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Assessment report of power quality analyzer Circutor CMV-A1500 according to IEC 61000-4-30 requirements for Class A equipment

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ISO 9001:2008
ISO 14001:2004
OHSAS 18001:2007
ISO 50001:2011

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1. Aim

This document presents the assessment results of power quality analyzer Circutor CVM-A1500 according to requirements of the edition currently in force of standard IEC 61000-4-30 for Class A equipment. This assessment is performed to guarantee the fulfilment of this analyzer accuracy requirements for the following power network conditions:

- Rated voltage: 230 V (U_{din})
- Rated frequency: 50 Hz / 60 Hz

To verify compliance with the aforementioned analyzer, calibration results obtained in the equipment serial number 084218070052 installed with firmware version **3.0.2**, by two laboratories accredited by ENAC, have been taken into account:

- Certificate number 19145, issued by CIRCUTOR
- Certificate number 4421, issued by LME-CIRCE

The following section includes the statement made by the analyzer manufacturer regarding the firmware version control installed on the equipment.

1.1 Firmware version control

Hereby, CIRCUTOR S.A, specifies that the version control of the panel mounted network analyzer CVM-A1500 and CVM-A1000 is carried out as follows:

The firmware version installed in analyzer CVM-A1500 & CVM-A1000 consists of 3 groups of 3 characters: XXX.YYY.ZZZ

Where:

- XXX - Version of measurement algorithms
- YYY - Version corresponding to the firmware relating to user interface: internal and external communications, display control and data delivery to PC software
- ZZZ - CIRCUTOR internal development version.


This firmware version can be visualized both on the CVM-A1500 & CVM-A1000 display, as well as from the PC software.

Viladecavalls, 22/11/2018

CIRCUTOR S.A.

 Joan Ros
 Director Desarrollo- área I+D
 Development Director- R+D



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1.2 Manufacturer's certificate regarding model CVM-A1000

CERTIFICADO CERTIFICATE

Mediante este documento CIRCUTOR S.A. garantiza que el modelo de analizador de panel CVM-A1000 comparte la misma estructura, método de medida, hardware y firmware que el modelo CVM-A1500.

CIRCUTOR certifica que la única diferencia entre estos modelos es el display (frontal de 96x96 (CVM-A1000) o 144x144 (CVM-A1500)).

No hay ninguna otra diferencia que afecte a la medida y cálculo de variables eléctricas.

Through this document, CIRCUTOR S.A. guarantees that the panel mounted power analyzer CVM-A1000 model has the same structure, measurement method, hardware and firmware as CVM-A1500 model.

CIRCUTOR certifies that the only difference between these models is the display (front of 96x96 (CVM-A1000) or 144x144 (CVM-A1500)).

There is no other difference that affects the measurement and calculation of electrical variables.

Viladecavalls, 22/11/2018

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2. Results

The following tables show the degree of compliance with the results of calibration performed by CIRCUTOR and LME-CIRCE, whose results are contained in certificates number 19145 and 4421, meets the requirements of the edition currently in force of standard IEC 61000-4-30, according to the maximum error values or limits allowed for Class A equipment.

In all cases, compliance statement is based on a 95 % probability of coverage for the expanded uncertainty of the measurement results on which the compliance decision is based.

Magnitude	Range	Limit	Compliance
Frequency	42.5 Hz – 57.5 Hz 51 Hz – 69 Hz	10 mHz	Yes
AC voltage (50 Hz / 60 Hz)	11 V – 345 V	$0.1 \% \cdot U_{din}$	Yes
Flicker (230 V at 50 Hz / 60 Hz)	Pst 0.2 – 10	5 % or 0.05 (the highest)	Yes
Voltage dips, interruptions and swells (230 V at 50 Hz / 60 Hz)	5 % – 110 % 0.1 s – 10 s	$0.2 \% \cdot U_{din}$ 20 ms / 16 ms	Yes ¹
Voltage harmonics (230 V at 50 Hz / 60 Hz)	Order 2 nd – 50 th 100 %, 10 %, 200 %	5 % if $\geq 1 \%$ else $0.05 \% \cdot U_{din}$	Yes
Voltage unbalance Negative sequence coeff. (u_2)	0.161 % – 6.927 %	0.15 %	Yes

¹ In this case only the obtained deviation from reference is considered. It is not possible to declare compliance using a probability of 95 % coverage for the expanded uncertainty even though the result of the measurement is below the limit.

Conclusions

In view of the above results, it can be concluded that the analyzer object of the calibration meets the requirements of the standard IEC 61000-4-30:2015 for Class A under the technical conditions specified in Section 2 “Results”.

Signed: Jorge Bruna Romero Electrical Test Responsible	Signed: Juan José Pérez Aragüés Technical Expert