

Configuration

Node: IEC61000 PARAMETERS
Declared supply voltage (Un): LV($\leq$ 1kV)
Network Topology: Wye
Declared supply voltage (Un): 400V (LL)
Device type: G4k BLACKBOX

Report information

Start time: 10/11/2013 00:00:00 End time: 18/11/2013 00:00:00
GMT: +2:00 Produced time: 26/11/2013 09:03:13
Report version: 1.0.0.30

Summary

Continuous phenomena

EN 50160:2010	Parameter	Result
4.2.1	Power frequency	Pass
4.2.2	Supply voltage variation	Fail
4.2.3.2	Flicker severity	Fail
4.2.4	Supply voltage unbalance	Pass
4.2.5	Harmonic voltage	Pass
4.2.5	Total harmonic distortion	Pass

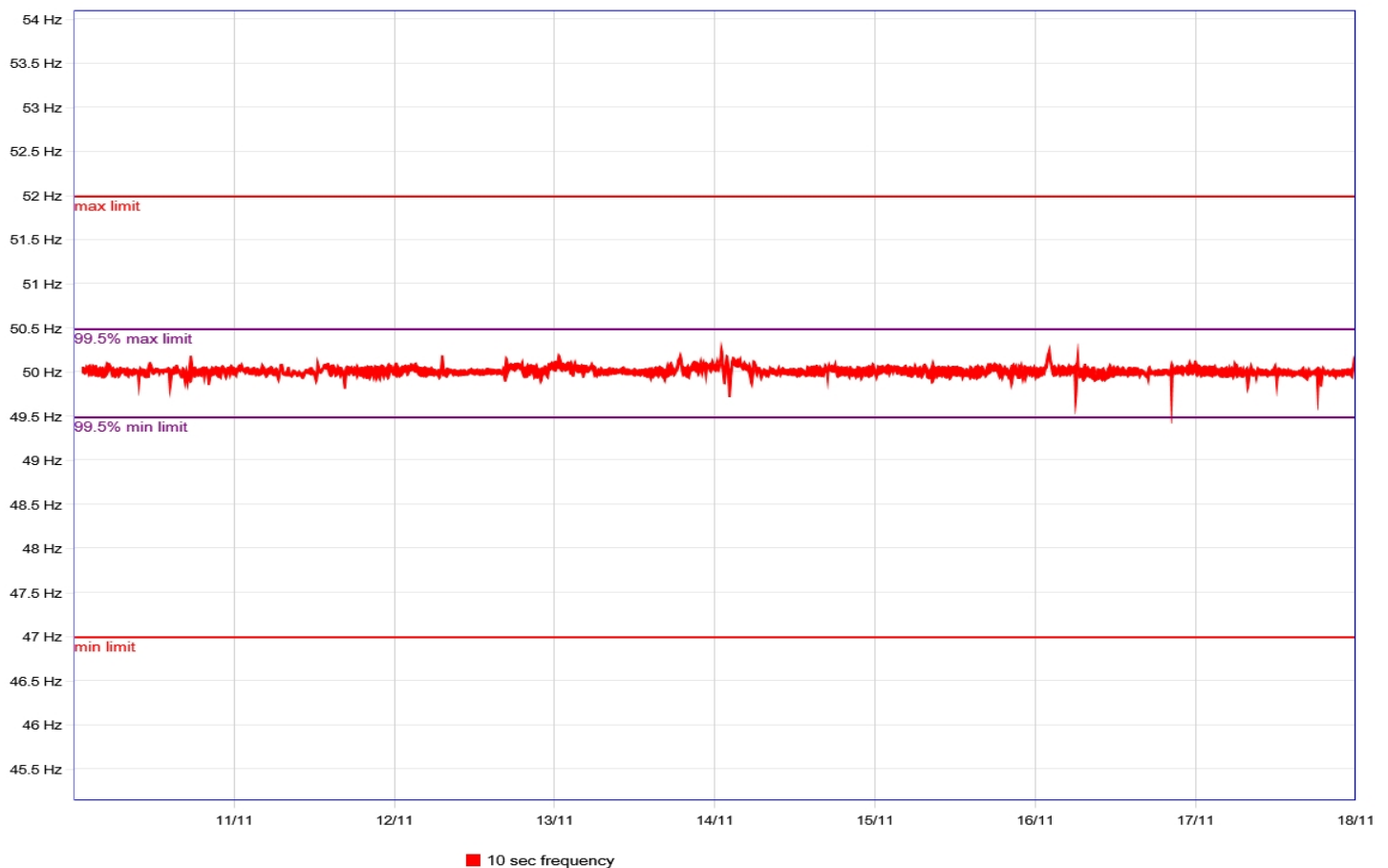
Voltage events

EN50160:2010	Event type	Number of events
4.3.1	Short Interruptions of the supply voltage	0
4.3.1	Long Interruptions of the supply voltage	0
4.3.2	Supply voltage dip	0
4.3.2	Supply voltage swell	0
4.3.3	Transient overvoltages	17

4.2.1 Power frequency

Under normal operating conditions: the mean value of the fundamental frequency measured over 10s shall be : 50Hz $\pm$ 1% during 99.5% of year and 50Hz +4%/-6% during 100% of requested time. For systems with synchronous connection to an interconnected system.

Percentage of time	Regulation min (Hz)	Measured min (Hz)	Regulation max (Hz)	Measured max (Hz)	Result (% within the limits)
99.5	49.5	49.883	50.5	50.158	Pass(100%)
100	47	49.692	52	50.301	Pass(100%)



Frequency - min/max values and limits for report time period.

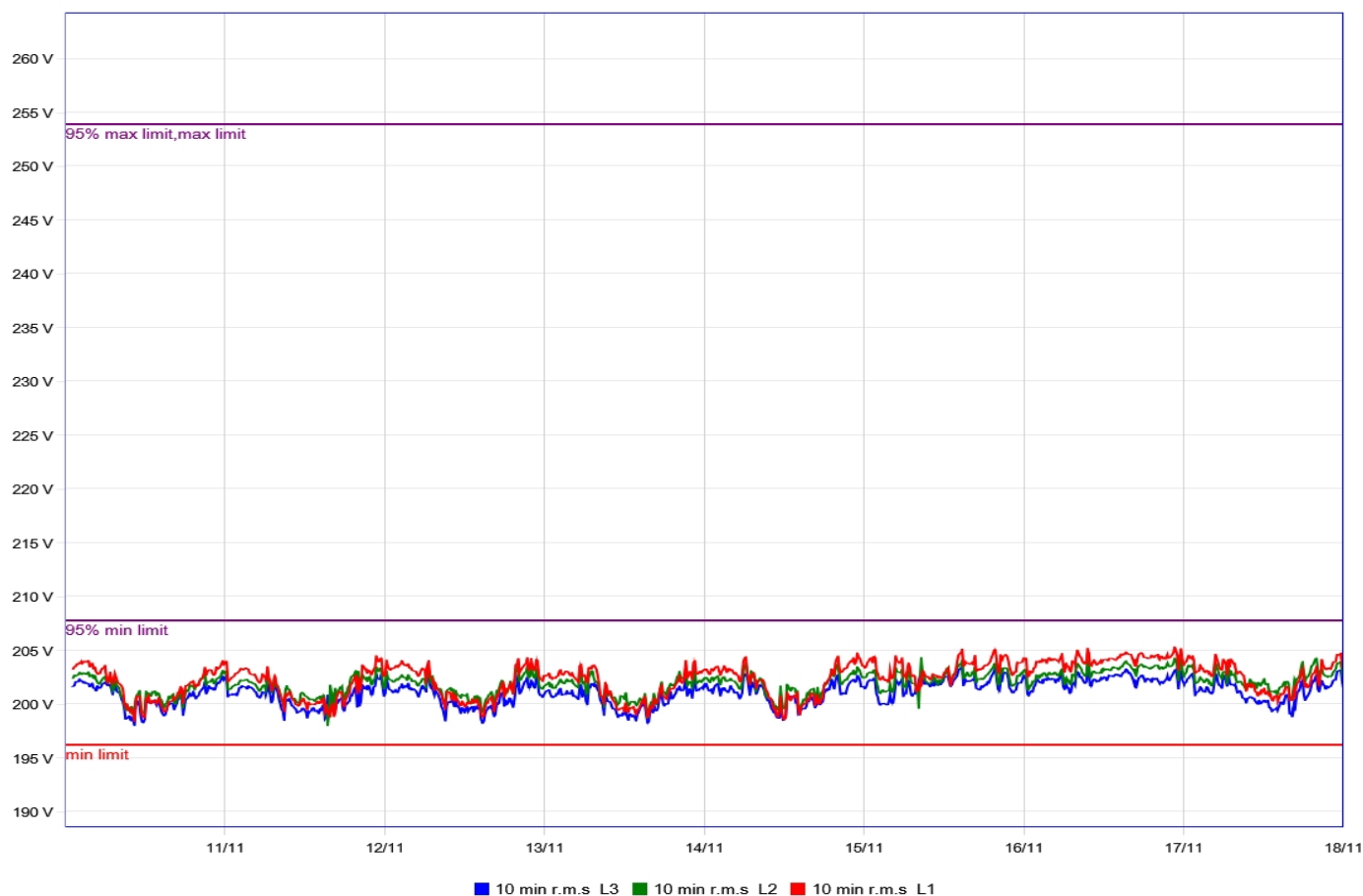
4.2.2 Supply Voltage Variations

Under normal operating conditions, during each period of one week 95% of the 10 min mean r.m.s. values of the supply voltage shall be within the range of $U_n \pm 10\%$ and all 10 min mean r.m.s. values of the supply voltage shall be within the range of $U_n +10\%/-15\%$.

Phase	Percentage of time	Regulation min (%)	Measured min (%)	Regulation max (%)	Measured max (%)	Result (% within the limits)
L1	95	90	86.402	110	88.574	Fail(0%)
L1	100	85	85.914	110	88.903	Pass(100%)
L2	95	90	86.58	110	88.178	Fail(0%)
L2	100	85	85.749	110	88.474	Pass(100%)
L3	95	90	86.178	110	87.819	Fail(0%)
L3	100	85	85.75	110	88.175	Pass(100%)

List of non - compliance sliding windows

Start time	End time	Phase	Percentage of time	Measured min V	Measured max V	Result
10/11/2013	17/11/2013	L1	95	199.537	204.469	Fail (0 %)
10/11/2013	17/11/2013	L2	95	199.949	203.504	Fail (0 %)
10/11/2013	17/11/2013	L3	95	199.021	202.691	Fail (0 %)
11/11/2013	18/11/2013	L1	95	199.714	204.515	Fail (0 %)
11/11/2013	18/11/2013	L2	95	200.141	203.599	Fail (0 %)
11/11/2013	18/11/2013	L3	95	199.159	202.755	Fail (0 %)
12/11/2013	18/11/2013	L1	95	199.767	204.553	Fail (0 %)
12/11/2013	18/11/2013	L2	95	200.2	203.639	Fail (0 %)
12/11/2013	18/11/2013	L3	95	199.147	202.809	Fail (0 %)



r.m.s. - min/max values and limits for report time period.

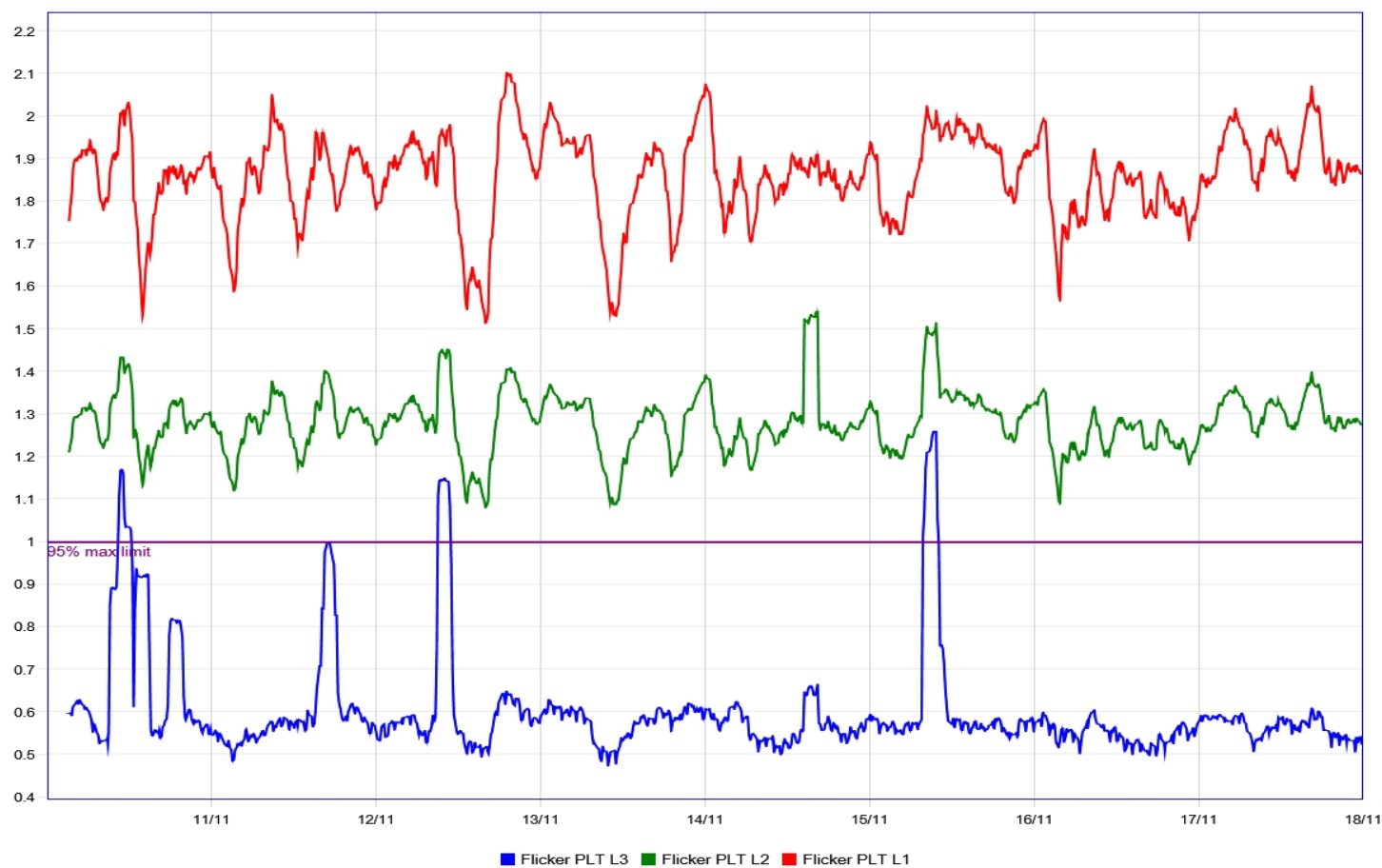
4.2.3.2 Flicker severity

Under normal operating conditions, during each period of one week the long term flicker severity Plt caused by voltage fluctuation should be less than or equal to 1 for 95% of the time.

Channel/Phase	Regulation max	Measured max	Result (% within the limits)
L1	1	2.012	Fail(0%)
L2	1	1.399	Fail(0%)
L3	1	0.947	Pass(96.46%)

List of non - compliance sliding windows

Start time	End time	Phase	Percentage of time	Measured max	Result
10/11/2013	17/11/2013	L1	95	2.002	Fail (0 %)
10/11/2013	17/11/2013	L2	95	1.399	Fail (0 %)
11/11/2013	18/11/2013	L1	95	2.007	Fail (0 %)
11/11/2013	18/11/2013	L2	95	1.393	Fail (0 %)
12/11/2013	18/11/2013	L1	95	2.012	Fail (0 %)
12/11/2013	18/11/2013	L2	95	1.398	Fail (0 %)

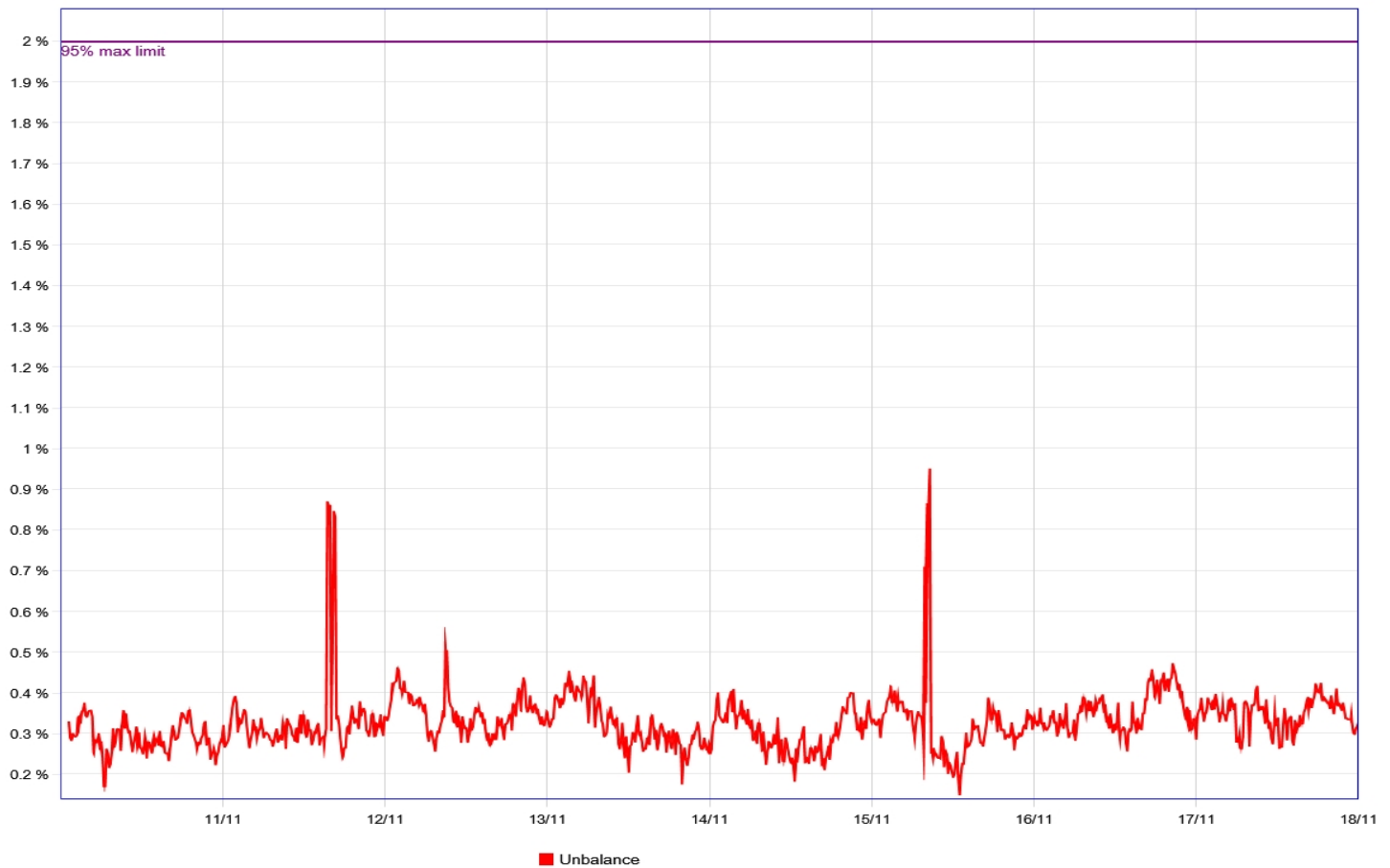


Flicker - min/max values and limits for report time period.

4.2.4 Supply voltage unbalance

Under normal operating conditions, during each period of one week, 95% of the 10 min mean r.m.s. values of the negative phase sequence component (fundamental) of the supply voltage shall be within the range 0% to 2% of the positive phase sequence component (fundamental).

Regulation max(%)	Measured max(%)	Result (% within the limits)
2	0.421	Pass(100%)

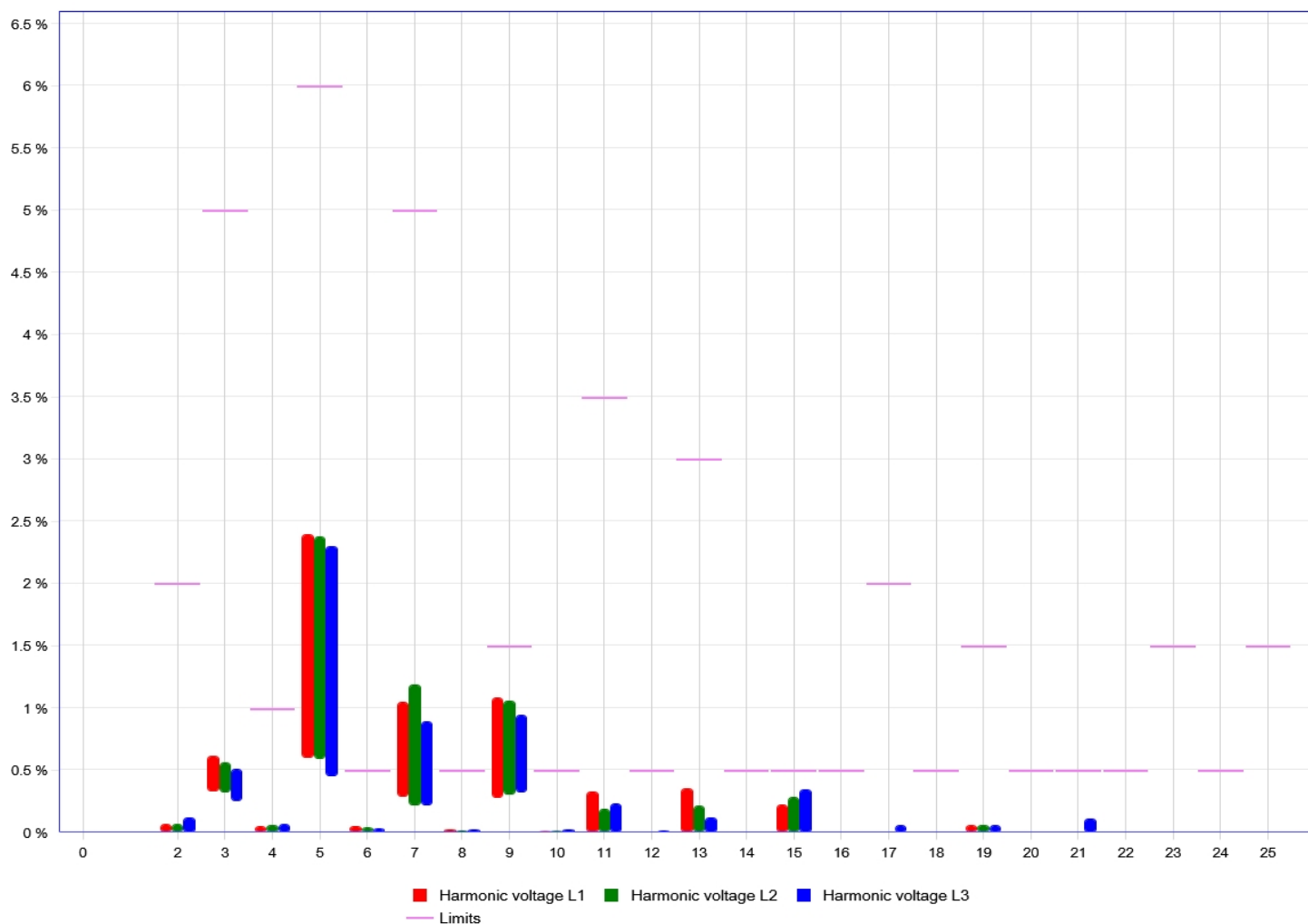


Unbalance : min/max values and limits for report time period

4.2.5 Harmonic voltage

Under normal operating conditions, during each period of one week, 95% of the 10 min mean r.m.s. values of each individual harmonic voltage shall be less than or equal to the regulation max values shown in the table below (values are given as percentage of the fundamental harmonic).

Harmonic	Regulation max (%)	Measured max (%)			Result (% within the limits)		
		L1	L2	L3	L1	L2	L3
2	2	0.025	0.023	0.021	Pass(100%)	Pass(100%)	Pass(100%)
3	5	0.591	0.528	0.479	Pass(100%)	Pass(100%)	Pass(100%)
4	1	0.011	0.01	0.009	Pass(100%)	Pass(100%)	Pass(100%)
5	6	2.112	2.105	2.022	Pass(100%)	Pass(100%)	Pass(100%)
6	0.5	0.009	0.008	0.007	Pass(100%)	Pass(100%)	Pass(100%)
7	5	0.966	1.029	0.813	Pass(100%)	Pass(100%)	Pass(100%)
8	0.5	0.008	0.007	0.005	Pass(100%)	Pass(100%)	Pass(100%)
9	1.5	0.872	0.855	0.739	Pass(100%)	Pass(100%)	Pass(100%)
10	0.5	0.006	0.005	0.004	Pass(100%)	Pass(100%)	Pass(100%)
11	3.5	0.131	0.1	0.174	Pass(100%)	Pass(100%)	Pass(100%)
12	0.5	0.004	0.003	0.003	Pass(100%)	Pass(100%)	Pass(100%)
13	3	0.246	0.108	0.066	Pass(100%)	Pass(100%)	Pass(100%)
14	0.5	0.003	0.003	0.003	Pass(100%)	Pass(100%)	Pass(100%)
15	0.5	0.134	0.211	0.216	Pass(100%)	Pass(100%)	Pass(100%)
16	0.5	0.003	0.003	0.003	Pass(100%)	Pass(100%)	Pass(100%)
17	2	0.002	0.002	0.022	Pass(100%)	Pass(100%)	Pass(100%)
18	0.5	0.002	0.002	0.002	Pass(100%)	Pass(100%)	Pass(100%)
19	1.5	0.002	0.002	0.002	Pass(100%)	Pass(100%)	Pass(100%)
20	0.5	0.002	0.002	0.002	Pass(100%)	Pass(100%)	Pass(100%)
21	0.5	0.002	0.002	0.056	Pass(100%)	Pass(100%)	Pass(100%)
22	0.5	0.002	0.002	0.001	Pass(100%)	Pass(100%)	Pass(100%)
23	1.5	0.002	0.002	0.001	Pass(100%)	Pass(100%)	Pass(100%)
24	0.5	0.002	0.002	0.001	Pass(100%)	Pass(100%)	Pass(100%)
25	1.5	0.002	0.002	0.001	Pass(100%)	Pass(100%)	Pass(100%)



Harmonics : min/max values and limits for report time period

4.2.5 Total Harmonics Distortion (THD)

The THD of the supply voltage (including all harmonics up to the order 40) shall be less than or equal to 8% during 95% of each period of one week.

Phase	Regulation max (%)	Measured max (%)	Result (% within the limits)
L1	8	2.342	Pass(100%)
L2	8	2.271	Pass(100%)
L3	8	2.205	Pass(100%)



THD - min/max values and limits for report time period.

Voltage events

4.3.2/4.3.1/4.3.1 Dips, short and long interruptions of supply voltage:

Res. voltage u (%)	Duration (s)					
	$0.01 \leq t \leq 0.2$	$0.2 \leq t \leq 0.5$	$0.5 \leq t \leq 1$	$1 \leq t \leq 5$	$5 \leq t \leq 60$	$t > 60$
$90 \geq u \geq 80$	0	0	0	0	0	0
$80 \geq u \geq 70$	0	0	0	0	0	0
$70 \geq u \geq 40$	0	0	0	0	0	0
$40 \geq u \geq 5$	0	0	0	0	0	0
$5 \geq u$	0	0	0	0	0	0

4.3.2 Supply voltage swell:

Voltage u (%)	Duration (s)		
	$0.01 \leq t \leq 0.5$	$0.5 \leq t \leq 5$	$5 \leq t \leq 60$
$u \geq 120$	0	0	0
$120 \geq u \geq 110$	0	0	0

Event summary

Type	Phase	Start time	Duration	Deviation (%)
Transient	L2	10/11/2013 10:41:53.825730	00:00:00.0006719	31.91
Transient	L3	10/11/2013 10:41:53.827181	00:00:00.0001967	20.80
Transient	L1	10/11/2013 10:41:53.827251	00:00:00.0002751	21.94
Transient	L3	12/11/2013 08:48:04.882018	00:00:00.0004473	22.90
Transient	L3	12/11/2013 08:48:04.883341	00:00:00.0002152	20.26
Transient	L3	12/11/2013 08:54:42.809805	00:00:00.0004238	22.34
Transient	L3	12/11/2013 08:54:42.811161	00:00:00.0002128	20.30
Transient	L3	13/11/2013 06:18:59.387915	00:00:00.0001178	21.04
Transient	L3	13/11/2013 21:07:09.573863	00:00:00.0000884	21.38
Transient	L3	14/11/2013 07:02:29.772164	00:00:00.0001150	22.80
Transient	L3	15/11/2013 07:47:12.572563	00:00:00.0005123	27.44
Transient	L2	15/11/2013 07:47:12.572630	00:00:00.0003436	21.85
Transient	L3	15/11/2013 07:47:12.573668	00:00:00.0004753	25.11
Transient	L3	15/11/2013 07:47:12.575204	00:00:00.0002848	22.98
Transient	L2	15/11/2013 07:47:12.575410	00:00:00.0003517	22.89
Transient	L2	15/11/2013 09:12:14.783693	00:00:00.0002662	20.76
Transient	L2	16/11/2013 06:58:22.816637	00:00:00.0005789	23.99