

Factsheet - Top-line summary, repairability of smartphones, tablets and laptops

Overall summary of all brands and devices

Greenpeace, in partnership with US-based iFixit, conducted an assessment of more than 40 best-selling models from 2015 - 2017, with a total of 17 brands represented.

Methodology

This assessment of the repairability of smartphones, tablets and laptops is based on the teardown score from iFixit as well as the availability of repair manuals and spare parts.

iFixit's repairability scores range from 1 (worst) to 10 (best). A device with a perfect score will be relatively inexpensive to repair because it is easy to disassemble and has a service manual available. Points are docked based on the difficulty of opening the device, the types of fasteners found inside, and the complexity involved in replacing major components. Points are awarded for upgradability, use of non-proprietary tools for servicing, and component modularity.

Greenpeace's product scorecards showcase iFixit's repairability score; the ease of replacing the battery and display; whether special tools are needed; and whether spare parts are available.

In sum, this assessment determines whether or not a product is designed with repairability in mind.

Among the 44 models assessed, 26 were purchased by Greenpeace, 10 in China, 7 in Germany, and 9 in the USA. The remainder were models obtained by iFixit.

Results

- **Only 3 of the 17 brands assessed provide spare parts and repair manuals**, (Fairphone, HP and Dell). At the other end of the scale, Samsung, Apple and Microsoft do not make spare parts or repair manuals easily available to users.
- **The most problematic component for design for repairability is the display**, which commonly fails in all these types of devices, but is often designed in a way that makes replacement very costly. Over two-thirds of the devices (30 out of the 44) that were tested had displays that were designed to be difficult or costly to replace.
- **Battery difficult to replace in over two-thirds of devices¹**. The assessment revealed

¹ "A battery is a feeble vessel that begins to fade the moment it leaves the factory. A battery is also the most prone parts to fail, requiring several replacements in the life of the host."

some very good examples (LG's G4 and G5) as well as extremely bad practice (such as the Samsung Galaxy S7, S7 Edge and S8 smartphones). Of the 44 devices tested, only 14 were designed for their batteries to be easily replaced by end users, with two-thirds requiring special tools or removal of adhesives to replace the battery.

- **Laptops highlight the biggest disparity in design choices by major brands**, with 5 of the 9 models torn down by iFixit scoring 8 or more points. In contrast, most smartphones and tablets are not designed with upgradeability in mind, an important feature for extending the lifetime of electronic products.
- A total of 20 smartphones were assessed for repairability, out of which only 4 scored above 8 points (Fairphone 2, LG's G4 & G5, and Xiaomi's Redmi Note 3), with the majority scoring between 5 and 7 points and the 3 Samsung smartphones (Samsung's Galaxy S8, Galaxy S7 and S7 Edge) at the bottom with 4 points or less. The Fairphone 2 scored the highest(10/10), incorporating modular parts that allow users to easily upgrade or repair, showing that this is also possible for smartphones and by extension, tablets.

Findings: Time to design repairable, longer lasting products

In general, the assessment shows **enormous potential for improving the repairability of electronics** and for giving users the option to repair their devices to extend their lifespans. The good examples show that this is technically achievable and that brands should be prioritising this in their product design and in the provision of their after sales services.

Making devices that can be repaired and last longer is the most significant step that brands can take to reduce the various environmental impacts associated with electronics manufacturing - from the extraction of virgin raw materials, through to the hazardous chemicals and the large amounts of energy used in manufacturing. Devices that can be easily disassembled for repair are also easier to disassemble for re-use and recycling - the next stage of a product's life - once it is no longer possible to use the whole product anymore. Components can be used again and, if not, recycled to recover the valuable raw materials.