Comments

on the preparatory study proposals for Ecodesign and Energy Labelling requirements on smartphones and tablets

Brussels, 12 May 2021

Following the stakeholder meeting on 16 April 2021, the environmental NGOs hereby submit their views on the regulatory requirements listed in the final Task 7 report of the preparatory study for smartphones and tablets.

We believe that the specific minimum ecodesign requirements proposed in the study provide a solid foundation for the forthcoming regulatory proposal, and strongly support the following elements in particular:

- Extended spare part list for professional repairers (sections 1.1.(1)(a) and (c))
- Limited spare part list for end-users which includes batteries and screen assemblies (1.1.(1)(b) and (c))
- Disassembly requirements with specification of classes of fasteners and connectors, tools, working environment and skill levels (1.1.(5)(a) and (b))
- Provision on the rollback of the operating system (1.2.(6)(b))
- Provision on the transparency of maximum price of spare parts (1.1.(4)(a))

We believe that the forthcoming regulatory proposal should make further improvements notably to the requirements related to:

- Availability of spare parts, including the list of parts to be provided to end-users
- Prevention of part serialisation
- Availability of repair information
- Ease of disassembly
- OS support
- Energy labelling, including through the introduction of a repair score

Our proposed changes to the draft regulatory text proposed in the preparatory study are detailed below.

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Availability of spare parts

List of spare parts

We strongly support the proposed extended list of spare parts to be provided to professional repairers and suggest that the list of parts available to consumers is extended to match what is available to professional repairers. The proposed list of spare parts is, we believe, well aligned with the well-documented findings of the preparatory study[1] on the frequency of smartphone defects associated with the failure of specific components, as summarised in the graph below:

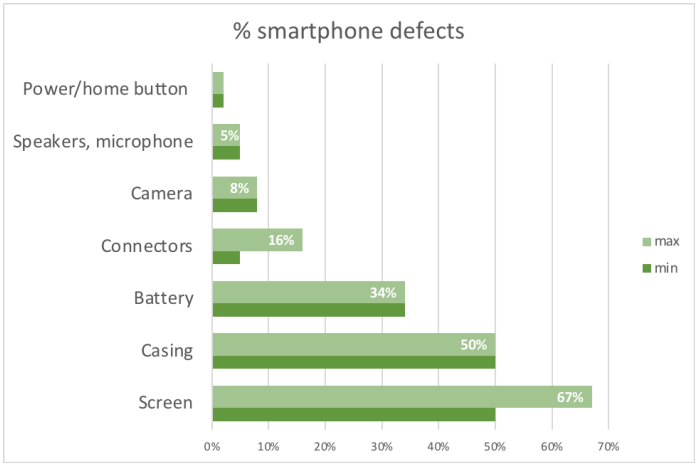

Figure 1 - % of smartphone defects by part[2]

It is, however, essential to the repair ecosystem that the smaller parts such as connectors, cameras, speakers and buttons are made available and replaceable. OEMs often refuse to carry out these smaller repairs for their customers once the devices are out of warranty, and also limit the repairs that their authorised professionals can carry out. A recent study found that in-store repair options offered by one of the leading OEMs were limited to the repair of only four key parts[3]. In particular, cameras, microphones and speakers should be retained on the list, as these combined represent around 13% of defects. If these smaller components are not made replaceable and available as spare parts, this could result in over 11.5 million smartphones per year being sent to landfill instead of being repaired[4].

Data from the Open Repair Alliance[5], based on the analysis of over 1900 repairs of smartphones at community repair events shows that just about half of repairs are successful today, which provides a strong rationale for extending the availability of spare parts and repair information to end-users. Repairs conducted at community repair events involve multiple fault types, among which 41% were linked to screens, 16% to battery and other power-related issues; 6% were

[1] See Agrawal (2017), Verduzco (2021), Cordella et al. (2020), and clickrepair (2019) as cited in Schischke, K., Clemm, C., Berwald, A., Proske, M., Dimitrova, G., Reinhold, J., Prewitz, C., Durand, A., & Beckert, B., (2021) *Ecodesign preparatory study on mobile phones, smartphones and tablets - Final Report,* Fraunhofer IZM, Fraunhofer ISI

[2] Additional critical components referenced in literature include hinge assemblies for folding phones and the operating system itself (see later discussion).

[3] *The Fix is In: How our smartphones get fixed, why it's harder than it should be, and why that matters,* U.S. PIRG Education Fund and iFixit (March 2020)

[4] Estimate based on the average of published figures for % phone owners carrying out repairs each year, total phone ownership (age 16 to 74) in Europe, and the % of defects due to smaller components

[5] Open Repair Alliance publishes open data on repairs at community repair events worldwide : https://openrepair.org/news/our-open-repair-dataset-grows-to-42000-records/

linked to charging ports, 2% with on/off buttons, 3% with other buttons; 3% with cameras, 2% with speakers or amplifiers, and another 2% with microphones. Based on the above, we believe that the range of spare parts available to both consumers and community repair initiatives should be extended as the lack of access to quality parts would mean that community initiatives and consumers would not be able to use high-quality parts from manufacturers for over 40% of the repairs they attempt.

Lastly, we very much welcome the proposed delivery time of spare parts to be within 5 working days, and for the new requirement to be introduced on the transparency of maximum spare part price both of which will facilitate the repair of both mobile phones and tablets. However, we recommend for the proposed inclusion of connectors to be further clarified in the regulatory text so to ensure that the provision covers both audio and charging connectors, and for the period during which spare parts are to be provided to be extended to seven instead of five years as proposed at present.

Part bundling

Situations where parts are only made available within a larger, more expensive assembly can present a substantial barrier to repair due to increased costs and have significant impacts on the resources used for part replacement. For example, in order to replace the charging connector of an iPhone SE, the design today requires the replacement of an assembly which includes the microphone, audio jack and other parts (see Figure 2).

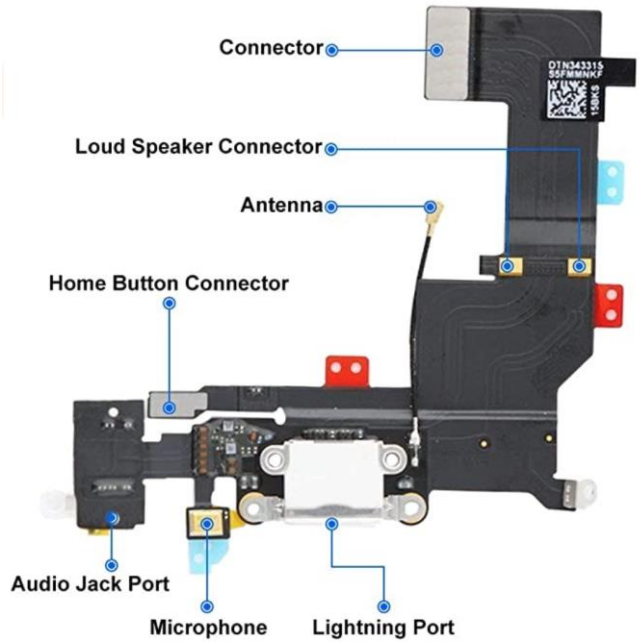

Figure 2 - Replacement lightning port spare part for the iPhone SE

Such bundling of parts should, we believe, be made explicitly non-compliant with the regulation. We propose the following refinement to the regulatory language on the spare parts list (section 1.1.1.(1)(a)) to ensure that the parts are available in separate assemblies for reasons of affordability and genuine resource use reduction:

manufacturers, importers or authorised representatives shall make available to professional repairers at least the following **individual** spare parts, including required fasteners if not reusable, for a minimum period from 6 months after placing the first unit of a model on the market until five years after placing the last unit of the model on the market, when present:

We believe that the proposed measures carry no significant risk of spare parts overstocking, since OEMs already have the technology in place to manage their supply chains effectively and there is no reason why spare parts would be an exception. Also, as discussed in the stakeholder meeting, manufacturers using more durable designs and less failure-prone components will have the advantage of having to keep a much lower inventory of parts as the demand for them will be lower.

Prevention of part serialisation

It has been found that some recent smartphone designs require remote authorisation of part replacement using serial number pairing and proprietary configuration apps. For example, iPhone 12 has been found to reject replacement batteries, screens, touch ID sensors and cameras on the grounds that they are not considered genuine. This is even the case when a genuine camera is swapped from one iPhone to another. Internal training guides provided to Apple-authorised technicians state that running Apple's proprietary, cloud-linked system configuration app is necessary in order to fully repair cameras and screens[6]. If these components cannot be replaced affordably by independent professional repairers, it is likely that millions of smartphones will reach the end of their lives prematurely and be sent to landfill.

In order to protect the right of consumers and professional repairers to affordably fix devices, it is essential that professional repairers are not prevented from replacing parts due to firmware and software tools which would inhibit the functionality of their devices. Moreover, it is important that smartphone designs are made compatible with both third party as well as reused and refurbished parts, so to facilitate access to affordable repairs and incentivise component reuse. For instance, genuine cameras can be easily harvested from broken phones and used as spare parts in new devices, saving valuable resources. This, however, is only possible if product designs accept such exchange of parts.

The argument that synchronisation of replacement part serial numbers is necessary for security reasons for parts used for user identification (e.g. fingerprint readers or camera modules) is, we believe, entirely invalid, since only a selected number of smartphone manufacturers require such remote acceptance of serial numbers at present, and similar synchronisation did not prove necessary previously. This serves to demonstrate that with good design choices, functionality of the device can be made secure without this having negative impacts on spare part reuse and replacement.

In order to best prevent the practice of spare part serialisation, we propose to amend the regulatory text in section 1.1.(2) as follows:

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[6] Purdy, K. (2020), *Is This the End of the Repairable iPhone?* iFixit, accessed 04/05/2021 at https://www.ifixit.com/News/45921/is-this-the-end-of-the-repairable-iphone?utm_content=bufferbe690

1.1 Design for repair and reuse
(2) access to repair and maintenance information
From 6 months after placing on the market the first unit of a model and until seven years after placing the last unit of the model on the market, the manufacturer, importer or authorised representative shall provide access to the repair and maintenance information to professional repairers for parts concerned by point 1(a) in the following conditions:

(a) the manufacturer's, importer's or authorised representative's website shall indicate the process for professional repairers to register for access to information;
[...]
e) the repair and maintenance information referred to in (a) shall include:
[...]
- xi) **the provision of** software tools, firmware and similar auxiliary means **to enable professional repairers to ensure the** ~~required for~~ full functionality of the spare part and device after repair, such as remote authorisation of serial numbers.

[...]
g) for access to information and tools referred to in (e, xi) the manufacturer, importer or authorised representative might require the owner of the device to notify the manufacturer, importer or authorised representative of the intended repair case

Availability of repair information

A number of refinements are necessary to the draft regulatory text on repair information. In the current draft, the provision on access to repair and maintenance information does not apply in relation to display assemblies and chargers, listed under point 1.1.(2)(c). For more involved repairs, it is important that the full list of information to be provided to professional repairers also covers these two parts. We suggest to edit the wording of the regulatory text in section 1.1.(2) as follows:

(2) access to repair and maintenance information
From 6 months after placing on the market the first unit of a model and until seven years after placing the last unit of the model on the market, the manufacturer, importer or authorised representative shall provide access to the repair and maintenance information to professional repairers for parts concerned by point**s** 1(a) **and (c)** in the following conditions:

If manufacturers, importers or authorised representatives reject an application for repair information by a professional repairer, it is essential that a substantial reason is provided, as otherwise all applications could be rejected without consideration and a manufacturer could still be considered compliant with the regulatory requirements in place. In order to prevent this from happening, we propose the following change to be made to section 1.1.(2)(b):

manufacturers, importers or authorised representatives shall accept or refuse the registration within 5 working days from the date of request. **In the case of refusal, a clear justification will be provided to the requestee outlining the reasons behind such decision**.

We consider the current wording on repair information in section 1.1.(2)(f) to be inappropriate, as it could be interpreted to prevent third parties from using repair information to repair products and to limit the repair information that third parties can publish prior to the OEM stopping to provide this information. In order to address this, we propose the following edit to section 1.1.(2)(f):

third parties shall be allowed to ~~use and~~ publish repair and maintenance information **authored by the manufacturer, importer or authorised representative and** covered by point (e) ~~once the manufacturer, importer or authorised representative terminates access to this information~~ after **the** end of the period of access to repair and maintenance information**.**

Ease of disassembly

We strongly support the disassembly requirements for classes of fasteners and connectors, tools, working environment and skill levels specified in sections 1.1.(5)(a) and 1.1.(5)(b). However, these currently only cover batteries and displays. We request that these classifications are extended to the other components listed in section 1.1.1.(1)(a) by implementing the following change in the wording of section 1.1.(5)(b):

manufacturers, importers or authorised representatives shall ensure that the process for ~~display unit~~ replacement **of the parts listed in 1(a) and (c)** meets the following criteria: • Fasteners and connectors: Removable (Class B) • Tools: Feasible with commercially available tools (Class C) • Working environment: Workshop environment (Class B) • Skill level: Generalist (Class B)

The text on disassembly in section 1.1.(5)(c) should, moreover, also apply to displays and batteries:

(c) manufacturers, importers or authorised representatives shall ensure, that joining, fastening or sealing techniques do not prevent the disassembly of parts concerned by points 1(a)**, (b) and (c)** using commercially available tools.

OS support

The operating system is frequently cited as one of the main failures for smartphones and tablets[7]. If it is not possible for upgrades and security updates to smartphone OS to be separated, it is important that both are therefore provided for at least a five-year period after the purchase. This availability period should be counted from the point the last unit is placed on the market to ensure that consumers buying products from the final production runs are not unfairly disadvantaged, and to clearly signal to OS providers the longevity required. We therefore propose the following edits to section 1.2(6)(a):

[7] See, e.g., Cordella, M.; Alfieri, F.; & Sanfelix, J. (2020): *Guidance for the Assessment of Material Efficiency: Application to Smartphones.* Edited by Publications Office of the European Union. Luxembourg (JRC116106).

(6) software upgrades and updates
(a) manufacturers, importers or authorised representatives shall ensure the availability of security updates ~~for at least 5 years and the availability of~~ **and** operating system version upgrades for at least ~~3~~ **5** years **after placing on the market the last unit of a model**, at no costs

In addition to guaranteeing OS and security updates for extended periods, it is necessary to ensure that an updated OS can be downgraded if required by the user. The installation of a new OS update can stop purchased software from functioning, remove features and functionality, and slow the operation of devices, thereby contributing to rapid obsolescence. In order to slow the degradation of older phones, users should have the ability to easily undo an OS upgrade if they find the functionality after the update is unacceptable. Deinstalling updates may mean that some security improvements are not available to the user. This liability issue can be handled via clear communication regarding which updates and functionality will be impacted, and user acceptance of terms and conditions which specify that deinstallations are implemented at the user's own risk and that OEMs are not to be held liable. Data from community initiatives provided by Open Repair Alliance is also revealing of end-users' determination to keep using devices for longer: 22% of the devices brought to these events are 5 to 10 years old, thus making clear the need for long-lasting software support.

Design for reliability

We note that industry stakeholders commonly refer to the trade-off between durability and reparability and would like to stress that there is no evidence for such a trade-off. As proven by some recent smartphone designs (e.g. the Samsung Galaxy S5 that features both a high IP class of IP67 and an easily user-removable battery at normal market thickness) parts can be made replaceable while ensuring that the overall design of the device also meets highest waterproofing and drop resistance requirements.

Furthermore, we note that despite industry claims about the possible challenges arising from the combined implementation of durability and repairability requirements, the IP requirement on smartphones specified in the draft regulatory text is the very basic IP44 level (splash-proofing) and is already achieved by the majority of the market. A higher rating of IP67 is only referenced as a condition for the exemption of durable batteries being made available for user repair. Given that many products available on the market already meet or exceed this level (for example, all of Samsung's latest flagship smartphones from 2020 onwards have an IP68 rating[8]), we believe that the proposed approach in relation to design for reliability presents a reasonable basis for ecodesign requirements. However, we propose for the battery endurance requirement, set at 500 cycles as

[8] Junje (2020), Top 8 Best Waterproof /Water-Resistant Phones 2020, Pandaily, https://pandaily.com/best-waterproof-water-resistant-phones-of-2019/ accessed 04/05/2020

the proposed threshold at the moment, to introduce a staged increase in ambition over time, so to ensure a progressive evolution of the market towards more durable batteries.

Energy Labelling

We strongly support the proposed introduction of a dedicated Energy Label for smartphones and tablets which would include an A to G rating on the basis of the proposed energy efficiency index and would include information on battery endurance in cycles. However, we believe that the proposed benchmark approach should be further refined in order to arrive at a more representative user profile which would notably include social media usage measurement. The graph below summarises the findings from recent research on smartphone usage which could serve as a useful basis from which to develop the approach further:

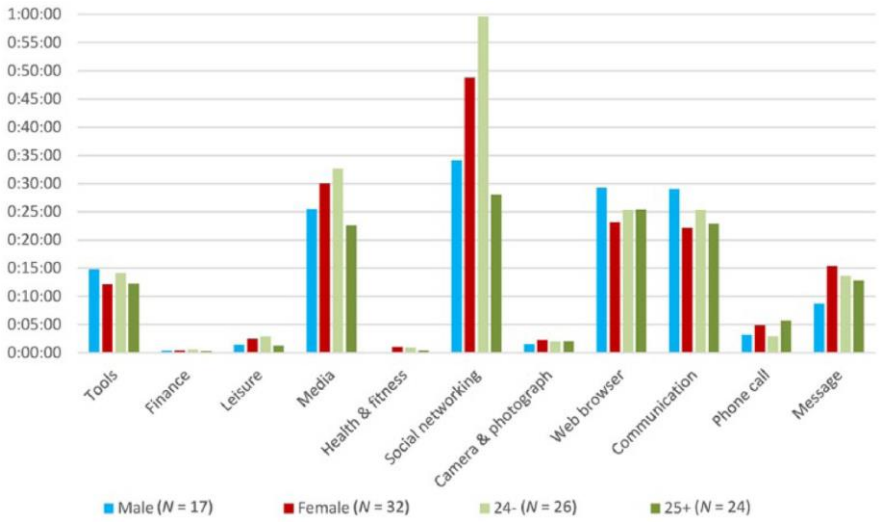

Figure 3 - Use per app category in a day among different demographic groups in 2018[9]

Furthermore, rather than including LCA information, we strongly recommend the label to include a repair score instead as this has more direct relevance to the consumer. It is our view that the current LCA methodologies are not robust enough to enable comparison of the information that would be presented and that this would therefore be in direct conflict of the planned Commission's initiative on green claims. The repair index should be based on a subset of criteria that go beyond minimum requirements in order to ensure a sufficient range in the index, including longer time periods for OS support or spare part availability, among others.

[9] Deng,T., Kanthawala, S., Meng, J., Peng, W., Kononova, A., Hao, Q., Zhang, Q., & David, P. (2018) Measuring smartphone usage and task switching with log tracking and self-reports, Mobile Media & Communication Volume: 7 issue: 1, page(s): 3-23, available at https://journals.sagepub.com/doi/full/10.1177/2050157918761491

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