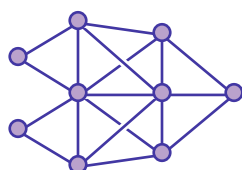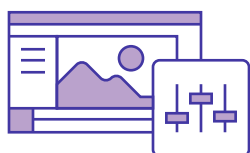**Create realistic visual effects in less time**

with higher Basemark GPU benchmark scores, higher GFXBench frame rates, and more samples per minute in Blender

Draw AI-driven conclusions from datasets in less time

with higher scores on UL Procyon AI Inference Benchmark for Windows

Complete video- and image-editing workflows in less time

with faster Autodesk Maya 2022 video render times, faster HandBrake video-encoding results, shorter Adobe Lightroom Classic import/ export times, and better Gigapixel AI upscale image resolution results

Escalate productivity and output with the newest HP ZBook Firefly 14 Mobile Workstation

We compared the ZBook Firefly 14 G10 with a 13th generation Intel Core i7 processor to its G9 predecessor

A high-performing mobile workstation can jumpstart productivity for on-the-go professionals. According to HP, the HP ZBook Firefly 14 Mobile Workstation combines pro-level performance, an AI-enhanced auto-framing 5MP webcam, a color-accurate display, and Wi-Fi 6E connectivity so mobile professionals can "collaborate and manage projects from anywhere."[1] But how much of a performance bump can you expect from one generation to the next?

At PT, we used industry-standard benchmarks to compare system performance on the newest HP ZBook Firefly 14 G10 Mobile Workstation with a 13th generation Intel® Core™ i7 U series processor to that of its G9 predecessor with a 12th generation Intel Core i7 U series processor. We also hand-timed video rendering and image processing workflows. We found that the ZBook Firefly 14 G10 provides a worthy upgrade path for users of earlier systems.

How we tested

To ascertain the benefits of upgrading to the newest HP ZBook Firefly 14-inch Mobile Workstation PC with a 13th generation Intel Core i7 processor, we compared the system performance of a G10 with that of a G9:

HP ZBook Firefly 14 G10 Mobile Workstation

- Intel Core i7-1365U vPro® processor
- NVIDIA® RTX A500 graphics card*
- 32 GB of memory
- 1 TB of NVMe storage*

HP ZBook Firefly 14 G9 Mobile Workstation

- Intel Core i7-1265U vPro processor
- NVIDIA T550 graphics card*
- 32 GB of memory
- 512 GB of NVMe storage*

*The storage size differences won't affect system performance and the graphics card differences are due to what is standard for each configuration.

To measure system performance improvements from many angles, we ran a variety of benchmark tests that used real-world apps and workloads:

- **Basemark GPU and GFXBench benchmarks** measure sustained, long-term graphics performance
- **Blender benchmarks** measure 3D rendering performance and speed
- **Geekbench benchmarks** measure single- and multi-core CPU and GPU performance
- **UL Procyon® AI Inference Benchmark** measures AI accelerator performance

We then hand-timed how long it took each mobile workstation to complete a series of custom workloads and common activities involved in building marketing collateral and creative projects:

- **Rendering a scene from an Autodesk Maya® 2024 video into an image** using the Arnold for Maya rendering tool
- **Changing video formats** using HandBrake video encoding
- **Importing and exporting 50 photos** using Adobe® Lightroom® Classic
- **Upscaling image resolution 4x** using Topaz Labs Gigapixel AI

About the HP ZBook Firefly 14 G10

According to HP, the 14-inch ZBook Firefly G10 Mobile Workstation combines pro-level performance with portability, 13th Generation Intel Core vPro processors, a color-accurate display, pro-grade components, and an AI-enhancing webcam—"everything you need to collaborate and manage projects from anywhere."[2]

The benchmark scores and hand-timed content creation 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, see the science behind the report.

Benchmark comparisons

No matter your focus or specialty, the quicker you can iterate and get projects out the door, the better. While mobile workstations are generally designed to handle resource-intensive tasks and demanding workloads, newer models are also better equipped to create realistic visual effects and 3D animations, render videos and computer aided design (CAD) objects, and draw AI-driven conclusions from datasets.

Why CPU and GPU benchmarks matter

CPU performance affects tasks such as checking your email, taking a picture, and playing music—whether you're doing each individually or all of it simultaneously. Professional workflows also increasingly involve GPU-driven elements, including some AI tasks, ray-traced rendering, computer-aided engineering (CAE), simulations, larger models and datasets, and high-resolution content.

About the Intel Core i7-1365U processor

According to Intel, this 13th generation Intel Core i7 U series processor is optimized for performance and portability.[3] Intel designed this 10-core processor with 12 threads and 3.9 (base) to 5.2 GHz (peak) processor clock speed for "excellent CPU performance for discrete-level graphics and AI acceleration."[4] These clock speeds are higher than those of the older processor (3.6 – 4.8 GHz).[5] Higher clock speeds within a processor family generally indicate more processing power at your fingertips.

Reduce the time it takes to create realistic visual effects

Ray tracing is a lighting technique that mimics the way light behaves in the real world, helping creators craft realistic shadows and reflections. The more frames per second (fps) and samples per minute a device can handle, the smoother and more realistic a video can appear. Investing in mobile workstations that deliver higher DirectX® Raytracing (DXR) scores, higher frame rates, and more samples per minute gives videographers, developers, and technical professionals the power to bring ultra-realistic visual effects to life.

Basemark GPU DirectX 12
Score | Higher is better

Figure 1: Basemark GPU DirectX 12 benchmark scores. Higher is better. Source: Principled Technologies.3

Blender 3.6
Samples per minute | Higher is better

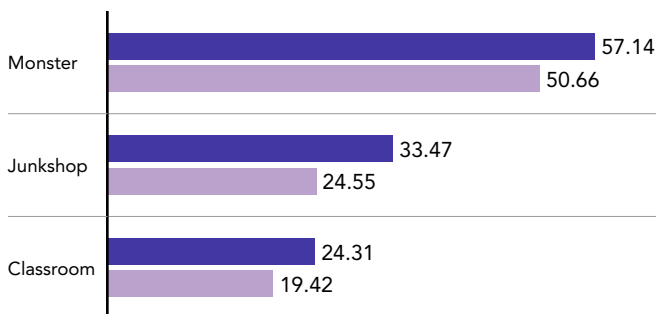■ ZBook Firefly 14 G10   ■ ZBook Firefly 14 G9

Figure 2: Blender benchmark workload samples per minute results on three different workloads (Monster, Junkshop, and Classroom). Higher is better. Source: Principled Technologies

GFXBench
Total frames rendered | Higher is better

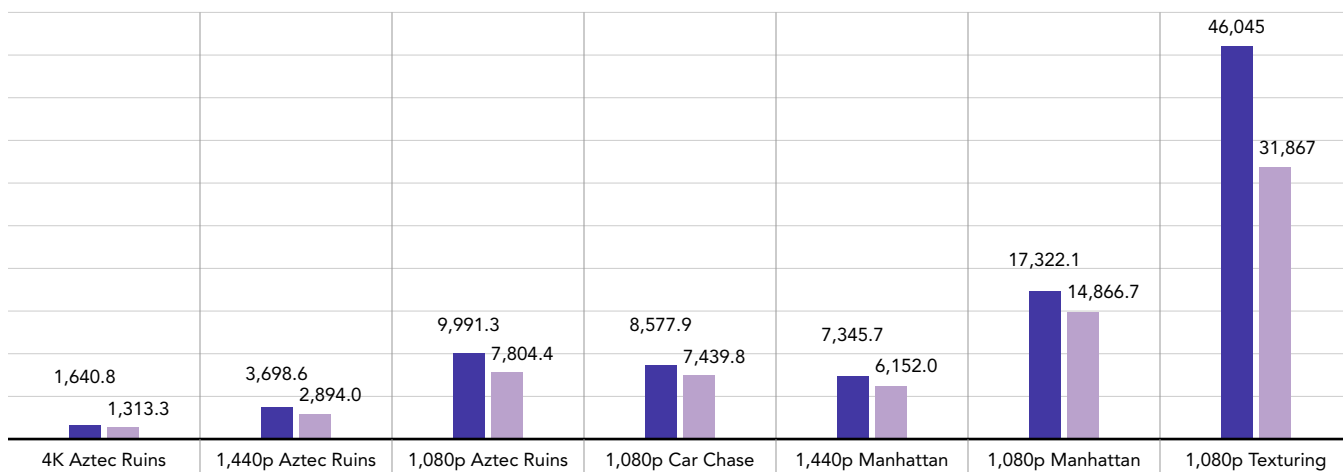■ ZBook Firefly 14 G10   ■ ZBook Firefly 14 G9

Figure 3: GFXBench benchmark workload total frames rendered. Higher is better. Source: Principled Technologies.

About these benchmarks

For this graphics-intensive task comparison, we ran Basemark GPU and GFXBench benchmarks, which are graphics performance benchmarks that use high-level game-like scenes to measure sustained, long-term device performance."[6,7] We also ran Blender 3.6 benchmarks, which measure rendering performance and speed.[8]

Reduce the time it takes to complete demanding workloads

Your team can boost efficiency with a device that smoothly handles GPU-hungry workloads, such as image processing, digital image capture, computer vision, and machine learning.[9] Investing in mobile workstations that deliver higher Geekbench CPU multi-core and GPU Compute Open Computing Language (OpenCL) scores can enable web designers and data scientists to finish their workload and get important results as quickly as possible.

Geekbench 6 Pro: CPU multi-core

Score | Higher is better

ZBook Firefly 14 G10
8,887

ZBook Firefly 14 G9
8,082

Figure 4: Geekbench 6 Pro CPU multi-core scores. Higher is better. Source: Principled Technologies.

Geekbench 6 Pro: GPU Compute OpenCL

Score | Higher is better

ZBook Firefly 14 G10
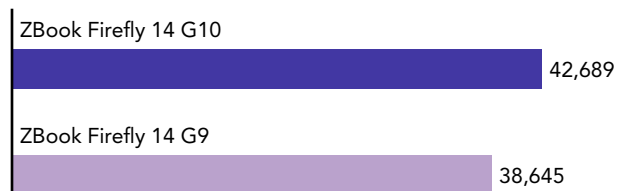42,689

ZBook Firefly 14 G9
38,645

Figure 5: Geekbench 6 Pro Compute OpenCL scores. Higher is better. Source: Principled Technologies.

About these benchmarks

For this demanding workload comparison, we ran Geekbench benchmarks, which measure CPU and GPU performance using workloads that represent everyday tasks found in popular real-world apps and realistic datasets.[10]

Reduce the time it takes to draw AI-driven conclusions from datasets

According to Kathy Hann, a Forbes Advisor contributor, "AI is allowing companies to become more nimble and productive."[11] Generative AI—which includes chatbots for customer service and technical support, visual object recognition for manufacturing and production, machine learning models for medical research, as well as the much-talked-about Dall-E and ChatGPT for content design and writing—is AI technology "that can produce various types of content, including text, imagery, audio, and synthetic data."[12] In plain terms, generative AI learns patterns from existing data and uses that training to infer answers based on learned patterns.[13] Investing in mobile workstations that deliver higher AI Inference scores gives data scientists and analysts the power to make predictions based on live data, thereby producing more actionable results.

Procyon AI Inference Benchmark for Windows

Score | Higher is better

ZBook Firefly 14 G10
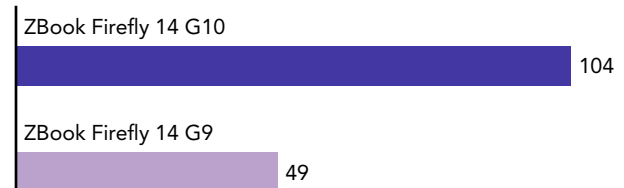104

ZBook Firefly 14 G9
49

Figure 6: Procyon AI Inference Benchmark for Windows (Intel OpenVINO™) CPU Integer results. Higher is better. Source: Principled Technologies.

About this benchmark

For this AI inference comparison, we ran Procyon AI Inference Benchmark for Windows, which executes common machine-vision tasks to measure AI accelerator performance.[14]

Hand-timed design workflow comparisons

Design workflows often have three phases: pre-production, where teams strategize with clients about goals and approaches; production, where teams crank out the new content; and post-production, where everything comes together to create the final product. Each phase can benefit from strong teams backed by powerful mobile workstations. For our hand-timed tests, we chose design workflows from a videographer's production and post-production task list and items from all three phases of a photographer's to-do list.

Reduce the time it takes to render a scene into an image

The faster creative teams can render video effects (VFX) and animations, the less time each video is in production. For this image-rendering workflow comparison, we rendered a single scene from an Autodesk Maya 2024 animation, as a quality check before animation publication, and timed how long it took each mobile workstation to render that scene into an image using the Arnold for Maya rendering tool.

Render a scene from a Maya 2024 video into an image with Arnold renderer workflow

Time (seconds) | Lower is better

ZBook Firefly 14 G10 — 45
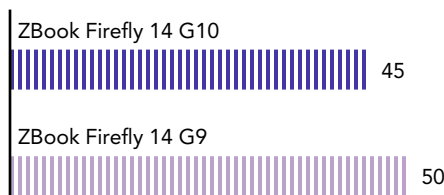
ZBook Firefly 14 G9 — 50

Figure 7: Time to render a scene in Maya 2024 with the Arnold for Maya rendering tool. Lower is better, Source: Principled Technologies.

Reduce the time it takes to change video formats

HandBrake is a post-production tool that converts videos from one format to another. It is not video editing software, but it does allow you to crop and resize video, upscale old and low-quality video, and make videos that take up less storage than the original.[15] For this comparison, we converted a 4K video to a 1080p H.264 video.

HandBrake hardware 1080p H.264 video encoding

Time (minutes:seconds) | Lower is better

ZBook Firefly 14 G10 — 4:04
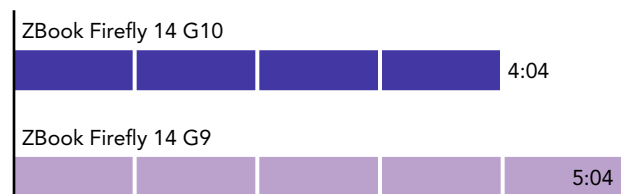
ZBook Firefly 14 G9 — 5:04

Figure 8: HandBrake hardware 1080p H.264 video encoding times. Lower is better. Source: Principled Technologies.

Reduce the time it takes to process images

Many photographers and designers use AI image upscalers, which utilize deep learning to deliver enhanced detail and resolution for better photo quality. One such AI image upscaler, the Topaz Labs application Gigapixel AI, uses machine learning to enlarge and enhance images.[16] For this comparison, we started with a 4284x2844 resolution image and used the Gigapixel AI app to enlarge and enhance that by 4x to a 17136x11376 resolution image.

Upscale image resolution 4x using Gigapixel AI

Time (seconds) | Lower is better

ZBook Firefly 14 G10
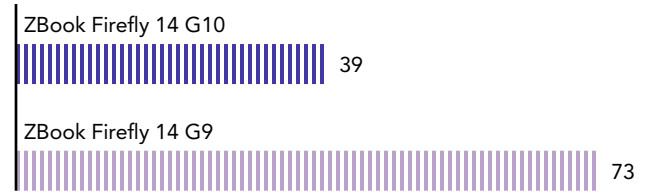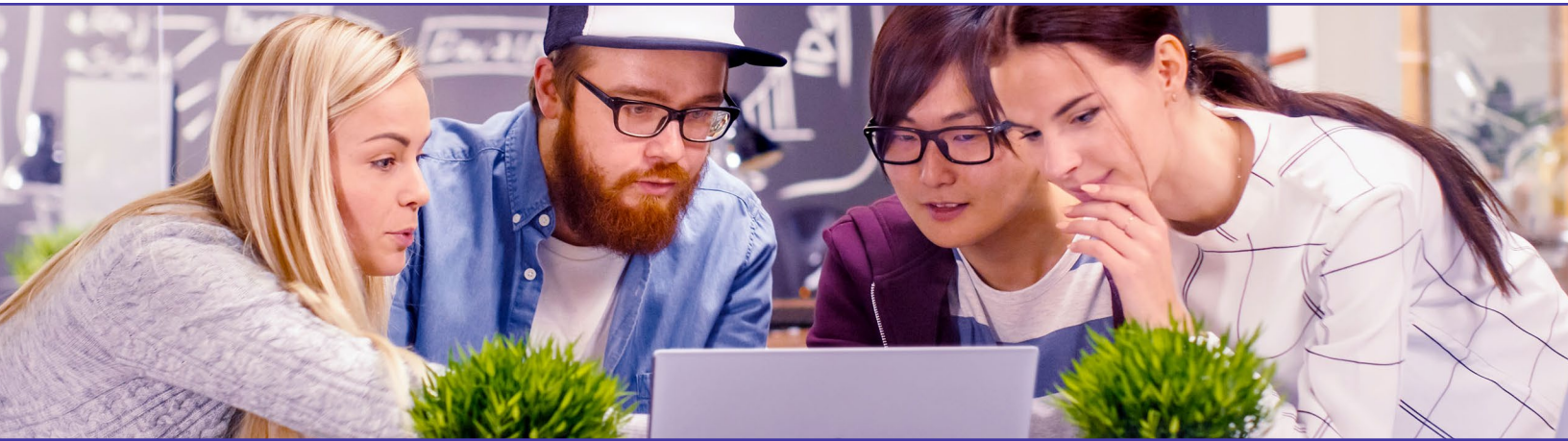39

ZBook Firefly 14 G9
73

Figure 9: Time to upscale image resolution 4x using Gigapixel AI. Lower is better. Source: Principled Technologies.

Reduce the time it takes to share images

The faster your photographers and graphics designers can import and export images for review or approval, the more streamlined these collateral processes are. Photography experts who use file- or folder-based workflows rely on Adobe Lightroom Classic to edit, organize, store, and share images.[17] In Lightroom Classic, images are typically stored locally, not on the cloud.[18]

Import 50 photos using Adobe Lightroom Classic

Time (seconds) | Lower is better
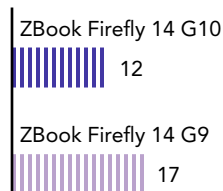
ZBook Firefly 14 G10
12

ZBook Firefly 14 G9
17

Figure 10: Time to import 50 photos using Adobe Lightroom Classic. Lower is better. Source: Principled Technologies.

Export 50 photos using Adobe Lightroom Classic

Time (seconds) | Lower is better

ZBook Firefly 14 G10
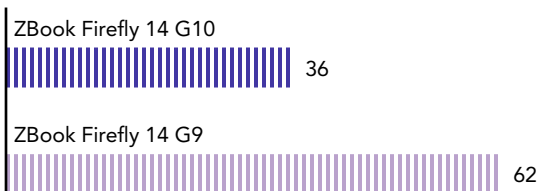36

ZBook Firefly 14 G9
62

Figure 11: Time to export 50 photos using Adobe Lightroom Classic. Lower is better. Source: Principled Technologies.

Conclusion

A high-performing mobile workstation can boost productivity and output for on-the-go creatives and technical professionals. In hands-on tests, we found that upgrading to the HP ZBook Firefly 14-inch Mobile Workstation PC G10 with a 13th generation Intel Core i7 U-series processor could result in shorter times for such tasks as creating realistic visual effects, drawing AI-driven conclusions from datasets, and completing video- and image-editing workflows than you could see with a previous-generation mobile workstation. No matter your focus or specialty, the quicker you can iterate and get projects out the door, the better.

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Read the science behind this report at https://facts.pt/My28fWL ▶

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