Keep productivity flowing with up to 10 hrs and 54 min of battery life

based on MobileMark 2018 results*

Reap better performance on everyday and intensive workloads

based on higher PassMark and Cinebench scores

Work comfortably with a cooler, quiet system

based on hot-spot temp and acoustic readings under load

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

Harness the power of the HP ZBook Firefly 14 G10 A Mobile Workstation and work unplugged for a full business day—or more

A comparison to the Dell Precision 3480 Workstation

A mobile workstation is designed to be just that: mobile. While packed with powerful workstation hardware, it must be able to travel just as much as you do. Whether you're rendering 3D animations or editing videos, a mobile workstation that can quickly accomplish even the most draining tasks while remaining cool and quiet could help you keep your focus throughout your day. And if that system enables you to work where you want, without the constraints of a charging cable, you may just find that creative boost to power your latest project.

At PT, we used industry-standard benchmarks to measure the performance and battery life of two mobile workstations: the HP ZBook Firefly 14 G10 A Mobile Workstation powered by an AMD Ryzen™ 7 PRO 7840HS processor and the Dell™ Precision 3480 Workstation powered by an Intel® Core™ i7-1370P vPro® processor. We also ran a compute-intensive benchmark and measured the heat and acoustic output of each system under load. In the benchmarks and test scenarios, the HP ZBook Power G10 A Mobile Workstation powered by an AMD Ryzen™ 7 PRO 7840HS processor delivered higher scores, cooler surface temperatures, and quieter noise levels.

This project was commissioned by HP and AMD.

What we tested

Before we started testing, we set the workstations to "best performance" power mode. For the MobileMark 2018 battery life tests, we set screen brightness to 200 nits and conducted "best performance" and "best power efficiency" power mode comparisons. We then reset screen brightness to 250 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 systems. We tested the following systems:

HP ZBook Firefly 14 G10 A

AMD Ryzen™ 7 7840HS PRO processor (3.8 – 5.1 GHz)

8 cores with 16 threads

32GB DDR5 RAM (2x 16GB)

512GB PCIe® NVMe® SSD

51WHr battery

Dell Precision 3480

Intel Core i7-1370P vPro processor (3.9 – 5.2 GHz)

14 cores with 20 threads

32GB DDR5 RAM (2x 16GB)

512GB PCIe NVMe SSD

54WHr battery

We ran the following performance-based benchmark tests:

- 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 tests, we ran a sustained CPU-intensive Cinebench R23 workload for 50 minutes, taking keyboard and bottom hot spot temperature readings every ten minutes. We then ran the CPU-intensive Cinebench R23 workload again for 20 minutes to record how much noise each device'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 you test, as well as screen brightness, network traffic, or software additions, can affect these results. For a deeper dive into our testing parameters and procedures, science behind the report.

Performance benchmark results: Knock out intensive and everyday work faster

It may be difficult for the average user to visually distinguish between a laptop and a mobile workstation. But, just like making a new friend or opening up a book, it's what inside that counts. Workstations are purpose-built with hardware that can handle taxing work such as engineering apps, computer-aided design (CAD) models, large dataset analysis, video editing, and more. Our real-world performance benchmark testing measures how well systems can handle both these resource-intensive workloads and everyday productivity. With a high-performing workstation that offers longer battery life and minimizes heat and noise, you could complete work faster, remove the hassle of searching for an outlet, and work more comfortably with a cooler, quiet system.

In another study, we ran these tests on the HP ZBook Power G10 A Mobile Workstation PC, as well as a host of other intensive workloads. To learn more about the performance gains the ZBook Power G10 A delivered, read the report: https://facts.pt/4hOX3cj.

About the HP ZBook Firefly 14 G10 A

For those who work collaboratively and manage projects on the go, HP offers the ZBook Firefly 14 G10 A Mobile Workstation PC. This system, where "pro-level performance combines with true mobility," features AI-enhanced webcam and audio, boasts a 16:10 aspect ratio display, and starts at 3.1 lb.[1]

To learn more, visit https://www.hp.com/us-en/workstations/zbook-firefly.html.

About the AMD Ryzen™ 7 PRO 7840HS processor

AMD says that its Ryzen™ PRO processors "are engineered for demanding business environments and deliver leadership performance and incredible power efficiency" to suit a variety of needs.[2] The AMD Ryzen™ 7 PRO 7840HS processor is built on Zen 4 technology and features eight cores with 16 threads, AMD Radeon™ graphics, and PCIe 4.0 connectivity.[3]

Accomplish your work with ease

In addition to intensive gaming and video editing workloads, we also ran a productivity benchmark. PassMark PerformanceTest 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.[4] The Cinebench R23 multi-core benchmark measures system performance by completing common Cinema 4D tasks that tax multiple CPU cores and modern processor features.[5]

Key performance takeaways

- The HP ZBook Firefly 14 G10 A Mobile Workstation PC achieved a 10 percent higher PassMark rating than the Dell Precision 3480 Workstation.
- In Cinebench R23 multi-core benchmark tests, the HP ZBook Firefly 14 G10 A scored 20.8 percent higher than the Dell Precision 3480.

PassMark PerformanceTest 11 benchmark
Performance score | Higher is better

10.0% higher score

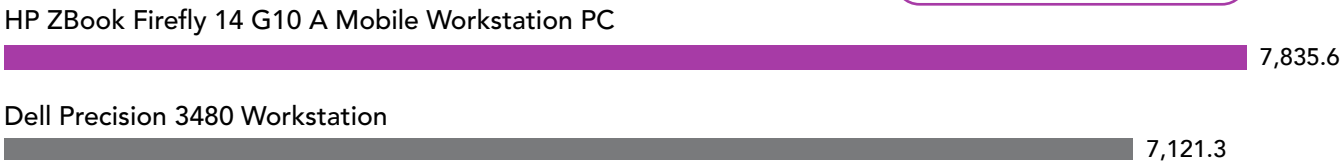


Figure 1: PassMark PerformanceTest 11 results. Higher is better. Source: Principled Technologies.

Cinebench R23 multi-core benchmark
Performance score | Higher is better

20.8% higher score

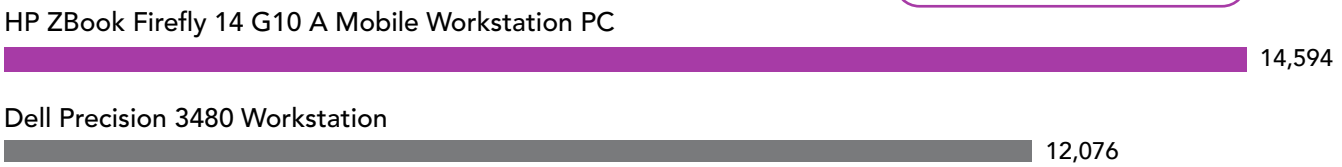


Figure 2: Cinebench R23 (multi-core) benchmark results. Higher is better. Source: Principled Technologies.

Battery life and efficiency results: The flexibility of an untethered workday

While you may do your job from the same desk every day, you might find your focus improves when working outside the office or even outdoors. In fact, convinced by evidence that nature can increase employee creativity and reduce stress, Google recently invested in creating biophilic offices that incorporate natural elements.[6] If you work from the front porch or the park—or even an indoor venue such as a coffee shop—a device able to make it through the workday without plugging in can open up new possibilities.

We tested the HP and Dell workstations in different configurations with two benchmarks designed to stress systems' battery life. The first, MobileMark 2018, measures battery life and performance at the same time. Using real applications, workloads, and data sets, it quantifies how overall system performance affects the user experience.[7] The other benchmark, MobileMark 25, puts devices through scenarios based on the real-world applications and activities that business users encounter every day.[8]

Key battery life takeaways

- With a 51WHr battery, the HP ZBook Firefly 14 G10 A achieved longer battery life and better system efficiency in all four tests compared to the Dell Precision 3480 with its 54WHr battery.
- In the MobileMark 2018 tests, when we set the systems to "best power efficiency" mode, the HP ZBook Firefly 14 G10 A delivered nearly 11 hours of battery life compared to the 8 hours and 33 minutes of the Dell Precision 3480—all while achieving 34.9 percent better system efficiency and a 83.8 percent higher performance score.
- In MobileMark 25 tests, when we set the systems to "best performance" mode, the HP ZBook Firefly 14 G10 A kept going for over 2 hours longer than the Dell Precision 3480, achieved a 22.7 percent higher performance score, and was 51.6 percent more efficient.

MobileMark 2018 "best power efficiency" mode battery life testing (200 nits) benchmark
Higher is better

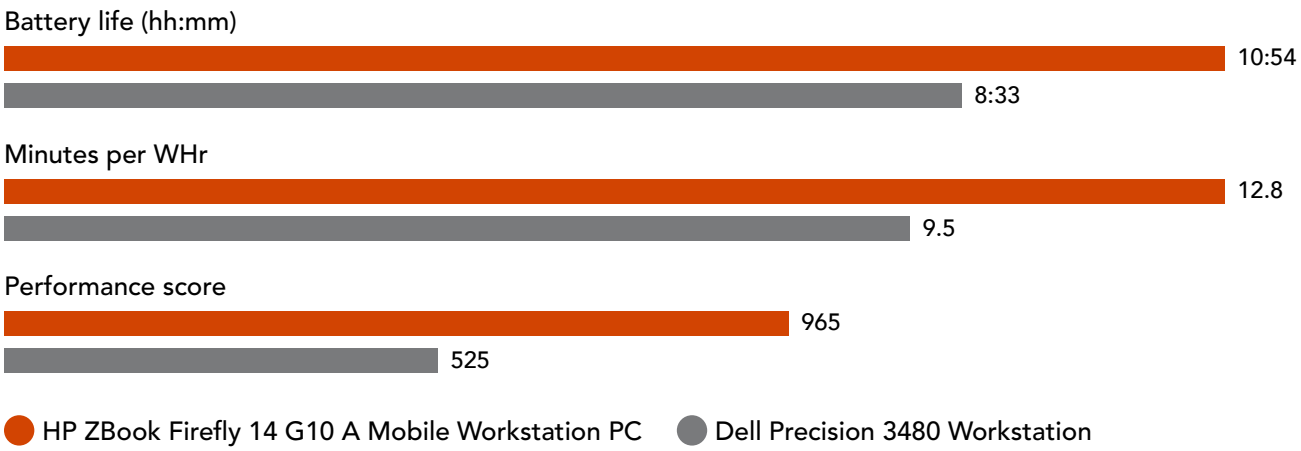


Figure 3: MobileMark 2018 battery life ("best power efficiency" mode) benchmark results. Higher is better. Source: Principled Technologies.

MobileMark 2018 "best performance" mode battery life testing (200 nits) benchmark
Higher is better

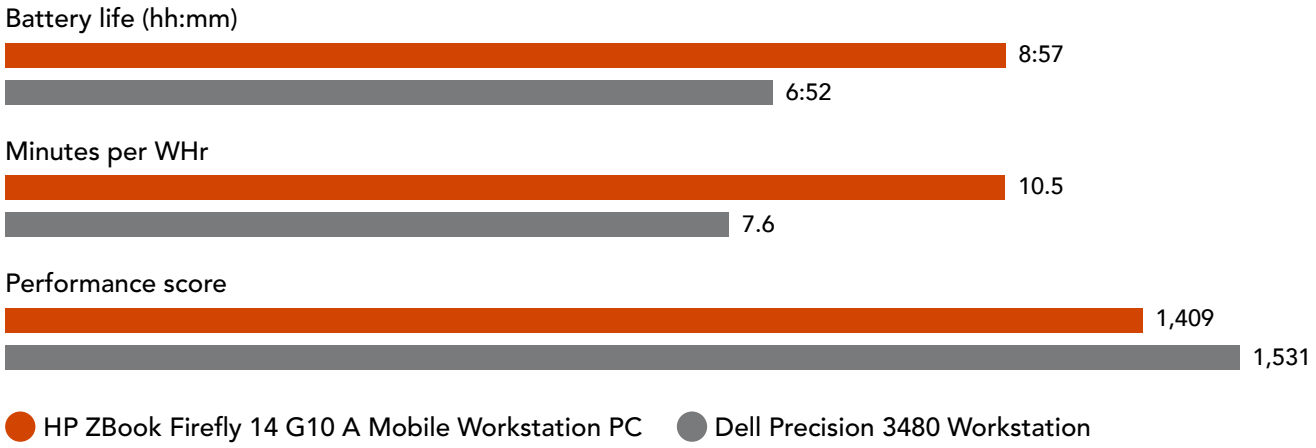


Figure 4: MobileMark 2018 battery life ("best performance" mode) benchmark results. Higher is better. Source: Principled Technologies.

MobileMark 25 "best power efficiency" mode battery life testing (250 nits) benchmark
Higher is better

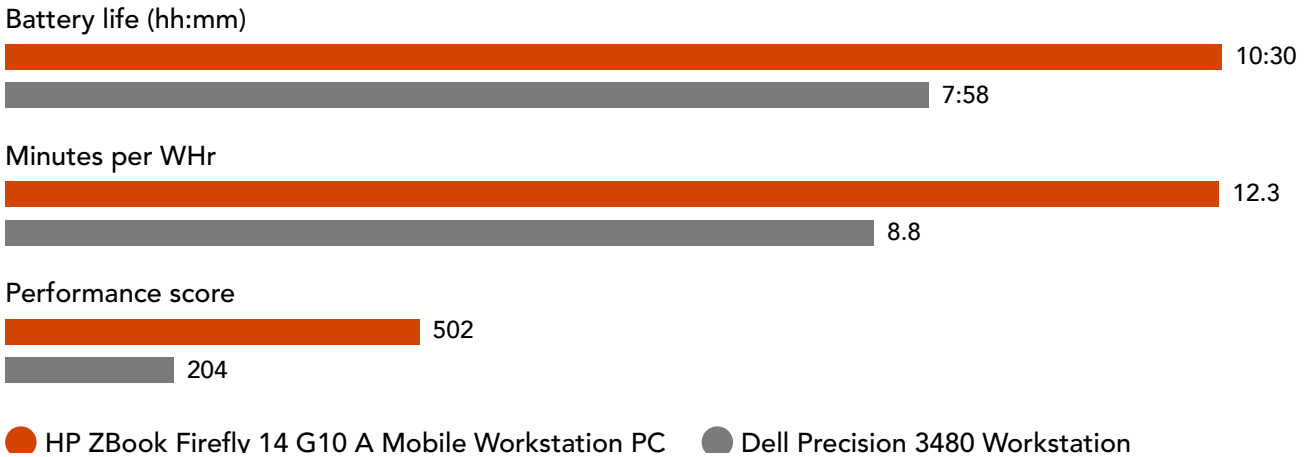


Figure 5: MobileMark 25 battery life ("best power efficiency" mode) benchmark results. Higher is better. Source: Principled Technologies.

MobileMark 25 "best performance" mode battery life testing (250 nits) benchmark
Higher is better

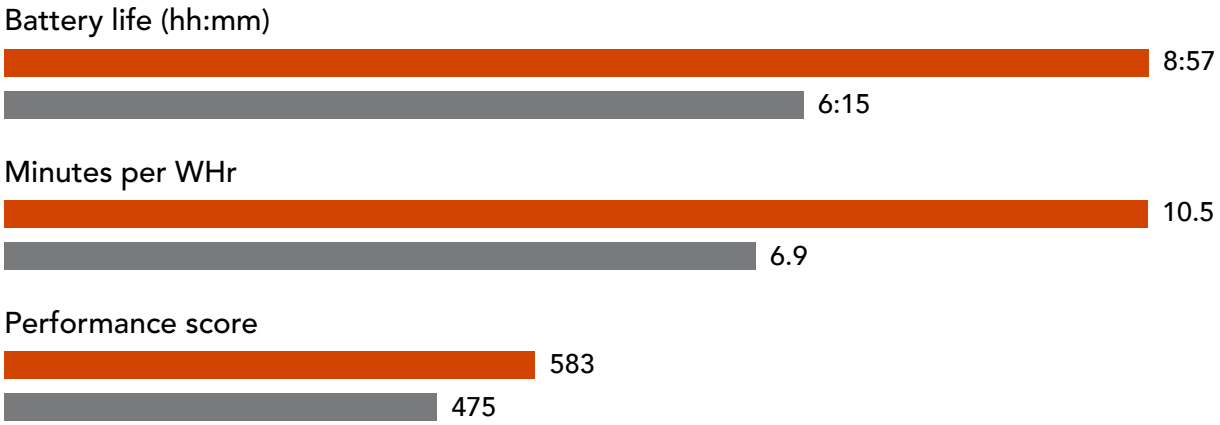
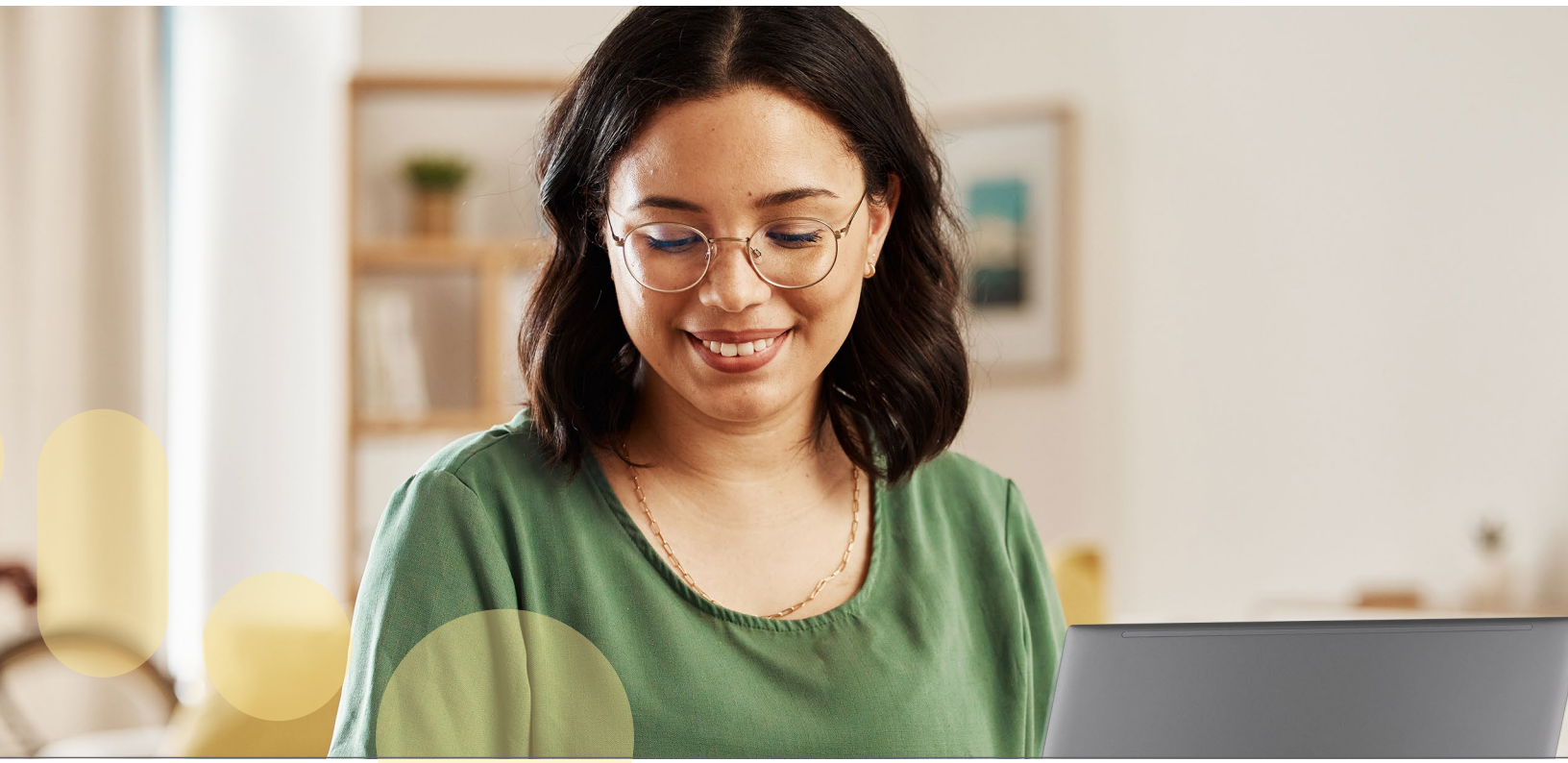


Figure 6: MobileMark 25 battery life (best "performance mode") benchmark results. Higher is better. Source: Principled Technologies.

For more information on the test devices, our screen brightness (nit) choices, and testing parameters and procedures, see the science behind the report.



Thermal testing results: Not too hot to handle

You work hard to finish every item on your to-do list. High-performing processors, such as the type you'd find in your mobile workstation, also busily labor to complete taxing workloads. While this does allow you to analyze large datasets or run scientific simulations, processors tend to heat up under stress. When that heat is drastic, you might notice dips in performance or your system may become uncomfortably hot to touch.

In our tests, we stressed each system with the Cinebench R23 multi-core benchmark, intensifying the burden by running it consecutively several times. We saw that the HP workstation not only ran cooler than the Dell workstation at two hot spots, but it also achieved a 22.8 percent higher performance score.

Key heat and noise takeaways

- In our heat tests with a sustained Cinebench R23 workload, the HP ZBook Firefly 14 G10 A Mobile Workstation PC powered by an AMD Ryzen™ 7 PRO 7840HS processor remained cooler at two hot spots while achieving a higher performance score than the Dell Precision 3480 Workstation with an Intel Core i7-1370P vPro processor.
- In our acoustic tests with Cinebench R23, the HP ZBook Firefly 14 G10 A Mobile Workstation PC powered by an AMD Ryzen™ 7 PRO 7840HS processor ran 1.5 dBA quieter on average.

Thermal performance and surface temps during a sustained Cinebench R23 workload

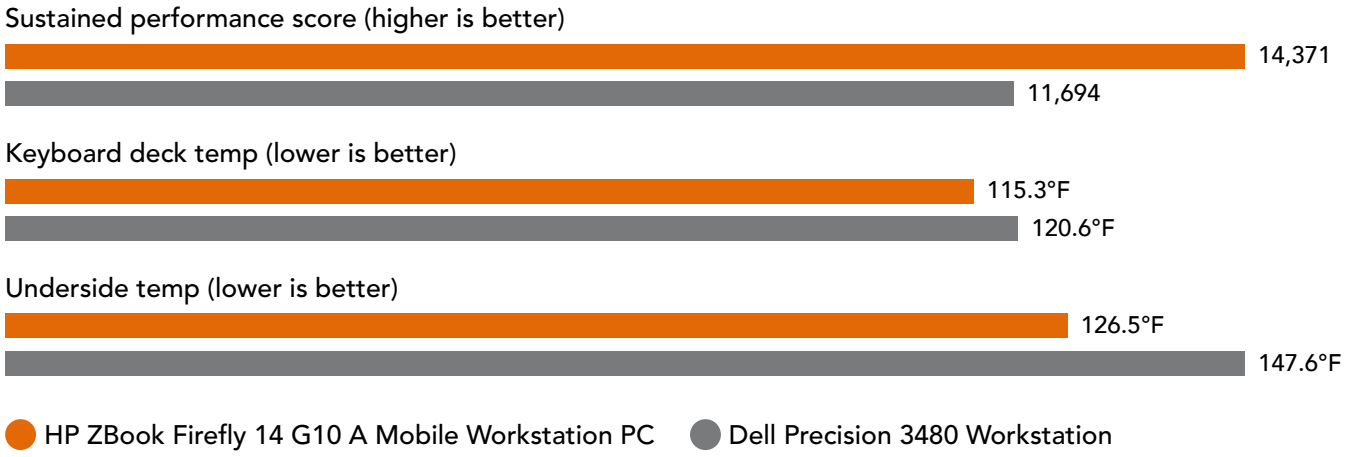


Figure 7: Thermal testing results. A higher score is better, and lower temperatures are better. Source: Principled Technologies.

Acoustic testing results: Quieting the noise

When working with intensive apps and demanding workloads, you might notice your system's hardware becoming louder. Because distracting noises can interrupt workflows, a quieter system could be the key to a smoother business day. In our acoustic tests, we ran a Cinebench R23 multi-core workload and measured the workstations' average noise levels. We saw that they were roughly comparable, varying by fewer than two decibels on average. Staying between 20dbA and 40dbA, both devices output noise levels akin to whispering or quiet library sounds.[9]

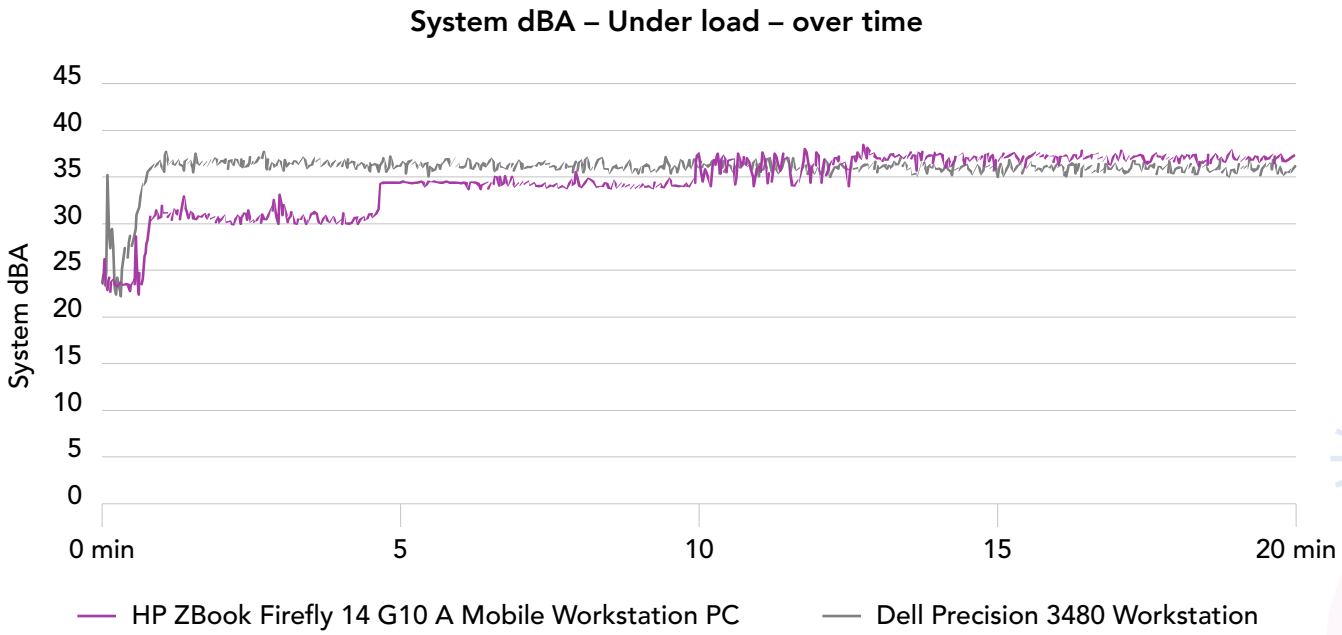
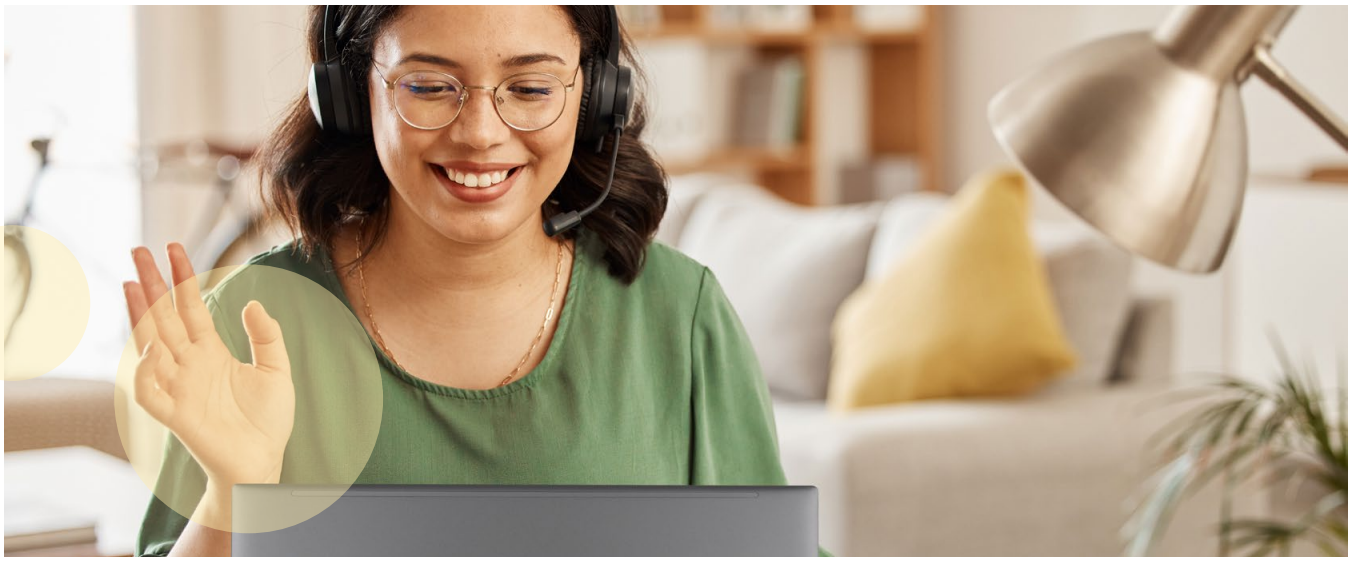


Figure 8: Acoustic testing results, in A-weighted decibels. Lower is better. Source: Principled Technologies.



Conclusion

A mobile workstation that is truly both—mobile and a workstation—can power the most resource-intensive work you do, wherever you do it. In the benchmarks we ran, the HP ZBook Firefly 14 G10 A Mobile Workstation PC powered by an AMD Ryzen™ 7 PRO 7840HS processor outperformed the Dell Precision 3480 Workstation with an Intel Core i7-1370P vPro processor. When we tested the systems' battery life, we found that the HP ZBook Firefly 14 G10 A Mobile Workstation PC delivered longer battery life, greater system efficiency, and higher performance. In thermal tests, the HP ZBook Firefly 14 G10 A Mobile Workstation PC powered by an AMD Ryzen™ 7 PRO 7840HS processor ran cooler and achieved a higher Cinebench R23 multi-core score, while acoustic tests proved it kept quiet under load.

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2. AMD, AMD Ryzen™ Processors with PRO Technologies," accessed September 19, 2023, https://www.amd.com/en/products/ryzen-pro-processors-laptop.
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Learn more about the even higher-performing ZBook Power G10 A Mobile Workstation PC

Read the science behind this report at https://facts.pt/qBKeZxB ►

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This project was commissioned by HP and AMD.