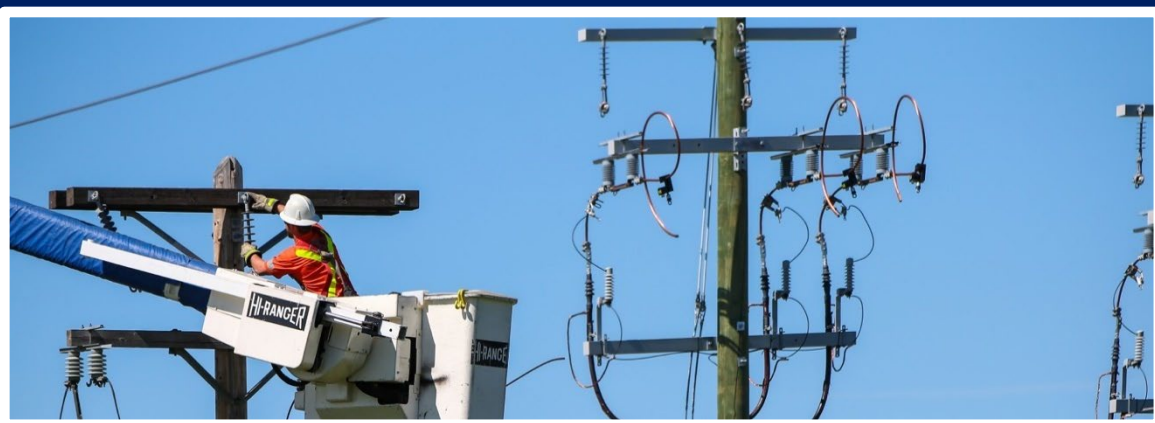


DER PQ Compliance Report



Customer Name: XYZ
CRM#: 66000XXXX
Report Date: July 5, 2022
Prepared by: Mike Jones
Approved by: John Smith

Introduction

The purpose of this report is to present a summary and supporting data to confirm the DER facility meets FortisAlberta DER-02/PQ-SPEC-01 compliance requirements when connecting to the FortisAlberta distribution system.

Customer Description

XYZ (Site ID: 4000XXXXXXX, CRM#: 66000XXXX) at SWXX-XX-XX-X in the area of XXXS-XXLN is a DER customer with generation type **Solar** and a maximum power output of **15MW** with power factor of **0.92**.

Monitored Devices and Installations

The power quality monitor equipment for the purpose of power quality benchmark report shall be installed at the PCC and conforming to IEC 61000-4-30 Class A measurement standards.

The monitoring device shall be installed and take the measurement on the primary side (25kV). It is recommended that the customer provide a single line diagram indicating the location of monitoring in their facility.

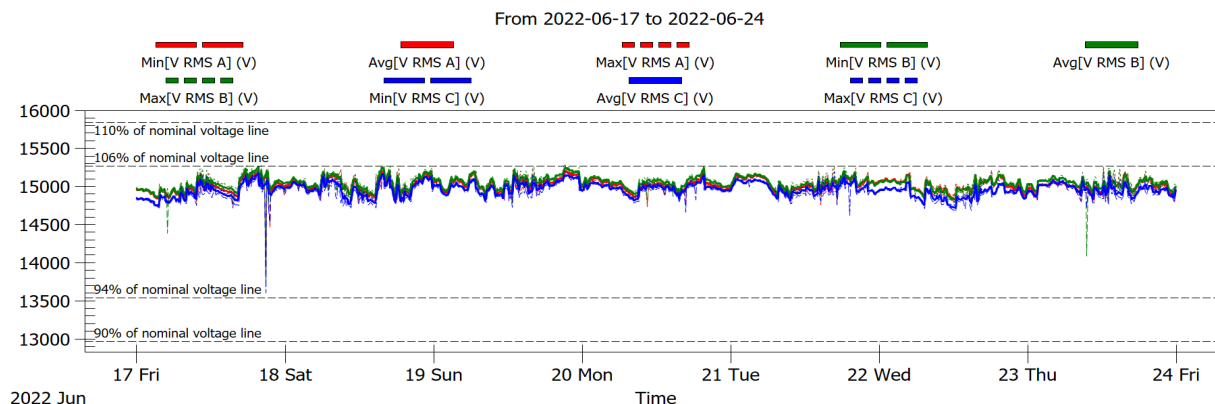
7 days of Compliance monitoring period (After Commissioning with normal generation): From **2022-06-17** to **2022-06-24**.

[Insert facility SLD indicating location of monitoring]

Data Analysis and Graphs

VRMS

Voltage RMS graph



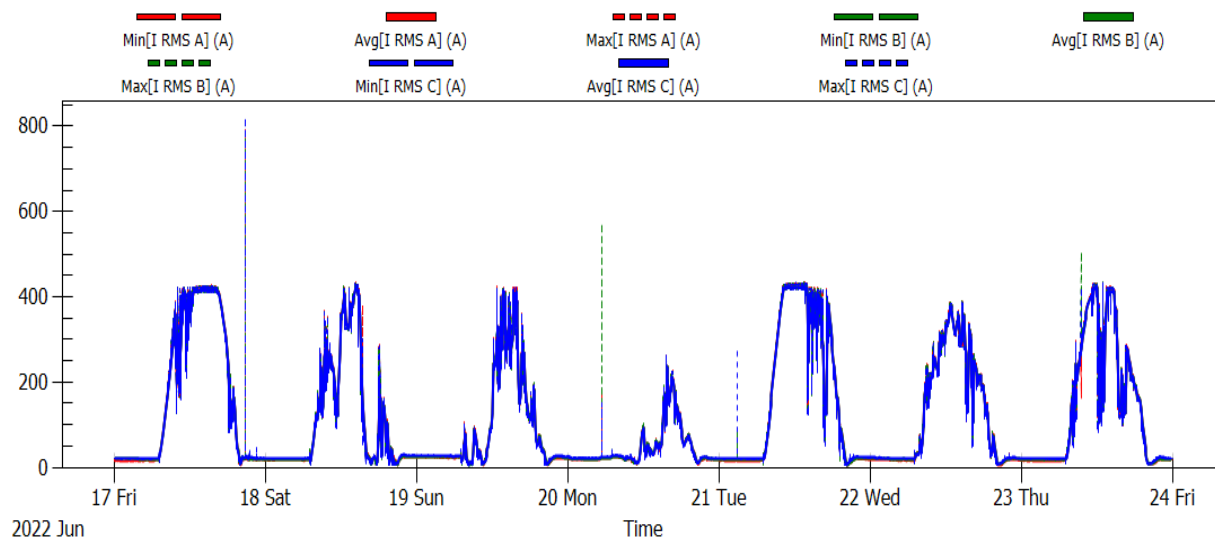
Note: V_{rms} 95% weekly value should meet CSA C235 nomal operating conditions.

Based on rms voltage graph/data, the average voltage statistical data shows the following:

5 th percentile	14855V
Average	15008V
95 th percentile	15149V

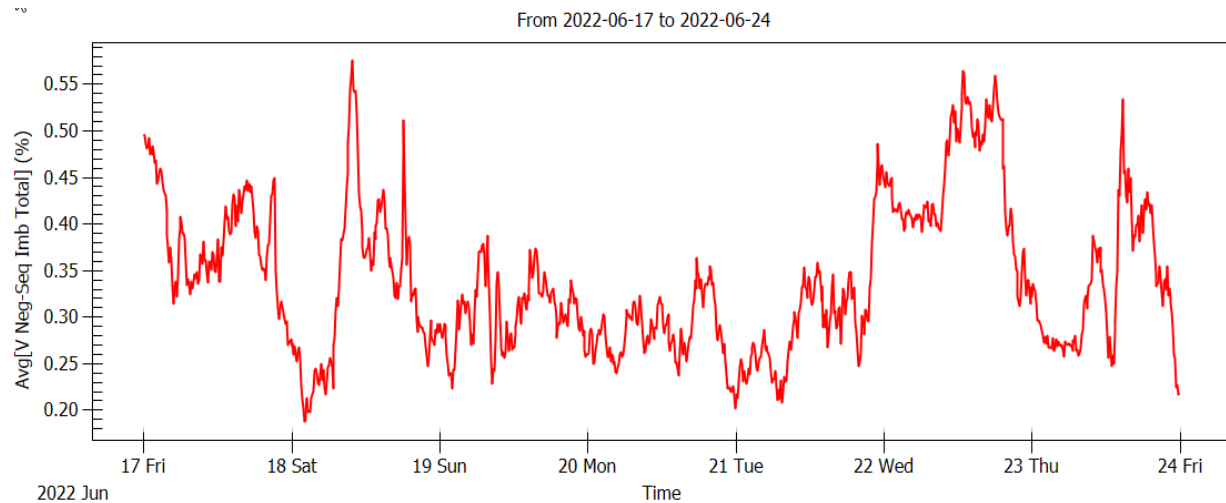
IRMS

Current RMS Graph



Voltage Unbalance

Voltage Unbalance Graph



Note: Voltage unbalance (based on sequence components) should not exceed the limit of 3%.

Voltage THD and Individual Voltage Harmonics Summary

The voltage harmonics are represented as a percentage (%) of the fundamental (60Hz) voltage for each phase accordingly.

V Harmonic	Average (%)	Maximum (%)	CP 95 (%)	Compliant (Yes/No)
V THD A	0.9659567	1.826495	1.63391	Yes
V THD B	0.8172211	1.40502	1.253725	Yes
V THD C	0.8255258	1.503068	1.404232	Yes
V H2 A	0.02432364	0.068516394	0.038925585	Yes
V H2 B	0.025142286	0.069174703	0.045217065	Yes
V H2 C	0.030641248	0.07855111	0.055799743	Yes
V H3 A	0.299017121	0.349512875	0.333414325	Yes
V H3 B	0.244740226	0.344194733	0.310915985	Yes
V H3 C	0.270445391	0.358111859	0.321941873	Yes
V H4 A	0.031084776	0.132673792	0.062463663	Yes
V H4 B	0.038176912	0.115819953	0.070327647	Yes
V H4 C	0.036671043	0.106000335	0.069022404	Yes
V H5 A	0.732527566	1.640655112	1.389476582	Yes
V H5 B	0.564137285	1.207448517	0.999679062	Yes
V H5 C	0.521735715	1.239491172	1.062617702	Yes
V H6 A	0.017713179	0.105338705	0.038516103	Yes

V H6 B	0.019582071	0.05182706	0.032197768	Yes
V H6 C	0.012896609	0.08737879	0.023583456	Yes
V H7 A	0.365476774	0.944875851	0.698018567	Yes
V H7 B	0.397849794	0.845203144	0.677299585	Yes
V H7 C	0.416266487	1.036569074	0.845925082	Yes
V H8 A	0.016425307	0.041325333	0.028851953	Yes
V H8 B	0.029595939	0.062707593	0.046148656	Yes
V H8 C	0.029041575	0.063346255	0.048434441	Yes
V H9 A	0.133095461	0.222843358	0.179908698	Yes
V H9 B	0.089091946	0.190215962	0.133176774	Yes
V H9 C	0.167614105	0.357733179	0.306527821	Yes
V H10 A	0.017774251	0.035407485	0.025869816	Yes
V H10 B	0.024569567	0.059484163	0.039938027	Yes
V H10 C	0.02334206	0.061946852	0.034939978	Yes
V H11 A	0.2267902	0.88054198	0.557603745	Yes
V H11 B	0.182210343	0.685937572	0.484281738	Yes
V H11 C	0.195941668	0.724094048	0.464352963	Yes
V H12 A	0.010212187	0.023828303	0.012972104	Yes
V H12 B	0.009542151	0.016863264	0.01160597	Yes
V H12 C	0.008382123	0.020740323	0.0111111397	Yes
V H13 A	0.089372418	0.205859506	0.174511342	Yes
V H13 B	0.085076464	0.214017584	0.150482066	Yes
V H13 C	0.072215028	0.185277552	0.133262718	Yes
V H14 A	0.006103	0.014961226	0.009001613	Yes
V H14 B	0.008828675	0.017167583	0.012929817	Yes
V H14 C	0.006374083	0.014254712	0.010026082	Yes
V H15 A	0.027331569	0.047345203	0.040303862	Yes
V H15 B	0.02874997	0.064660696	0.048412285	Yes
V H15 C	0.015940024	0.039970071	0.030830039	Yes
V H16 A	0.010677732	0.016874575	0.014375028	Yes
V H16 B	0.010230956	0.017480177	0.014616555	Yes
V H16 C	0.009199933	0.015252575	0.013017924	Yes
V H17 A	0.051033707	0.114786003	0.089938573	Yes
V H17 B	0.047894481	0.124414432	0.083249266	Yes
V H17 C	0.046221815	0.098923039	0.078910815	Yes
V H18 A	0.004154885	0.007896182	0.006222266	Yes
V H18 B	0.003888044	0.00681107	0.004893041	Yes
V H18 C	0.004377765	0.007899045	0.007101272	Yes
V H19 A	0.034391625	0.094895846	0.067810522	Yes
V H19 B	0.033770805	0.093925797	0.067125448	Yes

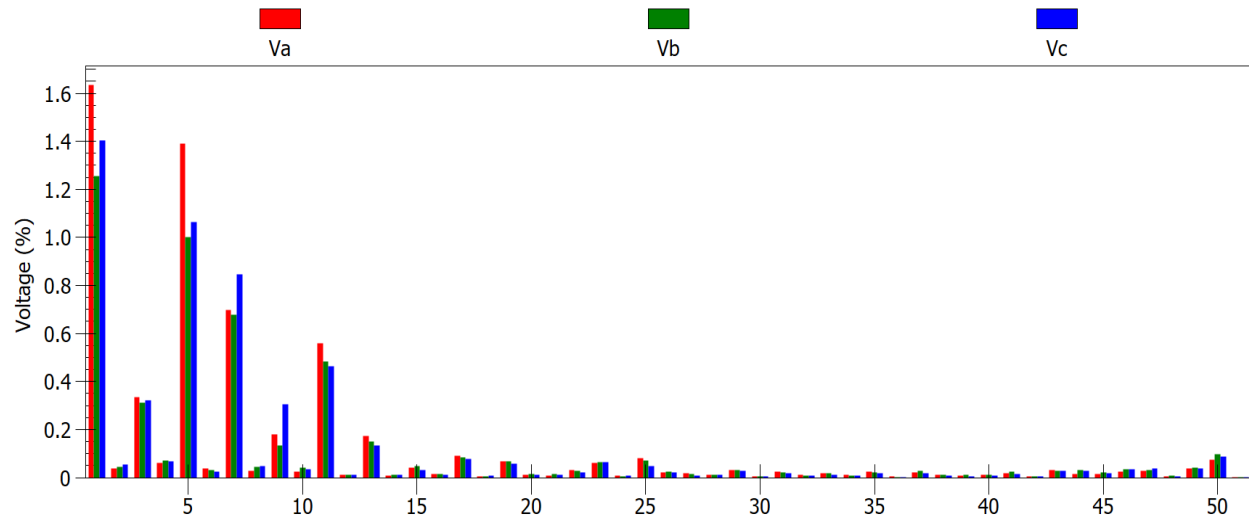
V H19 C	0.02821153	0.086261145	0.056789744	Yes
V H20 A	0.00695339	0.016728201	0.012933898	Yes
V H20 B	0.008278712	0.02087713	0.015456147	Yes
V H20 C	0.006060511	0.014189309	0.010816687	Yes
V H21 A	0.006229585	0.014420403	0.009645464	Yes
V H21 B	0.009184971	0.019217896	0.014666442	Yes
V H21 C	0.006721552	0.017188836	0.010636011	Yes
V H22 A	0.015570533	0.040586095	0.030899368	Yes
V H22 B	0.014178908	0.036488091	0.02893726	Yes
V H22 C	0.010671539	0.027816069	0.020719398	Yes
V H23 A	0.032041461	0.088167461	0.059442713	Yes
V H23 B	0.033805487	0.090609072	0.065008185	Yes
V H23 C	0.037218448	0.086059969	0.064548436	Yes
V H24 A	0.004283445	0.0130796	0.009060506	Yes
V H24 B	0.003161132	0.006596026	0.004335642	Yes
V H24 C	0.003837772	0.00945515	0.007617483	Yes
V H25 A	0.042261793	0.141709606	0.080587261	Yes
V H25 B	0.039125611	0.142544533	0.070803321	Yes
V H25 C	0.026243182	0.103300514	0.048460126	Yes
V H26 A	0.011884472	0.028853593	0.022923918	Yes
V H26 B	0.013671578	0.031098927	0.025577181	Yes
V H26 C	0.011282041	0.026433282	0.02147642	Yes
V H27 A	0.010821288	0.027950807	0.018705329	Yes
V H27 B	0.007909991	0.017432219	0.013351827	Yes
V H27 C	0.005489562	0.013657409	0.008864132	Yes
V H28 A	0.006803427	0.012499056	0.010804052	Yes
V H28 B	0.006725084	0.012958112	0.010932751	Yes
V H28 C	0.006397281	0.011959202	0.010190039	Yes
V H29 A	0.015884564	0.042588121	0.032110248	Yes
V H29 B	0.015714067	0.048921719	0.032774962	Yes
V H29 C	0.01376349	0.035597145	0.027108594	Yes
V H30 A	0.003077089	0.005551229	0.004179235	Yes
V H30 B	0.003278582	0.007679893	0.004521226	Yes
V H30 C	0.002561334	0.005751333	0.003892641	Yes
V H31 A	0.013019291	0.037043904	0.024530821	Yes
V H31 B	0.012133639	0.029071686	0.02253843	Yes
V H31 C	0.008958582	0.022363809	0.017977881	Yes
V H32 A	0.006877919	0.012706344	0.010457905	Yes
V H32 B	0.005115817	0.009903302	0.007841457	Yes
V H32 C	0.004613754	0.008811301	0.007271312	Yes

V H33 A	0.010985136	0.027479955	0.018543939	Yes
V H33 B	0.011683289	0.025989169	0.019745899	Yes
V H33 C	0.005820767	0.017027737	0.01094903	Yes
V H34 A	0.006732738	0.012340132	0.010035479	Yes
V H34 B	0.006553334	0.012401319	0.009740804	Yes
V H34 C	0.005376482	0.0096056	0.007840396	Yes
V H35 A	0.012624428	0.036815069	0.024769051	Yes
V H35 B	0.011488544	0.030767982	0.019974042	Yes
V H35 C	0.008959177	0.02257264	0.01666188	Yes
V H36 A	0.003071689	0.004690123	0.00384194	Yes
V H36 B	0.002158082	0.004169224	0.002978186	Yes
V H36 C	0.001769553	0.002592947	0.002100165	Yes
V H37 A	0.013630157	0.030165903	0.022232647	Yes
V H37 B	0.015204032	0.040608843	0.027343258	Yes
V H37 C	0.010543219	0.024984993	0.016826646	Yes
V H38 A	0.007277077	0.013409715	0.011382006	Yes
V H38 B	0.006871877	0.013843883	0.011595241	Yes
V H38 C	0.005831913	0.011208837	0.009599181	Yes
V H39 A	0.006395772	0.013892222	0.009871957	Yes
V H39 B	0.006067347	0.015020226	0.010286189	Yes
V H39 C	0.003024678	0.006538005	0.004578622	Yes
V H40 A	0.00738044	0.01384155	0.011297318	Yes
V H40 B	0.007691547	0.014035633	0.0112476	Yes
V H40 C	0.005835588	0.0105639	0.00839351	Yes
V H41 A	0.010025401	0.027890407	0.018951751	Yes
V H41 B	0.011914344	0.035697345	0.024710503	Yes
V H41 C	0.008427744	0.018602746	0.01464438	Yes
V H42 A	0.004016449	0.00611475	0.00494741	Yes
V H42 B	0.003238302	0.006201998	0.004707235	Yes
V H42 C	0.003005147	0.005724358	0.004358886	Yes
V H43 A	0.015744358	0.045525215	0.029941352	Yes
V H43 B	0.015717112	0.044455585	0.029592527	Yes
V H43 C	0.013586707	0.036103185	0.026459125	Yes
V H44 A	0.010124015	0.021594383	0.016149526	Yes
V H44 B	0.017103225	0.03919053	0.031564505	Yes
V H44 C	0.013820932	0.036015487	0.027615277	Yes
V H45 A	0.008170526	0.019183359	0.014337238	Yes
V H45 B	0.012257311	0.032036387	0.022113461	Yes
V H45 C	0.008460743	0.025279378	0.0175456	Yes
V H46 A	0.015356388	0.032183458	0.025784547	Yes

V H46 B	0.020389489	0.039170127	0.033373397	Yes
V H46 C	0.01995623	0.040446583	0.033026221	Yes
V H47 A	0.015035917	0.036277555	0.027178111	Yes
V H47 B	0.017706392	0.046095695	0.03108427	Yes
V H47 C	0.02154649	0.064342924	0.038990584	Yes
V H48 A	0.003902651	0.005798489	0.004941985	Yes
V H48 B	0.005015173	0.008573348	0.006868012	Yes
V H48 C	0.004712816	0.007714439	0.006350308	Yes
V H49 A	0.023838101	0.051185753	0.039484918	Yes
V H49 B	0.024801732	0.055327647	0.041354175	Yes
V H49 C	0.024382315	0.057920093	0.038964608	Yes
V H50 A	0.040732384	0.092567304	0.07401331	Yes
V H50 B	0.053027573	0.121593685	0.097759232	Yes
V H50 C	0.04738293	0.108837702	0.087096633	Yes

Note: Please refer to specific sections of the PQ-SPEC-01 for detailed compliance limits

95th Percentile VTHD and Individual Harmonic Spectrum Graph



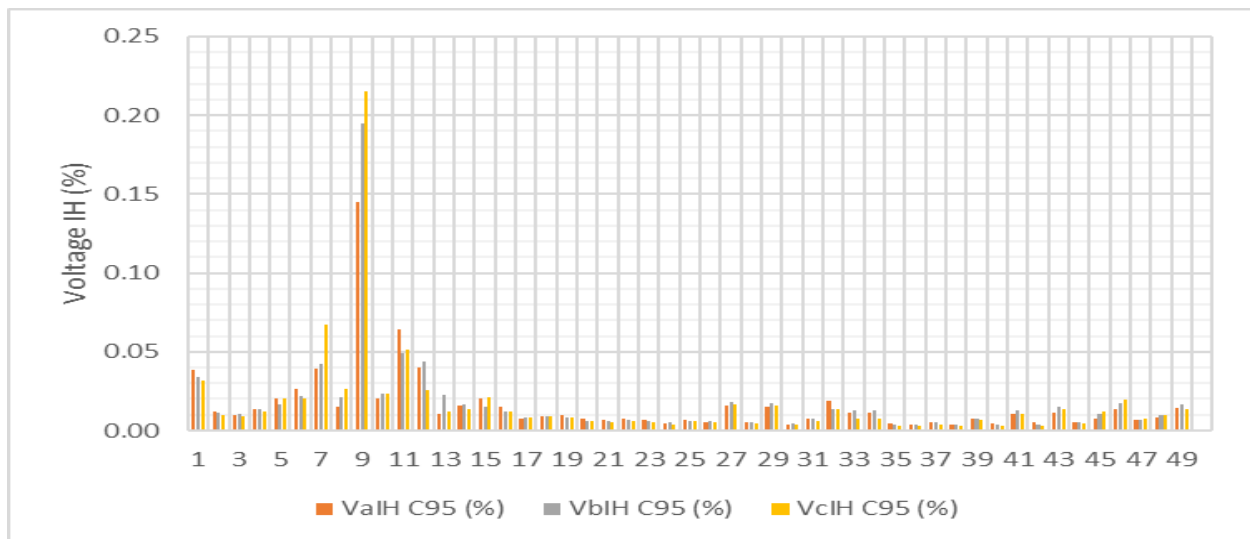
Voltage Interharmonics Summary

The voltage interharmonics are represented as a percentage (%) of the fundamental (60Hz) voltage for each phase accordingly.

IH Order	ValH avg (%)	ValH max (%)	ValH C95 (%)	VbIH avg (%)	VbIH max (%)	VbIH C95 (%)	VclH avg (%)	VclH max (%)	VclH C95 (%)
0	0.03	0.08	0.04	0.03	0.08	0.03	0.03	0.06	0.03
1	0.01	0.03	0.01	0.01	0.06	0.01	0.01	0.03	0.01
2	0.01	0.02	0.01	0.01	0.07	0.01	0.01	0.02	0.01
3	0.01	0.02	0.01	0.01	0.04	0.01	0.01	0.02	0.01
4	0.01	0.02	0.02	0.01	0.04	0.02	0.01	0.02	0.02
5	0.01	0.03	0.03	0.01	0.04	0.02	0.01	0.02	0.02
6	0.02	0.05	0.04	0.02	0.05	0.04	0.03	0.08	0.07
7	0.01	0.02	0.02	0.01	0.03	0.02	0.01	0.03	0.03
8	0.09	0.17	0.14	0.11	0.24	0.19	0.12	0.26	0.22
9	0.01	0.03	0.02	0.01	0.03	0.02	0.02	0.03	0.02
10	0.05	0.07	0.06	0.04	0.06	0.05	0.04	0.06	0.05
11	0.03	0.07	0.04	0.03	0.06	0.04	0.02	0.04	0.03
12	0.01	0.01	0.01	0.01	0.03	0.02	0.01	0.01	0.01
13	0.01	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.01
14	0.01	0.02	0.02	0.01	0.02	0.01	0.01	0.02	0.02
15	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
16	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
17	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
18	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
19	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01
20	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01
21	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01
22	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01
23	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00
24	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01
25	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.00
26	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02
27	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00
28	0.01	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.02
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01
31	0.01	0.03	0.02	0.01	0.02	0.01	0.01	0.02	0.01
32	0.01	0.01	0.01	0.01	0.02	0.01	0.00	0.01	0.01
33	0.01	0.01	0.01	0.01	0.02	0.01	0.00	0.01	0.01
34	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
35	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
36	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.00
37	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
38	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01

39	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
40	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.02	0.01
41	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00
42	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.02	0.01
43	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00
44	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
45	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.02	0.02
46	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
47	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
48	0.01	0.02	0.01	0.01	0.02	0.02	0.01	0.02	0.01
49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

95th Percentile Individual Voltage Interharmonic Spectrum Graph



Current TDD and Individual Voltage Harmonics Summary

The current distortion and harmonics are based on CSA 22.3 No.9:20 standard.

I Harmonic	Average (%)	Maximum (%)	CP 95 (%)	Limit (%)	Compliant (Yes/No)
I TDD A	1.057067321	2.299106217	1.902450391	5	Yes
I TDD B	0.989903163	2.134262832	1.751606099	5	Yes
I TDD C	1.075705074	2.22690624	1.82206809	5	Yes
I H2 A	0.035938111	0.136992956	0.066437133	1	Yes
I H2 B	0.031437933	0.138347511	0.057023933	1	Yes
I H2 C	0.036103267	0.184373156	0.070280089	1	Yes
I H3 A	0.333539556	0.531996444	0.416300667	4	Yes
I H3 B	0.384503333	0.473682222	0.446219111	4	Yes

I H3 C	0.458839778	0.650712889	0.564222	4	Yes
I H4 A	0.037799444	0.1567386	0.070446178	1	Yes
I H4 B	0.034688956	0.143687533	0.065238267	1	Yes
I H4 C	0.037870378	0.154987889	0.076998244	1	Yes
I H5 A	0.692602222	1.571693333	1.373688444	4	Yes
I H5 B	0.545345111	1.337225111	1.132028889	4	Yes
I H5 C	0.655232	1.366056889	1.189266444	4	Yes
I H6 A	0.009622673	0.152114867	0.014661669	1	Yes
I H6 B	0.018116584	0.082217778	0.029349067	1	Yes
I H6 C	0.014498213	0.132965333	0.021125627	1	Yes
I H7 A	0.639597111	1.073819111	0.876806889	4	Yes
I H7 B	0.668398444	1.242791111	1.008941333	4	Yes
I H7 C	0.654638444	1.258856444	0.993206444	4	Yes
I H8 A	0.019512696	0.041159289	0.028126733	1	Yes
I H8 B	0.026673311	0.046256467	0.035784222	1	Yes
I H8 C	0.018396456	0.054605311	0.028465844	1	Yes
I H9 A	0.123778578	0.1867964	0.153578844	4	Yes
I H9 B	0.059998	0.132536467	0.095197244	4	Yes
I H9 C	0.050919578	0.112509578	0.0910856	4	Yes
I H10 A	0.017387173	0.036413889	0.0224384	1	Yes
I H10 B	0.022808333	0.058349756	0.035788778	1	Yes
I H10 C	0.019439004	0.051370756	0.027558356	1	Yes
I H11 A	0.280749111	1.052428667	0.822407111	2	Yes
I H11 B	0.232035111	0.831094222	0.655986222	2	Yes
I H11 C	0.242927333	0.901669556	0.700428889	2	Yes
I H12 A	0.00955022	0.031102244	0.013799642	0.5	Yes
I H12 B	0.012546071	0.033632756	0.017705502	0.5	Yes
I H12 C	0.010279344	0.029523689	0.014392678	0.5	Yes
I H13 A	0.075252133	0.271749333	0.169488222	2	Yes
I H13 B	0.098647244	0.356860222	0.243555333	2	Yes
I H13 C	0.098792911	0.290116667	0.206664356	2	Yes
I H14 A	0.007436027	0.023275067	0.011897878	0.5	Yes
I H14 B	0.008139993	0.017169942	0.012602802	0.5	Yes
I H14 C	0.006405409	0.022209707	0.009507811	0.5	Yes
I H15 A	0.01090326	0.022218702	0.01669324	2	Yes
I H15 B	0.018747529	0.045284844	0.032564244	2	Yes
I H15 C	0.012368018	0.046191933	0.024802778	2	Yes
I H16 A	0.008497596	0.016448927	0.013481689	0.5	Yes
I H16 B	0.00918878	0.019534704	0.015599382	0.5	Yes
I H16 C	0.008922044	0.017688391	0.01495796	0.5	Yes

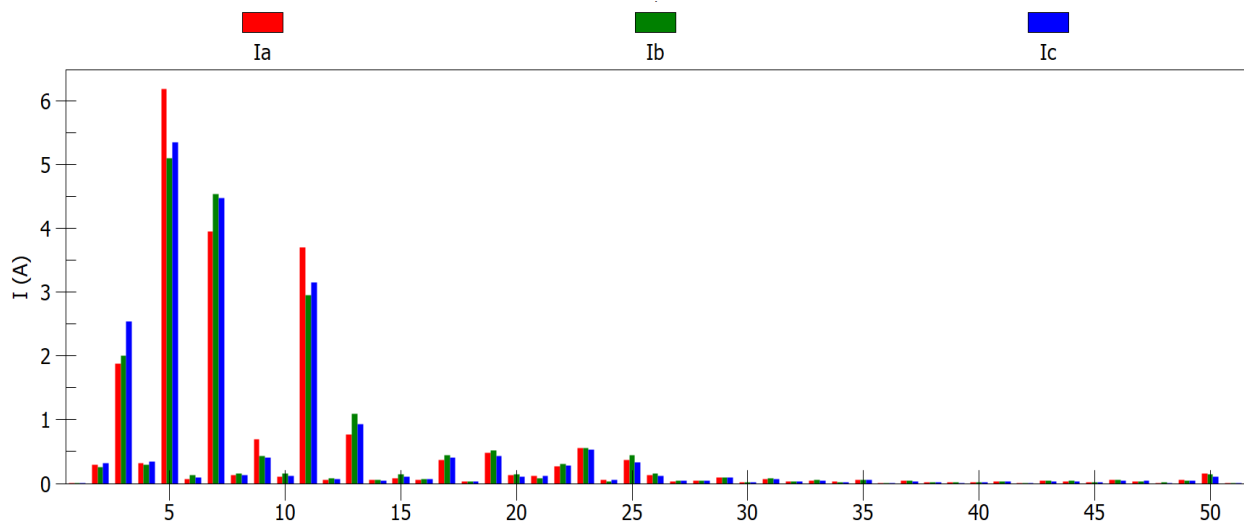
I H17 A	0.040702911	0.1075642	0.082473711	1.5	Yes
I H17 B	0.050588533	0.117353111	0.098635533	1.5	Yes
I H17 C	0.046018911	0.112037667	0.089668556	1.5	Yes
I H18 A	0.003801436	0.007861456	0.006148851	0.375	Yes
I H18 B	0.00384862	0.007370676	0.005586013	0.375	Yes
I H18 C	0.004075993	0.007796369	0.006524996	0.375	Yes
I H19 A	0.0591462	0.133230356	0.107711044	1.5	Yes
I H19 B	0.063287778	0.147282333	0.114555644	1.5	Yes
I H19 C	0.054373756	0.1362118	0.096880511	1.5	Yes
I H20 A	0.013991596	0.037875067	0.030441911	0.375	Yes
I H20 B	0.015204011	0.040529689	0.03111148	0.375	Yes
I H20 C	0.011645396	0.029905022	0.023210956	0.375	Yes
I H21 A	0.014014844	0.033547156	0.025305356	1.5	Yes
I H21 B	0.010544829	0.0228092	0.0179696	1.5	Yes
I H21 C	0.018799753	0.031977956	0.026011156	1.5	Yes
I H22 A	0.029870533	0.079224333	0.060868	0.375	Yes
I H22 B	0.0329354	0.084142578	0.067603	0.375	Yes
I H22 C	0.030745022	0.079699422	0.063023889	0.375	Yes
I H23 A	0.066325022	0.169107956	0.124355622	0.6	Yes
I H23 B	0.067049067	0.172927111	0.123593333	0.6	Yes
I H23 C	0.066377067	0.169971178	0.117331111	0.6	Yes
I H24 A	0.005554851	0.020112087	0.01362864	0.15	Yes
I H24 B	0.004887907	0.013010298	0.007903191	0.15	Yes
I H24 C	0.00605194	0.015949233	0.012287478	0.15	Yes
I H25 A	0.040270822	0.131589911	0.081338378	0.6	Yes
I H25 B	0.050500444	0.156275	0.099621356	0.6	Yes
I H25 C	0.037517	0.127617689	0.0748762	0.6	Yes
I H26 A	0.014860727	0.037078422	0.0294216	0.15	Yes
I H26 B	0.017259704	0.041860756	0.033766933	0.15	Yes
I H26 C	0.013737287	0.032717244	0.026107422	0.15	Yes
I H27 A	0.004674733	0.011890949	0.007498171	0.6	Yes
I H27 B	0.005078627	0.010613316	0.008646578	0.6	Yes
I H27 C	0.006043476	0.014033362	0.010268049	0.6	Yes
I H28 A	0.005793778	0.011891871	0.009761571	0.15	Yes
I H28 B	0.006248569	0.013012971	0.010800258	0.15	Yes
I H28 C	0.005468978	0.01103696	0.00915282	0.15	Yes
I H29 A	0.010749671	0.031943711	0.01995872	0.6	Yes
I H29 B	0.012452636	0.033499	0.021422902	0.6	Yes
I H29 C	0.010940142	0.026581578	0.020744793	0.6	Yes
I H30 A	0.00255796	0.004104973	0.003116724	0.15	Yes

I H30 B	0.002806051	0.005100187	0.003713687	0.15	Yes
I H30 C	0.002711658	0.004654238	0.003807138	0.15	Yes
I H31 A	0.008481116	0.022655956	0.015796389	0.6	Yes
I H31 B	0.008506969	0.0246048	0.0190685	0.6	Yes
I H31 C	0.007662424	0.020618676	0.014478953	0.6	Yes
I H32 A	0.004552724	0.00790462	0.006671987	0.15	Yes
I H32 B	0.004579533	0.009156387	0.006628951	0.15	Yes
I H32 C	0.004403471	0.007159202	0.006139113	0.15	Yes
I H33 A	0.005610936	0.017576224	0.010481076	0.6	Yes
I H33 B	0.005918329	0.017393582	0.011994953	0.6	Yes
I H33 C	0.005185669	0.014495798	0.009834149	0.6	Yes
I H34 A	0.004217378	0.007625636	0.006028407	0.15	Yes
I H34 B	0.003746527	0.006484098	0.005204164	0.15	Yes
I H34 C	0.003825304	0.006408	0.00527044	0.15	Yes
I H35 A	0.006782304	0.018247673	0.012283831	0.3	Yes
I H35 B	0.006522002	0.017544267	0.012634698	0.3	Yes
I H35 C	0.006174464	0.016854444	0.011269044	0.3	Yes
I H36 A	0.002188478	0.003153469	0.002508351	0.075	Yes
I H36 B	0.002189528	0.004505098	0.00273562	0.075	Yes
I H36 C	0.002182028	0.003236536	0.002700493	0.075	Yes
I H37 A	0.005271571	0.011421313	0.008466653	0.3	Yes
I H37 B	0.005147818	0.01235376	0.008999218	0.3	Yes
I H37 C	0.004523842	0.010640749	0.00756702	0.3	Yes
I H38 A	0.003811293	0.006440507	0.005429249	0.075	Yes
I H38 B	0.003629322	0.006097736	0.005051804	0.075	Yes
I H38 C	0.003481896	0.005941013	0.00484036	0.075	Yes
I H39 A	0.00252652	0.004468591	0.003168878	0.3	Yes
I H39 B	0.002290556	0.004340862	0.002849198	0.3	Yes
I H39 C	0.002210039	0.003442384	0.002677829	0.3	Yes
I H40 A	0.00332928	0.005967638	0.00466264	0.075	Yes
I H40 B	0.003395171	0.005872233	0.004781493	0.075	Yes
I H40 C	0.003303593	0.005475371	0.004457062	0.075	Yes
I H41 A	0.004231264	0.009373202	0.007098158	0.3	Yes
I H41 B	0.004040987	0.009334851	0.006853596	0.3	Yes
I H41 C	0.003492698	0.007604733	0.005686044	0.3	Yes
I H42 A	0.002165174	0.002897787	0.002484304	0.075	Yes
I H42 B	0.002167234	0.004521482	0.002595136	0.075	Yes
I H42 C	0.002182348	0.003368822	0.002675384	0.075	Yes
I H43 A	0.005010491	0.013833078	0.0096113	0.3	Yes
I H43 B	0.004901573	0.011437498	0.008610331	0.3	Yes

I H43 C	0.004282351	0.01104404	0.008082742	0.3	Yes
I H44 A	0.004729193	0.009263911	0.007511293	0.075	Yes
I H44 B	0.005163411	0.010761367	0.008706142	0.075	Yes
I H44 C	0.004474331	0.009217647	0.007299424	0.075	Yes
I H45 A	0.00291014	0.005218109	0.004276178	0.3	Yes
I H45 B	0.003398207	0.006586042	0.005531071	0.3	Yes
I H45 C	0.003090716	0.00628154	0.004815098	0.3	Yes
I H46 A	0.007850213	0.016764567	0.013405347	0.075	Yes
I H46 B	0.00690806	0.01459474	0.011603393	0.075	Yes
I H46 C	0.006108051	0.012410953	0.009996618	0.075	Yes
I H47 A	0.004560371	0.010113607	0.007430516	0.3	Yes
I H47 B	0.004622189	0.01117832	0.007911207	0.3	Yes
I H47 C	0.005099502	0.012232347	0.008737229	0.3	Yes
I H48 A	0.002264276	0.00313804	0.002599462	0.075	Yes
I H48 B	0.002303504	0.004234047	0.002813196	0.075	Yes
I H48 C	0.00229072	0.003335278	0.002714369	0.075	Yes
I H49 A	0.007233024	0.014094847	0.011178807	0.3	Yes
I H49 B	0.005531016	0.013753604	0.008930789	0.3	Yes
I H49 C	0.006169104	0.01261428	0.009779284	0.3	Yes
I H50 A	0.018653898	0.041370667	0.033631356	0.075	Yes
I H50 B	0.016997353	0.037878844	0.030676622	0.075	Yes
I H50 C	0.013314738	0.030106911	0.023953689	0.075	Yes

Note: Please refer to specific sections of the PQ-SPEC-01 for detailed compliance limits

95th Percentile ITHD and Individual Harmonic Spectrum Graph



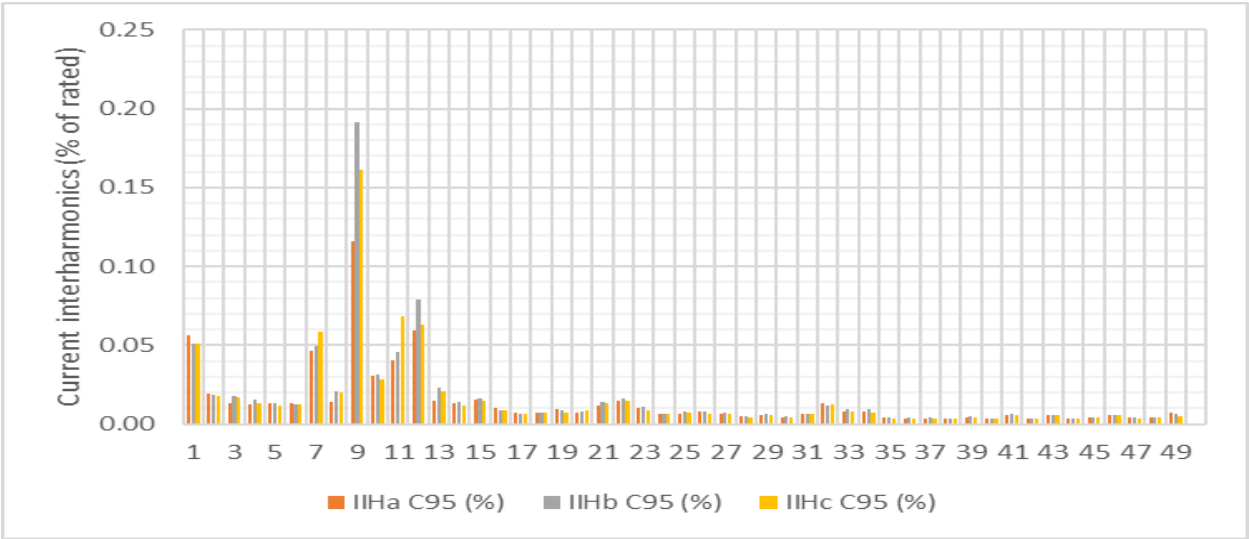
Current Interharmonics Summary

All current interharmonics are a percentage of the rated current or 95 percentiles of the current during the monitoring period.

IH order	IaIH avg (%)	IaIH max (%)	IaIH C95 (%)	IbIH avg (%)	IbIH max (%)	IbIH C95 (%)	IcIH avg (%)	IcIH max (%)	IcIH C95 (%)
0	0.03	0.48	0.06	0.03	0.47	0.05	0.03	0.35	0.05
1	0.01	0.11	0.02	0.01	0.20	0.02	0.01	0.12	0.02
2	0.01	0.04	0.01	0.01	0.15	0.02	0.01	0.06	0.02
3	0.01	0.02	0.01	0.01	0.09	0.02	0.01	0.04	0.01
4	0.01	0.02	0.01	0.01	0.07	0.01	0.01	0.03	0.01
5	0.01	0.02	0.01	0.01	0.06	0.01	0.01	0.03	0.01
6	0.03	0.06	0.05	0.03	0.07	0.05	0.03	0.07	0.06
7	0.01	0.02	0.01	0.01	0.04	0.02	0.01	0.02	0.02
8	0.09	0.15	0.12	0.12	0.24	0.19	0.11	0.21	0.16
9	0.02	0.06	0.03	0.02	0.06	0.03	0.02	0.05	0.03
10	0.03	0.06	0.04	0.03	0.08	0.05	0.05	0.10	0.07
11	0.04	0.12	0.06	0.05	0.16	0.08	0.04	0.13	0.06
12	0.01	0.02	0.01	0.02	0.03	0.02	0.02	0.02	0.02
13	0.01	0.02	0.01	0.01	0.02	0.01	0.01	0.01	0.01
14	0.01	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.01
15	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
16	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
17	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
18	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
19	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
20	0.01	0.02	0.01	0.01	0.02	0.01	0.01	0.02	0.01
21	0.01	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.02
22	0.01	0.02	0.01	0.01	0.02	0.01	0.01	0.01	0.01
23	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
24	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
25	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01
26	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
27	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00
28	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01
29	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
30	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01
31	0.01	0.02	0.01	0.01	0.02	0.01	0.01	0.02	0.01
32	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
33	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01

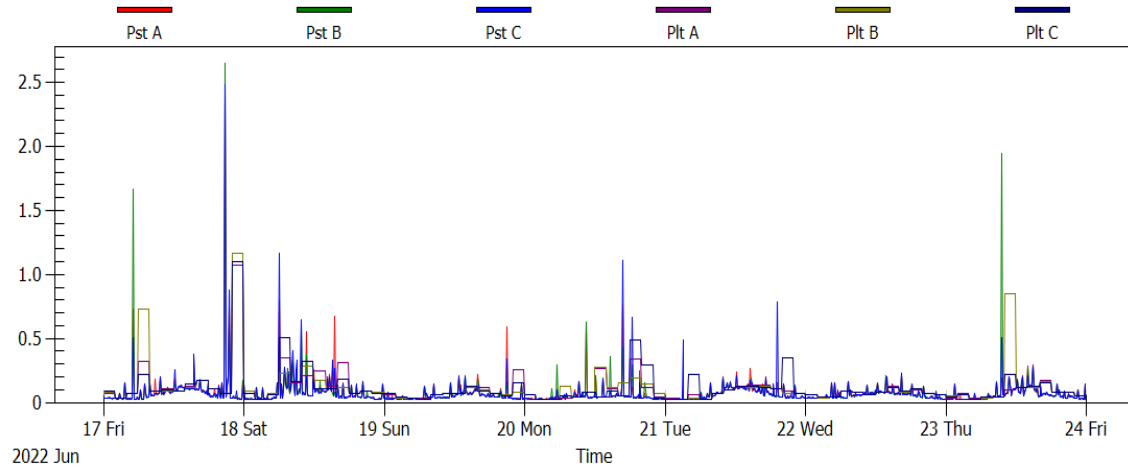
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01
43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00
45	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01
46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01
49	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

95th Percentile Individual Current Interharmonic Spectrum Graph



Voltage Flicker (P_{st} , P_{It})

P_{st}/P_{It} Graph



The 95th percentile value of P_{st} is **0.16**.

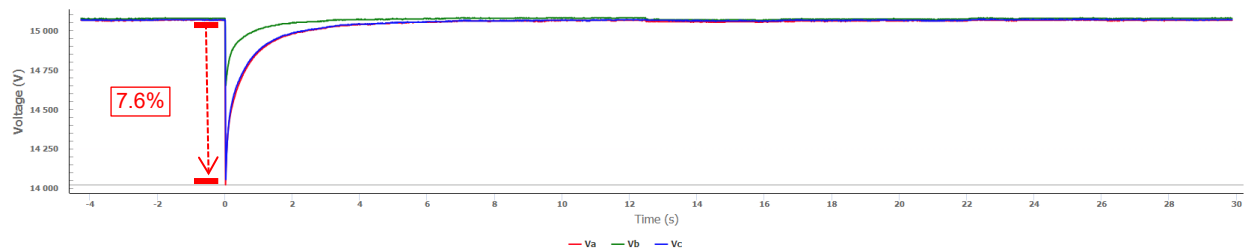
The 95th percentile value of P_{It} is **0.31**.

Note: The 95th percentile values of P_{st} and P_{It} should be below the standard limit of PQ-SPEC-01.

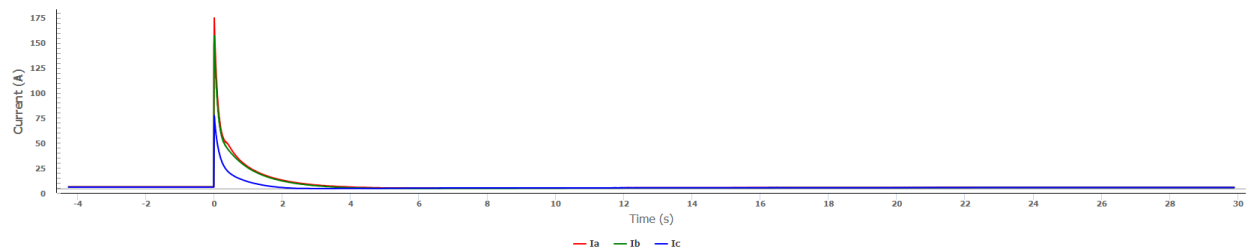
RVC (Rapid Voltage Change)

Single transformer energization

Voltage RMS Graph



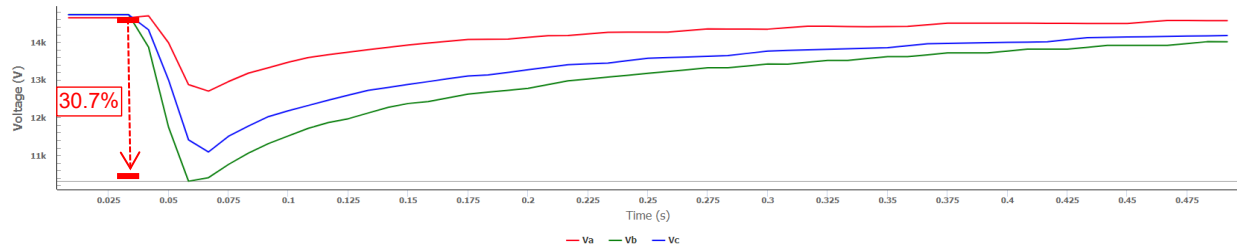
Current RMS Graph



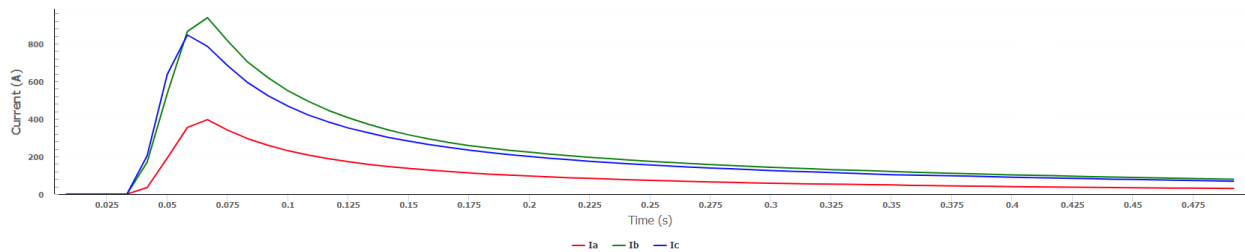
The RVC of single transformer energization (**3.6MVA**) results in **7.6%**.

All transformer energization

Voltage RMS Graph



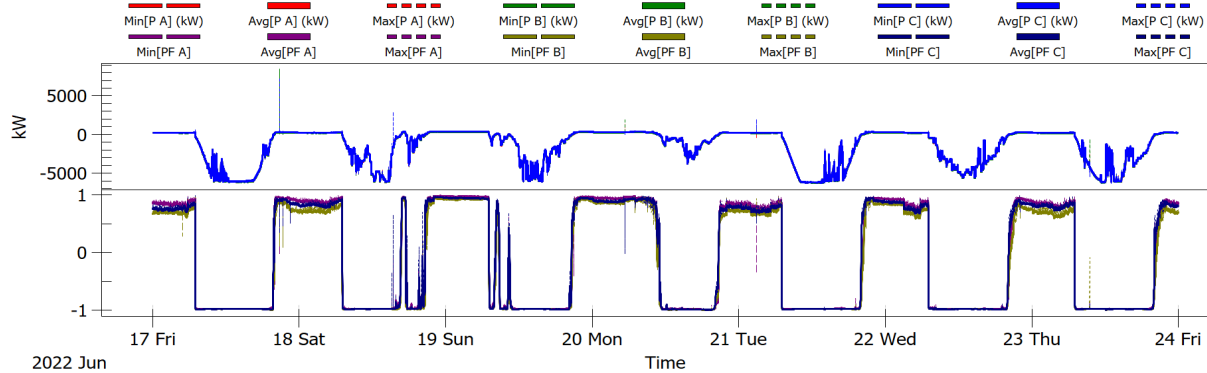
Current RMS Graph



The RVC of all transformer energization (**5 x 3.6MVA**) simultaneously results in **30.7%**. All transformers will be energized at once during facility maintenance, twice a year.

Power and Power Factor

Power and Power Factor Graph



The real power on each phase varies between **400kW (load)** and **-6000kW (generation)** during the monitoring period, with power factor varying between **0.95** and **-0.98**.

Note: The Power Factor setting should be the same as the agreed operating power factor during generation periods.

Summary of the Measurement Results

The summary of power quality compliance assessments are shown below assessment period between **2022-06-17** and **2022-06-24**. Detailed data and charts are presented in following sections for PQ indices that are identified to be not in compliance with the specification.

Assessments	Compliant (Yes/No)
Voltage THD and Individual Harmonics	Yes
Current THD and Individual Harmonics	Yes
Voltage Flicker (P_{st} and P_{lt})	Yes
RVC (infrequent)	No

Note: Please refer to specific sections of the PQ-SPEC-01 for detailed compliance limits

Additional Comments

Due to the causes of RVC is infrequent in nature, twice a year due to maintenance purposes, the limit RVC limit 3% would not apply.

However, with the infrequent RVC requirement from distribution facility owner FortisAlberta, the infrequent RVC of 30% is too excessive for the 25kV system, so each transformer must be energized one at a time, not together at the same time. DER owner has acknowledged and will mitigate by adopting the single transformer switching philosophy going forward during maintenance or other unforeseen activities that is infrequent in nature.

Provided by:

John Smith / XYZ

Power Producer or Engineering Consultant (name / company)

Electrical Engineer

Title (P.Eng Required)

John Smith

Signature

July 13, 2022

Date

Power Quality report to be reviewed by engineering, customer/consultant shall be contacted directly if any questions regarding the content.