

## Report according to EN 50160 2011

### Customer

**Name:** Statia 110/20kV Fantanele  
**Company:** SC Enel Distributie Banat SA  
**Location:** Arad jud.Arad

### Auditor

**Name:**  
**Company:** SC Enel Distributie Banat SA

**Start date:** 1/1/15 12:00 AM  
**End date:** 12/31/15 11:59 PM  
**Date:** 3/25/16 10:33 AM  
**Software:** Janitza-GridVis 4.0.2(2013-05-28\_14-34-52)



### UMG511-

Device type:	UMG511
EN 61000-4-7 Class:	Class 1
EN 61000-4-30 Class:	Class A
Flicker:	Supported
Events:	Supported
Transients:	Supported

Input Voltage (MediumVoltage):	20000.0V
Frequency:	50.0Hz
Relevant Voltages:	LL
Line selection:	L1 L2 L3

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## Summary

Frequency +-1%	Passed
Frequency -6%/+4%	Passed
Voltage effective L2-L1 - 1st Test	Passed
Voltage effective L2-L1 - 2nd Test	Failed
Voltage effective L3-L2 - 1st Test	Passed
Voltage effective L3-L2 - 2nd Test	Failed
Voltage effective L1-L3 - 1st Test	Passed
Voltage effective L1-L3 - 2nd Test	Failed
THD U L2-L1	Passed
THD U L3-L2	Passed
THD U L1-L3	Passed
Unbalance Voltage	Passed
Long term flicker L2	Passed
Long term flicker L3	Passed
Long term flicker L1	Passed
Harmonics voltage (rel.) L2	Passed
Harmonics voltage (rel.) L3	Passed
Harmonics voltage (rel.) L1	Passed
Undervoltage	
Overvoltage	

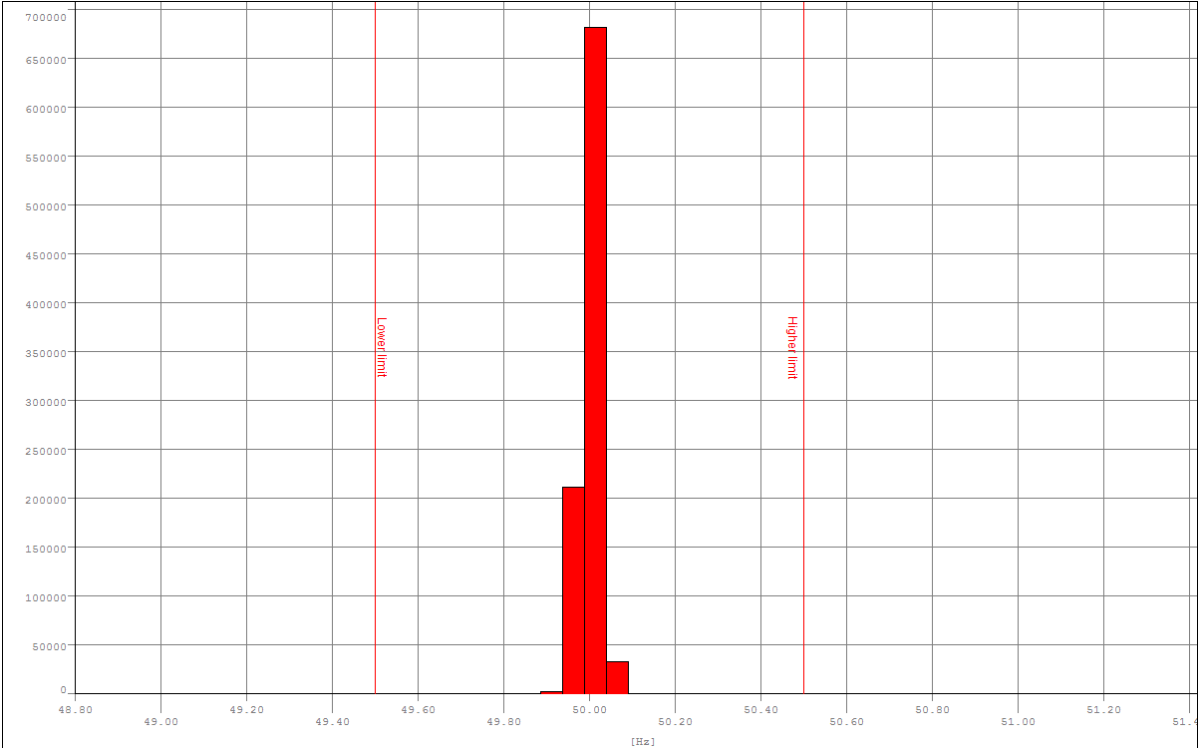
Frequency +-1%




Limits

Lower limit	49.50Hz
Higher limit	50.50Hz
Percentage	99.50%

Results

Min value	48.81Hz
Average value	50.00Hz
Max value	51.32Hz
Undercut	0.00%
Overcut	0.00%
Total out	0.00%
Result	Passed
Recording vacancy	70.56%



-  Norm Frequency (10s) [UMG511-Sagu Nou]
-  Marker Lower limit
-  Marker Higher limit

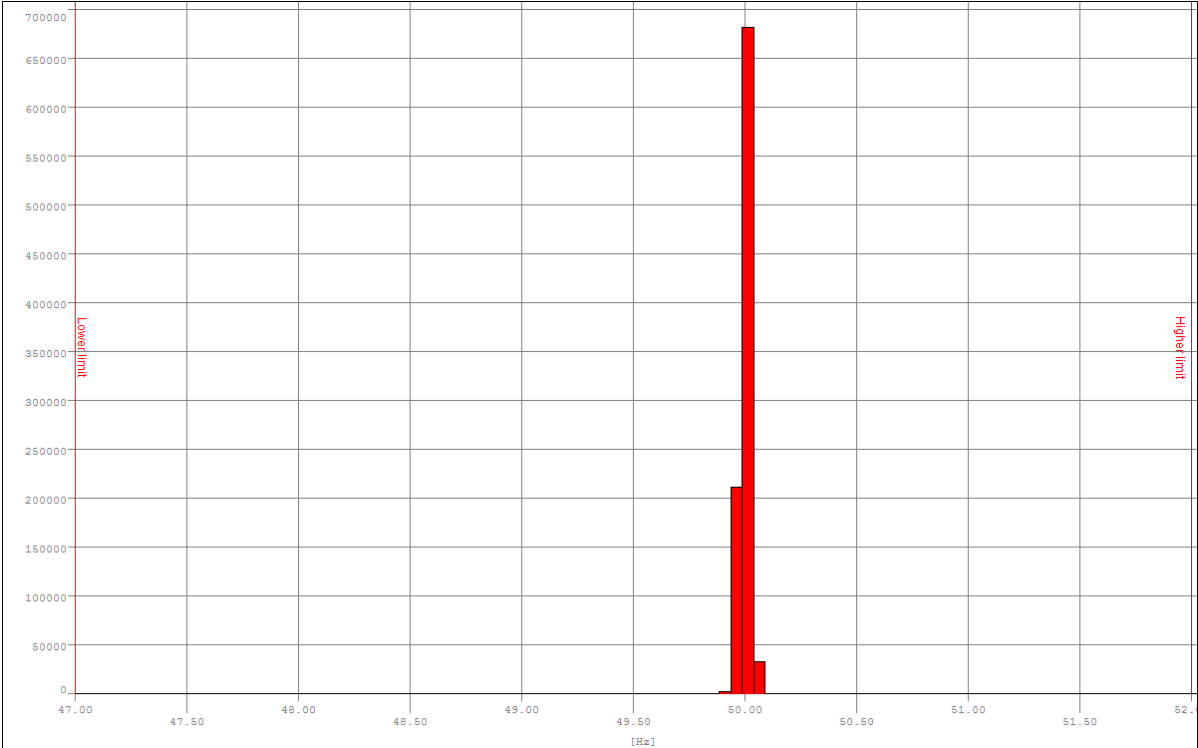
Frequency -6%/+4%

Limits

Lower limit	47.00Hz
Higher limit	52.00Hz
Percentage	100.00%

Results

Min value	48.81Hz
Average value	50.00Hz
Max value	51.32Hz
Undercut	0.00%
Overcut	0.00%
Total out	0.00%
Result	Passed
Recording vacancy	70.56%



- Norm Frequency (10s) [UMG511-Sagu Nou]
- Marker Lower limit
- Marker Higher limit

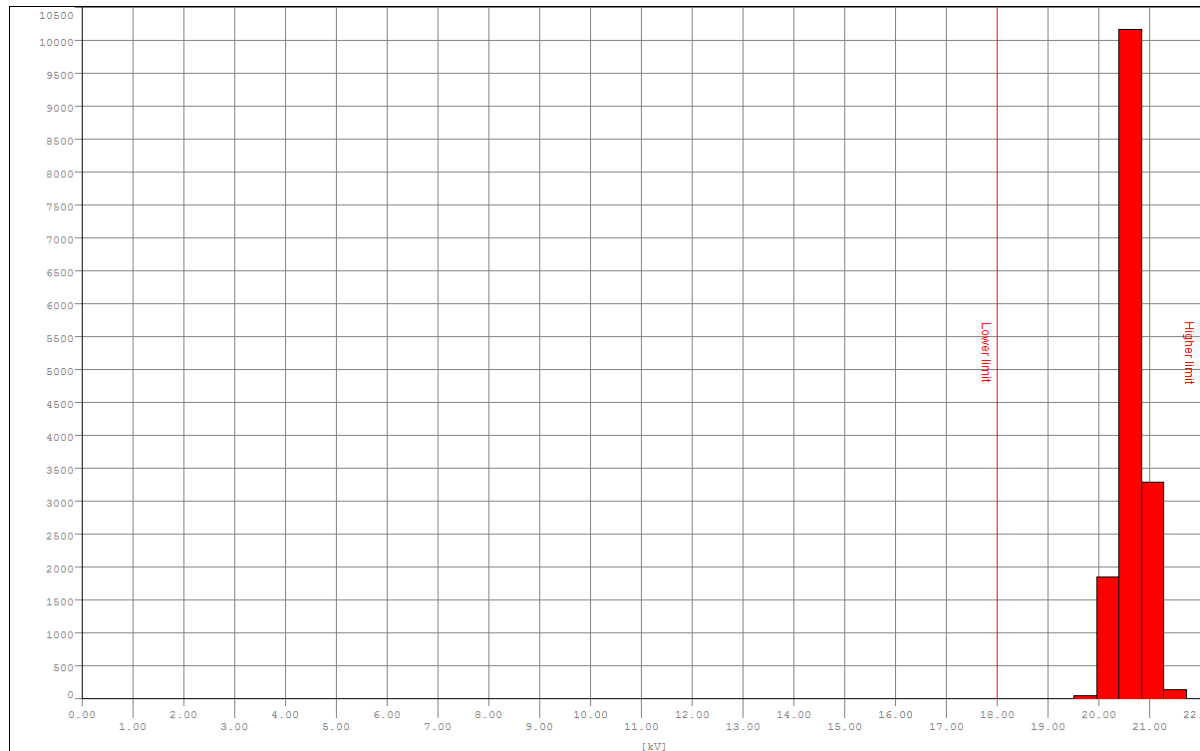
## Voltage effective L2-L1 - 1st Test

### Limits

Lower limit	18000.00V
Higher limit	22000.00V
Percentage	99.00%

### Results

Min value	1.88V
Average value	20655.75V
Max value	21727.17V
Undercut	0.05%
Overcut	0.00%
Total out	0.05%
Result	Passed
Recording vacancy	70.53%



- Voltage effective L2-L1 (10m) [UMG511-Sagu Nou]
- Marker Lower limit
- Marker Higher limit

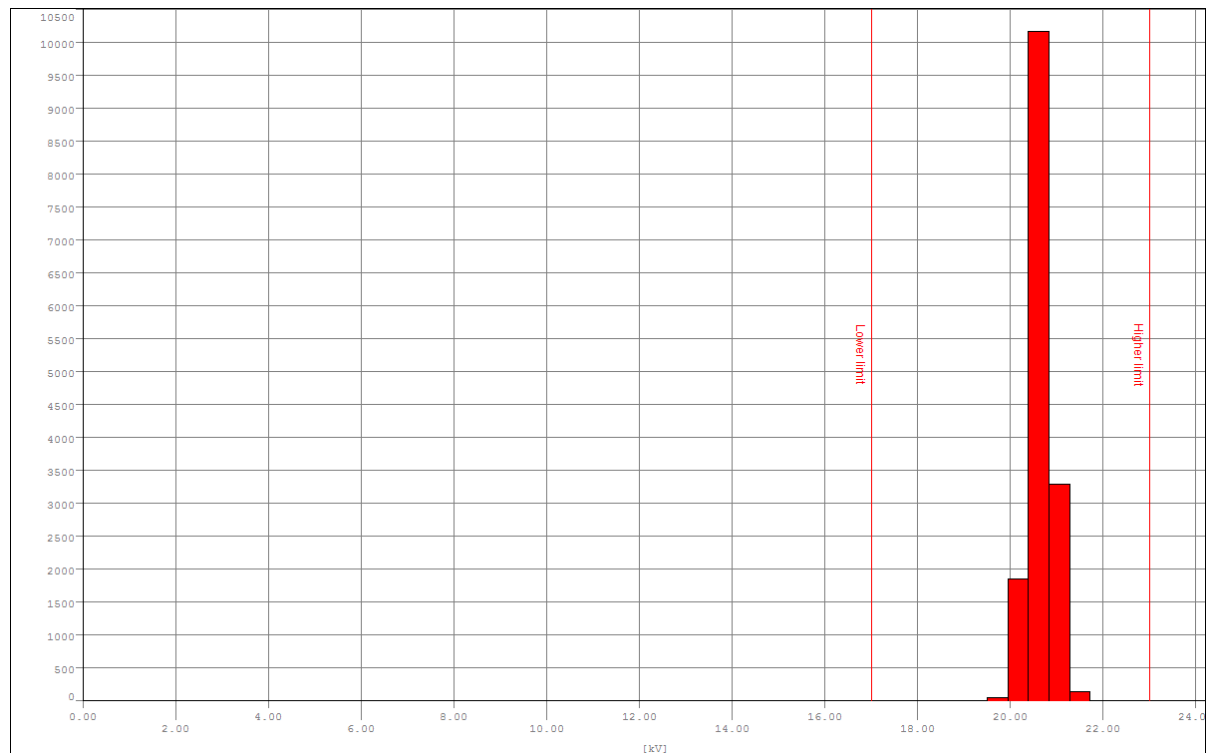
## Voltage effective L2-L1 - 2nd Test

### Limits

Lower limit	17000.00V
Higher limit	23000.00V
Percentage	100.00%

### Results

Min value	1.88V
Average value	20655.75V
Max value	21727.17V
Undercut	0.05%
Overcut	0.00%
Total out	0.05%
Result	<b>Failed</b>
Recording vacancy	70.53%



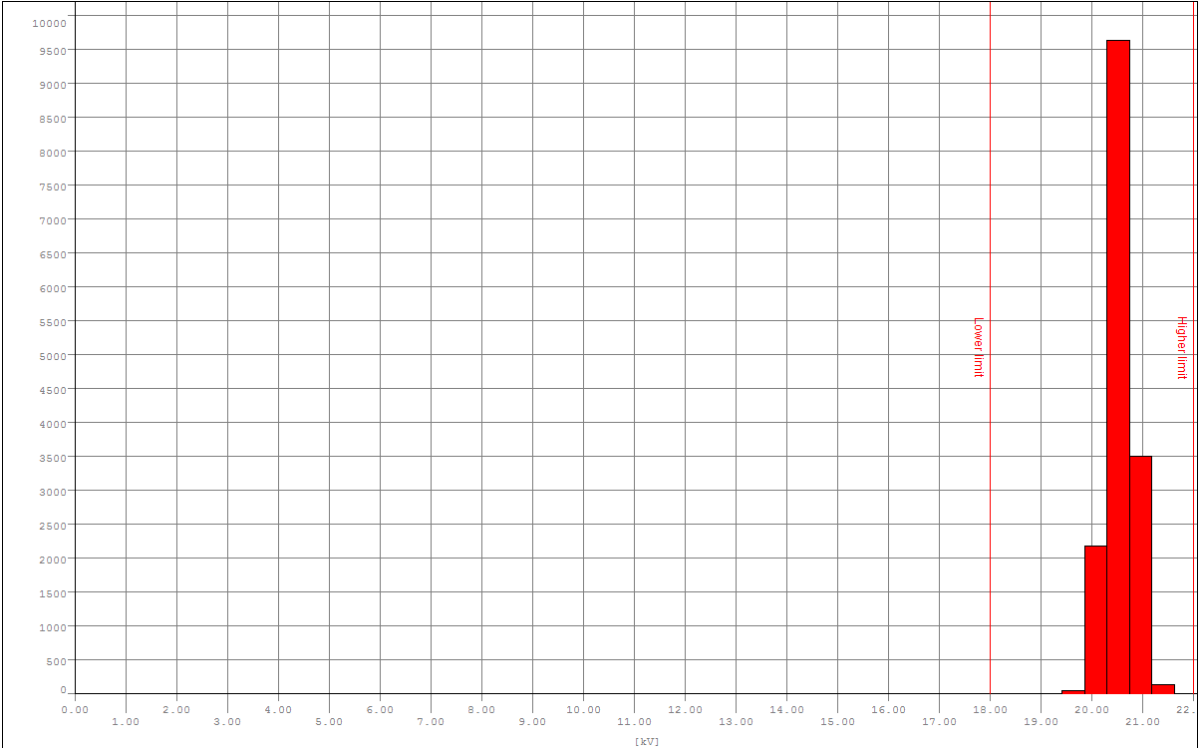
Voltage effective L3-L2 - 1st Test

Limits

Lower limit	18000.00V
Higher limit	22000.00V
Percentage	99.00%

Results

Min value	2.00V
Average value	20553.93V
Max value	21626.71V
Undercut	0.05%
Overcut	0.00%
Total out	0.05%
Result	Passed
Recording vacancy	70.53%



- Voltage effective L3-L2 (10m) [UMG511-Sagu Nou]
- Marker Lower limit
- Marker Higher limit

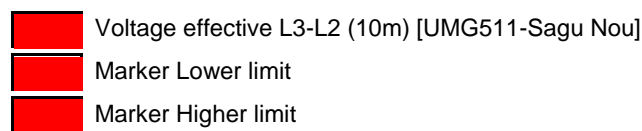
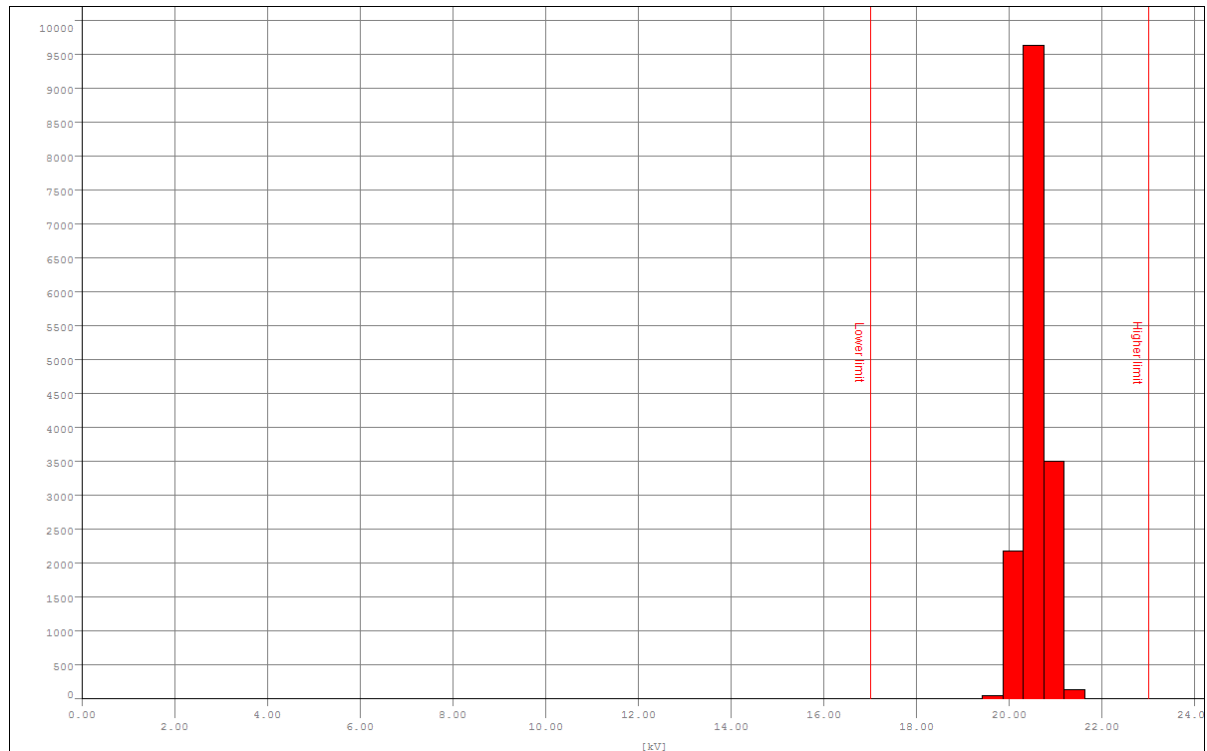
## Voltage effective L3-L2 - 2nd Test

### Limits

Lower limit	17000.00V
Higher limit	23000.00V
Percentage	100.00%

### Results

Min value	2.00V
Average value	20553.93V
Max value	21626.71V
Undercut	0.05%
Overcut	0.00%
Total out	0.05%
Result	<b>Failed</b>
Recording vacancy	70.53%





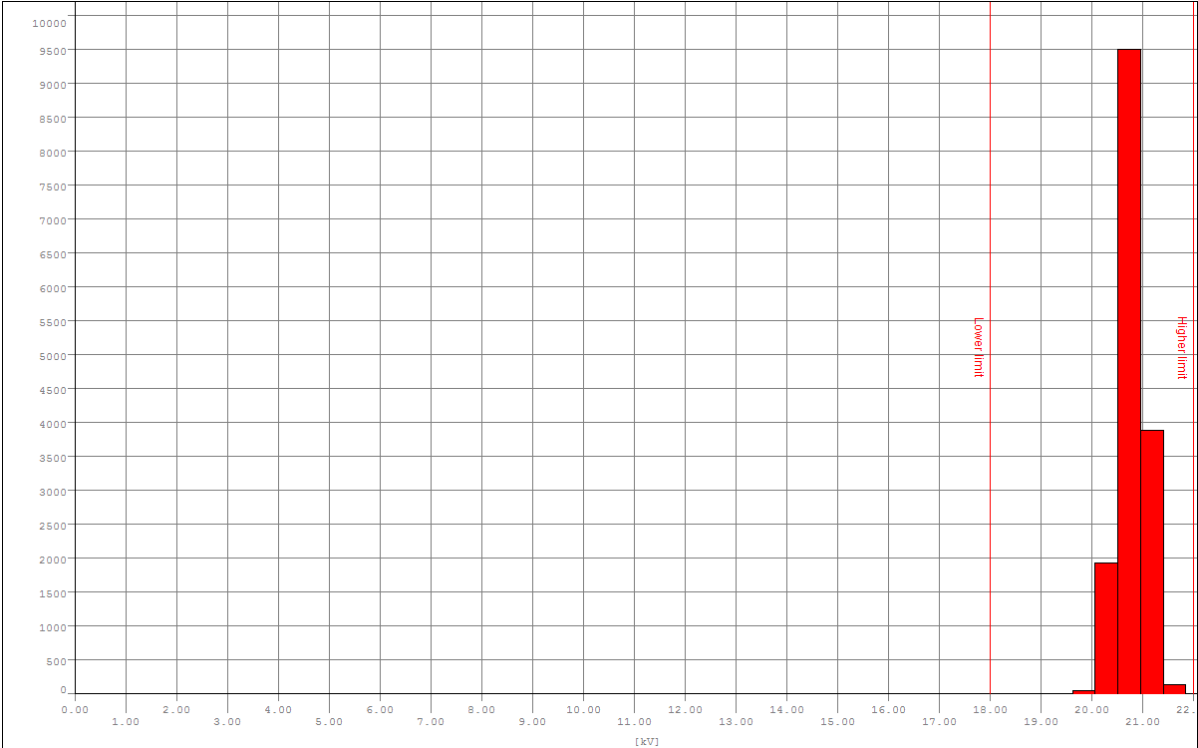
Voltage effective L1-L3 - 1st Test




Limits

Lower limit	18000.00V
Higher limit	22000.00V
Percentage	99.00%

Results

Min value	2.87V
Average value	20787.07V
Max value	21851.67V
Undercut	0.05%
Overcut	0.00%
Total out	0.05%
Result	Passed
Recording vacancy	70.53%



-  Voltage effective L1-L3 (10m) [UMG511-Sagu Nou]
-  Marker Lower limit
-  Marker Higher limit

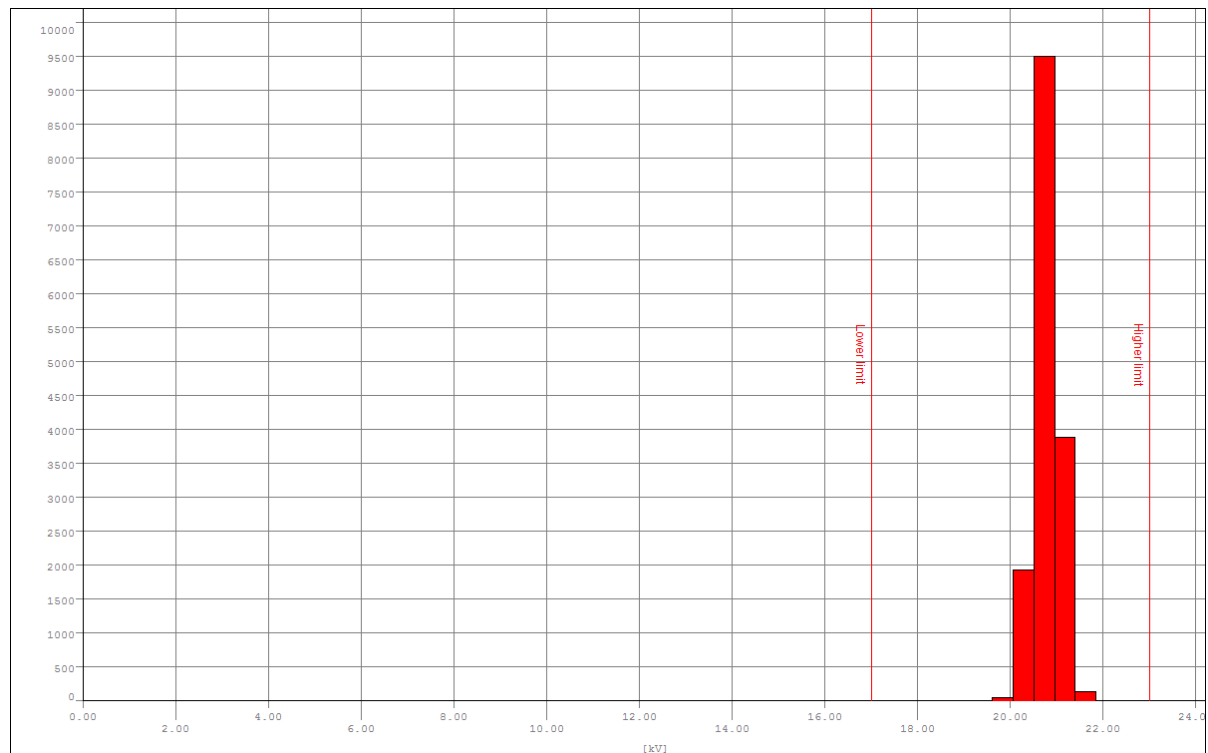
## Voltage effective L1-L3 - 2nd Test

### Limits

Lower limit	17000.00V
Higher limit	23000.00V
Percentage	100.00%

### Results

Min value	2.87V
Average value	20787.07V
Max value	21851.67V
Undercut	0.05%
Overcut	0.00%
Total out	0.05%
Result	<b>Failed</b>
Recording vacancy	70.53%



- Voltage effective L1-L3 (10m) [UMG511-Sagu Nou]
- Marker Lower limit
- Marker Higher limit

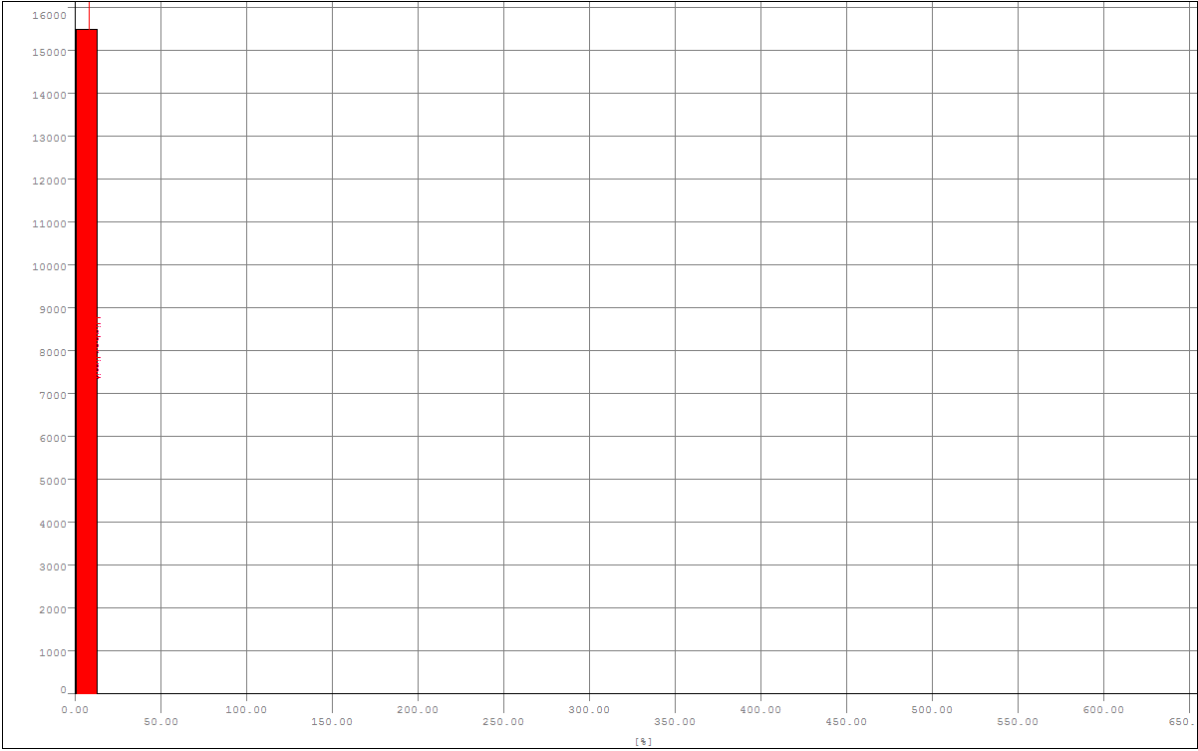
THD U L2-L1

Limits

Lower limit	--
Higher limit	8.00%
Percentage	95.00%

Results

Min value	0.51%
Average value	1.66%
Max value	600.39%
Undercut	--
Overcut	0.10%
Total out	0.10%
Result	Passed
Recording vacancy	70.53%



THD U L2-L1 (10m) [UMG511-Sagu Nou]  
Marker Higher limit

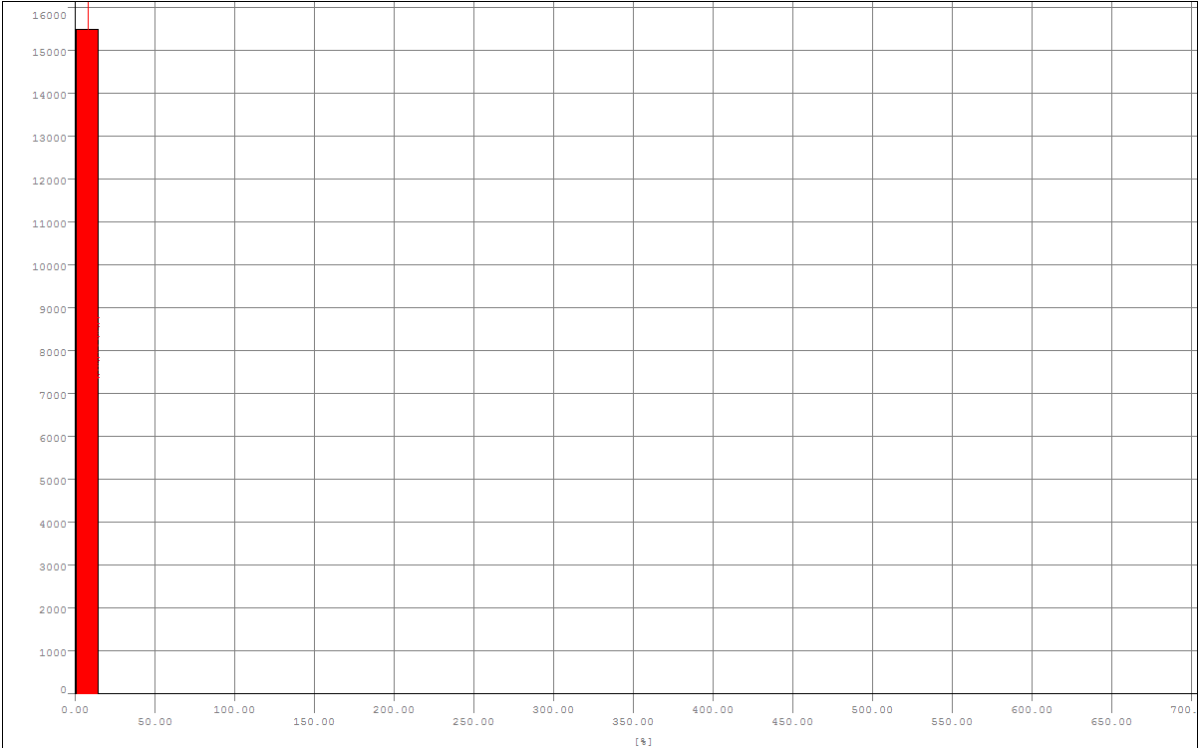
THD U L3-L2

Limits

Lower limit	--
Higher limit	8.00%
Percentage	95.00%

Results

Min value	0.56%
Average value	1.70%
Max value	677.59%
Undercut	--
Overcut	0.10%
Total out	0.10%
Result	Passed
Recording vacancy	70.53%



THD U L3-L2 (10m) [UMG511-Sagu Nou]  
Marker Higher limit

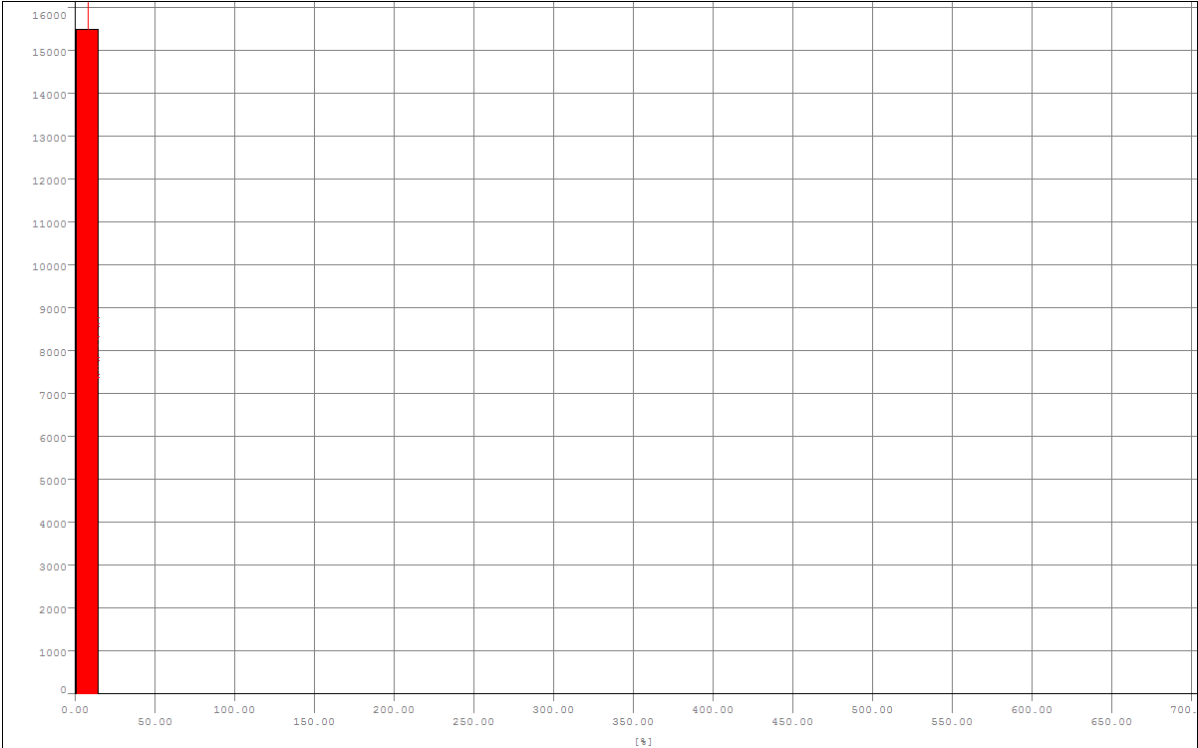
THD U L1-L3

Limits

Lower limit	--
Higher limit	8.00%
Percentage	95.00%

Results

Min value	0.48%
Average value	1.56%
Max value	670.45%
Undercut	--
Overcut	0.10%
Total out	0.10%
Result	Passed
Recording vacancy	70.53%



THD U L1-L3 (10m) [UMG511-Sagu Nou]  
Marker Higher limit

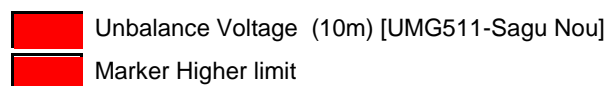
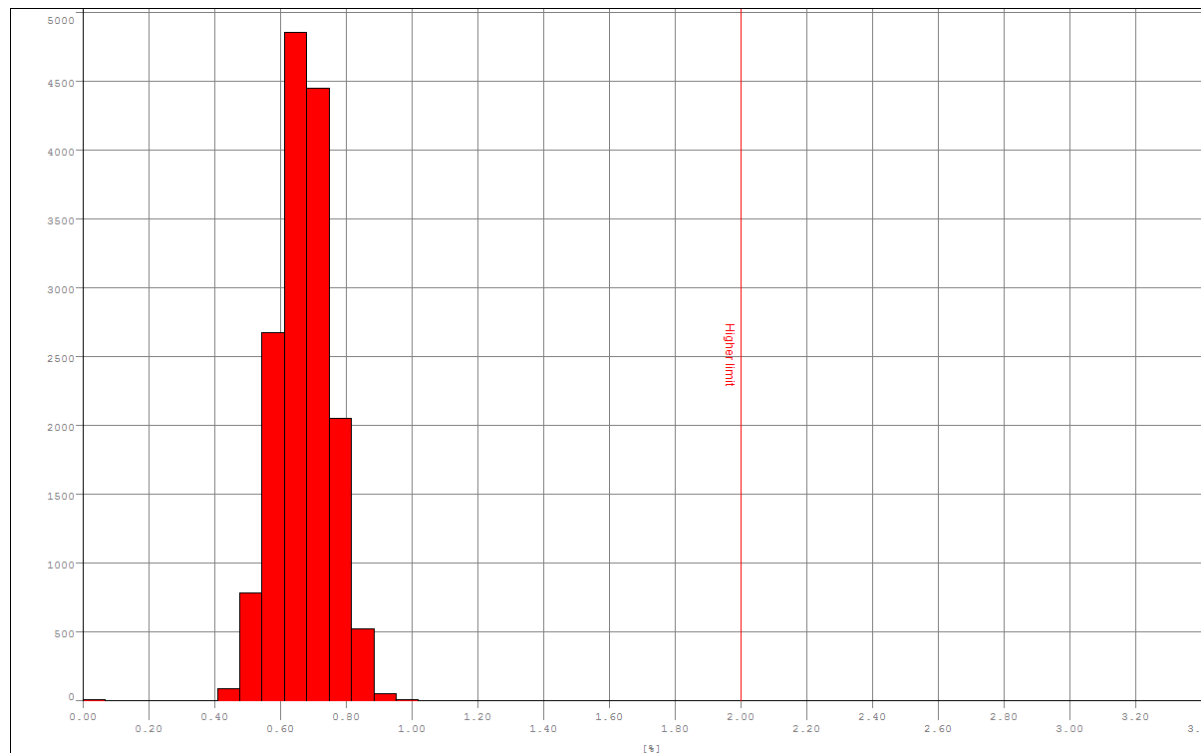
## Unbalance Voltage

### Limits

Lower limit	--
Higher limit	2.00%
Percentage	95.00%

### Results

Min value	0.00%
Average value	0.67%
Max value	3.33%
Undercut	--
Overcut	0.02%
Total out	0.02%
Result	Passed
Recording vacancy	70.53%



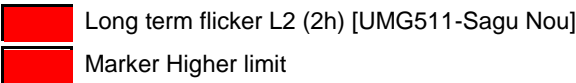
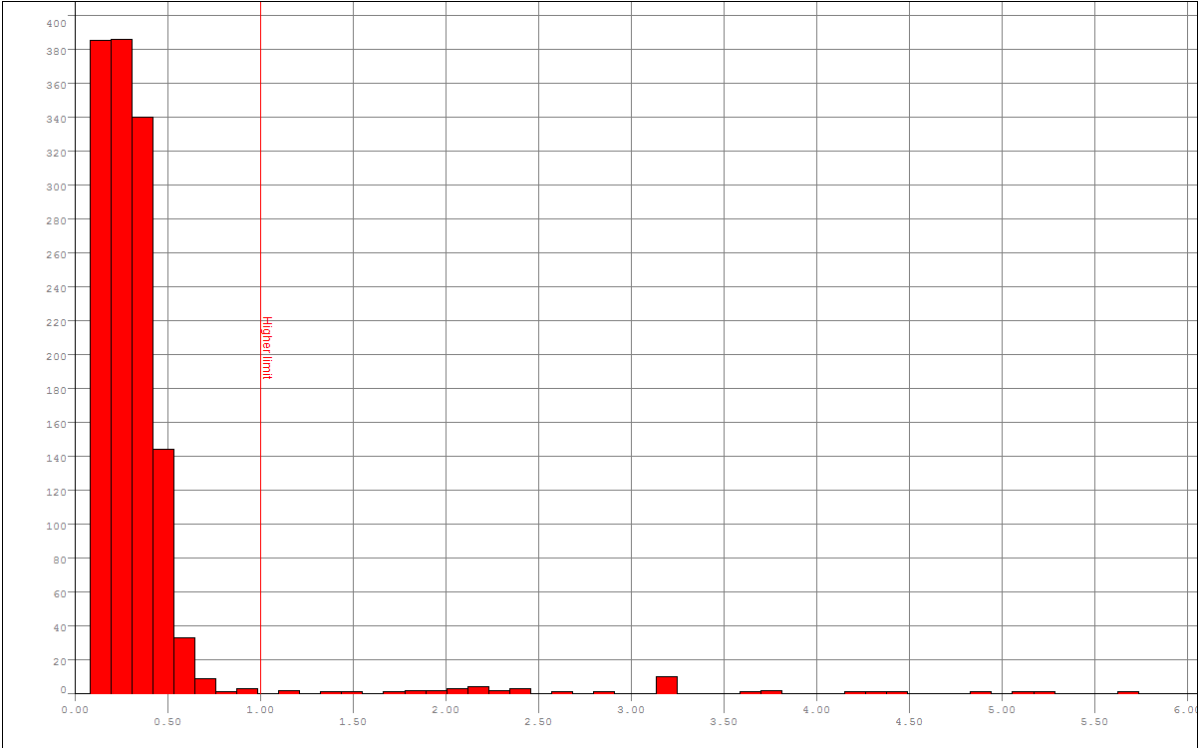
Long term flicker L2

Limits

Lower limit	--
Higher limit	1.00
Percentage	95.00%

Results

Min value	0.08
Average value	0.36
Max value	5.62
Undercut	--
Overcut	3.20%
Total out	3.20%
Result	Passed
Recording vacancy	69.32%



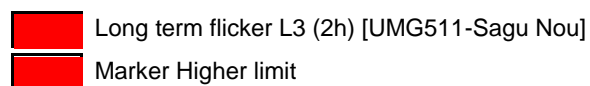
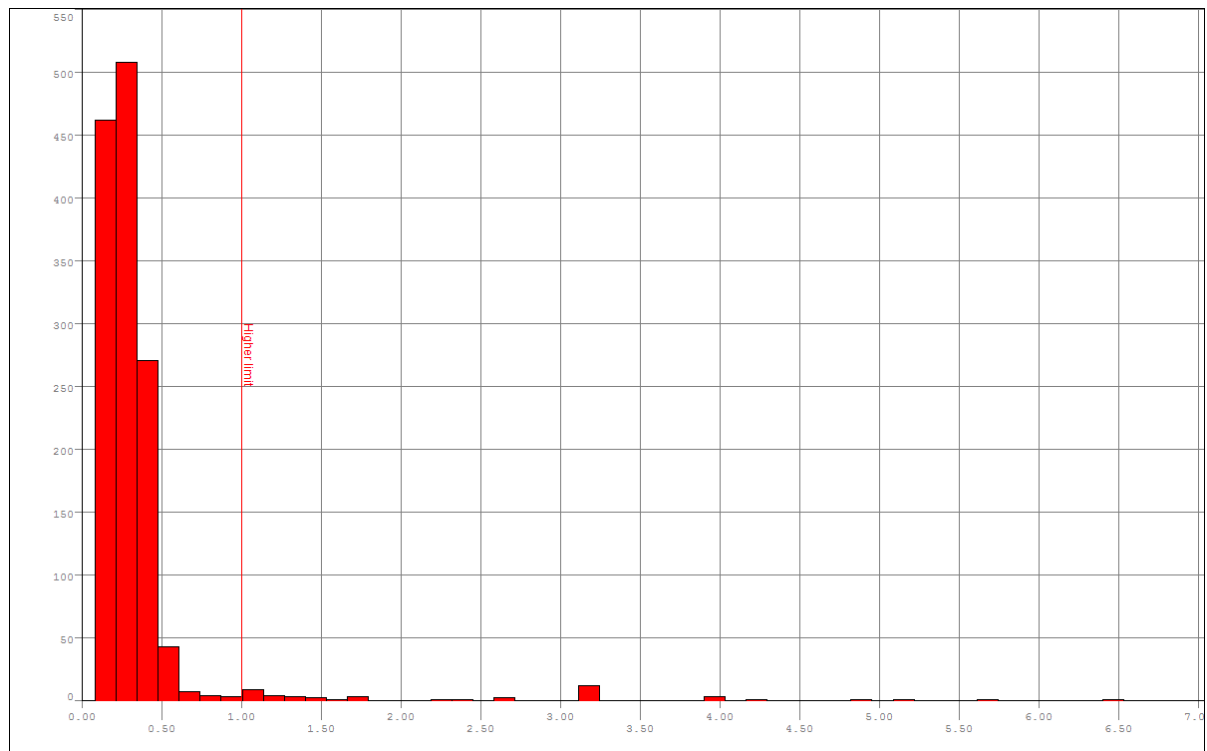
## Long term flicker L3

### Limits

Lower limit	--
Higher limit	1.00
Percentage	95.00%

### Results

Min value	0.08
Average value	0.34
Max value	6.53
Undercut	--
Overcut	3.42%
Total out	3.42%
Result	Passed
Recording vacancy	69.32%





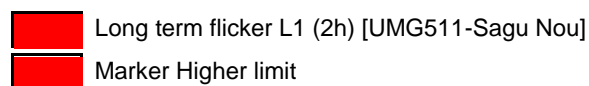
## Long term flicker L1

### Limits

Lower limit	--
Higher limit	1.00
Percentage	95.00%

### Results

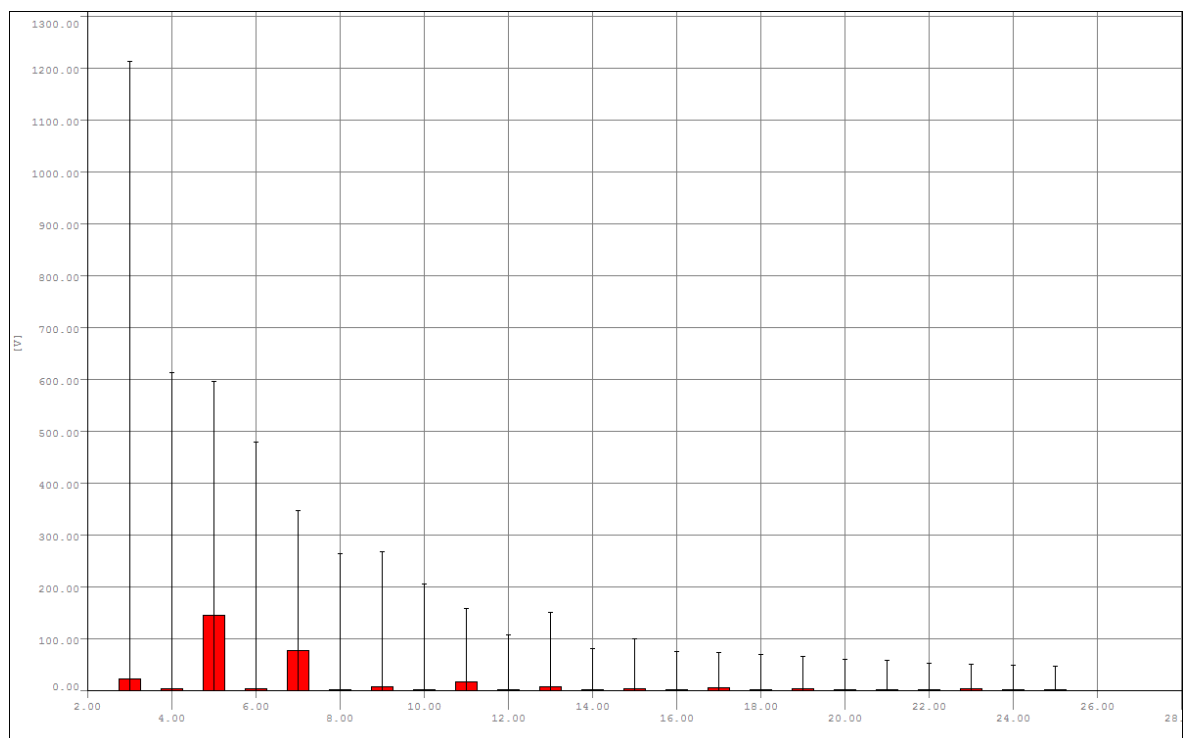
Min value	0.08
Average value	0.33
Max value	5.50
Undercut	--
Overcut	2.38%
Total out	2.38%
Result	Passed
Recording vacancy	69.32%



## Harmonics voltage (rel.) L2

Value	Higher limit	Min value	Overcut
	Percentage	Average value	Recording vacancy
		Max value	Result
2.Harmonic Voltage L2	2.00%	0.02%	0.05%
	95.00%	0.06%	70.53%
		59.79%	Passed
3.Harmonic Voltage L2	5.00%	0.04%	0.04%
	95.00%	0.21%	70.53%
		60.74%	Passed
4.Harmonic Voltage L2	1.00%	0.02%	0.05%
	95.00%	0.05%	70.53%
		59.76%	Passed
5.Harmonic Voltage L2	6.00%	0.09%	0.04%
	95.00%	1.26%	70.53%
		72.22%	Passed
6.Harmonic Voltage L2	0.50%	0.01%	0.05%
	95.00%	0.05%	70.53%
		58.32%	Passed
7.Harmonic Voltage L2	5.00%	0.08%	0.04%
	95.00%	0.67%	70.53%
		62.14%	Passed
8.Harmonic Voltage L2	0.50%	0.01%	0.05%
	95.00%	0.04%	70.53%
		56.68%	Passed
9.Harmonic Voltage L2	1.50%	0.01%	0.04%
	95.00%	0.08%	70.53%
		59.35%	Passed
10.Harmonic Voltage L2	0.50%	0.01%	0.05%
	95.00%	0.04%	70.53%
		58.66%	Passed
11.Harmonic Voltage L2	3.50%	0.02%	0.04%
	95.00%	0.17%	70.53%
		60.58%	Passed
12.Harmonic Voltage L2	0.50%	0.01%	0.05%
	95.00%	0.04%	70.53%
		61.83%	Passed
13.Harmonic Voltage L2	3.00%	0.02%	0.04%
	95.00%	0.08%	70.53%
		78.79%	Passed
14.Harmonic Voltage L2	0.50%	0.01%	0.05%
	95.00%	0.04%	70.53%
		78.62%	Passed
15.Harmonic Voltage L2	0.50%	0.01%	0.05%
	95.00%	0.06%	70.53%
		77.47%	Passed
16.Harmonic Voltage L2	0.50%	0.01%	0.05%
	95.00%	0.04%	70.53%
		69.20%	Passed
17.Harmonic Voltage L2	2.00%	0.02%	0.04%
	95.00%	0.08%	70.53%
		75.69%	Passed
18.Harmonic Voltage L2	0.50%	0.01%	0.04%
	95.00%	0.04%	70.53%
		73.69%	Passed

Value	Higher limit	Min value	Overcut
	Percentage	Average value	Recording vacancy
		Max value	Result
19.Harmonic Voltage L2	1.50%	0.01%	0.04%
	95.00%	0.05%	70.53%
		68.00%	<b>Passed</b>
20.Harmonic Voltage L2	0.50%	0.01%	0.04%
	95.00%	0.04%	70.53%
		70.02%	<b>Passed</b>
21.Harmonic Voltage L2	0.50%	0.01%	0.04%
	95.00%	0.04%	70.53%
		76.44%	<b>Passed</b>
22.Harmonic Voltage L2	0.50%	0.01%	0.04%
	95.00%	0.04%	70.53%
		70.66%	<b>Passed</b>
23.Harmonic Voltage L2	1.50%	0.01%	0.04%
	95.00%	0.05%	70.53%
		71.64%	<b>Passed</b>
24.Harmonic Voltage L2	0.50%	0.01%	0.04%
	95.00%	0.04%	70.53%
		71.62%	<b>Passed</b>
25.Harmonic Voltage L2	1.50%	0.01%	0.04%
	95.00%	0.04%	70.53%
		79.06%	<b>Passed</b>

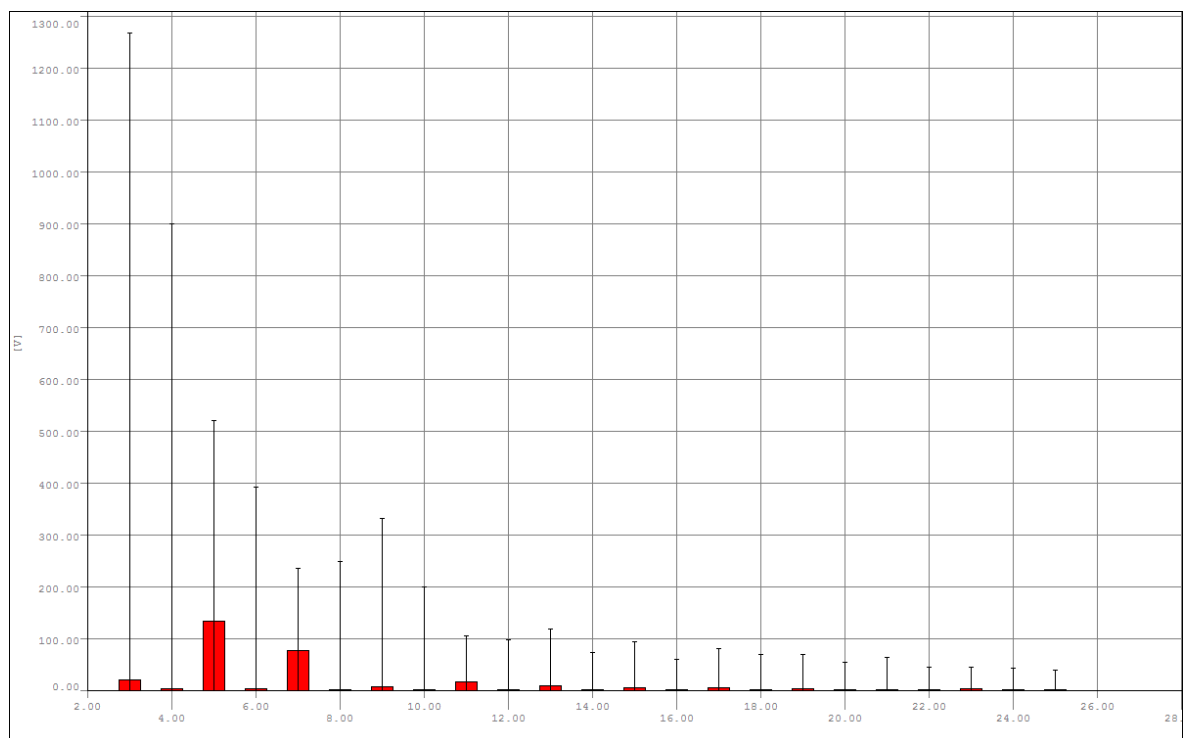


Harmonics voltage L2 [UMG511-Sagu Nou]

## Harmonics voltage (rel.) L3

Value	Higher limit	Min value	Overcut
	Percentage	Average value	Recording vacancy
		Max value	Result
2.Harmonic Voltage L3	2.00%	0.02%	0.05%
	95.00%	0.05%	70.53%
		42.55%	Passed
3.Harmonic Voltage L3	5.00%	0.05%	0.04%
	95.00%	0.19%	70.53%
		37.40%	Passed
4.Harmonic Voltage L3	1.00%	0.02%	0.05%
	95.00%	0.04%	70.53%
		32.75%	Passed
5.Harmonic Voltage L3	6.00%	0.10%	0.04%
	95.00%	1.13%	70.53%
		33.99%	Passed
6.Harmonic Voltage L3	0.50%	0.02%	0.05%
	95.00%	0.04%	70.53%
		31.22%	Passed
7.Harmonic Voltage L3	5.00%	0.07%	0.04%
	95.00%	0.66%	70.53%
		31.99%	Passed
8.Harmonic Voltage L3	0.50%	0.01%	0.05%
	95.00%	0.03%	70.53%
		31.20%	Passed
9.Harmonic Voltage L3	1.50%	0.01%	0.04%
	95.00%	0.08%	70.53%
		30.73%	Passed
10.Harmonic Voltage L3	0.50%	0.01%	0.05%
	95.00%	0.03%	70.53%
		31.03%	Passed
11.Harmonic Voltage L3	3.50%	0.03%	0.04%
	95.00%	0.15%	70.53%
		31.42%	Passed
12.Harmonic Voltage L3	0.50%	0.01%	0.05%
	95.00%	0.03%	70.53%
		36.75%	Passed
13.Harmonic Voltage L3	3.00%	0.02%	0.04%
	95.00%	0.10%	70.53%
		75.50%	Passed
14.Harmonic Voltage L3	0.50%	0.01%	0.05%
	95.00%	0.04%	70.53%
		78.33%	Passed
15.Harmonic Voltage L3	0.50%	0.01%	0.05%
	95.00%	0.06%	70.53%
		75.37%	Passed
16.Harmonic Voltage L3	0.50%	0.01%	0.04%
	95.00%	0.03%	70.53%
		63.31%	Passed
17.Harmonic Voltage L3	2.00%	0.02%	0.04%
	95.00%	0.06%	70.53%
		79.14%	Passed
18.Harmonic Voltage L3	0.50%	0.01%	0.04%
	95.00%	0.03%	70.53%
		75.20%	Passed

Value	Higher limit	Min value	Overcut
	Percentage	Average value	Recording vacancy
		Max value	Result
19.Harmonic Voltage L3	1.50%	0.01%	0.04%
	95.00%	0.05%	70.53%
		60.23%	<b>Passed</b>
20.Harmonic Voltage L3	0.50%	0.01%	0.04%
	95.00%	0.03%	70.53%
		70.00%	<b>Passed</b>
21.Harmonic Voltage L3	0.50%	0.01%	0.04%
	95.00%	0.03%	70.53%
		80.84%	<b>Passed</b>
22.Harmonic Voltage L3	0.50%	0.01%	0.04%
	95.00%	0.03%	70.53%
		72.48%	<b>Passed</b>
23.Harmonic Voltage L3	1.50%	0.01%	0.04%
	95.00%	0.04%	70.53%
		75.77%	<b>Passed</b>
24.Harmonic Voltage L3	0.50%	0.01%	0.04%
	95.00%	0.03%	70.53%
		84.37%	<b>Passed</b>
25.Harmonic Voltage L3	1.50%	0.01%	0.04%
	95.00%	0.04%	70.53%
		87.44%	<b>Passed</b>

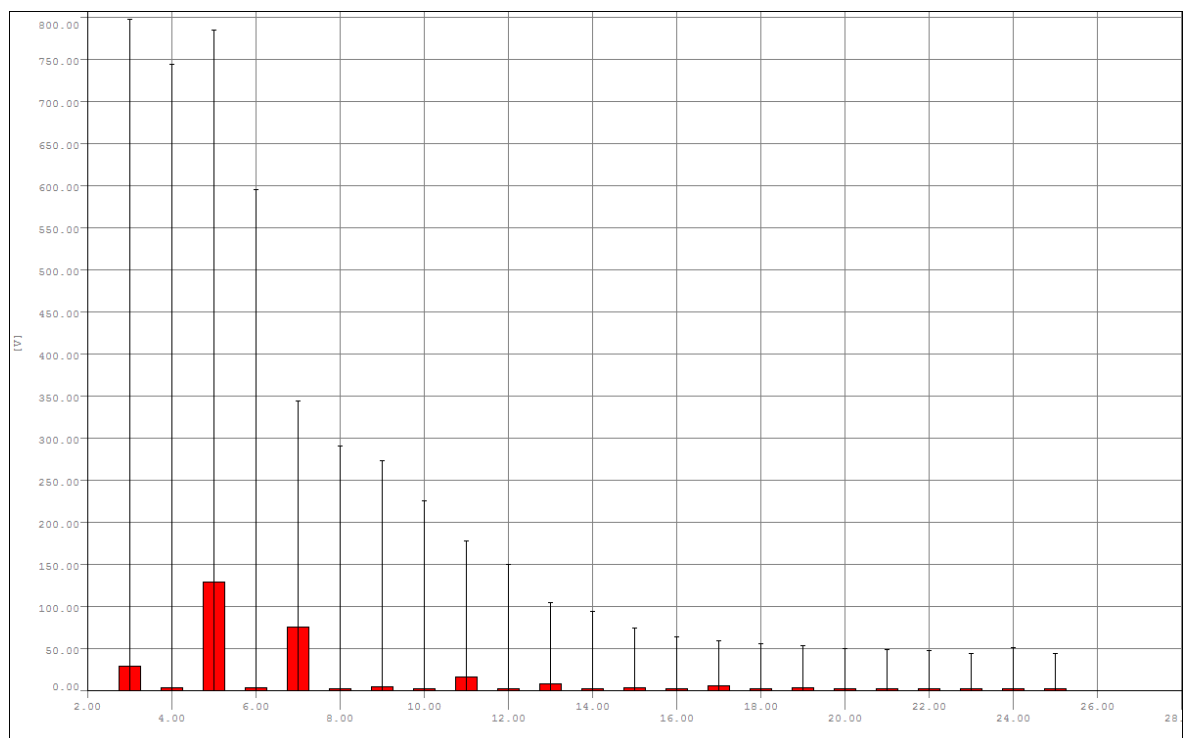


Harmonics voltage L3 [UMG511-Sagu Nou]

## Harmonics voltage (rel.) L1

Value	Higher limit	Min value	Overcut
	Percentage	Average value	Recording vacancy
		Max value	Result
2.Harmonic Voltage L1	2.00%	0.02%	0.05%
	95.00%	0.05%	70.53%
		43.59%	Passed
3.Harmonic Voltage L1	5.00%	0.07%	0.04%
	95.00%	0.26%	70.53%
		38.13%	Passed
4.Harmonic Voltage L1	1.00%	0.02%	0.05%
	95.00%	0.04%	70.53%
		34.86%	Passed
5.Harmonic Voltage L1	6.00%	0.07%	0.04%
	95.00%	1.09%	70.53%
		38.64%	Passed
6.Harmonic Voltage L1	0.50%	0.01%	0.05%
	95.00%	0.04%	70.53%
		34.02%	Passed
7.Harmonic Voltage L1	5.00%	0.10%	0.04%
	95.00%	0.64%	70.53%
		35.58%	Passed
8.Harmonic Voltage L1	0.50%	0.01%	0.04%
	95.00%	0.03%	70.53%
		33.92%	Passed
9.Harmonic Voltage L1	1.50%	0.02%	0.04%
	95.00%	0.05%	70.53%
		33.67%	Passed
10.Harmonic Voltage L1	0.50%	0.01%	0.04%
	95.00%	0.03%	70.53%
		33.55%	Passed
11.Harmonic Voltage L1	3.50%	0.02%	0.04%
	95.00%	0.15%	70.53%
		33.83%	Passed
12.Harmonic Voltage L1	0.50%	0.01%	0.04%
	95.00%	0.03%	70.53%
		33.64%	Passed
13.Harmonic Voltage L1	3.00%	0.02%	0.04%
	95.00%	0.08%	70.53%
		54.81%	Passed
14.Harmonic Voltage L1	0.50%	0.01%	0.04%
	95.00%	0.03%	70.53%
		56.49%	Passed
15.Harmonic Voltage L1	0.50%	0.01%	0.04%
	95.00%	0.04%	70.53%
		55.35%	Passed
16.Harmonic Voltage L1	0.50%	0.01%	0.04%
	95.00%	0.03%	70.53%
		50.16%	Passed
17.Harmonic Voltage L1	2.00%	0.02%	0.04%
	95.00%	0.06%	70.53%
		60.12%	Passed
18.Harmonic Voltage L1	0.50%	0.01%	0.04%
	95.00%	0.03%	70.53%
		57.59%	Passed

Value	Higher limit	Min value	Overcut
	Percentage	Average value	Recording vacancy
		Max value	Result
19.Harmonic Voltage L1	1.50%	0.01%	0.04%
	95.00%	0.04%	70.53%
		47.37%	<b>Passed</b>
20.Harmonic Voltage L1	0.50%	0.01%	0.04%
	95.00%	0.03%	70.53%
		52.71%	<b>Passed</b>
21.Harmonic Voltage L1	0.50%	0.01%	0.04%
	95.00%	0.03%	70.53%
		59.67%	<b>Passed</b>
22.Harmonic Voltage L1	0.50%	0.01%	0.04%
	95.00%	0.03%	70.53%
		55.10%	<b>Passed</b>
23.Harmonic Voltage L1	1.50%	0.01%	0.04%
	95.00%	0.04%	70.53%
		56.63%	<b>Passed</b>
24.Harmonic Voltage L1	0.50%	0.01%	0.04%
	95.00%	0.03%	70.53%
		61.98%	<b>Passed</b>
25.Harmonic Voltage L1	1.50%	0.01%	0.04%
	95.00%	0.04%	70.53%
		63.18%	<b>Passed</b>



Harmonics voltage L1 [UMG511-Sagu Nou]

## Undervoltage

383 Events have been found.

Residual voltage u %	Duration t				
	10 - 200ms	> 200ms	> 500ms	> 1s	> 5s - 60s
< 90 - 80 %	60	10	9	0	0
< 80 - 70 %	86	17	7	0	0
< 70 - 40 %	27	1	5	4	0
< 40 - 5 %	0	78	23	3	7
< 5 %	0	0	0	0	22

24 out of ranges!

Starttime Endtime	Length	Input	Eventtype	Limit	Min	Avg	Max
3/3/15 2:01:19 AM'131	466.182ms	L1	Voltage outage	17000.00	0.00	4117.72	16613.20
3/3/15 2:01:19 AM'597							
3/3/15 2:01:19 AM'954	50.072s	L1	Voltage outage	17000.00	0.00	286.37	14251.27
3/3/15 2:02:10 AM'026							
4/21/15 6:06:16 PM'353	449.198ms	L1	Voltage outage	17000.00	0.00	5498.81	15781.24
4/21/15 6:06:16 PM'802							
5/14/15 3:30:42 AM'785	553.078ms	L1	Voltage outage	17000.00	0.00	5802.67	15946.29
5/14/15 3:30:43 AM'338							
5/14/15 3:30:48 AM'743	50.075s	L1	Voltage outage	17000.00	0.00	368.89	16542.79
5/14/15 3:31:38 AM'818							
6/7/15 8:11:48 PM'616	454.772ms	L1	Voltage outage	17000.00	0.00	4561.35	16532.61
6/7/15 8:11:49 PM'071							
6/15/15 12:24:01 AM'884	750.299ms	L1	Voltage outage	17000.00	0.00	5990.55	15991.59
6/15/15 12:24:02 AM'635							
6/15/15 12:48:50 AM'330	454.009ms	L1	Voltage outage	17000.00	0.00	3917.38	14401.71
6/15/15 12:48:50 AM'784							
6/15/15 12:50:44 AM'176	465.231ms	L1	Voltage outage	17000.00	0.00	3950.57	15185.05
6/15/15 12:50:44 AM'641							
6/15/15 12:58:47 AM'985	455.576ms	L1	Voltage outage	17000.00	0.00	4045.19	14150.30
6/15/15 12:58:48 AM'441							
6/15/15 6:21:35 AM'082	464.937ms	L1	Voltage outage	17000.00	0.00	4954.43	15584.07
6/15/15 6:21:35 AM'547							
6/15/15 8:54:54 AM'293	469.431ms	L1	Voltage outage	17000.00	0.00	4309.23	16822.07
6/15/15 8:54:54 AM'762							
6/15/15 8:54:55 AM'071	50.080s	L1	Voltage outage	17000.00	0.00	336.24	15705.00
6/15/15 8:55:45 AM'151							
6/24/15 7:35:44 AM'690	659.801ms	L1	Voltage outage	17000.00	0.00	3648.48	15023.35
6/24/15 7:35:45 AM'349							
7/7/15 5:09:36 PM'213	337.943ms	L1	Voltage outage	17000.00	0.00	4078.53	13310.57
7/7/15 5:09:36 PM'551							
7/19/15 7:52:16 AM'341	1.477s	L1	Voltage outage	17000.00	0.00	13479.12	16494.97
7/19/15 7:52:17 AM'818							
7/30/15 12:27:40 PM'773	590.361ms	L1	Voltage outage	17000.00	0.00	3304.57	12763.97
7/30/15 12:27:41 PM'364							
7/30/15 4:23:03 PM'358	1m 44s	L1	Voltage outage	17000.00	0.00	235.93	13093.36
7/30/15 4:24:48 PM'210							
7/30/15 5:25:26 PM'451	47.317s	L1	Voltage outage	17000.00	0.00	1209.54	16899.15
7/30/15 5:26:13 PM'767							
8/6/15 9:54:39 AM'240	329.531ms	L1	Voltage outage	17000.00	0.00	4951.42	13834.77
8/6/15 9:54:39 AM'569							
8/8/15 6:00:16 PM'396	296.161ms	L1	Voltage outage	17000.00	0.00	6235.13	15317.81
8/8/15 6:00:16 PM'692							
8/9/15 5:35:39 PM'997	309.732ms	L1	Voltage outage	17000.00	0.00	6204.72	16672.75
8/9/15 5:35:40 PM'307							
8/20/15 10:12:40 AM'215	26m 53s	L1	Voltage outage	17000.00	0.00	194.61	16979.56
8/20/15 10:39:33 AM'406							
8/24/15 7:40:39 PM'764	630.544ms	L1	Voltage outage	17000.00	0.00	3823.06	16164.75
8/24/15 7:40:40 PM'394							



Starttime	Length	Input	Eventtype	Limit	Min	Avg	Max
Endtime							
8/30/15 9:43:58 AM'944	309.877ms	L1	Voltage outage	17000.00	0.00	5396.49	15132.02
8/30/15 9:43:59 AM'254							
9/1/15 5:50:26 PM'229	3h 34m	L1	Voltage outage	17000.00	0.00	24.52	15783.00
9/1/15 9:25:13 PM'907							
9/7/15 5:54:13 PM'461	2h 28m	L1	Voltage outage	17000.00	0.00	27.25	16644.69
9/7/15 8:23:03 PM'115							
9/20/15 10:35:53 AM'553	688.130ms	L1	Voltage outage	17000.00	0.00	9050.25	16970.21
9/20/15 10:35:54 AM'241							
10/4/15 9:02:18 AM'500	304.038ms	L1	Voltage outage	17000.00	0.00	4754.07	15818.08
10/4/15 9:02:18 AM'804							
10/5/15 10:37:50 AM'358	460.216ms	L1	Voltage outage	17000.00	0.00	3941.38	14254.73
10/5/15 10:37:50 AM'818							
10/6/15 1:00:16 PM'675	658.777ms	L1	Voltage outage	17000.00	0.00	3522.08	14752.65
10/6/15 1:00:17 PM'334							
10/6/15 1:00:18 PM'534	50.069s	L1	Voltage outage	17000.00	0.00	297.45	14917.13
10/6/15 1:01:08 PM'603							
10/7/15 9:37:00 AM'221	305.126ms	L1	Voltage outage	17000.00	0.00	5862.91	16482.14
10/7/15 9:37:00 AM'526							
10/10/15 7:10:40 AM'074	2.092s	L1	Voltage outage	17000.00	0.00	4829.55	16999.18
10/10/15 7:10:42 AM'165							
10/10/15 8:11:31 AM'986	459.509ms	L1	Voltage outage	17000.00	0.00	3899.61	14428.87
10/10/15 8:11:32 AM'445							
10/13/15 8:15:38 AM'554	456.563ms	L1	Voltage outage	17000.00	0.00	4693.84	16491.05
10/13/15 8:15:39 AM'011							
10/15/15 12:58:36 PM'567	314.561ms	L1	Voltage outage	17000.00	0.00	4156.19	14647.63
10/15/15 12:58:36 PM'882							
10/15/15 12:58:37 PM'072	50.063s	L1	Voltage outage	17000.00	0.00	298.29	15111.69
10/15/15 12:59:27 PM'134							
10/15/15 12:59:27 PM'329	2m 18s	L1	Voltage outage	17000.00	0.00	178.20	15216.02
10/15/15 1:01:45 PM'712							
10/15/15 1:01:45 PM'906	1h 9m	L1	Voltage outage	17000.00	0.00	31.47	14684.24
10/15/15 2:11:29 PM'693							
10/16/15 12:24:34 AM'519	5.879s	L1	Voltage outage	17000.00	0.00	1184.37	13374.12
10/16/15 12:24:40 AM'399							
10/19/15 8:35:47 AM'582	448.018ms	L1	Voltage outage	17000.00	0.00	3461.08	13291.13
10/19/15 8:35:48 AM'030							
10/21/15 9:04:30 AM'475	398.581ms	L1	Voltage outage	17000.00	0.00	4965.85	16928.03
10/21/15 9:04:30 AM'873							
10/25/15 12:35:00 PM'732	350.785ms	L1	Voltage outage	17000.00	0.00	6752.64	16850.60
10/25/15 12:35:01 PM'083							
10/25/15 12:35:01 PM'287	50.064s	L1	Voltage outage	17000.00	0.00	332.22	14477.08
10/25/15 12:35:51 PM'350							
10/25/15 1:20:33 PM'414	459.259ms	L1	Voltage outage	17000.00	0.00	4866.12	15135.33
10/25/15 1:20:33 PM'873							
10/28/15 9:36:17 AM'524	306.084ms	L1	Voltage outage	17000.00	0.00	4969.17	16335.89
10/28/15 9:36:17 AM'830							
11/10/15 10:05:33 AM'152	459.891ms	L1	Voltage outage	17000.00	0.00	3744.09	13742.21
11/10/15 10:05:33 AM'612							
12/5/15 10:10:06 PM'177	530.071ms	L1	Voltage outage	17000.00	0.00	4988.69	16812.65
12/5/15 10:10:06 PM'707							
12/5/15 10:10:07 PM'646	50.108s	L1	Voltage outage	17000.00	0.00	282.58	13403.54
12/5/15 10:10:57 PM'754							
12/5/15 10:10:58 PM'732	3m 13s	L1	Voltage outage	17000.00	0.00	126.01	12673.70
12/5/15 10:14:12 PM'680							
12/5/15 10:16:34 PM'302	38.003s	L1	Voltage outage	17000.00	0.00	414.61	16812.21
12/5/15 10:17:12 PM'306							
12/8/15 8:32:04 AM'523	450.162ms	L1	Voltage outage	17000.00	0.00	3144.40	11962.84
12/8/15 8:32:04 AM'973							
12/27/15 10:28:59 AM'955	279.300ms	L1	Voltage outage	17000.00	0.00	4242.43	13599.24
12/27/15 10:29:00 AM'234							
3/3/15 2:01:19 AM'127	466.234ms	L2	Voltage outage	17000.00	0.00	3968.98	15513.20
3/3/15 2:01:19 AM'594							
3/3/15 2:01:19 AM'951	50.080s	L2	Voltage outage	17000.00	0.00	326.31	15315.07
3/3/15 2:02:10 AM'032							
4/21/15 6:06:16 PM'350	449.197ms	L2	Voltage outage	17000.00	0.00	5786.11	16479.60
4/21/15 6:06:16 PM'799							
5/14/15 3:30:42 AM'781	553.028ms	L2	Voltage outage	17000.00	0.00	5923.90	16723.32
5/14/15 3:30:43 AM'334							
5/14/15 3:30:48 AM'740	50.074s	L2	Voltage outage	17000.00	0.00	368.79	16493.66
5/14/15 3:31:38 AM'814							

Starttime	Length	Input	Eventtype	Limit	Min	Avg	Max
Endtime							
6/7/15 8:11:48 PM'613	454.723ms	L2	Voltage outage	17000.00	0.00	4587.97	15957.37
6/7/15 8:11:49 PM'067							
6/15/15 12:24:01 AM'891	750.400ms	L2	Voltage outage	17000.00	0.00	5956.34	16126.13
6/15/15 12:24:02 AM'641							
6/15/15 12:48:49 AM'566	1.214s	L2	Voltage outage	17000.00	0.00	10293.38	16999.07
6/15/15 12:48:50 AM'781							
6/15/15 12:50:44 AM'103	535.333ms	L2	Voltage outage	17000.00	0.00	2681.50	13826.56
6/15/15 12:50:44 AM'638							
6/15/15 12:58:46 AM'961	1.486s	L2	Voltage outage	17000.00	0.00	10685.29	14485.51
6/15/15 12:58:48 AM'447							
6/15/15 6:21:35 AM'089	455.102ms	L2	Voltage outage	17000.00	0.00	6350.10	16847.57
6/15/15 6:21:35 AM'544							
6/15/15 8:54:54 AM'079	679.670ms	L2	Voltage outage	17000.00	0.00	9015.29	15525.19
6/15/15 8:54:54 AM'759							
6/15/15 8:54:55 AM'077	50.068s	L2	Voltage outage	17000.00	0.00	253.14	13682.73
6/15/15 8:55:45 AM'146							
6/24/15 7:35:44 AM'696	649.751ms	L2	Voltage outage	17000.00	0.00	3676.54	14497.35
6/24/15 7:35:45 AM'346							
7/7/15 5:09:36 PM'219	327.993ms	L2	Voltage outage	17000.00	0.00	4174.97	13259.70
7/7/15 5:09:36 PM'547							
7/19/15 7:52:17 AM'348	477.088ms	L2	Voltage outage	17000.00	0.00	3455.05	16726.65
7/19/15 7:52:17 AM'825							
7/30/15 12:27:40 PM'620	760.352ms	L2	Voltage outage	17000.00	0.00	3911.29	16753.79
7/30/15 12:27:41 PM'381							
7/30/15 4:23:03 PM'374	1m 44s	L2	Voltage outage	17000.00	0.00	381.10	16580.18
7/30/15 4:24:48 PM'214							
7/30/15 5:25:26 PM'457	47.316s	L2	Voltage outage	17000.00	0.00	1113.77	16895.24
7/30/15 5:26:13 PM'773							
8/6/15 9:54:39 AM'258	308.401ms	L2	Voltage outage	17000.00	0.00	5099.33	14452.56
8/6/15 9:54:39 AM'566							
8/8/15 6:00:16 PM'393	296.164ms	L2	Voltage outage	17000.00	0.00	5602.21	16717.82
8/8/15 6:00:16 PM'689							
8/9/15 5:35:40 PM'013	299.882ms	L2	Voltage outage	17000.00	0.00	5687.54	16065.04
8/9/15 5:35:40 PM'313							
8/20/15 10:12:40 AM'222	26m 53s	L2	Voltage outage	17000.00	0.00	208.30	16984.36
8/20/15 10:39:33 AM'473							
8/24/15 7:40:39 PM'640	750.644ms	L2	Voltage outage	17000.00	0.00	4121.42	15589.70
8/24/15 7:40:40 PM'391							
9/1/15 5:50:26 PM'235	3h 34m	L2	Voltage outage	17000.00	0.00	14.57	14240.89
9/1/15 9:25:13 PM'900							
9/7/15 5:54:13 PM'467	2h 28m	L2	Voltage outage	17000.00	0.00	27.89	16623.53
9/7/15 8:23:03 PM'119							
9/20/15 10:35:53 AM'560	678.082ms	L2	Voltage outage	17000.00	0.00	8511.17	16234.28
9/20/15 10:35:54 AM'238							
10/5/15 10:37:50 AM'355	460.165ms	L2	Voltage outage	17000.00	0.00	4807.98	16070.42
10/5/15 10:37:50 AM'815							
10/6/15 1:00:16 PM'672	668.826ms	L2	Voltage outage	17000.00	0.00	4537.60	16958.57
10/6/15 1:00:17 PM'341							
10/6/15 1:00:18 PM'530	50.067s	L2	Voltage outage	17000.00	0.00	269.31	14720.25
10/6/15 1:01:08 PM'598							
10/7/15 9:37:00 AM'227	304.927ms	L2	Voltage outage	17000.00	0.00	6457.11	16438.60
10/7/15 9:37:00 AM'532							
10/10/15 7:10:40 AM'081	1.891s	L2	Voltage outage	17000.00	0.00	2156.05	16566.59
10/10/15 7:10:41 AM'972							
10/10/15 8:11:31 AM'992	449.608ms	L2	Voltage outage	17000.00	0.00	3522.24	13023.38
10/10/15 8:11:32 AM'442							
10/13/15 8:15:38 AM'551	456.412ms	L2	Voltage outage	17000.00	0.00	4469.93	15423.28
10/13/15 8:15:39 AM'007							
10/15/15 12:58:36 PM'554	333.959ms	L2	Voltage outage	17000.00	0.00	5190.53	15647.12
10/15/15 12:58:36 PM'888							
10/15/15 12:58:37 PM'068	50.062s	L2	Voltage outage	17000.00	0.00	262.80	12499.39
10/15/15 12:59:27 PM'130							
10/15/15 12:59:27 PM'334	2m 18s	L2	Voltage outage	17000.00	0.00	179.49	15246.53
10/15/15 1:01:45 PM'714							
10/15/15 1:01:45 PM'897	1h 9m	L2	Voltage outage	17000.00	0.00	32.57	16376.52
10/15/15 2:11:29 PM'688							
10/16/15 12:24:34 AM'516	5.889s	L2	Voltage outage	17000.00	0.00	1344.83	15534.13
10/16/15 12:24:40 AM'405							
10/19/15 8:35:47 AM'579	458.216ms	L2	Voltage outage	17000.00	0.00	3781.64	15159.51
10/19/15 8:35:48 AM'037							

Starttime	Length	Input	Eventtype	Limit	Min	Avg	Max
Endtime							
10/21/15 9:04:30 AM'462	408.432ms	L2	Voltage outage	17000.00	0.00	4644.39	16973.68
10/21/15 9:04:30 AM'870							
10/25/15 12:35:00 PM'658	430.784ms	L2	Voltage outage	17000.00	0.00	5023.86	16345.30
10/25/15 12:35:01 PM'089							
10/25/15 12:35:01 PM'283	50.063s	L2	Voltage outage	17000.00	0.00	314.28	13445.56
10/25/15 12:35:51 PM'346							
10/25/15 1:20:33 PM'411	459.160ms	L2	Voltage outage	17000.00	0.00	5040.13	16215.08
10/25/15 1:20:33 PM'870							
10/28/15 9:36:17 AM'410	416.285ms	L2	Voltage outage	17000.00	0.00	5368.32	16853.62
10/28/15 9:36:17 AM'827							
11/10/15 10:05:33 AM'149	459.891ms	L2	Voltage outage	17000.00	0.00	4021.49	15210.83
11/10/15 10:05:33 AM'609							

## Overvoltage

32 Events have been found.

Residual voltage u %	Duration t ms		
	10 - 500ms	> 500ms	> 5s - 60s
> 110 - < 120	0	0	0
120 - %	28	0	0

4 out of ranges!

### 32 deepest events

Starttime Endtime	Length	Input	Eventtype	Limit	Min	Avg	Max
10/7/15 9:37:00 AM'107	70.002ms	L2	Over voltage	24000.00	24004.31	24277.81	24576.16
10/7/15 9:37:00 AM'177							
8/9/15 5:35:39 PM'875	59.994ms	L2	Over voltage	24000.00	24012.66	24616.93	25053.80
8/9/15 5:35:39 PM'935							
10/4/15 9:02:18 AM'390	60.050ms	L1	Over voltage	24000.00	24020.57	24142.46	24248.45
10/4/15 9:02:18 AM'450							
8/9/15 5:35:39 PM'868	108.894ms	L1	Over voltage	24000.00	24033.10	24483.85	25050.16
8/9/15 5:35:39 PM'977							
10/25/15 12:35:00 PM'635	9.949ms	L3	Over voltage	24000.00	24036.59	24036.59	24036.59
10/25/15 12:35:00 PM'645							
10/28/15 9:36:17 AM'407	20.050ms	L3	Over voltage	24000.00	24054.15	24068.08	24081.99
10/28/15 9:36:17 AM'427							
10/15/15 12:58:36 PM'419	29.973ms	L1	Over voltage	24000.00	24056.76	25261.88	26412.06
10/15/15 12:58:36 PM'449							
10/25/15 12:35:00 PM'655	9.949ms	L3	Over voltage	24000.00	24063.12	24063.12	24063.12
10/25/15 12:35:00 PM'665							
10/28/15 9:36:17 AM'487	20.050ms	L3	Over voltage	24000.00	24075.36	24165.28	24254.86
10/28/15 9:36:17 AM'507							
9/1/15 5:50:26 PM'222	10.051ms	L3	Over voltage	24000.00	24090.10	24090.10	24090.10
9/1/15 5:50:26 PM'232							
8/9/15 5:35:39 PM'964	19.600ms	L2	Over voltage	24000.00	24113.78	24171.21	24228.49
8/9/15 5:35:39 PM'984							
10/4/15 9:02:18 AM'373	90.051ms	L3	Over voltage	24000.00	24121.44	24721.62	25069.80
10/4/15 9:02:18 AM'463							
8/30/15 9:43:58 AM'792	99.664ms	L2	Over voltage	24000.00	24179.63	25086.67	25963.85
8/30/15 9:43:58 AM'892							
10/7/15 9:37:00 AM'104	60.050ms	L3	Over voltage	24000.00	24180.09	24316.45	24403.66
10/7/15 9:37:00 AM'164							
12/27/15 10:28:59 AM'825	40.051ms	L1	Over voltage	24000.00	24186.15	24493.79	24664.39
12/27/15 10:28:59 AM'865							
10/28/15 9:36:17 AM'484	30.100ms	L1	Over voltage	24000.00	24189.29	24494.35	24795.66
10/28/15 9:36:17 AM'514							
7/30/15 4:23:03 PM'329	19.500ms	L1	Over voltage	24000.00	24206.05	24206.05	24206.05
7/30/15 4:23:03 PM'348							
12/27/15 10:28:59 AM'905	30.099ms	L1	Over voltage	24000.00	24209.29	24222.95	24236.60
12/27/15 10:28:59 AM'935							
10/15/15 12:58:36 PM'426	49.402ms	L2	Over voltage	24000.00	24224.29	25824.87	27190.98
10/15/15 12:58:36 PM'475							
8/6/15 9:54:39 AM'123	29.951ms	L3	Over voltage	24000.00	24226.96	24786.85	25285.70
8/6/15 9:54:39 AM'153							
10/15/15 12:58:36 PM'518	39.350ms	L1	Over voltage	24000.00	24283.04	25618.95	26390.54
10/15/15 12:58:36 PM'557							
10/28/15 9:36:17 AM'394	59.951ms	L1	Over voltage	24000.00	24331.56	25136.53	25786.22
10/28/15 9:36:17 AM'454							
9/1/15 5:50:26 PM'209	9.951ms	L1	Over voltage	24000.00	24416.15	24416.15	24416.15
9/1/15 5:50:26 PM'219							
8/6/15 9:54:39 AM'106	40.050ms	L2	Over voltage	24000.00	24673.05	25210.71	25844.22
8/6/15 9:54:39 AM'146							

Starttime	Length	Input	Eventtype	Limit	Min	Avg	Max
Endtime							
8/30/15 9:43:58 AM'809	49.951ms	L3	Over voltage	24000.00	24739.24	25443.14	26097.09
8/30/15 9:43:58 AM'859							
7/30/15 4:23:03 PM'315	29.350ms	L2	Over voltage	24000.00	24752.45	25101.65	25291.78
7/30/15 4:23:03 PM'345							
9/1/15 5:50:26 PM'215	10.051ms	L2	Over voltage	24000.00	24892.30	24892.30	24892.30
9/1/15 5:50:26 PM'225							
8/6/15 9:54:39 AM'196	39.950ms	L2	Over voltage	24000.00	24965.67	25365.10	25533.23
8/6/15 9:54:39 AM'236							
7/30/15 4:23:03 PM'215	20.000ms	L2	Over voltage	24000.00	25068.85	25855.88	26619.66
7/30/15 4:23:03 PM'235							
7/30/15 4:23:03 PM'228	10.000ms	L1	Over voltage	24000.00	25709.94	25709.94	25709.94
7/30/15 4:23:03 PM'238							
9/7/15 5:54:13 PM'434	10.050ms	L3	Over voltage	24000.00	25734.73	25734.73	25734.73
9/7/15 5:54:13 PM'444							
9/7/15 5:54:13 PM'441	20.000ms	L1	Over voltage	24000.00	26661.17	26897.61	27131.98
9/7/15 5:54:13 PM'461							