signal65

POWER, PERFORMANCE, AND EFFICIENCY:

The Kompanio Ultra 910 Architectural Advantage

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In partnership with:

MEDIATEK

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Contents

Introduction

For over four decades, the trajectories of both the PC and the x86 architecture seemed inseparable; in 1979, Intel introduced its very first x86 chip, the 8086 processor, and just two years later it released the cut-down 8088 variant for the IBM Personal Computer, the original PC. Nearly all competitors to the x86 PC went out of business by the end of the millennium, and even as recently as a few years ago it was assumed that the PC belonged to the x86 architecture forever.

But within just a few years, the Arm architecture has transformed the situation for the PC and the market that has grown around it. At first, Arm penetration into the PC market was gradual, but lately the pace has dramatically increased as more high-performance processors are introduced. Intel and AMD, the sole stewards and designers of x86 chips, are now facing competition from several different series of Arm CPUs, including MediaTek's latest Kompanio Ultra 910 for Chromebook Plus laptops.

The Kompanio Ultra 910 on the whole is very similar to MediaTek's Dimensity 9400 for smartphones. Considering how powerful mobile chips can be today, this is actually a positive for the Kompanio Ultra 910, and you'll see that in the upcoming benchmarks that pit MediaTek's latest chip against similarly priced x86-based Chromebooks and Windows laptops.

On the CPU side of the processor, MediaTek uses an all-big-core design rather than a big-little configuration like many other Arm chip designers. However, the Kompanio Ultra 910 does have different variants of the Arm Cortex core: starting with the fastest, the chip has one Cortex-X925 core, three Cortex-X4 cores, and four Cortex-A720 cores, for a total of eight. By using different big cores from the Cortex series, MediaTek is able to reap some of the benefits of a big-little design but with a slant towards performance.

	Number of Cores	Maximum Boost Frequency	L2 Cache
Arm Cortex-X925	1	3.62 GHz	2 MB
Arm Cortex-X4	3	3.3 GHz	1 MB
Arm Cortex-A720	4	2.4 GHz	412 KB

The Kompanio Ultra 910 outperforms the latest x86 Chromebooks, delivering **up to 2x faster CPU** and **up to a 9x faster graphics performance.**

While x86 systems throttle up to 42% on battery, the Kompanio Ultra 910 **remains stable with only a 6% drop.**

The Kompanio Ultra 910 consumes up to **85% less power under load** and achieving nearly **5x the efficiency** of the latest x86 silicon Chromebooks.

Introduction

Paired with these CPU cores is support for fast LPDDR5X memory clocked at 8533 MHz. At that speed, the Kompanio Ultra 910 is actually faster than the best x86 chips designed for laptops, with the Intel Core Ultra 9 285H rated for LPDDR5(X) at 8400 MHz and the AMD Ryzen AI 9 HX 375 for LPDDR5X at 8000 MHz. Compared to CPUs the MediaTek processor directly competes with, its memory support is generally superior.

For integrated graphics, the Kompanio Ultra 910 has the 11-core variant of the Arm Immortalis-G925, the second-fastest iGPU in Arm's latest 5th generation of graphics. Focused largely on gaming and AI, the Immortalis-G925 features improved ray tracing and machine learning performance, respectively 52% and 34% faster than the previous Immortalis-G720 in these areas, while also using 30% less power.

Alongside the CPU and GPU is of course the Neural Processing Unit or NPU, the thing that makes locally AI performant and efficient. The MediaTek NPU 890 inside the Kompanio Ultra 910 is rated for up to 50 TOPS, which puts it in the same neighborhood as high-end designs from Intel, AMD, and other Arm chip designers.

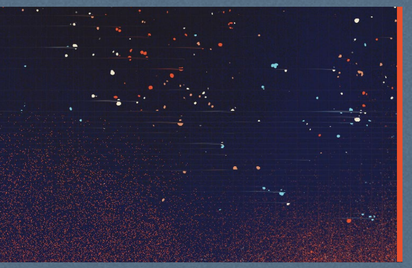
As for the manufacturing process that the Kompanio Ultra 910 is fabricated with, MediaTek is using TSMC's 3nm, which has been one of the company's cutting-edge process since 2022. Compared to TSMC's 5nm process, 3nm allows for up to 15% higher peak performance at the same power and up to a 35% reduction in power at equal performance. This means 3nm is a pretty substantial improvement in power efficiency, something that is important for all processors in general, and especially so for laptop chips.

Don't assume the Kompanio Ultra 910 doesn't have PC-grade connectivity just because it has smartphone DNA. The chip supports up to three 4K monitors, one internal and two external over a single DisplayPort cable with Multi-Stream Transport. At the same time, the Kompanio Ultra 910 gets lots of benefits from its mobile heritage: high-quality, efficient audio with low-power standby, Wi-Fi 7, Bluetooth 6.0, and camera support.

The ultimate goal of this Signal65 Lab Insights report is to compare the Kompanio Ultra 910 to competing silicon in both Chromebooks and Windows PCs, which should give us an understanding of what position MediaTek's latest PC chip has in the modern laptop market and what it offers in this segment that similar processors do not.

Memory Capacity	24 GB
Memory Speed	LPDDR5X-8533
Integrated GPU	11-core Arm Immortalis-G925
Video Encode/ Decode Support	HEVC, AVC, VP9, AV1
Display Support	1 Internal up to 4K60, 2 External up to 4K
Neural Processing Unit	MediaTek NPU 890
NPU TOPS	Up to 50

Test Setup



In the course of our testing, we benchmarked a variety of Chromebooks and Windows laptops to get a firm idea of how the Kompanio Ultra 910 compares to mainstream x86 CPUs from Intel and AMD. We also tested two Kompanio Ultra 910 Chromebooks: the Acer Chromebook Plus Spin 514 and the Lenovo Chromebook Plus 14. Having two MediaTek-based laptops will give us a clearer picture of how the Kompanio Ultra 910 performs overall.

The other two Chromebooks we tested are the ASUS Expertbook CX54 and the ASUS Chromebook Plus CM3401. The former is powered by an Intel Core Ultra 5 115U, a chip based on 2023's Meteor Lake-U that has a core configuration of two performance cores, four efficient cores, and two low-power efficient cores. The latter uses a quad-core Ryzen 5 7520C, derived from AMD's Mendocino chip that launched in late 2022, though the underlying Zen 2 CPU and RDNA 2 GPU architectures first debuted in 2019 and 2020 respectively.

On the Windows side of things, we chose one current-generation and two last-generation devices (as of 2025, that is). Our current-gen laptop is the Dell Pro 14 with the Intel Core Ultra 5 225U, which is based on Arrow Lake-U and has a core configuration of two performance cores, eight efficient cores, and two low-power efficient cores.

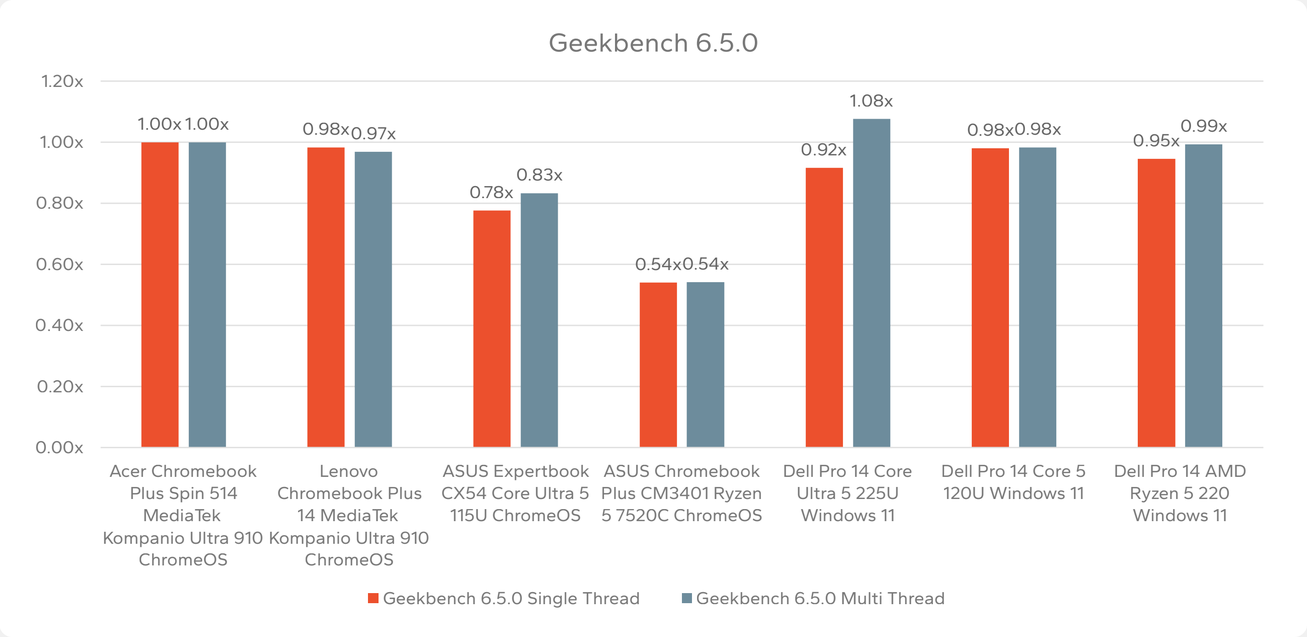
Our last-gen laptops are the Dell Pro 14 with the Core 5 120U and, yet again, the Dell Pro 14 with the AMD Ryzen 5 220. These chips are respectively based on Raptor Lake and Hawk Point; the former was first launched with 13th Gen CPUs in 2022 and the latter with Zen 4 and 4c-based Ryzen 8000 CPUs in 2024. The 120U has two performance cores and ten efficient cores, while the 220 has two performance cores and four efficient cores.

Performance Bounding

We have a wide variety of tests to demonstrate the Kompanio Ultra 910's performance versus other chips, and we're starting with our performance bounding benchmarks: Geekbench 6 and Passmark.

Among the Chromebooks, the Kompanio Ultra 910 is clearly in the lead, being roughly 20% faster than the Core Ultra 5 115U and almost twice as fast as the Ryzen 5 7520C. These results aren't too surprising considering the age of these x86 CPUs, especially the 7520C, which uses the Zen 2 architecture from 2019. To be clear, we're not testing Chromebooks with old x86 chips to make the Kompanio look good, these are actually the most recent x86 processors featured in Intel and AMD Chromebooks.

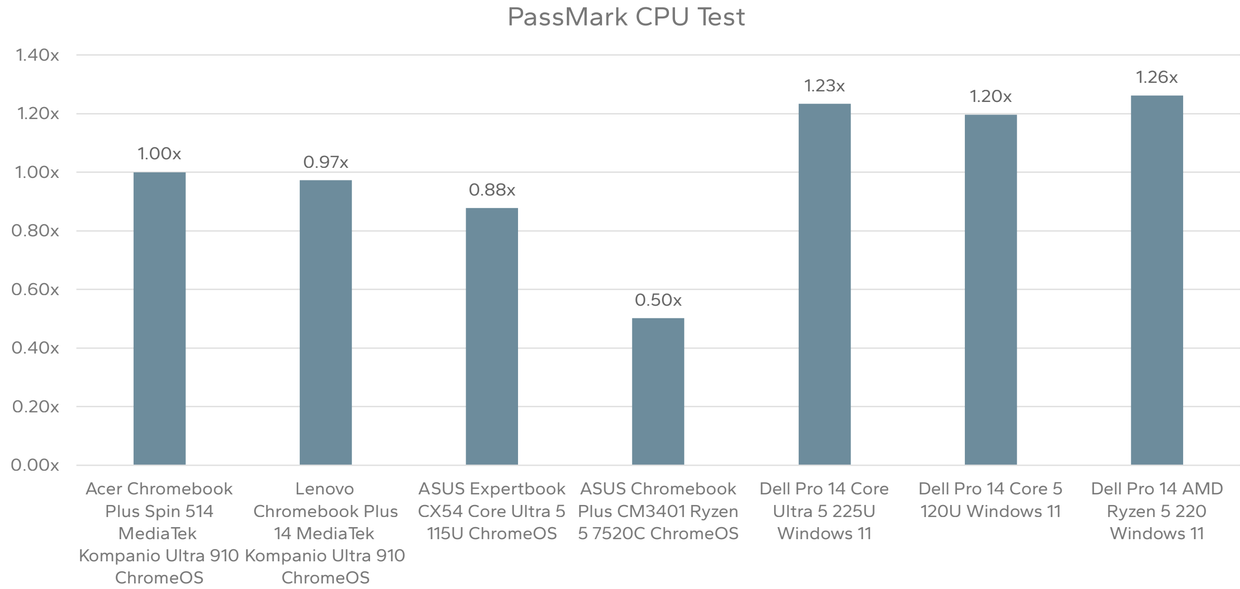
But even against the Windows PCs using much more recent x86 silicon, the MediaTek chip is on par. The Core Ultra 5 225U notches a slight win in multi-threaded but is somewhat behind in single-threaded. The Core 5 120U and Ryzen 5 220 are roughly equal to the Kompanio Ultra 910. This is in our view a pretty good result for the Kompanio Ultra 910 considering its individual cores debuted in 2023 and 2024, compared to the 225U that came out in 2025. In the past, relying on an Arm CPU usually meant less performance (albeit with better efficiency); now, companies like MediaTek can take stock Arm cores, add their recipe to extract max performance within a tight power budget, create their own CPU implementation, and match or even exceed the two x86 companies.

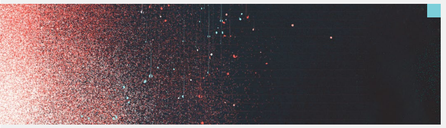


Passmark CPU Test

Once again, the Kompanio Ultra 910 scores higher than the x86-based Chromebooks, especially the Ryzen 5 7520C which was only half as fast as the MediaTek chip. Being 12% slower than the Acer Chromebook Plus Spin 514, the Core Ultra 5 115U-powered ASUS Expertbook CX54 wasn't exactly left in the dust, the gap in performance is hard to ignore.

But when compared to the Windows laptops, the Kompanio Ultra 910 falls behind in Passmark. Of course, the silicon in these devices is generally better and newer than what's in the x86-based Chromebooks, so stiffer competition is what we would expect. There may also be cross-platform challenges for this benchmark, and we suspect running Passmark in Windows instead of Linux-based ChromeOS may yield higher performance on a given CPU.

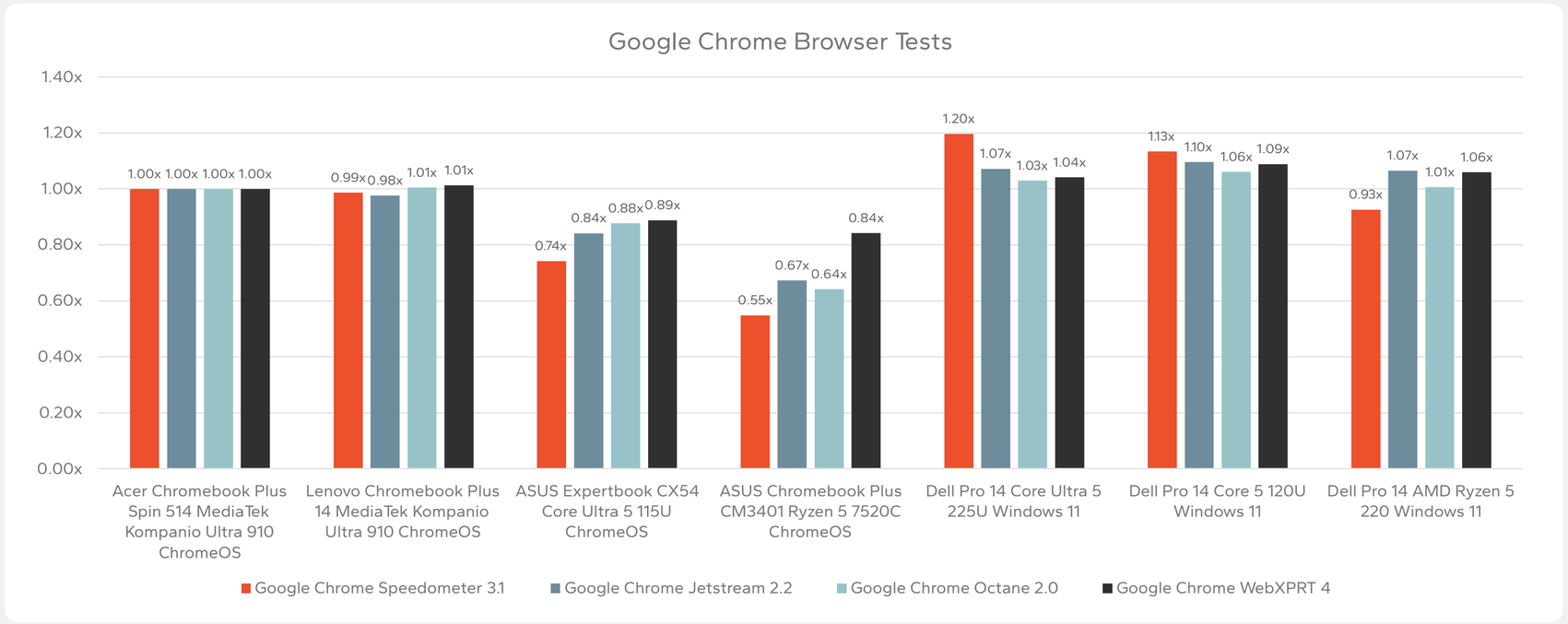


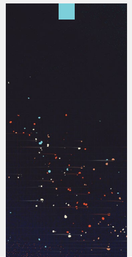


Google Chrome Browser Performance

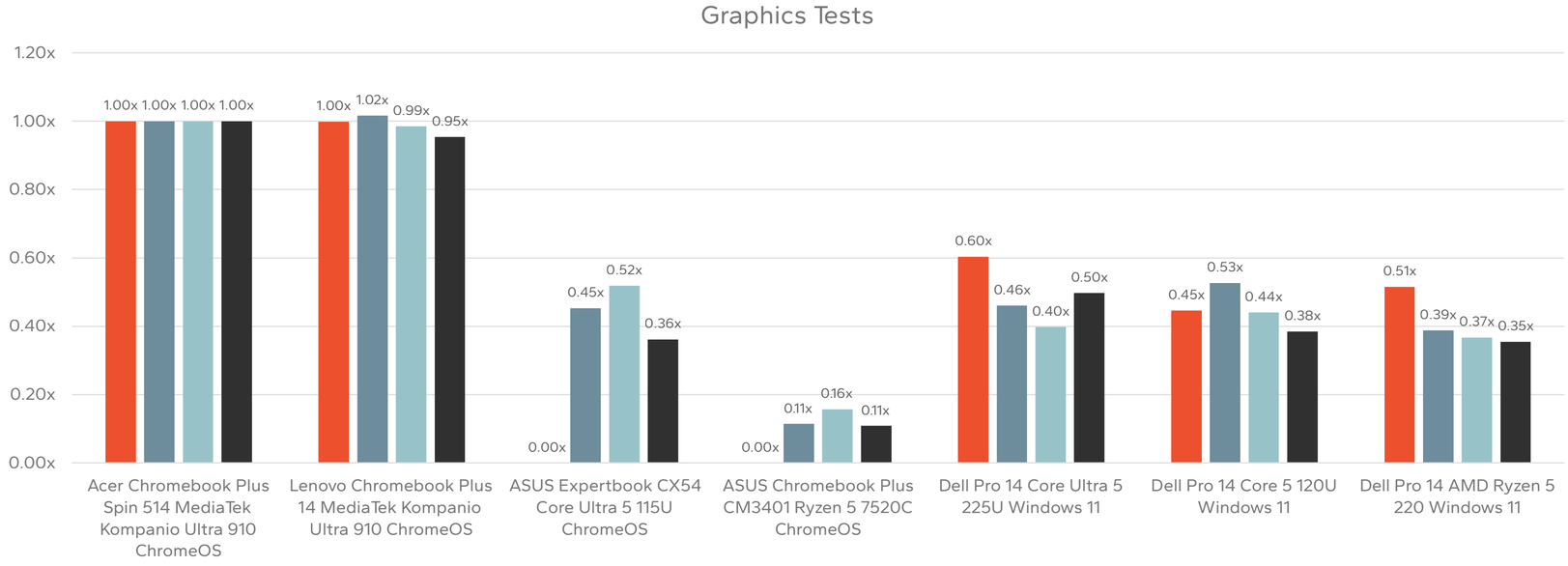
The Kompanio Ultra 910 still shows performance leadership over x86-powered Chromebooks in our Google Chrome benchmarks; even in the best-case scenario, neither x86 chip could muster 90% of the performance of the MediaTek CPU. In the worst case, the Intel processor was 74% as fast and the AMD chip was a mere 55% as fast.

Against the CPUs inside the Windows laptops, the Kompanio Ultra 910 is a little slower overall. It has the biggest performance gap versus the Intel chips in Speedometer 3.1, but the same benchmark also served the Kompanio its best win against the Ryzen 5 220. In all other cases, the Kompanio Ultra 910 was never more than 10% behind, and in many cases was just low to mid single-digits short of a tie. Considering MediaTek just got into the PC market, it's an impressive showing and demonstrates that Arm doesn't just work good enough for PC, it performs very well.





Graphics Performance



The Kompanio Ultra 910 did well in our CPU benchmarks, but it's a completely different matter when it comes to GPU tests. The best-case scenario for the x86-powered Chromebooks is the ASUS Expertbook CX54 with its Core Ultra 5 115U scoring 52% of what the Acer and Lenovo Chromebooks scored in GFXBench. The Ryzen 5 7520C is barely even on the board with barely 10% of the performance of the Kompanio Ultra 910. Neither x86 processor could even run Steel Nomad Light, 3DMark's latest lightweight benchmark.

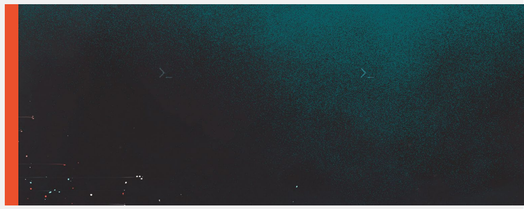
The Windows laptops did better than the Intel and AMD Chromebooks, but were still distant in the Kompanio Ultra 910's rear-view mirror. While Intel and AMD do have faster integrated graphics solutions that would at least put up a better fight, these iGPUs are only paired with newer and much higher-end CPUs; the two x86 chip designers have essentially priced themselves out of the graphics competition with MediaTek and lose pretty badly because of it.

Graphics Performance

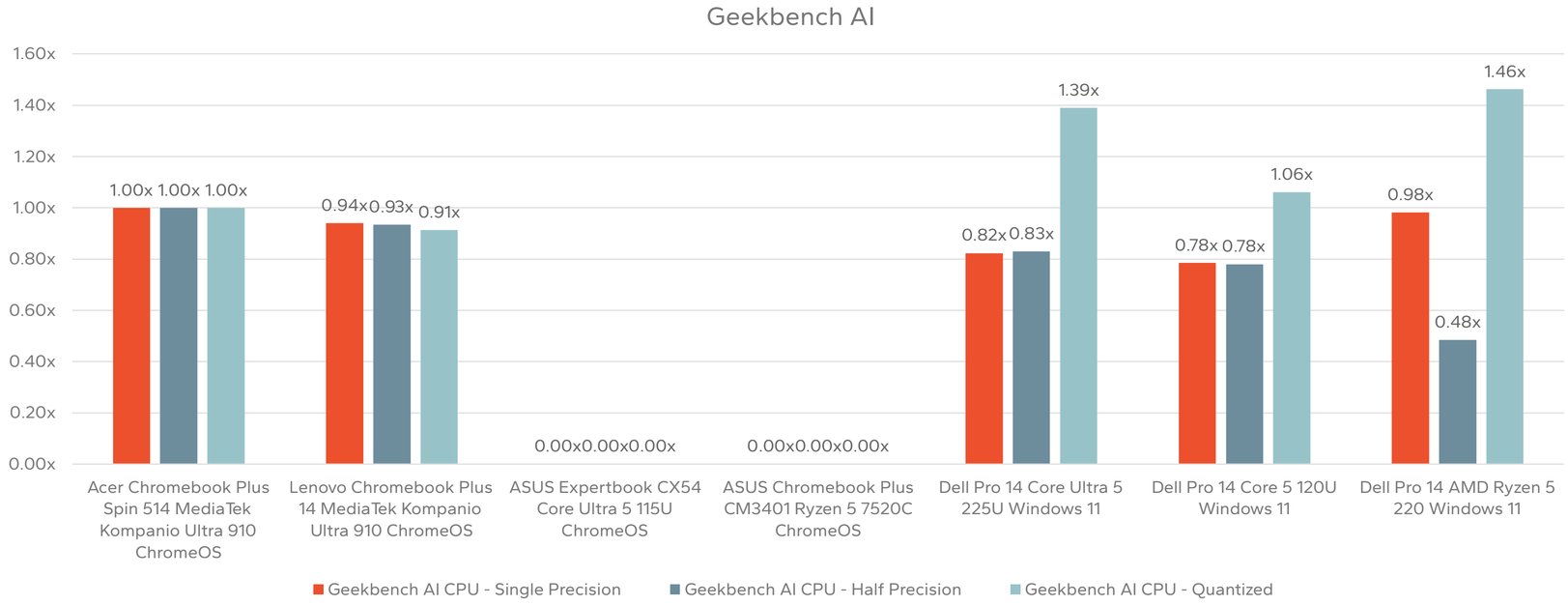
This could have pretty significant implications for gaming, since graphics prowess is a crucial component of gaming performance. One big advantage that MediaTek has in this regard is the fact that these Kompanio Ultra 910 Chromebooks can natively run the entire Android games library. After all, the Kompanio is based on the mobile Dimensity 9400, and ChromeOS is based on Linux like Android, and both operating systems are made by Google. By contrast, Windows-based devices have to emulate Android, which doesn't make for as good an experience.

Additionally, the number of games that natively support Arm is ticking up thanks to the increasing popularity of smartphone gaming and Nintendo's Switch consoles, which will probably help expand ChromeOS's gaming library for Arm-powered chips. Running games without native support is also on the table; open-source compatibility layer FEX (Fast EMulation for x86) has made significant progress on getting x86 games to work on Arm processors in Linux, on which ChromeOS is based. FEX benefits from cooperation with Valve, which is convenient since the company also oversees Proton, the software that makes Windows games run on Linux.

It's not hard to imagine a future where MediaTek chips are routinely running games made for Windows and x86-based processors via FEX and Proton, with acceptable to minimal performance loss. This is realistically realizable in the short-term if Proton is anything to go by. And that might only be the worst-case scenario; in the best-case, Arm might fully supplant x86 and all games are just made for Arm by default.

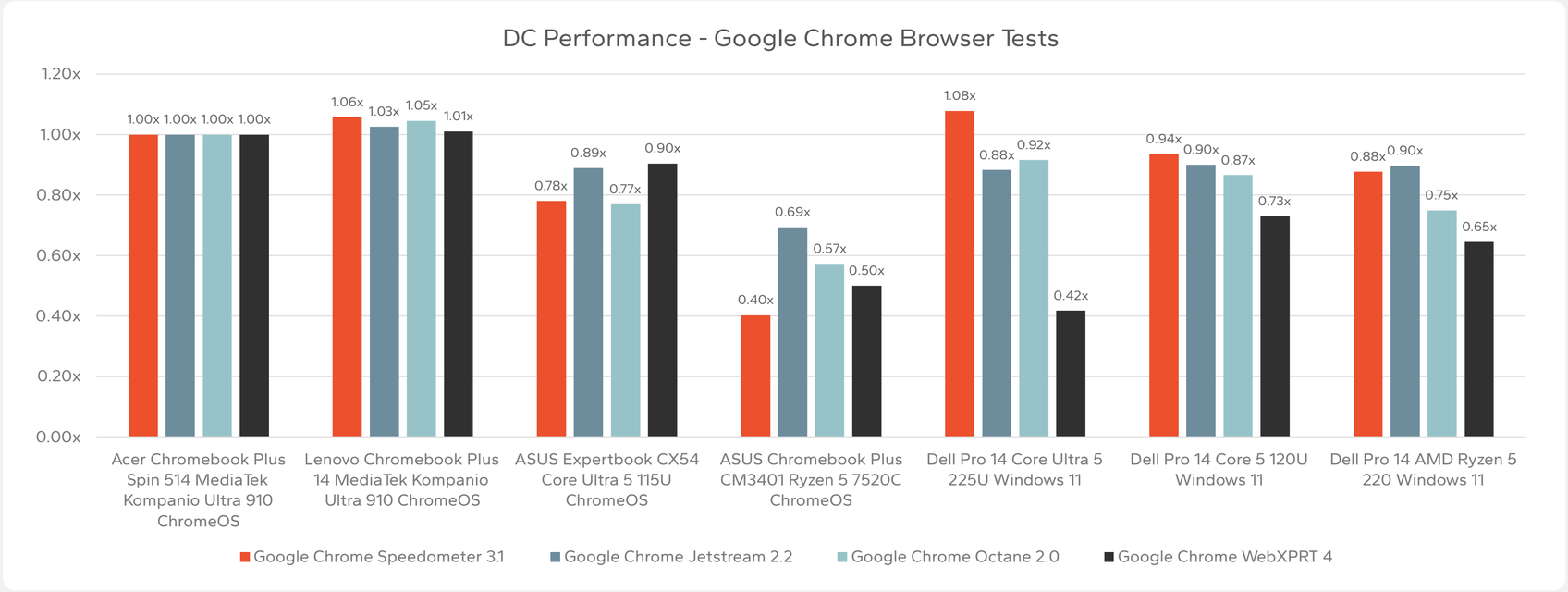


Geekbench AI Performance



In these CPU-only AI benchmarks, the Kompanio Ultra 910 wins by default against the Core Ultra 5 115U and Ryzen 5 7520C as those processors failed to run Geekbench AI, likely down to incompatibility issues these x86 processors have with Arm code, which can still occur with translators such as Intel's Houdini. The Windows laptops were able to complete the benchmarks, and in the single- and half-precision tests the Kompanio was usually in the lead by a comfortable margin; against the Ryzen 5 220, the MediaTek processor was actually more than twice as fast. However, the x86 CPUs all had substantial leads when tested with quantized models, which we suspect is down to a lack of optimization in this version of Geekbench. Optimization wasn't necessary for the single- and half-precision tests, hence the results there being more competitive.

Performance on Battery



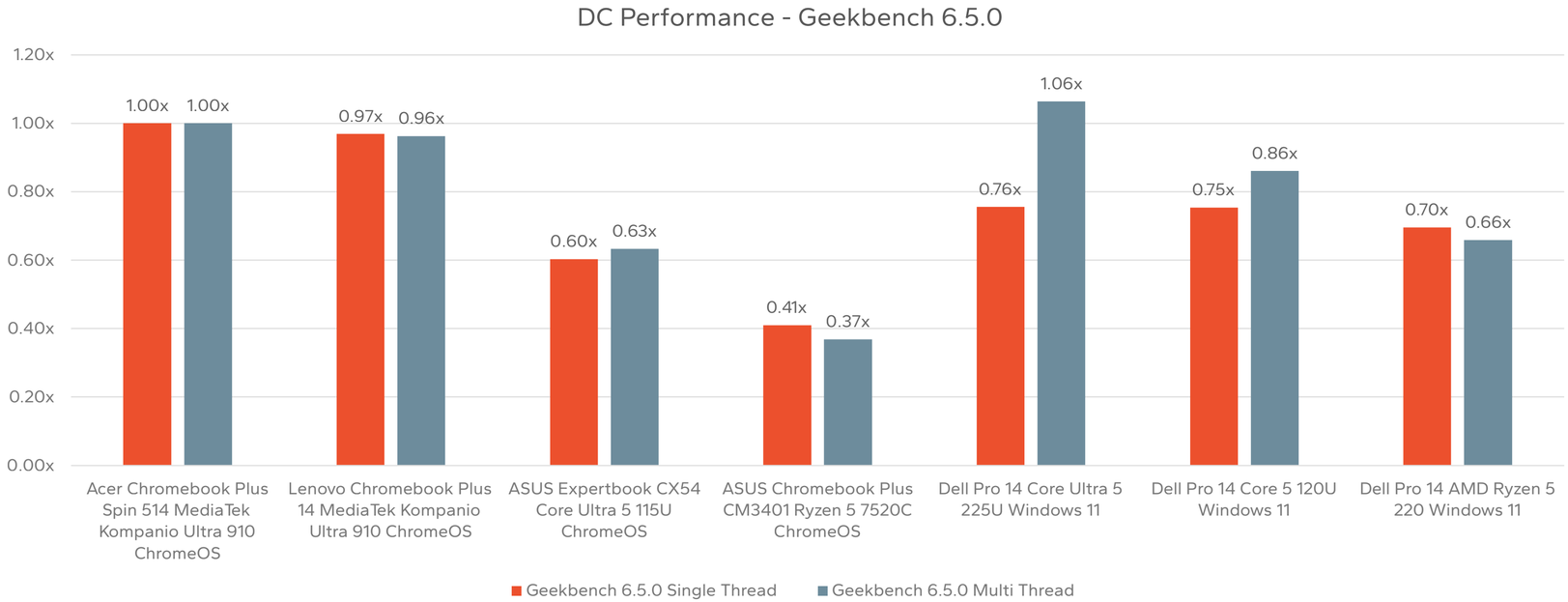
Google Chrome Tests

Up until this point, all the results we've shown were performed with AC power through the charger, but now we're switching to DC power from the battery to see how that impacts performance. Users are increasingly expecting more from their laptops when they're operating from the battery, and it's here that the Kompanio Ultra 910 and the Arm architecture in general really shines.

The MediaTek chip already did well when using AC power in Chrome-based benchmarks, but switching to DC really gives it an edge. Compared to the x86 Chromebooks, things aren't too different, except that the Ryzen 5 7520C lost even more ground. The Windows laptops on the other hand saw their x86 processors slow down substantially. The Core 5 Ultra 225U and Core 5 120U suffered a 20% performance loss in Speedometer 3.1, Jetstream 2.2, and Octane 2.0, plus a 34% drop in WebXPRT 4. The Ryzen 5 220 was a mixed bag: 11% down in Speedometer 3.1, 20% in Jetstream 2.2, 28% in Octane 2.0, and a massive 40% in WebXPRT 4. Meanwhile, the Kompanio Ultra 910 only lost two to six percent depending on the benchmark.

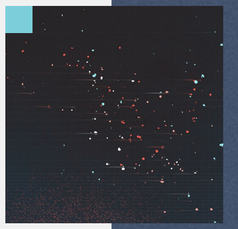
Consequently, the Kompanio only loses a single benchmark to any other machine: the Dell Pro 14 with the Core Ultra 5 225U in Speedometer 3.1, and only by a couple of percentage points. As a reminder, the Windows laptops held a slight to modest performance advantage in these tests while using AC power; it's a completely different story with DC power. It's a clear demonstration that MediaTek is taking full advantage of the power efficiency strengths associated with Arm.

Performance on Battery

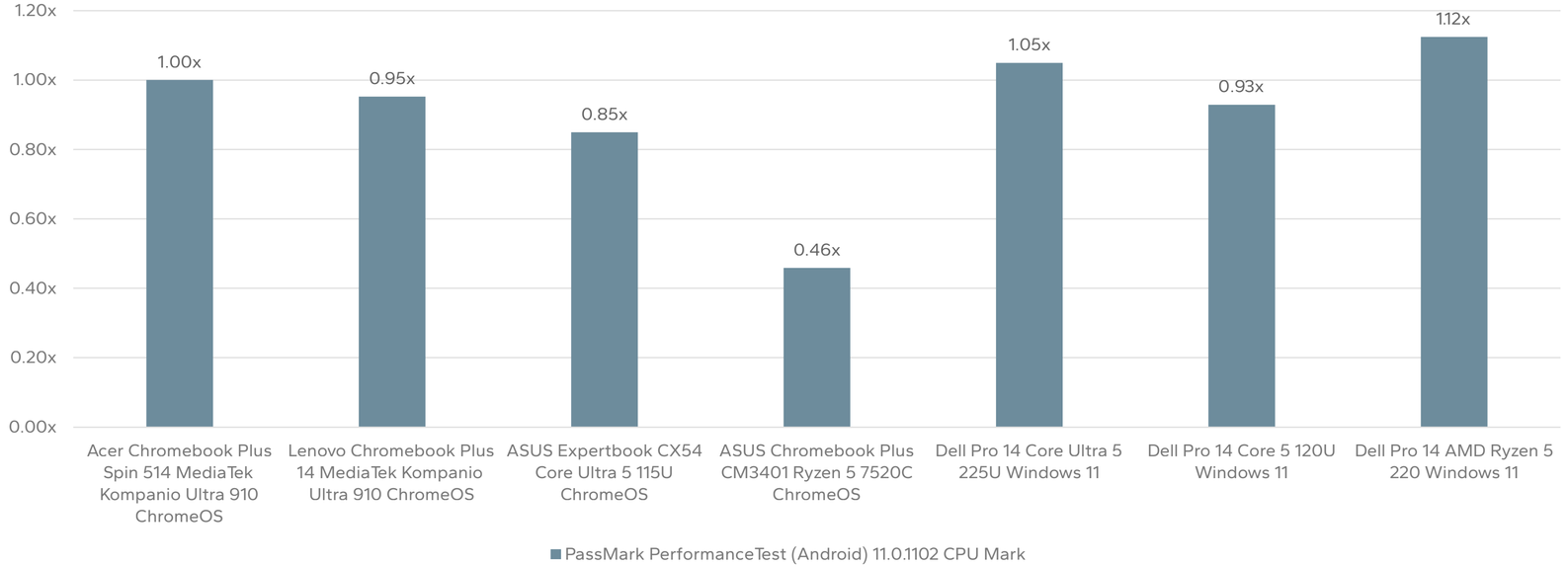


Geekbench

The same phenomenon happens in Geekbench. On DC power, the Kompanio Ultra 910 Chromebooks lose practically no performance, but every other chip does, to the tune of 20% to 35%. Some x86 CPUs lose more performance in the single-threaded benchmarks and others lose more in the multi-threaded one. Ultimately, this leaves the Kompanio with just a single loss, against the Core Ultra 5 225U in the multi-threaded score, which was just 6% higher on the Intel processor.



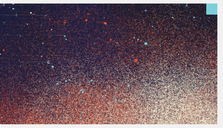
Performance on Battery



Passmark

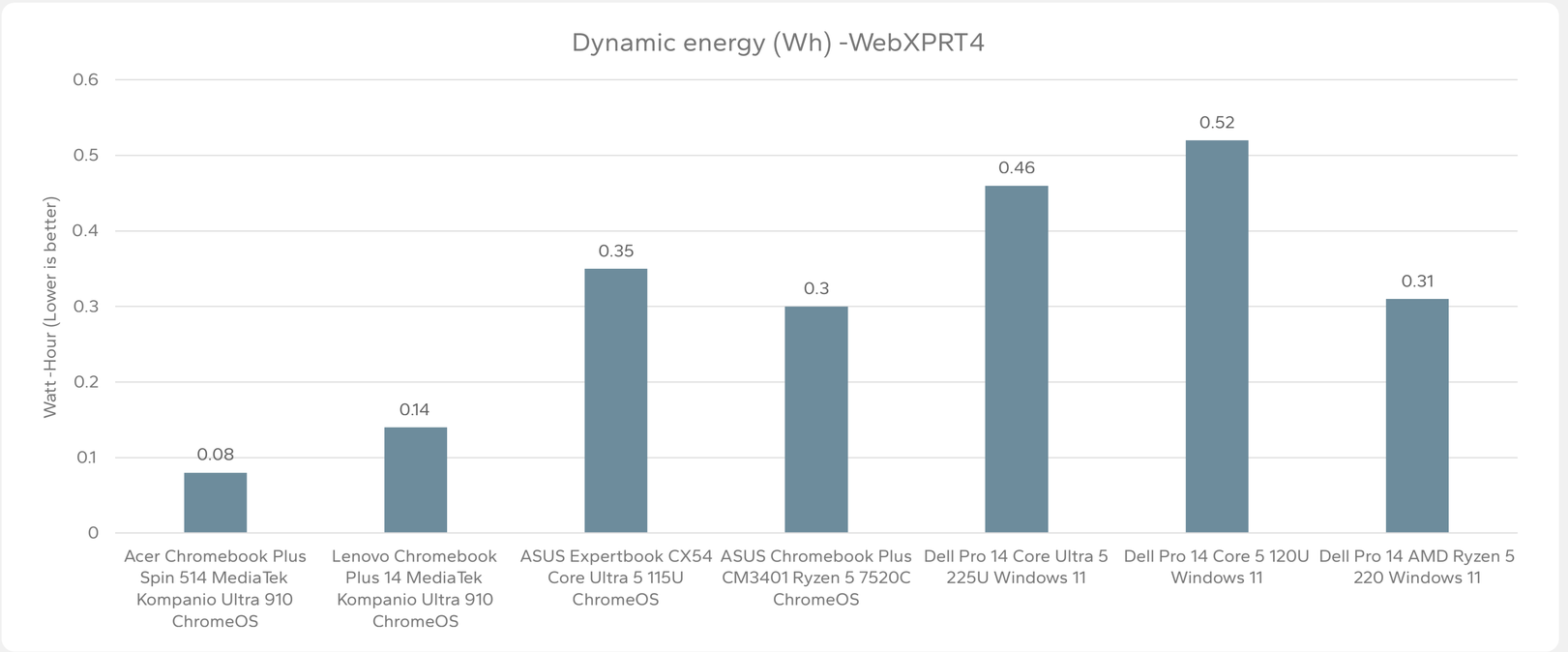
The story is similar in Passmark: the Kompanio Ultra 910 Chromebooks barely lose any speed at all switching to battery power, while the x86-powered devices lose anywhere between 5% and 23% of their performance. The performance drop was actually most pronounced on the Windows laptops with more modern CPUs rather than the Chromebooks, though in the end the Core Ultra 5 225U and the Ryzen 5 220 were still a hair faster than the Kompanio at 5% and 12% faster respectively.

While x86 laptops regularly lose significant amounts of performance when going off the charger, Arm laptops have proven time and time again that performance barely drops, if at all, and the Kompanio Ultra 910 continues this reputation. In the end, the MediaTek processor loses in just four instances in our on-battery benchmarks, the worst of which only saw the Ryzen 5 220 achieve a 12% lead in PassMark, a benchmark we believe may not be totally optimized for Linux and ChromeOS. In the cases where the Kompanio wins, it's faster by anywhere from 6% at the low end to 238% at the high end; on average, the Kompanio is 14% faster than the Core Ultra 5 225U, and 23% faster than both the Core 5 120U and Ryzen 5 220 when using DC power.



Power Efficiency Measurements

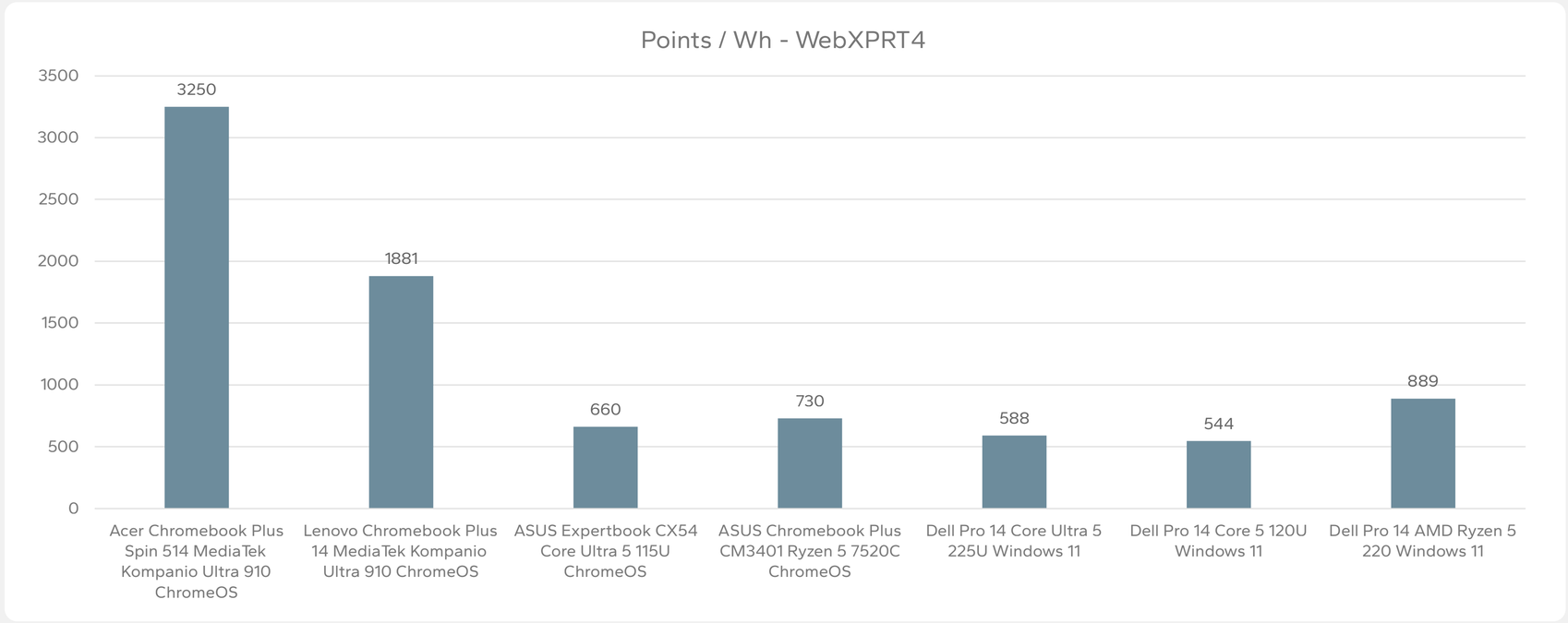
Our final set of tests examine power efficiency, which we've measured in watt-hours. We estimate power consumption by measuring power at the wall during testing, and then subtract idle power so that only load power consumption from the processor is considered. Estimated power consumption is what you'll see in the dynamic energy charts. In our power efficiency or points per watt-hour charts, we divide the benchmark performance score by the power consumption.

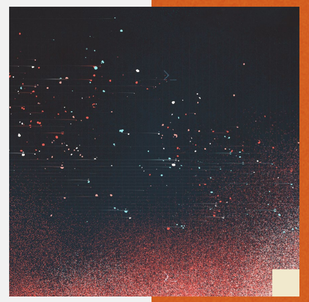


Energy Consumed – WebXPRT4

In WebXPRT4, the Kompanio Ultra 910 is in a completely different league compared to all other x86 processors, consuming just 0.08 Wh of power (less power usage is better) in the Acer Chromebook Plus Spin 514 and a slightly larger 0.14 Wh in the Lenovo Chromebook Plus 14. Even in the worst-case scenario with the Lenovo Chromebook, the MediaTek chip used less than half the power compared to the ASUS Chromebook Plus CM3401 with the Ryzen 5 7520C, which was measured at 0.3 Wh. The Ryzen 5 220 and Core Ultra 5 115U also consumed roughly 0.3 or so Wh, but the Core Ultra 5 225U and the Core 5 120U respectively needed 0.46 and 0.52 Wh, several times more energy than the Kompanio.

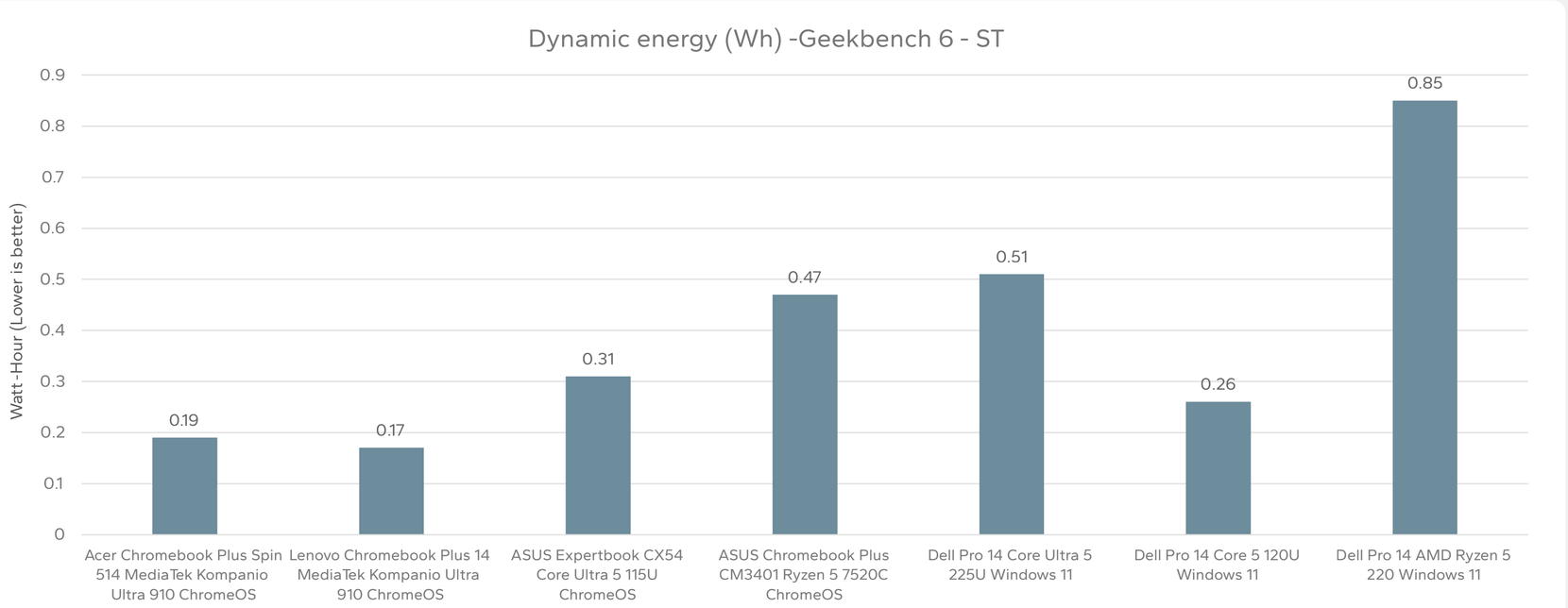
Power Efficiency Measurments





When we factor in performance to get points per watt-hour (higher is better here), the Kompanio-powered Chromebooks are in the four figures while all x86 devices, Chromebooks and Windows laptops alike, are stuck in the mid to high three figures. It's not even a matter of new hardware versus old hardware, as the Core Ultra 5 225U achieved the second-worst result overall despite being the latest of the Intel CPUs, and AMD's old Ryzen 5 7520C was actually the second-most efficient among the x86 chips.

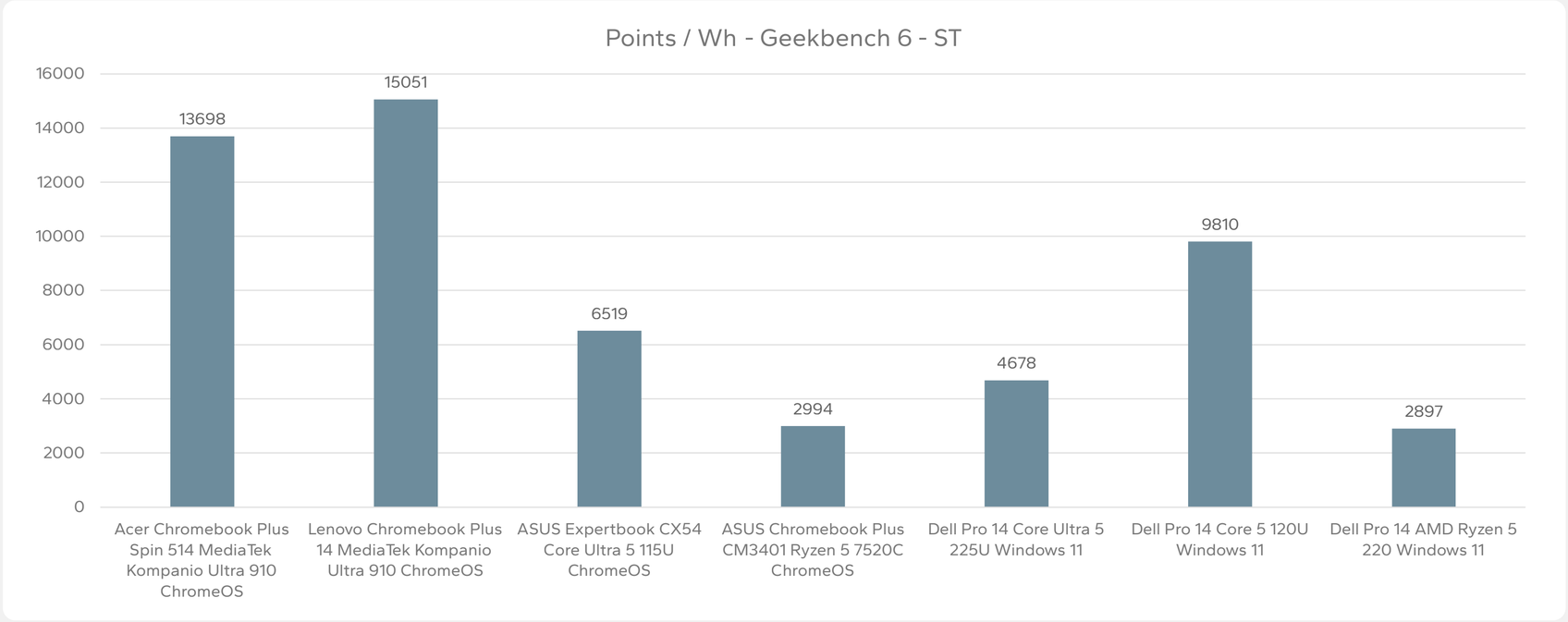
Power Efficiency Measurments



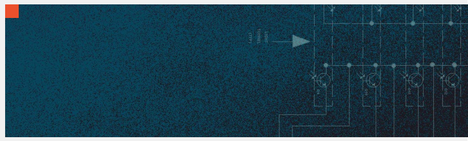
Energy Consumed – Geekbench ST

The story is similar in Geekbench's single-threaded mode. The gap between the Kompanio Ultra 910 and the least power-hungry x86 processors is a little narrower, but not by much.

Power Efficiency Measurments



While Geekbench single-threaded isn't as much of a blowout for the Kompanio Ultra 910 as we saw in WebXPRT4 in terms of points per Wh, the margin of victory is still staggering. The Dell Pro 14 with the Core 5 120U has about two-thirds of the efficiency of the Kompanio, and that's the best-case scenario. All other x86 chips were less than half as efficient, and in the case of the Ryzen CPUs were only 20% as efficient. This really recontextualizes the performance the Kompanio Ultra 910 achieved in our Geekbench 6 tests using AC power; the MediaTek processor was a little behind but used far less power than the competing Intel and AMD chips.



Conclusions

In the realm of Chromebooks, it's clear there's a new performance leader, and it's the Kompanio Ultra 910. It didn't lose a single benchmark to either of the x86-based Chromebooks we tested today, and none of its wins were particularly close. One thing that helped MediaTek take the gold is that it just designed a very performant chip that does well in a variety of workloads, especially graphics. Additionally, Intel and AMD have neglected to update their offerings in the Chromebook space, meaning its most competitive processors are actually one or two or even several generations old at this point.

In respect to Windows laptops, there was more competition for the Kompanio Ultra 910. But even in the worst-case scenario, the MediaTek processor could achieve 80% of the performance of the segment equivalent x86 CPU, and when the Kompanio was behind, it was rarely ever behind by more than 10%. The MediaTek chip pulled ahead in DC power workloads, which can often be more relevant to users since being tethered to an outlet isn't very enjoyable. Additionally, the Kompanio processor had vastly more powerful integrated graphics compared to all Windows laptops we tested. It was, with very little exception, two to ten times as fast as the other competing processors, which came with small, aging integrated graphics. This makes the Kompanio much more suitable for gaming, creator work, and even professional software that relies on graphics prowess. This combination of good CPU performance and no-contest GPU performance indicates the Kompanio Ultra 910 is ready for a wide variety of PCs across a broad array of workloads.

Power efficiency was perhaps the Kompanio Ultra 910's greatest advantage. It wasn't surprising to see that the Kompanio achieved the best power efficiency since Arm is well-known for leading x86 in that regard, but the difference between the MediaTek processor and everything else was nevertheless astounding. Even in the worst-case scenario, the Kompanio was 40% more efficient than the most efficient x86 silicon; in the best-case, it was almost six times more efficient. Most of the time, the Kompanio Ultra 910 had more than twice the efficiency of a given x86 processor, depending on the benchmark.

With the Kompanio Ultra 910, Chromebooks are finally getting a flagship level of performance. For many years, Intel and AMD have decided to only make older and lower-end silicon available for Chromebooks; this is especially true in AMD's case, as the company's best offering is a quad-core processor with anemic integrated graphics that uses technology from 2019. With MediaTek's latest chip for PCs, everything changes for Chromebook OEMs: vastly improved CPU performance, graphics throughput, and power efficiency compared to currently available x86 processors. For any company wanting to launch a Chromebook that can actually keep up with Windows laptops (or even outdo them), the Kompanio Ultra 910 is the obvious choice.

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

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About Signal65

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.

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System Configurations & Applications

	ACER CHROMEBOOK PLUS SPIN 514	LENOVO CHROMEBOOK PLUS 14	ASUS EXPERTBOOK CX54	ASUS CHROMEBOOK PLUS CM3401
CPU	MediaTek Kompanio Ultra 910	MediaTek Kompanio Ultra 910	Intel Core Ultra 5 155U	AMD Ryzen 5 7520C
Graphics	Immortalis-G925	Immortalis-G925	Intel Graphics	AMD Radeon Graphics
RAM	16GB LPDDR5X	16GB LPDDR5X	16GB LPDDR5X	16GB LPDDR5
Storage	256GB UFS 4.0	256GB UFS 4.0	256GB M.2 2280	256GB M.2 2280 NVMe PCIe 3.0 SSD
Display	14” 2880x1800	14” 1920x1200	14” 2560x1600	14” 1920x1200
System BIOS	16174.102.1	16174.126.0	15709.246.0	15390.178.0
Operating System	Google ChromeOS 143.0.7499.150	Google ChromeOS 143.0.7499.150	Google ChromeOS 143.0.7499.150	Google ChromeOS 143.0.7499.150
Windows Power Mode	N/A	N/A	N/A	N/A
OEM Power Mode	N/A	N/A	N/A	N/A
Virtualization Based Security	N/A	N/A	N/A	N/A

Applications Used (ChromeOS)

Geekbench 6.5.0

PassMark PerformanceTest for Android 10.2.1005

Google Chrome 143.0.7499.150

3DMark Android v2.6.5025

GFXBench (Android) 5.1.5

Geekbench AI for Android 1.6.1

System Configurations & Applications

	DELL PRO 14	DELL PRO 14	DELL PRO 14
CPU	Intel Core Ultra 225U	Intel Core 5 120U	AMD Ryzen 5 220
Graphics	Intel Graphics	Intel Graphics	AMD Radeon 740M
RAM	16GB DDR5-5600	16GB DDR5-5200	16GB DDR5-5600
Storage	256GB Samsung PM9C1b	256GB Samsung PM9C1b	256GB Samsung PM9C1b
Display	14" 1920x1200	14" 1920x1200	14" 1920x1200
System BIOS	1.6.0	1.6.0	1.7.0
Operating System	Windows 11 26100.7171	Windows 11 26100.7171	Windows 11 26100.7171
Windows Power Mode	Balanced	Balanced	Balanced
OEM Power Mode	Optimized	Optimized	Optimized
Virtualization Based Security	Enabled	Enabled	Enabled

Applications Used (Windows)

Geekbench 6.5.0

PassMark PerformanceTest 11.1

Google Chrome 143.0.7499.109

3DMark 2.32.8454

GFXBench 5.0.5

Geekbench AI 1.6.1


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