HP EliteBook 845 G11 Notebook PC: Empower anywhere work for high-producing teams

We compared day-to-day performance, battery life, and user experiences on an AMD Ryzen 8840U processor-powered HP EliteBook 845 G11 to those of two Intel Core Ultra 7 processor 165U-based Dell and Lenovo laptops

Artificial intelligence (AI) is changing the pace—and face—of business. That makes the PC and processor combo you choose for yourself or your team more important than ever. Earlier this year, HP launched the 14-inch EliteBook 845 G11 Notebook PC powered by next-gen Zen 4 technology-based AMD® Ryzen™ premium laptop processors. How does this powerful combination compare to Intel® Core™ Ultra processor-based AI PCs on the market?

In our hands-on system responsiveness and battery life tests, the 14-inch HP EliteBook 845 G11 Notebook PC with an 8-core AMD Ryzen 8040 Series PRO mobile processor delivered more than a full day's worth of battery life and received higher CPU- and GPU-focused benchmark scores than 12-core Intel vPro® with Intel Core Ultra 7 processor-based Dell™ and Lenovo® laptops. Read on for the full story.

Boost everyday performance

Up to 66.1% higher PassMark PerformanceTest 11 score

Be productive unplugged

Up to 12 hr and 13 min of battery life*

Supercharge AI-centric workflows

Up to 167.1% higher Geekbench AI ONNX DirectML GPU inference score

This project was commissioned by HP and AMD.

*MobileMark 30 battery life results in Windows 11 Pro best power efficiency power mode.

How we tested

When your goal is enabling enterprise knowledge workers in office or hybrid settings, you need to consider a number of factors before investing in new Windows 11 Pro PCs. We tested the performance, battery life, and user experience with the following specific configurations:

HP EliteBook 845 G11 Notebook PC

- 8-core/16-thread AMD Ryzen 7 PRO 8840U processor
- Integrated 12-core AMD PRO Radeon™ 740M Graphics
- Integrated AMD Ryzen AI neural processing unit (NPU)
- 56-Whr battery

Dell Latitude™ 7450 laptop

- 12-core/14-thread Intel vPro® with Intel Core Ultra 7 processor 165U
- Integrated 4-core Intel Graphics
- Integrated Intel AI Boost NPU
- 57-Whr battery

Lenovo ThinkPad® T14 Gen 5 laptop

- 12-core/14-thread Intel vPro with Intel Core Ultra 7 processor 165U
- Integrated 4-core Intel Graphics
- Integrated Intel AI Boost NPU
- 52.5-Whr battery

We focused our testing mostly on battery life and processor capabilities, but we recognize that CPU, GPU, RAM, and storage all pay important roles in the overarching performance picture. To create a level playing field, we equipped each PC with 32 GB of memory and 512 GB of SSD storage. This is more than enough RAM and SSD storage to power the benchmarking tools we used in testing:

- 3DMark®
- Cinebench 2024
- Geekbench AI
- LM Studio
- PassMark PerformanceTest 11
- Procyon® AI Computer Vision Benchmark
- Procyon Photo Editing Benchmark
- Procyon Video Editing Benchmark

To look at the relationship between battery life and performance, we ran the MobileMark 30 battery life benchmark with the PCs in the Windows 11 Pro "Balanced" and "Best power efficiency" power modes. We also measured how long each laptop would run Microsoft Teams while unplugged and in "Best power efficiency"power mode during a collaboration scenario among nine participants. To gauge user comfort, we recorded the heat and noise output of each PC while using the resource-intensive Cinebench 2024 workload for an extended period.

The results we report reflect the specific configurations we tested. Any difference in the configurations—as well as screen brightness, network traffic, and software additions—can affect these results. For a deeper dive into our testing parameters and procedures, see the science behind the report.

Note: The graphs in this report use different scales to keep a consistent size. Please be mindful of each graph's data range as you compare.

Empower anywhere work

When your team members' workdays are filled with meetings and a long list of to-do items, they need PCs that will help them succeed in their endeavors whether there's an outlet nearby or not. Set them up for success with strong day-to-day performance and all-day battery life.

Everyday performance

We first evaluated the PCs' general performance using the PassMark PerformanceTest 11 benchmark. PassMark PerformanceTest 11 combines CPU, 2D and 3D graphics, storage, and memory test performance metrics into an overall PassMark rating.[1]

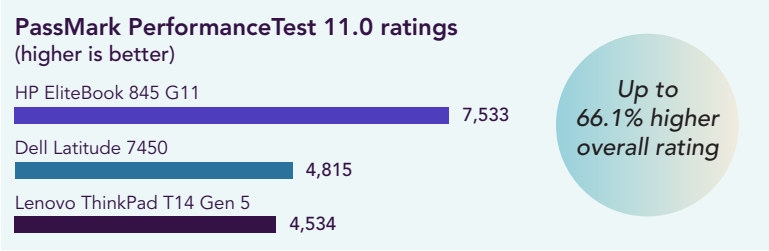


Figure 1: PassMark PerformanceTest 11.0 overall ratings. Higher is better. Source: Principled Technologies.

About the HP EliteBook 845 G11 Notebook PC

HP created HP EliteBook 805 Series Notebook PCs to "meet the needs of enterprise knowledge workers taking on daily workloads that demand powerful performance and collaboration features."[2] The HP EliteBook 845 G11 delivers the power of next-gen AMD Ryzen 5 or 7 processors, integrated AMD PRO Radeon 740M Graphics, and DDR5-5600 memory. This enterprise-ready laptop also delivers a more personalized on-the-go experience, with multiple external I/O ports; a clickpad with multi-touch gesture support; thermal, adaptive color, and fingerprint sensors; a 5MP or IR camera webcam; and dual stereo speakers with discrete amplifiers and integrated dual array microphones.[3]

HP EliteBook 805 Series G11 Notebook PCs also include HP Smart Sense, which learns your behavior over time and automatically makes "adjustments to energy-hogging resources to keep the battery, fan, processor, and everything inside your laptop in balance."[4]

Battery life

We then evaluated battery life and system responsiveness for general users and users who want as much battery life as possible. To see how changing power modes affected performance and battery life, we measured battery life and system responsiveness in Windows 11 Pro "Balanced" and "Best power efficiency" power modes. MobileMark 30 factors in both DC (unplugged) performance and battery life for the MobileMark 30 Index composite score.[5] Higher Index scores denote a better balance between performance and battery life. Lower Index scores indicate that the longer battery life came at the price of performance or vice versa.

In both MobileMark 30 comparisons, the HP EliteBook 845 G11 Notebook PC powered by an AMD Ryzen PRO 8840U processor provided all-day battery life and received higher DC performance and Index scores than its competitors. Higher MobileMark 30 scores can translate to a more responsive experience when using resource-intensive productivity apps, financial analysis tools, computer-aided design programs, and more.

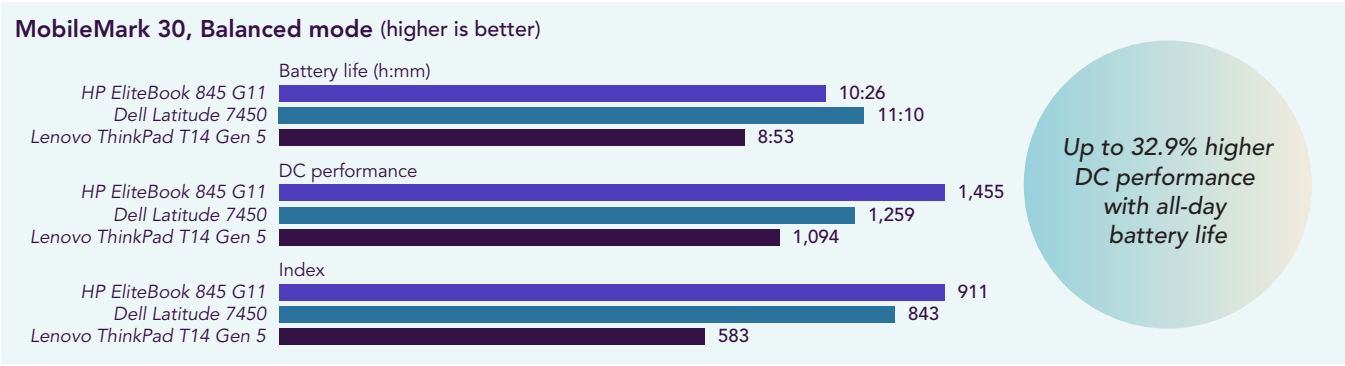


Figure 2: MobileMark 30 benchmark results in "Balanced" power mode. Time in hours and minutes (h:mm). Higher scores and times are better. Source: Principled Technologies.

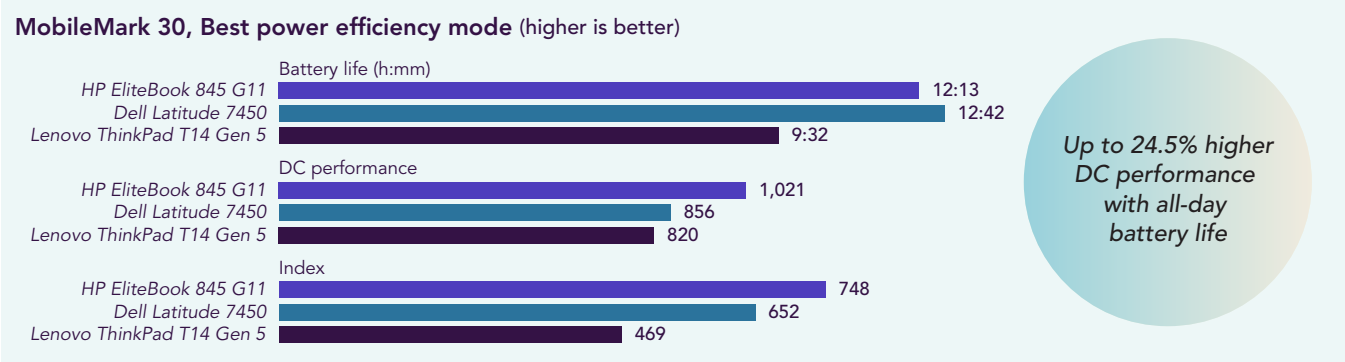


Figure 3: MobileMark 30 benchmark results in "Best power efficiency" power mode. Time in hours and minutes (h:mm). Higher scores and times are better. Source: Principled Technologies.

Collaboration

For the collaboration assessment, we set up a Microsoft Teams video-conferencing meeting for nine participants and measured how long the devices' batteries held out.

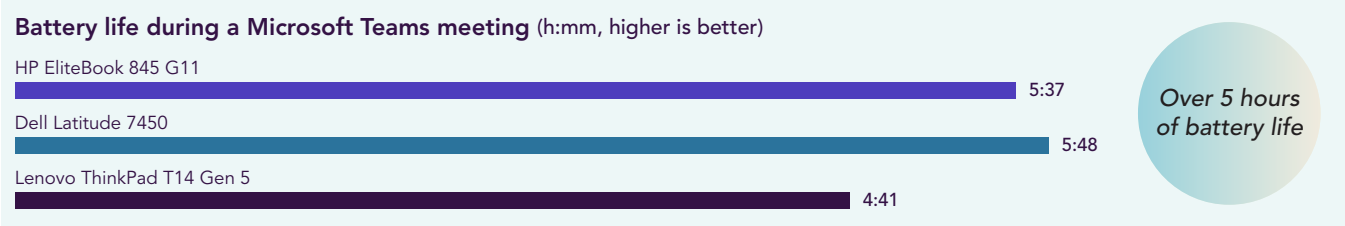


Figure 4: Battery life while conducting a nine-person Microsoft Teams meeting. Time in hours and minutes (h:mm). More time is better. Source: Principled Technologies.

Unleash creativity and productivity

Whether you and your team are tackling compute-intensive projects that involve computer vision and machine learning or graphics-intensive projects such as content creation, the results of these benchmarks can provide good insight into performance both now and in the future. Higher CPU- and GPU-based benchmarking scores can also indicate faster speeds in new and emerging AI-enabled productivity and creative tools.

Graphics-intensive performance

We evaluated the PCs' graphic performance using the 3DMark benchmark. 3DMark Fire Strike and Time Spy workloads scan a system's hardware and estimate the frame rates you can expect when using CPU- and GPU-intensive applications.[6] Better graphic performance can translate to faster response times from demanding scientific simulations, product design and development software, and financial analysis programs.

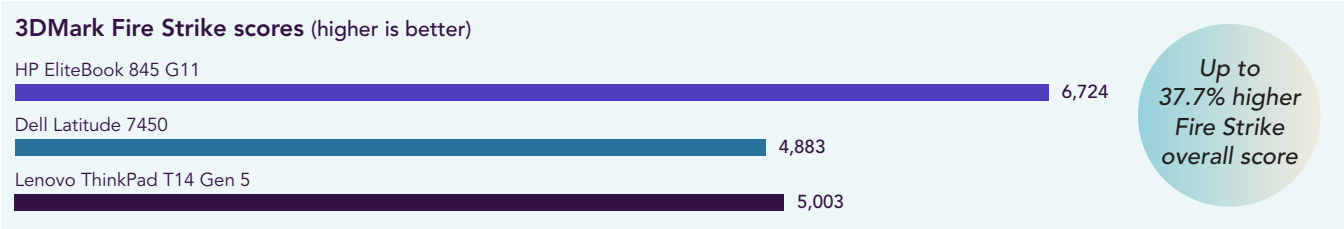


Figure 5: 3DMark Fire Strike overall scores. Higher is better. Source: Principled Technologies.

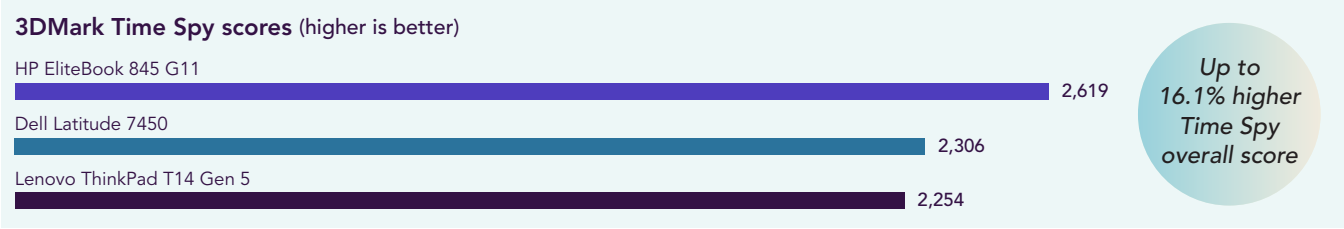


Figure 6: 3DMark Time Spy overall scores. Higher is better. Source: Principled Technologies.

About the AMD Ryzen 7 PRO 8840U processor

AMD designed this Zen 4 technology-based AMD Ryzen PRO 8040 Series mobile processor to deliver fast performance and long battery life for on-the-go professionals.[7] The 8-core/16-thread AMD Ryzen 7 PRO 8840U processor (3.3 to 5.1 GHz) has an integrated 12-core GPU Radeon 780M iGPU for "the most demanding mobile workstation applications."[8]

AMD Ryzen PRO 8040 Series mobile processors also include a suite of dedicated technologies for working professionals:

- **PRO graphics**: AMD Radeon PRO GPUs are designed to improve 3D modeling and design experiences.
- **PRO security**: AMD Shadow Stack and AMD Memory Guard multi-layered security features protect sensitive data.
- **PRO manageability**: Cloud-based Windows Autopilot and Microsoft Endpoint Manager simplify PC deployment and management.
- **PRO workflows**: AMD PRO Business Ready ensures AMD PRO technologies deliver enterprise-grade quality, reliability, and availability.[9]

You can learn more about AMD Ryzen PRO 8040 Series mobile processors at https://ir.amd.com/news-events/press-releases/detail/1190/amd-expands-commercial-ai-pc-portfolio-to-deliver.

Content creation performance

We used benchmarks that stressed the PCs' hardware with resource-intensive video- and photo-editing tasks. Cinebench 2024 measures a CPU's multi-core performance by rendering a 3D scene.[10] Procyon Photo Editing Benchmark uses Adobe® Creative Cloud® applications in a photo-editing workflow that includes batch processing and image retouching.[11] Procyon Video Editing Benchmark uses Adobe Premiere Pro in a video-editing workflow that includes importing video files, editing them, adding effects, and exporting them.[12]

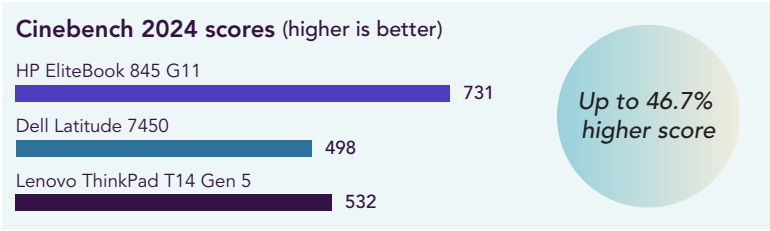


Figure 7: Cinebench 2024 CPU multi-core scores. Higher is better.
Source: Principled Technologies.

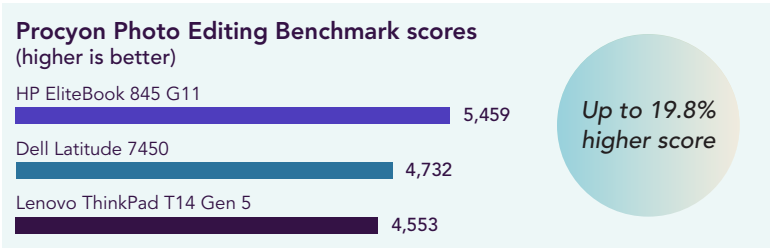


Figure 8: Procyon Photo Editing Benchmark scores. Higher is better.
Source: Principled Technologies.

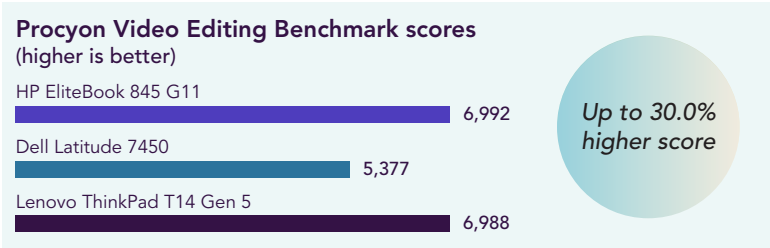


Figure 9: Procyon Video Editing Benchmark scores. Higher is better.
Source: Principled Technologies.

AI/ML performance

Geekbench AI uses large datasets to simulate real-world use cases and evaluate machine learning, deep learning, and AI-centric workload performance.[13] In our Geekbench testing, we used the Open Neural Network Exchange (ONNX) AI framework as well as the DirectML AI backend for machine learning on Windows. LM Studio uses local large language models (LLMs) to evaluate AI Chat capabilities.[14] In our LM Studio testing, we used the Llama 3 LLM to capture token metrics. Procyon AI Computer Vision Benchmark uses a variety of inference engines to gauge machine learning application performance.[15] In our Procyon testing, we used the Windows ML inference API on the AMD-based system and the Intel OpenVINO inference API on the Intel-based systems. The Windows ML API allowed the use of AMD hardware acceleration features, while the OpenVINO API is optimized for Intel CPU, GPU, and NPU inference.

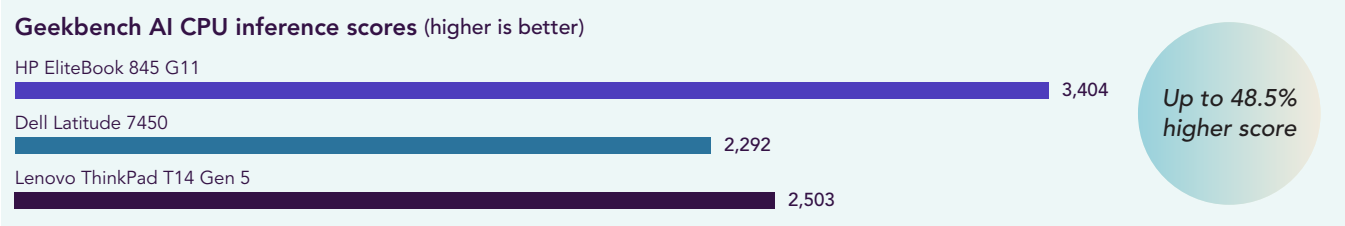


Figure 10: Geekbench AI ONNX CPU inference scores. Higher is better. Source: Principled Technologies.

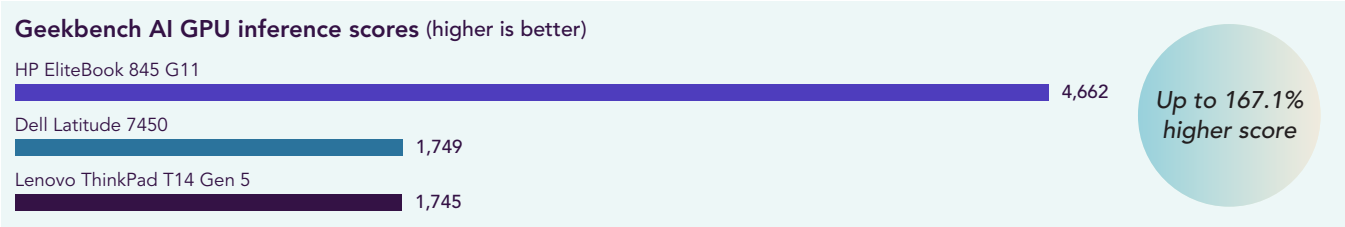


Figure 11: Geekbench AI ONNX DirectML GPU inference scores. Higher is better. Source: Principled Technologies.

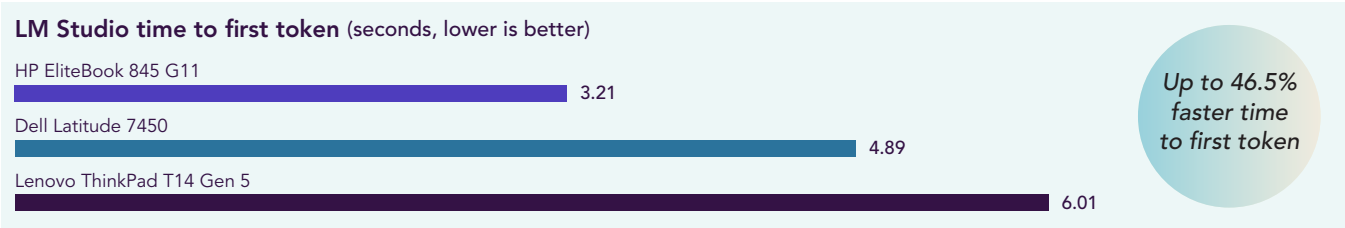


Figure 12: LM Studio (Llama 3) time to first token results. Time in seconds. Less time is better. Source: Principled Technologies.

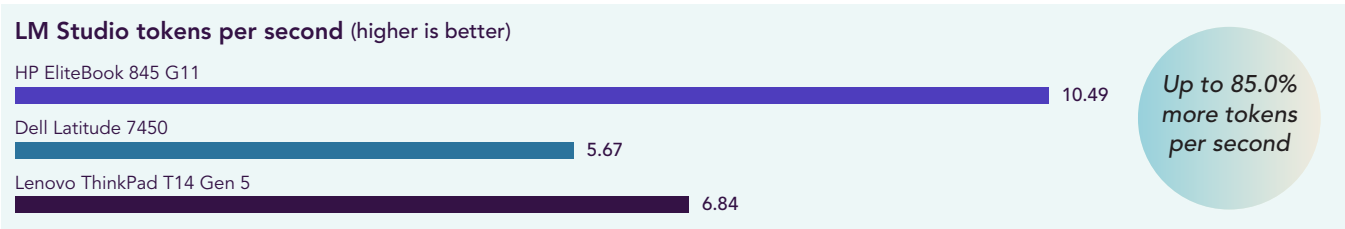


Figure 13: LM Studio (Llama 3) tokens per second results. More tokens are better. Source: Principled Technologies.

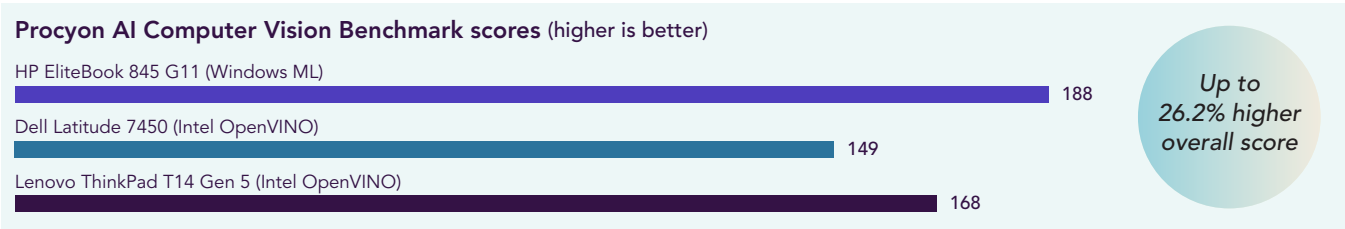


Figure 14: Procyon AI Computer Vision Benchmark GPU float32 scores. Higher Is Better. Source: Principled Technologies.

The work-from-anywhere user physical experience

Sometimes, opting for high-performing processors can mean you have to deal with more heat or noise coming from the PC. If your team members work with their PCs on their laps or in hoteling or hot-desking areas where excessive noise can bother others, this can be a real issue.

The HP EliteBook 845 G11 Notebook PC includes HP Smart Sense, which "redirects resources to just the programs that need it, creating lower temperatures and triggering appropriate fan speeds."[16] We tested all three laptops with their built-in intelligent features turned on. We also set each laptop to the highest performance power mode available with the intelligent thermal options enabled.

HP EliteBook 845 G11 Notebook PC

- AMD Ryzen 7 PRO 8840U processor
- Best performance power mode
- HP Smart Sense

Dell Latitude 7450 laptop

- Intel vPro with Intel Core Ultra 7 processor 165U
- Best performance power mode
- Dell Optimizer

Lenovo ThinkPad T14 Gen 5 laptop

- Intel vPro with Intel Core Ultra 7 processor 165U
- Balanced power mode
- Lenovo Intelligent Cooling

For reference, the ambient room temperature was between 74.1 and 74.8 degrees Fahrenheit and ambient room noise was between 23.4 and 23.5 decibels (dBA). We ran the resource-intensive Cinebench 2024 media-rendering benchmark six times: three times for thermal testing and three times for acoustic testing. Figure 15 shows the median performance scores captured during the thermal runs. Figures 16 and 17 show the median temps and noise levels from the separate 30-minute runs.

In this comparison, the AMD Ryzen 7 PRO 8840U processor-powered HP EliteBook 845 G11 Notebook PC outperformed both competitors—with comparable heat and audio output under load. While these temps may seem high, they're all well within the safe range of normal workloads, which is between 104° and 149°F, and well below the 176°F cap for a resource-intensive workload such as Cinebench 2024.[17] As for the decibel outputs, 10dBA is equivalent to normal breathing, 30dBA is whispering, and 40dBA is what you'd hear in a quiet office or residential area.[18]

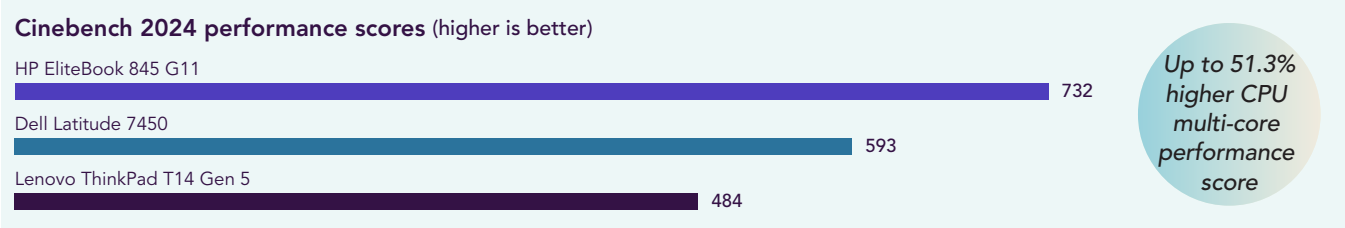


Figure 15: Median performance scores while the PCs were plugged in and running the Cinebench 2024 benchmark for 30 minutes. Higher performance scores are better. Source: Principled Technologies.

Figure 16: Median thermal results while the PCs were plugged in and running the Cinebench 2024 benchmark for 30 minutes. Lower temperatures are better. Source: Principled Technologies.

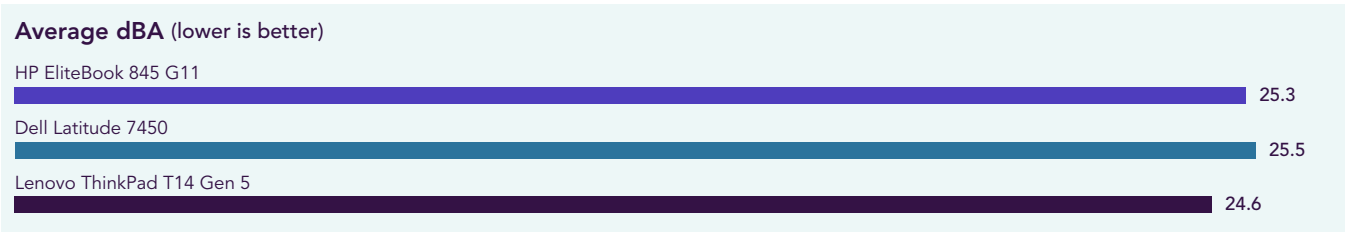
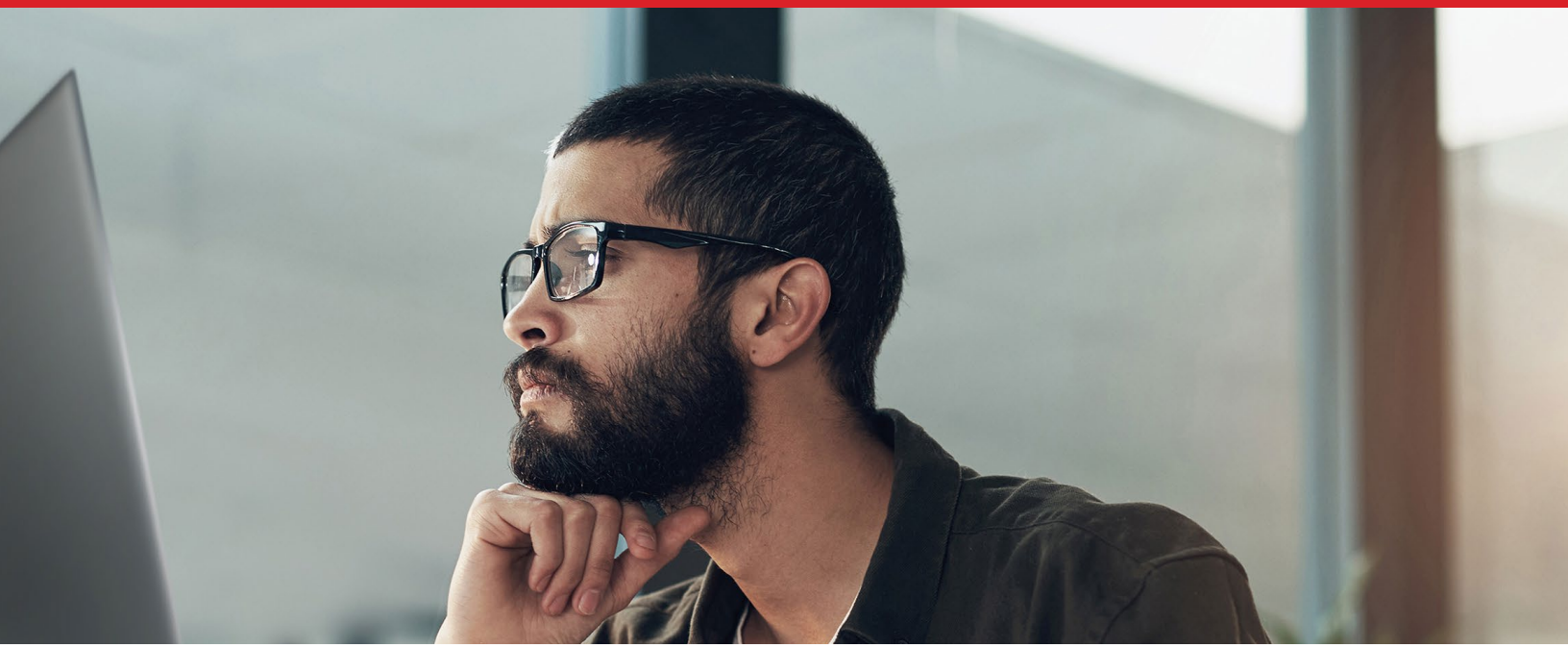


Figure 17: Median acoustic results while the PCs were plugged in and running the Cinebench 2024 benchmark for 30 minutes. Lower decibels are better. Source: Principled Technologies.



Conclusion

Above all, the PC and processor combo you invest in must empower your team to embrace emerging AI technologies, complete projects as quickly as possible, and provide enough battery life to sustain work when outlets are unavailable. In our hands-on system responsiveness and battery life tests, we found that a 14-inch HP EliteBook 845 G11 Notebook PC powered by an 8-core AMD Ryzen 7 PRO 8840U processor provided all-day battery life, a comfortable user experience, and received higher CPU- and GPU-focused benchmark scores compared to 12-core Intel Core Ultra 7 processor 165U-based Dell Latitude 7450 and Lenovo ThinkPad T14 Gen 5 laptops.

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Read the science behind this report at https://facts.pt/RfFjaiD ▶

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