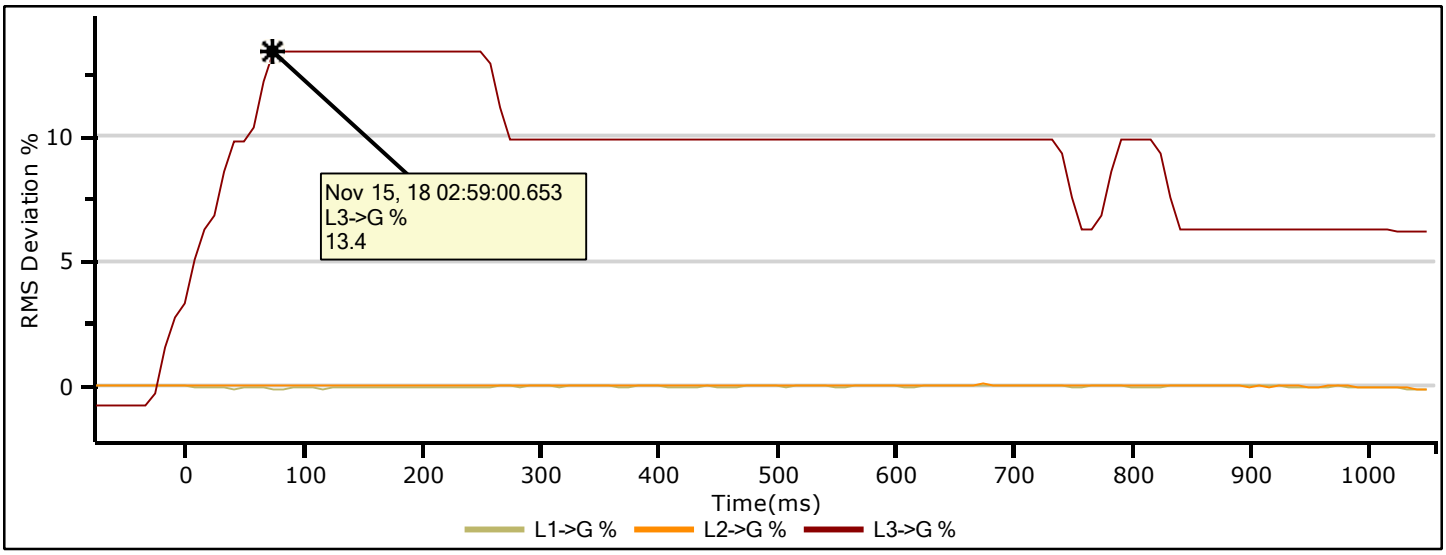


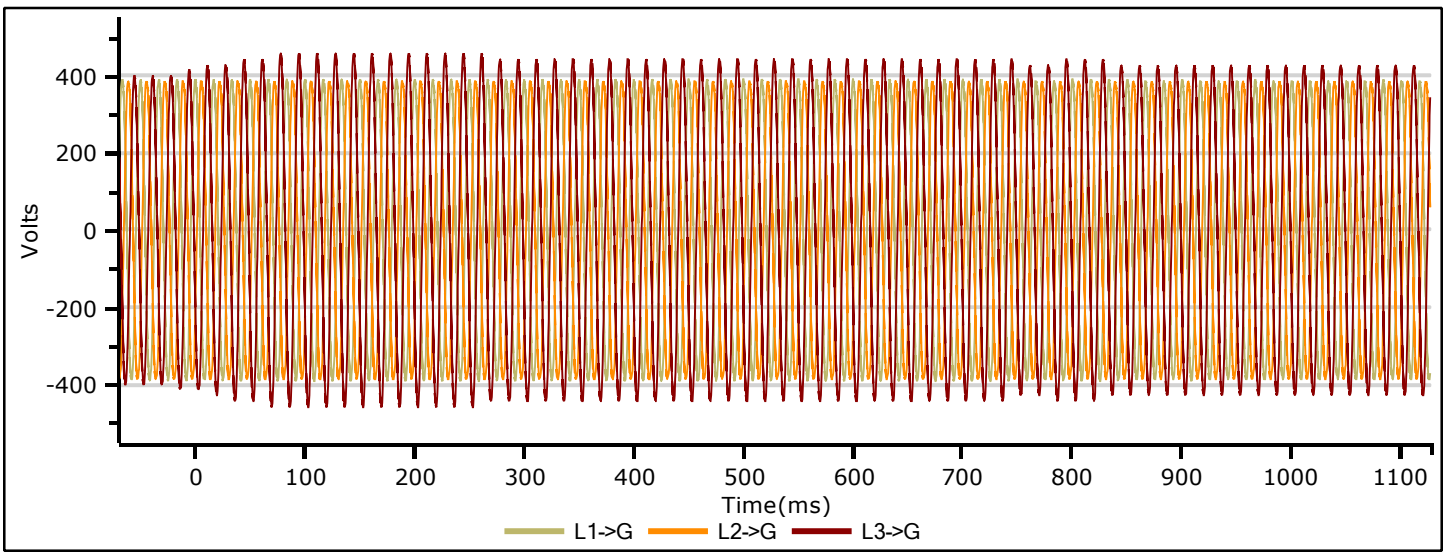
V & I + Voltage Deviation

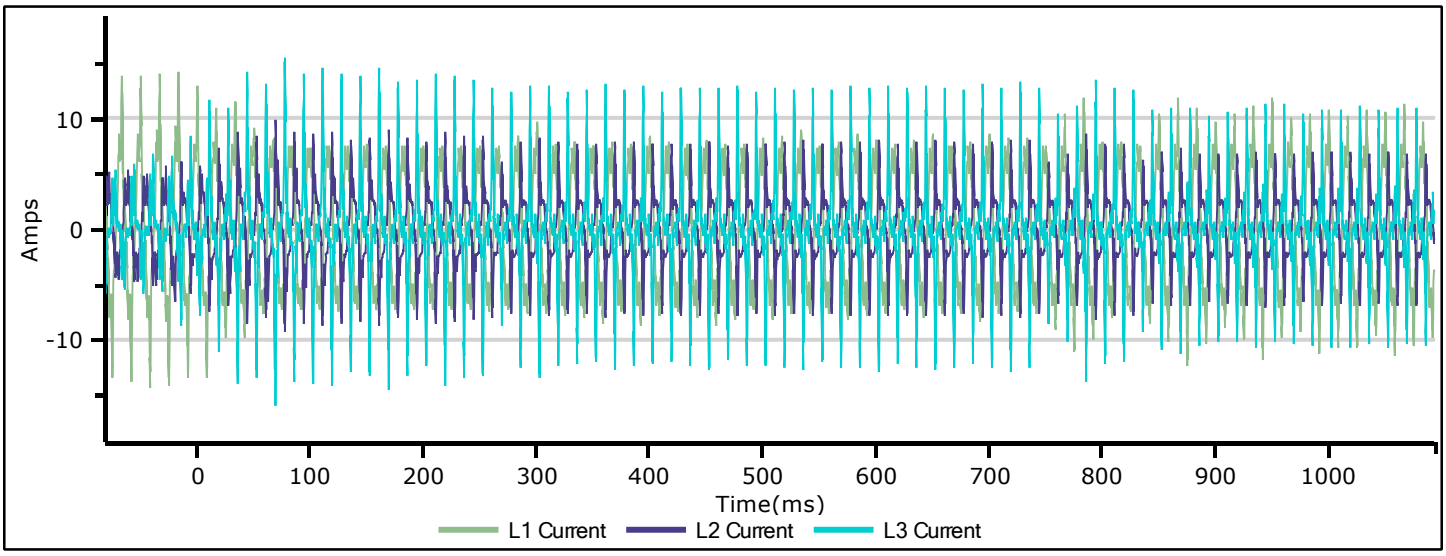
Site: 31098

Rx Monitoring Services, Inc. Demo

Event 313 - Thursday, Nov 15, 2018 02:59:00





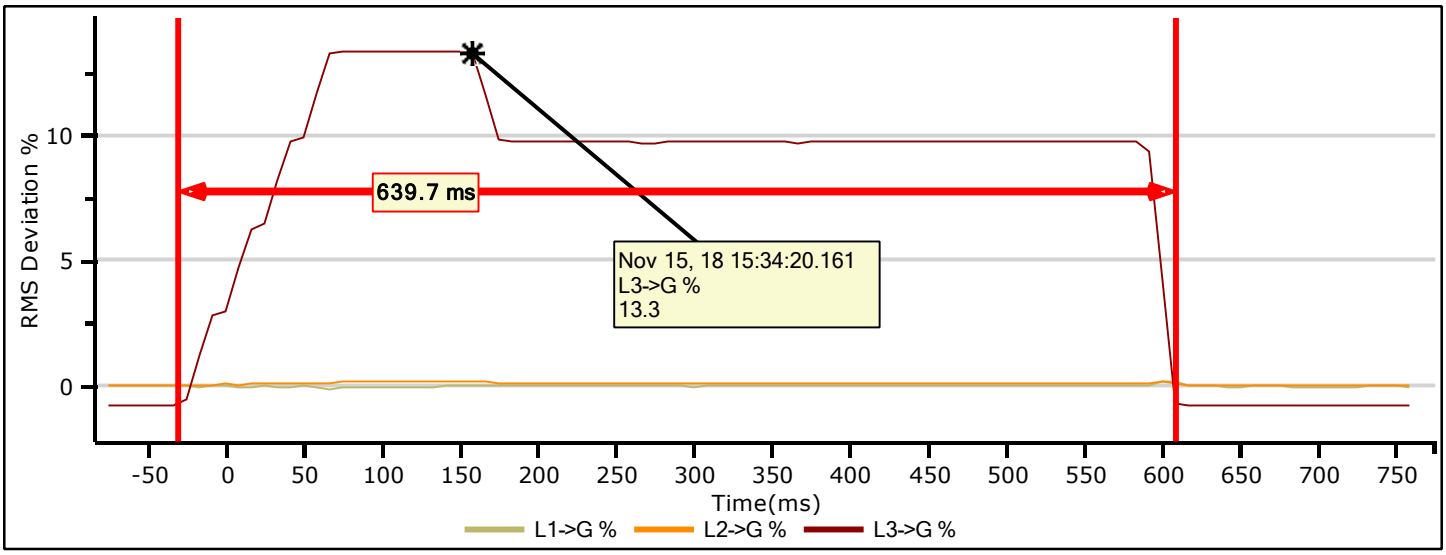


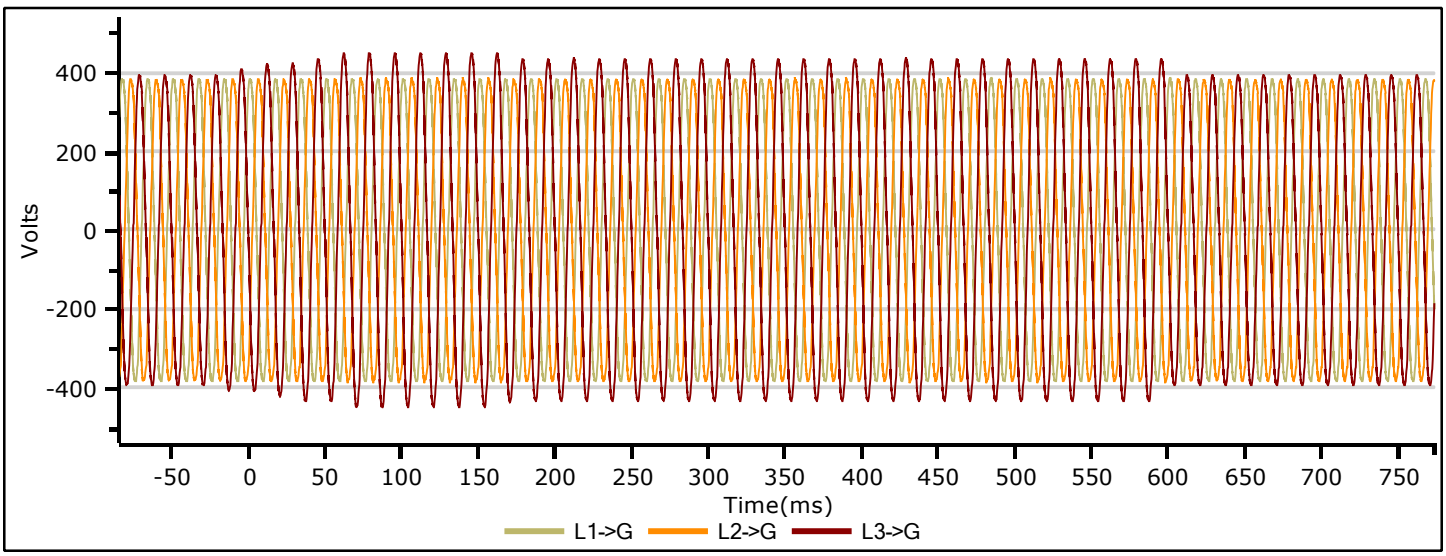
V & I + Voltage Deviation

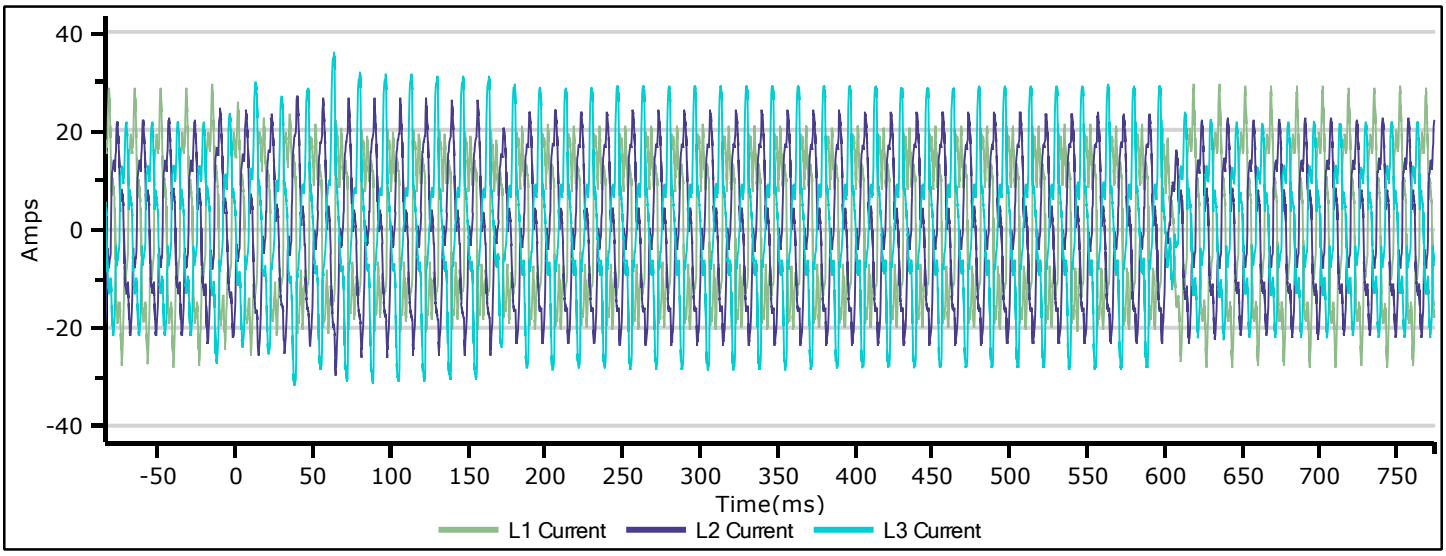
Site: 31098

Rx Monitoring Services, Inc. Demo

Event 617 - Thursday, Nov 15, 2018 15:34:20





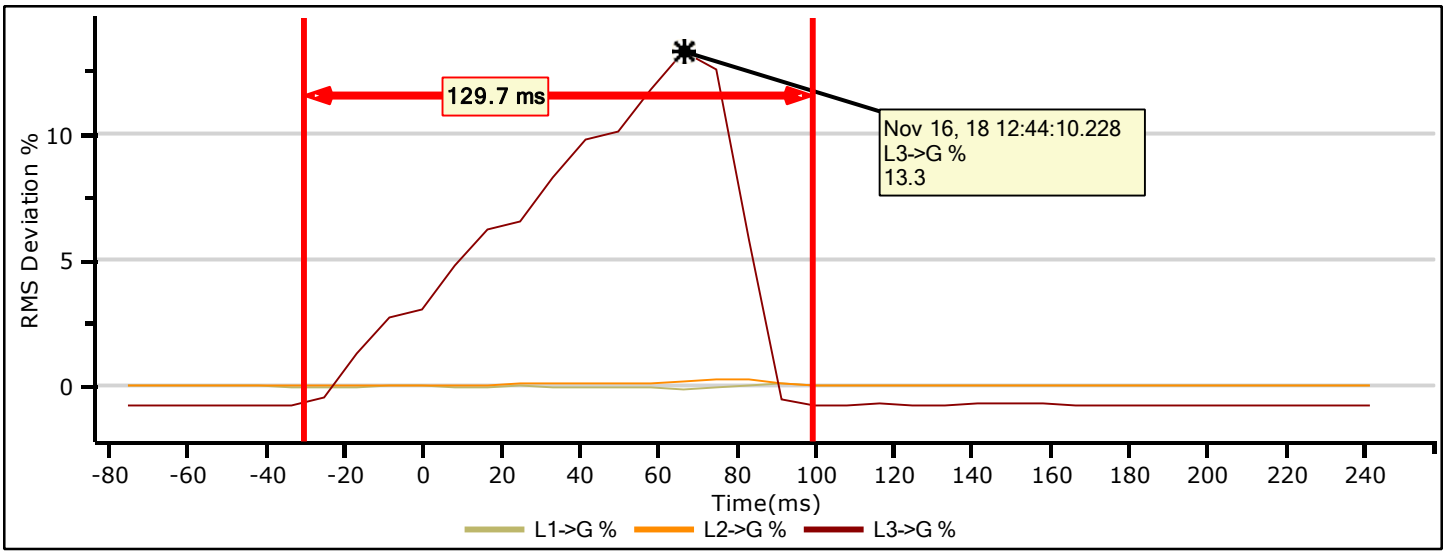


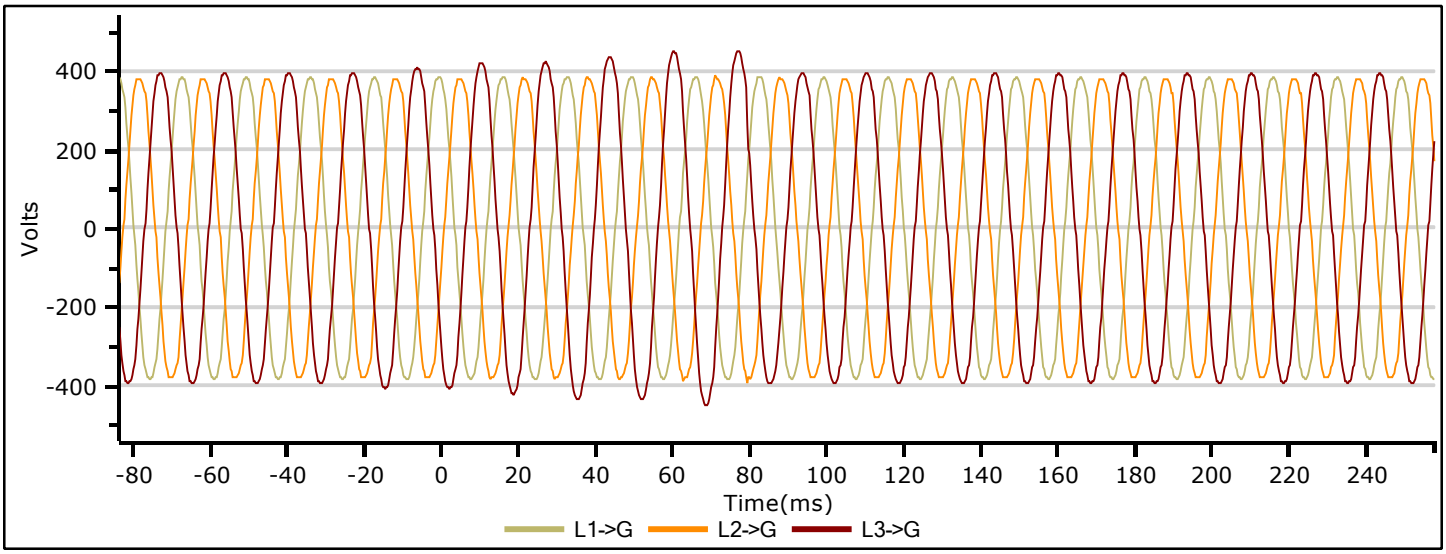
V & I + Voltage Deviation

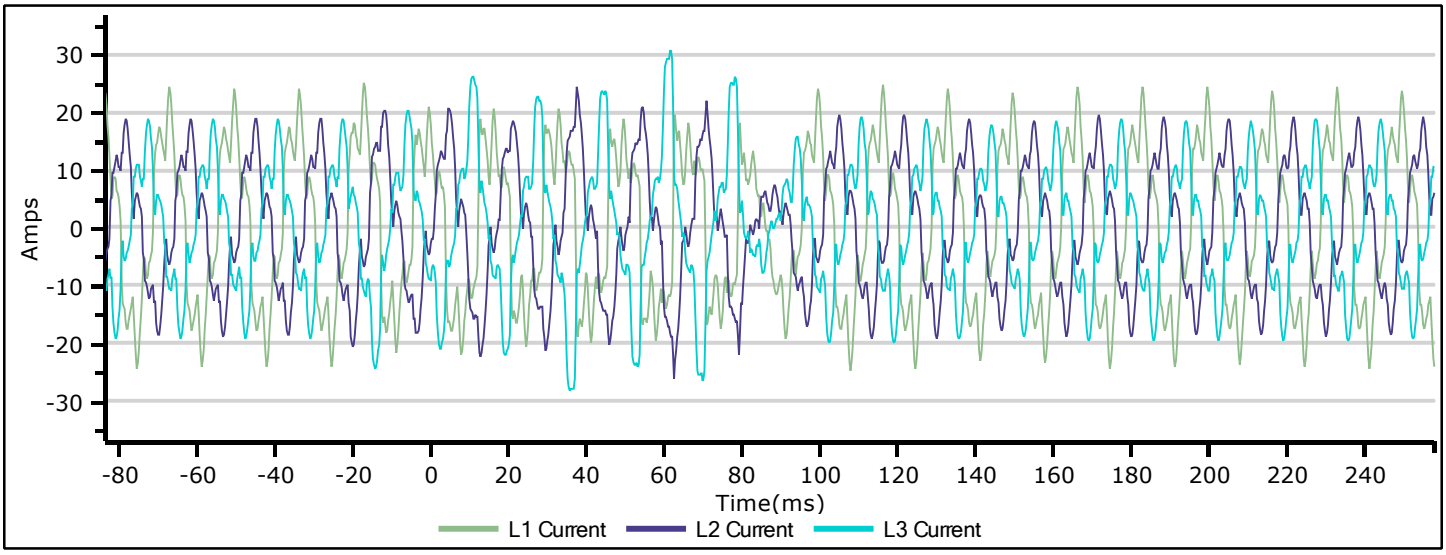
Site: 31098

Rx Monitoring Services, Inc. Demo

Event 876 - Friday, Nov 16, 2018 12:44:10





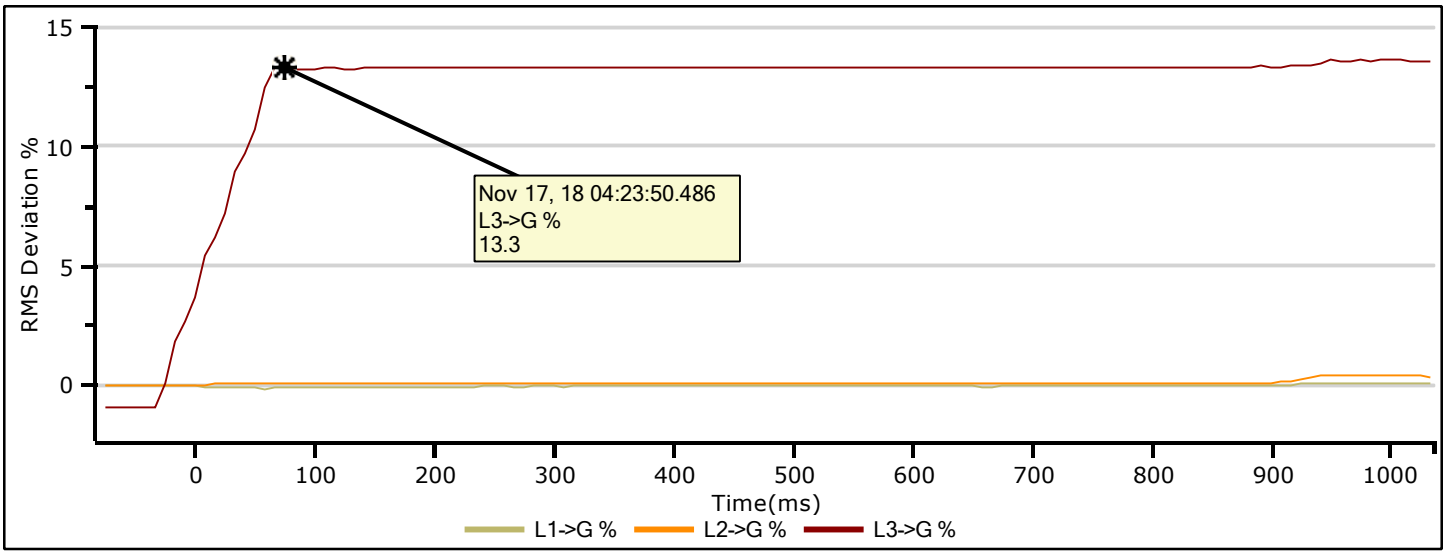


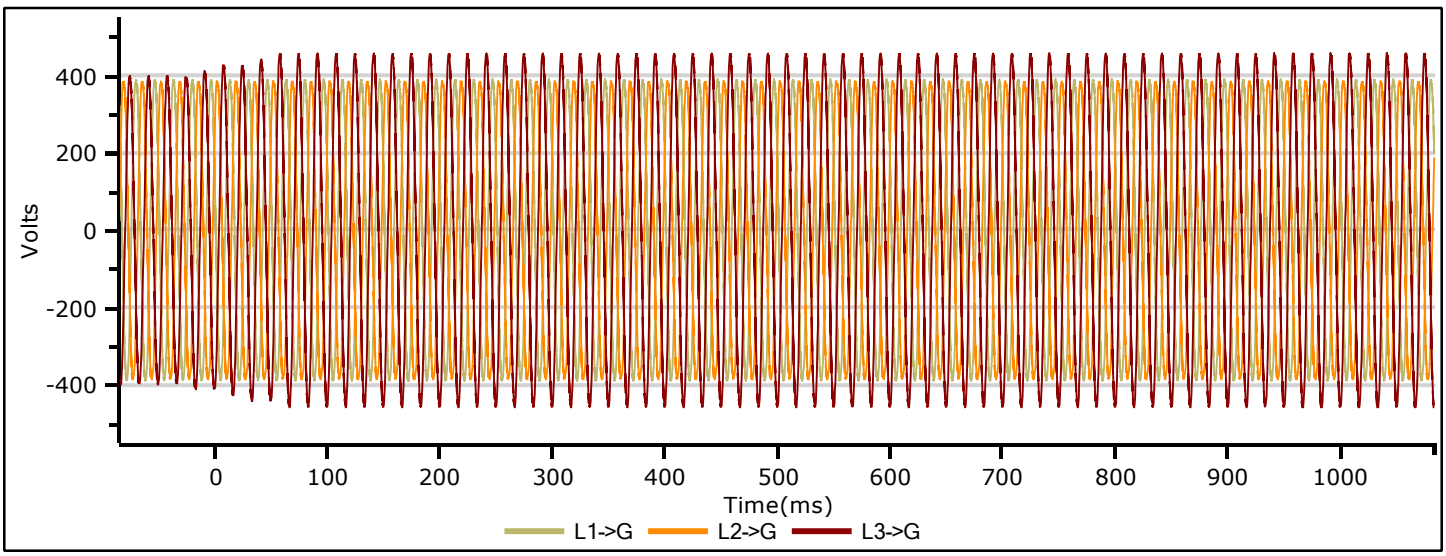
V & I + Voltage Deviation

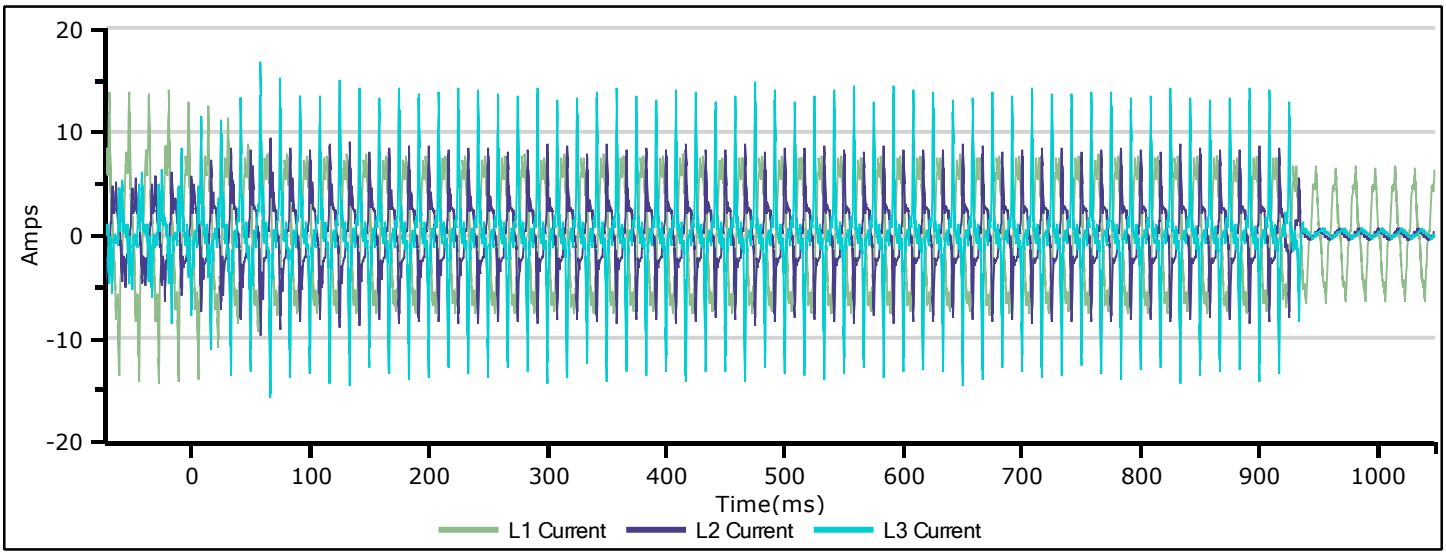
Site: 31098

Rx Monitoring Services, Inc. Demo

Event 1038 - Saturday, Nov 17, 2018 04:23:50





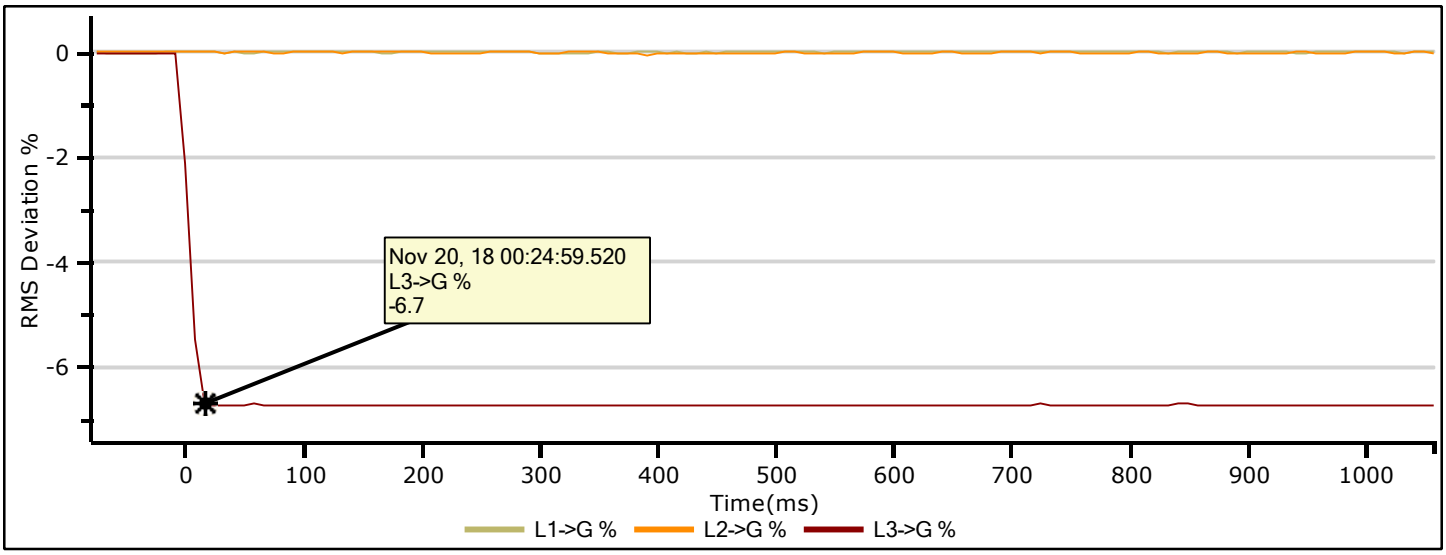


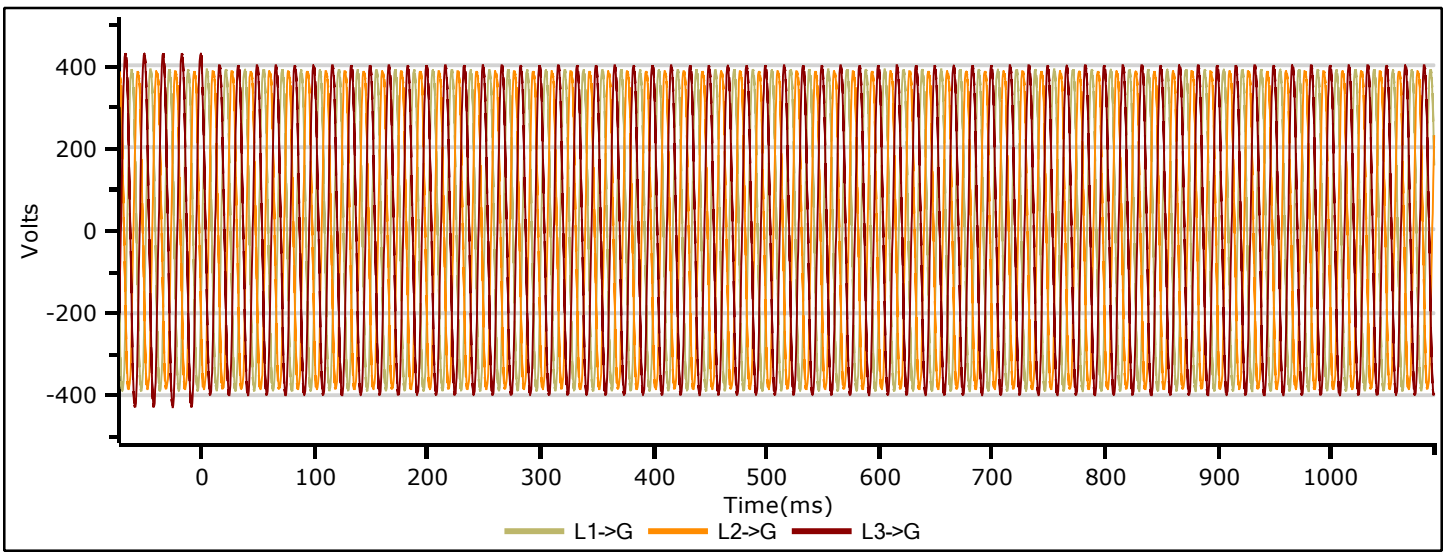
V & I + Voltage Deviation

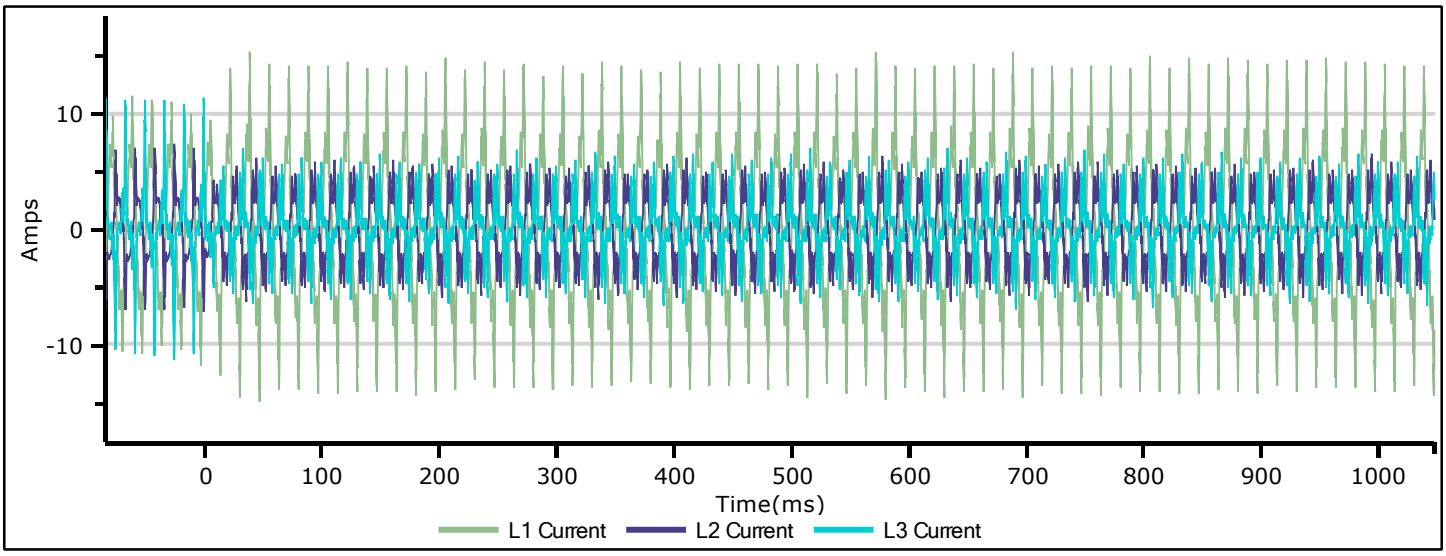
Site: 31098

Rx Monitoring Services, Inc. Demo

Event 1533 - Tuesday, Nov 20, 2018 00:24:59







V & I + Voltage Deviation

Site: 31098

Rx Monitoring Services, Inc. Demo

Event 1670 - Tuesday, Nov 20, 2018 08:16:46