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PROTOKOL O ZKOUŠCE **TEST REPORT**

6011-PT-L0018-18

Datum vystavení : 9.8.2018
Date of issue : 9th August 2018

List 1 z(e) 5 listů
Page 1 of 5

Zákazník : ELCOM, a. s.
Customer : Technologická 374/6
708 00 Ostrava-Pustkovec

Měřidlo :
Measuring instrument : PQ monitor

Výrobce : ELCOM
Manufacturer :

Typ : ENA075
Type :

Výrobní číslo : 1234393
Serial number :

Výsledky zkoušek byly získány za podmínek a s použitím postupů uvedených v tomto protokolu o zkoušce a vztahují se pouze k době a místu provedení zkoušky.

The results of the tests have been obtained following the procedures reported in this Report and are related only to the date, place and conditions of the test.

Datum provedení zkoušky : 30.7.2018 – 9.8.2018
Date of test : 30th July - 9th August 2018

Protokol vystavil :
Report issued :

Vedoucí oddělení :
Head of the Department :


Ing. Michal Hedvíček




Ing. Jiří Streit

Pověření :	Účelem tohoto protokolu o zkoušce je prověřit, zda PQ monitor splňuje požadavky normy IEC 62586-2:2017 Měření kvality elektriny v systémech elektrického napájení – Část 2: Funkční zkoušky a požadavky na nejistotu. Tato norma specifikuje funkční zkoušky a požadavky na nejistotu pro přístroje, jejichž funkce zahrnují měření, záznam a případně monitorování parametrů kvality elektrické energie v energetických systémech a jehož měřicí metody pro třídy A a S jsou definovány v normě IEC 61000-4-30:2015 – Elektromagnetická kompatibilita (EMC) – Část 4-30: Zkušební a měřicí technika – Metody měření kvality energie. Norma IEC 62586-2:2017 platí pro přístroje kvality elektrické energie v souladu s normou IEC 62586-1:2017 – Měření kvality elektriny v systémech elektrického napájení – Část 1: Přístroje pro měření kvality elektriny. Přístroj byl zkoušen jen v rozsahu dále uvedených testů.
Commission :	<i>Purpose of this Test Report is to find out whether PQ monitor meets requirements of standard IEC 62586-2:2017 – Power quality measurement in power supply systems – Part 2: Functional tests and uncertainty requirements. This part of standard specifies functional tests, and uncertainty requirements for instruments whose functions include measuring, recording, and possibly monitoring power quality parameters in power supply systems, and whose measuring methods for Class A and S are defined in IEC 61000-4-30:2015 – Electromagnetic compatibility (EMC) – Part 4-30: Testing and measurement techniques – Power quality measurement methods. The standard IEC 62586-2:2017 applies to power quality instruments complying with IEC 62586-1:2017 – Power quality measurement in power supply systems – Part 1: Power Quality Instruments (PQI). The device was tested only in the range of the tests listed below.</i>
Specifikace zkoušeného vzorku :	PQ monitor ENA075/ENA175: dle normy IEC 62586-1 se jedná o typ PQI-S-F11-H, přístroj pro pevnou instalaci, třída přesnosti S - podle normy IEC 61000-4-30:2015. 3x230/400 V (vstup. rozsah: 300 V), 5A, 50 Hz, napájecí napětí: 230V AC, pracovní teplota: -25 °C / 55 °C, verze firmware: 25.3, vyhodnocovací software: ENAX75 ST v.1, konfigurační software: ENAX75 ST v.1.0
Specification of tested sample :	<i>PQ monitor ENA075/ENA175: type PQI-S-F11-H according to standard IEC 62586-1, fixed installed instrument for indoor applications, Class S - (IEC 61000-4-30:2015). 3x230/400V (input range: 300 V), 5 A, 50 Hz, supply range: 230 V AC, -25 °C/+55 °C, firmware version: 25.3, evaluation software: ENAX75 ST v.1, configuration software: ENAX75 ST v.1.</i>
Použité etalony:	Kalibrátor střídavého elektrického výkonu, proudu a napětí FLUKE 6100A + 6101A (2 ks), v.č. 891350632, v.č. 891350638, v.č. 891350639, kalibrační list č. 6011-KL-E0092-17. Sada napěťových děličů, ČMI Ol Brno, v.č. 230 V/0.6 V/1, 230 V/0.6 V/2, 230 V/0.6 V/3, kalibrační listy č. 6011-KL-E0028-16, č. 6011-KL-E0049-16 a č. 6011-KL-E0061-16. Proudový bočník typ 10 A, v.č. CMI/10A/1/13, kalibrační list č. 6011-KL-E0088-17 Etalon času a frekvence Datum System 2000, v.č. 683 Klimatická komora Vötsch VC 4057, v.č. 07075789, kalibrační list č. 6036-KL-V0236-16 Použité etalony mají návaznost na (mezi)národní etalony.
Measurement standard used :	<i>Electrical power standard FLUKE 6100A + 6101A (2 pieces), sn. 891350632, sn. 891350638, sn. 891350639, calibration certificate no. 6011-KL-E0092-17. Set of voltage dividers, CMI Ol Brno, sn. 230 V/0.6 V/1, 230 V/0.6 V/2, and 230 V/0.6 V/3, calibration certificates no. 6011-KL-E0028-16, no. 6011-KL-E0049-16, no. 6011-KL-E0061-16. Current shunt, type 10 A. s.n. CMI/10A/1/13, calibration certificate no. 6011-KL-E0088-17 Standard of time and frequency Datum System, sn. 683 Climatic chamber Vötsch VC 4057, sn. 07075789, cal. certificate no. 6036-KL-V0236-16 Standards used are traceable to (inter)national standards.</i>

Další použité přístroje : Sada napěťových zesilovačů, MEgA, KZU 30, v.č. 2, 3 a 4.
Vzorkovací karty NI PXI 5922, v.č. EF3F4F a v.č. 00F22D5B
Univerzální D/A karta NI PXI 6733, v.č. 019299A9.
Transkonduktanční zesilovač Wavetek 4600, v.č. 29630

Other devices used : Set of voltage amplifiers, MEgA, KZU 30, sn. 2, 3, 4.
NI PXI 5922 digitizer cards, s.n. EF3F4F and s.n. 00F22D5B
Universal D/A Digitizer NI PXI 6733, sn. 019299A9.
Wavetek 4600 autocal transconductance amplifier, s.n. 29630

Výsledky zkoušek : Výsledky příslušných zkoušek jsou uvedeny v tabulkách výsledků.
Results of testing : Appropriate test results are stated in Tables of Results.

Poznámka 1: Nejistota generovaných veličin: Napětí / Voltage: <200 ppm
Note 1 The uncertainty of the Frekvence / Frequency: <100 ppm
generated quantities: Proud / Current: <200 ppm

Nejistota měření : Standardní nejistota měření byla určena v souladu s dokumentem EA-4/02 M:2013.
Uvedené rozšířené nejistoty měření jsou součinem standardní nejistoty měření a koeficientu k , který odpovídá pravděpodobnosti pokrytí přibližně 95 %, což pro normální rozdělení odpovídá koeficientu rozšíření $k = 2$.

Measurement uncertainty : The standard uncertainty of measurement has been determined in accordance with EA-4/02 M:2013 document. The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k corresponding to a coverage probability of approximately 95 %, which for normal distribution corresponds to a coverage factor $k = 2$.

Vyjádření o plnění specifikace : PQ monitor ENA075 splňuje všechny zkoušené požadavky dle normy IEC 62586-2:2017.

Statement of compliance : PQ monitor ENA075 has met all tested requirements according to standard IEC 62586-2:2017.

Poznámka : Naměřené hodnoty a konkrétní výsledky testů jsou uvedeny v příloze 1 tohoto protokolu (celkem 5 listů).

Note : Measured values and the specific test results are stated in Annex 1 of this Test Report (in sum 5 pages).

Byly testovány následující metody měření dle IEC 62586-2:2017:
The following measurement methods have been tested according to IEC 62586-2:2017:

Tabulky výsledků / Tables of Results

Parametr <i>Parameter</i>	Test <i>Test</i>	Třída <i>Class</i>	Realizace <i>Implemented</i>	Výsledek <i>Result</i>
Frekvence <i>Power frequency</i>	S1.2.1	S	Ano / Yes	√
	S1.2.2	S	Ano / Yes	√
	S1.2.3	S	Ano / Yes	√
	S1.3.1	S	Ano / Yes	√
	S1.3.2	S	Ano / Yes	√
	S1.4.1	S	Ano / Yes	√
Velikost napětí <i>Magnitude of supply voltage</i>	S2.2.1	S	Ano / Yes	√
	S2.2.2	S	Ano / Yes	√
	S2.2.3	S	Ano / Yes	√
	S2.3.1	S	Ano / Yes	√
	S2.3.2	S	Ano / Yes	√
Události na napětí <i>Supply voltage interruptions, dips and swells</i>	S4.1.2	S	Ano / Yes	√
	S4.1.3	S	Ano / Yes	√
	S4.1.4	S	Ano / Yes	√
Napěťová nesymetrie <i>Supply voltage unbalance</i>	S5.1.1	S	Ano / Yes	√
	S5.1.2	S	Ano / Yes	√
	S5.1.3	S	Ano / Yes	√
	S5.1.4	S	Ano / Yes	√
Napěťové harmonické <i>Voltage harmonics</i>	S6.1.7	S	Ano / Yes	√
	S6.1.8	S	Ano / Yes	√
	S6.2.1	S	Ano / Yes	√
	S6.2.2	S	Ano / Yes	√
	S6.2.3	S	Ano / Yes	√
	S6.2.4	S	Ano / Yes	√
	S6.2.5	S	Ano / Yes	√
	S6.3.1	S	Ano / Yes	√
	S6.3.2	S	Ano / Yes	√
Velikost proudu <i>Magnitude of current</i>	S2.2.1	S	Ano / Yes	√
	S2.2.2	S	Ano / Yes	√
	S2.2.3	S	Ano / Yes	√
	S2.3.1	S	Ano / Yes	√
	S2.3.2	S	Ano / Yes	√
Proudové harmonické <i>Current harmonics</i>	S6.2.1	S	Ano / Yes	√
	S6.2.2	S	Ano / Yes	√
	S6.2.3	S	Ano / Yes	√
	S6.2.4	S	Ano / Yes	√
	S6.2.5	S	Ano / Yes	√
	S6.3.1	S	Ano / Yes	√
	S6.3.2	S	Ano / Yes	√

Byly testovány následující metody měření dle IEC 62586-2:2017:
The following measurement methods have been tested according to IEC 62586-2:2017:

Tabulky výsledků / *Tables of Results*

Parametr <i>Parameter</i>	Test <i>Test</i>	Třída <i>Class</i>	Realizace <i>Implemented</i>	Výsledek <i>Result</i>
Proudové nesymetrie <i>Current unbalance</i>	S17.1.1	S	Ano / <i>Yes</i>	✓
	S17.1.2	S	Ano / <i>Yes</i>	✓
	S17.1.3	S	Ano / <i>Yes</i>	✓
	S17.1.4	S	Ano / <i>Yes</i>	✓
	S17.1.5	S	Ano / <i>Yes</i>	✓
Externí veličiny - Teplota <i>External influence quantities - Temperature</i>	S12.1.1	S	Ano / <i>Yes</i>	✓
	S12.1.3	S	Ano / <i>Yes</i>	✓
Fliker <i>Flicker</i> (dle/according to 61000-4-15) Pst dle/according to TAB.5	k = 0.4	S	Ano / <i>Yes</i>	✓
	k = 0.8	S	Ano / <i>Yes</i>	✓
	k = 1	S	Ano / <i>Yes</i>	✓
	k = 4	S	Ano / <i>Yes</i>	✓
	k = 10	S	Ano / <i>Yes</i>	✓

Konec protokolu o zkoušce.
End of the Test Report.

**Naměřené hodnoty a konkrétní výsledky testů dle
IEC 62586-2:2017**

***Measured values and the specific test results according to
IEC 62586-2:2017***

Český metrologický institut, Oblastní Inspektorát Brno (7 listů)

Czech Metrology Institute, Regional Inspectorate Brno (7 pages)

Power frequency

Test [-]	Testing points [Hz]	Error ^b [mHz]	Standard criterion [mHz]
S1.2.1	42.500	0	50
S1.2.2	50.050	0	50
S1.2.3	57.500	0	50

b: The largest absolute error of the test value (testing point) during the test.

Test [-]	Testing points [Hz]	Complementary conditions [-]	Error ^b [mHz]	Standard criterion [mHz]
S1.3.1	50.050	10 % U_{din}	0	50
S1.3.2	50.050	H3: 10 % U_{din} , 180° H7: 10 % U_{din} , 180° H11: 10 % U_{din} , 180° H15: 4 % U_{din} , 180° H19: 5 % U_{din} , 180° H23: 5 % U_{din} , 180°	7	50

Test	Target of the test	Result
S1.4.1	Check that the frequency measurement is made on the reference channel.	√

Magnitude of supply voltage

Test [-]	Testing points [-]	Testing points [V]	Error ^c [V]	Standard criterion [V]
S2.2.1	10 % U_{din}	23.000	0.207	1.150
S2.2.2	80 % U_{din}	184.000	0.104	1.150
S2.2.3	150 % U_{din}	345.000	0.331	1.150

c: The largest absolute error of the test value determined from all three phases.

Test [-]	Testing points [V]	Complementary conditions [-]	Error ^c [V]	Standard criterion [V]
S2.3.1	184.000	42.5 Hz 57.5 Hz	0.104 0.104	
S2.3.2	184.000	H3: 10 % U_{din} , 180° H7: 10 % U_{din} , 180° H11: 10 % U_{din} , 180° H15: 4 % U_{din} , 180° H19: 5 % U_{din} , 180° H23: 5 % U_{din} , 180°	0.186	1.150

c: The largest absolute error of the test value determined from all three phases.

Supply voltage interruption, dip and swell

Test S4.1.2 – Measurement of residual voltage									
Standard setting				Measured value			Error		
Residual voltage [%]	Set duration [cycle]	Set duration [ms]	Expected duration [ms]	Channel 1 [%]	Channel 2 [%]	Channel 3 [%]	Channel 1 [%]	Channel 2 [%]	Channel 3 [%]
150.00	2.5	50	60	149.91	149.96	150.00	-0.09	-0.04	0.00
	10	200	210	150.00	149.87	149.96	0.00	-0.13	-0.04
	30	600	610	150.00	149.91	149.91	0.00	-0.09	-0.09
	150	3000	3010	150.00	149.87	149.96	0.00	-0.13	-0.04
20.00	2.5	50	60	19.96	20.04	19.96	-0.04	0.04	-0.04
	10	200	210	20.04	19.96	19.96	0.04	-0.04	-0.04
	30	600	610	20.00	20.04	19.91	0.00	0.04	-0.09
	150	3000	3010	19.96	19.96	20.04	-0.04	-0.04	0.04

Test S4.1.2 – Measurement of duration									
Standard setting				Measured value			Error		
Residual voltage [%]	Set duration [cycle]	Set duration [ms]	Expected duration [ms]	Channel 1 [ms]	Channel 2 [ms]	Channel 3 [ms]	Channel 1 [ms]	Channel 2 [ms]	Channel 3 [ms]
150.00	2.5	50	60	100	100	100	40	40	40
	10	200	210	190	190	190	-20	-20	-20
	30	600	610	590	590	590	-20	-20	-20
	150	3000	3010	2989	2989	2989	-21	-21	-21
20.00	2.5	50	60	70	70	70	10	10	10
	10	200	210	210	210	210	0	0	0
	30	600	610	610	610	610	0	0	0
	150	3000	3010	3019	3019	3019	9	9	9

Test S4.1.3									
Standard setting			Measured value			Error			Recorded Event
Set duration [ms]	Expected duration [ms]	Residual voltage [%]	Channel 1 [ms]	Channel 2 [ms]	Channel 3 [ms]	Channel 1 [ms]	Channel 2 [ms]	Channel 3 [ms]	
50	40	112.2	40	40	40	0	0	0	swell
		107.8	0	0	0	0	0	0	WR
	40	92.2	0	0	0	0	0	0	WR
		87.8	40	40	40	0	0	0	dip

*WR = without record

Test S4.1.4									
Standard setting				Measured value			Error		
Residual voltage [%]	Set frequency [Hz]	Set duration [ms]	Expected duration [ms]	Channel 1 [ms]	Channel 2 [ms]	Channel 3 [ms]	Channel 1 [ms]	Channel 2 [ms]	Channel 3 [ms]
22.2	42.5	47.1	58.8	59	59	59	0.2	0.2	0.2
		705.9	717.6	729	729	729	11.4	11.4	11.4
	57.5	34.8	43.5	78	78	78	34.5	34.5	34.5
		521.7	530.4	539	539	539	8.6	8.6	8.6

Supply voltage unbalance

Test	Target of the test	Testing conditions		u ₀ [%]		u ₂ [%]	
				Measured value	Criterion	Measured value	Criterion
S5.1.1	Check accuracy of unbalance measurement	L1-N: 57.73 V, 0° L2-N: 57.73 V, -120° L3-N: 57.73 V, 120°	MIN	0.00	0.00	0.09	0.00
			MAX	0.00	0.30	0.09	0.30
S5.1.2	Check accuracy of unbalance measurement	L1-N: 42.143 V, 0° L2-N: 46.184 V, -120° L3-N: 50.225 V, 120°	MIN	5.01	4.75	4.89	4.75
			MAX	5.01	5.35	4.89	5.35
S5.1.3	Check accuracy of unbalance measurement	L1-N: 87.750 V, 0° L2-N: 80.822 V, -120° L3-N: 73.894 V, 120°	MIN	4.89	4.65	4.89	4.65
			MAX	4.89	5.25	5.01	5.25
S5.1.4	Check accuracy of unbalance measurement with phase	L1-N: 57.730 V, 0° L2-N: 51.957 V, -122° L3-N: 57.730 V, +118°	MIN	4.41	4.22	2.49	2.17
			MAX	4.41	4.82	2.49	2.77

Voltage harmonics

Test	Testing points	Result
S6.1.7	Crest factor test: H3:23V,180°; H5:34.5V,90°; H7:23V,180° H11:23V,180°; H15:9.2V,180°; H19:11.5V,180° H23:11.5V,180°, Crest factor = 2	All 40 harmonics comply twice accuracy according to IEC 61000-4-7, Class II.
S6.1.8-1	Aliasing test: 10 %, 3750 Hz	All 40 harmonics comply twice accuracy according to IEC 61000-4-7, Class II.

Test [-]	Testing points [-]	Expected value [%]	Error ^c [%]	Standard criterion [%]
S6.2.1	5 %, 100 Hz (2 nd harmonic)	5.00	0.03	0.25
S6.2.2	10 %, 150 Hz (3 rd harmonic)	10.00	0.04	0.50
S6.2.3	1 %, 2500 Hz (50 th harmonic)	1.00	0.04	0.05

c: The largest error of the test value determined from all three phases.

Test	Testing points	Result
S6.2.4	Distortion on all harmonics simultaneously up to the 40 th order at 10 % of class 3 compatibility levels from IEC 61000-2-4.	All 40 harmonics comply twice accuracy according to IEC 61000-4-7, Class II.
S6.2.5	Distortion on all harmonics simultaneously up to the 40 th order at 200 % of class 3 compatibility levels from IEC 61000-2-4.	All 40 harmonics comply twice accuracy according to IEC 61000-4-7, Class II.

Test [-]	Testing points [-]	Complementary conditions [-]	Expected value of U_{din} [%]	Error ^c [%]	Standard criterion [%]
S6.3.1	5 %, 85 Hz (2 nd harmonic) ¹	42.5 Hz	5.00	0.04	0.25
	1 %, 2875 Hz (50 th harmonic) ¹	57.5 Hz	1.00	0.00	0.05
	1: All 40 harmonics comply twice accuracy according to IEC 61000-4-7, Class II.				
A6.3.2	10 %, 150 Hz (3 rd harmonic)	10 % U_{din}	1.00	0.02	0.05
	10 %, 150 Hz (3 rd harmonic)	150 % U_{din}	10.00	0.01	1.00
	All 40 harmonics comply twice accuracy according to IEC 61000-4-7, Class II.				

c: The largest error of the test value determined from all three phases.

Magnitude of current

Test	Test. points	Testing points	Error ^c	Standard criterion ^b
[–]	[–]	[A]	[A]	[A]
S2.2.1	10 % Idin	0.500	0.000	0.050
S2.2.2	80 % Idin	4.000	0.000	0.050
S2.2.3	100 % Idin	5.000	0.000	0.050

c: The largest absolute error of the test value determined from all three phases.

b: Standard requirement: $\pm 1,0$ % Idin

Test	Test. points	Testing points	Error ^c	Standard criterion ^b
[–]	[A]	[–]	[A]	[A]
S2.3.1	4.000	42.500	0.000	---
		57.500	0.000	---
S2.3.2	4.000	H3:60%Idin,180° H5:55%Idin,0° H7:50%Idin,180° H9:41%Idin,0°	0.000	0.050

Current harmonics

Test	Testing points	Expected value	Error ^c	Standard criterion
[–]	[–]	[%]	[%]	[%]
S6.2.1	5 %, 100 Hz (2 nd harmonic)	5.00	0.01	0.25
S6.2.2	10 %, 150 Hz (3 rd harmonic)	10.00	0.04	0.50
S6.2.3	1 %, 2500 Hz (50 th harmonic)	1.00	0.05	0.15

c: The largest error of the test value determined from all three phases.

Test	Testing points	Result
S6.2.4	Distortion on all harmonics simultaneously up to the 40 th order at 10 % of class 3 compatibility levels from IEC 61000-2-4.	All 40 harmonics comply twice accuracy according to IEC 61000-4-7, Class II.
S6.2.5	Distortion on all harmonics simultaneously up to the 40 th order at 200 % of class 3 compatibility levels from IEC 61000-2-4.	All 40 harmonics comply twice accuracy according to IEC 61000-4-7, Class II.

Test	Testing points	Complem. conditions	Expected value of I _e	Error ^c	Standard criterion
[–]	[–]	[–]	[%]	[%]	[%]
S6.3.1	5 %, 85 Hz (2 nd harmonic) ¹	42.5 Hz	5.00	0.04	0.25
	1 %, 2875 Hz (50 th harmonic) ¹	57.5 Hz	1.00	0.11	0.15
	All 40 harmonics comply twice accuracy according to IEC 61000-4-7, Class II.				
S6.3.2	10 %, 150 Hz (3 rd harmonic)	10 % I _{din}	10.00	0.03	0.50
	10 %, 150 Hz (3 rd harmonic)	100 % I _{din}	10.00	0.02	0.50
	All 40 harmonics comply twice accuracy according to IEC 61000-4-7, Class II.				

Current unbalance

Test	Target of the test	Testing conditions		i_0 [%]		i_2 [%]	
				Measured value	Criterion	Measured value	Criterion
S17.1.1	Check accuracy of unbalance measurement	L1: 100,2 % Idin, 0° L2: 99,9 % Idin, -120° L3: 99,9 % Idin, 120°	MIN	0.09	0.00	0.09	0.00
			MAX	0.09	0.35	0.09	0.35
S17.1.2	Check accuracy of unbalance measurement	L1: 110 % Idin, 0° L2: 95 % Idin, -120° L3: 95 % Idin, 120°	MIN	4.89	4.80	5.01	4.80
			MAX	4.89	5.20	5.01	5.20
S17.1.3	Check accuracy of unbalance measurement	L1: 100 % Idin, 0° L2: 100 % Idin, -150° L3: 100 % Idin, 90°	MIN	17.70	17.50	17.61	17.50
			MAX	17.70	18.10	17.61	18.10
S17.1.4	Check accuracy of unbalance measurement	L1: 55,0 % Idin, 0° L2: 47,5 % Idin, -120° L3: 47,5 % Idin, 120°	MIN	4.89	4.70	5.01	4.70
			MAX	4.89	5.30	5.01	5.30
S17.1.5	Check accuracy of unbalance measurement	L1: 105,0 % Idin, 0° L2: 97,5 % Idin, -120,5° L3: 97,5 % Idin, 120,5°	MIN	1.89	1.80	3.00	2.80
			MAX	1.89	2.20	3.00	3.20

External quantities - Temperature

Test	Testing points	Complementary conditions	Error	Standard criterion
S12.1.1	42.50 Hz	-25 °C	0 mHz	100 mHz
	50.05 Hz	-25 °C	0 mHz	100 mHz
	57.50 Hz	-25 °C	0 mHz	100 mHz
	46 V	-25 °C	0.600 V	2.300 V
	161 V	-25 °C	0.612 V	2.300 V
	276 V	-25 °C	0.303 V	2.300 V
S12.1.3	42.50 Hz	55 °C	0 mHz	100 mHz
	50.05 Hz	55 °C	0 mHz	100 mHz
	57.50 Hz	55 °C	0 mHz	100 mHz
	46 V	55 °C	0.599 V	2.300 V
	161 V	55 °C	0.569 V	2.300 V
	276 V	55 °C	0.960 V	2.300 V

Flicker

Test	Testing points		Standard requirement Pst [-]	Error ^c [%]	Test criterion [%]
	k [-]	r [min ⁻¹]			
Parameter Pst Rectangular voltage changes according to Table 5 of standard IEC 61000-4-15	0.4	1	0.4	4.3	5
		2	0.4	2.5	5
		7	0.4	2.5	5
		39	0.4	2.5	5
		110	0.4	2.5	5
		1620	0.4	4.1	5
		4000	0.4	5.0	5
	0.8	1	0.8	3.8	5
		2	0.8	0.8	5
		7	0.8	1.2	5
		39	0.8	2.9	5
		110	0.8	2.1	5
		1620	0.8	1.3	5
		4000	0.8	1.3	5
	1	1	1	3.0	5
		2	1	0.0	5
		7	1	0.0	5
		39	1	1.0	5
		110	1	1.8	5
		1620	1	1.0	5
		4000	1	0.8	5
	4	1	4	3.0	5
		2	4	1.8	5
		7	4	2.8	5
		39	4	2.6	5
		110	4	3.4	5
		1620	4	2.4	5
		4000	4	1.9	5
	10	1	10	3.0	5
		2	10	2.8	5
		7	10	4.7	5
		39	10	4.0	5
		110	10	2.8	5
		1620	10	1.7	5
		4000	10	1.7	5

c: The largest error of the test value determined from all three phases.

Konec přílohy k protokolu o zkoušce č. 6011-PT-L0018-18.

End of annex to the test report no. 6011-PT-L0018-18.