

NFC card encryptor and encryptor, Model CUVEX

Tested under

CSA C22.2 No. 62368-1:19 / UL 62368-1:2019, Rev. October 22, 2021, Third Edition, Standard for Audio/Video, Information and communication Technology Equipment – Part 1: Safety Requirements

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Approved: November 14, 2023

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| <input type="checkbox"/> MET Recognition | <input type="checkbox"/> MET-C Recognition |
| <input type="checkbox"/> MET Classification | <input type="checkbox"/> MET-C Classification |

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Change Record

| Change Number | Description | Approval Date | Project Number | Amendment Engineer | Engineer Initials |
|---------------|-------------|---------------|----------------|--------------------|-------------------|
| -- | -- | -- | -- | -- | -- |

Description

Product(s) Covered:

- NFC card reader and encryptor, Model CUVEX

Product Description:

- The EUT is an encryption device capable of creating an AES 256 cryptogram of seeds, private keys or any type of secret in plain text. The EUT can also store the resulting cryptogram on NFC cards/tags.

Electrical Rating:

- 5 VDC, 250 mA / 1.25 W

Engineering Considerations (Not For Field Representative's Use):

- The NFC card reader and encryptor, model CUVEX has been investigated in accordance with CSA C22.2 No. 62368-1:19 / UL 62368-1:2019, Rev. October 22, 2021, Third Edition, Standard for Audio/Video, Information and communication Technology Equipment – Part 1: Safety Requirements.
- This product must be installed in accordance with all codes applicable to the location of the installation and in accordance with its instructions for use.
- This equipment has been evaluated for use in a Pollution Degree 2 environment.
- The EUT is provided only with a supply cable of USB Type-C which allows the user to supply the EUT with an external power supply of 5 VDC which is out of the scope. For the test, external supply connection has been considered as PS1 and ES1. This is the reason to consider that the equipment is not mains connected.
- The EUT is of indoor use.

Description (Continued)

Note to Field Representative: None

- A sample of each component listed below and a purchase order for the work described below at the current hourly rate shall be submitted to:*

Eurofins E&E NA, Inc.
 914 West Patapsco Avenue
 Baltimore, Maryland 21230-3432

for reassessment processed under job #XXXXX for verification of construction against the associated drawings also listed below. The component(s) shall be subjected to an annual audit for continued compliance. The annual re-verification is a client incurred expense to be assessed at the current hourly rate at the time of the test. The estimated time for re-verification is also listed below.

| Figure/ Item # | Component | Controlled Document Number | Re-Verification Type | Re-verification Maximum Estimated time (hours) |
|-------------------|-----------|-------------------------------|-------------------------|---------------------------------------------------|
| -- | -- | -- | -- | -- |

*Alternatively: If the evaluation is performed by the Eurofins E&E NA representative's lab other than the location above or by the MET representative during the Follow-up inspection, all data shall be returned to the Baltimore office listed above for surveillance tracking under the assigned job number mentioned above.

- The above inspections are a client incurred cost and will be billed at the hourly rate in place at the time of the inspection.

General Requirements

Scope of Requirements: The requirements contained within this section apply to all products contained within this Follow-Up Service Report File where applicable.

Definitions: *(as defined or used in the context of the standard)*

| Term | Definitions |
|------------------------------|--------------------------------------------------------------------------------------------------------------|
| SELV: | Safety Extra Low Voltage |
| PCB: | Printed Circuit Board |
| TNV: | Telecommunications Network Voltage |
| Listed/Recognized Component: | A component evaluated to the applicable U.S. standards by a Nationally Recognized Testing Laboratory (NRTL). |
| Certified Component: | A component evaluated to the applicable Canadian standards by a Certification Organization (CO). |
| Listee: | Applicant |

Measurements: All dimensions indicated in the body of this report are approximations unless otherwise indicated.

Corrosion Protection: All corrosive metals shall be provided with a means to protect from corrosion. Acceptable methods include painting, plating and galvanizing. Dissimilar metals shall not be employed where reliable continuity is required.

Soldered Connections: All soldered connections shall be made mechanically secure before soldering. Tack soldering is not acceptable. Acceptable forms of mechanical securement include:

- A) Lead is inserted through an eyelet or opening of a terminal block prior to soldering.
- B) Lead is inserted into a U or V shaped slot in the terminal prior to soldering.
- C) Lead is wrapped around a terminal post prior to soldering.
- D) Lead is tied to adjacent lead with wire tie-wrap near termination point.

Electrical Connections: All electrical connections other than soldering shall be provided with positive detent, crimp type insulated Recognized Component connectors suitable for the voltage and temperatures involved. They shall be sized for the wire and mounting terminations. Where hazardous voltage or energy is involved, all wire connections to connectors shall employ a recognized method of double securement. Where fork-type lugs are used, they shall be snap-on or up-turned lug type.

Mechanical Assembly: All parts shall be secured by welding, bolts/nuts with lock or star washers, or thread forming screws.

Creepage and Clearances: Shall be in accordance with the evaluated product standards.

General Requirements (Continued)

Where present, the following items are required.

PCB: Shall be a Recognized Component, rated minimum 94 V-1.

Internal Wiring: All internal wiring and connections are properly jacketed or enclosed within the equipment. Wiring is routed and secured to reduce the possibility of stress being transmitted to electrical connections, as necessary. All internal conductors in the secondary circuits are routed away from primary circuit conductors and from uninsulated live parts. There is no internal wiring subject to contact by the user when the product is employed as intended. The internal wiring is acceptable for conditions of service to which it will be subjected. Internal conductors consist of Recognized Component AWM insulated individual conductors; sized in accordance with the National Electric code and Canadian Electrical code, as may be applicable for the current expected in the conductor, rated VW-1, 300V, 90°C, and signal level ribbon wiring of flammability rating VW-1.

Interconnecting Cords and Cables: Flexible telecommunication cord and cable assemblies employed for interconnection between components are to be rated for and comply with temperatures, exposure to oil or grease and other conditions of service within the environment the product is to be utilized.

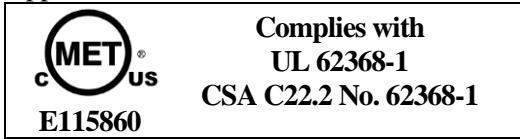
Markings

Etching, molding, die-stamping, silk-screening, stamped-, or etched-metal labels secured by rivets or screws are considered permanent. Recognized/Certified Component, Marking and Labeling Systems, and/or labels tested and deemed suitable for the surface to which it is applied is also considered permanent. Per the Canadian Electrical Code described in CSA C22.2 No. 0 General Requirements, Canadian product certification requires warning/cautionary markings in both English and French languages. It is the Applicant’s responsibility to provide the listed Bilingual Markings shown below in accordance with the Canadian regulatory requirements. Each product is to be permanently marked with the following information:

- a. The MET Mark (refer to MET Applicant Contract), with the applicant/listee name or alternate listee name as identified within this report, trade name or trade mark, product model number, and a date of manufacture or serial number. If the date of manufacture is in a code, it shall not repeat in less than 20 years and it shall not require reference to the manufacturer’s records to determine when the product was manufactured.
- b. Method of applying the MET Mark:

- Direct Imprinting
- Purchasing Labels from Eurofins E&E NA

Approved MET Mark:



- c. For Mains Connected Equipment, a rating label adjacent to the inlet connector identifying the voltage, current or power, frequency, fuse ratings, and fuse rupturing speed for the equipment.

Manual/Service Instructions

- Operations and Service instructions are provided with the equipment.

Description.

Cuvex is a cold hardware encryption device capable of creating an AES 256 cryptogram (without connection to internet or any other peripheral device) of seeds, private keys or any type of secret in plain text. Cuvex allows you to create this cryptogram using only one Mono-Signature Encryption Password/Signature (a single key) or with several Multi-Signature Encryption Passwords/Signatures (up to six keys entered by different people).

Additionally, Cuvex has the ability to store the resulting cryptogram on NFC cards, being able to create redundancy of the encrypted secret at a very low cost.

Important: This device does not require any maintenance.

Unpacking the device.

Its box comes shrink-wrapped in clear plastic and sealed with a holographic security sticker on the front of the box and another holographic sticker located in the area where the USB-C cable connects. These stickers contain unique codes to validate the authenticity of the device.



The codes of your stickers can be authenticated in the Cuvex App. The user only has to access the App to the security section menu "Authenticate Device", enter the codes printed on both seals and click on validate.



If the box shows any signs of having been opened, peeled off stickers with evidence of the word VOID, remains of previous labels or the codes of these seals are not authenticated in the Cuvex App, the customer must contact the company and not use the device.



Contents of the box.

- ✓ Cuvex device.
- ✓ USB-C power cable.
- ✓ Thank-you document, which also shows you the QR of access to the online instruction manual and the firmware installation and update manual.

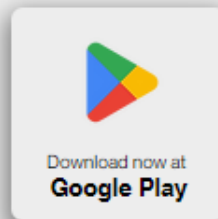


Firmware update and set up.

All Cuvex devices are shipped from the factory without Firmware.

The first step that the customer must execute is to download the latest version of the official firmware from the Cuvex App and install it on the Cuvex device by connecting the Cuvex App and the Cuvex device via Bluetooth.

- To get started, go to the official application market of your Smartphone and download the Cuvex App. The Cuvex App does not require the user to create any profile, or provide any personal data, name, email or telephone, nothing is requested by the Cuvex App and no special permission is required.



- Connect your Cuvex device via your USB-C power cable to any USB-C power charger you have and do not disconnect it at any time until any process you initiate is complete. The Cuvex device requires to be connected to its power in order to operate. You can also connect it to your PC or Laptop. The device only uses the USB-C port for power and there is no data exchange in this way.
- As soon as the Cuvex device is powered, the customer can only display the Firmware update screen, which indicates that it is in update mode and that Bluetooth is active to be visible to the Cuvex App.



Description.

Cuvex est un **dispositif de chiffrement matériel à froid** capable de créer un cryptogramme **AES256** (sans connexion à Internet ou à tout autre périphérique) de graines, de clés privées ou de tout type de secret en texte brut. Ce cryptogramme Cuvex permet de le créer à l'aide d'un seul mot de passe/signature de cryptage **Combinaison emblématique** (clé unique) ou avec plusieurs mots de passe/signatures de cryptage **Multisignature** (jusqu'à six mots de passe saisis par différentes personnes).

De plus, Cuvex a la capacité de stocker le cryptogramme résultant sur des cartes NFC, pouvant ainsi créer **redondance secrète** cryptage à très faible coût.

Important: Cet appareil ne nécessite aucun type de maintenance.

Déballage de l'appareil.

Sa boîte est emballée sous film rétractable dans du plastique transparent et fermée par un autocollant de sécurité holographique sur le devant de la boîte et un autre autocollant holographique situé dans la zone où le câble USB-C est connecté. Ces autocollants contiennent des codes uniques qui valident l'authenticité de l'appareil.



LATERAL.LEFT



LATERAL.R

Les codes de vos autocollants peuvent être authentifiés dans l'application Cuvex. L'utilisateur n'a qu'à accéder à l'application, à la section sécurité du menu « Authentifier l'appareil », à saisir les codes qu'il voit imprimés sur les deux sceaux et à cliquer sur authentifier.



Si la boîte présente des signes d'ouverture, des autocollants décollés avec la mention VOID, des restes d'étiquettes précédentes ou les codes de ces scellés ne sont pas authentifiés dans l'application Cuvex, le client doit contacter l'entreprise et ne pas utiliser l'appareil.



Contenu de la boîte.

- Appareil Cuvex.
- Câble d'alimentation USB-C
- Document de remerciement, qui vous montre également l'accès QR au manuel d'instructions en ligne et au manuel d'installation et de mise à jour du firmware.



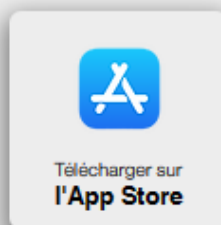


Mise à jour du firmware et démarrage.

Tous les appareils Cuvex sont expédiés de l'usine sans micrologiciel.

La première étape que le client doit suivre est de télécharger la dernière version du micrologiciel officiel à partir de l'application Cuvex et de l'installer sur l'appareil Cuvex en connectant l'application Cuvex et l'appareil Cuvex via Bluetooth.

- Pour commencer, rendez-vous sur le marché des applications officiel de votre Smartphone et téléchargez l'application Cuvex. L'application Cuvex n'exige pas que l'utilisateur crée un profil ou fournisse des données personnelles, aucun nom, aucun e-mail, aucun numéro de téléphone, rien n'est demandé par l'application Cuvex et aucune autorisation spéciale n'est requise.



- Connectez votre appareil Cuvex, via son câble d'alimentation USB-C, à n'importe quel chargeur d'alimentation USB-C dont vous disposez et ne le retirez à aucun moment tant que le processus que vous démarrez n'est pas terminé. L'appareil Cuvex doit être connecté à l'alimentation électrique pour fonctionner. Vous pouvez également le connecter à votre PC ou ordinateur portable. L'appareil utilise uniquement le port USB-C pour l'alimentation et il n'y a aucun type d'échange de données de cette manière.
- Dès que l'appareil Cuvex est alimenté, le client ne peut voir que l'écran de mise à jour du micrologiciel, qui indique qu'il est en mode mise à jour et que le Bluetooth est actif pour être visible par l'application Cuvex.

Alternate Listee Information

- Alternate listees and product names or model numbers: None

Applicant's Responsibilities

Product Modifications:

Minor product modifications by the manufacturer may be allowed using the following guidelines:

1. Components identified in this report as "Listed, Recognized, or Certified" and **NOT** identified with a manufacturer name or part number may be exchanged with an alternate "Listed, Recognized, or Certified" component of equivalent value.

Example: Appliance Inlet Connector - Listed/Certified Component, IEC 320 style male connector, rated 250 volts and 20 amperes. Mechanically secured to the front panel with screws and locking washers.

- This inlet connector may be replaced with any Listed/Certified inlet connector with the same ratings as stated and where mechanical securement is maintained.

2. Components identified by a manufacturer name, part number, or with specific comments, (such as AC only, indoor use only, approved for use in this product only), may **NOT** be replaced or modified without prior approval from MET Laboratories.

Example: Circuit Breaker - Recognized/Certified Component, ABCD Co. P/N XYZ123, rated 250 volts maximum, 50/60 Hz, 25 full-load amperes, 31.3 trip amperes. Toggle handle marked with IEC on/off symbols. Mechanically secured to the front panel with screws and locking washers.

- This circuit breaker can **NOT** be modified or changed without prior approval by Eurofins E&E NA, Inc.

Applicant's Responsibilities (Continued)

Project Amendments:

For any changes related to product construction, manufacturing locations, if the product is intended to be marketed/sold under an alternate name or model number than that originally listed, or any issues which would require notification or change in the status of this file, please complete the form and return to Eurofins E&E NA following the instructions provided on the form.

For your convenience a Project Amendment Request (PAR) form is available for download at <http://corp.metlabs.com/safetyreq/> Alternatively, please provide it to your local Eurofins office or Eurofins Partner Representative.

If you are terminating or temporarily suspending production of this product for an extended period, please send a letter on company letterhead to:

Eurofins E&E NA, Inc.
Attn: Follow Up Services Department
914 West Patapsco Avenue
Baltimore, Maryland 21230
USA
Fax: (410) 354-3313

Applicant's Responsibilities (Continued)

Manufacturing and Production-Line Tests and Documentation

- This product is exempt from production line testing.

Critical Components

| Figure/ item No. | Object/ Parts No. | Manufacturer/ Trademark | Type/ Model | Technical Data | Standard (Edition / year) | Mark(s) of Conformit y | Secured Method |
|------------------------|------------------------------|-----------------------------------------------------------|-------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------|---------------------------------|----------------------------------------|
| Not shown | Enclosure material | CHI MEI Corporation | PA-765(+) | Flammability Class V-1 @ 1,5 mm Acrylonitrile butadiene styrene (ABS) | UL 94 UL 746A CSA-C22.2 No. 0.17 | UL (E56070) | -- |
| Not shown | Display plastic screen | TEIJIN POLYCARBONAT E CHINA LTD | LN- 2250(##)(f1) | Flammability Class V-2 @ 0,430 mm Polycarbonate (PC) | UL 94 UL 746A CSA-C22.2 No. 0.17 | UL (E245526) | Secured to the enclosure by glue |
| Not shown | PCB Supply | GALLEGA DE CIRCUITOS ELECTRONICOS SLU | Multilayer printed wiring board - 2 | Flammability Class V-0 130°C | UL 796 CAN/CSA- C22.2 No. 0.17-00 | UL (E356144) | Secured to enclosure by screw |
| Not shown | PCB NFC | GALLEGA DE CIRCUITOS ELECTRONICOS SLU | Multilayer printed wiring board - 2 | Flammability Class V-0 130°C | UL 796 CAN/CSA- C22.2 No. 0.17-00 | UL (E356144) | Secured to enclosure by screw |
| Not shown | Supply cable | Shenzhen Qixingyuan Electronic Technology Co Ltd | HG-CT02 | Current: 6 A 30 W 80°C 5 x 44 AWG | UL 758 | UL (E518872) | -- |
| Not shown | Internal wiring | DONGGUAN ZELONGKANG ELECTRICS CO.,LTD | 1571 | 30 V 30 AWG 80°C | UL 758 | UL (E330488) | Secured by use of connectors |

Critical Drawings

| Title: | Drawing No.: | Rev. Level: | Date: |
|------------|-----------------|-------------|------------|
| Main Board | SML-230109PCB1_ | VH1.0 | 2023-07-26 |
| NFC Board | SML-230109PCB2 | VH1.0 | 2023-07-26 |

Figures

Figure 1.



Front side of the EUT



Back side of the EUT

Figures (Continued)

Figure 2.



Figures (Continued)

Figure 3.



Input side



Detailed view PCB control

Figures (continued)

Figure 4.



Detailed view NFC PCB



Detailed view display markings

Testing Considerations

A sample of the NFC card encryptor and decryptor, model CUVEX was subjected to the following test program with satisfactory results. All tests were conducted in accordance with CSA C22.2 No. 62368-1:19 / UL 62368-1:2019, Rev. October 22, 2021, Third Edition, Standard for Audio/Video, Information and communication Technology Equipment – Part 1: Safety Requirements.

Only these tests were considered necessary due to engineering considerations. Detailed test results are on file at Certification Entity for Renewable Energies, S.L. and MET Laboratories under project number 129508.

TESTS CONDUCTED:

1. Input Test
2. Marking Durability Test
3. Temperature Test
4. Mechanical Tests

Conclusion

The product(s) covered by this report have been tested, examined, and found to comply with the applicable requirements of CSA C22.2 No. 62368-1:19 / UL 62368-1:2019, Rev. October 22, 2021, Third Edition, Standard for Audio/Video, Information and communication Technology Equipment – Part 1: Safety Requirements. This certification has been granted under a System 3 program as defined in ISO/IEC 17067.

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