



Failing the Fix (2024)

GRADING LAPTOP AND CELLPHONE COMPANIES
ON THE FIXABILITY OF THEIR PRODUCTS

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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 that breaks.”

Many of us have purchased something, or received a gift, that nearly immediately stopped working. Many phones and laptops on the market are made to be so difficult to fix they become essentially disposable. Consumers would like to choose electronics that are durable and fixable, but how do we know which products are designed to last and which are destined for the dump?

This report calculates a repairability score for the most popular cell phone and laptop brands, and grades which manufacturers are designing devices to last and which are “Failing the Fix.”

Since January of 2021, France has required companies to provide detailed information about how fixable certain products are, and to post an overall repair score at the point of sale.¹ Our third edition of “Failing the Fix” reviews the detailed repair information now available from this requirement for 164 devices and tracks changes in grades since our last report. This year’s edition also includes a section highlighting the three most repairable cell phones and laptops available on the market from each manufacturer to guide consumers looking to buy a fixable device.

Overall, scores have increased for cell phones indicating that repair scores are continuing to incentivize manufacturers to design more repairable products. Unfortunately, improvement has not been consistent across product categories, with laptops having fallen according to several of our measurements.

Motorola leads cell phone manufacturers with a C+, while Apple and Google are tied for second place, each earning a C. Samsung lags with a C-. For laptop manufacturers, ASUS leads in repairability with a B+, followed by Acer with a B, DELL and Microsoft are tied for third each scoring a C+ grade, HP and Lenovo follow each earning a C, and Apple is in last place with a D.

Some notable trends from last year have continued, including that Chromebooks, while more affordable than other devices, continue to be less repairable than other laptops.² Apple continues to be in last place for laptop manufacturers, but improved the most among cell phone manufacturers, surpassing last year’s D to earn a C this year. The iPhone maker’s higher marks partially result from a significant increase in the ease of disassembly of their products.³

Unrepairable devices are a disaster for the environment and fuel a growing electronic waste crisis. Globally, we trash 59 million tons of used electronics (the weight of 161 Empire State Buildings) each year.⁴ Electronic waste is the fastest growing waste stream in the world,⁵ and the U.S. EPA reports that it is the fastest growing part of our domestic municipal waste stream.⁶

Fixable devices are also a boon for Americans looking to save money. An average family spends nearly \$1,500 on new electronics per year. A previous PIRG report found that consumers 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.²

This detailed repairability information provided by manufacturers in France are composed of five categories which help consumers understand what challenges they could face during repair. Our report more heavily weights the disassembly score because we think this better reflects what consumers think a repairability score indicates and because the other categories can be country specific. Consumers' ability to fix their devices is limited by efforts to stop the Right to Repair, so our final grades remove points from companies who are members of trade groups which lobby against repair legislation. This year's addition also deducts points if manufacturers don't easily provide full information on how they calculated their products' repair scores. (See more in the methodology section.)

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 comparison shopping. Additionally, repair scores encourage companies to design products that are repairable and stop supporting trade associations that lobby against Right to Repair legislation. Both are important steps to protect consumers and our planet.

Findings

FAILING THE FIX, 2024

The Top 3 Easiest Laptops to Repair

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Manufacturer	Grade	Laptop Models
	B+	Zenbook Pro 14 (UX6404) Zenbook S 13 (UX5304) Zenbook 14 (UM3402)
	B	Aspire Vero series Aspire 3 series Nitro 5 series
	C+	Vostro 16 Laptop Latitude 3140 Vostro 3520
	C+	Microsoft Surface Laptop Go 3 Microsoft Surface Laptop Go 2 Microsoft Surface Laptop Studio 2
	C	OMEN Gaming Laptop 16 series Victus Gaming Laptop 16 series OMEN Transcend Laptop 16 series
	C	ThinkBook 16 Gen 4 Plus IdeaPad Slim 5 Ideapad 1 15ALC7
	D	MacBook Air M1 13" MacBook Air M2 13" MacBook Pro M3 Max 16"

The Top 3 Easiest Cellphones to Repair

Manufacturer	Grade	Laptop Models
 motorola	C+	moto g 5g - 2023 motorola edge 30 fusion - 2022 motorola razr 2023
	C	iPhone 15 series iPhone 14 iPhone 13
	C	Pixel 8 series Pixel 7a Pixel 7
SAMSUNG	C-	Galaxy A14 5G Galaxy A54 5G Galaxy A25 5G

| 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."⁸ 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.⁹

France debuted the first repairability scores in January 2021, ahead of an EU-wide law requiring other countries to follow suit.¹⁰ 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.¹¹

These concerns resonate on both sides of the Atlantic. American consumers also expect to be able to repair devices, but without repair scores don't know which devices will meet their expectations. A 2021 study of U.S. consumers, conducted by Aaron Perzanowski, revealed consumers expect to be able to repair consumer electronics such as tablets, smart speakers, digital cameras, and smart refrigerators.¹² "Across device categories, 83% of consumers agreed with the proposition that they have the right to repair devices they purchase themselves or to take them to the repair shop of their choice. 59% reported that they would be very or somewhat surprised to learn that a manufacturer limited their ability to repair a device they purchased."¹³ These findings underscore that consumers need better information about whether the products they buy are repairable, such as by publishing a repair score.

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.

Our grade more heavily weighs the disassembly score, and deducts points for failing to provide full scoring information and for membership in anti-Right to Repair trade organizations (more on our process and rationale in the Methodology portion of this report). This edition reviews devices that were available for sale directly from manufacturers in January 2024.

Laptop drill down

Laptop Manufacturers	Scored Devices	Average FR score	Disassembly average (out of 10)	Missing scores PDFs deduction	Trade Association Modification	Grade	Letter Grade
Acer	14	6.9	8.1	-0.20	0	7.3	B
Apple	8	6.6	4.0	0.00	-1	4.3	D
ASUS	14	7.4	9.1	0.00	-0.5	7.7	B+
DELL	48	7.5	7.6	-0.20	-1	6.3	C+
HP	33	6.2	7.8	-0.40	-1	5.6	C
Lenovo	6	7.0	6.6	-0.80	-0.5	5.5	C
Microsoft	6	6.4	8.0	-0.40	-0.5	6.3	C+
<i>Avg across manufacturers</i>		6.9	7.3			6.2	

Table 1. Laptop overview

Asus has overtaken Dell to score the highest grade among laptop manufacturers this year with a B+. Second place is taken up by Acer with a B, DELL and Microsoft are tied for third each scoring a C+ grade, HP and Lenovo follow each earning a C, and Apple is in last place with a D. Looking at the column “Missing scores PDFs deduction” we can see that Lenovo lost the most points for having a large number of devices with missing full score breakdowns. (See the Methodology section for more). HP, Microsoft, and Acer lost points for not providing all the repair score breakdowns as well. We also removed points for membership in trade associations that fight against the Right to Repair (see Methodology section) with Apple, Dell, and HP all losing a full point for membership in both TechNet and the Consumer Technology Association (CTA), and Asus, Lenovo, and Microsoft losing half a point for their membership in one of these anti-consumer associations. Acer was the only manufacturer who didn’t lose any points for membership in a trade association that lobbies against repair.

Drilling down further into the five different categories that comprise the French score provides additional insight into where manufacturers excel or lag in terms of supporting repair. We can see that the average French repair score across manufacturers increased slightly from 6.5 in last year’s edition to 6.9 this year. Unfortunately, the average disassembly score across manufacturers decreased from last year’s 7.5 to 7.3 this year. This indicates that manufacturers are failing to design laptops that are easier to disassemble and repair. We weigh this category more heavily than the others in our manufacturer grades (see Methodology section) given that we believe it most accurately represents the concerns consumers have when considering reparability.

Laptop Manufacturers	FY24 Scored Devices	FY23 Scored Devices	FY24 Average FR score	FY23 Average FR Score	FY24 Disassembly average (out of 10)	FY23 Disassembly average (out of 10)	FY24 Grade	FY23 Grade	Difference in Grades FY24-FY23
Acer	14	32	6.9	6.4	8.1	7.7	7.3	7.0	0.3
Apple	8	9	6.6	6.2	4.0	3.5	4.3	3.3	1.0
ASUS	14	55	7.4	6.8	9.1	9.2	7.7	7.7	0.0
DELL	48	42	7.5	7.3	7.6	9.6	6.3	7.9	-1.6
HP	33	56	6.2	6.7	7.8	8.5	5.6	7.1	-1.5
Lenovo	6	40	7.0	7.5	6.6	6.8	5.5	6.9	-1.4
Microsoft	6	6	6.4	4.6	8.0	7.2	6.3	4.9	1.4
<i>Avg across manufacturers</i>			6.9	6.5	7.3	7.5	6.2	6.4	

Table 2. Laptop overview compared to last year (FY23)

The following table compares the breakdown on the five categories that comprise the overall French repair score with the results from last year's edition. We can see that the averages across manufacturers for documentation, parts availability, parts pricing, and the final laptop-specific category have all increased, as previously noted the most important category in our analysis, disassembly, has decreased slightly from last year.

Laptop Manufacturers	FY24 Cat 1: Documentation	FY23 Cat 1: Documentation	FY24 Cat 2: Disassembly	FY23 Cat 2: Disassembly	FY24 Cat 3: Parts Availability	FY23 Cat 3: Parts Availability	FY24 Cat 4: Parts Pricing	FY23 Cat 4: Parts Pricing	FY24 Cat 5: Specific	FY23 Cat 5: Specific
Acer	16.9	16.9	16.1	15.3	13.9	10.5	2.1	1.2	19.8	19.6
Apple	15.4	14.0	8.0	6.9	13.2	11.7	9.8	9.7	20.0	20.0
ASUS	17.0	13.2	18.2	18.3	5.4	2.2	14.1	15.9	19.3	18.2
DELL	16.6	17.0	15.1	19.2	14.6	12.1	8.8	4.5	20.0	20.0
HP	17.9	17.0	15.7	17.0	4.9	7.8	3.0	5.6	20.0	20.0
Lenovo	18.5	18.5	13.2	13.5	14.1	14.1	4.5	10.3	20.0	18.8
Microsoft	15.4	13.1	16.0	14.5	8.1	3.4	8.7	0.0	15.5	15.5
<i>Avg across manufacturers</i>	16.8	15.7	14.6	15.0	10.6	8.8	7.3	6.7	19.2	18.9

Table 3. Laptop repair score category breakdown

Finally this table compares the repair store and disassembly score for the 10 laptops which we identified as Chromebooks. Overall the average repair score across Chromebook devices of all manufacturers was 6.3 compared to an average of 7.0 for all other laptops. Again focusing on the disassembly category which we identify as the most important in our analysis, the average across

Chromebook laptops was 14.9, lower than the average of 15.2 across all other laptops. Both of these lower averages indicate that while often considered an affordable choice for individuals or schools, Chromebooks are on average less repairable than other laptops.

Brand	US Device Name and Model	Score	Category 2: Disassembly
DELL	Latitude 3140 Laptop or 2-in-1	8.8	19.3
ASUS	ASUS Chromebook Plus CX34 (CX3402)	7.4	19.5
ASUS	ASUS Chromebook CM14 Flip (CM1402F)	6.4	19.5
Acer	Acer Chromebook Plus 515 - CB515-2H-31NY	6.4	15.5
DELL	Latitude 5430 Chromebook	6.6	14.7
DELL	Latitude 3445 Chromebook	6.4	13.5
ASUS	ASUS Chromebook C423	4.7	15.5
DELL	Chromebook 3110 Laptop	5.7	10.8
HP	HP Chromebook 15a-na0047nr	5.2	11.5
HP	HP Chromebook 15a-nb0097nr	5.1	9.5
Chromebook average		6.3	14.9
Average of all other laptops		7.0	15.2

Table 4. Chromebooks

Cellphone drill down

Cellphone Manufacturers	Scored Devices	Average FR score	Disassembly average (out of 10)	Missing scores PDFs deduction	Trade Association Modification	Grade	Letter Grade
Apple	8	7.1	6.4	0.00	-1	5.7	C
Google	6	7.5	5.9	0.00	-1	5.7	C
Motorola	5	6.6	6.0	0.00	0	6.3	C+
Samsung	16	8.2	4.2	-0.20	-1	5.0	C-
avg		7.4	5.6			5.7	

Table 5. Cellphone overview

Grades were relatively clustered this year among cellphone manufacturers due to a decrease from Motorola compared to last year's edition and promising increases from Apple and Google. Motorola leads with a C+, while Apple and Google are tied for second place, each earning a C. Samsung lags with a C-. Only Samsung lost points for missing the full breakdown of repair score PDFs, but all manufacturers besides Motorola lost a full point due to membership in both anti-Right to Repair trade associations.

Cellphone Manufacturers	FY24 Scored Devices	FY23 Scored Devices	FY24 Average FR score	FY23 Average FR Score	FY24 Disassembly average (out of 10)	FY23 Disassembly average (out of 10)	FY24 Grade	FY23 Grade	Difference in Grades FY24-FY23
Apple	8	9	7.1	6.6	6.4	4.8	5.7	4.2	1.5
Google	6	5	7.5	6.7	5.9	5.8	5.7	4.7	1.0
Motorola	5	39	6.6	7.0	6.0	7.4	6.3	7.2	-0.9
Samsung	16	37	8.2	7.9	4.2	3.9	5.0	5.6	-0.6
avg			7.4	7.1	5.6	5.5	5.7	5.4	

Table 6. Cellphone overview compared to last year (FY23)

Reviewing the table above which compares scores from the last edition to this year, we can see that Apple improved the most with a 1.5 increase in their overall grade. This largely comes from their 1.6 increase in disassembly average indicating that the iPhone maker has improved the ability to take apart and fix their phones. Google is tied for second place overall and second place in terms of improvement, but as we can see in the below table comparing the five categories that constitute the overall repair score, their improvement is mostly from documentation and parts availability. We give less weight to these categories than disassembly in our overall manufacturer grade. Motorola, while still the top scoring cellphone manufacturer, also fell the most from last year due to a decrease in average disassembly scores. Samsung also had a lower score than last year due to their membership in lobbying trade associations and missing score PDFs.

Cellphone Manufacturers	FY24 Cat 1: Documentation	FY23 Cat 1: Documentation	FY24 Cat 2: Disassembly	FY23 Cat 2: Disassembly	FY24 Cat 3: Parts Availability	FY23 Cat 3: Parts Availability	FY24 Cat 4: Parts Pricing	FY23 Cat 4: Parts Pricing	FY24 Cat 5: Specific	FY23 Cat 5: Specific
Apple	14.6	13.7	12.7	9.5	14.1	11.9	10.0	10.6	20.0	20
Google	11.9	7.0	11.8	11.6	13.3	10.3	19.8	19.8	18.7	18
Motorola	13.8	13.8	12.0	14.7	5.3	5.5	16.8	18.2	18.0	18
Samsung	17.7	16.6	8.3	7.7	16.6	16.0	19.6	19.0	20.0	19.8
avg	14.5	12.8	11.2	10.9	12.3	10.9	16.5	16.9	19.2	18.95

Table 7. Cellphone repair score category breakdown

Reviewing the above table which compares the breakdown on the five categories that comprise the overall French repair score with the results from last year's edition highlights improvements in the averages across manufacturers in all categories besides parts pricing. In general, cellphones are getting more repairable with better documentation, spare parts availability, and easier disassembly.

| 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. Cellphones are getting easier to open up and repair while laptops are failing the fix.

Having a repairable product requires that the product be designed to facilitate repairs, have an ecosystem of support where owners can access parts and documentation, and consumers with access to a range of repair businesses to provide service. Repair scores give valuable information about the design of products and an indication of the support the manufacturer provides to the repair ecosystem. Our score further reflects membership in trade associations which fight against Right To Repair legislation, the availability of detailed repair scoring information, and the physical ease of repairing devices.

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. Our report shows that 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, especially because consumers are significantly concerned about durability while comparison shopping. In a study by Avery Dennison, almost 30% of consumers ranked durability as a top three concern and 48% as a top five concern.¹⁴ Repairability transparency also increases incentives for manufacturers to make more repairable products, resulting in significant environmental benefits.

More cellphones are designed to last

Apple is still in last place in terms of laptop manufacturers, but the iPhone maker improved the most in terms of cellphones with a 1.5 increase in their overall grade. This largely comes from their 1.6 increase in the disassembly average indicating that Apple has improved the ability to take apart and fix their phones. Across all cellphone manufacturers, we saw improvements in averages across all five categories of the repair scores besides parts pricing. In general, cellphones are getting more repairable with better documentation, spare parts availability, and easier disassembly.

Software is a growing concern that threatens gains in repairability

Although newer iPhone models have been designed with more accessible hardware, software locks still make them increasingly difficult to repair. For example, while the iPhone 14's rear glass panel makes it easier to disassemble, repair technicians and home fixers have encountered software barriers to installing replacement parts.¹⁵ Even when using official Apple replacement parts, fixers can receive Apple's warning that they installed an "unknown part." That's because

DIY-fixers don't have access to Apple's software tools that allow them to officially "authenticate" the repair. These restrictions are examples of a technique known as parts pairing, which is an increasingly common barrier to repair.¹⁶ Apple isn't the only tech company using software to prevent repair: It's a growing problem for consumers.¹⁷

Software support timelines can also pose a challenge to device longevity

Manufacturers often use software to push us into the whirlpool of replacement. They commonly end software support after just a few years. Consumers deserve to know the "support date" that guarantees the length of a product's software support, so we're not kept in the dark about when a phone or laptop will reach its "death date." Software support timelines are not currently included in French repairs scores and therefore aren't tracked in the manufacturer grades in this report.

Right to Repair reforms and Right to Repair scores 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.

Nobody walks into an electronics store looking to buy something that breaks and can't be repaired or fixed. But right now we don't know which products are destined for the dump and which are designed to last. There needs to be a consistent repair score criteria that allows apples-to-apples comparisons, just like other successful labeling programs such as automobile fuel economy stickers. U.S. Right to Repair scores, similar to the scoring system in France used by this report, provide transparency in the marketplace by providing consumers with a simple way to compare reparability across products. These scores are like fuel economy stickers for reparability.

State lawmakers and the federal government can act to provide consumers with the information they need to choose repairable products. Many retailers and manufacturers already have these scores due to the French repair score policy and should voluntarily provide them to U.S. consumers.

| Methodology

This report compared scores from the same manufacturers in the last two editions in order to capture trends over time. For the inaugural edition, 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.¹⁸ Because Samsung discontinued sales of laptops in Europe, we could not review the French repair score for these products, so we scored the remaining seven brands.¹⁹ For cellphones, we also reviewed popular brands.^{20 21} Our final list of most popular cellphone brands was Apple, Samsung, Motorola and Google.

We followed a three phase approach to collect devices and score them for this report. Phase one: Devices from each manufacturer that met the inclusion criteria were listed. We included any device in the US for sale directly from the manufacturer's website. We included manufacturer-refurbished devices and those that were currently out of stock. We didn't include devices that were only available from third party retailers.

Phase two: We searched for the device on French retailers to find the repair score breakdown PDF. This PDF lists the model number and the score (out of 20) for the 5 categories that make up the final device topline score (out of 10). In many cases, especially for laptop brands Acer, Asus, HP, and Lenovo the model numbers used in the U.S. didn't match those used in France. We first compared so-called "marketing names" (e.g. Vivobook 17X) and if the product pictures and these "marketing names" matched for specific U.S. and French devices, we corresponded the French model's repair score with the U.S. device. We then attempted to compare the model numbers to determine a match. Model numbers often contained three sections separated by dashes. e.g. xxx-xxx-xxx If the first two sections of a U.S. and French model number matched, we counted them as corresponding models. If the second section was different we reviewed product photos, and if the device housing (e.g. port placement, keyboard layouts) were identical, we counted them as corresponding models. If we couldn't find a corresponding French model we marked this device as "Not for sale in France."

Phase three: 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 searched for the full repair score breakdown PDF on the French version of the manufacturer's website and on third-party retailers boulanger.com and amazon.fr. If we couldn't find the full breakdown PDF on any of these three sources we marked the device as "No PDF." We did not include products for which we could not locate this detailed scoring information.

If we found the PDF we transcribed the five score categories. The overall French score was calculated as a sum of the five categories divided by 10 to calculate a topline score out of 10. We use this calculated score in the report if the topline score for the device was either misreported or rounded incorrectly.

Some brands provided a full accounting of all their repair scores in one central place, while others posted it alongside each product individually. Motorola deserves credit for displaying their scores the most accessibly, allowing consumers to easily review them while shopping.²² Microsoft and Apple link to their scores on a less accessible support page rather than on the store listing for each device.^{23 24}

There were a number of products which did not seem to be sold in France and for which we could not find a repair score. Manufacturers didn't receive any sort of deduction for U.S. models not being available in France. On the other hand, some devices were available in France but had no links to the full score breakdown, broken links, or links to documentation that didn't include the device's full repair scores. This year, we removed points from manufacturers for those that had a large number of missing full score PDF, noted as "No PDF" in the below tables. Lenovo was the worst at providing complete scoring information with 19 devices that were missing full scoring breakdowns or 76% of the total devices available for sale in France that didn't have scoring information. When we called French Lenovo customer service we were told that the devices were too new and the repair scores would be provided at an unspecified date.²⁵

Cellphone Manufacturers	Scored Devices	Total "No PDF:"	Percent "No PDF:"	Modification
Apple	8	0	0%	0.00
Google	6	0	0%	0.00
Motorola	5	0	0%	0.00
Samsung	16	2	11%	-0.20

Table 8. Cellphone "No PDF" deductions

Laptop Manufacturers	Scored Devices	Total "No PDF:"	Percent "No PDF:"	Modification
Acer	14	1	7%	-0.20
Apple	8	0	0%	0.00
ASUS	14	0	0%	0.00
DELL	48	4	8%	-0.20
HP	33	12	27%	-0.40
Lenovo	6	19	76%	-0.80
Microsoft	6	2	25%	-0.40

Table 9. Laptop "No PDF" deductions

Percent "No PDF."	Modification
0% - 10%	-0.20
11% - 20%	-0.20
21% - 30%	-0.40
31% - 40%	-0.40
41%+	-0.60
51-60%	-0.60
61-70%	-0.80
71-80%	-0.80
81%+	-1.0

Table 10. "No PDF" grade modifications

Calculating manufacturer grades: Our overall process was similar to last year's edition with some changes to the deductions for trade association membership and the addition of deductions for missing score PDFs. Just as last year, 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 0.5 points for each case of membership in TechNet or Consumer Technology Association (CTA). The full deductions for trade association membership are listed below. While Lenovo owns Motorola, just as last year we decided against deducting Lenovo's trade association memberships from Motorola, since the brand has its own association memberships and appears to act independently. We removed deductions for so-called "direct lobbying" that had been present in previous editions because at this point many manufacturers have both supported and opposed various state Right to Repair bills. We wanted to highlight the consistent opposition of TechNet and CTA towards all Right to Repair policies. As described above, this year we also calculated the percentage of all devices which were also for sale in France yet were missing the full score breakdown PDF. We deduct between 0.20 and 1.0 points from the manufacturer's final grade according to the tables above.

Companies	TechNet Membership -0.5 to grade	CTA Membership -0.5 to grade	Grade Modification
Acer	no	no	0
Apple	yes	yes	-1
Asus	no	yes	-0.5
DELL	yes	yes	-1
Google	yes	yes	-1
HP	yes	yes	-1
Lenovo	no	yes	-0.5
Microsoft	no	yes	-0.5
Motorola	no	no	0
Samsung	yes	yes	-1

Table 11. Manufacturer trade association membership details

Our manufacturer grades, out of ten, were translated to letter grades using the following breakdown from the previous editions of this report:

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

Table 12. Manufacturer grade to letter grades

Endnotes

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