



## The HP EliteBook 655 G9, powered by the eight-core AMD Ryzen 7 PRO 5875U processor, scored well on eight industry-standard performance benchmarks

This system not only outperformed the higher-priced Dell Latitude 5520, powered by the four-core Intel Core i7-1185G7 processor, but its underside was cooler during use, making for a more comfortable user experience

Companies typically weigh a variety of factors when choosing laptops for their employees. Performance—a system’s ability to execute tasks in a speedy manner and reduce the time that users must wait—is paramount, but so is the comfort of those using the device. A highly efficient system that is unusually noisy or excessively warm to the touch is likely to draw complaints. As with any business decision, pricing is also a consideration.

We tested two business laptops with comparable specifications aside from their processors: the HP® EliteBook 655 G9, powered by the eight-core AMD Ryzen™ 7 PRO 5875U processor, and the Dell™ Latitude™ 5520, powered by the four-core Intel® Core™ i7-1185G7 processor. The models we tested had the same amount of RAM and the same size and type of solid-state drive for storage.

Across a series of tests, the AMD Ryzen 7 PRO 5875U processor-enabled laptop outperformed the laptop with the Intel Core i7-1185G7 processor while generating comparable levels of noise and less heat on the bottom. The HP EliteBook 655 G9 was also the more affordable system, with a discounted price 11 percent lower than that of the Dell Latitude 5520.



Higher or comparable scores on performance benchmarks

Up to 2.64x the performance on Blender Benchmark 3.1.0 Junkshop render



Cooler underside



Comparable noise level



Better price

Up to 11% less expensive\*

\*Prices subject to change

## About the AMD Ryzen 7 PRO 5875U processor

The AMD Ryzen 7 PRO 5875U processor is part of the AMD Ryzen PRO 5000 Series Mobile Processors product line, which AMD states “offer up to 8 high-performance cores for blazing fast performance that accelerate the latest productivity, collaboration, and office applications that are essential to the hybrid workforce.”<sup>1</sup> The AMD Ryzen 7 PRO 5875U processor has 16 threads, a 2.0GHz base clock, and up to a 4.5GHz maximum boost clock.<sup>2</sup> In our testing, the AMD Ryzen 7 PRO 5875U processor powered the HP EliteBook 655 G9.

Learn more at

<https://www.amd.com/en/products/apu/amd-ryzen-7-pro-5875u>.



## Putting two laptops to the test

We compared two business laptops:

### The HP EliteBook 655 G9

AMD Ryzen 7 PRO 5875U processor  
8 cores  
16GB RAM  
512GB SSD

### The Dell Latitude 5520

Intel Core i7-1185G7 processor  
4 cores  
16GB RAM  
512GB SSD

We conducted a series of performance benchmark tests:

- ◆ Cinebench R23 vR23.200
- ◆ Geekbench 5 Pro
- ◆ PassMark PerformanceTest 10
- ◆ PCMark 10
- ◆ Blender Benchmark 3.1.0
- ◆ UL Procyon® Office Productivity Benchmark
- ◆ UL Procyon Photo Editing Benchmark
- ◆ UL Procyon Video Editing Benchmark

*Note: For UL Procyon benchmark testing, we installed a clean Windows 11 image. For all other tests, we used OEM Windows images.*

To understand the experience employees might have when using these devices, we also measured the amount of sound and heat that each system generated while idle and while under load (running Cinebench R23). Finally, we looked at the pricing of the two systems. For complete configuration information for the two test systems and step-by-step details of our testing, see the [science behind the report](#).

## Comparing system performance using benchmark scores

The tasks that laptop users perform vary considerably, but by looking at a range of industry-standard benchmarks that measure different aspects of system performance, we can provide insight into the kind of responsiveness users will likely experience. In this section, we present the results of eight benchmarks.

### Cinebench R23

The Cinebench R23 benchmark tests both multi-core and single-core performance. As Figure 1 shows, the AMD Ryzen 7 PRO 5875U processor-powered HP EliteBook 655 G9 achieved a Cinebench R23 CPU multi-core score more than twice that of the Intel Core i7-1185G7 processor-powered Dell Latitude 5520. The CPU single-core scores for the two laptops were almost identical.

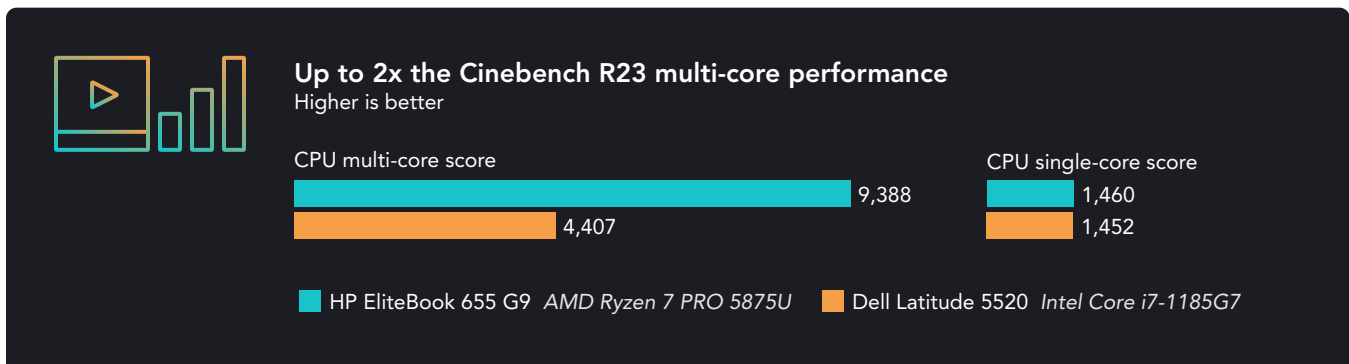


Figure 1: Cinebench R23 vR23.200 performance scores. Higher is better. Source: Principled Technologies.

### Geekbench 5 Pro

Geekbench 5 Pro measures a system's potential to handle tasks such as gaming and video editing. As Figure 2 shows, the AMD Ryzen 7 PRO 5875U processor-powered HP EliteBook 655 G9 achieved a Geekbench 5 CPU multi-core score up to 51.3 percent higher than the Intel Core i7-1185G7 processor-powered Dell Latitude 5520. Compared to the Intel Core i7-1185G7 processor-powered Dell Latitude 5520, the AMD Ryzen 7 PRO 5875U processor-powered HP EliteBook 655 G9 had a slightly lower CPU single-core score.

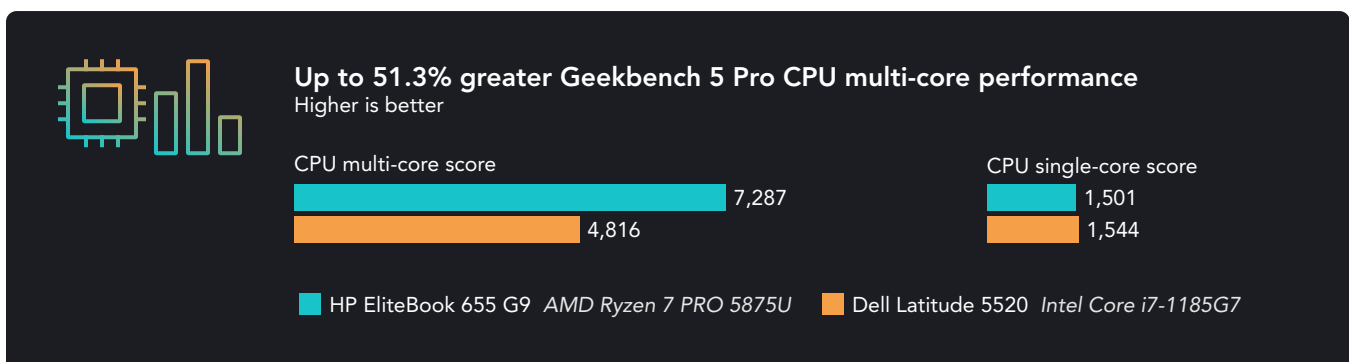


Figure 2: Geekbench 5 Pro performance scores. Higher is better. Source: Principled Technologies.

## PassMark PerformanceTest 10

PassMark PerformanceTest 10 is a benchmark that measures performance in a number of areas, including CPU, 2D and 3D graphics, disk, and memory. As Figure 3 shows, the AMD Ryzen 7 PRO 5875U processor-powered HP EliteBook 655 G9 achieved a PassMark PerformanceTest 10 score up to 54.1 percent higher than the Intel Core i7-1185G7 processor-powered Dell Latitude 5520.

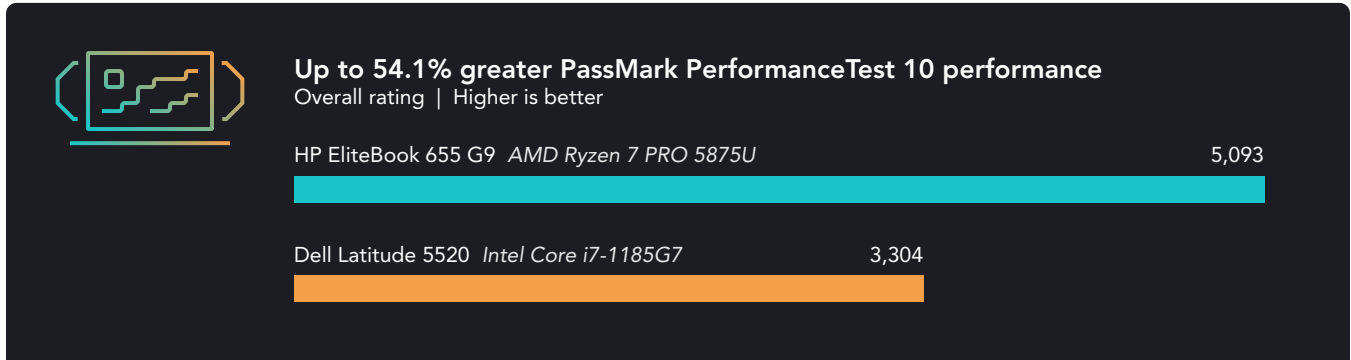


Figure 3: PassMark PerformanceTest 10 overall ratings. Higher is better. Source: Principled Technologies.

## PCMark 10

PCMark 10 includes “a comprehensive set of tests that cover the wide variety of tasks performed in the modern workplace.”<sup>3</sup> As Figure 4 shows, the AMD Ryzen 7 PRO 5875U processor-powered HP EliteBook 655 G9 achieved a PCMark 10 score up to 11.5 percent higher than the Intel Core i7-1185G7 processor-powered Dell Latitude 5520.

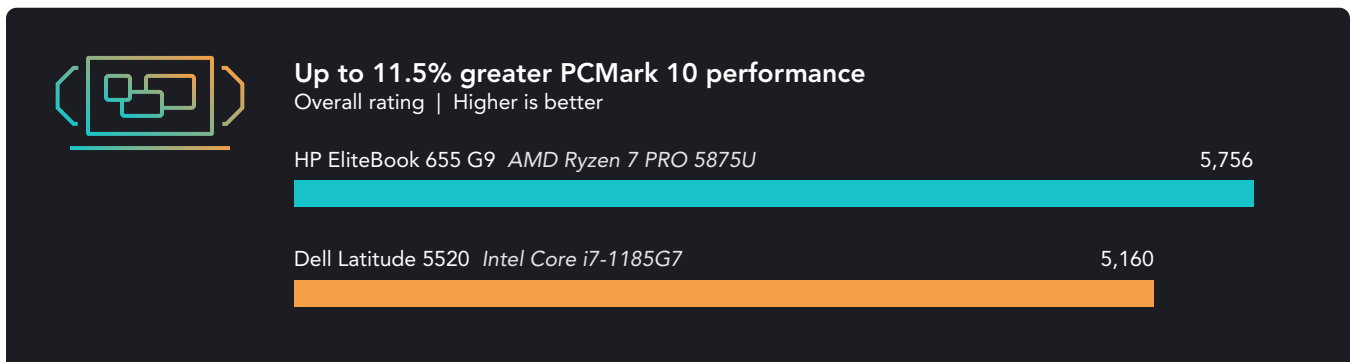


Figure 4: PCMark 10 overall ratings. Higher is better. Source: Principled Technologies.





## Blender Benchmark 3.1.0

Blender Benchmark 3.1.0 measures 3D modeling performance. We tested three Blender models and found that the AMD Ryzen 7 PRO 5875U processor-powered HP EliteBook 655 G9 outperformed the Intel Core i7-1185G7 processor-powered Dell Latitude 5520 on all of them. As Figure 5 shows, the HP EliteBook 655 G9 achieved up to 2.27 times as many samples per minute as the Dell Latitude 5520 on the Monster model, up to 2.64 times as many samples per minute on the Junkshop model, and up to 2.63 times as many samples per minute on the Classroom model.

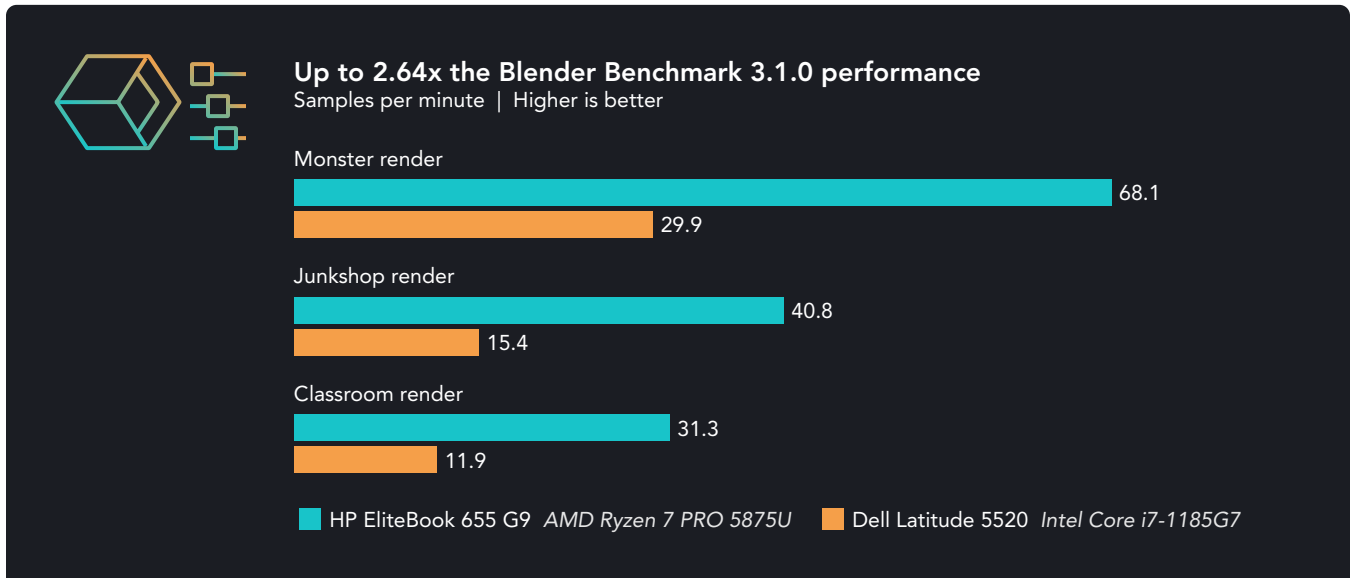


Figure 5: Blender Benchmark 3.1.0 samples per minute. Higher is better. Source: Principled Technologies.



## The UL Procyon benchmark suite

UL Procyon is a suite of benchmarks for professional users working in “industry, enterprise, government, retail and press.”<sup>4</sup>

### UL Procyon Office Productivity Benchmark

As Figure 6 shows, the AMD Ryzen 7 PRO 5875U processor-powered HP EliteBook 655 G9 achieved a UL Procyon Office Productivity Benchmark overall score up to 2.5 percent higher than the Intel Core i7-1185G7 processor-powered Dell Latitude 5520 did.

### UL Procyon Photo Editing Benchmark

As Figure 7 shows, the AMD Ryzen 7 PRO 5875U processor-powered HP EliteBook 655 G9 achieved a UL Procyon Photo Editing Benchmark overall score up to 8.1 percent higher than the Intel Core i7-1185G7 processor-powered Dell Latitude 5520 did.

### UL Procyon Video Editing Benchmark

As Figure 8 shows, the AMD Ryzen 7 PRO 5875U processor-powered HP EliteBook 655 G9 achieved a UL Procyon Video Editing Benchmark overall score up to 17.1 percent higher than the Intel Core i7-1185G7 processor-powered Dell Latitude 5520 did.

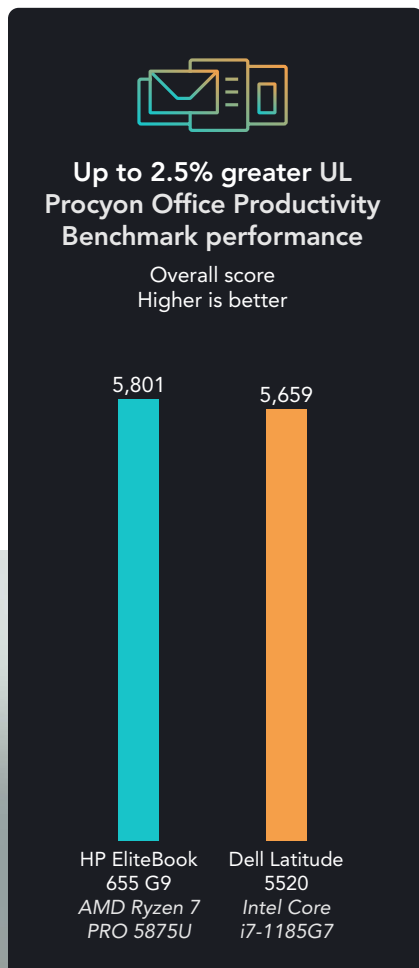


Figure 6: Overall UL Procyon Office Productivity Benchmark rating. Higher is better. Source: Principled Technologies.

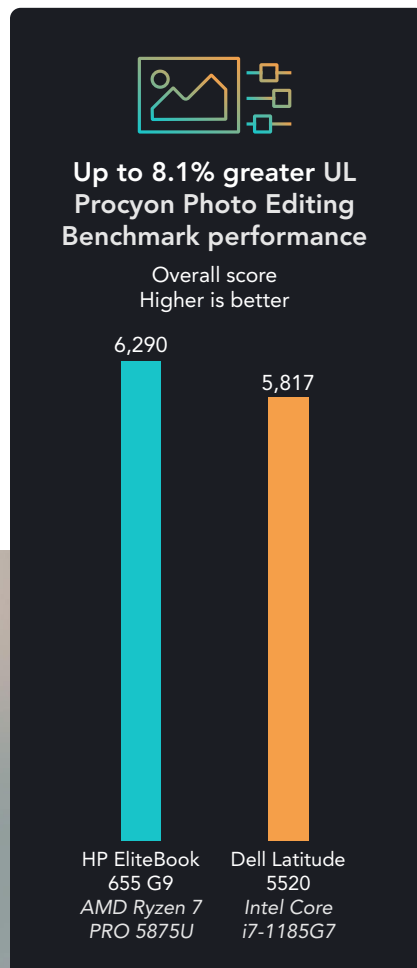


Figure 7: Overall UL Procyon Photo Editing Benchmark rating. Higher is better. Source: Principled Technologies.

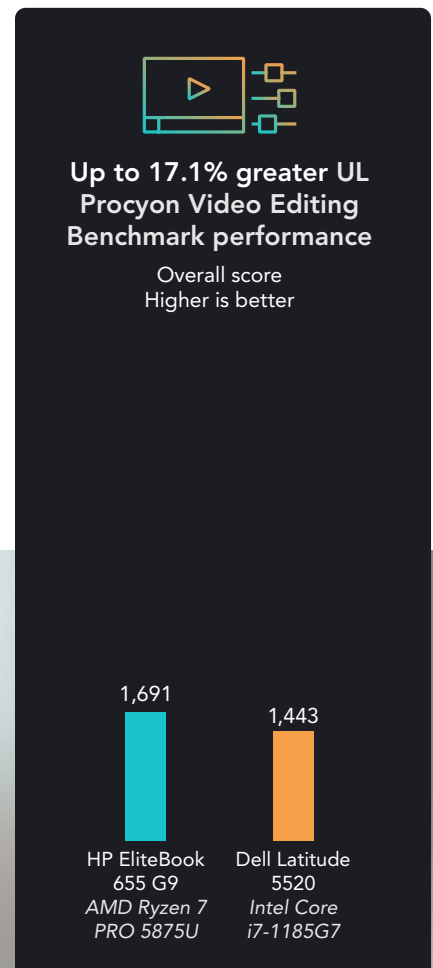


Figure 8: Overall UL Procyon Video Editing Benchmark rating. Higher is better. Source: Principled Technologies.

## Cooler or comparable surface temperatures

Even if your employees typically place their systems on a desk, table, or counter to work, many occasionally take the term “laptop” literally and sit with the device on their thighs. Under these conditions, a warmer computer can be uncomfortable. Figure 9 shows temperature readings we took at two locations on our test devices while they were under CPU load running the multi-core workload in Cinebench R23. Despite its greater performance on this benchmark, the bottom hot spot of the AMD Ryzen 7 PRO 5875U processor-powered HP EliteBook 655 G9 ran up to a full degree cooler than the same spot on the Intel Core i7-1185G7 processor-powered Dell Latitude 5520. The Ryzen 7 PRO 5875U processor-powered HP EliteBook 655 G9 top hot spot measured up to half a degree warmer than the Intel Core i7-1185G7 processor-powered Dell Latitude 5520 top hot spot.

Figure 10 shows temperature readings we took at the same two locations on our test devices while they were idle. The bottom hot spot of the AMD Ryzen 7 PRO 5875U processor-powered HP EliteBook 655 G9 ran up to 2 degrees cooler than the same spot on the Intel Core i7-1185G7 processor-powered Dell Latitude 5520. The AMD Ryzen 7 PRO 5875U processor-powered HP EliteBook 655 G9 top hot spot measured up to 1.6 degrees lower than the Intel Core i7-1185G7 processor-powered Dell Latitude 5520 top hot spot.

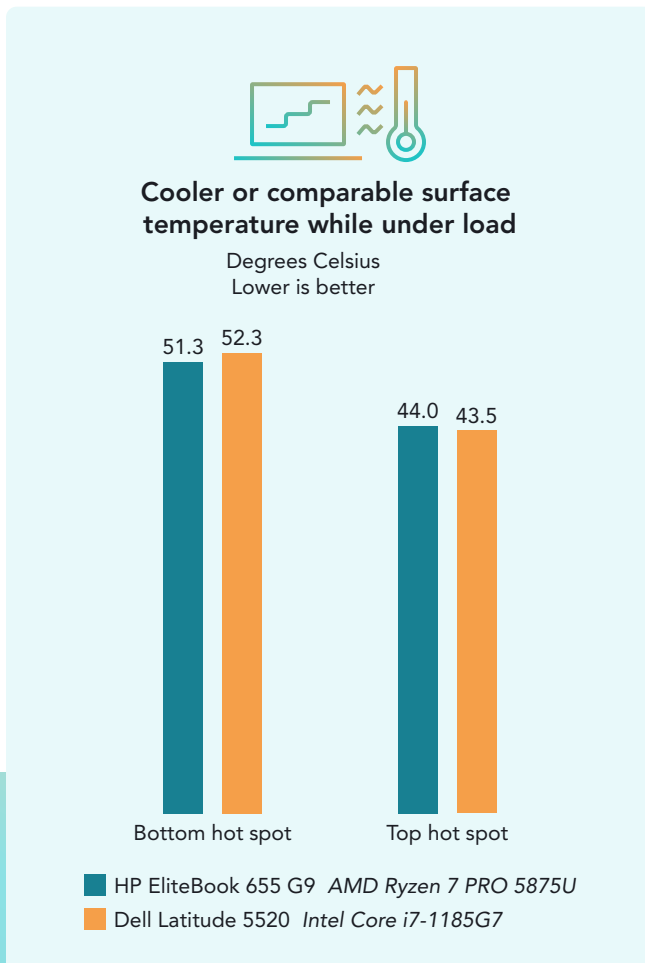


Figure 9: Temperature while under CPU load, in degrees Celsius, at two locations on the systems we tested. Lower numbers are better. Source: Principled Technologies.

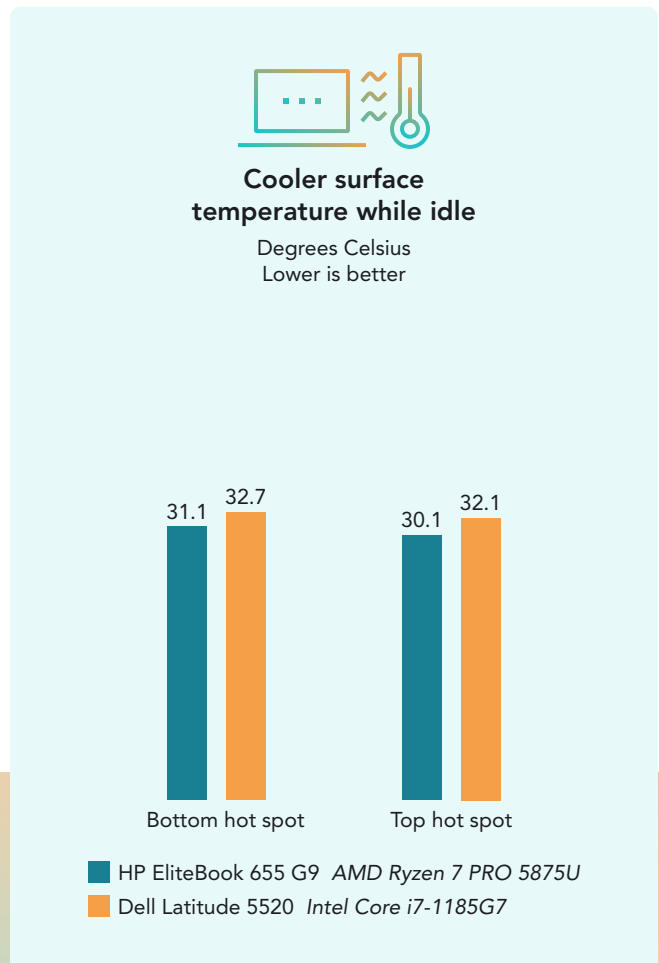


Figure 10: Temperature while idle, in degrees Celsius, at two locations on the systems we tested. Lower numbers are better. Source: Principled Technologies.

## Comparable noise

A noisy system can be a distraction for your employees as they do their work. As Figure 11 shows, the amount of sound the two laptops generated while idle and while running the multi-core workload in Cinebench R23 was almost identical.



### Comparable acoustics

Decibels | Lower is better

While running the multi-core workload in Cinebench R23

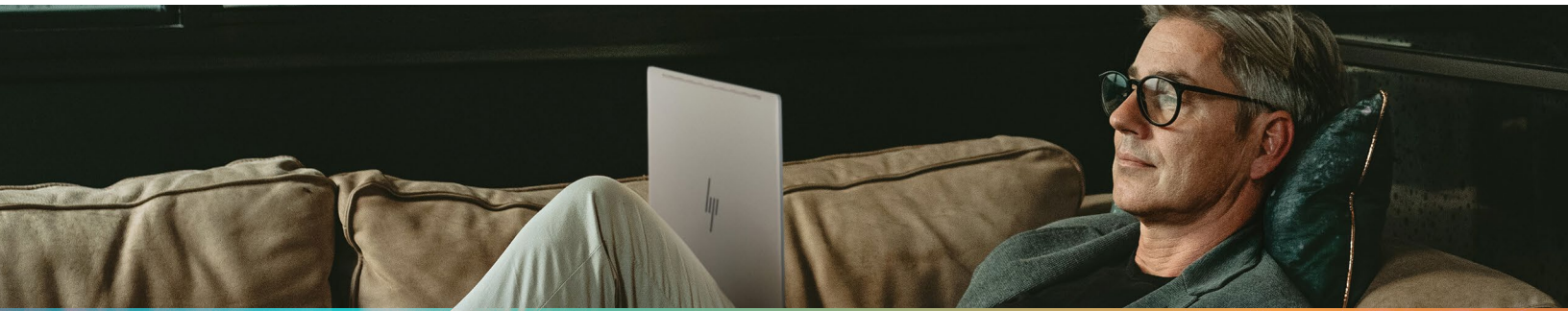


While idle



■ HP EliteBook 655 G9 AMD Ryzen 7 PRO 5875U ■ Dell Latitude 5520 Intel Core i7-1185G7

Figure 11: Acoustics, in decibels, for the two test systems while idle and under CPU load. Lower numbers are better. Source: Principled Technologies.



## Better pricing

Figure 12 shows the price we paid, after discounts, for the two test systems. We purchased the AMD Ryzen 7 PRO 5875U processor-powered HP EliteBook 655 G9 on April 11, 2022 for \$1,903.15. That is up to 11.6 percent less expensive than the Intel Core i7-1185G7 processor-powered Dell Latitude 5520, which we purchased on March 22, 2022 for \$2,153.03.



### Up to 11.6% less expensive after discount

Price (USD) | Lower is better

HP EliteBook 655 G9 AMD Ryzen 7 PRO 5875U \$1,903.15

Dell Latitude 5520 Intel Core i7-1185G7 \$2,153.03

Figure 12: Pricing, after discounts, for the two systems we tested. Lower numbers are better. Source: Principled Technologies.





## Conclusion

Performance is an important consideration when selecting laptops. Noise and heat levels, which can affect the user experience, are also worth investigating. In our tests, an AMD Ryzen 7 PRO 5875U processor-enabled HP EliteBook 655 G9 outperformed a Dell Latitude 5520 with the Intel Core i7-1185G7 processor on a number of industry-standard benchmark tests. Its underside was cooler when running and it was also 11 percent less expensive.

1. "AMD Ryzen™ Processors with PRO Technologies," accessed June 1, 2022, <https://www.amd.com/en/products/ryzen-pro-processors-laptop>.
2. According to AMD, "Max boost for AMD Ryzen processors is the maximum frequency achievable by a single core on the processor running a bursty single-threaded workload. Max boost will vary based on several factors, including, but not limited to: thermal paste; system cooling; motherboard design and BIOS; the latest AMD chipset driver; and the latest OS updates." Source: "AMD Processor Specifications," accessed August 3, 2022, <https://www.amd.com/en/partner/processor-specifications>.
3. "PCMark 10," accessed July 1, 2022, <https://benchmarks.ul.com/pcmark10>.
4. "UL Procyon® benchmark suite," accessed July 1, 2022, <https://benchmarks.ul.com/procyon>.

Read the science behind this report at <https://facts.pt/rx2FQRc> ►



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This project was commissioned by AMD.