



RIGHT TO REPAIR

Comments

on the revised proposal for smartphone & tablet repair scoring

Brussels, 7 January 2022

Following the distribution of the second draft version of the repair scoring report and calculator, the environmental NGOs and repair actors hereby submit their views on the proposed refinements.

We welcome the work undertaken by the JRC to date and strongly support the introduction of a mandatory point-of-sale repairability score for mobile phones and tablets. The score, we believe, would work best if it were added as a parameter on the proposed new Energy Label.

We appreciate and strongly support the following refinements made in the second iteration of the scoring method:

- Amendment of the part weighting approach for foldable and rolling phones;
- Inclusion of OS support as a scoring parameter;
- Reduction of the weighting on the disassembly depth scoring parameter in favour of other parameters;
- Expansion of the tools parameter to five classes;
- Clarification that in cases where multiple priority parts of the same type are present, the part with the lowest score is to be used for the calculation purposes.

However, we believe that a number of important changes are still needed to ensure the robustness of the scoring approach. This, most notably, includes the following:

- Introducing missing parameters on bundling, part pairing and board-level repairs;
- Amending parameters on OS update availability and disassembly depth as well as fastener guidance;
- Extending the existing parameter on spare part availability to include part price, availability and delivery time.

Missing parameters

We previously proposed parameters that were neglected in the current study report and for which we believed there was notable scope for improvement over the minimum ecodesign requirements. These were not taken onboard in the second iteration of the scoring methodology, and we believe the justification not to include these is unsatisfactory. Further rationale for including these aspects is detailed below:

Freedom from part pairing and serialisation

Freedom from part pairing and serialisation is a high priority parameter as it is critical to the likelihood of repair. The current draft Ecodesign regulation for smartphones and tablets fails to sufficiently address the critical issue of part pairing, as the text (in information clause xi on remote authorisation of serial numbers) establishes the OEM as the sole decision maker on whether a part is accepted or not. OEM control of part pairing restricts the consumer's right to repair and enables OEMs to dictate which repair operations they would like to be possible, and which defects they would rather result in the consumer buying a replacement product. Not only does this go against the intention of the draft regulatory requirements to ensure more widespread user and professional repair, but it also represents a serious competition concern.

The response in the revised report does not address the issue of OEM control of part pairing. It merely includes a clarification that *"processes requiring actions relevant to the disassembly such as remote notification or authorisation of serial numbers for full functionality of the spare part and device during repair, need to be counted as additional repair steps."* **We strongly recommend that a parameter, following the proposal in the annex, is included in the scoring if the minimum Ecodesign requirements are not revised to prevent widespread part pairing and serialisation, especially as these practices are otherwise likely to become more prevalent in other products in the future, with restriction of repair via software having already been observed in televisionsⁱ, kitchen appliancesⁱⁱ, tractorsⁱⁱⁱ and medical ventilators^{iv}.**

Absence of part bundling

Availability of parts only when combined within a larger, more expensive assembly can present a substantial barrier to repair due to increased costs of the respective parts and have significant impacts on the resources used for part replacement. Such bundling of parts should, in our view, be made explicitly non-compliant with the regulatory requirements. Pending such changes in the draft regulation, we consider it important that part bundling is specifically addressed in the scoring approach as a minimum. This is particularly a concern as price is currently not addressed in the scoring, in order to balance against the disassembly depth criterion which would encourage bundling.

As the JRC stated in their report, part bundling is an issue that should be addressed at both Ecodesign regulation and scoring system levels. Despite the recognition that there is a critical need to clarify how bundling of priority parts should be handled in the scoring within sections 2.2 and 4.1 of the report, there have been no edits made to the methodology to properly address this important concern. In particular, in section 4.1 discussing the validation of the previous iteration of the method it is stated:

“during the validation exercise, multiple priority parts have been found attached with non-removable fasteners (i.e., soldered or encased in a module) from which further disassembly requires de-soldering or destructive disassembly.”

This underlines the urgent need to address more directly the barrier that the bundling of parts presents to repair. Bearing in mind the immediate need for clarification in the absence of a regulatory requirement, **we suggest that it is stated in the scoring report that as a bare minimum priority parts:**

- **Must not be supplied as spare parts or within the product in non-disassemblable combinations of level 1 and/or level 2 parts;**
- **Must not be supplied as spare parts or within the product as assemblies of more than a maximum of three level 3 and/or 4 parts.**

The approach which would enable the scoring to take account of bundling is outlined in the annex of this document.

Extended range of spare parts (PCB) and supporting repair information

Some important repair operations are impossible if board-level repair is not facilitated – for example, retrieval of data from a water-damaged phone^v. Availability of an extended range of spare parts that can be replaced at printed circuit board (PCB) level, and information to support board repairs is important for such smartphone repairs that may still be carried out, for instance, in repair training centres^{vi}. Therefore, **it is important that the precedent is set for improved board level repairs by allowing additional points for provision of an extended range of spare parts.**

Facilitating printed circuit board-level repairs increases the range of repair operations that are possible and increases likelihood of repair. The list of parts which would facilitate board level repair include the following: USB controller, charging controllers, audio, backlight, LCD/OLED power ICs, RF components, SMC, MOSFETs of power related components, RAM, NAND and FPC connectors. Scorings in relation to this parameter are suggested in the annex of this document.

Furthermore, we note that the revision to the JRC report recommends that repair information regarding electronic board diagrams is excluded from the scoring for repair information. This is a change that inhibits the ability of a range of repairs to be carried out. The calibration and validation exercise found that repair information provided for smartphones was very limited, underlining the need to incentivise the provision of this information at both “professional repairer” and “end-user” level in the scoring. **We therefore call for the circuit diagrams** (i.e. a schematic representation of the components and their functional interrelations, using symbolic representations) **as well as circuit board layout drawings** (i.e. a graphic representation of the components and connections on a circuit board in terms of their physical location on the board) of all circuit boards, as required for failure analysis, **to be included in the list of repair information assessed for provision to both "professional repairers" and "end-users".**

Amendments to proposed parameters

OS update availability

We strongly support the inclusion of software update availability within the scoring. However, we believe that improvements to the durations included in the proposal are necessary. **In the current proposal, a product offering 6 years of OS functionality updates (class III) would score lower than one offering 5 years of OS functionality updates (class II).** We call for this to be amended as follows

:

	Current proposal (years)		Recommended approach	
	security	functionality	security	functionality
Class I	7	6	7	6
Class II	6	5	6	6
Class III	5	6	5	5
Class IV	5	4	5	4
Class V	5	3	5	3

We also note that Table 7 detailing the verification requirements states that the time period for OS update availability is to be considered to start from the date of product launch. This is not coherent with the draft Ecodesign regulation nor with what the study contractors communicated at the preparatory study stakeholder meeting of 16 April 2021. In this meeting, it was explained that the proposals were more ambitious than the status quo because the currently reported time for OS support was from the point in time when a chipset was brought on the market, while the draft regulation were to introduce requirements for OS support counted from the last unit of product placed on the market. This meant that the OS support period proposed in the draft was at least 1 year or longer than the industry communicated support period. As such, **we call for Table 7 to be amended in line with the proposed draft Ecodesign requirements. Alternatively, the stringency of the requirements in the Ecodesign regulation and the scoring approach should be tightened by a further year as a minimum** (i.e. 6 years security updates and 4 years functionality updates).

Disassembly depth

The previous version of the scoring approach proposed stricter scoring on disassembly depth (fewer steps permitted in each rating class) for the battery and back cover. The new approach has harmonised the scoring across all priority parts “to account for differences in product design and the fact that different parts may be the first ones to be removed along a disassembly pathway.” This is especially problematic due to the clarification that the assessment of the type of fasteners and tools is part-based rather than path-based. This means that “only the fasteners/tools used starting from the previous priority part already removed are taken into consideration in the score”.

We do not support this change to a harmonised approach, and strongly recommend reverting to the previous differentiated approach for the two components for the following reasons:

- **Back cover:** This will be one of the first parts to be removed in a typical smartphone or tablet design. Permitting more steps for a good score on back cover removal therefore would be counterproductive, as it would result in a lack of differentiation in scoring for improved back cover designs, and a bias on the back cover score which the report itself considers “less relevant from a functional perspective”.
- **Battery:** It is important to incentivise ease of battery removal as this is one of the most common parts needing replacement, especially given that future models are expected to contain batteries that are easier to access as a result of the minimum Ecodesign requirement to allow for user removable batteries unless they last 1000 cycles @ 80% performance. Under the newly proposed part-based approach, the removal of the back cover would not be counted in the consideration of the battery scoring, making it considerably easier to obtain a high score for battery removal.

Guidance provided on fasteners (Annex II)

We note that new text has been included in relation to fastener guidance in Annex II. **We consider that this guidance is inadequate for the following reasons:**

- **It introduces no limitations on adhesive fracture type:** while the guidance provided explains that the different types of adhesive fractures can facilitate repair, it provides no incentives for specific design choices. Instead, it only states that “in order to facilitate the replacement of adhesive in a repair process, the “adhesive fracture on one substrate” is the most favourable option”;
- **Adhesives leaving residue are considered reusable when a new adhesive is supplied with the part:** We do not consider the argument that residue removal is accounted for in the disassembly steps sufficient. It is counterintuitive that adhesives leaving residue and complicating repair would be awarded maximum points in the category of fasteners;
- **Adhesives that do not leave residue are not incentivised in the scoring:** There are many adhesives that do not leave residues such as pressure sensitive adhesives. These should be rewarded through the scoring in order to encourage a shift toward adhesives that do not inhibit repair.

Given the above, **it is necessary that the following change is made to the guidance provided on fasteners:**

“Adhesives are in general considered removable (but non-reusable) fasteners unless new ones are supplied with the spare part and in this case, the adhesive can be considered reusable. During the process of removal of adhesives, different types of fractures can occur. ~~In order to facilitate the replacement of adhesive in a repair process, the “adhesive fracture on one substrate” is the most favourable option~~ For the adhesive fixing to be considered a reusable fastener, the fracture type must be “adhesive fracture on one substrate” and it must be removable with basic or commercial tools. (see Figure 15 below).”

A revised scoring approach taking into account adhesive residues and tools required for removal is contained in the annex.

Extension of proposed parameters

Spare part availability

As already suggested previously, we strongly believe that, building on the JRC’s general method (Table 3 and section 3.1.1), **the scoring on spare part availability should, in addition to target group, aggregate spare part price, availability and delivery time into the score** (see annex for details of our proposal):

- **Spare part price:** The report states that the price of spare parts is considered to be too volatile for use as a parameter and could impact the robustness and verification and that there may be issues of price variation across Member States. However, our experience shows that no meaningful price variation in spare part price exists across EU regions currently. Moreover, the requirement to disclose the maximum pre-tax price of spare parts proposed in the draft Ecodesign regulation can be expected to further address the issue of volatility. We strongly believe that introducing a parameter in the score focused on maximum spare part prices (see annex for a revised proposal adapted on the basis of the French repair score which addresses the volatility and robustness concerns) is of paramount importance to capture the crucial aspect of repair price. Not only would such inclusion stimulate competition thereby driving down spare part prices, but also discourage part bundling.
- **Availability of spare parts for a specific period of time:** The report states that 5-year part provision for smartphones is sufficient to capture a reasonable product lifetime. However, it is increasingly likely that smartphones will last longer in the future due to the regulatory attention on OS availability (extended to potentially 7 years in the scoring) which will reduce premature obsolescence. Availability of spare parts beyond the 5-year time period is therefore a critical complementary scoring.
- **Spare part delivery time:** The report states that a regulatory requirement on delivery time within 5 working days captures a reasonable period of time without introducing a bias related to the place of delivery. However, the time it takes for the product to be returned to the end-user has an important impact on consumer convenience and therefore an influence on premature obsolescence. For products that users depend on daily, such as laptops and smartphones, the consumer's tolerance to be without the product is likely to be very low. Waiting five days for spare parts before the repair can take place may be so long that they are forced to discount repair and buy a new product. Therefore, we consider it important to incentivise reduced spare part delivery times as these can greatly encourage repair in such critical-use products.

ANNEX I: Proposed changes to scoring

Freedom from part pairing

The proposed scoring approach could follow the following logic, detailed in the table below:

Points	Entity with access	Tools available	Type authorisation	cost
1	professional repairers	software tools, firmware and similar auxiliary means required for full functionality of the spare part and device after repair	For remote (e.g. OEM) authorisation or pairing of serial numbers	at a reasonable and proportionate fee
2	professional repairers	software tools, hardware tools, firmware and similar auxiliary means required for full functionality of the spare part and device after repair	For independent authorisation or pairing of serial numbers ¹	at a reasonable and proportionate fee
3	professional repairers and end-users	software tools, hardware tools, firmware and similar auxiliary means required for full functionality of the spare part and device after repair	For independent authorisation or pairing of serial numbers ^{Error!} Bookmark not defined.	at a reasonable and proportionate fee
4	professional repairers and end-users	software tools, hardware tools, firmware and similar auxiliary means required for full functionality of the spare part and device after repair	For independent authorisation or pairing of serial numbers ^{Error!} Bookmark not defined.	free of charge
5	Replacement of all parts requires no special hardware or software tools and no authorisation. Product is designed to ensure no compatibility issues with after-market and reused parts.			

¹ with informed end-user consent as appropriate

Absence of part bundling

Scorings for this parameter are proposed to be calculated as follows:

- no assemblies combining level 1 and level 2 parts with other parts, but presence of assemblies combining a maximum of three level 3 and/or 4 parts = 1 point
- all assemblies containing only one priority part (but including other non-priority parts) = 3 points
- provision of parts without any wider additional assemblies combining other non-priority parts = 5 points.

Extended range of spare parts

Scorings in relation to this parameter should be designed as follows:

- no board-level parts = 1 point,
- provision of board level parts for 5 years = 3 points,
- provision of board-level parts for 7 years = 5 points.

Spare part availability

Scoring should aggregate the following aspects in addition to target group:

Spare part price

We propose to define three parameters in relation to spare part price:

- The **maximum** price of the most expensive spare part – x
- The average **maximum** price of the other spare parts – y
- The **maximum** price of the product **when placed on the market** – z

The spare part and product price ratio is then proposed to be calculated according to the following formula: $0.5 \cdot (x+y)/z$. In order to address issues related to price variations across regions and over time, it is proposed to focus on maximum prices when placed on the market. Maximum spare parts prices will already be declared under the draft regulation.

The part prices should include the price of pairing operations and purchase of any other repair information, in case relevant. The scorings for the spare part and product price ratio should then be allocated as follows:

- $> 30\% = 1$ point,
- $20\% < \text{ratio} < 30\% = 2$ point,
- $15\% < \text{ratio} < 20\% = 3$ points,
- $10\% < \text{ratio} < 15\% = 4$ points,
- $< 10\% = 5$ points.

For the purposes of verification, we propose for the spare price ratio to be based on the recommended retail price for the product and spare parts, which shall be indicated on the manufacturer's or importer's publicly accessible website. Alternatively, the spare price ratio could be based on the wholesale price for the product and spare parts, which the manufacturer or importer is to produce upon request by a competent authority. In cases where different price brackets were to exist, the ratio in such cases could be based on the price bracket representing the highest turnover for each of the categories (products and spare parts).

Spare part availability

We propose the following scoring in relation to spare part availability:

- 5 years = 1 point,
- 6 years = 3 points,
- 7 or more years = 5 points.

Spare part delivery time

We propose the following scorings in relation to spare part delivery times:

- 5 days (120 hours) = 1 point,
- more than 48 but less than 120 hours = 2 points,
- more than 24 hours but less than 48 hours = 4 points,
- equal to or less than 24 hours = 5 points

In order to combine the four sub-parameters for spare parts availability to determine a total score for this parameter, we suggest the following weightings:

- **Target group (40%):** Availability of spare parts to wider target groups has an important influence on the likelihood of repair.
- **Spare part price (40%):** Cost of spare parts has an important influence on the likelihood of repair.
- **Spare part delivery time (15%):** Shorter delivery times can increase likelihood of repair compared to draft regulation.
- **Time period of availability (5%):** Availability for longer time periods has a critical impact on ability to repair after 5 years (albeit lower volume of repairs).

Software / OS update availability

In light of the current draft Ecodesign requirements, the scorings are proposed to be calculated as follows (when the time period is counted from the placement on the market of the last product):

- 5-year security updates and 3-year functionality updates = 1 point,
- 5-year security updates and 4-year functionality updates = 2 points,
- 5-year security updates and 5-year functionality updates = 3 points,

- 6-year security updates and 6-year functionality updates = 4 points,
- 7-year security updates and 6-year functionality updates = 5 points.

Fasteners

We propose the following alternative scorings for this parameter:

- removable fasteners leaving residue removable using commercially available tools = 1 point
- removable fasteners leaving residue that is removable using basic tools = 2 point
- removable fasteners without leaving residue OR reusable fasteners leaving residue that is removable using commercially available tools = 3 points
- reusable fasteners leaving residue that is removable using basic tools = 4 point
- reusable fasteners without residue = 5 points.

Contact :

ECOS – Environmental Coalition on Standards

Ernestas Oldyrevas, ernestas.oldyrevas@ecostandard.org

ⁱ See, e.g., the following service manual which requires for replaced mainboards, t-con modules and panels to be paired via a hidden routine on the device in order for the television to work again properly: <https://servicemanuals.us/sony/tv/kd-49x8505b-kd-55x8505b-kd-55x9005b-kd-65s9005b-kd-65x8505b-kd-65x9005b-kd-65x9505b-kd-70x8505b-kd-75s9005b-kd-79x9005b-kd-85x9505b-kdl-32w705b-k.html?start=8>

ⁱⁱ See, e.g., the reporting on the following issue on Thermomix 5 encountered upon non-OEM-authorised part replacement: <https://de.ifixit.com/Antworten/Ansehen/712556/How+to+reset+the+C150+error>

ⁱⁱⁱ Koebler, J., *Tractor-hacking farmers are leading a revolt against Big Tech's repair monopolies*, VICE, available at: <https://www.vice.com/en/article/kzp7ny/tractor-hacking-right-to-repair> (retrieved 20 December 2021)

^{iv} Koebler, J., *Why repair techs are hacking ventilators with DIY dongles from Poland*, VICE, available at: <https://www.vice.com/en/article/3azv9b/why-repair-techs-are-hacking-ventilators-with-diy-dongles-from-poland> (retrieved 20 December 2021)

^v Pierini, D., *Tenacious repair tech combats misinformation in Apple Support Forum*, Cult of Mac, available at: <https://www.cultofmac.com/620124/apple-support-forum-jessa-jones> (retrieved 21 December 21 2021)

^{vi} See, for instance, <https://therepairacademy.com> or <https://www.cursosmovil.es>