



Benefit from up to 13 hr 44 min of uninterrupted battery life

based on MobileMark 2018 results*

Work happy on the go with greater unplugged performance and longer battery life using an HP EliteBook 645 G10 Notebook PC

vs. a Dell Latitude 5440 laptop

Notebook users shouldn't have to compromise device performance to squeeze out a few more hours of battery life. Many users expect consistent performance from a device, whether they plug devices in at an office or coworking space or they need to unplug during their commute or at their airport terminal. And when they're completing mission-critical work on the go, mobile trailblazers need a solution that can deliver both the battery life to complete their workday and performance that won't slow them down. But with so many compelling choices on the market with high-performance processors, it can be difficult to know which device can best empower a mobile trailblazer.

At PT, we used industry-standard benchmarks to provide real-world battery life estimates and highlight crucial differences between plugged-in and unplugged system performance on an HP EliteBook 645 G10 Notebook PC powered by an AMD Ryzen™ 7 7730U processor and a Dell™ Latitude™ 5440 laptop powered by an Intel® Core™ i7-1355U processor. For personal comfort, we also hand-measured how hot and loud each became while running a CPU-intensive workload. We found that the HP EliteBook 645 G10 Notebook PC powered by an AMD Ryzen™ 7 7730U processor generally delivered better mission-critical performance unplugged and longer battery life than the Dell Latitude 5440 laptop powered by an Intel Core i7-1355U processor.

Work unplugged without sacrificing system performance

based on PassMark and Cinebench results

Stay comfortable with a cooler and quieter laptop

based on hot-spot temp and acoustic readings under load

*With Windows power set to "best power efficiency" mode

What we tested

Before we started testing, we set the 14-inch Windows 11 Pro business laptops to “best performance” power mode. For the MobileMark® 2018 battery life tests, we set screen brightness to 205 nits and conducted “best performance” and “best power efficiency” power mode comparisons. We then reset screen brightness to 255 nits for the MobileMark 25 battery life comparisons. Other than making and verifying those changes, we used out-of-box OEM performance settings for both laptops. We tested the following systems:



HP EliteBook 645 G10 Notebook PC

AMD Ryzen™ 7 7730U processor (2.0 – 4.5 GHz)
with Radeon™ graphics

8 cores with 16 threads

32 GB of dual-channel memory

512 GB of PCIe® NVMe® SSD storage

51Whr battery



Dell Latitude 5440 laptop

Intel Core i7-1355U processor (1.7 – 5.0 GHz)
with integrated Intel UHD graphics

10 cores with 12 threads

32 GB of dual-channel memory

512 GB of PCIe NVMe SSD storage

54Whr battery

We ran the following performance-based benchmark tests twice—once with the laptops plugged in and again unplugged while in “best performance” power mode:

- PassMark PerformanceTest 11
- Cinebench R23

To test battery life and efficiency, we ran MobileMark 2018 and MobileMark 25 benchmarks twice—once in “best performance” power mode and again in “best power efficiency” power mode. For our surface temperature comparisons, we ran a sustained Cinebench R23 workload for 50 minutes, taking keyboard and bottom hot-spot temperature readings every 10 minutes. We then ran the CPU-intensive workload again for 20 minutes to determine how much noise each laptop’s fan produced under load.

The benchmark scores and battery life results we report reflect the specific configurations we tested. Any difference in the configurations, as well as screen brightness, network traffic, or software additions, can affect these results. For a deeper dive into our testing parameters and procedures, see the [science behind the report](#).

Performance benchmark results: Work unplugged without big performance losses

A large part of any mobile workforce's daily routine is switching back and forth between documents, websites, and apps. In fact, researchers in a Harvard Business Review case study found that mid-or back-office users across three Fortune 500 companies toggled between apps and websites an average of nearly 1,200 times each day.⁴ This is one reason our real-world performance, battery life, heat, and noise comparisons under load are so important. With them, teams can focus on completing mission-critical work from anywhere without worry.



About the HP EliteBook 645 G10 Notebook PC

HP designed this customizable 14-inch laptop to help teams stay productive no matter where they're working. According to HP, this model is highly secure, providing connectivity options and configurable ports for on-the-go individuals.¹

To learn more about the HP EliteBook 645 G10 Notebook PC, visit the HP website:

<https://www.hp.com/us-en/shop/pdp/hp-elitebook-645-g10-notebook-pc-customizable-75c13av-mb>.

About the AMD Ryzen™ 7 7730U processor

This AMD Ryzen™ 7030 Series processor for mobile is built on "Zen 3" architecture and balances power, performance, and efficiency.² The AMD Ryzen™ 7 7730U processor has eight cores with 16 threads, Radeon™ graphics, and PCIe 3.0 connectivity.³

Boost mobile productivity

PassMark PerformanceTest is a productivity benchmark that gathers CPU, disk, memory, and 2D/3D graphics performance metrics before combining the individual component metrics to create a single, overall score, called the PassMark rating. The bigger the overall rating number, the faster the device.⁵

Better handle demanding workloads

The Cinebench R23 benchmark measures system performance by completing common Cinema 4D tasks that tax multiple CPU cores and modern processor features.⁶

Key mobile productivity takeaways

- In our PassMark productivity benchmark tests, the unplugged EliteBook 645 G10 we tested experienced a 10.4 percent system performance loss when we switched from plugged-in to unplugged, while performance on the unplugged Latitude 5440 laptop, which scored 10.9 percent higher in the plugged-in comparison, dropped from 4,801.8 to 3,401.6 after we unplugged it. That's a 29.1 percent mobile productivity drop!
- In our Cinebench R23 multi-core benchmark tests, the unplugged EliteBook 645 G10 we tested experienced minimal system performance loss when we switched from plugged-in to unplugged, while performance on the unplugged Latitude 5440 laptop, which scored 8.1 percent higher in the plugged-in comparison, dropped from 10,533 to 6,393 after we unplugged it. That's a 39.3 percent mobile productivity decrease!

PassMark PerformanceTest

Performance score | Higher is better

HP EliteBook 645 G10 Notebook PC



Dell Latitude 5440 laptop



Plugged in

Unplugged

Plugged-in vs. unplugged performance

Only a **10.4%** performance drop with the EliteBook 645 G10 vs. a 29.1% drop with the Latitude 5440 laptop

Figure 1: PassMark PerformanceTest benchmark results. Higher is better.

Source: Principled Technologies.

Cinebench R23 multi-core benchmark

Performance score | Higher is better

HP EliteBook 645 G10 Notebook PC



Dell Latitude 5440 laptop



Plugged in

Unplugged

Plugged-in vs. unplugged performance

Only a **0.4%** performance drop with the EliteBook 645 G10 vs. a 39.3% drop with the Latitude 5440 laptop

Figure 2: Cinebench R23 (multi-core) benchmark results. Higher is better. Source: Principled Technologies.

Battery life and efficiency results: Work where you want, no strings (or cables) attached

While a battery life estimate can be helpful in determining potential performance, running just one test is like trying to paint a portrait with a just a few brushstrokes. An onlooker may begin to discern a general shape and outline, but they could still misjudge what they see. With results from multiple tests, you can paint a fuller picture of battery life performance. To paint our performance picture, we ran battery tests in multiple configurations, including MobileMark 2018, which measures battery life and performance at the same time. It uses real applications, workloads, and data sets to quantify how overall system performance affects the user experience.⁷ The second test we ran, MobileMark 25, puts devices through scenarios based on the real-world applications and activities business users encounter every day.⁸ In these tests, we saw a clearer picture of the battery life users might expect from both devices.

Key battery life and efficiency takeaways

- In our MobileMark 2018 battery life tests, when we set both devices to “best power efficiency” mode, the HP EliteBook 645 G10 powered by an AMD Ryzen™ 7 7730U processor kept working almost 3 hours longer, received a 21.6 percent higher performance qualification score, and was 33.6 percent more efficient than the Dell Latitude 3440 powered by an Intel Core i7-1355U processor.
- In our MobileMark 25 battery life tests, when we set both devices to “best power efficiency” power mode, the HP EliteBook 645 G10 powered by an AMD Ryzen™ 7 7730U processor kept working three hours longer, received a 53.9 percent higher Index score, and was 38.9 percent more efficient than the Dell Latitude 3440 powered by an Intel Core i7-1355U processor.

MobileMark 2018 “best power efficiency” mode battery life testing (205 nits) benchmark

Higher is better

Battery life (hr:min)



Minutes per WHr



Performance score



Unplugged

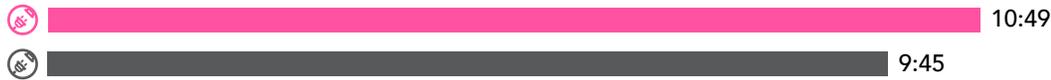
HP EliteBook 645 G10 Notebook PC

Dell Latitude 5440 laptop

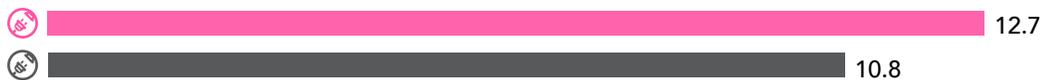
Figure 3: MobileMark 2018 battery life (“best power efficiency” mode) benchmark results. Higher is better. Source: Principled Technologies.

MobileMark 2018 “best performance” mode battery life testing (205 nits) benchmark
Higher is better

Battery life (hr:min)



Minutes per WHr



Performance score



Unplugged
 HP EliteBook 645 G10 Notebook PC
 Dell Latitude 5440 laptop

Figure 4: MobileMark 2018 battery life (“best performance” mode) benchmark results. Higher is better. Source: Principled Technologies..

MobileMark 25 “best power efficiency” mode battery life testing (205 nits) benchmark
Higher is better

Battery life (hr:min)



Minutes per WHr



Performance score



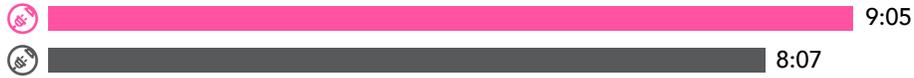
Unplugged
 HP EliteBook 645 G10 Notebook PC
 Dell Latitude 5440 laptop

Figure 5: MobileMark 25 battery life (“best power efficiency” mode) benchmark results. Higher is better. Source: Principled Technologies.

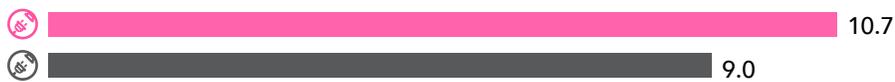
MobileMark 25 "best performance" mode battery life testing (205 nits) benchmark

Higher is better

Battery life (hr:min)



Minutes per WHr



Performance score



Unplugged



HP EliteBook 645 G10 Notebook PC



Dell Latitude 5440 laptop

Figure 6: MobileMark 25 battery life ("best performance" mode) benchmark results. Higher is better. Source: Principled Technologies.

For more information on the test laptops, our nit choices, and testing parameters and procedures, see the [science behind the report](#).



Thermal testing results: Stay comfortable without overheating

High-performance processors put off a lot of heat—but laptop manufacturers understand that and dissipate the heat to keep both users and the hardware safe from harm. So, what’s an acceptable temperature when laptops are running CPU-intensive loads like the Cinebench R23 workload we ran for 50 minutes? According to the Make Use Of newsletter, anything under 140°F/60°C is “perfect” in computer-land.⁹ We took temperature readings every 10 minutes to see how each device compared.

The higher Cinebench R23 performance scores and the well-within-normal-range underside temp (118.0°F) while running this CPU-intensive workload make the HP EliteBook 645 G10 Notebook PC powered by an AMD Ryzen™ 7 7730U processor an attractive choice for mobile trailblazers. By contrast, the underside of the Dell 5440 laptop powered by an Intel Core i7-1355U hit 136.1°F, which could make working with it on your lap for extended periods very uncomfortable.

Key heat and noise takeaways

- In our Cinebench R23-driven heat tests, the HP EliteBook 645 G10 powered by an AMD Ryzen™ 7 7730U processor kept its cool and received an 18.6 percent higher Cinebench R23 score than the Dell Latitude 5440 powered by an Intel Core i7-1355U processor.
- In our Cinebench R23-driven noise tests, the HP EliteBook 645 G10 powered by an AMD Ryzen™ 7 7730U processor was much quieter than the Dell Latitude 5440 powered by an Intel Core i7-1355U processor.

Thermal performance and surface temps during a sustained Cinebench R23 workload

Sustained performance score (*Higher is better*)



Keyboard deck temp (*Lower is better*)



Underside temp (*Lower is better*)



Unplugged HP EliteBook 645 G10 Notebook PC Dell Latitude 5440 laptop

Figure 7: Thermal testing results. A higher score is better, and lower temperatures are better. Source: Principled Technologies.



Acoustic testing results: Keep it quiet

A noisy laptop can be a distraction for anyone—especially mobile trailblazers trying to complete mission-critical tasks as quickly as possible. When we measured the noise levels of each device while idle and while running a Cinebench R23 multi-core workload, we saw that the HP EliteBook 645 G10 Notebook PC was noticeably quieter, with average noise levels under load that were almost six decibels lower than the Dell Latitude 5440 laptop noise levels. It's important to note that the decibel scale is logarithmic, which means it increases by a power of 10 each time. So, 10dBA is ten times more powerful than 0 dBA and a sound that is 30dBA is 1,000 times more powerful than 0 dBA. For scale, 10dBA is normal breathing while 50dBA is a refrigerator.¹⁰

System dBA – Under load – over time

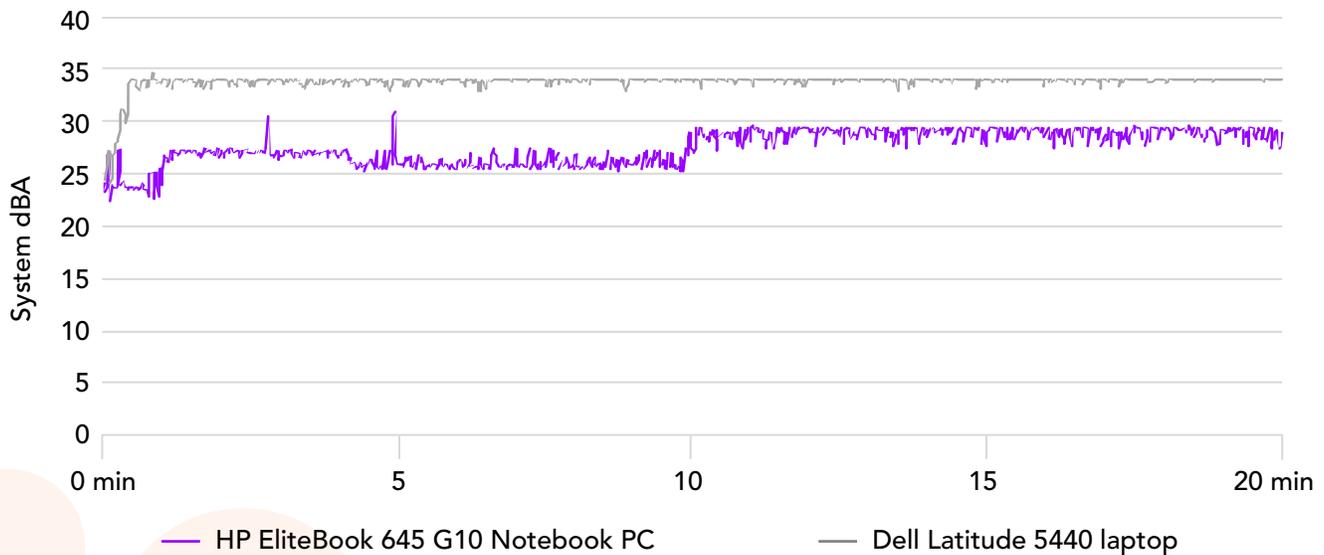


Figure 8: Acoustic testing results, in A-weighted decibels. Lower is better. Source: Principled Technologies.



Conclusion

In this hands-on comparison, an HP EliteBook 645 G10 Notebook PC proved to be a better fit for mobile productivity than a Dell Latitude 5440 laptop. In our tests, when going from plugged-in to unplugged, an HP EliteBook 645 G10 Notebook PC powered by an AMD Ryzen™ 7 7730U processor delivered more consistent performance than a Dell Latitude 5440 laptop powered by an Intel Core i7-1355U processor. Battery life tests indicate that the HP EliteBook 645 G10 Notebook PC powered by an AMD Ryzen™ 7 7730U processor could deliver longer battery life and greater system efficiency while still achieving strong performance. Additionally, while running a CPU-intensive Cinebench R23 workload, the underside of the HP EliteBook 645 G10 Notebook PC powered by an AMD Ryzen™ 7 7730U processor ran 18°F cooler and was noticeably quieter than the Dell Latitude 5440 laptop powered by an Intel Core i7-1355U processor.

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Read the science behind this report at <https://facts.pt/O6TDRlh> ►



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This project was commissioned by HP and AMD.