



## | FAILING THE FIX

Grading laptop and cell phone companies on the fixability of their products

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**February 2022**

Cover photo: Andrey Solovev, Shutterstock.com

## | ACKNOWLEDGEMENTS

The author thanks Kris Rodriguez, Guide Community Manager, iFixit.com; Kyle Wiens, Co-Founder and CEO, iFixit.com; Tony Dutzik, Associate Director and Senior Policy Analyst, Frontier Group; Sarah Nick, Policy Associate, Frontier Group; and Gay Gordon-Byrne, Executive Director, Repair.org for their contributions.

The author bears any responsibility for factual errors.

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## EXECUTIVE SUMMARY

Nobody walks into an electronics store and thinks, “I’m going to buy something unfixable.” But how can you know which products will last, and which are too difficult or costly to repair and keep in use?

The prevalence of unfixable stuff is a problem for both consumers and the planet. Electronic waste is the fastest growing waste stream in the world,<sup>i</sup> and the U.S. EPA reports that it is now the fastest growing part of our domestic municipal waste stream.<sup>ii</sup> Americans spend nearly \$1,500 on new electronics per household, per year – and could save a combined \$40 billion if they were able to repair instead of replace products and extend the lifespans of their electronics by 50 percent.<sup>iii</sup>

In order to help consumers pick more repairable products, and to incentivize manufacturers to support repair, France has begun to require the posting of a repairability score for common electronics, such as laptops and cell phones.<sup>iv</sup> The information disclosed in these scores, especially when you look into the detailed breakdown of how the score was calculated,<sup>v</sup> gives insight into what the repair challenges will be.

In order to grade manufacturers on their support for repair and Right to Repair, U.S. PIRG Education Fund, with assistance from iFixit.com, has accumulated French repair scores across 187 devices from 10 prominent manufacturers. Because repairing products is dependent on your ability to get access to necessary repair materials, our grade also reflects companies’ records of lobbying against Right to Repair, or membership in associations which are prominent Right to Repair opponents.

Consumers who seek to purchase easily repairable products – especially from companies who do not fight to prevent Right to Repair – can use these grades as a starting point for making those evaluations. Additionally, an analysis of which manufacturers scored higher or lower on which repairability criteria, such as parts pricing or repair documentation, can help consumers understand what repair challenges they might encounter with a given product – and also help manufacturers best address their repair shortcomings.

Galaxy Z Fold3 5G

SM-F926BZKDEUH



Couleur: Noir



256 Go

512 Go

★★★★☆ 4.2 (240)



1 699,00€

*Samsung phone shown with its repair score (7.8 of 10)*

FINDINGS

## Repair Scorecard: Laptops

A

(8.0-10)

B

(6.5-7.9)



B+ (7.81)

ASUS® B+ (7.61)

Lenovo B- (6.99)

acer B- (6.87)

C

(5.0-6.49)



C+ (6.39)

D

(3.0-4.99)



Microsoft D+ (4.60)



D- (3.16)

F

(0-2.99)

# Repair Scorecard: Cell Phones

A

(8.0-10)

B

(6.5-7.9)

C

(5.0-6.49)

D

(3.0-4.99)

F

(0-2.99)

 **motorola** B+ (7.77)

**SAMSUNG** C (5.69)

 D+ (4.64)

 F (2.75)

## FRANCE'S REPAIRABILITY INDEX

The European Union's Ecodesign Directive, established in 2009, sets goals to improve the environmental performance of consumer products around energy usage and sustainability by "bringing all products produced or sold in the EU in line with technical standards for sustainability."<sup>vi</sup> The European Parliament, as part of that directive, voted in November 2020 to approve new repairability measures, in order to address the rise in throwaway electronics. Part of that measure requires the European Union to create repairability and durability labels for consumer products, which the European Commission is tasked with developing, with the goal of addressing the shortening lifespans of electronics.<sup>vii</sup>

France debuted the first repairability scores in January 2021, ahead of an EU-wide law requiring other countries to follow suit.<sup>viii</sup> These labels are meant to incentivize manufacturers to abandon unsustainable design practices such as designing products that are impossible to repair, requiring proprietary tools, refusing to provide access to tools or service instructions, and other anti-repair tactics.

On behalf of Samsung, OpinionWay investigated how the French repairability index has influenced French consumer attitudes and behavior since its introduction on January 1, 2021. Among the key findings: 71% have heard about the index, and 86% say that the index impacts their purchasing behavior – including 8 out of 10 who indicated they would give up their favorite brand for a more repairable product.<sup>ix</sup>

The repairability index scores devices on five criteria, with a max score of 20 for each criterion. Those criteria are: availability of repair documentation (manuals and service guides), ease of disassembly (how easy or hard it is to open the device), availability of spare parts, affordability of spare parts (calculated as a percentage of the cost of the whole product), and a device-specific category. The scores for the five categories are then summed and divided by 10 to create a total score ranging from 0 to 10.

## LAPTOP DRILL DOWN

Company	Number of devices scored	Average of French scores	Average disassembly rating (out of 10)	Did we find a record of direct lobbying on Right to Repair?	Is the company a TechNet member?	Is the Company a CTA member?	Anti-repair lobbying deduction	Grade out of 10	Letter grade
Acer	13	6.32	7.42	No	No	No	0	6.87	B-
Apple	12	6.08	3.24	Yes	Yes	Yes	1.5	3.16	D-
Asus	22	6.43	9.30	No	No	Yes	0.25	7.61	B+
Dell	36	7.07	9.55	No	Yes	Yes	0.5	7.81	B+
HP	18	5.94	7.84	No	Yes	Yes	0.5	6.39	C+
Lenovo	15	7.93	6.56	No	No	Yes	0.25	6.99	B-
Microsoft	9	3.87	7.34	Yes	No	No	1	4.60	D+

The French repairability index scores devices across five categories: documentation, disassembly, parts access, parts pricing, and a device specific score. Each category is worth 2.0 points to the final grade out of 10. Our grade more heavily weights the disassembly score (more on our process and rationale in the Methodology portion of this report).

Dell ranked highest for the ease to disassembly, despite Lenovo recording the best overall scores in the French index. Microsoft devices are much more physically repairable than their French scores might lead you to believe – however, because access to documentation and parts is limited, those devices lose points to result in a 3.87 average grade across their current models for sale in France.

Apple lost the greatest number of points for their active lobbying against Right to Repair and support for other trade groups who are most visible in opposition, with Microsoft also losing points for direct lobbying.

Drilling down further into the five different categories represented in the French score provides additional insight into where manufacturers excel or lag in terms of supporting repair.

Companies	Average documentation score	Average disassembly score	Average parts availability score	Average parts pricing score	Average laptop-specific score
Acer	16.9	14.8	9.0	3.7	18.5
Apple	12.8	6.5	10.8	10.8	<b>20.0</b>
Asus	10.8	18.6	1.8	14.9	18.1
DELL	16.9	<b>19.1</b>	12.4	1.9	<b>20.0</b>
HP	16.2	15.7	4.6	2.9	<b>20.0</b>
Lenovo	<b>18.5</b>	13.1	<b>14.1</b>	<b>15.5</b>	18.0
Microsoft	7.4	14.7	<i>0.6</i>	<i>0.0</i>	16.1

Scores marked in **bold** represent the highest score in the category (with a three-way tie for the laptop-specific category), and *italic* scores indicate the lowest. Lenovo received the highest scores for availability of documentation (service manuals), as well as parts pricing and availability.

A new laptop manufacturer, Framework, which launched in 2021, promises to build a much more fixable product. Their debut laptop outscored all of the laptops we reviewed for the best-selling brands, with a 9.7 out of 10 overall, and 20 out of 20 on disassembly.<sup>x</sup> Those scores would be consistent with an A+ grade in this scorecard (though we did not fully score Framework).





## CELL PHONE DRILL DOWN

Company	Number of devices scored	Average of French scores	Average disassembly rating (out of 10)	Did we find a record of direct lobbying on Right to Repair?	Is the company a TechNet member?	Is the Company a CTA member?	Anti-repair lobbying deduction	Grade out of 10	Letter grade
Apple	20	5.64	2.86	Yes	Yes	Yes	1.5	2.75	F
Google	3	6.33	5.94	Yes	Yes	Yes	1.5	4.64	D+
Motorola	18	7.15	8.38	No	No	No	0	7.77	B+
Samsung	21	8.10	3.78	No	No	Yes	0.25	5.69	C

Looking more carefully at the contributing factors to our grade for cell phones, we again see some disparities between the total French reparability index and the physical ease of opening the device. Samsung had the highest overall score, but a considerably lower score on ease of opening the device relative to Motorola. Apple and Google lost the most points due to their engagement in opposing repair-friendly legislation.

Companies	Average documentation score	Average disassembly score	Average parts availability score	Average parts pricing score	Average cell phone-specific score
Apple	12.3	5.7	9.3	8.9	20.0
Google	6.2	11.9	7.2	20.0	18.0
Motorola	13.8	16.8	5.5	17.4	18.0
Samsung	17.7	7.6	16.7	19.3	20.0

A closer look at the five categories for the French score shows that Samsung provides the best access to documentation and parts for French customers, which helps it overcome a rather low score on the physical ease of repair.

Across the 62 phones we scored, the average total French repairability score was 6.94, and the highest score belongs to the Samsung Galaxy A03s with an 8.4 – but the device only scored a 9.4 out of 20 for disassembly. That’s slightly below the average disassembly score of 9.9. The phones tied with the highest score for disassembly are the Motorola Moto g10 and e7i Power, both with 18.9 out of 20 scores.



The Fairphone FP3+ has a total score of 8.7, and a disassembly score of 20 out of 20 – higher than any phone we reviewed, and scores consistent with a total grade of A+ (though we did not score Fairphone). It is therefore reasonable to believe that all manufacturers could produce phones with similar features that are much easier to fix.<sup>xi</sup>

## CONCLUSION

**Some devices are not easily repairable, and it can be difficult to know which ones are hard to fix: Consumers need better information about repairability at the point of sale.**

Having a repairable product requires that the product be designed to facilitate repairs, and that there exists an ecosystem of support where owners can access parts and documentation, and there are a range of repair businesses to provide repair services. The French score gives valuable information about the design of the product and an indication of the support the manufacturer provides to the repair ecosystem. Our score further reflects how the manufacturers treat repair competition legislation.

The long-term value of a product is generally tied to its ability to keep working over time. Consumers should be able to know if the product they are purchasing is repairable, as it impacts the value of their purchase. Even some expensive models have low repair scores, while other more affordable models are very repairable – so price alone does not convey how repairable a product is, and therefore how long it will hold value. There is a significant benefit for consumers to have access to this information as they make their purchases. Repairability transparency also increases incentives for manufacturers to make more repairable products, resulting in significant environmental benefits. Manufacturers are already scoring these products; American consumers should have the benefit of knowing the repair score at the point of purchase.

## **Manufacturers need to improve access to parts and service information.**

There are a variety of ways manufacturers gain and lose points on their product scores. Some products are physically repairable, according to the “Category 2” score which rates the ease of physical disassembly, but the lack of repair documentation or spare part access greatly lowers the final score. For example, Motorola phones were the most physically repairable of the four rated manufacturers (average score of 16.8 out of 20), but had a lower parts availability score than other manufacturers. Conversely, Samsung phones had the highest average total French score (8.1 out of 10), but the phones are generally more difficult to open and fix, with only a 7.6 of 20 on the averaged disassembly score.

Manufacturers should increase access to parts and service instructions to improve their scores and take advantage of fixable designs by creating robust repair markets around their products.

## **Right to Repair reforms would help consumers fix their stuff.**

Requiring companies to provide access to parts and service instructions, as well as any necessary software tools, would improve repair scores across the board, and result in more products getting fixed, avoiding electronic waste. By passing Right to Repair reforms at the state and national levels, we can ensure consumers can fix their products.

## **METHODOLOGY**

In order to select which brands to compare, we reviewed popular laptop manufacturers in the American market, of which the top eight were HP, Dell, Apple, Acer, Lenovo, Asus, Microsoft and Samsung.<sup>xii</sup> Because Samsung has discontinued sales of laptops in Europe, we could not review the French repair score for these products, so we scored the remaining seven brands.<sup>xiii</sup> For cell phones, we also reviewed popular brands.<sup>xiv xv</sup> We decided to omit LG phones, because while somewhat popular, the brand is discontinuing smartphone production moving forward.<sup>xvi</sup> Our final list was Apple, Samsung, Motorola and Google.

We attempted to gather as many full repair score breakdown sheets as possible. First, we checked the manufacturers’ French web marketplace for their products, accessing and recording as many products as they included scores for. Next, we checked the popular French electronics retailer Boulonger.com for any other models which might be for sale there, but not from the manufacturer’s site. Some brands provided a full accounting of all their repair scores in one

central place, while others posted it alongside each product individually. There were a number of products which did not include scores, such as Lenovo's IdeaPad Duet 5 Chromebook Gen 6, which includes the disclaimer: "Cet indice de réparabilité n'est pas encore disponible, il sera publié dans les meilleurs délais," or "the repairability index is not yet available and will be provided as soon as possible."<sup>xvii</sup>

The repairability index scores devices on five criteria, with a max score of 20 for each criterion, for a total of 100 points, and then divides the total by 10. Each score is based on a worksheet which shows the breakdown of all five criteria. We collected the full score worksheet for each scored product to better identify and evaluate products according to the different criteria measured by the French repair index. We did not include products for which we could not locate this detailed scoring information. There were two products where there appeared to be a discrepancy in the overall score and the full score breakdown, both Asus VivoBooks (S533UA-L1245T and S712EQ-AU003T). We elected to use the score suggested by the full repair worksheet in those two cases, which resulted in revised scores of 5.3 and 5.4 respectively.

We also collected information about the lobbying record of each company. We reviewed lobbying records in three states which had highly contested Right to Repair bills and have a public record of lobbying clients posted online: California, Colorado and Massachusetts. In addition, we reviewed membership for trade associations which are highly visible Right to Repair opposition lobbying groups, TechNet and the Consumer Technology Association (CTA).

In calculating the final grade, we decided to give significant weight to the physical ease of disassembly of the product. Because a large portion of the French score gauges access to repair manuals and spare parts, and that access can change over time or from country to country, we wanted the score to reflect the design of the product more prominently. We believe this is what consumers generally expect when learning about a "repair score." Each company grade averages the total French score and the disassembly score with equal weight, and then deducts 1 point for lobbying directly against Right to Repair measures in the three states we reviewed, and .25 points for each case of membership in TechNet or CTA. While Lenovo owns Motorola, we decided against deducting Lenovo's trade association memberships from Motorola, since the brand has its own lobbying efforts and appears to act independently.<sup>xviii</sup>

Our scores, out of ten, were translated to letter grades using the following breakdown:

9 or above	A+
8.5-8.99	A
8.0-8.49	A-
7.5-7.99	B+
7.0-7.49	B
6.5-6.99	B-
6-6.49	C+
5.5-5.99	C
5-5.49	C-
4.5-4.99	D+
4-4.49	D
3.0-3.99	D-
2.99 or below	F

## END NOTES

<sup>i</sup> Matthew Gault, "[The World Economic Forum Tells Davos: Electronics Are 'the Fastest-Growing Waste Stream in the World'](#)," Vice, Jan. 29, 2019.

<sup>ii</sup> "[Helping Communities Manage Electronic Waste](#)," U.S. EPA, June 1, 2021.

<sup>iii</sup> Alex DeBellis and Nathan Proctor, "[Repair Saves Families Big](#)," U.S. PIRG, January 2021.

<sup>iv</sup> Maddie Stone, "[Why France's new 'repairability index' is a big deal](#)," Grist, Feb. 8, 2021.

<sup>v</sup> For example, the full score sheet for the Lenovo IdeaPad 3i, <https://drive.google.com/file/d/1U07uOWvbbQrhur2OeUX4b0tLkXgn3kRN/view?usp=sharing>.

<sup>vi</sup> "Sustainable product policy & ecodesign," European Commission, accessed February, 2022. [https://ec.europa.eu/growth/industry/sustainability/sustainable-product-policy-ecodesign\\_en](https://ec.europa.eu/growth/industry/sustainability/sustainable-product-policy-ecodesign_en)

<sup>vii</sup> Christopher Pitchers & Aida Sanchez, "[MEPs vote for easier phone repairs, potentially ending big tech's mending monopoly](#)," EuroNews, Nov. 25, 2020.

<sup>viii</sup> Adele Chasson, "[French repairability index: what to expect in January?](#)" Repair.eu, Nov. 3, 2020.

<sup>ix</sup> Samsung, Accessed February 2022. <https://news.samsung.com/fr/sondage-indice-reparabilite>.

<sup>x</sup> Ordinateur portable Framework Laptop FRANBP0000, Indice de réparabilité website, accessed February 2022. <https://www.indicereparabilite.fr/produit/ordinateur-portable-framework-laptop-franbp0000/>.

<sup>xi</sup> Smartphone Fairphone FP3+, Indice de réparabilité website, accessed February 2022. <https://www.indicereparabilite.fr/produit/smartphone-fairphone-fp3/>.

<sup>xii</sup> "[The Most Popular Laptop Brands in the U.S.](#)," Statista, accessed January 2022.

<sup>xiii</sup> Leo Kelion, "[Samsung laptops to be pulled from sale in Europe](#)," BBC, Sept. 24, 2014.

<sup>xiv</sup> "[Manufacturers' market share of smartphone sales in the United States from 1st quarter 2016 to 2nd quarter 2021](#)," Statista, accessed January 2022.

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<sup>xv</sup> [“2019 Most Popular Mobile Phones in the United States.”](#) Discover Big Fish, accessed January 2022.

<sup>xvi</sup> Abner Li, [“LG officially shutting down worldwide mobile phone business,”](#) 9 to 5 Google, April 4, 2021.

<sup>xvii</sup> Lenovo, accessed January 2022.

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<sup>xviii</sup> Jon Russell, [“Lenovo Has Completed The \\$2.91 Billion Acquisition Of Motorola From Google,”](#) TechCrunch, Oct. 30, 2014.