Introduction

Easee would like to express support to Elsäkerhetsverket and its focus on safety. Easee works with ground-breaking technology, and since the very beginning, our primary focus has been to develop the safest and most innovative solutions for our customers. We welcome the dialogue with Elsäkerhetsverket and this opportunity to share information regarding the safety of Easee Home/Charge.

Trust and openness are key values at Easee and we hope that the provided information and voluntary actions will answer Elsäkerhetsverkets questions. If any additional input is needed, Easee is happy to present documentation in a meeting with Elsäkerhetsverket to clarify any uncertainty. At Easee we consider safety in all elements of our work. From design to manufacturing, installation, and in the daily use of the products.

Easee will provide answers to the inquiries from Elsäkerhetsverket and will describe voluntary actions to improve the DoC (Declaration of Conformity), product marking, and manual related to Easee Home/Charge. This includes clarifications in the manual of situations where an external RCD is required.

This letter demonstrates that the questioned overvoltage test towards CP (Control Pilot) is not applicable. The document also clarifies how Easee considers the RCD in Easee Home/Charge to meet the intended functional and safety levels, for both AC and DC protection, established in the referenced standards.

We will elaborate on how our chargers continuously check for faults both when in charging and standby mode. This is made possible by the more than forty sensors inside the charger that constantly check for abnormal changes in currents, voltages, temperatures, and humidity. Just as importantly, sensors also check that the RCD inside the charger is functioning.

This document also explains the behaviour during the EMC-test in question and why this is still considered to fulfil the acceptance criteria of the test.

Easee will go into details on the company's understanding of the standards and how these are applied to Easee Home/Charge. We will elaborate on how Easee Home/Charge fulfils the product safety level required. In sum, Easee is of the firm opinion that there are no legal grounds to issue a sales ban in Sweden.

Easee would also like to bring attention to the statistical reliability of Easee Home/Charge. Currently more than 57.3 million charging sessions have been recorded in Easee's backend system. We have installed over half a million chargers across Europe, which gives us vast amounts of evidence on how our products ensures safe charging for our customers.

1 Response to findings and voluntary actions initiated by Easee:

Easee has noted the following remarks from Elsäkerhetsverket and will address them accordingly in this section:

- 1.1: Overvoltage test 7000V towards PELV not passed
- 1.2: RCD
  - 1.2.1: RCD not compliant to EN 61008-1 and IEC 62955
  - 1.2.2: Test device and related marking missing
  - 1.2.3: Mechanical coupling of relays missing
  - 1.2.4: Manual switching device and related marking missing
  - 1.2.5: Lacking information in manual to install external RCD
- 1.3: Declaration of Conformity
- 1.4: Incorrect marking
  - 1.4.1: Date of Manufacturing missing
  - 1.4.2: Standard IEC 61439-7 missing
- 1.5: Immunity test towards EMCD not passed
- 1.6: Sales prohibition

1.1 Overvoltage test for PELV

EN 61851-1 Ch. 12.7.2 specify impulse dielectric withstand test. This test is not applicable to the Control Pilot (CP) pin, at any test voltage.

EN 61851-1 Ch. 12.7.2 clearly states that the test voltage shall be applied to live parts and exposed conductive parts, as seen in Figure 1 below. All phases (LLLN) are considered live. Only PE is considered exposed conductive parts.

The CP-pin in the output socket is neither live nor exposed, as defined in Figure 2Figure 2: EN 61851-1, clause 3.2.5 This is ensured by design according of the output socket according to EN 62196-1/2 as documented in a previously provided test report.

12.7.2 Impulse dielectric withstand (1,2 µs/50 µs)

The dielectric withstand of the power circuits at impulse test shall be tested according to IEC 60664-1.

The impulse voltage shall be applied to live parts and exposed conductive parts.

Figure 1: EN 61851-1, Ch. 12.7.2

3.2.5
exposed conductive part
conductive part of electrical equipment, which can be touched and which is not normally live, but which can become live when basic insulation fails

Note 1 to entry: A conductive part of electrical equipment which can only become live through contact with an exposed-conductive-part which has become live is not considered to be an exposed-conductive-part itself.

Figure 2: EN 61851-1, clause 3.2.5

EN 61851-1 Ch. 12.7.2 shall only be applied to LLLN(In+out) –> PE. This test is performed with a rated impulse withstand voltage of 4kV according to overvoltage class III.

The applicable test for the CP-circuit is the preceding section EN 61851-1 Ch. 12.7.1 section 3 (Figure 3). Un is the nominal line to neutral voltage (230V), thus the test voltage is 2860V AC for 60s which the circuit withstand, as seen in Figure 4 below.

12.7.1 AC withstand voltage

The dielectric withstand voltage, at power frequency of 50 Hz or 60 Hz, shall be applied for 1 min as follows:

(...)

3) For both class I and class II AC EV supply equipment where the insulation between the AC supply network and the extra low voltage circuit is double or reinforced insulation, 2 times (Un + 1 200 V) (r.m.s.) shall be applied to the insulation.

Figure 3: EN 61851-1, clause 12.7.1

4.4.7.10-2	TABLE: electric strength measurements, impulse voltage test and partial discharge test (for OVC III)			P
test voltage applied between:	test voltage (V)	impulse withstand voltage (V)	partial discharge extinction voltage (V)	result
Model: RAC10-3.3SK/277				
Between live parts and output circuit	2954	6000	415.5	Pass
Between live parts and external enclosure	2954	6000	415.5	Pass
Between primary winding of transformer and secondary winding of transformer (T1)	2954	6000	415.5	Pass
Between core of transformer and secondary winding of transformer (T1)	2954	6000	415.5	Pass
Live parts of different polarity	2954	4000	415.5	Pass
Model: RAC10-24SK/277				
Between live parts and output circuit	2954	6000	415.5	Pass
Between live parts and external enclosure	2954	6000	415.5	Pass
Between primary winding of transformer and secondary winding of transformer (T1)	2954	6000	415.5	Pass
Between core of transformer and secondary winding of transformer (T1)	2954	6000	415.5	Pass
Live parts of different polarity	2954	4000	415.5	Pass

Figure 4: PELV Insulation test

The Type-2 socket is IP24 rated, when not mated and with the socket cap open. IP2X means that conductive parts cannot be touched with a test finger of 12mm diameter and 80mm length (ref IEC 60529). The diameter of the CP pin opening is 3.5mm and the actual pin is located 6.5mm deep into this entry, as illustrated in Figure 5 below. Hence, to Easee Home/Charge, since the CP pin is not touchable, the test referenced by Elsäkerhetsverket is not applicable.

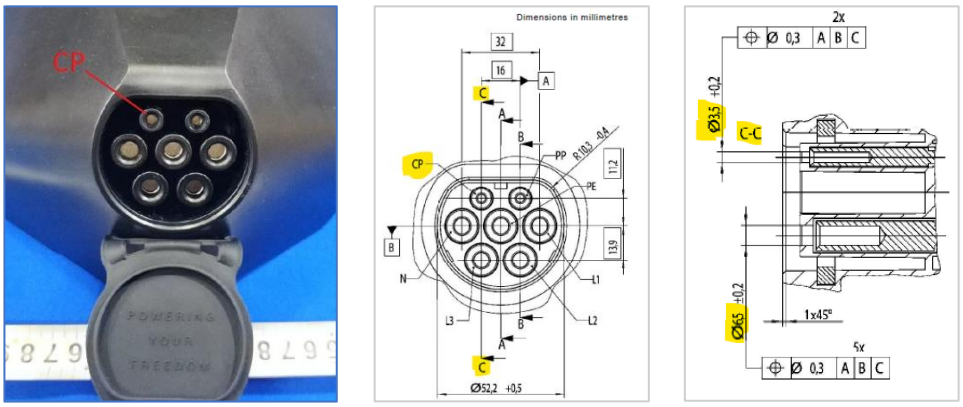


Figure 5: CP location and dimension of Type-2 socket openings of Ø3.5mm for CP and Ø6.5mm for live.

1.2 RCD according to EN 61008-1 and IEC 62955

1.2.1 RCD in Easee Home/Charge

All charging points shall be protected by an individual RCD according to national wiring regulations based on IEC 60364 (e.g., SS436 40 00 in Sweden). Protection against both AC and DC leakage currents shall be provided. This can be achieved with a Type-B RCD or a combination of Type-A/F and RDC-DD. The protection may be placed in the installation, the charging equipment, or a combination of the two.

Most EVSEs include an RDC-DD in the equipment and rely on an external Type-A RDC. Easee has decided to integrate the complete RCD protection for both AC and DC into the equipment because this approach provides many advantages, including:

- RCD protection is never omitted by the installer.
- RCD is never by-passed.
- Charging is blocked in case of a faulty RCD.
- A digital sensor in the RCD ensures accurate trip levels and timing over a wide temperature range and prevents annoying false tripping.
- Automatic test of the RCD functionality without end-user interference.
- User feedback with instruction in case of a faulty device or detected leakage current.
- Data log of all faults detected.
- No additional RCD wire terminals eliminates risk of poor connections and heat build-up.
- RCD is protected from contamination inside the sealed IP54 Easee Home/Charge enclosure.

The integrated RCD in Easee Home/Charge does not take the shape of a traditional DIN-rail mounted device. In fact, it is not a separate device at all, but instead integrated into the overall charger design.

As described in previously provided documentation, a purpose designed RCD sensor, developed, and tested by a third-party company specialising in such devices, is used to detect both AC and DC leakage currents and signal the event. Dedicated electronics will then immediately cut power to all switching devices and isolate the output socket. No software is part of the actual detection and breaking mechanism, but the event is observed by a microcontroller which will alert the user and Easee of the incident.

Such an integrated RCD is not specifically defined in any equipment standard. In place of a dedicated standard, Easee has applied relevant parts of the traditional Type-A standard, EN 61008-1, and the newer RDC-DD standard, IEC 62955.

Essential safety requirements include compliance with the same trip-levels and timing limits as defined in these standards, along with other aspects directly linked to electrical safety, such as insulation and dielectric properties.

The above two RCD-standards have been referenced in the product documentation although they in some instances have been applied according to the intention of the standard and not the described solution itself, as elaborated in more detail in the following sections. This is considered in-line with EU CE marking directives. Compliance towards standards is not a legal requirement. Standards define the level of safety that shall be met and may be used as guidelines and accepted solutions, but the legal requirements are limited to the EU directives.

Annex III in the Low Voltage Directive (LVD) is clear that standards may be applied in part, but that alternative solutions adopted shall be described in the technical file, as seen in Figure 6 below. The

regulations for CE marking shall not limit technological progress, and thus the directives and the essence of the standards are specifying *what* shall be achieved rather than *how* to achieve it.

(d) a list of the harmonised standards applied in full or in part the references of which have been published in the *Official Journal of the European Union* or international or national standards referred to in Articles 13 and 14 and, where those harmonised standards or international or national standards have not been applied, descriptions of the solutions adopted to meet the safety objectives of this Directive, including a list of other relevant technical specifications applied. In the event of partly applied harmonised standards or international or national standards referred to in Articles 13 and 14, the technical documentation shall specify the parts which have been applied;

Figure 6: LVD annex III

1.2.2 Test device

Both EN 61008-1 and IEC 62955 specify a "Test device" in Ch. 8.11 of the respective standards. The purpose is to allow periodic testing of the operation of the RCD, as seen in Figure 7 below.

8.11 Test device

RCCBs shall be provided with a test device to simulate the passing through the detecting device of a residual current in order to allow a periodic testing of the ability of the residual current device to operate.

Figure 7: Test device (EN 61008-1)

According to IEC 62955 this test device shall be "manual or an automatically initiated test function" (Figure 8), while EN 61008-1 only states that it shall be "provided".

Easee has applied an automatically initiated test function, as described in IEC 62955, and illustrated in Figure 8. The RCD is tested between each charging session and at least every 24 hours. The automatic test functionality in Easee Home/Charge passes a residual current through the RCD-sensor, as mentioned in EN 61008-1 Ch 8.11 (Figure 7), and verify correct detection of AC and DC faults, respectively.

This automatic method ensures Easee that the RCD is functional before allowing any charging. If a faulty RCD is detected, the charger will not permit power to the output socket or car and will warn the end-user through the Easee mobile app and with a red light on the charger itself.

8.11 Test device

An RDC-DD shall be provided with a manual or an automatically initiated test function or both that checks the residual DC detection circuit.

Where provided the automatic test function shall be performed at every switch on and at intervals not exceeding at least once a day.

During automatic testing, it is not required to open the contacts.

NOTE 1 The mechanical parts of the mechanism are verified by the endurance tests and the contacts are verified by the short circuit tests. For that reason, these parts are expected to be highly reliable and need not to be included in a periodic test.

Figure 8: Test device (IEC 62955)

Easee considers the requirement for test device fulfilled through automatic testing, even without having a physical button to initiate it. Easee view the described solution as an improvement over the manual approach and that it meets or even exceeds the safety level specified in EN 61008-1.

However, Easee also see that a manually initiated test can be useful in some settings, e.g., as a final test for the electricians when verifying a new installation. Easee will implement a function in the "Easee Installer App", a mobile app used by electricians to configure Easee Home/Charge during an installation, to provide a manual way of testing the RCD. This test approach can also be extended to the Easee App for end-users. Such a software-based test device will ensure that this functionality is provided to all Easee Home/Charge devices, including those already installed.

1.2.3 Manual switch

The RCD standard, EN 61008-1, specifies that it shall be possible to switch the RCD on and off by hand without any further justifications (Figure 9). For a stand-alone RCD, typically installed in the beginning of a circuit, this could be convenient for disconnecting a circuit, e.g., during maintenance.

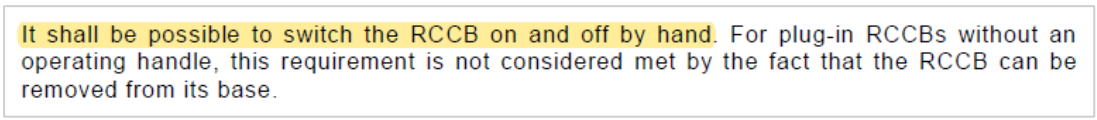

It shall be possible to switch the RCCB on and off by hand. For plug-in RCCBs without an operating handle, this requirement is not considered met by the fact that the RCCB can be removed from its base.

Figure 9: Manual switch (EN 61008-1, clause 8.1.2)

For the RCD located inside Easee Home/Charge the switch is automated and linked to the detection and communication with a connected vehicle. The switch is always open whenever no charging is in progress. Even when a charging cable is plugged into both the charger and a car, no voltage is applied to the socket before the car requests power and the charger has verified that no faults are detected.

The newer standard for DC-protection, IEC 62955, has taken the above into account and removed the requirement for manual switch and made it optional, as seen in Figure 10 below.


Operating means, if any, shall be securely fixed on their shafts and it shall not be possible to remove them without the aid of a tool.

Figure 10: Manual switch (EN 62955, clause 8.1.2)

Easee has considered that a manual switch is not providing any additional safety or functionality in our use-case. Instead, it would add complexity and a higher risk of failure. Based on these arguments no manual switch has been implemented in Easee Home/Charge. Easee does not consider this to negatively affect the safety level of the product in any way.

1.2.4 Mechanically coupled poles

The RCD standards specify that all poles, except Neutral, shall make and break simultaneously, as seen in Figure 11 below. Neutral shall make contact before or together with the other poles and shall break together or after the other poles. It is specified that this shall be achieved by coupling them mechanically.

Easee has achieved the same simultaneous switching behaviour by coupling the switches electronically and considers this to meet an equivalent safety level to mechanical coupling.

8.1.2 Mechanism

The moving contacts of all poles of multipole RCCBs shall be mechanically coupled so that all poles except the switched neutral, if any, make and break substantially together, whether operated manually or automatically.

The switched neutral pole (see 3.3.15) of four-pole RCCBs shall not close after and shall not open before the other poles (see 3.3.14).

Compliance is checked by inspection and by manual tests, using any appropriate means (e.g.: indicator lights, oscilloscope, etc.).

Figure 11: Mechanism (EN 61008-1)

The fact that compliance may be checked with an oscilloscope is a clear indication that it is not mechanical coupling that is essential, but simultaneous switching. Thus, by applying this means of inspection one can verify that Easee Home/Charge complies with these switching requirements without considering how the switches are coupled.

Easee has documented simultaneous switching of all poles using oscilloscope in chapter 7.5.3.5.1 of the previously provided technical assessment of Easee Home/Charge and consider this implementation to meet the same safety level as a mechanically coupled switch.

1.2.5 Instructions of use and need for external RCD

Easee acknowledges that RCD approach in Easee Home/Charge is novel and could be better explained in the user/installation manual. Several improvements to the manuals will be implemented to rectify this issue.

Easee will revise the user/installation manual to make it clear how the RCD integrated in Easee Home/Charge performs the automatic self-test between each charging session or at least once every 24 hours. It will also explain how to initiate a manual RCD test through the Easee installer app once this feature is implemented. It will also explain that no manual switching device is provided as the switches are default open when not charging and only closed after a completed communication sequence with a connected vehicle.

Furthermore, the revised manual will specify maximum values of break time, in case of selected levels of residual AC or DC leakage currents, for the internal RCD in Easee Home/Charge. This will be presented next to the limits required by EN 61008-1 and IEC 62955 to ensure full transparency of the RCD behaviour and show that the requirements are met with sufficient margin.

Finally, the revised manual will clarify installation scenarios where an external RCD is required, and the conditions Easee sets when the internal RCD in Easee Home/Charge is considered to provide sufficient protection according to local installation regulations based on IEC 60364.

An external RCD is required when at least one of the below conditions are identified:

- The installation, including cable, junction boxes etc., includes components with only basic insulation (Class I).
- Any other electrical equipment apart from Easee Home/Charge, including lamps and socket outlets, is connected to the circuit.
- Any other conditions identified by the authorized installer requiring an external RCD.

The internal RCD is considered to provide the required RCD protection for both AC and DC leakage faults when all the below conditions are fulfilled:

- The installation, including cable, junction boxes etc, is performed entirely with components providing double or reinforced insulation (Class II).
- No other electrical equipment apart from Easee Home/Charge, including lamps and socket outlets, is connected to the circuit.
- No other conditions identified by the authorized installer requiring an external RCD

1.2.6 RCD summary

Easee is confident that the RCD integrated in Easee Home/Charge fulfils the intentions and safety levels of the referenced RCD-standards. It is designed to protect against the risk of electric shock accurately and precisely according to the same criteria as described in the standards. Furthermore, it provides means to test its functionality, ensures that the output is isolated and that all poles switch together.

In essence the internal RCD is considered to provide an equivalent safety level as a traditional stand-alone RCD. Protection against both AC and DC fault currents is provided within the requirements specified for Type-A RCDs and RDC-DD devices, as documented in previously provided documentation.

1.3 Declaration of Conformity (DoC)

Easee acknowledges, as pointed out by Elsäkerhetsverket, that RED and RoHS are the two applicable directives to declare compliance with on the CE-Declaration of Conformity (DoC) for Easee Home/Charge.

The requirements for compliance with safety requirements in the Low Voltage Directive and electromagnetic compatibility according to the EMC directive follows from Article 3.1 (a) and (b) in RED.

To address this finding, Easee will revise the DoC. The DoC will be restructured, and compliance declared solely towards Radio Equipment Directive (RED) 2014/53/EU and RoHS Directive 2011/65/EU. The applied standards, including those to fulfil RED article 3.1.a) and 3.1.b), will be listed clearly separated from the directives. The drafted version is provided in Figure 12 below.

Easee will also update the user/installation manual to include a simplified DoC and a link to the complete version online. Easee appreciates any feedback from Elsäkerhetsverket regarding the new DoC before it is signed and published:

Easee AS
Grenseveien 19
4313 Sandnes, Norway
contact@easee.com

EU Declaration of Conformity (DoC) – ENGLISH

We declare under our sole responsibility that the products Easee Home, Easee Charge and Easee Ready* are in conformity with the EU directives listed below, provided it is installed in accordance with relevant local regulations and maintained and used in accordance with the manufacturer's instructions

Radio Equipment Directive (RED) 2014/53/EU

RoHS Directive 2011/65/EU*

The following standards have been applied:

Radio spectrum
EN 300 328 V2.2.2 (2019)

RoHS
EN 63000 (2018)*
EN 62321-1 (2013)*

Electrical safety
EN IEC 61851-1 (2019)
EN 62196-2 (2017)
EN 61008-1 (2012) 1
IEC 62955 (2018) 1
EN 60309-1 (2013)*

Electromagnetic Compatibility (EMC)
EN IEC 61851-21-2 (2021)
ETSI EN 301 489-1 V2.2.3 (2019)
ETSI EN 301 489-3 V2.1.1 (2019)
ETSI EN 301 489-17 V3.2.4 (2020)
ETSI EN 301 489-52 V1.1.2 (2020)

1 The RCD is automatically tested between each charging session or at least every 24h, as described in IEC 62955. Manual operating means are omitted. The switching device will automatically isolate the Type-2 socket when not charging a connected vehicle or whenever the RCD detects a leakage current exceeding 6mA DC or 30mA AC. RCD is reset by disconnecting the charging cable from the socket.
* Only those marked with an asterisk are applicable to Easee Ready.

www.easee.com

DoC Easee Charging Robot | 13.02.2023 | 1/1

Figure 12: Draft of revised DoC towards RED and RoHS

1.4 Product marking

1.4.1 Date of manufacturing

Elsäkerhetsverket points out that date of manufacturing is missing from the label.

Easee is of the opinion that neither EN 61851-1 nor EN 61439-1 require that the actual date of manufacturing shall be printed on the label. Instead, they both refer to "means of identifying date of manufacturing", as seen in Figure 13 and Figure 14 below.

Every Easee Home/Charge includes a label on the Type-2 socket. This contains a unique serial number and the month/year of production in clear text. This gives the end-user an indication of manufacturing time, while Easee can tell from the serial number exactly where and when the unit was manufactured. Easee considers this to fulfil the requirement for means of identifying date of manufacture.

> The EV supply equipment manufacturer shall provide each EV supply equipment with one or more labels, marked in a durable manner and located in a place such that they are visible and legible during installation:
>
> d) means of identifying date of manufacture;

Figure 13: EN 61851-1, Ch. 16.3

> The following information regarding the ASSEMBLY shall be provided on the label(s):
>
> a) ASSEMBLY manufacturer's name or trade mark (see 3.10.2 of IEC 61439-1:2011);
>
> b) type designation or identification number or any other means of identification, making it possible to obtain relevant information from the ASSEMBLY manufacturer;
>
> c) means of identifying date of manufacture;

Figure 14: EN 61439-7, Ch. 6.1

1.4.2 Reference to IEC 61439-7

Easee acknowledges that "IEC 61439-7" should have been printed on the product according to this standard, as pointed out by Elsäkerhetsverket. However, after reviewing the standard and the labels, Easee has concluded to remove the reference to this standard from the Declaration of Conformity (DoC). It is considered redundant with the latest edition of EN 61851-1 and in addition it is not a standard that has been published in the Official Journal for LVD.

Since the IEC 61439-7 standard will no longer be referenced, the related marking requirement is no longer applicable.

1.4.3 Visibility of marking

Easee acknowledges that some of the marking is located under a cover and not readable while the charger is in use, as pointed out by Elsäkerhetsverket.

EN 61851-1 and EN 61439-1/7 differ slightly with respect to whether information shall be readable after or during installation. As mentioned in chapter 1.4.2 above, Easee has decided to remove any reference to EN 61439-7 and rely entirely on EN 61851-1.

EN 61851-1 Ch. 16.3 is clear on what information shall be visible during both installation and maintenance and what is only required to be visible during installation, as illustrated in Figure 15 below. No information is specifically required during operation.

16.3 Marking of EV supply equipment

The EV supply equipment manufacturer shall provide each EV supply equipment with one or more labels, marked in a durable manner and located in a place such that they are visible and legible during installation and maintenance:

a) EV supply equipment manufacturer's name, initials, trade mark or distinctive marking;

b) type designation or identification number or any other means of identification, making it possible to obtain relevant information from the EV supply equipment manufacturer;

c) "Indoor Use Only", or the equivalent, if intended for indoor use only;

The EV supply equipment manufacturer shall provide each EV supply equipment with one or more labels, marked in a durable manner and located in a place such that they are visible and legible during installation:

d) means of identifying date of manufacture;

e) type of current;

f) frequency and number of phases in case of alternating current;

g) rated voltage (input and output if different);

h) rated current (input and output if different) and the ambient temperature used to determine the rated current;

i) degree of protection;

j) all necessary information relating to the special declared classifications, characteristics and diversity factor(s), severe or unusual environmental conditions of use, see 5.3.

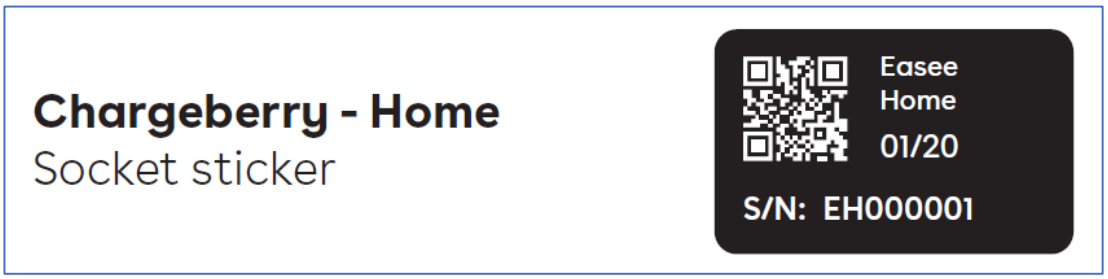
Figure 15: EN 61851-1, Ch. 16.3

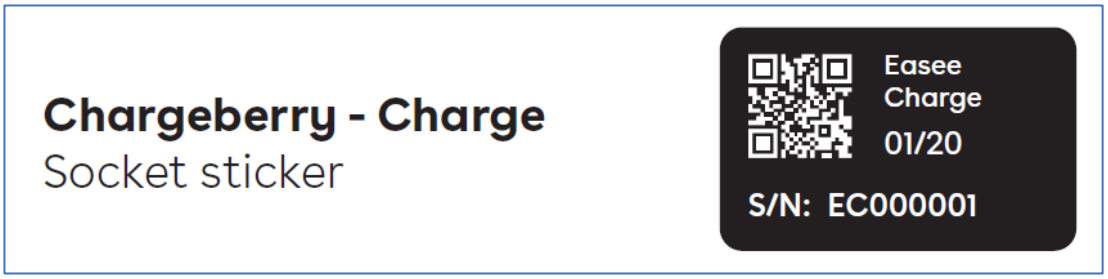
Easee acknowledges that the manufacturer's name is only visible in form of the Easee-logo on the front cover and that type designation is printed on the rear of the Chargeberry, and thus only visible during installation or when disconnecting it from the backplate. Please see Figure 16 for reference to the individual parts of Easee Home/Charge.

Figure 16: Individual parts of Easee Home/Charge

Figure 17: Label on Type-2 socket

To correct the above two findings, Easee will update the serial number label located on the Type-2 socket (Figure 17) to include “Easee Home” or “Easee Charge”, as illustrated below.



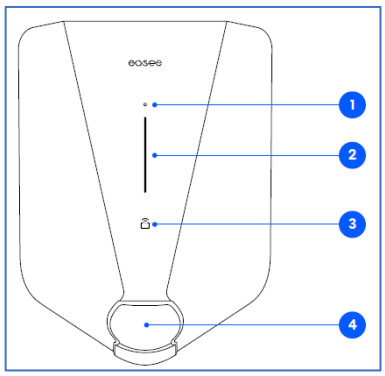


The label on the Type-2 socket is still located under the front cover, but Easee considers removing this cover relevant to maintenance and thus acceptable to place the labels under it. Since the product is often installed outside and exposed to both rain and sun, it is good practice to protect the marking from these elements as achieved by locating the labels under a cover.

Easee Charge/Home is designed as a main unit plugged into a permanently installed backplate where the electrical installation is terminated. Since this unit may be disconnected or replaced, it is essential that the marking is located on the actual equipment itself, and not on the separate cover, to ensure that the marking follows the product throughout its whole lifetime.

1.5 EMC immunity

Easee Home/Charge has been tested towards the EMC requirements specified in EN 61851-21-2. All tests, except Conducted RF-field immunity (EN 61000-4-6) passed without remarks.



Easee Home/Charge has a touch button (1 in the illustration to the right) over the Light strip (2). When this button is touched for 5 seconds, Easee Home/Charge will flash a green light on the light strip and provide a short buzzing sound. This action opens the WiFi interface for local connection to cellphones.

When exposed to the noise in the EMC test above, some frequencies triggered false activation of this touch button causing the same green light and buzzing feedback.

EN 61851-21-2 specifies the test levels and acceptance criteria for the required EMC-tests for an EVSE. The acceptance criterion for EN 61000-4-6 is “Performance criteria A”, meaning that the charger shall

continue to operate as intended without changing operation state (e.g., not stop ongoing charging or start charging unintentionally), as seen in Figure 18 below.

5.2.2 Performance criteria A

The EUT shall continue to operate as intended within the tolerances defined by the EUT manufacturer during and after the application of the appropriate tests. It shall not change the state in which it is operating (i.e. charging shall continue if in charge mode and shall remain idle if in waiting mode).

Figure 18: EN 61851-21-2 – Performance criteria A definition.

The behaviour seen under this test is with a short light glimpse and sound feedback is considered harmless both from a functional and safety perspective. Easee has had no support cases related to this and is not aware of situations with this happening in real-life.

This behaviour does not interrupt or affect ongoing charging or other functionality in any way. No change in operating state is observed, and thus Easee considers performance criteria A fulfilled.

1.6 Sales prohibition

Based on the technical description in section 1.1-1.5 above, Easee is of the opinion that the requirements laid out in section 4 and 6 of the Swedish radio equipment act are fulfilled.

The EU product regulations allow manufacturers to choose how they fulfil the essential requirements of the legislation (cf. the Blue Guide (2022/C 247/01) section 4.1.1). The manufacturer can choose to apply harmonized standards or use other technical specifications or develop the product in accordance with general engineering or scientific knowledge. This flexibility, described in the Blue Guide, therefore aims to allow manufacturers to choose the way to meet the requirements. It also allows, for instance, that the materials and product design may be adapted to technological progress. Accordingly, Union harmonisation legislation based on essential requirements does not necessitate regular adaptation to technical progress, since assessment of whether requirements have been met or not are based on the state of technical know-how at the moment the product is placed on the market. The manufacturer can therefore choose to apply a part of a harmonized standard and in such case, simply document how the relevant remaining essential requirements are fulfilled.

With reference to the above, it is important that any alleged lack of conformity to standards must not be equated with a lack of legal conformity. An (alleged) non-compliance with the relevant standard has no significance for the question of legal conformity.

As for the legal basis of any potential sales prohibition, Easee is of the opinion that there is no legal basis for the issue of a sales prohibition based on section 12 of the Radio Equipment Act (Sw. radioutrustningslag (2016:392)).

In any event, the issue of a sales prohibition would be a very restrictive measure that should only be used in exceptional cases, when there are no less intrusive/restrictive measures suitable for the purpose.

2 Response to questions from Elsäkerhetsverket

1. The number of sold units in 2021, 2022 and total
Easee Home/Charge is designed and marked to be sold in all EEC country. Since release on the market in 2019 more than 700'000 units have been installed.

The yearly distribution is listed in Table 11 below.

2021	2022	Grand Total
253 676	345 251	717 037

Table 1: Sold units in 2021, 2022 and total.

2. What is the stock balance of Easee Home/Charge?
Both Easee and their business partners have a significant number of chargers in stock to ensure the popular demand for our product is served without unnecessary delay.

Exact numbers are provided in "Attachment 1 -Stock balance – CONFIDENTIAL"
Easee is of the firm opinion that this information shall be subject to confidentiality/secrecy based on, inter alia, Chapter 30, Section 23 of the Act on Public Access to Information and Secrecy (Sw. offentlighets- och sekretesslag (2009:400)).

The reason is that the information contains critical business-related information. Easee is of the firm opinion that the information contained in this document Information on Easee's stock balance is an important part of the company´s business strategy and can be misused by competitors in the market if this information is disclosed. Easee would incur irreparable harm from a competition perspective should this information be made publicly available. This also applies to the context in this submission which could be used by Easee's competitors

Furthermore, Easee is of the opinion that the information is not relevant for the assessment of the safety of the charger and that it does not have any public interest.

Consequently, Attachment 1 is marked confidential and must be exempted from public availability.

3. List of Swedish resellers
The complete list of resellers of Easee Home/Charge in the Swedish market is provided in "Attachment 2 - List of Swedish resellers – CONFIDENTIAL"
Easee is of the firm opinion that this information shall be subject to confidentiality/secrecy based on, inter alia, Chapter 30, Section 23 of the Act on Public Access to Information and Secrecy (Sw. offentlighets- och sekretesslag (2009:400)).

The reason is that the information contains critical business-related information. An exhaustive list of all Easee's resellers is confidential information that the company does not share externally. This is to

ensure trust and confidentiality with partners. Easee would incur irreparable harm from a competition perspective should this information be made publicly available. This also applies to the context in this submission which could be used by Easee's competitors

Furthermore, Easee is of the opinion that the information is not relevant for the assessment of the safety of the charger and that it does not have any public interest.

Consequently, Attachment 2 is marked confidential and must be exempted from public availability.

4. EES Countries in which we have sold our products.
The majority of sold units are found in Norway and Sweden, but large quantities are also in use in Denmark, Finland, UK, Germany, The Netherlands, and most other European countries. The complete list is provided in Table 2 below.

EES Countries			
Austria	France	Italy	Romania
Belgium	Germany	Luxembourg	Scotland
Bulgaria	Greece	Netherlands	Spain
Denmark	Hungary	Norway	Sweden
Estonia	Iceland	Poland	Switzerland
Finland	Ireland	Portugal	United Kingdom

Table 2: List of ECC countries where Easee Home/Charge has been sold

3 Continuous improvements

In closing, is also worth mentioning that every Easee Home/Charge has connection means to the internet. This is provided through WiFi or an included SIM-card connection to the mobile GSM network. This allows Easee to continuously monitor status, perform remote diagnostic and provide the user with messages and instructions through the mobile app interface.

Based on actual diagnostic data, Easee will proactively take actions to improve the product by pushing software updates to the chargers. This allows Easee to adapt to issues with specific cars or to optimize both the behaviour and safety monitoring of our devices found through analysis of these data.

Currently more than 57.3 million charging sessions have been recorded in Easee's backend system. Each session includes data from the multiple sensors monitoring the status of the charger, including temperature, humidity, current and voltage levels. Warnings and alarms can be triggered both in the charger and in the backend system when defined limits are exceeded.

Final remarks

Easee was established in 2018. Since the beginning we have put openness and trust as core values, and we continue to look for improvements to our products and services. We appreciate the dialogue with Elsäkerhetsverket and their work to make sure all EV chargers on the Swedish market are safe. As part of this process, we have provided detailed information and highlighted our safety features that protect over 500,000 of our customers every day.

Should there be any further questions, please do not hesitate to contact us and we will be happy to respond.