



Maximizing Mobility with the HP OmniBook 5 and Snapdragon X Processor

Merging power efficiency and performance on battery.

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COMMISSIONED BY

Qualcomm

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Introduction

The landscape of portable computing is undergoing some dramatic shifts, driven by the convergence of artificial intelligence capabilities, extended battery life requirements, and the need for outstanding performance while mobile. The Microsoft Copilot+ PC initiative has cemented these requirements into a new category of Windows laptops that must deliver at least 40 TOPS of AI processing power from a dedicated NPU while maintaining the battery efficiency necessary for true all-day computing. This combination of capabilities represents more than incremental improvement, it signals a shift of what mobile professionals should expect from their primary computing devices.

Within this evolving ecosystem, HP

has positioned the OmniBook 5 as a compelling mainstream solution that leverages the Snapdragon X platform to deliver on these ambitious goals. Building on HP's experience with Snapdragon-powered systems across both consumer and commercial segments, including the [EliteBook 6 G1q analyzed in our previous Signal65 research](#), the OmniBook 5 represents an expansion of Arm-based Windows computing into the broader consumer and small business market. This positioning is particularly significant as it demonstrates the maturation of Windows on Snapdragon from niche to mainstream deployment.

The purpose of this analysis is to examine the HP OmniBook 5 system design characteristics and evaluate its competitive

differentiation in two critical areas: battery life under real-world conditions and performance consistency when operating on battery power. These metrics have become increasingly important as hybrid work patterns normalize and users expect their laptops to deliver consistent experiences whether connected to power or operating remotely.

Key Highlights:



HP OmniBook 5 with Snapdragon X offers over **34 hours** of battery life and uses half the energy compared to a MacBook Air 15



The Snapdragon X CPU in the HP OmniBook 5 is up to **58% faster** than competing x86 platforms when running on battery

The HP OmniBook 5 Laptop



The HP OmniBook 5 represents a thoughtfully engineered approach to mainstream mobile computing, built around the Snapdragon X1-26-100 processor. This specific SKU features 8 Oryon CPU cores, all configured as performance cores without the traditional efficiency core segregation seen in some competing architectures. This design philosophy reflects Qualcomm's confidence in the inherent efficiency of the Oryon architecture, allowing all cores to scale dynamically based on workload demands while maintaining power efficiency targets.

The processor operates at frequencies up to 3.0 GHz and integrates 30MB of cache, which should position it competitively within the mainstream segment while maintaining the power envelope necessary for extended battery operation.

A critical component of the Snapdragon X platform is the integrated Hexagon NPU, delivering 45 TOPS of dedicated AI processing capability. This exceeds Microsoft's 40 TOPS requirement for Copilot+ PC certification, providing headroom for future AI workload expansion. This democratization of AI performance across the product stack represents a strategic decision to ensure consistent AI experiences regardless of price point.

The OmniBook 5's physical design prioritizes mobility without sacrificing usability. The 16-inch form factor strikes a balance between screen real estate and portability, with the laptop measuring 13.98 x 9.65 x 0.52 inches and weighing 3.52 pounds. These dimensions position it competitively within the 16-inch category,

particularly considering its mainstream price positioning. The aluminum chassis construction provides structural rigidity while contributing to thermal dissipation, an important consideration for sustained performance scenarios.



MAXIMIZING MOBILITY WITH THE HP OMNIBOOK 5 AND SNAPDRAGON X PROCESSOR

The HP OmniBook 5 Laptop

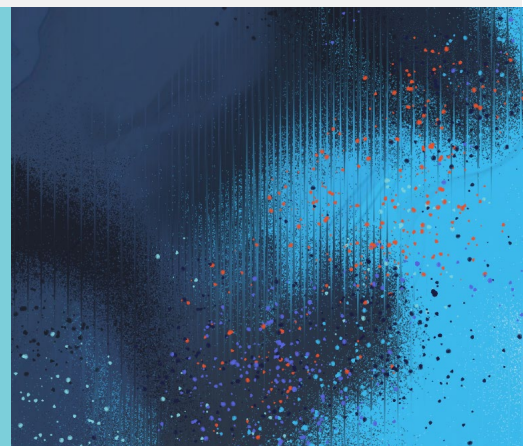


Display technology plays a crucial role in the user experience, and HP has equipped this OmniBook 5 with a 16-inch 2K OLED panel operating at 1920 x 1200 resolution in a 16:10 aspect ratio. The OLED technology delivers superior contrast ratios and color accuracy compared to traditional LCD panels, with the display covering 95% of the DCI-P3 color gamut and achieving 300 nits of brightness. The non-touch configuration helps optimize battery life while keeping costs aligned with mainstream market expectations.

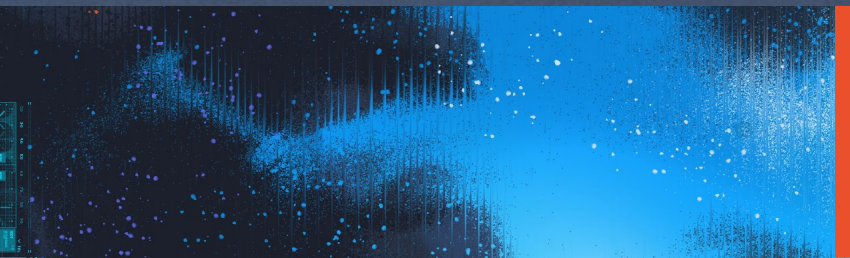
Connectivity options reflect modern usage while maintaining compatibility with legacy peripherals. The system includes two USB Type-C ports

supporting 10 Gbps data transfer rates, two USB Type-A ports for backward compatibility, a full-size HDMI 2.1 port for external display connectivity, and a 3.5mm audio jack. Wireless connectivity is handled by the Qualcomm FastConnect 7800, supporting Wi-Fi 7 and Bluetooth 5.3 standards. This connectivity suite ensures compatibility with current and emerging wireless infrastructure while maintaining support for existing peripherals and accessories.

Memory and storage is configured to include 16GB of LPDDR5X-8448 RAM and a 512GB PCIe NVMe SSD, though obviously there are other combinations depending on the specific SKU.



Competitive Setup



	HP OmniBook 5	ASUS Vivobook S 14	ASUS Vivobook 16
CPU	Snapdragon X1-26-100	Intel Core Ultra 5 226V	AMD Ryzen AI 5 340
Graphics	Qualcomm Adreno X1-45	Intel Arc 130V	AMD Radeon 840M
RAM	16GB LPDDR5X-8448	16GB LPDDR5X-8533	16GB DDR5-5600
Storage	512GB SK Hynix BC901	512GB Micron MTFDKBA512QGN-1BN1AABGA	512GB Micron MTFDKBA512QGN-1BN1AABGA
Display	15" 1920x1900	14" 1920x1200	16" 1920x1200

To properly contextualize the HP OmniBook 5 performance and efficiency characteristics, our analysis includes comparative testing against two similarly positioned systems from competing vendors. These systems, for this analysis, represent current-generation offerings utilizing Intel’s Lunar Lake and AMD’s Ryzen AI architectures respectively.

The ASUS laptop features Intel’s latest mobile platform optimized for efficiency and AI workloads, while the Dell laptop incorporates AMD’s Ryzen AI 5 processor with integrated RDNA graphics and dedicated AI acceleration. All three systems target similar price points and usage scenarios, making them natural comparison points for mainstream laptop buyers evaluating their options in the current market.

The selection of these specific competitive systems reflects the reality of the current laptop market, where buyers must choose between traditional x86 architectures with established software compatibility and emerging Arm-based platforms promising superior efficiency and battery life. This comparison provides practical insights into the trade-offs and benefits of each approach.

The Importance of Measurement on Battery Power

General methodology of performance testing has evolved significantly as mobile computing patterns have shifted from occasional portability to primary mobile usage. Traditional laptop reviews often focus exclusively on peak performance metrics obtained while systems are connected to the wall, providing unlimited power and optimal thermal conditions. However, this approach fails to capture the reality of how mobile professionals actually use their devices throughout a typical workday.

The value of examining performance and system behavior while operating on battery power extends beyond simple battery life measurements. Performance-qualified battery life, understanding not just how long a system runs but how well

it performs during that time, has become critical for evaluating real-world utility. A laptop that delivers 12 hours of battery life but throttles performance by 50% when unplugged provides a fundamentally different user experience than one maintaining consistent performance throughout its battery runtime.

This distinction becomes more important when considering the diverse workload patterns of modern knowledge workers. Video conferences, document editing, web browsing, and increasingly, AI-assisted tasks all demand responsive performance. Users have learned to adapt to reduced battery life by carrying chargers and seeking power outlets, but they cannot easily compensate for sluggish performance during critical tasks. The frustration of a

laptop that becomes noticeably slower when disconnected from power can significantly impact productivity and user satisfaction.

While our analysis maintains its primary focus on demonstrating the capabilities of the HP OmniBook 5, providing competitive context enhances understanding of its relative positioning. The inclusion of performance and battery results from price-equivalent systems utilizing Intel Lunar Lake and AMD Ryzen AI platforms provides perspective on the current state of mobile computing across different architectural approaches.



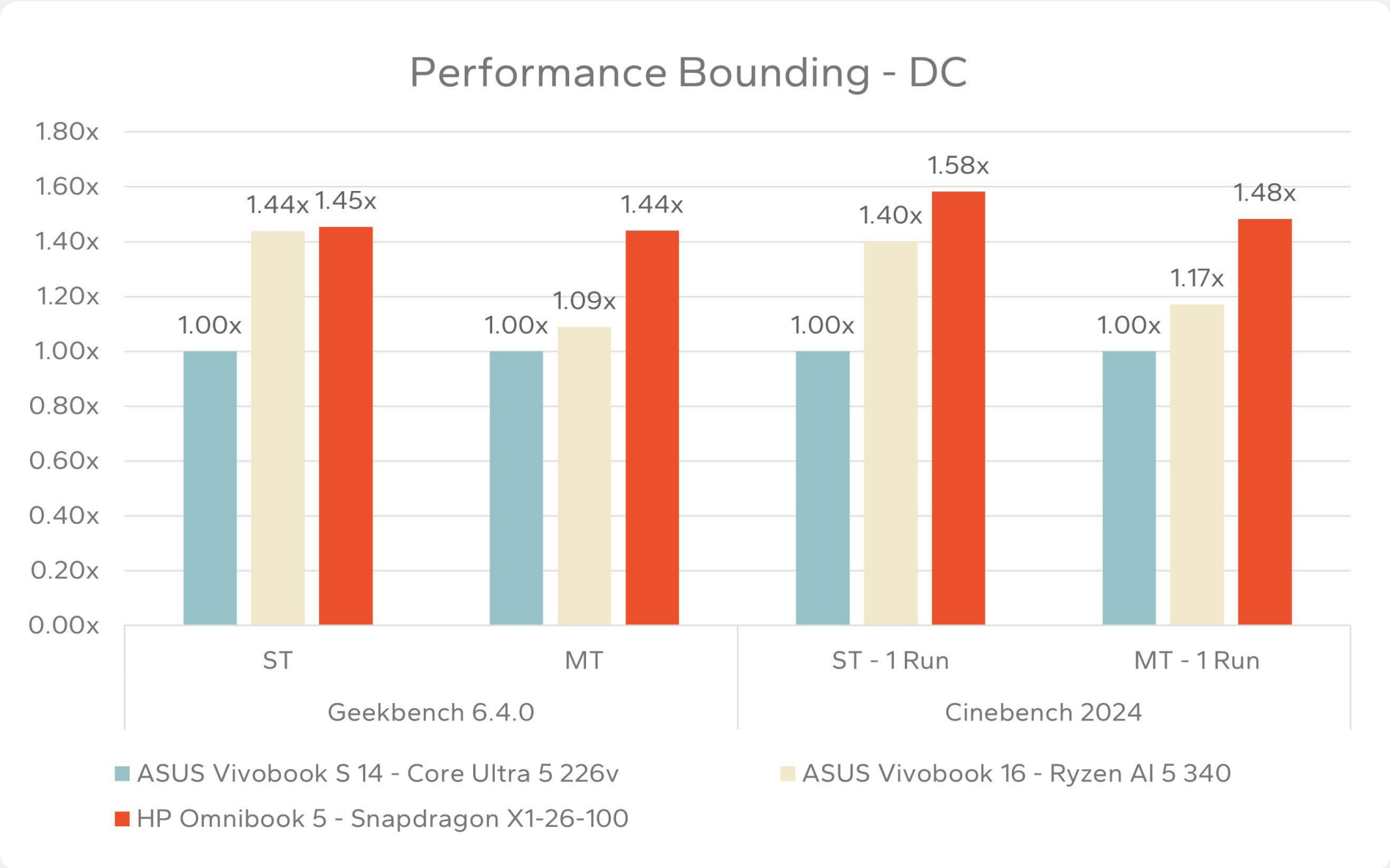
Windows Performance on Battery

Geekbench 6 provides cross-platform performance measurement capabilities that span mobile to desktop systems across multiple operating systems. The benchmark encompasses workloads representative of real-world computing scenarios, including augmented reality processing, object detection, and file compression tasks. While not a direct measurement of specific applications, Geekbench serves as an effective indicator of general-purpose performance across diverse, burst-oriented workloads.

Cinebench 2024, based on Maxon’s Cinema 4D rendering engine, measures sustained processor performance under maximum load conditions. This benchmark has maintained consistent methodology across industry analysis for years, providing reliable assessment of both single-threaded and multithreaded processor capabilities under sustained computational stress.

The first performance results reveal the competitive dynamics between the three platforms in both single-threaded (ST) and multi-threaded (MT) workloads. In Geekbench 6.4.0, the HP OmniBook 5 with Snapdragon X1-26-100 takes the lead in both single-threaded (1.45x) and multi-threaded (1.44x) performance, outperforming the ASUS Vivobook 16 with Ryzen AI 5 340 and the ASUS Vivobook S 14 with Intel Core Ultra 5 226v.

The Cinebench 2024 results show an even more pronounced advantage for the Snapdragon platform. In single-threaded performance after one run, the HP OmniBook 5 achieves 1.58x the Intel baseline, while AMD manages 1.40x. Multi-threaded results maintain the HP’s leadership at 1.48x versus AMD’s 1.17x and Intel’s baseline at 1.00x. These results demonstrate that when running on battery power, a common scenario for mobile users, the Snapdragon



X platform delivers superior performance across both lightly-threaded and heavily-threaded workloads.

What’s particularly noteworthy is the consistency of the Snapdragon platform’s advantage across different benchmark types. Whether testing burst performance in Geekbench or

sustained rendering workloads in Cinebench, the HP OmniBook 5 maintains its performance leadership by significant margins of 40-58% over the Intel system and competitive advantages over the AMD platform.

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Windows Performance on Battery

The Procyon Productivity benchmark evaluates system performance using actual Microsoft Office 365 applications, simulating real-world business workloads and usage scenarios. This testing methodology provides direct correlation to the productivity applications most commonly deployed in enterprise environments, offering practical performance insights beyond synthetic benchmark results.

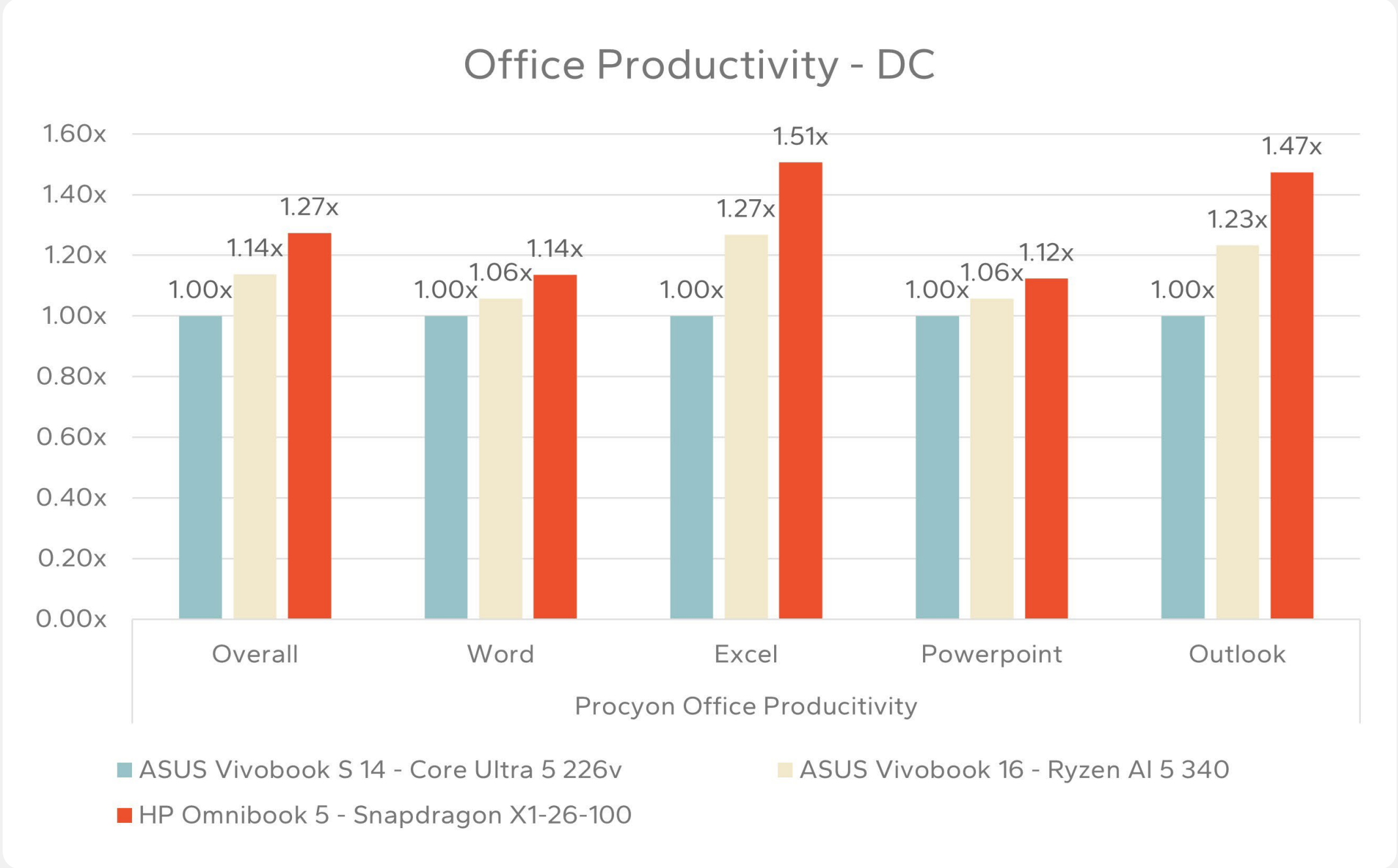
The Procyon Office Productivity results provide crucial insights into real-world application performance while running on battery power. Across the suite of Microsoft Office applications, the HP OmniBook 5 with Snapdragon X1-26-100 demonstrates consistent performance leadership. In the overall score, the Snapdragon system achieves 1.27x the performance of the Intel Core Ultra 5

226v baseline, with the AMD Ryzen AI 5 340 system falling between at 1.14x.

Breaking down individual applications reveals even more impressive results for the Snapdragon platform. Excel

performance shows the most dramatic advantage, with the HP OmniBook 5 delivering a 51% improvement that translates directly into faster spreadsheet calculations, data analysis, and financial modeling tasks.

HP OmniBook 5 with Snapdragon X offers up to 51% better performance on battery than the Intel Core Ultra 5 226v.



Outlook performance, essential for email and calendar management, shows the HP system at 1.47x versus Intel's baseline, with AMD at 1.23x. PowerPoint sees the Snapdragon platform achieving 1.12x performance, while Word operations run at 1.14x the Intel baseline. These results demonstrate that across the entire spectrum of office productivity tasks, from document creation to data analysis to communication, the Snapdragon X platform maintains meaningful performance advantages when running on battery power.

The consistency of these advantages across different Office applications suggests excellent optimization of the Snapdragon platform for productivity workloads. For business users who spend their days in these applications, the 27% overall performance advantage translates into tangible time savings and improved responsiveness throughout the workday.

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Windows Performance on Battery

UL's Procyon AI Computer Vision Benchmark provides comprehensive insights into AI inference engine performance on Windows systems, featuring multiple AI inference engines from different vendors with benchmark scores reflecting on-device inferencing operation capabilities. The benchmark evaluates AI models performing image recognition, classification, and upscaling tasks, utilizing both integer and floating-point precision calculations depending on hardware and software stack compatibility.

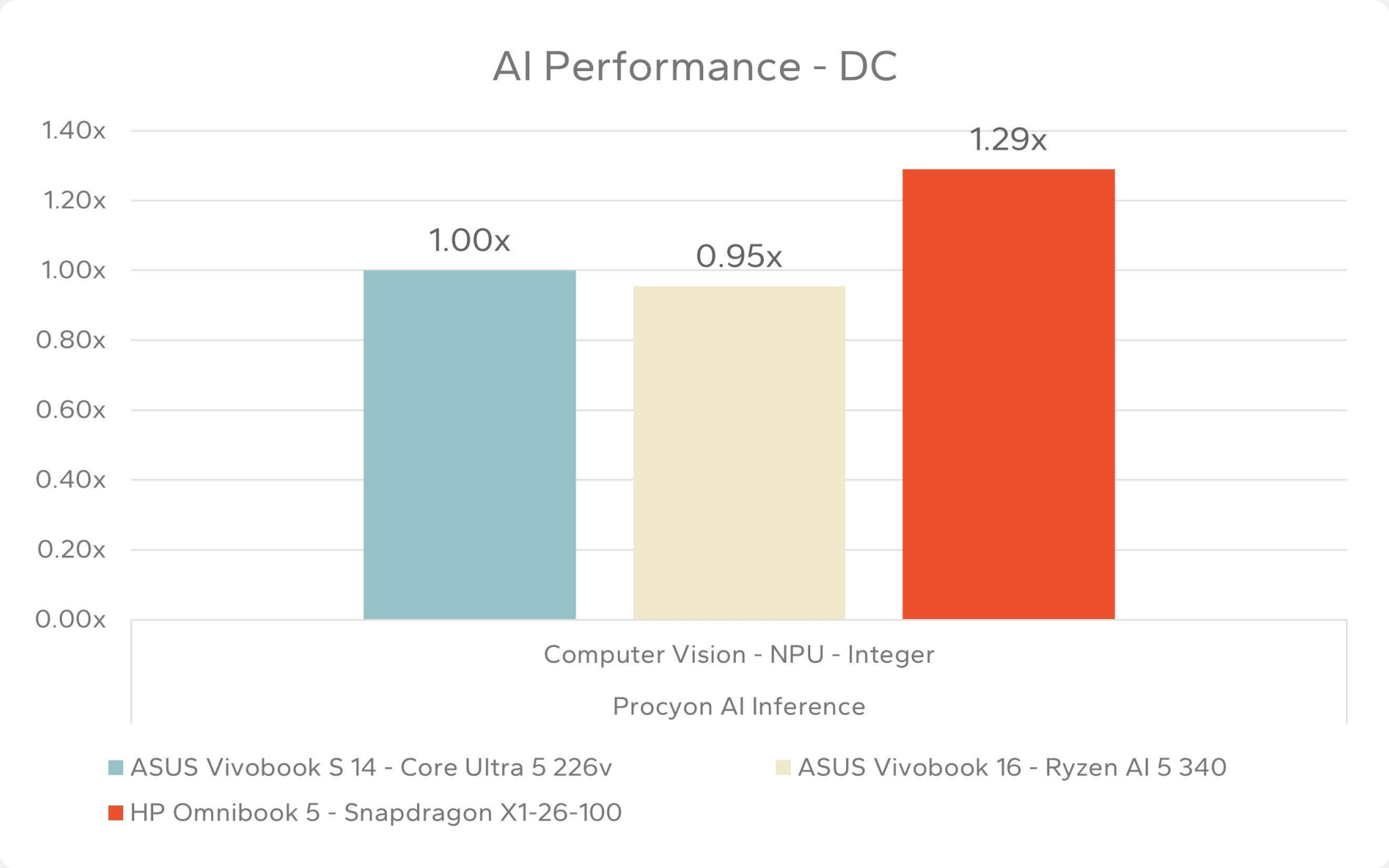
AI inference performance represents a critical capability for modern laptops, particularly those targeting Copilot+ PC certification. The Procyon AI Inference benchmark using Computer Vision models with NPU Integer precision reveals the dedicated AI acceleration capabilities

of each platform when running on battery power. Here, the HP OmniBook 5 with its Snapdragon X1-26-100 and integrated Hexagon NPU delivers a 29% advantage in AI workload processing.

Interestingly, the AMD Ryzen AI 5 340 system shows slightly lower performance at 0.95x the Intel baseline, suggesting potential optimization challenges or architectural differences in NPU implementation. The Snapdragon

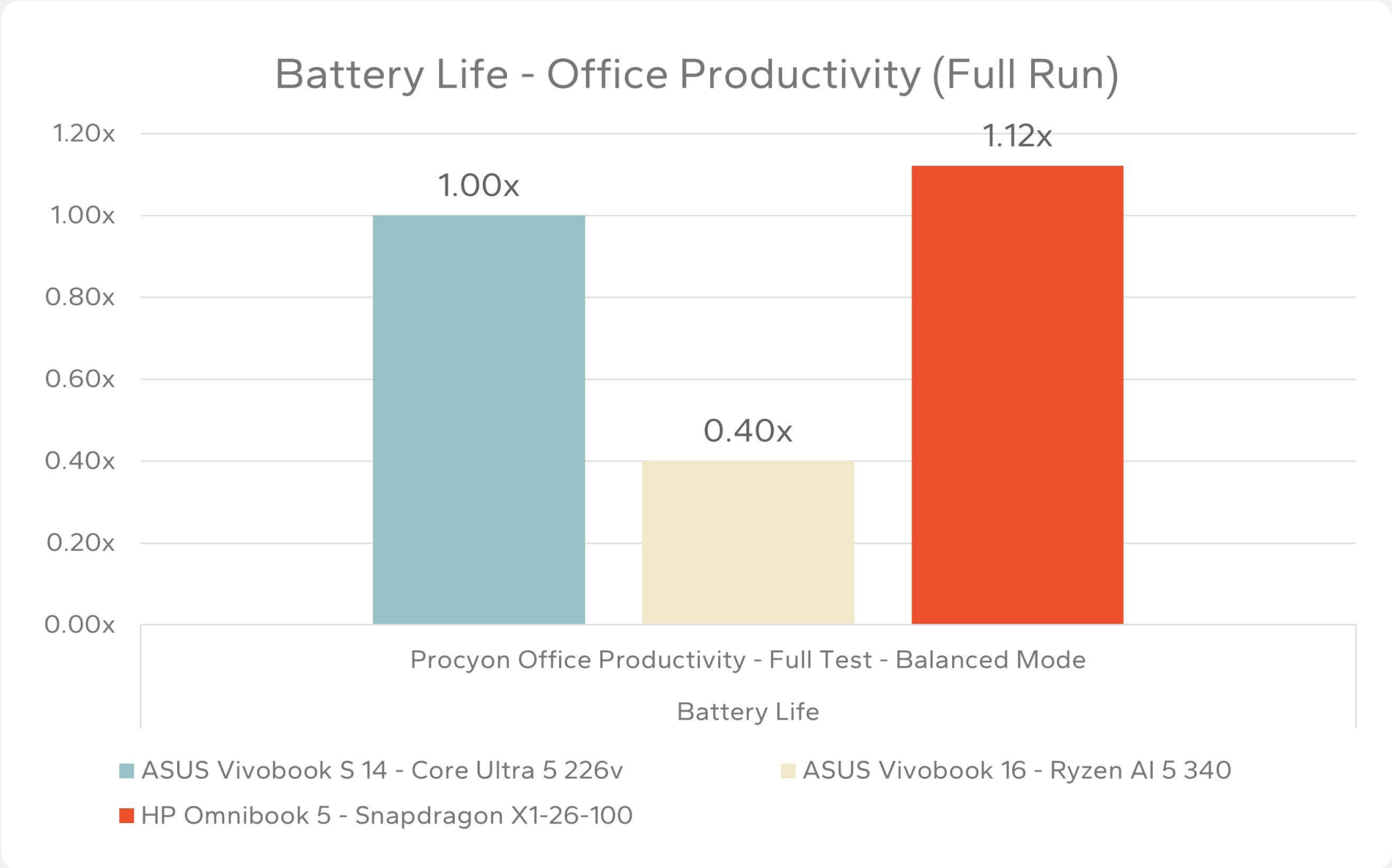
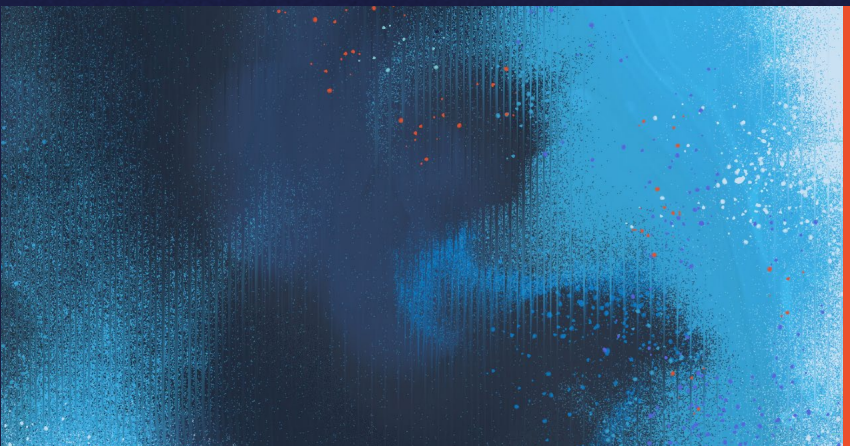
platform's clear leadership in this test validates Qualcomm's focus on AI acceleration as a core competency of the platform.

This 29% performance advantage in AI inference tasks has immediate practical implications. Features like background blur in video calls, real-time translation, image enhancement, and emerging generative AI applications all benefit from stronger NPU performance. As Windows continues to integrate AI-powered features throughout the operating system and applications increasingly leverage on-device AI processing, the Snapdragon platform's superior AI performance while on battery ensures these capabilities remain responsive and available whenever users need them.



Battery Life

Battery performance represents a critical differentiator in commercial laptops, where professionals require consistent productivity throughout extended work sessions.



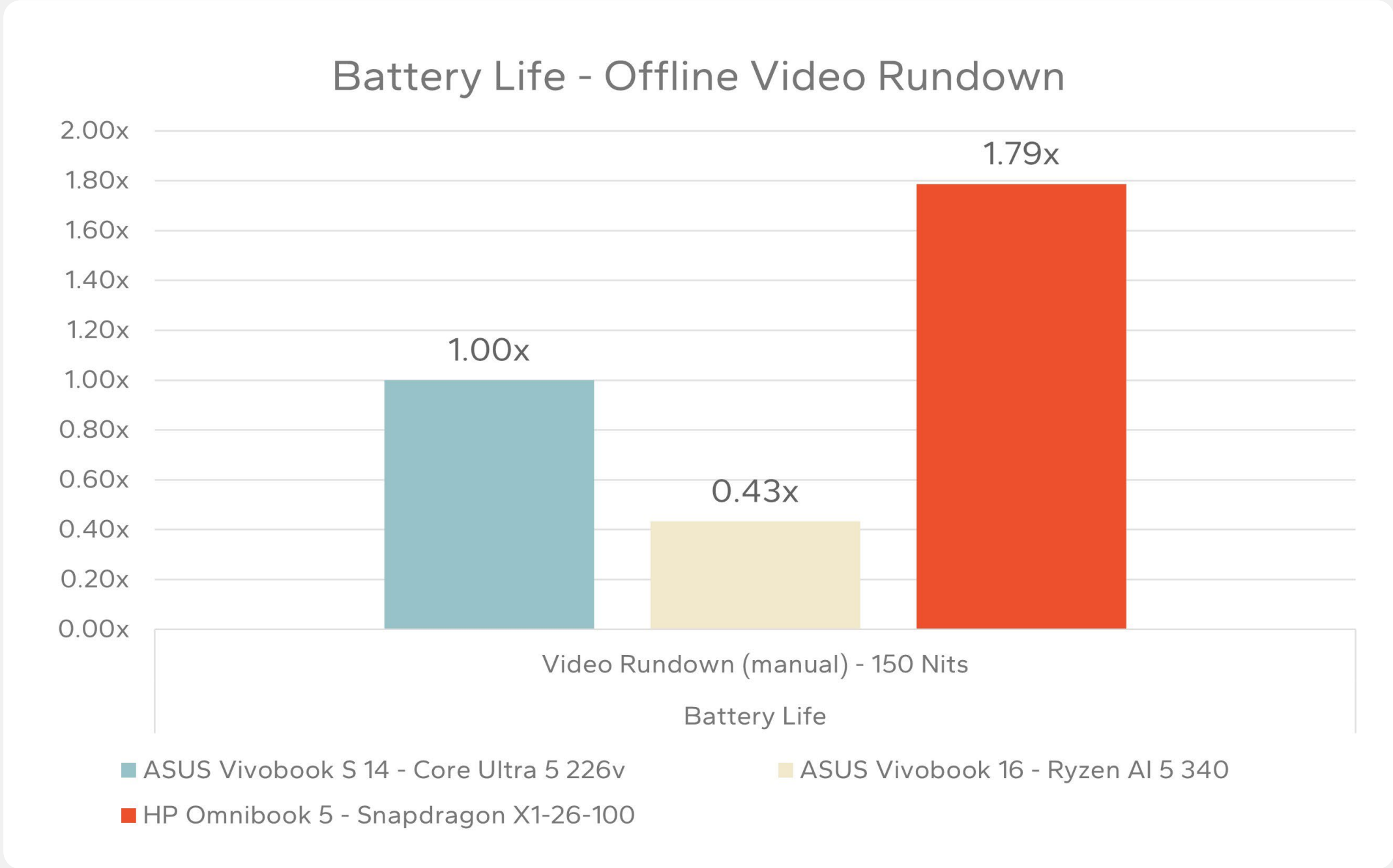
Battery life testing using the Procyon Office Productivity benchmark reveals a clear hierarchy in power efficiency among the three tested platforms. The HP OmniBook 5 with Snapdragon X1-26-100 achieves 12% longer runtime while continuously exercising Microsoft Office

applications. Even more dramatically, the AMD Ryzen AI 5 340 system manages only 0.40x the Intel baseline, meaning it delivers less than half the battery life of the Intel system and significantly trails both competitors.

These results demonstrate that in real-world productivity scenarios, the Snapdragon platform offers users the longest unplugged working time. The 12% advantage over Intel may seem modest but translates to approximately an additional hour of productivity in a typical workday.

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Battery Life



The Snapdragon-powered HP OmniBook 5 offers up to 79% longer battery life than the competitive Intel laptop.

When looking at battery life for this system in a less intense, but still important, video playback scenario, the results were simply...stunning. In our testing, playing back a 1080p local video file with the display at 150 nits, we were able to achieve more than 34 hours of measured playback. Yes: 34 hours of video playback, far outpacing even the best other laptops we have measured on the market.

Compared to the other Windows systems, this makes for an 80% advantage over the Intel Core Ultra 5 226V laptop and a more than 4x lead over the AMD-base design.



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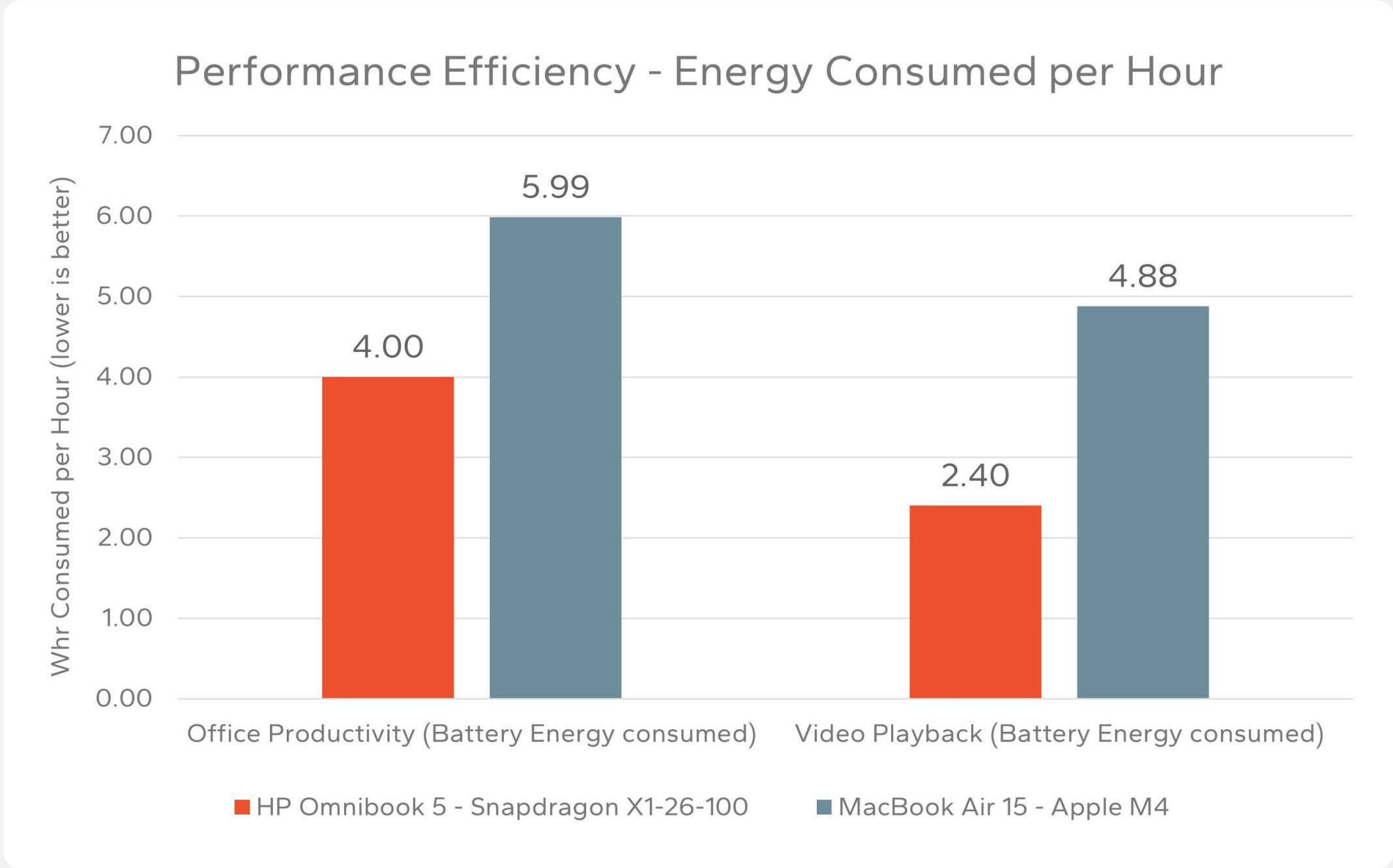
Battery Life

To provide additional context on the Snapdragon platform’s efficiency, we conducted comparative testing against Apple’s MacBook Air 15 with the M4 processor. Due to the complexity of cross-platform battery testing between Windows and macOS, we employed a one-hour rundown test methodology rather than full discharge testing. This approach measures energy consumed per hour during controlled workloads, providing a normalized comparison that accounts for differences in operating systems and battery capacities while maintaining testing practicality.

Looking at energy consumption provides deeper insights into platform efficiency. The HP OmniBook 5 demonstrates superior energy efficiency across both tested workloads. In Office Productivity

tasks, the Snapdragon system consumes only 4.00 Whr per hour compared to 5.99 Whr for the MacBook Air 15 with Apple M4, a 33% reduction in energy consumption. For video playback, the efficiency gap narrows but remains

The HP OmniBook 5 with Snapdragon X operates at nearly double the power efficiency of the M4-powered MacBook Air.

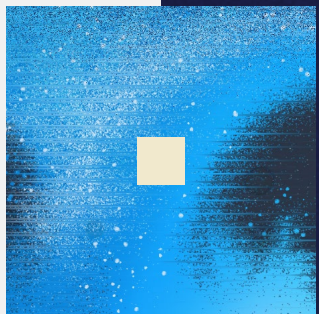


substantial, with the HP system consuming 2.40 Whr per hour versus Apple’s 4.88 Whr per hour.

These energy consumption metrics reveal the fundamental efficiency of the

Snapdragon X platform, along with the other system level component selection from HP on this laptop. Lower energy consumption per hour directly translates to either longer battery life with the same battery capacity or the ability to achieve competitive battery life with smaller, lighter batteries. The comparison with Apple’s M4 processor is particularly noteworthy, as Apple Silicon has been widely regarded as the efficiency leader in mobile computing. The Snapdragon platform’s ability to consume less energy than the M4 in these workloads represents a significant achievement for Windows-based systems.

Note that this testing was done at 200 nits brightness, the standard suggested by UL Benchmarks for its software.



The Future is Now

The HP OmniBook 5 with Snapdragon X represents more than an incremental advancement in laptop design, it demonstrates a market shift in what mainstream users can expect from mobile computing platforms. The convergence of strong performance, exceptional battery life, and consistent operation regardless of power source creates a combination that redefines mobility for everyday computing.

Our testing reveals that the Snapdragon X-based OmniBook 5 delivers strong, leadership performance versus comparable Intel and AMD platforms where it matters: in real-world usage while operating on battery power. The platform demonstrates 45% better single-threaded and 44% better multi-

threaded performance than Intel in Geekbench testing, with even more impressive 58% and 48% advantages respectively in Cinebench workloads. In practical Office productivity tasks, the Snapdragon platform maintains a 27% overall performance advantage, with Excel operations showing a remarkable 51% improvement, directly benefiting many professionals' daily activities.

The platform's AI acceleration capabilities deliver concrete advantages, with the Hexagon NPU achieving 29% better performance than Intel's implementation and significantly outpacing AMD's solution. This 50 TOPS of AI performance through the NPU matches that of Qualcomm's highest-end processors, ensuring users won't

be left behind as software evolves to leverage these capabilities. As Copilot+ features and third-party AI applications proliferate, having substantial local AI processing capability will transition from differentiator to necessity.

Battery life leadership manifests in multiple dimensions. The OmniBook 5 delivers 12% longer battery life than Intel's Lunar Lake platform while dramatically exceeding AMD's Ryzen AI solution by over 2.5x in Office productivity workloads. More impressively, when compared to Apple's M4 processor, long considered the efficiency benchmark, the Snapdragon based system demonstrates 33% lower energy consumption in Office tasks and 51% lower consumption during video

playback. This efficiency advantage exceeding even Apple Silicon represents a watershed moment for Windows-based systems and exactly what Microsoft had in mind when building out the Copilot+ PC initiative.



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The Future is Now

For organizations deploying next-generation AI PCs, the HP OmniBook 5 presents a compelling value proposition. The combination of mainstream pricing, premium features like the 2K OLED display, and class-leading efficiency creates a laptop that addresses the needs of diverse user populations. Small businesses seeking to maximize their technology investments will find consistent performance on battery particularly valuable; employees can maintain full productivity whether working from the office, home, or anywhere in between.

The general user evaluating Copilot+ PCs will discover that the OmniBook 5 delivers on the promise of all-day computing without the performance compromises that can sometimes

accompany extended battery life. The ability to work confidently throughout a full day without seeking power outlets or experiencing the performance degradation seen in competing platforms, where other systems can lose 40-60% of their plugged-in performance, represents a qualitative improvement in the mobile computing experience.

The future of mobile computing isn't arriving, it's here, packaged in an affordable, capable system that redefines expectations for mainstream laptops. The HP OmniBook 5 with Snapdragon X demonstrates that the benefits of advanced processor architectures need not be confined to premium segments, bringing transformative capabilities to the broad market of users who will ultimately drive the next phase of PC innovation.



Key Highlights:



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Contact us if you would like to discuss this report and Signal65 will respond promptly.

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Signal65 exists to be a source of data in a world where technology markets and product landscapes create complex and distorted views of product truth. We strive to provide honest and comprehensive feedback and analysis for our clients in order for them to better understand their own competitive positioning and create optimal opportunities to market and message their devices and services.



System Configurations

	HP OmniBook 5	ASUS Vivobook S 14	ASUS Vivobook 16
CPU	Snapdragon X1-26-100	Intel Core Ultra 5 226V	AMD Ryzen AI 5 340
Graphics	Qualcomm Adreno X1-45	Intel Arc 130V	AMD Radeon 840M
RAM	16GB LPDDR5X-8448	16GB LPDDR5X-8533	16GB DDR5-5600
Storage	512GB SK Hynix BC901	512GB Micron MTFDKBA512QGN-1BN1AABGA	512GB Micron MTFDKBA512QGN-1BN1AABGA
Display	15” 1920x1900	14” 1920x1200	16” 1920x1200
System BIOS	F.03	S5406SA.323	M1607KA.322
Operating System	Windows 11 26100.4770	Windows 11 26100.4770	Windows 11 26100.4770
Windows Power Mode	Balanced	Balanced	Balanced
OEM Power Mode	N/A	Standard	Standard
Virtualization Based Security	Enabled	Enabled	Enabled

Applications Used

Geekbench 6.4.0	3DMark v2.31.8385	Google Chrome 139.0.7258.128
Cinebench 2024.0.1	Adobe Photoshop 26.8	
UL Procyon 2.10.1729	Adobe Lightroom Classic 14.3.1	
Microsoft Office 2507	Pugetbench for Creators 1.3.20	



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