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

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# 1 Aim

This document presents the assessment results of power quality analyzer Circutor MYeBOX 1500 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 083217190026 installed with firmware version **001.002.000**, by two laboratories accredited by ENAC, have been taken into account:

- Certificate number 18792, issued by CIRCUTOR
- Certificate number 4367, 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 portable power network analyzer MYeBOX is carried out as follows:

The firmware version installed in analyzer MYeBOX consists of 3 groups of 3 characters:

XXX.YYY.ZZZ

Where:

XXX - Hardware model and associated peripherals

YYY - Version of measurement algorithms

ZZZ - Version corresponding to the firmware relating to user interface: internal and external communications, display control and data delivery to APP, cloud and files

This firmware version can be visualized both on the MYeBOX display and the APP.
In the header of the files just the last two groups of characters is shown

YYY.ZZZ.

Viladecavalls, 9th of April of 2018

## 1.2 Manufacturer's certificate regarding model MYeBOX 150

This section includes the certificate issued by the manufacturer of the analyzer regarding the fact that model MYeBOX 1500 has the same structure, measurement method, hardware and firmware as model MYeBOX 150.

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**CERTIFICADO**
*CERTIFICATE*

**Mediante este documento CIRCUTOR, S.A. garantiza que el modelo de analizador portátil MYeBOX 1500 comparte la misma estrutura, método de medida, hardware y firmware que el modelo MYeBOX 150.**
**CIRCUTOR certifica que las únicas diferencias entre estos modelos son la entrada del canal de corriente de fugas, la entrada del canal de la tensión de referencia, las entradas/salidas transistor y las comunicaciones 3G.**
**No hay ninguna otra diferencia que afecte a la medida y cálculo de variables eléctricas.**

*Through this document CIRCUTOR, S.A. guarantees that the MYeBOX 1500 portable analyzer model has the same structure, measurement method, hardware and firmware as MYeBOX 150 model.*
*CIRCUTOR certifies that the only differences between these models are the input of the leakage current channel, the channel input of the reference voltage, the transistor inputs / outputs and the 3G communications.*
*There is no other difference that affects the measurement and calculation of electrical variables.*

***Carlos Córcoles***
Responsable de Producto - División Gestión Energética
Product Manager - Energy Management Division

***CIRCUTOR, SA***

CIRCUTOR, S.A.

# 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 18792 and 4367, meets the requirements of the edition currently in force of standard IEC 61000-4-30, according 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<br>51 Hz – 69 Hz | 10 mHz | Yes |
| AC voltage (50 Hz / 60 Hz) | 11 V – 345 V | 0.1 % · $U_{din}$ | Yes |
| Flicker (230 V at 50 Hz / 60 Hz) | Pst 0.2 – 10 | 5 % or 0.05<br>(the highest) | Yes |
| Voltage dips, interruptions and swells (230 V at 50 Hz / 60 Hz) | 5 % – 110 %<br>0.1 s – 10 s | 0.2 % · $U_{din}$<br>20 ms / 16 ms | Yes[1] |
| Voltage harmonics<br>(230 V at 50 Hz / 60 Hz) | Order $2^{nd}$ – $50^{th}$<br>100 %, 10 %, 200 % | 5 % if ≥ 1 %<br>else 0.05 % · Udin | Yes |
| Voltage unbalance<br>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.

## 2.1 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<br>Electrical Test Responsible | Signed: Juan José Pérez Aragüés<br>Technical Expert |
|---|---|
| Firmado digitalmente por Jorge Bruna Romero<br>Nombre de reconocimiento (DN): cn=Jorge Bruna Romero, o=LME, ou=CIRCE-LME, email=jbruna@fcirce.es, c=ES<br>Fecha: 2018.06.05 09:01:27 +02'00' | Firmado digitalmente por PEREZ ARAGUES JUAN JOSE - 25176323V<br>Fecha: 2018.06.05 08:43:16 +02'00' |