Comments

on the External power supply Ecodesign regulation (2019/1782) review

Brussels, 04 May 2022

Following the consultation forum (CF) meeting held on 31st March 2022, in which the Commission presented a new approach to review the Ecodesign regulation on External Power Supplies (EPS), ECOS would like to provide the Commission with our comments.

Limits of "Back-to-back evaluation" procedure: We support a faster process but urge the Commission to improve on the proposed approach to ensure that there are sufficient opportunities for stakeholder comments to be considered. It is essential that the work is organised in such a way that allows for the necessary depth and breadth of technical analysis that is customary in a review study.

Neglect of some technical aspects: Based on the CF proposals, there is a risk that important technical improvements to the EPS Ecodesign regulation are neglected:

- New efficiency requirements at different loads: Due to the Common Charger initiative, EPS may be used at a wide range of loading levels. Therefore, it is important to revise Ecodesign energy efficiency rules to include a 10% load efficiency requirement. Current US Department of Energy (DOE)'s work shows that further savings are also possible through tightening the efficiency requirements, or efficiency requirements could be specified at each of the loading points without averaging them.
- Wireless charging efficiency: The Commission's current proposal to leave wireless charging under the remit of the Radio Equipment Directive would fail to address wireless charging efficiency. It would be a huge oversight not to address this in the current review.
- Extending scope: Scope should be extended to maximise savings by including high power EPS, active power over Ethernet injectors, and external power supplies used with a wide range of radio equipment.

Need for additional consumer information: This is necessary beyond USB PD availability, so that consumers have clarity on the capabilities of their common cables and EPS units.

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Concerns with the "Back-to-back evaluation" procedure

The regulatory process for Ecodesign is often subject to substantial delays, and we support in principle measures to speed this process up, such as the proposal for a combined review study and impact assessment. However, we do not consider that there are sufficient opportunities for stakeholder comments to be provided and considered with the approach as currently proposed. We are concerned that, in the rush to complete both technical analysis and impact modelling concurrently, important technical aspects will be neglected, and the depth of analysis will be too shallow. We ask the Commission to refine the procedure to ensure that it allows for a deep technical analysis with multiple points to provide and integrate stakeholder input.

Neglected technical aspects

The focus presented in the CF was on circular economy and common charger elements. Whilst we strongly support the need to address these aspects, there is a risk that necessary technical improvements to the EPS regulation in line with the intentions of the review clause are neglected.

Article 7, the review clause of (2019/1782), states that the following shall be assessed:

- the feasibility of setting a requirement regarding **minimum energy efficiency at 10 % load;**
- options for including **wireless chargers** within the scope of the Regulation**,**
- active **power over Ethernet injectors**,
- external power supplies used with electrical and electronic household and office equipment that is **not included in Annex I;**
- options for including requirements in support of **circular economy** objectives, including **interoperability.**

It is important that all these aspects are appropriately analysed during the review. In particular:

Efficiency at different loading levels

We did not observe in the presentation of the study contractors a clear intention to carry out a detailed analysis of the EPS efficiency metric or the 10% loading level, despite further savings being possible, and analysis being currently under way by US DOE to revise their EPS efficiency metric[1] on which the EU approach was based.

Due to the Common Charger initiative, EPS are increasingly likely to be used at a wide range of loading levels – in particular at lower loading levels. EPS have typically operated at reduced efficiency at these lower loads. It is therefore important to revise Ecodesign energy efficiency requirements appropriately.

- **10% load:** It was argued at the previous review that there was insufficient evidence on which to base efficiency requirements for the 10% loading level. An information requirement on efficiency at 10% load was included in the revised regulation, and it is now essential that ambitious requirements are developed using this data to ensure improvements in efficiency at lower loads.
- **Other loading levels:** This EPS efficiency metric was defined over a decade ago by US DOE and has served its purpose well to transform the market from very inefficient EPSs to

[1] US DOE. (2022). *External Power supplies. Appliance Standards Rulemakings and Notices.* Retrieved April 26, 2022, from https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=1

reasonably efficient ones. Current US DOE studies show that further savings are also possible through tightening the efficiency requirements[2]. Alternatively, a simpler approach could be to specify efficiency requirements at each of the loading points without averaging them. In particular, the 25% loading point could also be critical considering the Common Charger initiative. The existing average of 4 load points dilutes the impact of any single load point. This allows an EPS to comply despite relatively poor efficiency at potentially critical loads. This means that an EPS may appear efficient in theory, but not in practice. As such, **we encourage the commission to consider a different metric setting minimum efficiency requirements at each of the loading points (10%, 25%, 50%, 75% and 100%) without averaging them.**

To achieve improvements across lower load levels, designs of EPS will need to be improved. Design cycles for EPS are sufficiently agile to incorporate such changes within regulatory timelines. Design options already exist to facilitate such changes, for example[3]:

- Improved Transformers
- Selection of Semiconductor Technologies
- Technologies for higher power applications
- Modern Switched-Mode Power Supplies (SMPS)
- Active Power Factor Correction (PFC)

Wireless charging efficiency

We believe that the scope foreseen by the Commission could result in wireless charging efficiency falling in the gap between the Radio Equipment Directive and the EPS regulation:

- **Radio Equipment Directive (RED):** The Commissions' proposal, currently being negotiated within an ordinary legislative procedure, only focuses on shifting towards common wireless charging protocols for interoperability among different wireless chargers. The European Parliament simply suggests that the Commission harmonises wireless-charging solutions by the end of 2026[4].
- **EPS Ecodesign regulation**: The Consultation Forum proposal was only to cover the part of the wireless charger meeting the definition of EPS, so excluding the actual charging coil component.

Neither of these would address the urgent need for a means of assessing the power transfer-efficiency of a wireless charging system. The more efficient the wireless charging process is, the less energy it will consume per charge. It is important that the Commission honour the intentions stated in the review clause of the EPS regulation, and address wireless charging efficiency without delay for the following reasons:

- **Wireless charging for electronics will grow significantly in future:** The global market for wireless charging is expected to grow from $6.51 billion in 2018, to $40.24 billion by 2027[5].
- **US DOE recognises wireless importance:** US DOE has acknowledged the need for wireless charging to be addressed at a regulatory level and for test procedures to be defined. They are currently developing a rulemaking to address wireless charging efficiency[6]. If Europe does not

[2] US DOE. (2022) *Preliminary Analysis for External Power Supply (EPS),* document reference : EERE-2020-BT-STD-0014
[3] US DOE. (2022) *Preliminary Analysis for External Power Supply (EPS)*, document reference : EERE-2020-BT-STD-0014
[4] European Parliament (2022), *Common charger: Parliament commits to reducing electronic waste*
[5] Patil, A., Humbare, R., & Kumar, V. (2020). *Wireless charging market size, share and growth: Analysis - 2027*. Retrieved April 26, 2022, from https://www.alliedmarketresearch.com/wireless-charging-market
[6] US DOE. (2021). *Battery chargers. Appliance Standards Rulemakings and Notices.* Retrieved April 26, 2022, from https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=26&action=viewlive

address this urgently, the opportunity to steer development of standards and regulation in the area will be lost.

- **Market confusion on wireless efficiency:** Wireless charging efficiency can be assessed and there is data available on charging efficiencies[7]. However, there is a need for agreement on a standard approach. Wireless efficiencies can be easily misrepresented through incorrect measurement, for example through using coil-to-coil or "dc-in" to "dc-out" efficiency figures which do not predict overall system efficiency[8]. Being able to test and report wireless charging efficiency using different protocols is important to make informed decisions around which protocol to use and how protocols and chargers can be improved.
- **Need for market transformation:** There is currently a wide range of efficiencies on the market, underlining the urgent need for regulation in this area before the market expands as predicted and savings are lost[9].
- **EPS Ecodesign regulation is the right fit:** There is no other regulatory mechanism more appropriate for addressing wireless power supplies than in the EPS Ecodesign regulation. Indeed, they can be used both to charge devices that operate solely on a battery and to directly supply power to a device[10].

There was strong support in the Consultation Forum from a range of stakeholders for wireless charging efficiency to be properly addressed within the EPS regulation and we believe it would be a huge oversight not to address this in the current review.

Extending Scope

We believe that the scope of the regulation should be expanded to ensure that it results in the best possible savings, by assessing the following potential extensions:

- **High power EPS:** US DOE already covers these power supplies, and has performed a detailed analysis of the technical feasibility and cost of efficiency requirements. Aligning EU requirements with current DOE proposals would be simple and avoid lost savings.
- **Active power over Ethernet injectors:** These could meet the definition of an external power supply, and should therefore be included within scope.
- **External power supplies used with electrical and electronic household and office products that are not included in Annex I:** For consistency with the changes to the Radio Equipment Directive (RED) to address common chargers, the range of products in scope of the EPS regulation should be extended to those recommended by the rapporteur in charge of this file within the European Parliament. This would include handheld mobile phones, tablets, digital cameras, earbuds, headphones and headsets, handheld videogame consoles, portable speakers, smart speakers, digital radios, smart watches, personal care devices, sport devices, GPS/portable navigation, and electronic toys[11].

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[7] Note: Wireless charging efficiency can be assessed as total energy into the battery divided by total energy into the transmitter over the battery charge cycle. Power-transfer efficiency measurements should be taken as a spatial average taken in 2-mm increments over the load profile because, the system efficiency can vary significantly over the charging area / volume, see Teschler & Perzow (2016)

[8] Teschler, L., & Perzow, J. (2016). *Wireless charging efficiency: How to measure in the real world.* Power Electronic Tips. Retrieved April 26, 2022, from https://www.powerelectronictips.com/measuring-wireless-charging-efficiency-in-the-real-world/

[9] Teschler, L., & Perzow, J. (2016). *Wireless charging efficiency: How to measure in the real world.* Power Electronic Tips. Retrieved April 26, 2022, from https://www.powerelectronictips.com/measuring-wireless-charging-efficiency-in-the-real-world/

[10] US DOE. (2021). *Battery chargers. Appliance Standards Rulemakings and Notices.* Retrieved April 26, 2022, from https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=26&action=viewlive

[11] Saliba, A. (2021) *2021/0291(COD) DRAFT REPORT on the proposal for a directive of the European Parliament and of the Council amending Directive 2014/53/EU on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment (COM(2021)0547 – C9-0366/2021 – 2021/0291(COD))*, European Parliament

Consumer information

Based on the presentation used in the Consultation Forum, additional information beyond USB PD does not appear to be currently considered for the revision of the EPS regulation. We believe that the proposed basic information requirements would fall short of what is needed to avoid consumer confusion in the context of common chargers, and would result in the following:

- **EPS packaging confusion:** EPS and cables are currently marketed using a range of current (A), power (W) and cable features on packaging in a non-standard way.
- **Lack of on-EPS/cable information:** Once EPS and cables are out of their packaging there would be no indication of their properties. Users may find themselves with identical-looking EPS that have different power ratings, and identical-looking cables that offer different charging performance or functions.

To prevent such consumer inconvenience and facilitate the Common Charger initiative, the following information should be mandatory within the Ecodesign regulation on EPS, and should be provided not only on packaging but also on a label or tag on the product itself:

Information aspect	Example
EPS power and current range	65W (3.25A) to 15W (3A)
EPS fast charge capability: Indications not just that the EPS supports USB power delivery, but of all supported fast charging protocols, including the specific version number e.g.	USB PD X.0 fast charging
Cable maximum power, voltage and current	MAX: 100W (20V / 5A)
Cable additional capabilities: Data delivery speed and display delivery resolution, if available.	DATA DELIVERY: 5Gbps DISPLAY DELIVERY: 4K@60Hz

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