

Lenovo ThinkBook 13s

It doesn't have all the ThinkPad trimmings, but Lenovo is offering small businesses a bargain

SCORE ★★★★★

PRICE £567 (£680 inc VAT) from lenovo.com/uk

If you've always longed for a ThinkPad but been put off by the high asking price, Lenovo is dangling this tempting carrot: a 13in business-focused laptop with much of the ruggedness found on ThinkPads, yet at a remarkably low price. The switch from black to industrial grey is no coincidence, as Lenovo is hoping to woo a younger audience of buyers who consider the traditional ThinkPad as too unfashionable to go with their topknot and almond-milk latte.

What's most impressive about the ThinkBook, though, is that Lenovo retains so much of the ThinkPad heritage while keeping the price down. For instance, it still feels rugged, with an aluminium chassis that's reassuringly cool to the touch. There's no military-standard testing to back up this feeling, though, so you would be well advised to extend the warranty from the initial one year.

Lenovo has trimmed a millimetre or two of travel from its usual keyboard, so it doesn't have the luxurious feel of a ThinkPad. But it's still significantly better than most keyboards on a sub-£1,000 laptop, so don't be put off. It should survive if you spill some of that latte onto it, too, as the keyboard is designed to be spill-proof. Including a precision



ThinkBook 13s lasts longer on the road. A battery life of 8hrs 30mins is more than

respectable, beating the Acer by 90 minutes, and you can always use the single USB-C port to supply power. Lenovo's power supply plugs into

a proprietary port, next to which you will find a full-size HDMI output. Old-style USB isn't forgotten either, with two ports on the right side, meaning that the only obvious omission is a microSD/SD card slot.

There's no infrared webcam, so

touchpad is another nice touch.

The matte Full HD screen isn't one of the platinum-grade, super-bright panels you can specify in the best ThinkPads, but it reached a peak brightness of 324cd/m² in our tests and covered 90.1% of the sRGB gamut. With an average Delta E of 1.06, you can trust the colours it produces, while a contrast ratio of 1,827:1 means you won't miss out on details when watching films.

Where it shows its budget leanings are moderate viewing angles and a slight grain effect.

Looking for more compromises? One is management.

You still get Lenovo's full suite of Vantage tools to help

keep your PC protected and in peak condition, and note the inclusion of Windows 10 Pro, but there's no vPro certification for the Intel Core i5-8265U. In truth, that won't matter to most small businesses, who will care more about speed – and the ThinkBook 13s has a fine turn of pace. An overall score of 86 is excellent for a Core i5 with 8GB of RAM in support, and that's made possible because Lenovo backs it up with active cooling: you'll often hear the low pitch of its fans kicking in.

This isn't the slimmest of laptops as a consequence, but 15.9mm isn't fat. Compared to the Acer Travelmate X5 (see issue 302, p60) it's heavy at 1.3kg – the Acer weighed 960g – but Lenovo can rightfully point out that the

ABOVE The chassis feels high-quality – as does the keyboard for a sub-£1,000 machine

Windows Hello support is limited to the fingerprint reader integrated into the power button, but to save potential blushes there's a privacy filter for the webcam. This takes the usual desultory 1,280 x 720 photos and videos. Audio playback is typical of a modern laptop too, making music

bearable at a push, so don't get too excited by Lenovo's "audio by Harman" claims.

The 13s is the first ThinkBook to go on sale, and it's notable that there's only one

"If there's any justice in the world, the Lenovo ThinkBook 13s should be popular: at £680, this machine is a real bargain"

specification available in the UK. Considering the aggressive price, I can live with the 256GB SSD, and note that it's meant to be a "quick ship" model – as long as Lenovo has stock, it will ship in one to two days. If it proves popular, higher-specified models will no doubt be released, along with a 14in version. And if there's any justice in the world, it should be popular: at £680, this machine is a real bargain. Sure, it trims back on a few luxuries, but when you're paying Ford prices you can't expect a Porsche. **TIM DANTON**

LEFT Two old-style USB ports are in place on the right-hand side of the ThinkBook



ABOVE The ThinkBook 13s may be flexible, but it weighs a not-so-skinny 1.3kg

SPECIFICATIONS

Quad-core 1.6GHz Intel Core i5-8265U processor • 8GB 2,400MHz DDR4 RAM • Intel UHD 620 Graphics • 13.3in non-touch IPS display, 1,920 x 1,080 resolution • 256GB M.2 PCIe SSD • 720p HD webcam • 2x2 802.11ac Wi-Fi • Bluetooth 5 • USB-C 3.1 (with data transfer, charging and DisplayPort support) • 2x USB 3.1 • HDMI 1.4 • combo 3.5mm mic/headphone • 45Wh battery • Windows 10 Pro • 308 x 216 x 15.9mm (WDH) • 1.4kg • 1yr RTB warranty



HP Envy 13 (2019)

Last year's top bargain buy has become this year's top all-round choice thanks to upgrades in the right places

SCORE ★★★★★

PRICE £958 (£1,150 inc VAT)
from johnlewis.com

At any one time, there's a sweet spot for computers. A big-selling product type where the major manufacturers are simultaneously dropping prices and improving quality in their quest to usurp rivals. That sweet spot, for the moment at least, is the 13in ultraportable.

While the Dell XPS 13 has been the 13in laptop to beat for some time, HP undoubtedly produced the bargain of 2018 with its Envy 13 (see issue 288, p61). At £849 for a Core i5/8GB/256GB spec, it was unbeatable value. This year, it's set its sights higher by boosting quality and dropping prices: the Core i5 version costs £749 direct from HP, while this version (the aq0003na) with a Core i7, 16GB of RAM and a 1TB SSD is a still-affordable £1,149. (Spend the extra pound and order from John Lewis, though, as this upgrades the warranty to two years.) To put those prices into perspective, the Dell XPS 13 starts at £1,149 – and that's with the same specification as the £749 Envy.

One reason to stick with the XPS 13 is speed: Dell still provides the best cooling setup in a 13in ultraportable, which enables it to make the most out of a Core i7-8565U processor. That chip, combined with 8GB of memory and a 256GB SSD, scored 95 in our benchmarks, while this HP Envy 13



only managed 85 with 16GB of RAM. In fairness, that's still respectable. It's just that the chip was typically running at 2.3GHz to keep its four cores comfortably below their 100°C threshold. HP doesn't include the fastest SSD around, but sequential read and write speeds of around 1,300MB/sec and 650MB/sec respectively will rarely hold you back.

The XPS 13 also lasts longer: 10hrs 35mins in our video rundown battery test, compared to the 8hrs 34mins of the Envy 13. But that's still an hour improvement over 2018's model, and it can charge from 0% to 50% in around 45 minutes.

Plus, HP has a trick unavailable to Dell: Nvidia graphics. While the GeForce MX250 sits closer to Intel's UHD Graphics than it does to a GTX 1060, it can still run many games that are beyond the reach of Intel's integrated chip. For instance, it averaged 56fps at 720p in *Dirt: Showdown*, and even managed 36fps in *Metro: Last Light* at 1080p.

Games and movies look fantastic on the bright 13.3in Full HD display, with a glossy finish that extracts every last ounce of colour from images. It helps that the display packs a 1,842:1 contrast punch. You can trust that the colours you see are accurate, too, with a stunning average Delta E of 0.39 and a maximum of one. Combine that with 98.6% coverage of the sRGB gamut

ABOVE The excellent 13.3in Full HD display squeezes every drop of colour from images

“Colour accuracy plus 98.6% coverage of the sRGB gamut mean the best image quality results yet from a 13in ultraportable”

LEFT HP has included a fingerprint reader, but note the lack of an infrared webcam

BELOW The sides boast a good selection of ports – and a button to disable the webcam

and you have the best image quality results yet from a 13in ultraportable. Its speakers aren't the same stellar quality, but they're still good partners for a film. Besides, there's a 3.5mm jack on the left edge, along with a USB-C and USB connector. Curiously, HP uses a tiny flap for the latter, as if the Envy 13 is so slim it couldn't squeeze in a normal slot;

in truth, it's quite slender at 14.7mm, but no one's jaw will drop when they see it in profile. The other side holds a second USB port, microSD slot and a button to turn off the webcam, and it produces such shocking results that it's best left unused.

When you lift the lid it also lifts the rear of the chassis, which supposedly helps both airflow and the typing angle. I'm sceptical about the latter – there isn't enough of a hike to notice

– but the keyboard is pleasant to type on with plenty of travel on the keys and a soft feel. The Enter key is only single height, while it's a standard touchpad so you don't get the smooth, glass

finish of higher-end laptops, but these are both easy concessions to live with.

The feature I miss more is an infrared webcam to log in. There's a fingerprint reader, and it worked every time, but it isn't as convenient.

But these are minor criticisms. HP already had the best “value” ultraportable around with last year's Envy, and all the upgrades – the superior screen, faster components, improved battery life – mean this isn't just our preferred budget machine but our 13in laptop of choice. **TIM DANTON**

SPECIFICATIONS

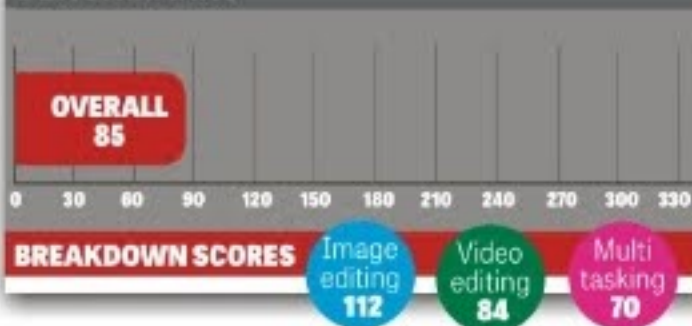
Quad-core 1.8GHz Core i7-8565U processor • 2GB Nvidia GeForce MX250 graphics • 16GB RAM • 13.3in touch IPS display, 1,920 x 1,080 resolution • 1TB M.2 PCIe SSD • 2x 802.11ac Wi-Fi • Bluetooth 4.2 • USB-C 3.1 (with data transfer, charging and DisplayPort support) • 2x USB 3.1 • microSD card reader • 53Wh battery • Windows 10 Home • 307 x 212 x 14.7mm (WDH) • 1.2kg • 2yr RTB warranty (via John Lewis)



BATTERY: video rundown, 8hrs 34mins



BENCHMARKS



Acer TravelMate X3

A fast, solid laptop with excellent battery life that would make a fine choice for small businesses

SCORE ★★★★★

PRICE £658 (£790 inc VAT)
from uk-store.acer.com

I was mightily impressed by the sleek Acer TravelMate X5 last month (see issue 302, p60), with Acer offering a high-quality 13in business ultraportable for £900. The X3 may sound like it's smaller still, but in fact this is a 14in and comparatively chunky machine. But that's fine. If power is more important to you than portability then there are advantages to going up in girth.

The most obvious is that a larger chassis gives more room for cooling, and that in turn means that you can expect the processor inside your machine to keep going at its maximum speed for longer. And so it proved here. While the X5 I tested last month included a Core i7-8565U processor that promised boost speeds of 4.7GHz, in reality it wasn't comfortable running faster than 2.7GHz for any length of time. The Core i5-8265U inside the X3 here, on other hand, kept churning away at over 3GHz without complaint even in heavy-duty benchmarks.

That resulted in an overall score of 81 to the X5's 75, and in reality few people will ever complain about this laptop's speed. The only exception, as ever for a machine that relies on Intel's UHD 620 Graphics, is if your task involves 3D acceleration. For example, it only managed 29.6 frames per second in the offscreen GFX Bench Open GL Car Chase test.

The other advantage of a bigger chassis is that manufacturers can include a larger battery, with the X3 featuring a 59Wh unit. That's almost twice the size of the X5's, and while



the smaller TravelMate stopped playing our video on repeat after 7hrs, the X3 carried on for 12hrs 16mins. Note that you can charge the laptop via the USB-C port on the left, but Acer provides a conventional, compact charger as standard.

The USB-C port can also be used for connecting an external monitor, but you may prefer to use the full-size HDMI output. There's even a D-SUB connector for hooking up older projectors. Another potentially useful inclusion is the Ethernet port, again sitting on the left-hand side, with a USB 3 slot to round things off. The right-hand side is similarly packed, with two USB 3 ports, a 3.5mm combo jack and an SD card reader.

As this plethora of ports hints at, this isn't the world's slimmest laptop: it measures 19.9mm from top to bottom, while it's an inch wider than an A4 sheet of paper at 328mm. I wouldn't describe it as bulky, though, and a weight of 1.53kg is perfectly respectable for a 14in laptop. (Note that Acer's website undersells its weight at 1.6kg.) It's well built, and Acer has reassuringly put the X3 through a number of MIL-STD 610 tests. With an all-aluminium chassis, I'm optimistic that it would survive three years of daily commuter abuse.

Acer backs up this capable design with a high-quality keyboard, with generously sized keys, a substantial feel and an absolutely huge touchpad. The only thing it may take you time to get used to is the column of keys to the right, where Acer has chosen to place Delete, Home, Pg Up, Pg Dn and End. I found the backspace key particularly difficult to locate while typing.

ABOVE The 14in matte display and generous array of ports are ideal for business use



"The other advantage of a larger chassis is that it means a larger battery, and the X3 carried on going for 12hrs 16mins"



ABOVE Not as compact as the X5, but the X3 is a portable system at 19.9mm thick and 1.53kg

You'll search in vain for a fingerprint reader next to the touchpad, but that's because it's integrated into the power key just above the keyboard. This makes perfect sense – you'll be pressing it anyway, after all – and by backing it up with an infrared webcam, Acer has all the Windows Hello bases covered. Note the processor isn't compliant with Intel's vPro platform, though. Acer claws back some

management favour by making the hard disk and RAM user-upgradeable, via slots on the bottom of the chassis. As this model only includes 8GB of RAM and a 256GB SSD, both of those options could be handy.

I'm also a fan of the 14in Full HD screen Acer supplies, with a matte finish that proved excellent at deflecting light. It peaks at 330cd/m² and scored top marks in our quality tests: 93.4% sRGB coverage and an average Delta E of 0.63 point to a colour accurate panel. The corollary is that it won't be a brilliant choice for streaming movies and the speakers are comically poor, so don't choose

this as your primary entertainment machine.

This laptop isn't without flaws, but considering that you're buying a Windows 10 Pro laptop with considerable battery life, plenty of

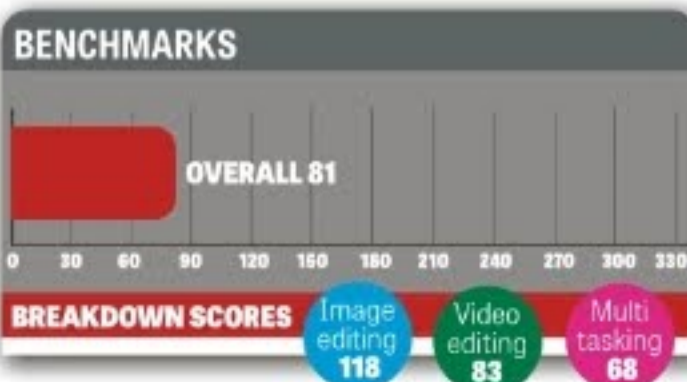
power and quality in all the most important places, it's hard to baulk at the £790 Acer is asking for it. The only caveat is that the one-year limited warranty isn't reassuring, but the £150 Acer wants for a three-year on-site warranty is reasonable.

Once again, Acer delivers an excellent value laptop that's well-tailored to small businesses.

TIM DANTON

SPECIFICATIONS

Quad-core 1.6GHz Intel Core i5-8265U processor • 8GB 2,400MHz DDR4 RAM • Intel UHD 620 Graphics • 14in non-touch IPS display, 1,366 x 768 resolution • 256GB M.2 PCIe SSD • 720p HD webcam • 2x2 802.11ac Wi-Fi • Bluetooth 5 • USB-C 3.1 (with data transfer, charging and DisplayPort support) • 3 x USB 3.1 • D-SUB • Gigabit Ethernet port • HDMI 1.4 • SD card reader • combo 3.5mm mic/headphone • 59Wh battery • Windows 10 Pro • 328 x 236 x 19.9mm (WDH) • 1.53kg • 1yr RTB warranty





Unveiled

The key details of this month's hot hardware releases



► Dell UltraSharp 27 4K PremierColor UP2720Q

Dell is hoping to attract content creators who crave the ultimate in colour accuracy with the announcement of the first 27in 4K monitor with a built-in colorimeter and Thunderbolt 3.

The UltraSharp 27 4K PremierColor is targeted squarely at photographers and video editors. Dell claims the display provides 100% cover across the Adobe RGB gamut, as well as 98% of the DCI-P3 standard.

To ensure those figures are maintained, there's a built-in colorimeter for calibration, which can be scheduled to run when the display is not in use and is designed to work with the CalMAN calibration software.

The UltraSharp is an IPS panel with a 3,840 x 2,160 resolution, 250-nit brightness, a 1,300:1 contrast ratio and a 6ms response time.

In picture-by-picture mode, the monitor can display two different colour gamuts independently and there's an option for daisy-chaining

two monitors for multitasking or comparing input colours.

The monitor sports two Thunderbolt 3 ports that offer a charge of 90W to laptops, potentially reducing the number of wires trailing across users' desks. A clip-on shading hood reduces glare and reflection.

KEY DIGITS AND DETAILS

Availability January 2020

Price \$2,000

Resolution 3,840 x 2,160



ABOVE The Galaxy Book Flex 15 lives up to its name and the screen features a dazzling 600-nit brightness mode

► Samsung Galaxy Book Flex 15

Samsung claimed a coup when it unveiled the first laptops with QLED screens, which the company says provide true-to-life colours and vivid images.

The Galaxy Book Flex 15 is a 2-in-1 that hinges between a standard notebook and a tablet. It (and its 13in sibling) features an aluminium body housing the 1,920

x 1,080 QLED display, with an "Outdoor Mode" that boasts a maximum 600-nit brightness that Samsung claims makes the screen readable even in sunny conditions.

What impact the brightness has on battery life from the 69.7Wh battery remains to be seen – especially if customers use the Wireless PowerShare feature that charges compatible Samsung smartphones or wearables via the laptop's touchpad.

To take full advantage of that screen, there's an option to upgrade graphics to an Nvidia GeForce MX250 with 2GB of GDDR5 memory.

There's also a heavy focus on note taking and drawing with the supplied S Pen, but the pen also features gesture controls that will rewind or forward video, or skip presentation slides, for example.

Samsung worked with Intel to gain the Project Athena certification, which sets strict goals for performance, battery life and response times, and is becoming of a badge of honour for high-end devices.

KEY DIGITS AND DETAILS

Availability December 2019

Processor 10th-gen Intel Core

Memory Up to 16GB

Storage Up to 1TB SSD

Screen 15.6in QLED FHD

Ports 2 x Thunderbolt 3, USB-C, UFS/microSD combo, 3.5mm jack

Dimensions 355 x 227 x 14.9mm (WDH)

Weight 1.57kg

► Samsung Galaxy Book S

Samsung has been relatively tight-lipped about the Galaxy Book S project first mooted in August. It's an always-connected, LTE-enabled laptop that was expected to be driven by Qualcomm's Snapdragon hardware.

The laptop looked like a direct rival to Microsoft's upcoming Snapdragon-powered Surface Pro X, but it has so far failed to emerge, with rumours swirling that it might never happen.

Now Intel and Samsung have spoken about a Galaxy Book S,

which will run on Intel processors – although Samsung will not say if it is a replacement for the Qualcomm project.

According to Intel, the upcoming Galaxy Book S is set to be the first laptop running its Lakefield system-on-a-chip, which combines various technologies to offer high performance and low battery drain on the same silicon.

The Lakefield SoC destined for the Galaxy Book S includes one high performance Ice Lake core for heavy computing work and four low-powered Tremont cores for less intensive tasks, with the processors stacked using Intel's Foveros 3D architecture.

It's scheduled to arrive in "the coming months".

KEY DIGITS AND DETAILS

Availability 2020

Price Unknown

Processing Intel Lakefield SoC

Connectivity LTE always-on

ABOVE You can daisy-chain two Dell UltraSharp 27 4K PremierColor monitors for that mission control feel

LEFT The Galaxy Book S boasts the Intel Lakefield SoC – not the rival Snapdragon chip

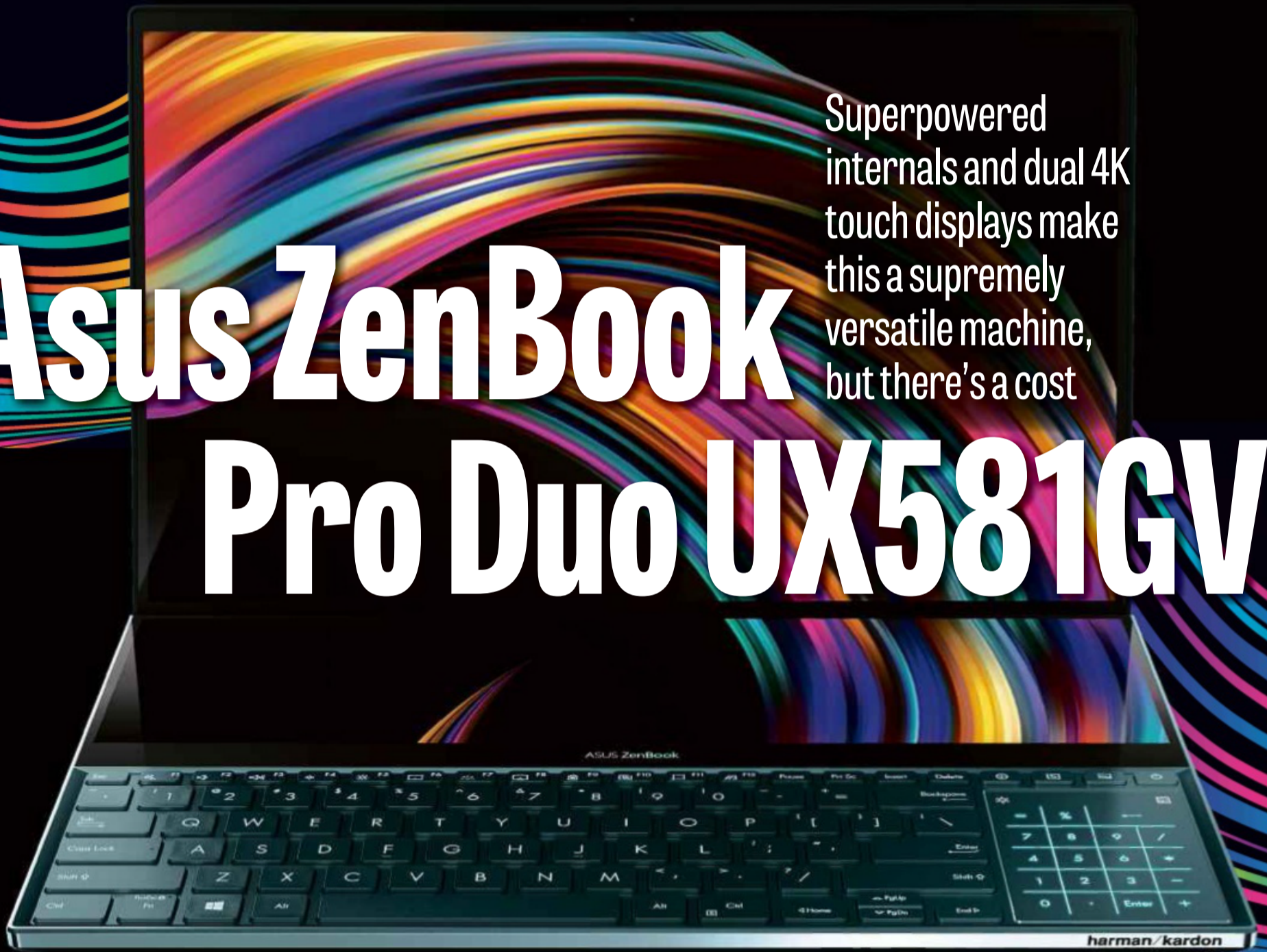


Reviews

The biggest, best, most exciting products in tech – tested, evaluated and reviewed

Asus ZenBook Pro Duo UX581GV

Superpowered internals and dual 4K touch displays make this a supremely versatile machine, but there's a cost



SCORE ★★★★★

PRICE £2,500 (£3,000 inc VAT)
from johnlewis.com

Multi-display laptops are not a new concept. Apple has the Touch Bar, Lenovo the Yoga Book and HP the Omen X 2S. Indeed, Asus itself has previously released ZenBook Pro models that feature a secondary display, or ScreenPad, housed within the touchpad.

But the ZenBook Pro Duo is the most ambitious take on the dual-screen concept yet. The primary display is a 15.6in, 3,840 x 2,160 OLED touchscreen with a reflective glass

coating. The lower display, known as the ScreenPad Plus, is a 14in LCD touchscreen with a matte finish and an unusual letterbox-shaped resolution of 3,840 x 1,100.

Asus sent us the top-spec ZenBook Pro Duo UX581GV for review. It's powered by an octa-core Intel Core i9-9980HK CPU, supported by 32GB of RAM, 1TB of PCIe SSD storage and an Nvidia GeForce RTX 2060 GPU. Put simply, it's a monster.

■ The new black

Still, it's an attractive monster. A tasteful aluminium chassis with an exclusive "Celestial Blue" finish gives it a futuristic look. When unveiled at Computex in Taiwan in June 2019,

ABOVE The "Celestial Blue" – or dark green – looks swish, but the chassis loves to pick up fingerprints

Asus described Celestial Blue as "a little bit green, but very dark", while also optimistically suggesting that it might be "the new black". Whatever colour it actually is, it's a fiend for fingerprints and I had to wipe it down frequently during my tests.

Weighing 2.5kg and measuring 359 x 246 x 24mm (WDH), the ZenBook Pro Duo is much bulkier than your typical laptop. That's because the base houses not only that second display, but a serious set of cooling fans and heat vents. In this respect, it feels more like a gaming laptop than a workstation, although its design is understated compared to Asus' ROG laptops: the only LED effect here is a thin light bar on the front

edge of the base, which activates when using the Pro Duo's integrated Alexa function.

As with other Asus designs, the laptop's lid extends out at the bottom, which tilts the base upwards when the lid is raised. This lifts the keyboard to a slightly more comfortable typing angle, and provides breathing room below the base. Even so, I'm not convinced that Asus has done enough to prevent overheating inside the chassis – but I'll get onto that later.

Given that this machine is aimed at creatives, the array of interfaces is limited. The left-hand side holds a USB 3.1 port, 3.5mm audio jack and a USB-C Thunderbolt 3 connector that supports DisplayPort. On the right, there's one more USB 3.1 port, an HDMI 2 output and the power socket. An obvious omission is a built-in SD card reader, but it feels like Asus could have included more USB sockets, too.

The pair of Harman Kardon-certified SonicMaster "surround sound" speakers have beefier marketing than output; they don't produce the all-encompassing wall of sound you might expect from such a description. Like practically every set of laptop speakers, they would benefit from added bass in particular.

There's a webcam above the display, but it has a lowly 1MP resolution and records in 720p at just 7fps: it looks awful in low-light conditions. At least Asus partners it with a Windows Hello IR lens for instant face-unlocking. In the box, you'll also find a bundled, battery-powered Asus Pen for doodling on the screens. This works well, but there's nowhere to store it so I can imagine it being easily lost.

■ Deft touch

One inevitable side effect of the second display is that the ZenPro Duo's keyboard is pushed forward. As a result, it can feel cramped to work on, and when typing on the top two rows it's possible to inadvertently brush against the ScreenPad Plus and register unwanted clicks. The location of the touchpad, squashed into the bottom right-hand corner, makes it easy to graze accidentally with a trailing pinky, too.

On the plus side, the keys have a generous 1.4mm of travel, and the metal plate beneath them feels solid underhand. Asus includes a few special keys, letting you switch between Turbo and Auto performance modes, swap the contents of the two screens and temporarily deactivate the keyboard – which is necessary if you're using it as a palmrest while doodling away on the ScreenPad Plus. There are also shortcut keys for switching between the keyboard's

three white backlighting settings, as well as adjusting the luminance of the main display. Frustratingly, though, there isn't a key to adjust the brightness of the ScreenPad Plus.

My biggest gripe, from an ergonomic perspective, concerns the touchpad. It's tiny, and the surface is friction-heavy, so tracking is not smooth at all. A shortcut in the upper corner lets you turn it into a touch-sensitive numeric keypad, and you're probably best leaving it in that mode. Anyone who buys the ZenBook Pro Duo, whether for creative work or not, will need an external mouse.

■ Display no.1

The ZenBook Pro Duo's primary display is a 15.6in touch-enabled panel with a 4K (3,840 x 2,160) resolution. Thanks to its OLED technology, it has an effectively infinite contrast ratio: this helps images leap out from the screen with stunning clarity and boldness, and viewing angles are absolutely superb.

Touch response on the display is perfect, and thankfully the lid doesn't have much wobble. I could live without the glossy finish, however, because on occasion I had to adjust the screen angle to avoid glare from light sources. Still, a maximum brightness of 387cd/m² makes the display perfectly viewable even in bright lighting conditions.

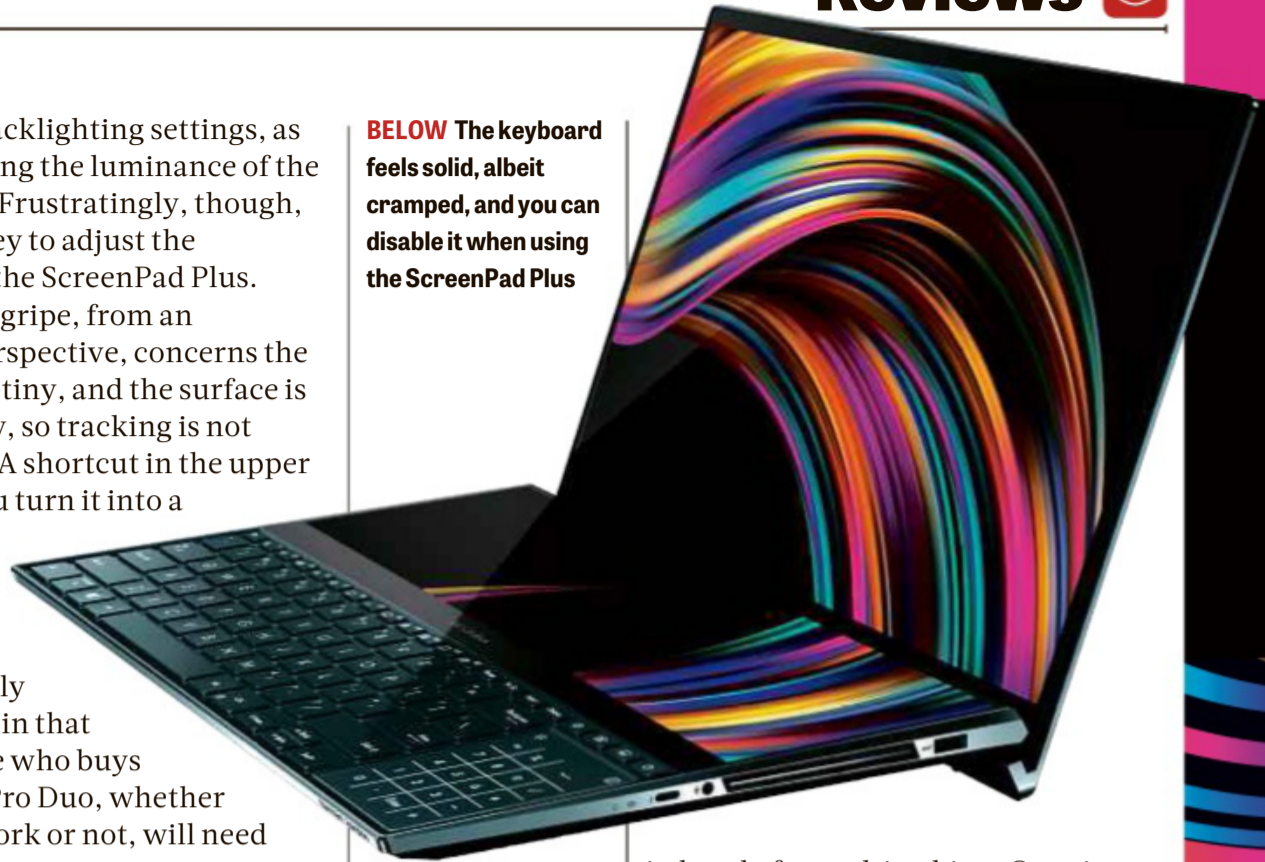
If you're considering the ZenBook Pro Duo for a professional role, you'll be encouraged to hear that, in our tests, the screen delivered 100% sRGB gamut coverage. However, it oversaturates colours, with a total sRGB gamut volume of 174.9% – and an average Delta E of 3.96 means colour accuracy is way off base for professional-standard video and photo editing. It looks fantastic for films and games: just be aware that it tends to exaggerate vivid colours.

■ Display no.2

The ScreenPad Plus is about half the height of the main screen, and it's about half as good: it's an LCD panel, not OLED, and it has a matte finish instead of a gloss coating. Asus calls it a 4K panel, but its 3,840 x 1,100 resolution translates to a shortened 32:9 format, with fewer than half of the pixels of a regular 4K display.

While the aspect ratio is unfamiliar, the ScreenPad Plus comes

BELOW The keyboard feels solid, albeit cramped, and you can disable it when using the ScreenPad Plus



in handy for multitasking. Creatives can use it as a control panel when working with video, image or music software, and it can house up to three apps at a time, all easily arranged using the standard Windows snapping functions. It's also ideal for spreading out toolbars or for displaying reference materials while working on


“The ScreenPad Plus is ideal for spreading out toolbars or for displaying reference materials while working on the main screen”

the main screen. During my time with the ZenBook Pro Duo, I found myself regularly using the ScreenPad Plus as a place to keep mundane windows such as Spotify or Google Analytics.

Sadly, the experience is far from seamless. When an app or web page spreads across both displays, some of the content is concealed beneath the partition that separates them, so you can't combine the two panels into one extended desktop. It's also fiddly to use: it occasionally failed to detect taps made with a finger or the Asus Pen, and if you're touching the surface then you can't use the touchpad, keyboard or primary touchscreen.

Perhaps the biggest drawback is the limited viewing angle of the ScreenPad Plus: I often found I had to lean over and look directly down onto the panel to see everything clearly. The fact that it has a separate brightness control to the main display (not to mention a lower maximum brightness) is also annoying, and there's no way to link the two together without third-party software.

■ Heavyweight hardware

The promise of multi-display multitasking calls for serious hardware, and Asus kitted out our ZenBook Pro Duo with 32GB of RAM and an octa-core ninth-gen Intel Core 



ABOVE The lid lifts the keyboard to a more ergonomic angle – and also provides much-needed cooling space



i9-9980HK. This is the most powerful mobile processor currently available, with a base frequency of 2.4GHz and a maximum Turbo speed of 5GHz – yet, sad to say, the ZenBook Pro Duo fails to extract its full potential. As you can see to the right, its *PC Pro* benchmark result of 209 is speedy, but nowhere near the 291 recorded by the similarly specified Acer Predator Triton 900.

The cause is easy to identify. While our benchmark tests were running, I used the Core Temp tool to monitor CPU temperatures and soon found that – regardless of whether the laptop was in Auto or Turbo mode, and despite the whirring fans and stream of hot air pumping out of its side vents – three of the eight cores had hit their maximum limit of 100°C, while the remaining five were blazing along at either 99°C or 98°C. Clearly, thermal throttling holds the CPU back from achieving maximum performance.

Still, its CPU speed and multitasking abilities are furlongs ahead of the Razer Blade 15 (2019) and the Apple MacBook 15in (2018).

Since the ZenBook Pro Duo's 4K panel only has a refresh rate of 60Hz, it's not ideal for gaming. If that's what you want to do, though, there's a good chunk of power on hand. In the offscreen GFXBench Car Chase test, the Nvidia GeForce RTX 2060 GPU cranked out an average of 255fps. That's well below the Acer Predator Triton 900 and Razer Blade 15, but those machines benefit from either RTX 2070 or RTX 2080 units.

Even Triple-A gaming is within the Pro Duo's wheelhouse. It ran the 1080p *Metro: Last Light* benchmark on High detail settings at 141fps, and managed 35fps in the crushing 1080p

ABOVE Creative types can use the ScreenPad Plus as a handy control panel when using music, video or photo-editing software

Hitman 2 Mumbai benchmark at Medium detail settings.

As for storage, this top-spec model has a generous 1TB PCIe SSD, and performance is fairly nippy: in the AS SSD benchmark, it read sequential files at 1,561MB/sec, and wrote them at 1,244MB/sec. Neither result is close to the fastest we've seen, but you won't be sitting around all day waiting for files to save or open.

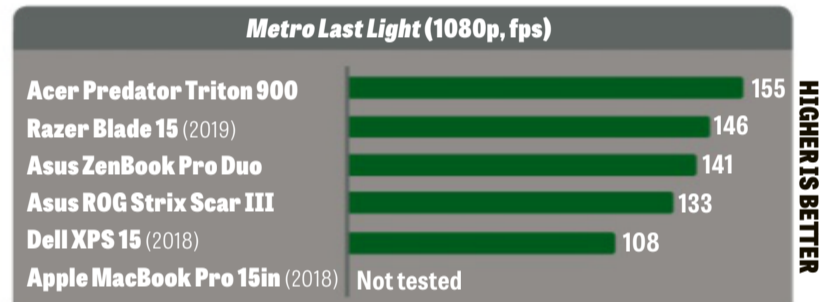
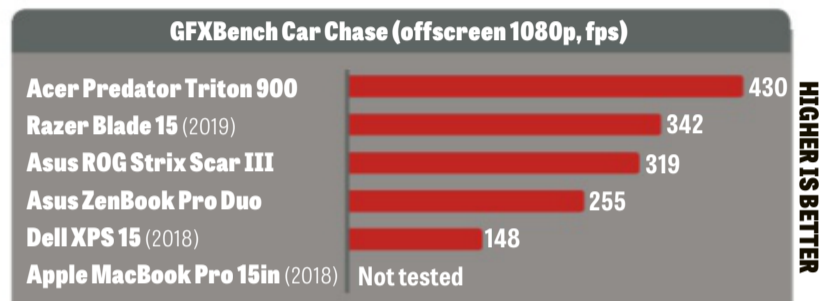
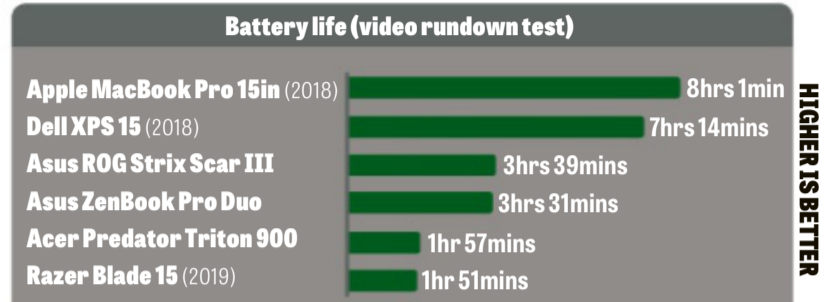
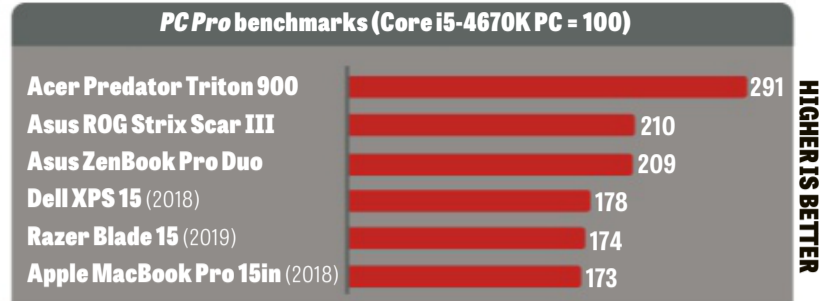
Whenever a laptop arrives boasting a top-end processor and a discrete GPU, the trade-off is almost always battery life – and that's especially true when said laptop has two 4K displays. We weren't expecting great things from the Pro Duo's battery, therefore, and in the event it lasted for 3hrs 31mins in our standard video-playback rundown test.

Note that this result is in a power-friendly mode, with no applications running besides a video player. If you turn the secondary display off, you can make the 71Wh battery last longer, but we'd recommend you think of this as a portable desktop replacement rather than a truly mobile companion.

Double take

The ZenBook Pro Duo is expensive. The only UK retailer that has this particular configuration in stock is John Lewis, but if you're willing to drop down to a Core i7-9750H, 16GB of RAM and a 512GB SSD then you can save almost £650 by buying from Amazon ([pcpro.link/304asus](https://www.amazon.co.uk/dp/B085L38383)). Amazon also has a 14in model with much reduced specs for £1,500 ([pcpro.link/304asus2](https://www.amazon.co.uk/dp/B085L38383)).

Whichever model you look at, there's no questioning Asus' ambition. Aside from the unreleased



BELOW The small touchpad is much more useful when transformed into a numeric keypad



Razer Project Valerie – a triple-display laptop – it's surely the most daring multi-display laptop ever made.

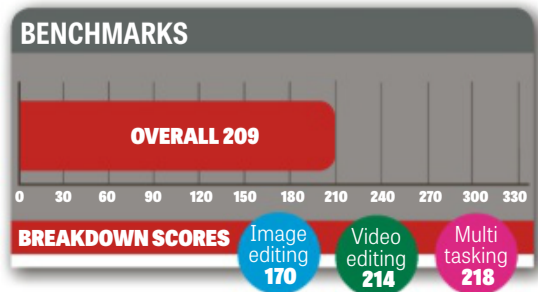
That doesn't mean I'd spend £3,000 on it, though. The ScreenPad Plus has annoying problems, and the disparity in quality between it and the primary OLED panel is jarring. Couple that with those thermal issues, short battery life and ghastly touchpad and it's unquestionably a flawed machine.

Even so, there's no denying that the ZenBook Pro Duo's ScreenPad Plus is a genuinely useful innovation, for content creators especially. There's potential here, and I'm excited to see what Asus does with the dual-display concept next.

TOM BRUCE

SPECIFICATIONS

Octa-core 2.4GHz Intel Core i9-9980HK processor • 6GB Nvidia GeForce RTX 2060 graphics • 15.6in 3,840 x 2,160 AMOLED touchscreen • 14in 3,840 x 1,100 IPS ScreenPad Plus • 32GB DDR4-2667 RAM • 1TB M.2 NVMe SSD • 720p IR webcam • 2x2 802.11ax Wi-Fi • Bluetooth 5 • HDMI 2.0 • Thunderbolt 3 • 2x USB 3.1 Gen 2 • 71Wh li-polymer battery • 359 x 246 x 24.6mm (WDH) • 2.5kg • Asus Pen • Windows 10 Home • 2yr RTB warranty (via John Lewis)





Dell XPS 13 2-in-1 (2019)

A superb laptop by any measure – its convertible design is simply the icing on the case

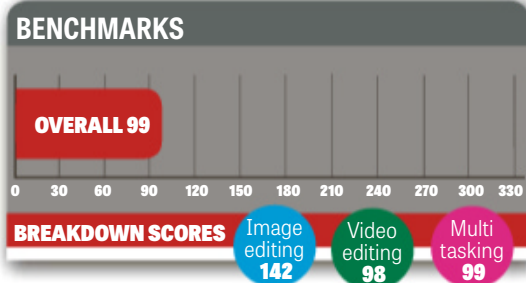
SCORE ★★★★★

PRICE £1,266 (£1,519 inc VAT)
from dell.co.uk

The Dell XPS 13 (see issue 296, p54) has long been one of our favourite laptops. The 2-in-1 version takes that winning formula and adds a fold-around screen, giving you the option of working in tablet, “stand” or “tent” modes, as well as the regular clamshell format.

As with all Dell’s XPS 13 systems, the 2-in-1 features an eye-catching “InfinityEdge” display, which in layman’s terms means thin bezels. It looks great, and allows Dell to squeeze a 13.4in screen into a chassis that measures 296 x 207mm, with a 13mm depth at the rear that tapers to 7mm at the front. It’s wonderfully portable, although at 1.33kg it’s weightier than most 13in laptops.

Dell offers the CNC-machined aluminium machine in two colours: “Platinum Silver” or “Arctic White”.



I was sent the traditional silver design, and the black touchpad and subtly patterned wristrests look stylish and feel pleasingly warm to the touch. But I found they quickly became smudged with fingerprints and palm-prints.

■ Key features

As always with a convertible, holding the 2-in-1 in tablet mode is jarring at first as your hand presses down on the keyboard. Fortunately, the XPS 13’s keys are low profile, yet they still feel beautifully crisp and positive to type on: it’s one of the best-feeling keyboards I’ve ever tried. The layout is agreeably spacious, too. My only issue is the half-height PageUp and Down keys, which are situated flush with the left and right cursor keys; it’s annoyingly easy to hit these by accident.

The roomy 112 x 67mm touchpad is smooth and precise. It’s hinged at the top, so physical clicks register better in its lower half, but I found taps and swipes were picked up perfectly all across its surface.

One controversial aspect of the Dell XPS 13 2-in-1 is its physical connectivity – or rather its lack thereof. The XPS 13 2-in-1 eschews old-style USB Type-A

ABOVE Whether you’ll mainly use it for work or play, the flexible XPS 13 2-in-1 is up to the task



BELOW Connectivity is kept to a minimum: there’s only a USB-C port and headphone jack on the right

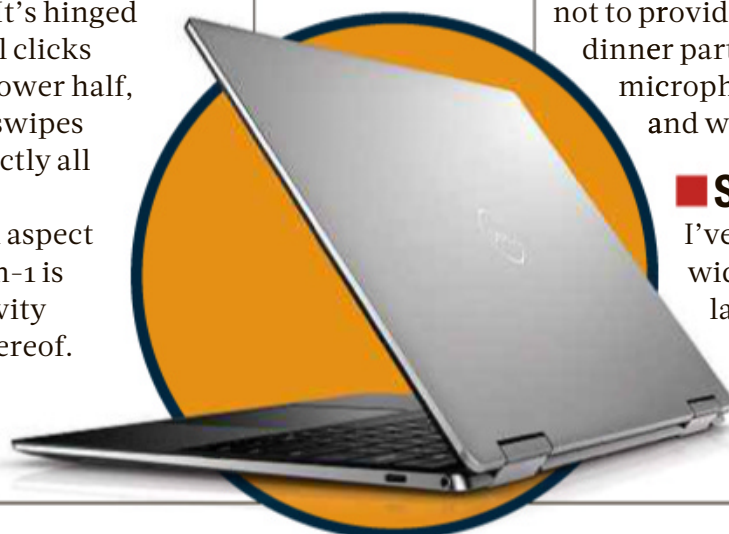
connectors, with two USB-C sockets (one at each side) for connecting peripherals and charging. These both support Thunderbolt 3, so they’re fast and versatile, but if you want to hook up legacy devices you’ll need to use the supplied USB-C to USB-A adapter. The only other sockets on offer are a microSD card slot and a headphone jack.

Another compromise is the webcam. Kudos for cramming a 720p sensor into the tiny upper bezel above the screen, but I found the image soft and noisy: it’s fine for chatting with friends, but if you dream of YouTube stardom you’ll need something better. Note that there’s no infrared webcam support, either, but a fingerprint reader is built into the power button.

The tinny speakers are clear but quiet. I’d be happy to use the XPS 13 2-in-1 to watch iPlayer in bed, but not to provide background music at a dinner party. Still, the built-in microphone is surprisingly clean and warm.

■ Squarer display

I’ve never been a fan of widescreen displays on laptops: I prefer the taller 3:2 format of Microsoft’s Surface devices. Dell’s new 1,920 x 1,200 panel is a bit more





ABOVE The keyboard is crisp and the touchpad precise – but the wristrests hoard fingerprints

rectangular than that, but it's an improvement over the Full HD displays of previous XPS laptops.

It's a superb screen, too. I measured a maximum brightness of 538cd/m², while a contrast ratio of 1,761:1 ensures that the picture is solid and vibrant, with the sort of dynamic range that only an OLED panel could beat. Even better is the screen's colour performance: it delivered 97.1% coverage of the sRGB colour space, with an average Delta E of 1.18. There's also support for HDR video streaming, although not for wide-gamut apps or games.

I've only one reservation about the screen and that's its sharpness. The expensive 4K+ variants boast an ultra-high pixel density of 338ppi, but on the Full HD+ models that's slashed to 169ppi. That's coarser than the 267ppi of the Microsoft Surface Pro 7 (see issue 304, p56) – and it shows. Text, in particular, is soft-edged rather than sharp and smooth.

■ New chip, new level

The XPS 13 2-in-1 uses Intel's tenth-gen, top-of-the-range mobile Core i7 processor, the i7-1065G7 – so despite its slimline design, I expected strong performance. And in the *PC Pro* benchmarks, that's what I got, with an overall benchmark score of 99. Geekbench 4 tells much the same story, with results of 5,624 (single-core) and 18,960 (multicore).

The Core i5 version comes with bog-standard integrated graphics but the Core i7 silicon includes Intel's more powerful Iris Plus GPU. This doesn't mean you can run the latest 3D games with all the detail settings whacked up to maximum: the Full HD, high-detail *Hitman 2* benchmark proved beyond its capabilities, giving

a jerky average frame rate of 16fps. Even so, GFXBench confirmed that there's plenty of graphical power here: 52.6fps in the onscreen Car Chase test and 59.2fps offscreen are roughly double what Intel's previous-generation Ultra HD graphics provide.

In practice, this meant I could enjoy *Dirt: Showdown* at 720p with high-detail settings at a smooth 57fps, and even in *Metro: Last Light* the XPS 13 2-in-1 kept up a playable average frame rate of 32fps at 1080p.

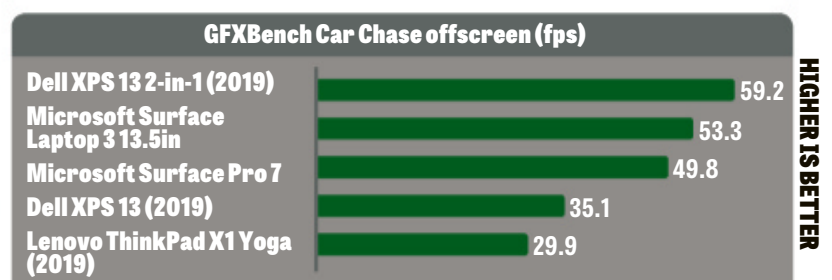
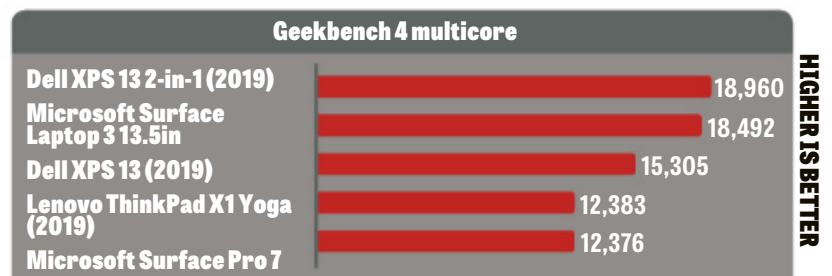
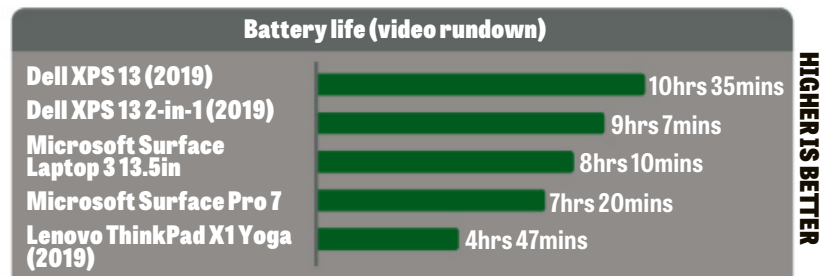
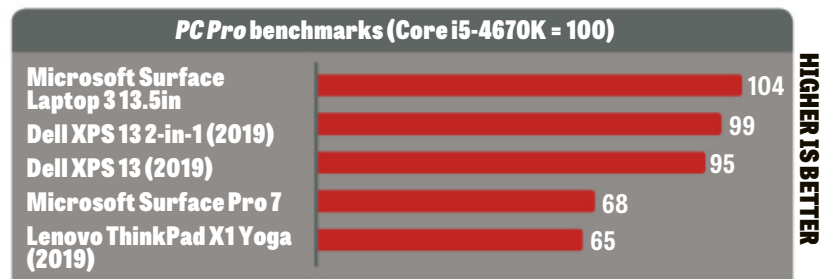
Battery life was another strength with our test system, but note this includes a Full HD+ screen; if you choose a 4K+ display, expect battery life to be reduced by an hour or two. In our video-rundown test, with the display set to a brightness of 170cd/m², the XPS 13 2-in-1 lasted a creditable 9hrs 8mins, easily outlasting its 2-in-1 competitors listed in the graphs above.

As a final plus point, the XPS 13 2-in-1 supports 802.11ax, so you can take advantage of the very fastest Wi-Fi speeds – just as soon as you buy a compatible router.

Choice of spec

The Dell XPS 13 2-in-1 is offered in four configurations. The cheapest comes with an Intel Core i5-1035G1 CPU and a 1,920 x 1,200 touchscreen for £1,429. That includes 8GB of RAM and a 256GB SSD. The next model up is the one on test here, which is identical save for a Core i7-1065G7 CPU. The list price for this is £1,519, but as always it's worth checking for special offers; during my testing, it dropped to £1,399 on dell.co.uk.

The top two configurations use the same Core i7 processor but partner it with a 4K+ screen, which quadruples the standard resolution to 3,840 x 2,400, and have either 16GB of RAM with a 512GB SSD or 32GB of RAM with 1TB of storage. Officially, these high-end models cost £1,919 and £2,319 respectively.



■ Stick or flip?

Every convertible design has its trade-offs but the XPS 13 2-in-1 is the most attractive take I've seen on the idea. Dell has created an uncompromising laptop that just happens to also offer

“Every convertible design has its trade-offs but the Dell XPS 13 2-in-1 is the most attractive take I've seen on the idea”

the convenient option of flipping around into tent or tablet mode.

Of course, if you have no use for the folding design, you can save money by choosing a regular Dell XPS 13 or a

Surface Laptop with a taller, sharper screen. Conversely, if you plan to use tablet mode on a regular basis, you might find the Surface Pro 7 suits you better: it's lighter and doesn't have a keyboard sticking out of the back.

But for many users, I suspect the idea of a high-quality touchscreen system that can occasionally be transformed into other modes will hit the sweet spot. Even if you'd usually turn your nose up at a convertible, you might find it hard to resist the charms of this fast, stylish and portable machine. **DARIEN GRAHAM-SMITH**

SPECIFICATIONS

Quad-core 1.3GHz Intel Core i7-1065G7 processor • Intel Iris Plus graphics • 1,920 x 1,200 touchscreen display • 256GB PCIe SSD • 8GB LPDDR4x-3773 RAM • Full HD webcam • 2x2 MIMO 802.11ax Wi-Fi • Bluetooth 5 • 2 x Thunderbolt 3 • microSD slot • 51Whr battery • Windows 10 Home • 296 x 207 x 13mm (WDH) • 1.33kg • 1yr on-site warranty

Dell Inspiron 14 7000

A high-performance laptop that packs staggering battery life, but beware the sacrifices elsewhere

SCORE ★★★★★

PRICE £999 (£1,199 inc VAT)
from dell.co.uk

In a way, your choice of whether to buy the Inspiron 14 7000 or not is simple. If, like certain of our political leaders, you crave power on a tight budget, this may be the machine for you. With a tenth-generation Intel Core processor married to GeForce MX250 graphics, it tore through most of our benchmarks. But you will make sacrifices along the way.

Let's start with what you're losing. First, style. This is no Dell XPS range, despite the fact that the bulk of the chassis is made with a magnesium alloy. You also sacrifice convenience. The Inspiron 14 7000 supports Modern Standby, but with no Windows Hello-compatible webcam you'll either need to enter your PIN or use the optional fingerprint reader.

Dell also makes a couple of subtle ergonomic sacrifices. The keyboard isn't as pleasant to use as that of the XPS range, with a curtailed stroke and severely shortened cursor keys; you'll have to be careful when using these, as they blend into each other. And, while it's a precision touchpad, which means it supports all of Windows 10's gestures, there's no smooth glass top here. It's fine, but nothing special.

Then there's the 14in, 1,920 x 1,080 screen. In terms of passing technical tests, it's excellent. It covers almost 100% of the sRGB gamut, averaged a phenomenal 0.25 in our Delta E tests for colour accuracy, and a measured contrast ratio of 1,583:1 tells you everything you need to know about watching films: this is a great vehicle for Netflix. Nevertheless, I don't like it. Dell has done little to



block reflections on the glossy screen, and I found the contrast dropped off in distracting fashion whenever I moved my head away from the perfect head-on angle.

I freely admit I'm being fussy – this is still a fine screen – but it's one of the reasons why I wouldn't buy the Inspiron myself. And I also miss the ability to navigate by touch; this has become second nature when using my laptop on the move. Compared to premium laptops, the audio is poor, too. Don't expect any detail to come through, and naturally you can forget about bass.

All of these foibles are a shame because there's so much else to love. Intel's tenth-gen Core processors

ABOVE The Inspiron 14 7000 doesn't cut a glamorous dash, but there's a generous selection of ports

It also offers extraordinary battery life. A time of almost 14 hours in our video-rundown test is exceptional, and all the more so when you consider it weighs 1.15kg (this is on our scales; Dell claims 1.1kg). It's also a compact chassis: you might find the Inspiron 14 7000 is both slimmer and has a smaller footprint than any 13in ultraportables you have lying around.

More reasons to like the Inspiron? How about the inclusion of 802.11ax Wi-Fi rather than the slower 802.11ac you'll find in most laptops? Or the fact that it packs in a generous number of ports: Thunderbolt 3, HDMI and a microSD card reader on the left, two USB 3 ports

“A time of almost 14 hours in our video-rundown test is simply exceptional, and all the more so when you consider it weighs 1.15kg”

and a combo jack on the right.

You can also save some money if you don't need, say, Nvidia graphics. Dell offers a base model (£969 inc VAT) with a Core i5 processor, 8GB of RAM and a 256GB SSD. As always with Dell, it's worth looking out for discounts or haggling with a sales advisor, too.

If you can negotiate the price down to around 15% less, and you'll take daily advantage of the power and portability it offers, there are reasons

to consider the Inspiron 14 7000 over the less powerful HP Envy 13 (see issue 303, p57) and the more expensive Dell XPS 13. However,

if you're fussy about screens and keyboards, I suggest you steer clear.

TIM DANTON

SPECIFICATIONS

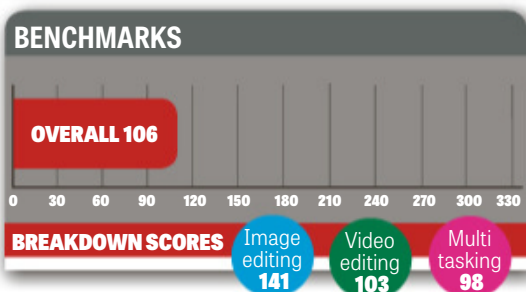
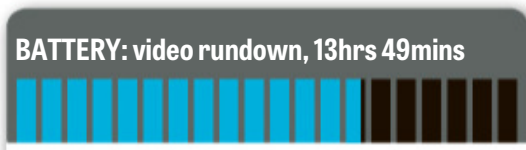
Quad-core 1.8GHz Intel Core i7-10510U processor • 16GB 2,133MHz LPDDR3 RAM • 2GB Nvidia GeForce MX250 graphics • 14in non-touch IPS display, 1,920 x 1,080 resolution • 512GB M.2 PCIe SSD • 720p HD webcam • 2x2 802.11ax Wi-Fi • Bluetooth 5 • USB-C 3.1 (with charging and DisplayPort support) • 2 x USB 3.1 • HDMI 2 • microSD card slot • combo 3.5mm headphone • 52Whr battery • Windows 10 Home • 320 x 206 x 14.9-18mm (WDH) • 1.15kg • 1yr C&R warranty



already look set to be a great hit. An overall score of 106 is a tremendous result, and in truth this is a lightweight powerhouse.

That's especially true when you take into account the Nvidia GeForce graphics. The MX250 chip has just enough power to make demanding games playable, although you will have to drop resolution and settings for more recent releases. Still, it scored an excellent 72.4fps average in *Dirt: Showdown* and even managed 55.4fps in *Metro: Last Light* (I tested both games at 1080p with High settings).

ABOVE Spectacular Delta E and contrast ratio scores make the screen ideal for Netflix



Lenovo ThinkVision M14

This phenomenally thin portable monitor marries clever design with a high-quality 14in IPS panel

SCORE ★★★★★

PRICE £176 (£211 inc VAT)
from ballicom.co.uk

Portable monitors aren't a new idea, but it's taken Lenovo to produce one that's worth buying. It weighs 570g, can be carried quite comfortably with a two-finger pinch, and takes little room in your bag (Lenovo includes a felt carry case).

Build quality is excellent. Applying pressure to the corners of the screen, for instance, barely flexes it at all, and both the main stand hinge and the mini height-adjusting hinge are satisfyingly firm. Narrow bezels keep the dimensions down, but its key characteristic is that it's incredibly thin – 4.4mm at its narrowest point, and still only 12mm when the integrated stand is folded in. And don't think that this means it's vulnerable during your travels: the M14 is much sturdier than its slimness would suggest.

Lenovo pulls off the stand far better than AOC with its I1601FWUX. This uses a folding, tablet-style sleeve to stay upright, which offers extra protection in transit but lacks adjustability. The M14 instead has a hinged stand, which lets it be angled anywhere between bolt upright and completely flat. On the underside of the stand is another, smaller hinged flap that props the screen upwards slightly. Angle adjustment would have been a big advantage on its own, but Lenovo has added a touch of height adjustment too.

Lenovo builds the M14's ports and controls into the stand, but don't expect desktop monitor levels of control. You get rocker-style buttons for brightness and a button for the low blue light mode, which gives the screen an ugly but less eye-straining orange tint. While both are welcome inclusions, that's your lot: there's no conventional OSD menu and that means no profiles, no contrast controls and no colour balance tweaking.

Connectivity is more fleshed-out. While the



two DisplayPort-enabled USB-C inputs don't sound like much, having one on each side means you have a choice of where to plug in your laptop; using the left port, for instance, will prevent the cable getting in the way of right-handed mouse users.

These ports also support passthrough power, in the sense that inserting a power adapter into one USB-C port can simultaneously power the display and charge a laptop or other device connected to the opposite USB-C port. Getting the most out of this, however, involves meeting specific hardware requirements. The adapter must support the PD (Power Delivery) 2.0 standard and be plugged into the right-side port only, leaving the left port for the video device.

As you can simply plug in a laptop connected to its own charger, this setup doesn't really save on cables, and I struggle to think of when it might be useful – except if your laptop was running low on juice and you had a power cable for the display, but not for the laptop itself. There's no data passthrough either, so you can't use the spare USB-C port to connect an external SSD or move files off a smartphone. Ultimately, though, this won't matter to most people.

The actual screen component of the M14 is a 16:9, Full HD (1,920 x 1,080) IPS panel. Measuring 14in diagonally, it's slightly smaller than the 15.6in I1601FWUX, but there's still sufficient space and the resolution is neither so low as to look blurry nor so high as to make onscreen text too small.

It's also hard to worry about a 1.6in difference when the M14 is so far

ABOVE Only 4.4mm at its narrowest point, the M14 can safely be described as "svelte"



"The M14 isn't quite the all-supreme champion that portable monitors have been missing, but it's the one that comes closest so far"

BELOW Naturally, Lenovo hopes you will be connecting the ThinkVision to your existing ThinkPad

ahead on picture quality. This is best demonstrated by its colour accuracy: we measured an average Delta E of just 1.3, drastically superior to the I1601FWUX's 6.5.

Its sRGB gamut coverage comes in at 89.9%, which is reasonable but not outstanding. Still, this makes for a much more vivid-looking screen than that of the I1601FWUX, which only managed 52.3%. Similarly, the M14's peak brightness is a fairly average 311cd/m², yet looks much better next to the I1601FWUX's duller 223cd/m².

The only notable weakness is brightness uniformity, as the bottom-right corner showed a -12.8% variance compared to the centre, while the top-right corner varied by -11%. I

didn't notice this in normal use, though, and there are other successes for the M14. I measured contrast at a respectable 1,200:1, and the matte finish reduces reflections. As is common of IPS

panels, the M14 benefits from wide viewing angles – useful if you need a screen to show around in meetings.

In the end, the M14 isn't quite the all-supreme champion that portable monitors have been missing, but it's the one that comes closest so far. Display quality exceeds expectations, especially for colour accuracy, and the sleek design is stylish and smart.

The ports aren't as versatile as we're used to from USB-C, but no portable monitor is, or even needs to be, a hub of connectivity. Where the ThinkVision M14 succeeds, it succeeds by a distance and is worth your consideration – even without any passthrough shenanigans.

JAMES ARCHER

SPECIFICATIONS

14in 1,920 x 1,080 IPS panel • 6ms response time • 2 x USB-C (DisplayPort 1.2 and power) • 0° to 90° foot tilt • -5° to 90° stand tilt • 323 x 4.4-12 x 220mm (WDH) • 598kg • 3yr RTB warranty

Lenovo Yoga C940

A fine 14in convertible hybrid that outlasts and outperforms the Dell XPS 13 2-in-1

SCORE ★★★★★

PRICE **£1,113 (£1,335 inc VAT)**
from lenovo.co.uk

While the essential idea behind the Lenovo C940 is the same as the Dell XPS 13 2-in-1 (see issue 305, p60), this convertible laptop has two immediate advantages: it comes with an active stylus, which stows away neatly in a slot in the spine of the machine; and it includes a larger display. The Yoga's measures 14in across the diagonal with an aspect ratio of 16:9, while the Dell's is 13.4in and a squarer 16:10.

You can configure the Yoga C940 with a 1080p or 4K panel, with Lenovo sending me the former for testing. It's a fine display but if you're going to use it for photo editing or colour-critical design work, seek out the Intel Graphics Control Panel by searching for it in the Windows 10 Start menu. With the power-saving settings enabled, dynamic contrast kicked in, dimming the display when there was a lot of dark content on the screen.

With this battery-saving guff disabled, the display was decent without being amazing. Brightness peaks at 369cd/m², which is a fair notch behind the Dell XPS 2-in-1's 538cd/m², and it also falls behind for colour accuracy: while a 91.4% figure for sRGB coverage is

good, an average Delta E of 3.08 is not. Dell's laptop scored 97.1% and 1.18 in those tests.

I would still be happy watching films on the C940, though, and that's due to the exceptional speakers. These take the form of a Dolby Atmos-branded "soundbar" that stretches across the centre of the machine, in

the crease between the screen and keyboard. These don't pump out much bass but produce audio with a surprising amount of body and volume. I wouldn't want to listen to music on these, but talk radio, podcasts and TV shows? No problem.

A 720p webcam sits above the screen, and unlike the Dell it includes a cover that you can slide across for privacy. Alas, you can't use the webcam to unlock the machine with your face as it isn't compatible with Windows Hello, but a fingerprint reader sits just below the bottom right-hand corner of the keyboard for speedy unlocking.

While I'd prefer more travel and feedback, the keyboard is pleasant to type on with a good amount of space surrounding each key. The touchpad is large and responsive too: it's a diving-board design, which means you can't click it along its top edge, but the clicks aren't too heavy or rattly.

With a compact chassis

– it weighs 1.35kg – physical connections are inevitably limited, but still beat the Dell thanks to an old-school USB-A port sat alongside a pair of Thunderbolt 3-enabled USB-C ports on the left edge of the machine.

It's also good to see Wi-Fi 6, but that's to be expected alongside Intel's tenth-gen mobile CPUs. With a Core i7-1065G7 and 16GB of RAM in this configuration, and a 256GB Samsung SSD, the C940 performed strongly in our benchmarks. A

total of 102 is three points faster than the Dell.

It was a similar

story when it came to graphics performance, with the more advanced Intel Iris Plus graphics (denoted by the G7 in the processor name) delivering a noticeable performance advantage over the less beefy Core i5 in the Acer Swift 5 (see p58) and a similar performance to the XPS 13 2-in-1. In the GFXBench Car Chase test both the Dell and Lenovo scored around 55fps, compared to 31fps for the Acer.

Note that Lenovo includes a speedy SSD too, with the Samsung drive returning sustained read and write speeds of 2,585MB/sec and 2,062MB/sec respectively. The latter is three times as fast as the Dell XPS 13 2-in-1.

And this laptop's battery life was even more impressive, lasting 11hrs 13mins in our video rundown test. That's a good two hours longer than the Dell XPS 13 2-in-1 and three hours better than the similarly specified Surface Laptop 3 (see issue 304, p54).

Whichever way you slice it, then, the Lenovo Yoga C940 is a mighty fine 2-in-1. It's as fast as all its rivals and outlasts them for battery life. It has broad connectivity, impressive speakers and its only weakness is the display. (But, in general, it's still a good screen.) With a sleek chassis, solid 360° hinge and a bundled stylus, you have a 2-in-1 that combines good looks and great performance – and all at a keen price. If you want a 2-in-1, it has to be either this or the Dell XPS 13 2-in-1. For my money, the Lenovo Yoga C940 edges it. **JONATHAN BRAY**

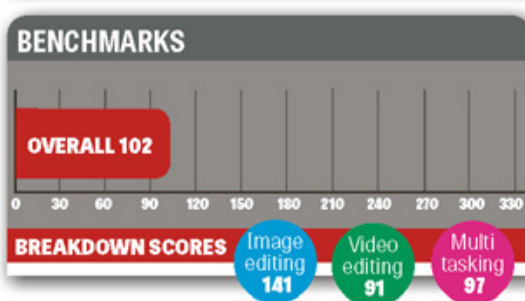
ABOVE The screen and keyboard are both decent, without being spectacular



"Whichever way you slice it, the Yoga C940 is a mighty fine 2-in-1. It's as fast as all its rivals and outlasts them for battery life"

LEFT An exceptional "soundbar" occupies the gully between the screen and keyboard

BELOW The bundled active stylus slips satisfyingly into a slot on the spine



SPECIFICATIONS

- Quad-core 1.3GHz Intel Core i7-1065G7 processor
- Intel Iris Plus graphics
- 14in 1,920 x 1,080 touchscreen IPS display
- 256GB SSD
- 16GB LPDDR4 RAM
- Full HD webcam
- 2x2 MIMO 802.11ax Wi-Fi
- Bluetooth 4.1
- 2x Thunderbolt 3
- USB-A 3.0 (Gen 2)
- 60Whr battery
- active stylus
- Windows 10 Home
- 320 x 216 x 15.7mm (WDH)
- 1.35kg
- 1yr RTB warranty

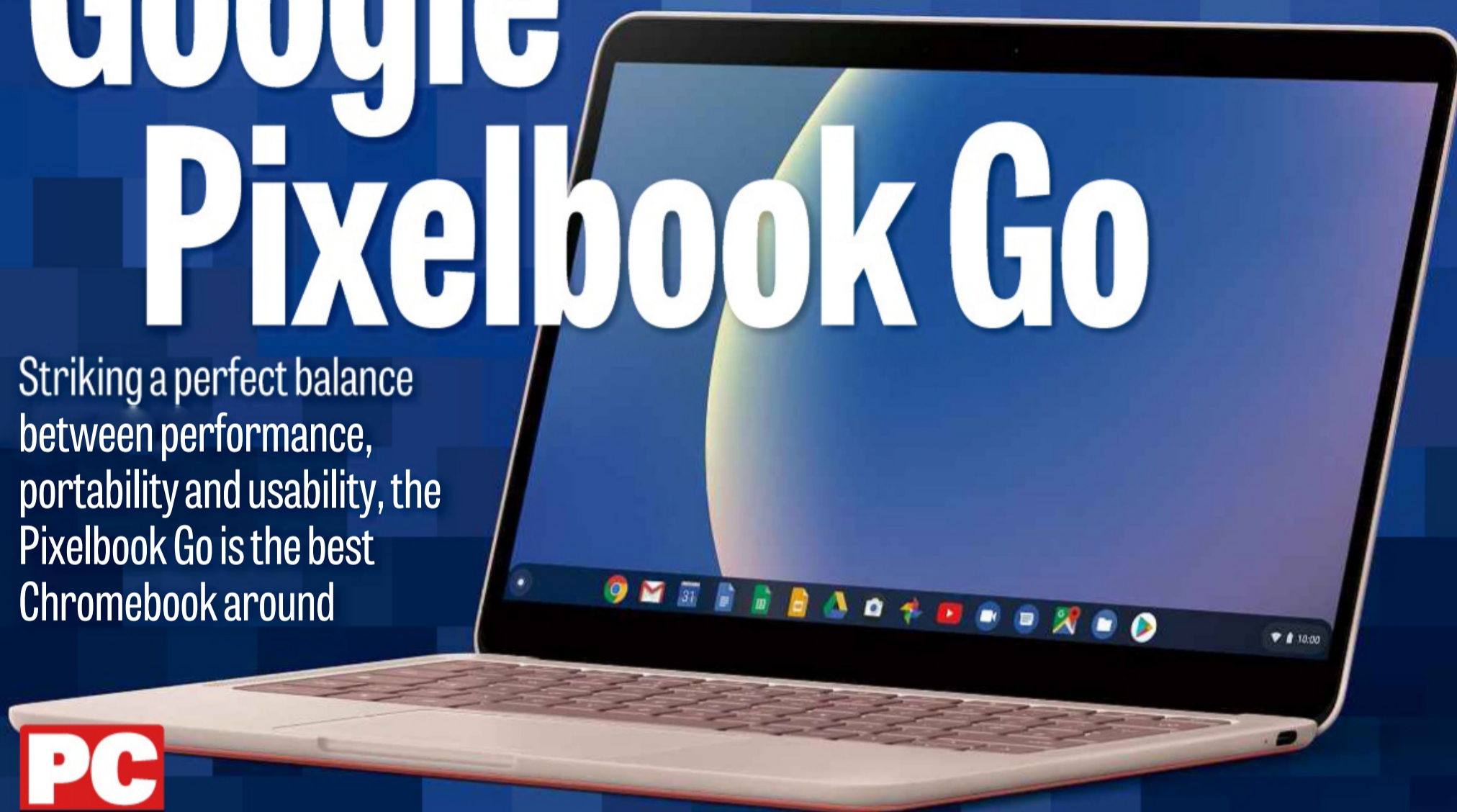
Reviews



The biggest, best, most exciting products in tech – tested, evaluated and reviewed

Google Pixelbook Go

Striking a perfect balance between performance, portability and usability, the Pixelbook Go is the best Chromebook around



SCORE ★★★★★

PRICE £691 (£829 inc VAT)
from store.google.com

Add “Go”, “Lite” or “LE” to a product’s name and most people assume that its function or appearance has been curtailed in some way. That’s why I was surprised that Google called its latest flagship Chromebook the Pixelbook Go: while most manufacturers target the low-end with their Chromebooks, Google has always promoted its own-brand products as standard-bearers.

■ Cut-down to go?

So is the Pixelbook Go a cut-down product? In most ways, absolutely

not. It’s slim, light, very nicely put together and has a big, bright 13.3in screen. With a comfy keyboard and large touchpad, it’s a great all-round machine. And it houses not an Intel Celeron, as so many of its Chromebook brethren do, but a Core i5 CPU – this is a proper laptop that just happens to run Chrome OS.

And yet, despite its relatively high price and grown-up specifications, it seems that Google has lowered its sights with the Pixelbook Go. It doesn’t run the very latest tenth-gen Intel CPUs, instead sticking with low-power eighth-gen chips. And it’s much more of a basic design than the Slate and original Pixelbook.

In return, the Pixelbook Go starts out considerably cheaper than the Pixel Slate released in 2018 (see issue

ABOVE The design of the Pixelbook Go won’t draw awed gasps, but its build quality might

“The Pixelbook Go houses not an Intel Celeron, but a Core i5 CPU – this is a proper laptop that just happens to run Chrome OS”

293, p50) and the original Pixelbook released the year before that (see issue 280, p48). Prices start at £629 for the Core m3-based Pixelbook Go, which comes with 8GB of RAM and 128GB of storage.

There are four models in the Pixelbook Go range (see the table on p52), and as you progress through the ranks the prices increase. I was sent the Core i5-8200Y version with 8GB of RAM and 128GB of storage, which costs £829. It’s a shame that you don’t get

the model with the 4K “Molecular Display” until you get to the top-end Core i7 model – all of the others come with the more basic 1080p screen I have on my review unit.



■ Slim by design

In terms of its design, the Google Pixelbook Go is right up there with the very best laptops on the market. It's not particularly flashy – even the red model is pretty plain – but it's solid and beautifully built, at the same time as being very light at 1.06kg and slim at 14.5mm.

Weirdly, the most eye-catching part of the Pixelbook Go is its crinkle-cut underside. Aside from adding a little extra grip, and providing a talking point on the walk between meetings, it doesn't have much point. The rest of the design is unfussy yet appealing. Its gently curved corners and flat lid feel friendly and approachable and I like the smooth matt finish, which Google calls "finely painted magnesium"; it feels lovely under the palm.

The chassis feels remarkably rigid given how slim it is and the lid closes with a satisfyingly soft, yet solid, thunk. Another nice touch is that you can open it with only one finger without the laptop tipping back on its heels. Too many manufacturers neglect this important aspect of laptop design, making the lid magnet too strong or the gap too thin to easily get any purchase on.

Aside from a 1080p webcam (that's something not even Apple's high-end MacBook Pro laptops have), there's little else to get excited by when it comes to features. There's no microSD card slot and no SIM card slot, while physical connectors are kept to a minimum. You get a pair of USB-C ports, one on each side of the base towards the rear of the machine, both of which can be used to charge, output video or connect

ABOVE Google gingerly dips a little toe into "quirky" with the washing board rear, which also adds a bit of grip

peripherals. There's also a 3.5mm headset jack on the left edge – and that's your lot for physical ports.

Wireless connectivity is covered by a simple dual-band 802.11ac card, which also supports Bluetooth 4.2. Again, I'm surprised that this machine doesn't support the latest Wi-Fi 6 technology; not the end of the world, but disappointing for a laptop designed to be always connected.

■ Peach of a keyboard

The Pixelbook Go's keyboard, on the other hand, is much harder to criticise: it's a delight to type on, whether you're a hunt-and-peck specialist or a high-speed touch-typing dynamo. It has a solid base, the key action is light, quiet and well dampened, yet just positive enough to let you know your key presses have registered – and the key tops are large enough to keep typos to a minimum. It's an absolute peach.

When it comes to layout, the usual Chromebook rules apply, which won't be to everyone's taste. You get a search button on the left-hand side where you'd normally find a Caps Lock key, which has always irritated me with Chromebooks. There's also a Google Assistant key where you would normally see the Windows or Command keys on other laptops, which is less of an imposition. I'd like to see the two functions merged. That way Google can give us the Caps Lock key back and I won't have to think about which search key to press



ABOVE The "finely painted magnesium" finish feels gorgeous under your fingers

BELOW In terms of physical connections, there are two USB-C ports and a headphone jack – and that's it

Speedometer 1.0



MotionMark



Multitasking



Battery life



when I'm looking for stuff.

Fortunately, the rest of the layout is sensible. In the UK, you get a narrow but double-height Enter key. The Shift keys have a decent width to them as do the Backspace and Tab keys – and the cursor cluster isn't too cramped.

The touchpad also works well. It's spacious enough to allow you to perform multitouch gestures comfortably and the click doesn't feel overly heavy or insubstantial.

Note, though, that since it's mechanical, clicking doesn't work at the very top of the pad.

■ Solid display

The Pixelbook Go's weakest point is the display, but it's good enough for most uses. It's a 1080p unit measuring 13.3in across the diagonal and it's both sharp and bright. I measured it at 369cd/m² with the screen filled with white; that's not as high as the brightest laptops but should be good enough for most indoor situations and even some outdoor use.

It's colour accurate, too, and has a very high contrast ratio of 2,275:1, ensuring onscreen images have punch and presence. It isn't without its issues, however. The first is that viewing angles are disappointing: tilt the screen left and right or up and down and the display dims noticeably



past around 45°. It's also a little grainy and more reflective than I would ideally like.

The touchscreen, however, works well enough for the few times you're likely to want to use it – such as when clicking links, scrolling through web pages and accepting cookie agreements for the 30th time that day.

■ Stellar battery life

Google sticks to the same range of CPUs it used in the Pixel Slate. While that may seem like a mistake, if the results of our tests are anything to go by, there's no need for more oomph in Chrome OS anyway.

I've been working on the laptop for almost a week now with no issues whatsoever. Even with tens of tabs open in Chrome, and multiple large Google Sheets spreadsheets running, the Pixelbook Go isn't fazed. I suspect the Core m3 version will struggle when you load it up, but it's clear that you don't need anything faster than the Intel Core i5-8200Y or any more RAM than the 8GB supplied with our review device.

In the benchmarks, the Pixelbook Go kept pace with the Google Pixel Slate we reviewed last year. That's hardly surprising because that machine was built around the same processor and had the same amount of RAM installed. It fell behind the Dell Inspiron Chromebook 14 (see issue 299, p84), however, despite that having a seemingly lesser Core i3-8130U processor.

You'll see that, in both the MotionMark and the multitasking graphs on p51, the Slate sits slightly below the Pixelbook Go in the pecking order. That's because our Go review sample has a 1080p display

where the Slate we tested had a 4K "Molecular Display", and the multitasking test uses MotionMark too. Otherwise, the benchmarks are as you'd expect them to be, with the Pixelbook Go sitting in mid-table.

However, where the Pixelbook Go stretches out a lead over all of the competition is battery life. Quite simply, it's stunning in this regard. It lasted 14hrs 15mins in our video-rundown test, which is almost five hours longer than the Dell Inspiron Chromebook 14 and almost six hours longer than the Pixel Slate. This is a laptop you can work on all day without plugging it into the mains, perhaps more so than any other conventional laptop I've used. And the fact you can charge it via USB-C only adds to the convenience.

■ Go Pixelbook

That's what tips the balance in favour of a five-star Recommended award for me. With battery life this impressive and a keyboard this usable, I've found myself searching for reasons why I wouldn't use the Pixelbook Go over any other laptop.

Indeed, now that you can run Android apps and Linux on Chrome OS there are becoming fewer and fewer reasons not to. Even the Android Lightroom app works well on this machine, removing the one reason that, in previous years, had been holding me back from using a Chromebook for work. And with the advent of Google Stadia (see p40), you can even play full-blown AAA

ABOVE The Pixelbook Go comes in Not Pink or Just Black, depending on which configuration you choose

The Pixelbook Go's rivals

Google isn't the only company making high-spec Chromebooks; the Asus Chromebook Flip (see issue 299, p82) and Dell Inspiron Chromebook 14 are strong rivals to the Go. Both have slightly larger 14in 1080p touchscreen displays that fold over so you can use them like a tablet. They're available in similar configurations to the Pixelbook Go as well.

The Core m3 Asus Chromebook Flip C434TA can be bought for a mere £550 from Argos; this has 4GB of RAM and 128GB of eMMC storage. If you want more power, you can buy a Core i5 model with 8GB of RAM and 128GB of eMMC storage for £749. The Dell Inspiron Chromebook 14 comes with a Core i3 CPU, 4GB of RAM and a 256GB SSD and is great value at £550.



ABOVE A double-height Enter key is sensibly in place – so no irksome accidental key presses here

games on the Pixelbook (and pretty much any device with a browser).

The one negative is the display, with its comparatively poor viewing angles and high reflectivity. But that really is the only bad thing about the Google Pixelbook Go. All-round it is a superb machine that gets the balance between usability, looks and performance spot on. If you are buying a laptop this year, make it your business to at least seriously consider the Pixelbook Go.

JONATHAN BRAY

SPECIFICATIONS

Dual-core 1.3GHz Intel Core i5-8200Y processor • Intel HD 615 Graphics • 8GB RAM • 128GB SSD • 13.3in 1,920 x 1,080 IPS touchscreen • 1080p webcam • 2 x USB-C • 3.5mm headphone jack • 2x2 MIMO 802.11ac Wi-Fi • Bluetooth 4.2 • 47Wh battery • Chrome OS • 311 x 206 x 13.4mm (WDH) • 1.06kg • 2yr limited warranty

Intel Core m3	Intel Core i5	Intel Core i5	Intel Core i7
8GB RAM	8GB RAM	16GB RAM	16GB RAM
64GB SSD	128GB SSD	128GB SSD	256GB SSD
1,920 x 1,080	1,920 x 1,080	1,920 x 1,080	3,840 x 2,160
£629	£829	£949	£1,329

All prices inc VAT from store.google.com



Acer ConceptD 7

The Acer ConceptD 7 is a creative powerhouse that delivers almost everything its target market could wish for



SCORE ★★★★★

PRICE £1,916 (£2,299 inc VAT)
from uk-store.acer.com

What does the “D” stand for in Acer’s ConceptD brand? Pretty much anything you like: dynamic, design, discovery, detail and development are among the ideas Acer has put forward.

Strip away the marketing buzzwords, however, and you quickly realise that the ConceptD 7 is a mobile workstation targeted at creatives. And Acer backs that up with some bold choices of components. One of its biggest sells is its IPS display. Not simply that its 4K resolution stretches across a 15.6in diagonal, but that it’s Pantone Validated and capable of reproducing 100% of the Adobe RGB colour space. Perhaps “D” does stand for dynamic.

BATTERY: video rundown, 4hrs 52mins

BENCHMARKS

OVERALL 185

BREAKDOWN SCORES

Image editing
155

Video editing
185

Multi tasking
195

■ Pantone plus

Fortunately, it’s also an excellent screen. If you’re willing to round up your decimal points, it matched Acer’s Adobe RGB coverage claims in our tests with a result of 99.6%. With volume coverage of 103.8%, and an average Delta E of 0.8, what you see onscreen is what you’ll get when you print using a professional service.

The backlighting is very even, too, ensuring that, wherever you look at the display, it’s going to give the same representation of colour and tone. It’s also more than bright enough for its intended use, with a top brightness of 365cd/m² in our tests. Unless you’re going to be using this laptop outside, that’s plenty.

While test scores provide the figures, anecdotally I can say that it’s far too easy to fall down a rabbit hole of watching nature videos and drone footage of epic landscapes when the display quality is this good.

The high-quality speakers certainly help. They’re positioned on the front corners of its base, which is a usually bugbear of mine as it sends audio down into whatever surface the laptop is resting on – and if that surface is soft then the audio can sound muffled. That said, I was impressed by the quality produced by the ConceptD 7’s internal speakers. There’s clarity at maximum volume with little distortion, and its output is pleasingly loud.

ABOVE The display is exceptional and the ports plentiful – perfect for discerning creative folk

You can tweak the audio via Acer’s “ConceptD Palette” app using the MaxxAudio suite of tools. These allow you to create sound presets for Gaming, Movies, Music and Voice, while Waves Nx promises to “turn any pair of headphones into a high-end 360° surround-sound system” by tracking your head movements via the laptop’s 720p webcam and adjusting the audio as you move. It only works with wired headphones but I found its surround-sound effect surprisingly convincing.

■ Power PC

The ConceptD 7 we tested uses a ninth-generation hexa-core Intel Core i7-9750H running at a base frequency of 2.6GHz, backed up by 32GB of RAM and Nvidia GeForce RTX

2060 graphics. It can efficiently run the demanding tasks involved in 2D/3D design, video creation and editing, and even live streaming.

It performed well in our in-house 4K benchmark tests, scoring an impressive 185. That puts it ahead of all but one of the laptops we’ve tested running eighth-gen Core i7-8750H processors, including the MSI P65 Creator 8F (see issue 294, p54), which is designed for a very similar purpose.

It also holds up well against other Core i7 laptops. As the graphs opposite show, the only laptop that pulls ahead

of the ConceptD 7 is Apple's 16in MacBook Pro (see issue 305, p52), which employs an eight-core, 2.4GHz Intel Core i9-9980HK, 32GB of RAM and a staggeringly fast Western Digital NVMe SSD.

The Nvidia GeForce RTX 2060 graphics chip is a year old but it's still a great choice for mobile gaming. It averaged 139fps in our *Metro: Last Light Redux* test at 1080p on High settings, which is up there with top performing gaming laptops we've tested, including the 2019 Razer Blade 15 (see issue 300, p52).

It even averaged 31.9fps in the *Hitman 2* 1080p benchmark, which is so demanding that the majority of laptops we review can't run it. It may not be designed or marketed as a gaming

laptop but in terms of graphical performance, the ConceptD 7 has the capability to double-up as one.

It's worth mentioning that during even the most arduous benchmarking tests, the ConceptD 7's fans kept noise to a minimum.

■ Slimline design

Kudos again goes to Acer for the ConceptD's robust aluminium chassis, which measures 359 x 255 x 17.9mm (WDH). Given what Acer has crammed into such a slim package, keeping the weight to 2.1kg is impressive. The only downside is its chunky power supply (it weighs 628g, two-thirds of the HP Elite Dragonfly on p54), and you will need to bring this with you on daily outings.

With the screen set at a brightness of 170cd/m², this laptop only lasted 4hrs 52mins in our video-rundown battery test. This isn't a terrible result given how powerful the machine is, but means the laptop is best viewed as a portable workstation rather than a truly mobile laptop.

It's certainly happiest on a desk, with a wide array of connectivity options. There's a USB-C Thunderbolt 3 port on the right side of the laptop, where you'll also find two USB-A (USB 3.1 Gen 1) ports and a mini-DisplayPort. On the left side sits another USB-A port, HDMI, two 3.5mm jacks and an Ethernet port, which you'll want to be a little wary of as its uncovered edges are sharper than ideal. The only glaring omission is any form of SD card reader.

Sadly, the ConceptD 7 isn't capable of connecting to the latest Wi-Fi 6 networks, either: there's no 802.11ax radio here, merely 802.11ac. Nor is

there a fancy way to sign in to the ConceptD 7, with no Windows Hello face recognition and (surprisingly) no fingerprint scanner.

■ Finishing touches

The good news for your fingers is that the keyboard is excellent. The keys are perfectly spaced out and enable fluid typing. You don't get a huge amount of travel to each key, but they still offer positive feedback.

Acer decides against a numeric keypad, but all the essential hotkeys you'd expect are present: sleep mode, screen brightness control and a key for controlling the keyboard backlight.

The backlight is an eye-catching amber colour and provides ample illumination for darker environments.

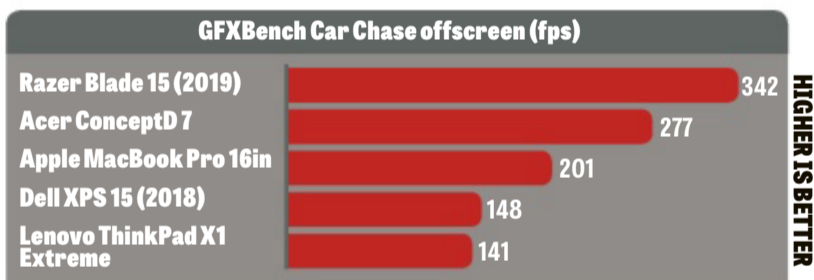
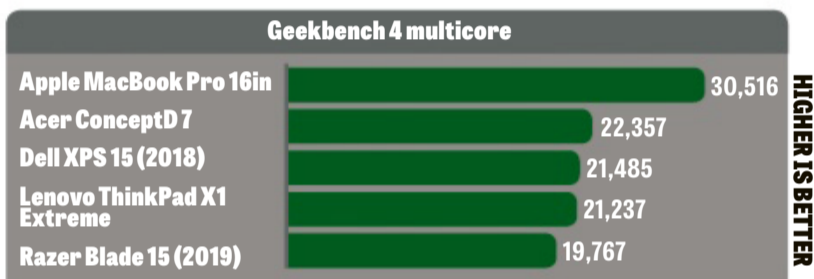
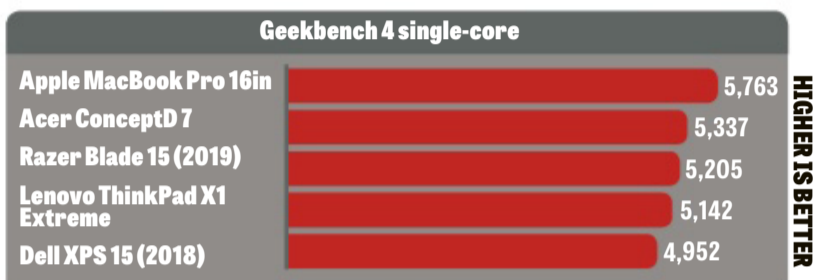
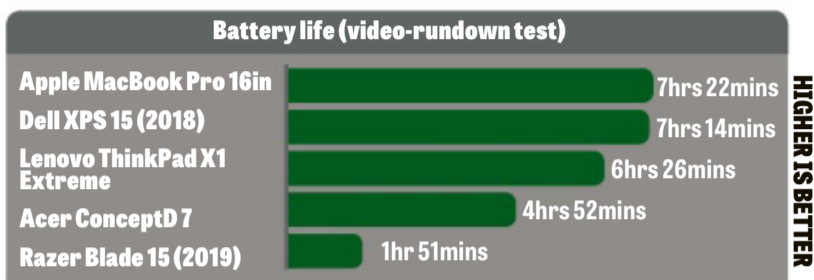
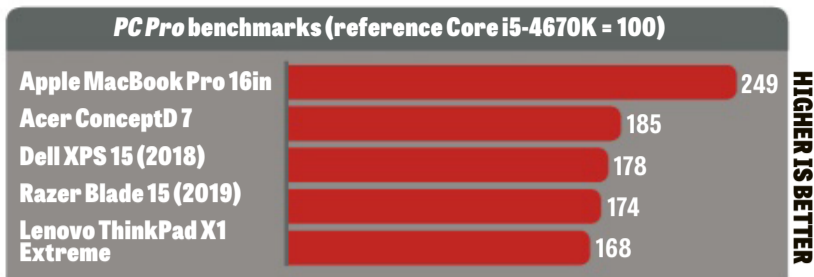
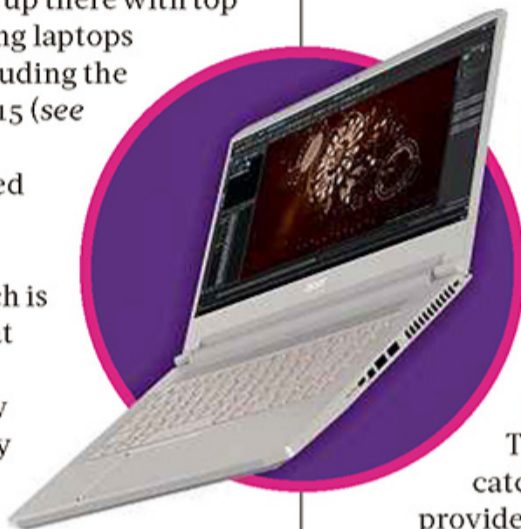
The ConceptD 7's 105 x 65mm diving board-style touchpad is centrally positioned and surrounded by a reflective silver border. In use, however, I found it too "sticky" and resorted to using the tip of my finger to make it comfortable to use.

■ The final decision

While I tested the "low-end" model with a 1TB SSD and GeForce RTX 2060 graphics, for £2,799 you can upgrade to a GeForce RTX 2080 with 8GB of dedicated RAM. There's also a "Pro" version for £2,499 with 16GB of RAM, a 1TB SSD and an Nvidia Quadro RTX 3000 GPU with 6GB of RAM.

Not that Acer is your only choice. Apple's 16in Macbook Pro is the main rival when it comes to laptops aimed at creative professionals. It comes in several configurations, but for one with specs closest to our ConceptD 7 review model you'll be paying £2,799. This gets you an Intel Core i9-9980HK processor, 16GB of RAM, 1TB of storage and AMD Radeon Pro 5500M graphics.

The good news is that even against the Apple MacBook Pro, the ConceptD



BELOW The striking amber backlight gives the Acer's keyboard a futuristic feel

7 stands proud: this is a superb mobile workstation, suitable for designers, photographers and video editors. Its display is a delight and demonstrates exceptional colour accuracy across the Adobe RGB gamut.

Its ninth-generation Core i7 processor and GeForce RTX 2060 GPU provide graphical performance on par with some of the best gaming laptops on the market, while it copes with complex tasks quietly and effortlessly. Battery life prevents it from being truly great, but the ConceptD 7 is a premium laptop that delivers where it matters.

ANDY WHITE

SPECIFICATIONS

Hexa-core 2.6GHz Core i7-9750H processor
 • 32GB DDR4 RAM • 6GB Nvidia GeForce RTX 2060 graphics • 15.6in non-touch IPS display, 3,840 x 2,160 resolution • 1TB M.2 PCIe SSD • Full HD webcam • 2x2 802.11ac Wi-Fi • Bluetooth 5 • USB-C Thunderbolt 3 • mini-DisplayPort • 3x USB-A • HDMI • 2x 3.5mm jacks • RJ-45 port • 4-cell battery • Windows 10 Pro • 359 x 255 x 17.9mm (WDH) • 2.1kg • 1yr limited warranty • part code: NX.C4HEK.001



HP Spectre x360 (2020)

An expensive and visually striking convertible that comes complete with all the modcons you could ever want



SCORE ★★★★★

PRICE £1,499 (£1,799 inc VAT)
from store.hp.com

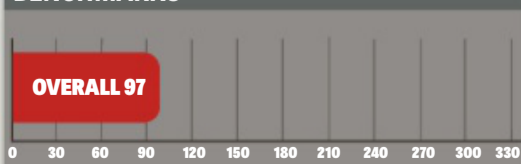
It's not often that I take a laptop to America as part of the review process, but the Spectre x360 is an exception. Ironically, it's because the early sample HP sent me was only available in the supplied specification in the US; hang on to it, HP suggested after I pointed this out, and give it a road trip before we send you a UK spec that's actually available to buy.

That means I have two HP Spectres sitting in front of me: one with a 4K AMOLED screen and top-end specification (1TB SSD and 16GB of RAM) that you can order today from HP's UK store for £1,799; and one with a Full HD IPS screen and top-end specification that you can't. If you want a Full HD screen then you will need to drop down to a 512GB SSD and 8GB of RAM for £1,399. Or move to America.

BATTERY: video rundown, 5hrs 57mins



BENCHMARKS



BREAKDOWN SCORES
Image editing: 128
Video editing: 95
Multi-tasking: 89

Full HD vs 4K

This, then, is your first big decision: to sacrifice the glory of a 4K AMOLED screen for a more humble Full HD IPS offering. Put the two machines side by side and there's no disputing the extra punch delivered by AMOLED. Colours leap out at you from the screen in a way that IPS technology can't match.

Far less obvious, though, is the difference that 4K makes versus Full HD – despite the fact that 4K offers four times as many pixels. If anything, 4K is more of a hassle in everyday life as certain programs don't comply with Windows 10's built-in scaling, which results in tiny system text. Fortunately, such apps are now in a shrinking minority.

But the real downside of having so many pixels is on battery life, as reflected in my video-rundown tests. The 4K Spectre lasted for 5hrs 57mins when playing back a full-screen movie at 170cd/m², while the Full HD version kept going for 9hrs 13mins.

Screen quality

Whether you choose the AMOLED Spectre x360 or an IPS offering, you'll be buying a top-quality display. Both screens put in an excellent performance in our technical tests, with the IPS screen returning an average Delta E of 0.28 and the AMOLED screen scoring 0.62. Anything below one is considered

ABOVE The keyboard and touchpad are lovely, but beware the slimline Enter key...



“Whether you choose the AMOLED Spectre x360 or an IPS offering, you'll be buying a top-quality display”

BELOW The Spectre x360's sturdy hinges rotate smoothly into clamshell, tent and tablet mode

such reliable colour accuracy that your eyes can't tell the difference.

Of the two machines in front of me, the AMOLED screen is brighter and more versatile. I measured it at a peak of 473cd/m² compared to 424cd/m² for the IPS display, but its real advantage is that you can use the Windows Display Settings app to jump between colour settings depending on whether you want punchy cinematic visuals (DCI-P3), print accuracy (Adobe RGB) or output tuned for the web (sRGB).

There's also a Native option, which effectively gives you an in-between setting. In sRGB mode, the AMOLED Spectre delivered 100% of the sRGB spectrum (and 108.4% volume, which means some of the colours

it shows sit beyond sRGB so it's not perfectly tuned) but only 77% of the DCI-P3 gamut. Switch to DCI-P3, and it shows 99.6% of the gamut (but 119.6% volume). Its Adobe RGB setting returned excellent figures of 96.1% coverage and 102.5% volume.

AMOLED also gives effectively perfect contrast, but even the IPS panel scored well here with a 1,644:1 measurement. Where it falls down is coverage of Adobe RGB and DCI-P3, as it only covers around 70% of those gamuts. Nevertheless, unless



you need absolute accuracy in those colour spaces, I'd still opt for a Full HD panel's battery life.

One final caveat: aggravatingly, the IPS screens currently on offer from HP in the UK are actually different from the US model I tested. They not only include a top brightness of 1,000cd/m² but also HP's Sure View technology. This means, with a single press of the button, you can stop people from either side of you reading what's on your screen; all they see is a grey blur. It's a superb security feature, and my previous tests of such screens suggest you'll get similar accuracy and coverage scores to the IPS panel that I tested.

■ Pens and keys

As the x360 in its name gives away, this 13in version of the Spectre is a convertible. This is rapidly becoming the norm for laptops, and two solid-looking hinges enable this machine to smoothly rotate into any of its three modes: clamshell, tent and tablet. HP bundles its rechargeable Tilt Pen with all the UK editions of the Spectre x360 13in, and while there's nowhere to stow the pen this is still a welcome inclusion.

Other than its shortened height, the glass-topped touchpad is excellent, and once I adjusted my typing style a fraction I also enjoyed using the quiet but solid-feeling keyboard. This is again shorter than you might expect, but the keys are still large and easy to hit. I didn't even mind the single-height Enter key.

A fingerprint reader sits underneath the cursor keys, but I suspect most people will defer to the excellent infrared camera that can be set to automatically log you in via Windows Hello. Flip up the screen and it recognises you almost immediately, making this laptop almost instant-on.

What's most impressive is that HP has squeezed in the camera – which, unfortunately, doubles up as the usual drab 720p webcam – despite the narrowness of the bezels. This is another huge leap over the 2019 edition and it all helps to make this laptop incredibly compact. If keeping size down is important to you, you'll love that the Spectre x360 measures 306mm wide, 195mm deep and 16.9mm thick.

■ Ports ahoy

The inevitable compromise of such compactness is ports. However, HP cleverly makes space out of nowhere by chiselling away at the corners, with a "V" effectively cut into either side of the laptop's rear. One of the two Thunderbolt 3 USB-C ports sits

on the right-hand corner, while the power button is its mirror image on the left.

HP also finds room for an old-style USB port on the left, alongside a 3.5mm combo mic/headphone jack. Head back over to the right-hand side and you'll find a microSD card slot keeping that second USB-C port company. All models feature a webcam and microphone physical "kill switch", but don't get excited by HP preloading ExpressVPN; this is only a 30-day free trial.

There are currently no 4G/LTE wireless versions of the Spectre x360 on sale in the UK (our American cousins have the advantage here), but you will at least benefit from Wi-Fi 6 (802.11ax) and Bluetooth 5.

■ Colour options

You can buy the Spectre x360 in either silver or metallic brown. While the silver edition is more modest, I prefer the brown version with its bronze edges. The silver design could date back to 2010, while the bronze'n'brown combo should still look good in 2030 (see our feature on the future of PCs on p34). Of course, these things boil down to personal taste, and you may find the decision is taken for you. If you want the 4K AMOLED screen, for instance, it's currently only available in silver.

This is the specification of Spectre x360 that HP sent me, and with 16GB of RAM and a 1TB SSD you can expect its results to be a few percentage points higher than models shipping with 8GB of RAM and a 256GB or 512GB SSD. Note that, while the bottom of the chassis is removable using Torx T5 screwdrivers, you won't be able to upgrade the RAM (but authorised HP engineers can replace the battery and SSD).

So how fast is it? Considering the size of this laptop, and the inevitable effect this has on cooling, it's very fast indeed. A score of almost 100 in our benchmarks suggest it will be a speedy performer for years to come, and it will remain silent most of the time too: only strenuous tasks push the fan into action. The bottom can get hot, but no more so than other ultraportable laptops.

BELOW The bronze model has a timeless appeal, although it isn't currently available with a 4K AMOLED screen



“So how fast is it? Considering the size of this laptop, and the inevitable effect this has on cooling, it's very fast indeed”

BELOW You'd assume that HP would have to compromise on the ports, yet there's a decent array here

The reason it's so fast is largely Intel's 10th Gen Core i7 processor. While the quad-core i7-1065G7 has a nominal base frequency of 1.3GHz, all four cores can happily run at 3GHz under load and, if it's only needed for short tasks, it can jump to 3.8GHz.

The new Intel processor also brings faster 3D acceleration thanks to Intel's Iris Plus graphics, which pushed the x360 to a 61.3fps in the GFXBench Car Chase onscreen benchmark (roughly double its predecessor). And it averaged 41.2fps at 720p in *Metro: Last Light* at High settings. You'll still need to drop down quality settings to play at 1080p in many games, but Iris Plus brings much more after-hours entertainment within reach.

Don't get carried away by the Bang & Olufsen-tuned speakers; these are best at low volume and gentle music rather than anything with a beat. Still, thanks in large part to the glossy screen, I enjoyed watching films on the Spectre.

■ Time to decide

As ever with HP's Spectre range, you pay a premium for all this luxury, but there's no disputing the quality of the design or the components. For example, our review sample included

a fast 1TB SSD with 32GB Optane memory, which returned excellent sequential transfer rates of 2,562MB/sec read and 1,170MB/sec write.

If it's value you seek, consider the excellent HP

Envy 13 (see issue 303, p57). But if money is less of an object, and you like the angular cut of the Spectre's jib, this is a laptop you'll enjoy for many years to come. **TIM DANTON**

SPECIFICATIONS

Quad-core 1.3GHz Intel Core i7-1065G7 processor • Intel Iris Plus graphics • 3,840 x 2,160 touchscreen display • 1TB PCIe SSD • 16GB LPDDR4-2400 RAM • Full HD infrared webcam • 2x2 MIMO 802.11ax Wi-Fi • Bluetooth 5 • 2x Thunderbolt 3 • USB-A 3.1 Gen 2 • microSD card reader • 60Whr battery • Windows 10 Home • 306 x 195 x 16.9mm (WDH) • 1.33kg • 1yr collect-and-return warranty





Samsung Galaxy Book S

A lightweight, long-lasting masterpiece of laptop design – Windows on ARM finally comes of age



SCORE ★★★★★

PRICE £833 (£999 inc VAT)
from samsung.com

Although Samsung's phones dominate in the UK and Europe, it surprised us all by pulling out of the laptop market in late 2014. While it's flirted with the 2-in-1 form factor through its range of tablets, such as the Galaxy Tab S6 (see issue 305, p70), those have all been on Android rather than Windows.

Now it's back. With a cutting-edge Qualcomm ARM chip running a tweaked version of Windows 10 Home, along with built-in 4G, this is a machine that anyone looking for a travel companion should consider.

Price mover

One of the reasons why is its price: £999 is competitive for such a slimline laptop. That matches the cheapest of Microsoft's Surface Laptop 3 range (see issue 304, p54), with a Core i5, 8GB of RAM and a pathetic 128GB SSD. And no 4G modem.

Or consider the Galaxy Book's closest rival in terms of spec: the Microsoft Surface Pro X (see issue 306, p68). This 2-in-1

tablet/laptop runs a Microsoft SQ1 processor, effectively the same as the Snapdragon 8cx inside the Galaxy Book S, and has 4G built-in. However, the Pro X costs almost £130 more than Samsung's offering once you factor in the detachable keyboard. Almost £260 more if you want the keyboard and Surface Pen stylus.

The Book S certainly doesn't feel less expensive than its Microsoft rivals. Whichever colour you choose – "Earthy Gold" is a light bronze, "Mercury Grey" a more standard silver – you're buying a premium machine with a metal coating on the outside and a rough-feeling matte plastic surrounding the keyboard.

Ups and downs

Flip open the lid and you'll see that, in thoroughly modern fashion, the 13.3in Full HD touchscreen is surrounded by narrow bezels. A good quality but non-Hello compatible 720p webcam sits above the screen, with dual microphones embedded into the area of plastic just above the keyboard. Samsung cleverly integrates a fingerprint scanner into the power button in the keyboard's top-right

ABOVE The speakers are impressive – not something we often write in laptop reviews

"I achieved download speeds approaching that of a decent broadband connection with only two bars of signal"

BELOW The price for portability? You only get a microSD tray and two USB-C ports

corner, which makes logging in a little less painful.

That keyboard includes flat Scrabble-style keys and a wide touchpad that's big enough to perform Windows 10's collection of two, three and four-finger multitouch gestures. I'm less of a fan of how the keyboard feels to type on. Although the layout is largely sensible, the key action offers little travel or feedback. It reminds me

of Apple's much-maligned butterfly-switch keyboard – less clicky but with a similar feel.

Physical connectivity is limited, as you might expect of a laptop this slim. You get two USB-C sockets – one on the left

edge, the other on the right – both of which can be used to charge the machine or output to an external monitor. There's also a 3.5mm headset jack on the left edge, next to one of the USB-C ports, and a SIM/microSD card tray on the base of the machine.

Wireless connectivity, on the other hand, is excellent, courtesy of the chipset's integrated Qualcomm X24 modem. Download and upload speeds





RIGHT
The bronze, or “Earthy Gold”, lid wouldn’t look out of place on a pharaoh’s table

are rated at up to 2Gbits/sec and 316Mbits/sec respectively; while I got nowhere near these maximums, I did achieve download speeds approaching that of a decent broadband connection (31Mbits/sec) with only two bars of signal strength.

While you could criticise the Galaxy Book for lacking Wi-Fi 6 – it includes a 2x2 802.11ac radio – or support for 5G, I’m more interested in what it can do today – and those on-the-move download speeds are seriously impressive.

■ Loud speaker

You’re getting a decent IPS screen here too. It measures 13.3in across the diagonal, so a fraction larger than the Microsoft Surface Pro X’s 13in display, but you may prefer the Surface’s 3:2 ratio and higher resolution: it offers 2,880 x 1,920 to the Samsung’s 1,920 x 1,080. Still, Full HD is perfectly sharp for a screen that’s going to sit further than a foot away from your eyes most of the time.

It isn’t as bright as the Pro X’s display, peaking at 378cd/m² compared to 452cd/m², but it kept pace with its rival in our technical tests thanks to sRGB coverage of 94.5% and a solid contrast ratio of 1,290:1. There’s no hint of HDR compatibility here, unfortunately, but images are bright, crisp and vivid without veering off into over-saturated territory. In short, it’s a very good screen.

I was also impressed, much to my surprise, by the quality of the speakers. They can’t reproduce much in the way of bass, but the audio emanating from this tiny laptop is impressively warm and rich. It sounds especially good with voices, which makes it the ideal tool for video calls, but it’s also decent enough to make listening to light classical music a pleasant experience.

■ Turn of pace

Perhaps the most interesting aspect of the Galaxy Book S is its performance. We can’t test using our tough media benchmarks as they won’t run on it,

nor would the cross-platform OpenGL gaming benchmark, GFXBench.

Instead, I’ve relied on

Geekbench 5 to see how it stacks up. A quick glance at the graphs to the right suggests there’s quite a discrepancy in CPU-bound performance between the Core i5-based laptops and the Snapdragon laptops, both in single-core and multicore tasks. And that much is backed up in the way the Galaxy Book S feels to use. Most of the time it’s fine, but load up Edge with a lot of tabs and you won’t be zipping about as quickly as you would with a Surface Laptop 3.

And don’t forget that although this laptop will run a wide variety of Windows software – you can even run heavyweight apps such as Photoshop if you like – you can’t currently install software that’s only available as 64-bit Intel distributions. Also worth noting is that, unless the developer has taken the time to

produce a native ARM or ARM64

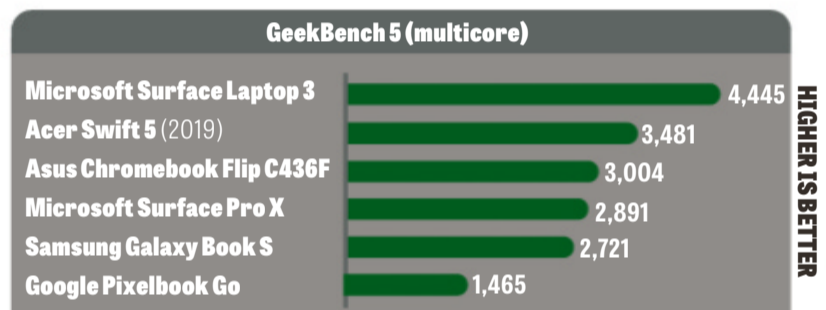
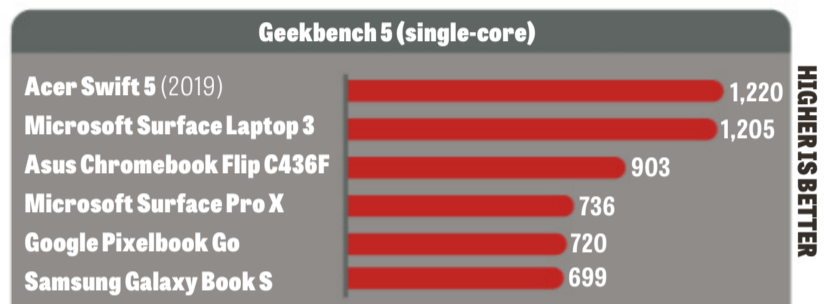
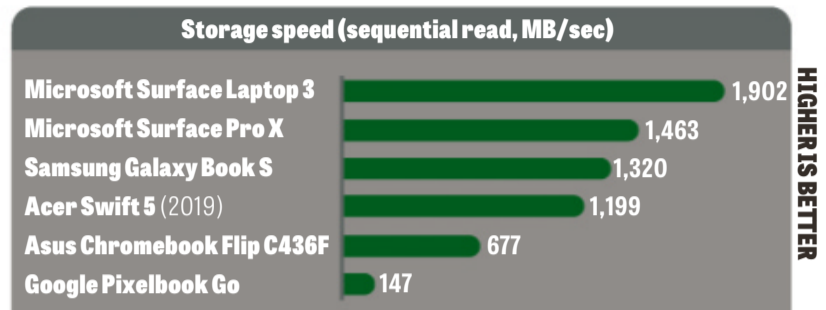
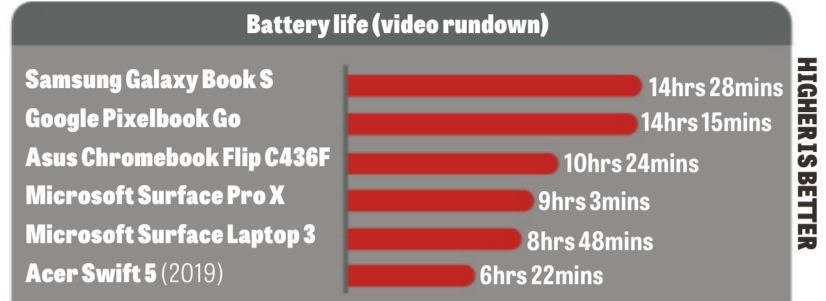
version of its app, the Samsung Galaxy Book S will run an emulated version of the 32-bit Windows app instead, which has an inevitable impact on performance.

All of the disappointment with the performance falls by the wayside, however, when you look at the battery life graph. This is an astonishing level of stamina for a Windows laptop; the Samsung Galaxy Book S beats all of its close rivals, outlasting even the Surface Pro X by five hours. In short, you’ll be able to use this machine all day without worrying about running out of juice – even if you’re connecting via Wi-Fi and 4G.

The only laptops that come close are the Google Pixelbook Go and the Asus Chromebook Flip C436F. Although both are lovely laptops, they’re also Chromebooks.

■ Final decision

There are many things to love about the Samsung Galaxy Book S, particularly for frequent travellers. It’s slim, light and has phenomenal battery life. You can connect to the internet via 4G from wherever you are and it has surprisingly good speakers for such a compact device. Only that mediocre keyboard is holding me



LEFT Simply slot in a SIM and you can be online from anywhere with a 4G signal

back from gushing over this laptop more, and I’m fast getting used to the way that feels.

It’s still, however, early days for Windows 10 laptops based on ARM chips such as the Snapdragon 8cx. Although Windows works well the majority of the time, there will still be moments when you find software that you’d like to use but doesn’t run smoothly (or at all).

With that in mind, I would recommend the Windows Surface Laptop 3 13.5in over the Samsung

“This is an astonishing level of stamina for a Windows laptop; it beats all of its close rivals, outlasting even the Surface Pro X by five hours”

Galaxy Book S for most people, based purely on grounds of performance and compatibility. However, if long battery life and 4G connectivity are imperative there’s nothing that can hold a

candle to the Samsung Galaxy Book S.
JONATHAN BRAY

SPECIFICATIONS

Quad-core 1.8GHz Core i7-1051U processor • 16GB LPDDR3-2133 RAM • Nvidia GeForce MX250 graphics • 14in touchscreen LTPS display, 3,000 x 2,000 resolution • 1TB M.2 PCIe SSD • 720p webcam • 2x2 802.11ac Wi-Fi • Bluetooth 5 • NFC • 2x USB-C 3.1 • USB-A 3 • 3.5mm jack • 56Wh battery • Windows 10 Home • 304 x 217 x 14.6mm (WDH) • 1.33kg • 1yr limited warranty



Huawei MateBook 13 (2020)

A compact laptop that packs in a staggering amount of power, but we're not fans of its connectivity

SCORE ★★★★★

PRICE £999 (£1,199 inc VAT) from ao.com

If this laptop was a boxer, it would be short, lean and wiry. It packs a lot of power, but that's only obvious when you pitch it into battle. The muscle comes courtesy of Intel's tenth-generation Core i7-10510U processor, and it's got all the right components in its corner thanks to discrete Nvidia graphics, a fast M.2 SSD and a tasty 16GB of RAM.

Considering the MateBook's slight frame, that's quite a lineup. While most 13in laptops are more than 300mm wide, it measures 286mm. It's also a slim 14.9mm.

Huawei still finds room for one of the best cooling systems I've seen in an ultraportable, helping to make this one of the fastest laptops we've tested with a Core i7-10510U. Just compare its results to the Acer TravelMate P6 opposite, which it beat by a margin ranging from 10% to 25% in our tests. Where the Acer could only step up to the chip's Turbo Boost speeds for short bursts, the MateBook 13 kept hurtling along at between 4GHz and 4.8GHz for several minutes. The downside is fan noise, but this appears during tough tasks rather than general use.

Huawei also makes more of the GeForce MX250 graphics, which sit a notch above Intel and AMD's integrated offerings. For example, *Metro: Last Light* returned a 44.9fps average at 1080p and *Dirt: Showdown* 89.6fps. This extra horsepower means you can enjoy many games at the screen's resolution of 2,160 x 1,440.

As mental arithmeticians will have spotted, that translates into a 3:2



aspect ratio, rather than the 16:9 of most screens. The extra pixels also means more density than a Full HD (1,920 x 1,080) panel, which in turn makes it easier to view two windows side by side on the screen. There's even enough colour accuracy for web designers, with 90.4% coverage of the sRGB gamut with an average Delta E of 0.94; not print designers, though, as its Adobe RGB coverage is 62.9%.

Despite a relatively flat 990:1 contrast ratio, don't be put off if you're looking for an after-hours entertainment system. It coped well with dark, brooding scenes, and a decent pair of speakers mean you don't need to plug in headphones. Drums lose something in translation, and you wouldn't want to listen to heavy rock on it, but the same could be said for most laptop speakers.

Aside from a combo 3.5mm jack, the only two physical connectors here are USB-C, with one on either side. Huawei bundles an adapter with HDMI, USB and VGA connectors, but this doesn't make up for the annoyance that the left USB-C port only supports charging and data transfer, while the right port is for data transfer alone. If you want to connect a monitor, you'll need to fish out that adapter.

ABOVE Don't judge the Huawei by its size: it can still spar with the heavyweights

"Huawei still finds room for one of the best cooling systems, helping to make it the fastest laptop we've seen with this processor"

BELOW Huawei crams in a well-spaced keyboard despite this laptop's narrow width

I'm also disappointed to see 802.11ac wireless rather than Wi-Fi 6, with the only good news being for owners of recent Huawei and Honor phones: thanks to Huawei Share, you can tap your phone against the sticker below the keyboard and then quickly share files between phone and laptop.

The unfortunate side effect of this is the Huawei Share sticker itself, which spoils this laptop's minimalist lines. You can remove it, but Share will no longer work. A huge trackpad sits to the left, and it's matched by a backlit keyboard with large keys. It isn't my favourite to type on, with little feedback, but it's quiet.

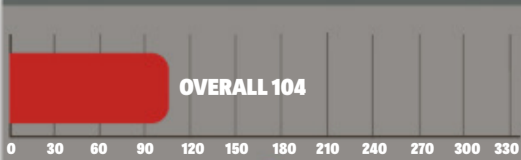
Huawei builds a fingerprint reader into the power button, but note that the webcam squeezed into the top bezel doesn't support Windows Hello. It takes terrible photos, but its video is passable for Zoom.

Should you buy the MateBook 13? It certainly excels for speed, and Huawei Share sticker aside it looks great. That said, if you're paying this much you should demand a better keyboard and USB-C ports that actually work like everyone else's. It's a nice laptop, but it lacks the killer punch. **TIM DANTON**

BATTERY: video rundown, 8hrs 15mins



BENCHMARKS



BREAKDOWN SCORES: Image editing 142, Video editing 101, Multi tasking 94



SPECIFICATIONS

Quad-core 1.8GHz Core i7-10510U processor • 16GB LPDDR3 RAM • Nvidia GeForce MX250 graphics • 13in, 2,160 x 1,440 touchscreen IPS display • 512GB M.2 PCIe SSD • 1-megapixel webcam • 2x 2 802.11ac Wi-Fi • Bluetooth 5 • 2x USB-C 3.1 • 3.5mm jack • USB-C port replicator (HDMI, USB-A 3.1, VGA, USB-C) • 41.7Wh battery • Windows 10 Home • 286 x 211 x 14.9mm (WDH) • 1.3kg • 1yr limited warranty

Acer TravelMate P6 TMP614-51TG

Superb build quality, slim design and chart-topping battery life compensate for mediocre performance

SCORE ★★★★★

PRICE **£1,039 (£1,247 inc VAT)**
from ballicom.co.uk

If you have a perception of Acer as a maker of pile 'em high, sell 'em cheap laptops, your stereotypes need an update. While Acer still produces budget laptops, the business-focused TravelMate P6 is a different beast entirely.

What lifts the P6 onto a different plane is build quality, with a magnesium alloy chassis that's a match for the best in the business. It's no surprise to see that this laptop has been through the MIL-STD-810G tests, although consider upgrading the one year of return-to-base cover (if you buy direct through Acer, a three-year on-site warranty costs £150).

At a shade over 1.2kg, it's also surprisingly light. That's 100g less than the Huawei MateBook opposite, and that makes a difference in the hand. Acer commendably achieves this while including a 14in display, but there's no hiding from this laptop's 325mm width.

Acer makes use of all this edge space by stuffing in a multitude of ports. The left side alone offers five: a 3.5mm jack, Thunderbolt 3, USB, HDMI and a power input. On the right, you'll find a microSD slot, USB port and wired Gigabit Ethernet. There's even Wi-Fi 6 support, thanks to Intel's AX201 chip.

The P6 uses a top-rate touchscreen panel, as reflected by its results in our technical tests: it covers 93.2% of the sRGB gamut with an average Delta E of 0.68, with a contrast ratio of 1,228:1 and top brightness of 318cd/m². I've seen brighter screens, but it's

BATTERY: video rundown, 9hrs 42mins



BENCHMARKS



BREAKDOWN SCORES
Image editing: 107
Video editing: 84
Multi tasking: 74



readable in all situations other than direct sunlight.

It's also a pleasure to gaze at. Whites look suitably white, and there's no visible grain, despite the 1,920 x 1,080 resolution. Don't expect great things from the speakers, though, as they marry the subtlety of Jim Davidson with the finesse of Tony Adams. At least they're good enough for video calls, and the four-mic array and 1080p webcam (which includes a privacy cover) proved a strong combination.

Acer includes a separate infrared camera for Windows Hello sign-ins, along with a fingerprint sensor embedded into the power button. This is perched above the backlit keyboard, which is fine but unexceptional. There is plenty of travel on each key, and a firm "clunk" when you hit the bottommost point, but it lacks the feel of a top-quality keyboard. The only design black spot is the cluster of half-height cursor keys, with PgUp and PgDn squeezed into the same space. Everything else is large and easy to hit at pace. The touchpad is only remarkable for how unremarkable it is.

Finally, we come to the problematic area of performance. As with so many slim and light laptops, Acer sacrifices cooling efficiency for a svelte design – and you pay the price as soon as you start to push the processor. Where the Huawei opposite was quite happy operating at between 4GHz and 4.8GHz for minutes at a time, the Acer kept slamming on the brakes and dropping to around 3GHz. The end result was a set of

ABOVE Acer may have watched its weight at 1.2kg, but there's no escaping the width



“Don't expect great things from the speakers, though, as they marry the subtlety of Jim Davidson with the finesse of Tony Adams”

LEFT The TravelMate P6 excels in the port department, with five on the left side alone

poor scores in our benchmarks, with an overall score of 83 on a par with laptops that use eighth-generation Core i7 chips. It was the same story in Geekbench 5, with a multicore tally of 3,276 to 4,456 for the MateBook 13.

This lack of grunt again showed in games, where it trailed around 10% behind the Huawei laptop despite featuring the same GeForce MX250 graphics chip, but we should put this into perspective: a score of 83.4fps in *Dirt: Showdown* at 1080p, and 42.5fps in *Metro: Last Light*, are proof that there's plenty of gaming power here.

In truth, most people will find it speedy in general use too. It's only when being pushed in gruelling tasks that the limited cooling becomes a barrier. Nor can I complain about battery life, with a result of 9hrs

42mins in our rundown test showing that it has easily enough stamina to last a full working day.

Note, too, that cheaper models in the range are available if you're happy to sacrifice the 1TB SSD.

Mix in features such as a Trusted Platform Module 2 and support for eSIMs, and this becomes an even more tempting proposition for business buyers. **TIM DANTON**

SPECIFICATIONS

Quad-core 1.8GHz Core i7-10510U processor
 ● 16GB DDR4 RAM ● Nvidia GeForce MX250 graphics ● 14in touchscreen IPS display, 1,920 x 1,080 resolution ● 1TB M.2 PCIe SSD ● 720p webcam ● 2x 802.11ax Wi-Fi ● Bluetooth 5 ● HDMI ● Thunderbolt 3 ● 2x USB-A 3.1 ● Gigabit Ethernet ● microSD slot ● 3.5mm jack ● 59.6Wh battery ● Windows 10 Pro ● 325 x 230 x 16.6mm (WDH) ● 1.2kg ● 1yr limited warranty



LG Gram 17

A great choice if you're looking for a super-light 17in laptop, with stellar battery life another key attraction

SCORE ★★★★★

PRICE Core i7/16GB/512GB, £1,292 (£1,550 inc VAT) from argos.co.uk

If you're looking for a work-from-home laptop, LG believes it has the answer in the LG Gram 17. This 17in laptop has all of the power that most people will need, phenomenal battery life and a 17in screen that stretches from here to infinity when compared to 13.3in ultraportables.

But what makes it so very clever is that LG packs all this into a chassis that weighs a cat's hair over 1.3kg.

It's a truly remarkable achievement that puts the Gram into a category all on its own.

In fact, the LG Gram 17's competition is itself: we gave this product a five-star review last year (see issue 295, p60), when it was powered by eighth-generation Intel Core processors, and you may still find it online for a lower price.

■ Expanding range

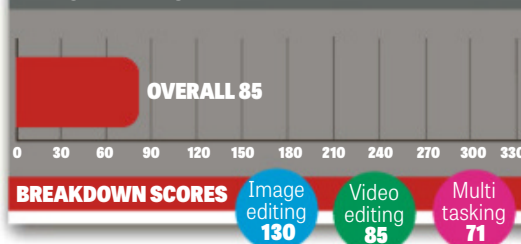
While last year's Gram 17 was only available with one specification (Core i7, 16GB of RAM, 512GB SSD), it's a sign of LG's confidence that this year the Gram comes in a range of three. I'm not convinced LG should have bothered with the Core i7 version with 256GB of storage because that's a recipe for "you're running out of storage space" frustration, but there's certainly an argument for saving £150 and buying the Core i5/8GB of RAM/512GB SSD option. It's only a shame that LG doesn't offer a 1TB version to match the pre-production sample we previewed four months ago (see issue 307, p62).

LG sent me the UK's top-of-the-range model, and it is fast – as long as you're looking for short bursts of

BATTERY: video rundown, 11hrs 27mins



BENCHMARKS



action. It helps that LG has wisely upgraded the SATA disk in last year's model to a fast PCIe drive this time around, which hit highly respectable sequential read/write speeds of 2,404MB/sec and 1,781MB/sec using AS SSD benchmarking software.

If, however, you seek a multithreaded monster to chew through video-editing tasks, the Gram would be a poor choice. During our tough benchmark, I regularly saw the Core i7-1065G7 processor drop down to 2GHz from its Turbo Boost maximum of 3.9GHz. This is a sign of limited cooling and is common to ultra-sleek chassis such as the one on show here. It's not a problem in itself; just something to be aware of before you buy.

■ The daily grind

All of this means that the LG Gram 17 has enough power to meet most people's day-to-day demands for many years to come. The question then comes of what it's like to use? The most important factors here are the keyboard and the screen, because there's no point in buying a 17in laptop if it's going to spend most of its time powering a dedicated monitor. You're buying the Gram to be all the computer you need, including the main display.

The good news is that this screen, complete with its 2,560 x 1,600 resolution, is simply excellent. It's an IPS panel so we'd expect the wide

ABOVE Gram by name, gram by nature: this is an exceptionally light laptop



"A weight of a cat's hair over 1.3kg is a remarkable achievement that puts the LG Gram 17 into a category all on its own"

BELOW Two USB 3 ports, a 3.5mm jack and a microSD slot sit pretty on the right

viewing angles on offer – important when the screen is so large – but LG matches it with a maximum brightness of 422cd/m² and superb colour accuracy. In the sRGB colour space, it covered 93.5% of the gamut with an average Delta E of 0.59. The only minor criticism I can fling at this screen is that it doesn't support touch and its brightness dips by 5% to 10% at the edges, but it took a colorimeter to spot the latter.

I have more mixed feelings about the keyboard. It has several factors in its favour, including a quiet typing action, well separated cursor keys and a dedicated number pad to the right. Again, this adds to LG's argument that this laptop is ideal for

remote workers, as it reduces the need for a separate keyboard.

I'm less fond of the single-height Enter key, but my real criticism is for the lack of "feel" here.

There isn't much travel, which isn't surprising bearing in mind the lack of distance available before you start reaching vital components, but LG's engineers should spend some time ripping apart Lenovo's ThinkPads and working out how to add that feeling of resistance. I'm being picky, and there's every chance I'd get used to this action if I used it continually for three years, but there's an equal chance it would annoy me.



ABOVE HDMI, USB-C and USB 3 ports grace the left of the Gram 17, despite its slimness

BELOW The keys lack "feel", but the webcam is sublime, capturing warts and all

One accessory that I'd invest in is an external mouse. There's nothing wrong with LG's glass-topped precision touchpad, but because it's placed centrally on the chassis – rather than directly below the main character keys – I find my hands instinctively move to the wrong place when I need to "mouse". Still, I had zero problems with brushing the pad while typing – certain laptops interpret this as a command and move the cursor, most irritatingly – and you can deactivate the mousepad entirely using a function key on the keyboard.

■ A bit of fun

So, as the hour hand ticks past six and your other half brings you a finely chilled glass of Pouilly-Fumé as a reward for finishing another rich and fulfilling day of work, how good is the LG Gram 17 at meeting all of your entertainment needs?

Enthusiastic gamers should spend their money elsewhere because LG relies on the graphics integrated into Intel's tenth-generation Core processors. Intel markets this as Iris Plus graphics, and it's a clear step above what came before: the Gram averaged 44.7fps in *Metro: Last Light* at 720p, with a similarly playable 53.3fps in *Dirt: Showdown*. Both of those are old games, however, and once you get up to this screen's native resolution it dropped down to 13.9fps and 25.3fps.

The screen is also tuned for sRGB rather than DCI-P3, and that's reflected in a much poorer 68.7% coverage of this colour space. It can still cope with dark scenes in films (a high contrast ratio of 1,545:1 helps), but it wouldn't be my number-one choice for watching *Blade Runner*.

This laptop's speakers are also a comparative weakness, with a tinny output that accentuates the mids at the expense of bass. In Taylor Swift's *Shake It Off* (please don't judge), for instance, the cymbals dominate at the expense of the rest of the drumset. It's better suited to listening to podcasts and Radio 4.

There's bad news for when you wake up the morning after having one too many glasses of that white wine because the 720p webcam is one of the best I've used on a laptop. You won't be able to hide behind a blurred lens

with all your blemishes visible to colleagues. Budget extra for concealer.

■ Let's get physical

Fans of Windows Hello should note that the webcam isn't infrared, so for password-less login you're relying on the fingerprint reader embedded into the power button. This works well – it helps that LG has carved out a circle within the button so you know exactly where to place your fingertip – and definitely speeds up logins.

If security is of topmost importance to you – and especially if you're thinking of rolling out LG Gram 17 to remote-working staff – you'll want to upgrade Windows 10 Home to Windows 10 Pro. LG doesn't offer a way to do this, but turn to p34 to see how to buy an upgrade for only £40 from the *PC Pro* store.

There's no Ethernet port present here, but with Wi-Fi 6 in place this isn't the big issue it used to be, even if most people are yet to upgrade their home routers to this latest standard. Otherwise, the LG Gram is well stocked with ports. There's a full-size HDMI out, USB 3 and USB-C on the left as you look at it, with the latter being usable for charging, data transfer and video output. You'll also find the

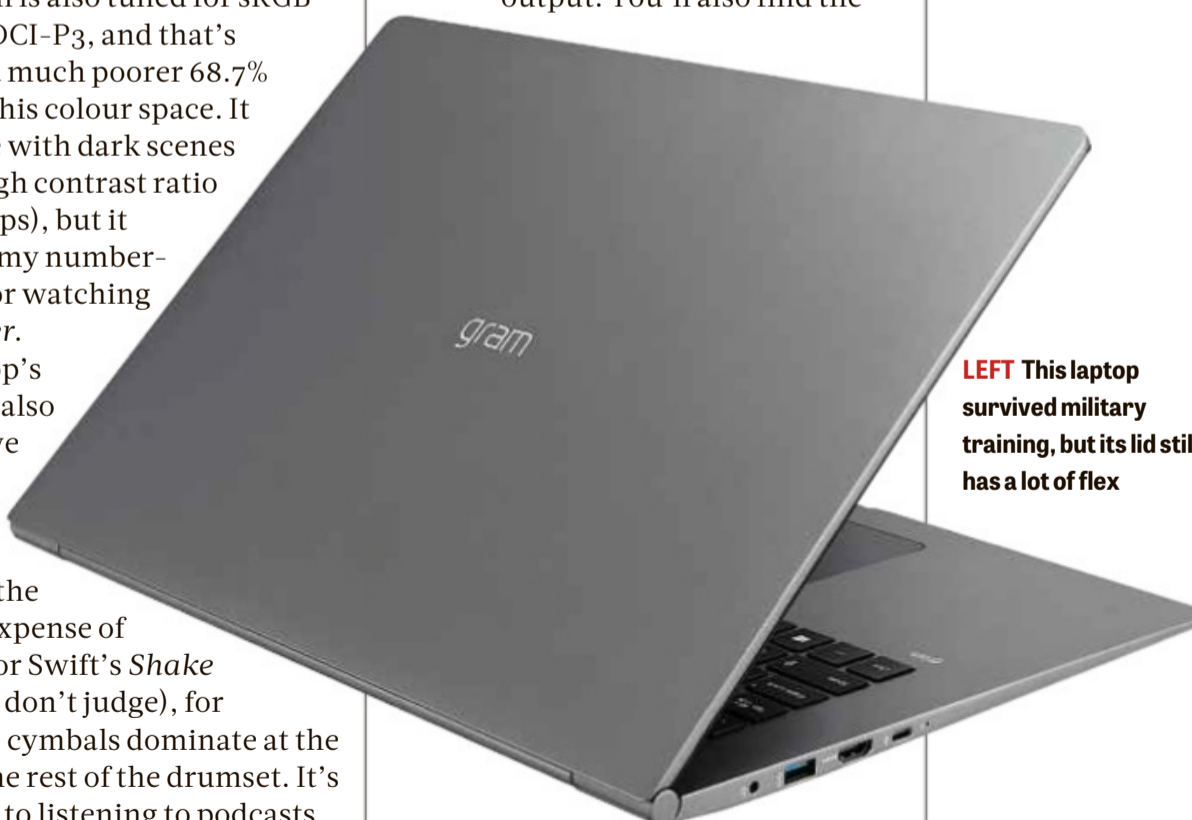


In particular, it passed seven of the MIL-STD-810G tests: shock, low pressure, extremes of low and high temperature, blowing dust, vibration and spraying salt water. Sounds like a dream date. The one notable omission there is drop testing, so seriously consider accidental damage cover to complement the single-year of limited warranty.

There are question marks as to how severe a smash the back of the screen could survive too, with a lot of flex if you twist it. This isn't inherently bad – it helps for the screen to be flexible, as that can absorb impacts – but it's in stark contrast to the rest of the sturdy magnesium alloy chassis.

There's one more thing to consider before you decide whether or not to buy: battery life. LG finds room for an 80Wh battery here, and that kept this laptop going for 11hrs 27mins in our video-rundown test. That's great news for travellers, but also for people who find themselves moving from room to room when working from home, as you don't need to keep reaching for the power supply.

This leaves me with only words of praise for the LG Gram 17. If you're looking for a lightweight, big-screened laptop and you don't need the raw power of, say, the Razer Blade Pro 17 (see p54), it's the obvious choice. **TIM DANTON**



LEFT This laptop survived military training, but its lid still has a lot of flex

CONFIGURATIONS

PROCESSOR	RAM	STORAGE	PRICE
Core i5	8GB	512GB	£1,400
Core i7	16GB	256GB	£1,500
Core i7	16GB	512GB	£1,550

Prices inc VAT from argos.co.uk

SPECIFICATIONS

Quad-core 1.3GHz (3.9GHz Turbo) Intel Core i7-1065G7 • Intel Iris Plus graphics • 2,560 x 1,600 non-touch 17in IPS display • 512GB NVMe SSDs • 16GB DDR4-2400 RAM • 720p webcam • 2x2 MIMO 802.11ax Wi-Fi • Bluetooth 5 • USB-C 3 • 3 x USB-A 3.1 • HDMI • microSD card slot • 80Whr battery • Windows 10 Home • 380 x 263 x 17.4mm (WDH) • 1.33kg • 1yr RTB warranty



Dell XPS 13 (2020)

A beautifully built ultraportable with an excellent display and outstanding battery life, but be careful which model you buy

SCORE ★★★★★

PRICE Core i7/16GB/512GB, £1,333 (£1,599 inc VAT) from [dell.co.uk](https://www.dell.co.uk)

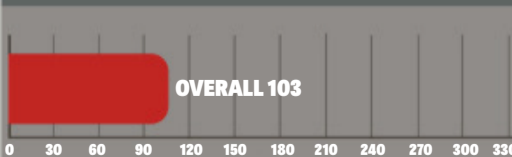
For many years, the Dell XPS 13 has set the gold standard for ultraportable laptops – and it remains so in 2020. It still has that classic wedge-shaped profile, with aluminium plates on the lid and base, and there’s still carbon fibre soft-touch plastic on the interior. But don’t be fooled: this year’s laptop brings subtle yet important upgrades.

First, the internals have also been given a boost, to the best tenth-generation Intel CPUs. Physically, there’s a new Windows Hello webcam and a thinner bezel at the bottom of

BATTERY: video rundown, 10hrs 50mins



BENCHMARKS



BREAKDOWN SCORES
Image editing: 142
Video editing: 101
Multi tasking: 91

the screen. Perhaps most notably, that display shifts from a 16:9 aspect ratio to a taller 16:10, and it’s available in FHD+ and UHD+ resolutions.

■ Small change

Otherwise, though, it’s still the Dell XPS 13 we all know and love. Its dimensions are a touch more generous – it’s a few millimetres narrower and a handful of grams lighter – but nothing that would stop you in your tracks.

The port layout and selection has changed, though. Where last year you had three USB-C ports – one USB 3.1 Gen 1 (5Gbits/sec) and two Thunderbolt 3 – this year you have only two Thunderbolt 3 USB-C ports. The handy LED battery gauge has disappeared too, but thankfully Dell has retained the microSD slot and 3.5mm headset jack.

Open up the laptop and there are a number of other minor physical changes, some good, some bad. The keyboard now stretches right to the edges of the chassis, leaving a mere 6mm gap either side. The new rectangular power button/fingerprint reader now resides where the Delete



“The internals have been given a boost to the best tenth-gen Intel CPUs. Otherwise, it’s still the excellent laptop it was”

BELOW The port selection is minimalist, with a single USB-C port on each side

key used to be, shunting it a centimetre or so to the left. And the webcam set into the bezel above the screen has gained a couple of extra eyes, which is what enables Windows Hello face-recognition login.

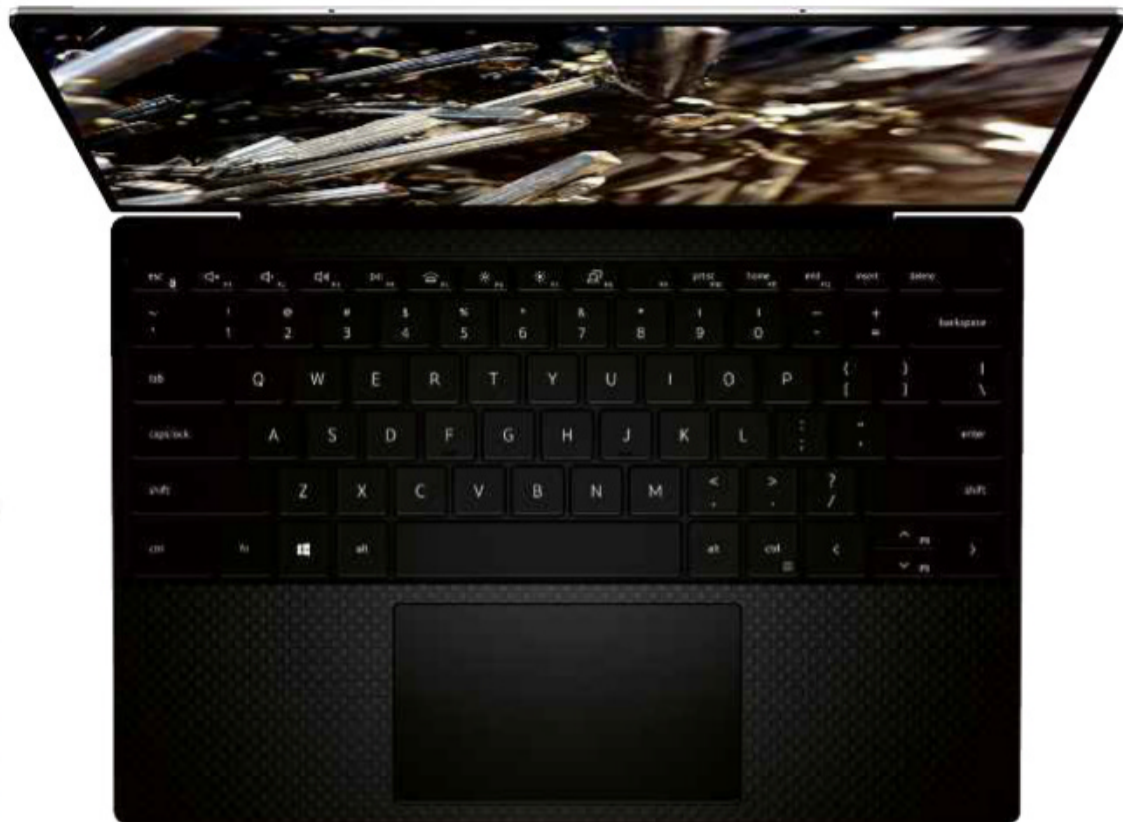
I’ve tested both login methods and they work just as reliably as you’d expect. As a regular video-call webcam, the new Windows Hello camera does leave something to be

desired, though. The picture lacks crispness (resolution is limited to 720p) and the auto-exposure often struggles with extremes of light and dark. Microsoft’s 1080p webcams are far superior to this one.

Having said that, the microphone works well and the speakers are loud and clear enough for podcasts and conference calls.

■ Type cast

Moving around core keys such as Delete is normally enough to raise my blood pressure a few notches, but thankfully the rest of the keyboard is sensibly laid out. The Shift, Tab,



Backspace and Enter keys are all in their right and proper places, they're nice and big, and there are no other nasty surprises.

And, as ever, the typing feel of the XPS 13's keyboard is second to none. Although there isn't a huge amount of travel, you get loads of positive feedback and every time you press a key it's accompanied by a satisfying, well-dampened thunk. Other laptop manufacturers should take note.

The 113 x 64mm touchpad is just as good, with a silky surface that delivers precise cursor control. It's large enough to make multi-touch gestures a joy instead of a chore.

■ Square eyes

You have two display options with the 2020 XPS 13: a non-touch 1,920 x 1,200 screen or a 3,840 x 2,400 InfinityEdge touchscreen, both of which employ a taller, slightly squarer 16:10 aspect ratio than with the previous model.

Alas, I don't have the 4K touchscreen to test, which is a shame because the specifications look tempting, but it's good to know that the cheaper variety is pretty darned good. It gets incredibly bright, peaking at almost 600cd/m², making it the perfect laptop for working out in the garden – even on relatively sunny days.

The high contrast ratio of 1,777:1 ensures images on the screen have plenty of presence and don't look washed out. Colour accuracy in the sRGB colour space is exemplary, and a matte finish to the screen ensures you aren't distracted by reflections from overhead strip lights in the office. There's no support for HDR with this non-touch display, but if you decide to upgrade to the 4K screen you get Dolby Vision and DisplayHDR 400 support.

ABOVE The keyboard now spans almost the entire width and, minor Delete key quibble aside, its feel is still the best around

■ Speed bump

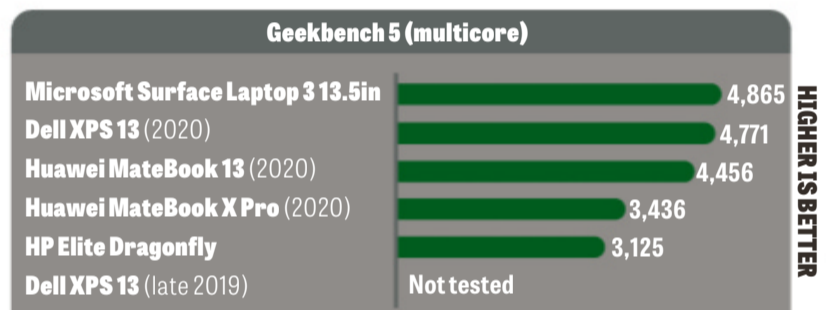
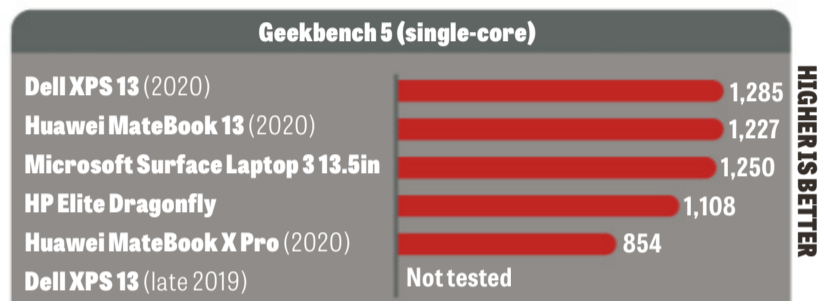
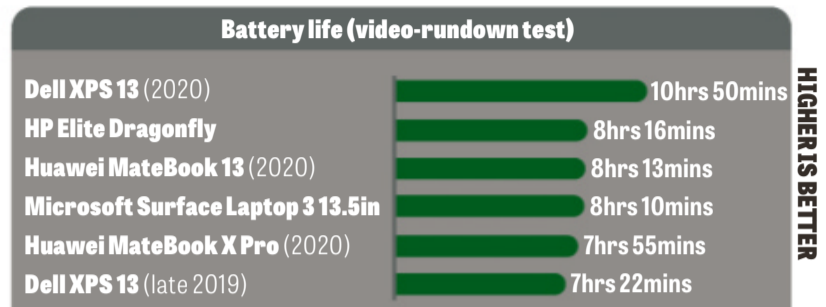
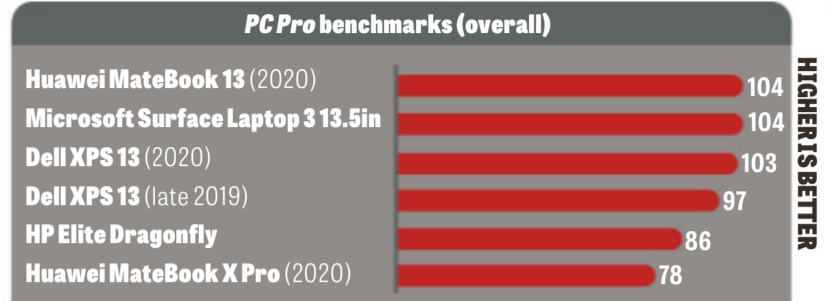
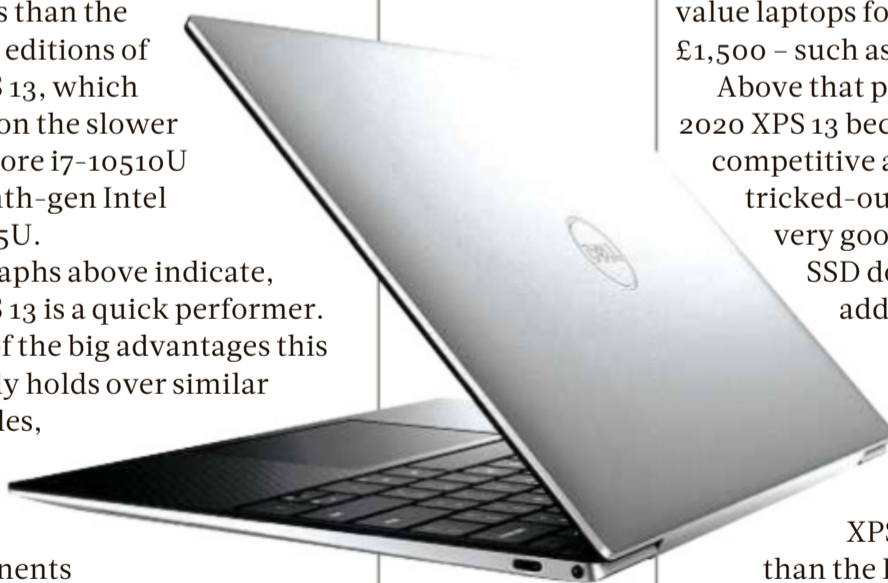
As it usually does each year, Dell has transitioned quickly to the latest generation of Intel CPUs, following up its first tenth-gen refresh in late 2019 with another set of tenth-gen CPUs. You have a choice of two quad-core CPUs with the 2020 XPS 13: the Core i5-1035G1 and the quad-core Core i7-1065G7. One key benefit of the Core i7 is its higher Turbo speed (3.9GHz to 3.6GHz).

I had the latter for testing, accompanied by 16GB of RAM, and it performs slightly better in the benchmarks than the 2019 Core i7 editions of the Dell XPS 13, which were based on the slower tenth-gen Core i7-10510U and the eighth-gen Intel Core i7-8565U.

As the graphs above indicate, the Dell XPS 13 is a quick performer. This is one of the big advantages this laptop family holds over similar ultraportables, with Dell ensuring that the core components are kept as cool as possible.

Dell squeezes the most out of Intel's integrated graphics, too, with a 51.1fps average in *Dirt: Showdown* at 1080p and 64.8fps in the GFXBench offscreen Car Chase benchmark.

What's perhaps more impressive is that battery life is now much better than it was in the late 2019 model. As you can see from the graph above, a time of 10hrs 50mins puts the new XPS 13 some distance in front of all its 13in laptop rivals. If you want stamina and speed, it's a great choice.



BELOW Dell has wisely decided not to overcook the already impressive design

■ Choose carefully

The price is the only thing that gets in the way of an A-List award for the XPS 13. Simply put, there are better-value laptops for between £1,000 and £1,500 – such as the Surface Laptop 3.

Above that price, however, the 2020 XPS 13 becomes steadily more competitive and, for the fully tricked-out model, £1,800 is a very good price indeed: the SSD doubles to 1TB while adding a 4K touchscreen.

This is significantly better value than the MacBook Pro 13, and overall the 2020 edition of the

XPS 13 is a better laptop than the Huawei MateBook X Pro. The XPS 13 remains the premium ultraportable to beat, then, but only at the high end. **JONATHAN BRAY**

SPECIFICATIONS

- Quad-core 1.3GHz Intel Core i7-1065G7
- Intel UHD graphics
- 1,920 x 1,200 non-touch 13.4in IPS display
- 512GB NVMe SSDs
- 16GB RAM
- 720p webcam
- 2x2 MIMO 802.11ax Wi-Fi
- Bluetooth 5.1
- 2 x Thunderbolt 3
- microSD card slot
- 3.5mm jack
- 52Whr battery
- Windows 10 Home
- 296 x 199 x 14.8mm (WDH)
- 1.2kg
- 1yr on-site warranty



Samsung Galaxy Book Ion

Slim with amazing battery life
– Samsung returns to laptops with an impressive ultraportable



SCORE ★★★★★

PRICE 13in Ion, £1,041 (£1,249 inc VAT)
from johnlewis.com

You know the Samsung Galaxy Book Ion is special as soon as you prise it from its box. This is no MacBook Air clone, clad in dull grey aluminium, but a laptop with its own identity that hits all the right notes for a 13in ultraportable: it's light at 970g, robust and packs a stunner of a screen. The company couldn't have chosen a better machine to announce its return to the British laptop market.

Or, to be absolutely correct, a better pair of machines. The Ion is also available with a 15.6in screen, but with precisely the same core specs: 8GB of RAM, a 512GB SSD and a Core i5-10210U processor. It's also a supremely light 1.19kg.

■ Novel design

Whichever model you choose, I suspect you'll love the design. The Ion is available only in "Aura Silver", which has an attractive, pearlescent sheen when light falls on it. With a metallic blue strip running along the spine of the laptop, it looks distinctly

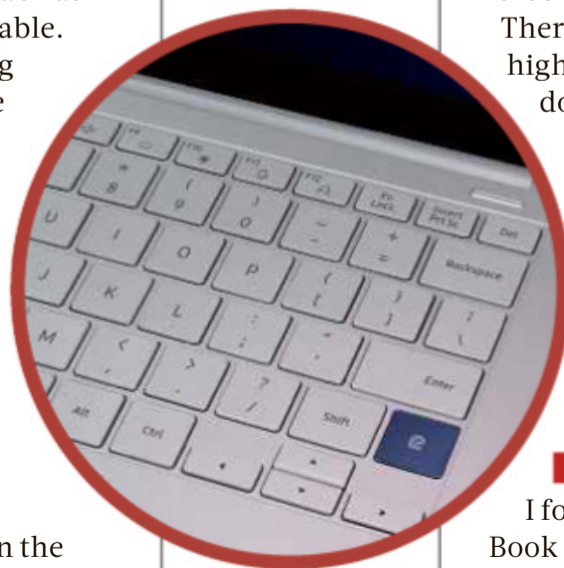
different from the rest of the ultraportable crowd.

The way the Ion's hinge lifts up the base at the rear, along with its angular body, reminds me of the old Sony Vaio Z laptops. You don't get the same feeling of brutal ruggedness as a MacBook Pro, but that's the trade-off with ultra-light laptops. It's tiny too: it measures 12.9mm thick when closed, while 4mm bezels to the left and right of the screen (and a 7mm bezel above it) makes it clear that Samsung has squeezed as much as possible into the space available.

Despite this, the Samsung Galaxy Ion is tough in all the right places. If you give the chassis a twist, it barely moves; there's certainly no creaking or cracking to indicate poor build quality. The display backing is more flexible, but there's no rippling in the LCD if you push your fingers hard on the rear of the lid.

Samsung hasn't forgotten the practicalities, either, with plenty of ports and sockets along the edges. On the left are a full-sized HDMI and Thunderbolt 3 port, alongside a 3.5mm headset jack and DC charging

ABOVE The 13.3in and 15.6in (pictured here) versions both have a glinting silver aura



ABOVE The Ion's dark blue fingerprint reader cramps the Shift key's style

port (the Ion can also be charged via that Thunderbolt port), while on the right edge is a pair of USB 3 ports and a microSD tray.

The latter also supports Samsung's UFS memory cards, which are faster than regular SD cards, offering read and write speeds of up to 500MB/sec and 200MB/sec respectively. Alas, since these are hard to come by (you can't even buy one from Samsung's own UK website), it looks like you'll be stuck using slower standard microSD cards for some time.

There's a way to add more high-speed storage, though, if you don't mind getting busy with a screwdriver. Inside the chassis, the Samsung Galaxy Book Ion has space to add both extra storage and RAM with one slot available for each. That's not something you often see in ultraportable laptops.

■ Touchy topics

I found typing on the Galaxy Book Ion a comfortable experience, but you shouldn't expect the best keyboard in the world. The keys – while large and easy to touch-type on without too many typos – lack the well-dampened feel of rival machines,

and there isn't much travel to the keys, either.

The layout is also imperfect. I like the double-height Enter key and the cursor, while the Backspace and Delete keys are again a good size, but the fingerprint reader is awkwardly placed just next to the right-hand Shift key, shrinking it and crowding it over to the left. This meant I frequently ended up tapping the reader instead of Shift.

It's a similar story with the touchpad, which is okay but not brilliant. I like the smooth glass top and the fact that it's so wide, but the built-in click action feels insubstantial. That said, I didn't have any issues with the touchpad's accuracy or reliability.

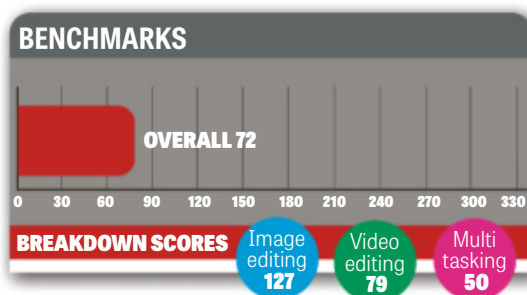
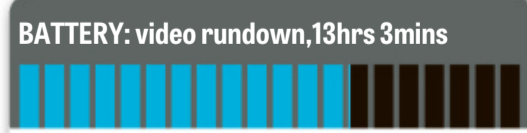
■ Gorgeous display

You might be prepared to forgive the keyboard and touchpad's minor foibles once you lay eyes on that glorious QLED display. On this, the smaller model, it measures 13.3in across the diagonal and the resolution is 1,920 x 1,080, giving an aspect ratio of 16:9.

I prefer the taller aspect ratio of the Surface Laptop 3 (see issue 305, p56) and Dell XPS 13 (see p58), but the brightness and colour performance are like nothing else I've seen on a laptop. This is a truly stunning display, outshining the very best that even Apple has to offer.

First up, outdoor mode: hit Fn+F10 and the display will gain a significant boost to brightness, allowing you to continue working in the brightest of outdoor sun. Indeed, peaking at an incredible 791cd/m², this is the brightest laptop display I've ever seen. Only rugged laptops, designed for such challenging outdoor conditions, can go beyond this.

Colours, too, are sumptuous. The display has been factory-calibrated to the sRGB colour space, yet it's also capable of reproducing the full Adobe RGB (99%) and DCI-P3 colour spaces (101.8%). The Ion's only weakness is accuracy, with an average Delta E of 2.64 rather than the sub-one scores we're gradually becoming used to with top-end laptops.



LEFT The display keeps pace with the best Apple has to offer

For those wondering if a Full HD display is enough on a 13.3in screen, let me quickly say don't worry. In action, it's gloriously detailed. In my opinion, a high dpi on laptop screens is massively overrated – and I wouldn't have any concerns about choosing the 15.6in Ion, which also has a Full HD resolution.

■ Stellar battery

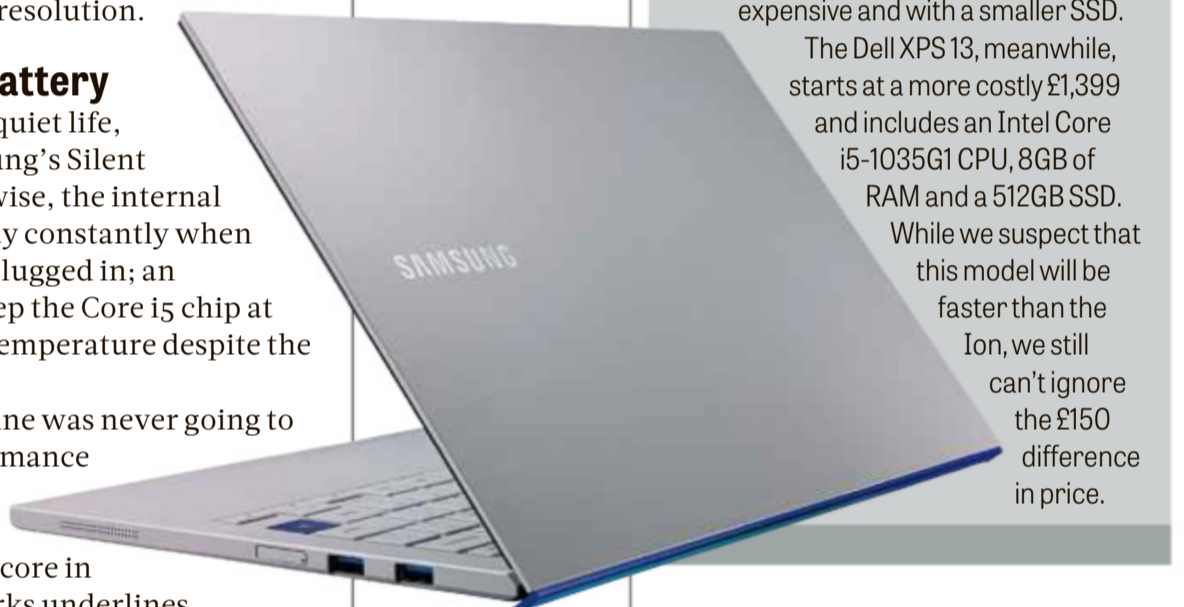
If you want a quiet life, engage Samsung's Silent mode. Otherwise, the internal fans whir away constantly when the laptop is plugged in; an attempt to keep the Core i5 chip at an optimum temperature despite the slim chassis.

This machine was never going to top the performance charts, though, and its 72 overall score in our benchmarks underlines that fact. That's in line with our expectations for a tenth-generation Core i5 chip with 8GB of RAM for company, but if it's speed you're after then choose a Dell XPS 13 with a Core i7 and 16GB of RAM instead.

It's a similar story for 3D acceleration, with the Samsung Galaxy Book Ion scraping its way to 31fps in the onscreen GFXBench Car Chase test and 26fps off-screen. Likewise, average 720p frame rates of 36.4fps in *Dirt: Showdown* and 11.5fps in *Metro: Last Light* emphasise that this laptop is for lighter gaming duties only.

There's only one area where this laptop is screamingly fast, in fact, and that's SSD performance. Taking into account both read and write speeds (2,508MB/sec and 2,148MB/sec), it's the fastest SSD I've seen in an ultraportable, bar none.

The most impressive aspect of the Galaxy Book Ion's performance, however, is its battery life. In our video-rundown tests, where we set the display to a moderately bright 170cd/m² and engage Flight mode, the Ion lasted for 13hrs 3mins. That's the longest battery life I've seen from any Intel-based Windows 10 laptop.



ABOVE The microSD tray also supports Samsung's UFS cards, if you can find one

Meet the competition

The Samsung Galaxy Book Ion has plenty of competition, whether it's the Microsoft Surface Laptop 3, the Dell XPS 13, the Apple MacBook Air or numerous other lightweight machines.

Samsung clearly isn't aiming to win for all-out value. The MacBook Air, for instance, costs £1,099 with a Core i5 CPU, 8GB of RAM and a 256GB SSD, although it uses an older variant of the Core i5. Then there's HP Envy 13 range, which usually costs around £900 for that specification – but we await its 2020 update.

The Galaxy Book Ion is better value than the Surface Laptop 3, however. While Microsoft's offering starts cheaper at £999, that model only comes with a 128GB SSD. Microsoft sells a Core i5 version with 8GB of RAM and 256GB SSD for £1,269, which means it's £20 more expensive and with a smaller SSD.

The Dell XPS 13, meanwhile, starts at a more costly £1,399 and includes an Intel Core i5-1035G1 CPU, 8GB of RAM and a 512GB SSD.

While we suspect that this model will be faster than the Ion, we still can't ignore the £150 difference in price.

■ Cast-Ion performance

There are so many things to love about the Samsung Galaxy Book Ion that its foibles don't spoil things. It's fast and responsive. It's light and thin. And, unlike so many other rival ultraportables, there are loads of ports to play with; you can even expand the storage by adding a second SSD internally.

Combined with a stunning display, a battery that just won't quit and a reasonable price (see "Meet the competition", above), it goes together to produce an ultraportable laptop of rare quality. Welcome back to the world of Windows laptops, Samsung – you've been sorely missed. **JONATHAN BRAY**

SPECIFICATIONS

Quad-core 1.6GHz Intel Core i5-10210U • Intel UHD graphics • 1,920 x 1,200 non-touch 13.3in QLED display • 512GB NVMe SSD • 8GB RAM • 720p webcam • 2x2 MIMO 802.11ax Wi-Fi • Bluetooth 5 • Thunderbolt 3 • 2 x USB-A 3 • HDMI • UFS/microSD card slot • 3.5mm jack • 69.7Whr battery • Windows 10 Home • 306 x 200 x 12.9mm (WDH) • 970g • 1yr limited warranty (2yr via John Lewis)

“The Galaxy Book Ion lasted for 13hrs 3mins – the longest battery life I’ve seen from any Intel-based Windows 10 laptop”

Honor MagicBook 14

A superbly made 14in laptop that crushes the competition when it comes to value for money

SCORE ★★★★★

PRICE £458 (£550 inc VAT) from honor.com

Four months ago, we printed a glowing review of the Huawei MateBook D 15 (see issue 307, p64), and now it's time for the company's sister brand to shine: the Honor MagicBook 14 is a remarkable budget laptop that's packed with quality.

The first thing you notice is its all-metal chassis, immediately lifting it above the budget laptop pack, but it has still been built with portability in mind. A 1.38kg weight is roughly the same as the most recent 13in MacBook Pro and makes it light enough to carry around all day without worrying about shoulder ache. Meanwhile, a battery life of 8hrs 15mins means you can leave the USB-C charger behind on day trips – and if you do find room for it, rapid charging means you can go from empty to almost 50% charge in half an hour.

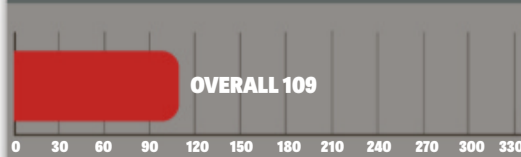
That's all the more impressive when you consider how much power this laptop packs. Honor eschews Intel in favour of AMD and employs a 2.1GHz quad-core Ryzen 5 3500U processor with Radeon Vega 8 graphics and 8GB of DDR4 RAM. The one notable drawback is that it only comes with 256GB of storage, but it's a fast PCIe SSD, hitting 2,456MB/sec sequential read speeds in AS SSD.

This laptop performed admirably in the remainder of our benchmarks. An overall score of 109 in the *PC Pro* tests demonstrates, once again, how powerful those four Ryzen cores are. The only area where it can't match the tenth-generation Intel Core chips is in single-threaded tasks, as reflected by a single-core Geekbench 5 score of 878

BATTERY: video rundown, 8hrs 15mins



BENCHMARKS



BREAKDOWN SCORES: Image editing 116, Video editing 110, Multi tasking 106



compared to the 1,308 of the Core i7-1065G7 in the LG Gram 17 (see p56).

Any resultant high fives in Intel HQ were short-lived, however: the Honor's Radeon Vega 8 graphics were superior to Intel's Iris Plus accelerator in both our gaming benchmarks. For example, the MagicBook 14 returned 71fps in *Dirt: Showdown* at 720p, while the LG managed 53fps, and it edged ahead in *Metro: Last Light* at 720p with 26.7fps to the LG's 24.7fps.

Then we come to connectivity, where the MagicBook 14 is positively well endowed. It has two regular USB ports, one full-sized HDMI socket, a 3.5mm audio jack and a USB-C port – but note that this only supports charging and data transfer, not video output. The MagicBook 14 also comes with Honor's Magic-link 2 tech, which allows you to transfer photos, videos and documents by tapping your Honor phone on the NFC chip below the keyboard (this is identical to Huawei's OneShare technology).

The MagicBook 14 is even pleasant to use. Its keys have a soft-yet-positive action that bodes well for lengthy typing sessions and there's no flex to the keyboard base or uncomfortable bounce. The keyboard's layout is sensible too, with a double-height, UK-specific Enter key, large Backspace and right Shift keys, and no weird function doubling.

I'm less enamoured by the touchpad, with a slight rattle that is one of the few signs of this laptop's budget leanings, but it's reliable and wide enough to accommodate Windows 10's multitouch gestures effectively. In fact, the only big problem here is the pop-up 720p webcam, which sits between the F6 and F7 keys. Image quality is okay, but its positioning results in an awkward, up-your-nose

camera angle that's all kinds of wrong.

Naturally, there's no infrared camera built into the webcam and therefore no support for

Windows Hello, but a fingerprint reader built into the power button is a respectable compromise.

Our tour of the MagicBook 14 finishes with its non-touch 14in Full HD IPS panel. If this was a more expensive laptop, I'd criticise its 278cd/m² peak brightness and 57.9% coverage of the sRGB colour gamut, but 1,328:1 contrast ratio and excellent viewing angles mean that it's a fine inclusion – unless you're going to be doing a lot of photo-editing work where you need colour accuracy, you

won't find better in a laptop of this price.

Honor is clearly singing from the same hymn sheet as Huawei when it comes to laptop production. While the MagicBook 14 might not

shine in all departments, it's certainly good enough for most and undercuts the sweeping majority of its Windows and Mac rivals on price. If you can

lay your hands on one – I'm sure at this price there's going to be a high demand – the Honor MagicBook 14 is an absolute steal. It's slim, light, handsome, powerful and very pleasant to use – and it's remarkably well connected to boot. **JONATHAN BRAY**

ABOVE The Honor's display is simply the best you'll get for this amount of money



“If you can lay your hands on one – I'm sure there's going to be a high demand – the Honor MagicBook 14 is an absolute steal”



ABOVE The nostril-gazing webcam isn't infrared, but there's a fingerprint reader

SPECIFICATIONS

- Quad-core 2.1GHz AMD Ryzen 5 3500U
- AMD Radeon Vega 8 graphics
- 1,920 x 1,080 non-touch 14in IPS display
- 256GB NVMe SSD
- 8GB DDR4-2400 RAM
- 720p webcam
- 2x2 MIMO 802.11ac Wi-Fi
- Bluetooth 5
- USB-C 3
- USB-A 3
- USB-A 2
- HDMI
- NFC
- 56Whr battery
- Windows 10 Home
- 323 x 215 x 15.9mm (WDH)
- 1.38kg
- 1yr RTB warranty



LG Gram 14 (2020)

This 999g 14in laptop lacks speed but compensates with an attractive screen and plenty of ports

SCORE ★★★★★

PRICE Core i7/16GB/512GB, £1,125 (£1,350 inc VAT) from [pcpro.link/312lg](https://www.pcmag.com/uk/links/312lg)

Over the past two years, LG has sent us numerous laptops from its lightweight Gram range – including the *PC Pro Recommended* LG Gram 17 last month (see issue 311, p56). While they’ve all been excellent in their own ways, none has lived up to the Gram name as much as this latest entry. Weighing in a dab of paint under 1kg, it’s one of the most portable Windows 10 laptops you can buy.

Model selection

It’s also the smallest laptop in the LG Gram lineup. Whereas the standard Gram employs a 15.6in display and the Gram 17 uses a 17in panel, the Gram 14’s display measures – as you might have guessed – 14in from one corner to the other.

The Gram 14 comes in two variants in the UK. You can buy it with a tenth-generation Intel Core i7-1065G7 CPU, 16GB of RAM and a 512GB SSD (model: 14Z90N-V.AA75A1), or with a tenth-generation Core i5-1035G7, 8GB of RAM and a 256GB SSD (model: 14Z90N-V.AR52A1). Both versions have a maximum memory capacity of 24GB of RAM.

The model we reviewed is the more expensive version, which costs £1,350 from Amazon or Argos. The Core i5 model sells for around £1,200 inc VAT.

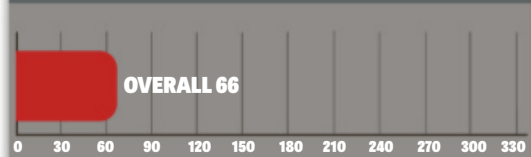
Slim by design

Unsurprisingly, the Gram 14 looks a lot like the Gram 17, only smaller. While its big brother is 380mm wide, 263mm deep and 17.4mm tall, the

BATTERY: video rundown, 10hrs 17mins



BENCHMARKS



Gram 14’s vital stats of 323 x 210 x 17.8mm are much more backpack-friendly. And when LG says it weighs less than 1kg, it’s talking by the narrowest of margins: it’s 999g, to be exact. Its magnesium alloy chassis is coated in a dark-silver finish, which has a rough, almost scratchy feel. That’s not a bad thing, though: it’s a classy looking machine, and the coating does a fine job of warding off unwanted fingerprints. I also like that you can lift the lid with a finger.

That said, there are weak points. The areas to the right and left of the touchpad can be depressed without much effort at all. And, as I found with the last Gram I tested, the lid feels flimsy – it wobbles like a piece of cardboard. Then again, you can’t expect the Gram 14 to be rock solid when it weighs less than a kilogram, and there are advantages to flexibility when it comes to absorbing shocks.

Although the LG looks sleek from almost every angle, the bezels surrounding its 14in display are chunky when compared with rival machines such as the Dell XPS 13 (see issue 311, p58) and Samsung Galaxy Book Ion (see issue 311, p62). The only advantage of the large forehead bezel is that it houses the 720p webcam, although it’s surprising that this doesn’t include an infrared setup for Windows Hello logins. Instead, you must rely on the fingerprint reader built into the power button. It’s reliable, though, unlocking the laptop instantly every time.

Despite its slender profile, LG fits a decent selection of ports onto the Gram 14. On the left edge, there’s a Thunderbolt 3 port, HDMI output, USB-A 3.2 Gen 1 slot and a power port.

ABOVE The 14in screen is bright and vibrant – just don’t expect top-tier accuracy

“If you want to upgrade the memory of the Gram 14, you can pop off the bottom plate and add an additional 8GB of RAM”

BELOW On the right, there’s a microSD slot, USB-A port and 3.5mm audio jack



Over on the right, there’s another USB-A port, a Kensington lock slot, a 3.5mm audio jack and a microSD slot.

On the underside, five rubberised feet prevent the laptop from sliding around, and they also give it desk clearance to help the Gram stay cool. The stereo speakers are located on the bottom too, although they aren’t anything special. Lastly, if you want to upgrade the memory of your Gram, you can pop off the bottom plate and add an additional 8GB of RAM. A nice upgrade option, especially if you choose the 8GB model.

Type cast

The backlit, chiclet-style keyboard is a treat to type on, with a quiet action making up for a lack of travel. Each key has a subtle matte finish that gives your fingers a little extra grip – a small thing but one with tangible benefit. My only complaint is that, due to space limitations, the Backspace and Enter keys are shorter than you might expect.

A whole host of shortcuts are built into the keys on the top row, from the LG Control Center launcher to Reader mode (which turns the screen dark and warm) and Flight mode.

The “diving board” touchpad is recessed slightly into the chassis and, like the keyboard, it’s faultless. The surface is smooth, but not too slick, and it’s responsive to the slightest touch. Palm-rejection works



well most of the time and the left and right clickers both depress evenly without feeling spongy.

Star display

The 14in IPS display doesn't disappoint, either. A Full HD 1,920 x 1,080 resolution gives it a sharp (at normal viewing distances) pixel density of 158ppi, while it delivers a peak brightness of 339cd/m². That's by no means blinding, but more than enough for typical indoor use. For the majority of the time I spent with the Gram 14, I had the brightness turned down a notch or two from the maximum for the sake of my vision.

It's a well-tuned display that reproduced 96.7% of the sRGB gamut with a gamut volume of 99.4%. That's a great result, on par with all of the Gram 14's key competitors, and colours on the spectrum appear vibrant and natural (it's helped by a 1,330:1 contrast ratio). An average Delta E of 2.69 tells us that the Gram 14's colour accuracy isn't perfect, but unless you need to edit photo and video to a professional standard, this display will do you proud.

Limited performance

And now for the bad news. Remember that LG sent us the top-spec Gram 14, with a tenth-generation Core i7-1065G7 processor backed by 16GB of DDR4 RAM. That's a powerful setup for such a slender laptop, yet the LG Gram's diminutive nature prevents it from making the most of it.

In our benchmark tests, the Gram 14 lagged notably behind several machines packing the same internal components, including the Dell XPS 13, Lenovo Yoga C940 (see issue 306, p59) and 13.5in Microsoft Surface Laptop 3 (see issue 304, p54).

Even the Samsung Galaxy Book Ion, which weighs just 970g and runs on a Core i5-10210U, managed to edge ahead of the LG. Why? It all boils down to a lack of active cooling; when the CPU is taxed too heavily, it's forced to throttle down to a lower clock speed so it doesn't overheat.

On the plus side, the minimal cooling means that the Gram 14 is one of the quietest laptops I've ever tested. Moreover, it's fast in short bursts, and that's all the speed that many people will need. Its score of 122 in the photo-editing component of our benchmarks is a very solid result.



Without a dedicated graphics chip, the Gram 14 isn't exactly a gaming machine. Its Core i7-1065G7 CPU does have integrated Intel Iris Plus Graphics, however, and it can handle less demanding titles. It ran *Dirt: Showdown* in 1080p at just under 30fps, which makes it playable if not exactly slick, but you can forget about firing up any of the latest AAA games.

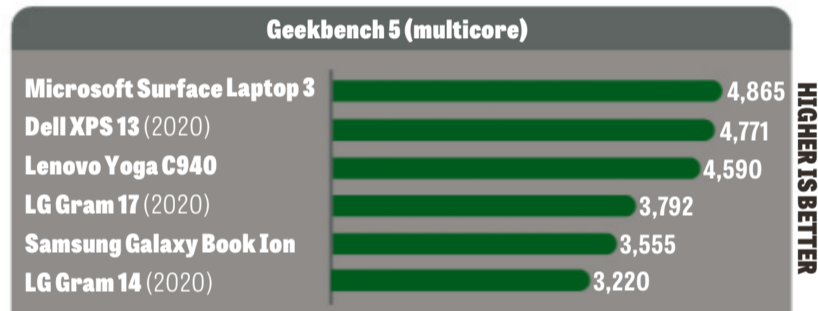
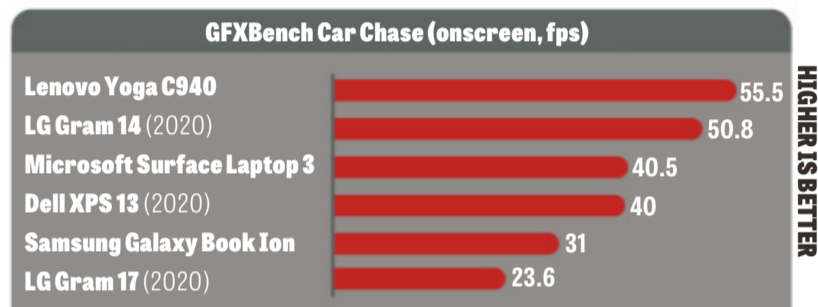
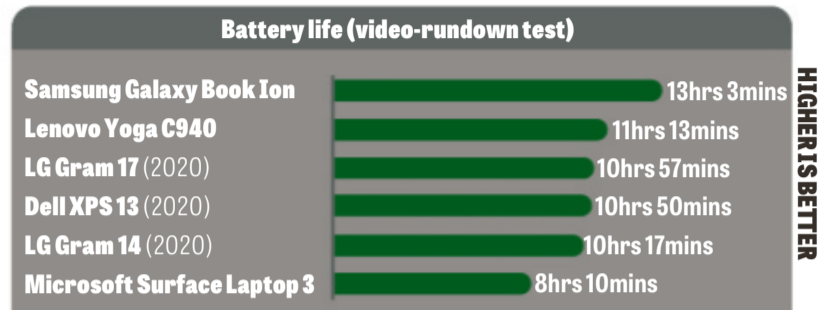
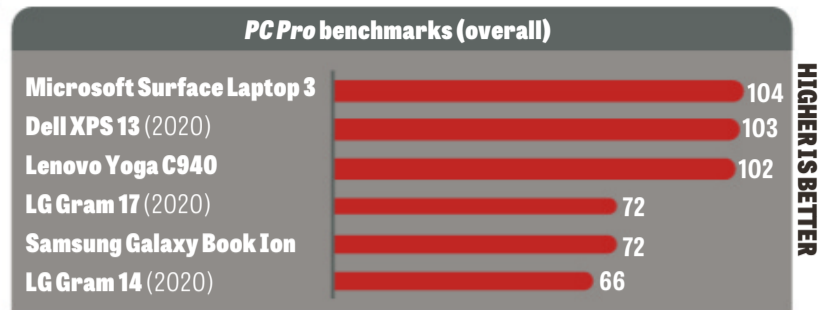
What the Gram 14 lacks in raw power, it makes up for with SSD speed. In our AS SSD disk speed test, its 512GB drive achieved read speeds of 2,916MB/sec and write speeds of 2,063MB/sec. These results make it among the speediest SSDs we've tested in a lightweight laptop.

Finally, there's the battery life of the Gram 14. In our standardised video playback test, the Gram 14's 72Whr battery kept it ticking along for 10hrs 17mins. That's not as good as the Lenovo Yoga C940 or Dell XPS 13 but it is over two hours longer than the Microsoft Surface Laptop 3. Then again, the Samsung Galaxy Book Ion lasted more than 13 hours. The

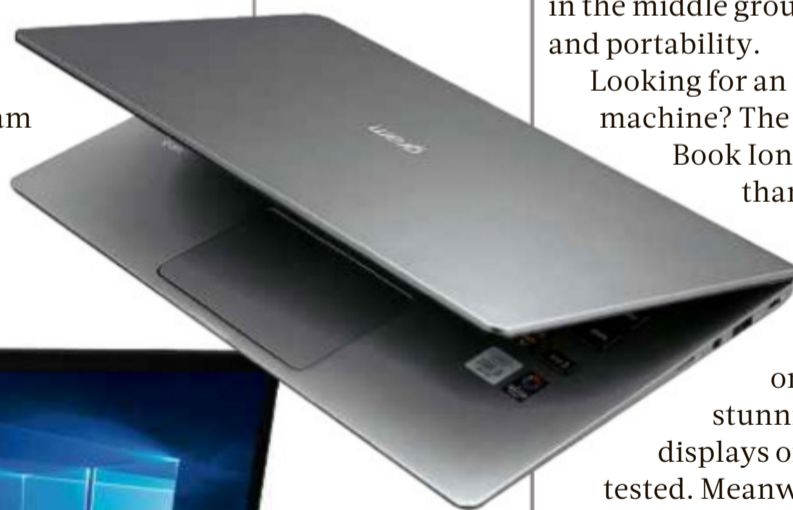
Gram 14's battery life is respectable, then, but not as good as you can get for this sort of cash.

Weighing up

Apart from its lack of active cooling, and subsequently disappointing performance in our benchmarks, there's every reason to applaud the LG Gram 14. It's a sleek and extraordinarily lightweight machine with a premium build



LEFT The left edge of the Gram 14 boasts a USB-A, HDMI and Thunderbolt 3 port



ABOVE The Gram looks sleek from any angle, as it should with a 999g weight

LEFT The keyboard will please even the most fleet-fingered of typists

and gorgeous IPS display. It's a decent performer in short bursts too.

The big problem for the Gram 14 – and the reason it doesn't win our Recommended award – is that it sits in the middle ground between power and portability.

Looking for an ultraportable machine? The Samsung Galaxy Book Ion weighs even less than the Gram 14 yet outperformed it in our testing, has better battery life and features one of the most stunningly bright displays on any laptop we've tested. Meanwhile, should you require a laptop that can take full advantage of that expensive Core i7 CPU, you're best off with a machine such as the Lenovo Yoga C940 or Dell XPS 13. **TOM BRUCE**

SPECIFICATIONS

- Quad-core 1.3GHz Intel Core i7-1065G7
- Intel Iris Plus graphics
- 1,920 x 1,080 non-touch 14in IPS display
- 512GB NVMe SSD
- 16GB DDR4-2400 RAM
- 720p webcam
- 2x2 MIMO 802.11ax Wi-Fi
- Bluetooth 5
- Thunderbolt 3
- 2 x USB-A 3.1
- HDMI
- microSD card slot
- 72Whr battery
- Windows 10 Home
- 323 x 210 x 17.8mm (WDH)
- 999g
- 1yr RTB warranty



Dynabook Portégé X30L

Performance and portability rarely go hand in hand, but this astonishing laptop excels in both departments

SCORE ★★★★★

PRICE 1,362 (£1,634 inc VAT)
from lambda-tek.com

BENCHMARKS



Corporate types will need no introduction to the Portégé brand, debuted by Toshiba all the way back in 1994. Today it's been spun off to the Sharp-backed Dynabook, but the formula remains the same: high-end specifications in an ultra-light, ultraportable chassis.

When we say ultra-light, that's not mere marketing fluff. Pick up the X30L and you'll think you're holding an empty shell, rather than a functioning PC. On the scale it registers just 870g; in practice, it's a system you can take everywhere and never even notice the weight.

Though light, the Portégé X30L isn't the smallest laptop on the block. The casing isn't as compact as the Dell XPS 13, nor as slim as the HP Elite Dragonfly, but at a modest 309mm across and 18mm thick it doesn't feel chunky, and the sombre "onyx blue" colour scheme is impeccably tasteful.

Raise the lid and you'll find a 13.3in matte IGZO screen, offering a Full HD resolution. This isn't what we'd call a huge amount of desktop space, but it's fine. Similarly, the pixel density of 164ppi isn't perfectly clean, but nor is it distractingly blocky.

And the overall impression is helped along by the screen's blazing backlight. We measured a maximum luminance of 521cd/m² and a not-too-shabby contrast ratio of 1,397:1; in other words, whites are dazzlingly bright, while darker tones are suitably solid. Colour performance is strong too, with the panel offering 93.2% sRGB coverage and an excellent average Delta E of 1.3.

All of this makes the Portégé X30L perfect for a spot of Netflix when the working day is done. Maybe dig out some headphones, though, as the speakers have very little low end, and pumping up the volume just makes them sound nasty and harsh. Don't expect too much on the gaming front, either: *Dirt: Showdown* was playable at 43.1fps, but the integrated GPU will struggle with newer games and higher detail settings.

Still, when it's time to get down to work, the Portégé X30L has something none of this month's rivals can match: its

Intel Core i7-10710U CPU is a six-core model,

capable of working on 12 threads at once. It was no surprise, therefore, to see the X30L take the gold medal in our multitasking benchmark tests, and come close to topping the overall rankings.

It doesn't hurt that the CPU is partnered with the expected 16GB of RAM and a reasonably fast 512GB SSD. The Portégé X30L hits the most important practical notes too, with both Gigabit Ethernet and HDMI ports for conveniently slotting into an office setup, plus Wi-Fi 6 for ultrafast wireless connections.

There are some aspects of the design that we're not in love with. The magnesium casing is MIL-STD 810G-certified, so it should survive a bit of rough and tumble – but it still feels rather flimsy, with a perceptible flex as you pull open the lid.

There's a sense of compromise to the keyboard too. While the backplate is good and firm, the keys don't have an awful lot of travel and lack a really positive "click" when a press is

ABOVE Large bezels give the X30L a dated look, but it's packed with the latest parts



LEFT The 870g X30L is ideal for hopping between planes, trains and automobiles

registered. The touchpad is one of the smallest here, and the fingerprint reader in the top corner means you can't use its entire surface area.

Then there's the battery life, which is merely average in this month's company. It's not awful by any means, delivering 8hrs 45mins of video playback, but that suggests the X30L might not get you through a whole day if you hammer that six-core CPU.

Finally, Dynabook has evidently decided that business laptops don't need touchscreens. It may be right, but in 2020 the omission feels a little strange and mean. There's no stylus support either, nor a snazzy hinge mechanism: the lid folds back to around 150° and that's your lot.

If that bothers you, the HP Elite Dragonfly opposite is the obvious alternative: it costs more, and is a touch heavier, but it's as compact as they come, and flips into tablet mode with zero fuss.

Conversely, if you're happy with a traditional laptop design, the Huawei Matebook X Pro on p86 might be a better bet. For a similar price to the Dynabook, Huawei's system gives you a larger screen, a discrete Nvidia GPU, a nicer keyboard and touchpad, a bigger, faster

SSD – and a touchscreen, just for the odd occasion when the need arises.

If your top criterion is portability, however, the X30L is a hard to beat. Its incredible lightness would make it an superb on-the-go companion even it were equipped with a low-end CPU. Throw in that six-core processor and it adds up to something quite special.

“It was no surprise to see the X30L take the gold medal in our multitasking tests, and come close to topping the overall rankings”

BATTERY: video rundown, 8hrs 45mins



HP Elite Dragonfly

A stylish convertible that will fold around into any format – or serve happily as a slim and serious workhorse

SCORE ★★★★★

PRICE £1,509 (£1,811 inc VAT)
from store.hp.com

BENCHMARKS



HP's Elite Dragonfly isn't the smallest or lightest laptop here, but it's definitely toward that end of the scale. At less than 20cm deep it will nestle into any satchel, and its 1.01kg weight feels almost flyaway compared to the some of the chunkers in this month's Labs.

Impressively, HP has managed at the same time to engineer in a 360° hinge, permitting you to flip the screen around into stand, tent or tablet formats; there's even a stylus included, so you can make the most of tablet mode right away. And we're pleased to see that nothing about the design is compromised to enable that flexibility. The 2-in-1 and inking options are a bonus for when you want them, but for everyday work you can forget about them entirely.

Indeed, we'd say the Dragonfly cuts a more practical figure than some traditional laptops. The build quality can't be faulted: the lid and body both feel perfectly rigid, while the keyboard is firm and positive and the touchpad is a decent size too, with a pleasing click action. The "iridescent dragonfly blue" finish adds a note of style to what is undeniably a prestige bit of engineering.

Turn to the screen and things become a little more nuanced. The Dragonfly uses a glossy 13.3in panel, and the model we tested has a Full HD resolution, yielding a pixel density of 164ppi. That's fine for work purposes, but we'd prefer a slightly squarer aspect ratio and a higher resolution for pin-sharp text. You can get the latter by stepping up to the 4K



variant, but that adds around £200 to the price of what is already an expensive computer.

On the plus side, the standard display performs rather well, with a top brightness of 402cd/m² and a strong contrast ratio of 1,702:1. And with 98.5% sRGB coverage and an average Delta E of 1.06, colours should look perfect even to a trained eye. The Bang & Olufsen-branded internal speakers perhaps aren't quite up to cinematic standards, but they're still warm enough to make films and music enjoyable, and surprisingly loud.

Like a few other laptops this month, the Elite Dragonfly is built on an eighth-generation CPU from 2018, but that's not necessarily a problem. The Core i7-8565U remains a perfectly capable part, and it's partnered here with the usual 16GB of RAM and a reasonably nippy Intel SSD. Thus equipped, the Dragonfly achieved an overall score of 80 in our

benchmarks, matching many of its tenth-generation rivals.

The Dragonfly didn't disgrace itself in our 3D tests either, giving us a playable 43.8fps in the 720p *Dirt: Showdown* benchmark and 31.4fps in the

off-screen 1080p GFXBench Car Chase test. Clearly you'll do better with a discrete GPU, but this is as good a performance as you could ask for from the UHD Graphics 620 chip.

More serious pursuits haven't been forgotten. The small chassis finds space for one USB-A 3.1 port, twin USB-C sockets (one of which is used for charging) and full-sized HDMI. There's no built in Ethernet, but the

ABOVE This 1.01kg laptop may float like a dragonfly, but the price will sting



"The build quality can't be faulted: the lid and body both feel perfectly rigid, while the keyboard is firm and positive"

LEFT The HP's 360° hinge makes flattening into tablet mode or pitching a tent a cinch

internal Intel AX200 card supports Wi-Fi 6 and the 4K model has a SIM slot at the side for LTE connectivity.

We've just two hesitations about the HP Elite Dragonfly. First, while we love the lightness of this laptop, some of the weight saving has evidently come from shrinking the power cells. The 38Wh battery gave us less than eight and a half hours of video playback: that's not terrible, but it slightly undermines its otherwise excellent portability credentials. The battery on the 4K model is 50% larger, but it may not run for much longer due to the increased power demands of the screen.

The other issue is the price. It's

understood that a business laptop worthy of the name may cost more than a typical consumer system. The Dragonfly, however, is one of the most expensive products in this month's Labs, and

you might reasonably question whether it's worth the premium. If you're focused on portability, the Dynabook Portégé X30L opposite is cheaper, lighter and faster – or, if you're seeking a daily workhorse, the heftier Huawei Matebook X Pro overleaf offers a more luxurious screen, plus twice the storage and a bigger battery.

Where the Dragonfly succeeds is in finding a workable sweet spot between the two – and, let's not forget, adding the versatility of that flexible hinge. If you like your laptops small and swivelly, and don't mind paying, the HP Elite Dragonfly could be your ideal all-rounder.

BATTERY: video rundown, 8hrs 25mins





Acer TravelMate X3

Cheap and chunky, perhaps, but the X3 is no slouch, and has excellent battery life

SCORE ★★★★★

PRICE £583 (£699 inc VAT)
from ebuyer.com

BENCHMARKS



Acer's TravelMate X3 will come as a breath of fresh air for cost-conscious businesses. It comes in various configurations, but the one we tested costs just £583 exc VAT – and it holds up remarkably well against much pricier rivals.

Let's start with performance. Our X3 came with a relatively modest Core i5-8265U, and it was one of only two Windows systems this month to make do with 8GB of RAM. For general desktop productivity, however, that's perfectly ample, and while the X3



didn't particularly distinguish itself in our multitasking test, it flew through our single-threaded image-editing benchmark, coming out with a perfectly fine overall score of 80.

That's partly thanks to the TravelMate X3's relatively spacious 328 x 237mm chassis, which affords the CPU some welcome breathing room. Acer also takes advantage of its size to build in all the connections you're likely to need, including four USB connectors, Gigabit Ethernet, HDMI and even VGA. The Wi-Fi module only supports 802.11ac, but that's fine for everyday office work.

There's even room for a 62Wh battery – one of this month's largest – which saw the TravelMate X3 put in an excellent shift of 12hrs 19mins of video playback on a single charge. If

ABOVE The X3 is powerful, packed with ports and will save your pennies



you're seeking a laptop that won't let you down halfway through the afternoon, look no further.

Needless to say, there are aspects of the X3 that reflect its low price. We've mentioned its size, and it's one of this month's heaviest systems, at 1.52kg. The screen, meanwhile, shares the foibles of the TravelMate P6 – it's a 14in panel, but has only a 1080p resolution, with unremarkable brightness and contrast levels. Note that it doesn't support touch either. But it's colour accurate, with a perfectly decent average Delta E of 1.64 while covering 93.4% of the sRGB colour gamut.

At the end of the day, though, the TravelMate X3 is an impressively practical machine. It's powerful enough for office work, it's genuinely pleasant to use – thanks to a solid keyboard and a generously sized touchpad – and its battery lasts a whole working day and then some. Sure, there are shinier, more portable options, and the less said about the X3's gaming performance the better, but if you're on a strict budget it could be the perfect package.

BATTERY: video rundown, 12hrs 19mins



Google Pixelbook Go

It's short on grunt, but this Chromebook is lightweight, long-lived and likeable

SCORE ★★★★★

PRICE £691 (£829 inc VAT)
from store.google.com



IT managers love the security and manageability of Chrome OS, while CFOs love the fact that a perfectly serviceable Chromebook can be had for as little as £200. If you want the full Google-branded experience, however, you'll have to pay a bit more – £691 exc VAT, to be precise, for the Pixelbook Go.

As the name suggests, the focus is on portability. The Go is just 13mm thick, and weighs a fairly airy 1.08kg. There's no need to carry a separate charger around, either: in our video-rundown test, the Go ran for a magnificent 13hrs 19mins before finally shutting down.

As is usual with Chromebooks, however, these plus points come at the expense of computing power. The Pixelbook Go is built on an ultra-

lightweight dual-core Intel Core i5-8200Y processor, partnered with 8GB of RAM and 128GB of slow eMMC storage. The result is a chasm in performance between the Pixelbook and this month's Windows-based alternatives: our desktop benchmarks don't run on Chrome OS, but the cross-platform Geekbench 5 and GFXBench tell the story clearly enough (see the graphs overleaf).

The defence, of course, is that Chrome OS isn't really designed for demanding tasks. That's true as far as it goes, but when you're working on a big table in Google Sheets you may well long for the snappiness of Excel running on a full-fat Core i7. It's also disappointing to note that the Pixelbook Go is stuck with 802.11ac wireless: for a computer that's

ABOVE Gargantuan battery life makes this laptop perfect for light work on the Go

designed to do everything in the cloud, a Wi-Fi 6 adapter would have made a lot of sense.

Still, if you don't ask too much of it, the Pixelbook Go is user-friendly. The keys are nicely spaced out, the touchpad well sized and responsive; the 13.3in touchscreen looks lovely and bold too, with an outstanding contrast ratio of 2,197:1 and a maximum brightness of 355cd/m²

that will do for any indoor environment. While an average Delta E of 2.05 is undistinguished in this company, that still indicates excellent accuracy. It's not the sharpest panel here, as Google opts for Full HD resolution, but for typical Chromebook tasks it does the job.

In short, the key to the Pixelbook Go is to keep your expectations at the right level. Yes, it costs quite a bit more than the average Chromebook, and it would have been nice if Google had crammed in a little more CPU power. But as both a solid and simple connected companion, you will find the Pixelbook Go's lightweight design and stunning battery life very easy to get along with.

BATTERY: video rundown, 13hrs 19mins





RECOMMENDED		LABS WINNER			
HP Elite Dragonfly	HP Elite x2	Huawei Matebook X Pro	Lenovo ThinkPad X1 Carbon	Lenovo ThinkPad L14	Microsoft Surface Book 3
★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
8MK77EA#ABU	7KN93EA	MACHC-WAE9LP	20U90044UK	20U1000WUK	SLK-00004
£1,509 (£1,811)	£1,609 (£1,931)	£1,417 (£1,700)	£1,583 (£1,900)	£767 (£920)	£2,041 (£2,449)
store.hp.com	store.hp.com	johnlewis.com	lenovo.com	lenovo.com	microsoft.com
2-in-1 (360° hinge)	2-in-1 (tablet with keyboard cover)	Laptop	Laptop	Laptop	2-in-1 (detachable screen)
304 x 198 x 16mm	289 x 222 x 14mm	304 x 217 x 15mm	323 x 218 x 15mm	331 x 235 x 20mm	312 x 232 x 23mm
1.01kg (424g)	1.44kg (420g)	1.32kg (198g)	1.08kg (310g)	1.49kg (319g)	1.64kg (430g)
3yr RTB	3yr RTB	1yr RTB	3yr on-site	1yr RTB	1yr RTB
83%, 74%	83%, 74%	N/A	85%, 75%	85%, 75%	88%, 80%
Intel Core i7-8565U	Intel Core i7-8565U	Intel Core i7-10510U	Intel Core i7-10510U	Intel Core i5-10210U	Intel Core i7-1065G7
1.8GHz (4.6GHz)	1.8GHz (4.6GHz)	1.8GHz (4.9GHz)	1.8GHz (4.9GHz)	1.6GHz (4.2GHz)	1.3GHz (3.9GHz)
4 (8)	4 (8)	4 (8)	4 (8)	4 (8)	4 (8)
16GB (2,133MHz)	16GB (2,133MHz)	16GB (2,133MHz)	16GB (2,133MHz)	8GB (2,667MHz)	32GB (3,733MHz)
Lithium-ion, 38Wh	Lithium-ion, 46Wh	Lithium polymer, 56Wh	Lithium polymer, 53Wh	Lithium polymer, 45Wh	Lithium-ion, 70Wh
13.3in gloss	13in	13.9in gloss	14in matte	14in matte	13.5in gloss
1,920 x 1,080	3,000 x 2,000	3,000 x 2,000	1,920 x 1,080	1,920 x 1,080	3,000 x 2,000
16:9	3:2	3:2	16:9	16:9	3:2
164ppi	277ppi	259ppi	155ppi	155ppi	267ppi
✓	✓	✓	✗	✗	✓
Intel UHD Graphics 620	Intel UHD Graphics 620	Nvidia GeForce MX250	Intel UHD Graphics 620	Intel UHD Graphics 620	Nvidia GeForce GTX 1650 Max-Q
300MHz (1.15GHz)	300MHz (1.15GHz)	1.5GHz (1.6GHz)	300MHz (1.15GHz)	300MHz (1.15GHz)	1GHz (1.2GHz)
24	24	384	24	24	1,024
Intel Optane	Samsung MZVLB512HAJQ	Samsung MZVLBIT0HBLR	Samsung MZVLB512HBJQ	Toshiba KXG60ZNV256G	Toshiba BG4
NVMe SSD	NVMe SSD	NVMe SSD	NVMe SSD	NVMe SSD	NVMe SSD
512GB	512GB	1TB	512GB	256GB	512GB
802.11ax	802.11ax	802.11ac	802.11ax	802.11ax	802.11ax
5	5	5	5	5	5
✗	✗	✗	Via supplied adaptor	✓	✗
✗	✗	✗	✗	microSD	SD
USB-A (3.1), 2 x USB-C (3.1) with Thunderbolt 3	3 x USB-C (3.1) with Thunderbolt 3	USB-A (3), 2 x USB-C (3.1) with Thunderbolt 3	2 x USB-A (3.1), 2 x USB-C (3.1) with Thunderbolt 3	2 x USB-A (3), USB-C (3), USB-C (3.1)	2 x USB-A (3.1), USB-C (3.1)
HDMI, 3.5mm audio, Kensington lock	3.5mm audio	3.5mm audio	HDMI, 3.5mm audio, dock connector, Kensington lock	HDMI, 3.5mm audio, dock connector, Kensington lock	3.5mm audio, 2 x Surface Connect
USB-C	USB-C	USB-C	USB-C	USB-C	Surface Connect, USB-C
✓	✓	✓	✓	✓	✓
✓	✓	✓	✗	✗	✓
110 x 65mm	100 x 45mm	120 x 77mm	101 x 57mm	100 x 68mm	104 x 70mm
1,280 x 720	1,920 x 1,080	1,280 x 720	1,280 x 720	1,280 x 720	1,920 x 1,080
✓	✓	✗	✓	✓	✓
✓	✓	✓	✓	✓	✗
✓	✓	✗	✗	✗	✗
✗	USB-C dock (HDMI, VGA, Gigabit Ethernet, 2 x USB-A, USB-C)	USB-C dock (HDMI, VGA, USB-A, USB-C)	TrackPoint mouse control	TrackPoint mouse control	8-megapixel rear camera
Function key	Up/down buttons, Function key	Function key	Function key	Function key	Up/down buttons, Function key
Windows 10 Pro	Windows 10 Pro	Windows 10 Home	Windows 10 Pro	Windows 10 Pro	Windows 10 Home



Huawei Matebook X Pro

Hardly an original design, nor without its flaws, but the Matebook X Pro's charms are hard to resist

SCORE ★★★★★

PRICE **£1,417 (£1,700 inc VAT)**
from johnlewis.com

BENCHMARKS



Looks aren't everything, but it certainly doesn't hurt if your laptop happens to be a thing of aesthetic and ergonomic beauty. That's something Huawei clearly gets: we'd say its exquisite Matebook X Pro vies with the Dell XPS 13 for the title of this month's most attractive laptop.

As soon as you pick it up, the Matebook X Pro feels desirable. With a footprint of just 304 x 217mm it's deliciously compact, and the warm grey metallic shell is impressively sturdy. It sits quite heavily in the hand, packing a substantial 1.32kg into that small chassis, but the USB-C "wall wart" power supply weighs just 198g, meaning the system as a whole is highly portable.

Inside, the 13.9in screen is far larger than you'd expect in a frame of this size, courtesy of some very narrow bezels – which Dell fans will find familiar – and it's a delight to gaze upon. The backlight goes up to a terrifically bright 504cd/m², while its native 3,000 x 2,000 resolution gives you a diamond-sharp 259ppi. Even the shape is a winner: we find the 3:2 aspect ratio better suited to productivity tasks than the 16:9 format used by other manufacturers.

On that point, the keyboard and touchpad deserve a mention too. Here, Huawei's inspiration seems to have come from the MacBook Pro, but that's no bad thing. The keys are well spaced with a positive action, and the touchpad is as big and responsive as you could ask for. It's a laptop we'd be happy to work on for extended periods, and while a battery life of 9hrs 31mins isn't exceptional, it

suggests you might manage a full day away from the mains.

Whatever you're doing, Windows and applications feel gloriously nimble. That doubtless has something to do with the 1TB Samsung NVMe SSD – whose read rate of 2.6GB/sec is one of the fastest here – and it's partnered with 16GB of RAM and a tenth-generation Core i7-10510U processor. Surprisingly, considering how slick it feels, the Matebook X Pro actually achieved this month's lowest score in our real-world benchmarks, but the margin was tiny and the synthetic Geekbench 5 tests cast it in a much better light. If you really need all the performance you can get, the six-core Dynabook is a better bet, but the Matebook X Pro is meaty enough to churn through heavy apps and even VMs with zero slowdown.

Graphical performance gets a boost from an Nvidia GeForce MX250 GPU. This isn't in the same league as the

GTX 1650 found in Microsoft's Surface Book 3 (see p89), but the Matebook X Pro gave a fair showing in the 3D stakes, romping through our 720p *Dirt: Showdown* test at an average of 74fps, and achieving a creditable 113fps in the off-screen GFXBench Manhattan benchmark. Frame rates plummeted in the onscreen test, but that's only because the display has such a high native resolution.

While there's plenty to like about Huawei's Matebook X Pro, there remain a few caveats for business buyers. The first is that the screen is highly reflective: that helps graphics and videos look rich and vibrant, but glare from office lights and windows could be an irritation.

ABOVE The 3:2 screen is brilliantly bright and sharp, with just a whisper of bezel



“The X Pro's keys are well spaced with a positive action, and the touchpad is as big and responsive as you could ask for”

LEFT The metal chassis is substantial – unlike the selection of ports on either side

Next, a word about connectivity. The Matebook X Pro's small case offers just two USB-C ports – one of which is used for charging – and a single USB-A 3 connector. An adaptor in the box adds HDMI, VGA and two more USB ports, but that's an extra widget to carry around, and it still doesn't cover Ethernet. It's a shame too that the internal wireless module is limited to last-generation 802.11ac, with no support for Wi-Fi 6.

Finally, since there's no room for a webcam above the screen, it's hidden instead under a fake key between F6 and F7, which pops up when pressed. We've seen this idea before on older Dell XPS 13 models, and in truth it's never worked all that well: video-callers end up gazing directly up your nose, creating a distracting and unprofessional impression. Windows Hello face-recognition is ruled out too, though you can log in biometrically using the fingerprint reader built into the power button.

All of this colours the Matebook X Pro as a “prosumer” laptop rather than a real professional machine – and that's confirmed by the inclusion of Windows 10 Home (although see p125). Business buyers may conclude that a less glamorous system is a better fit for their day-to-day needs.

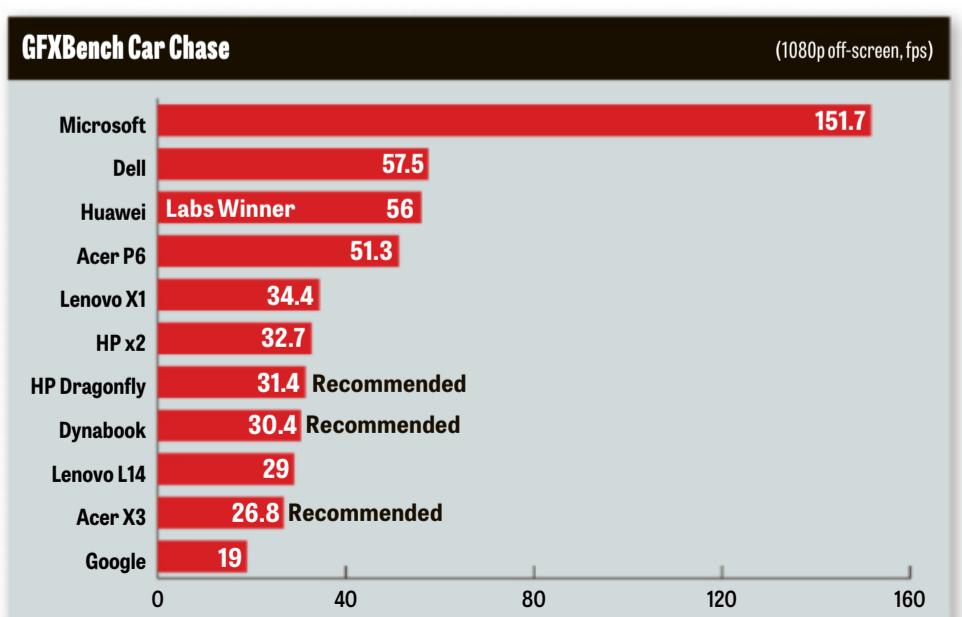
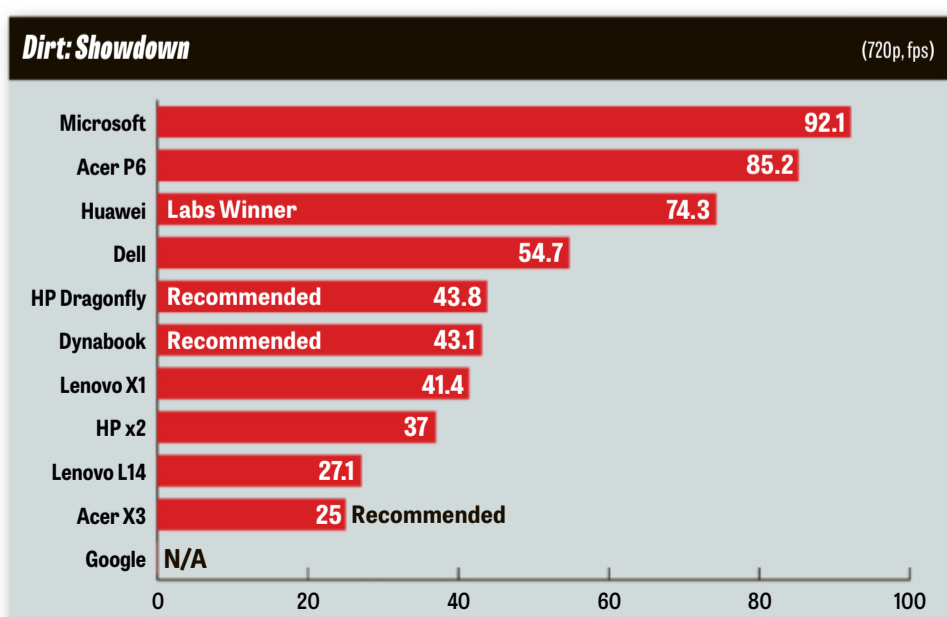
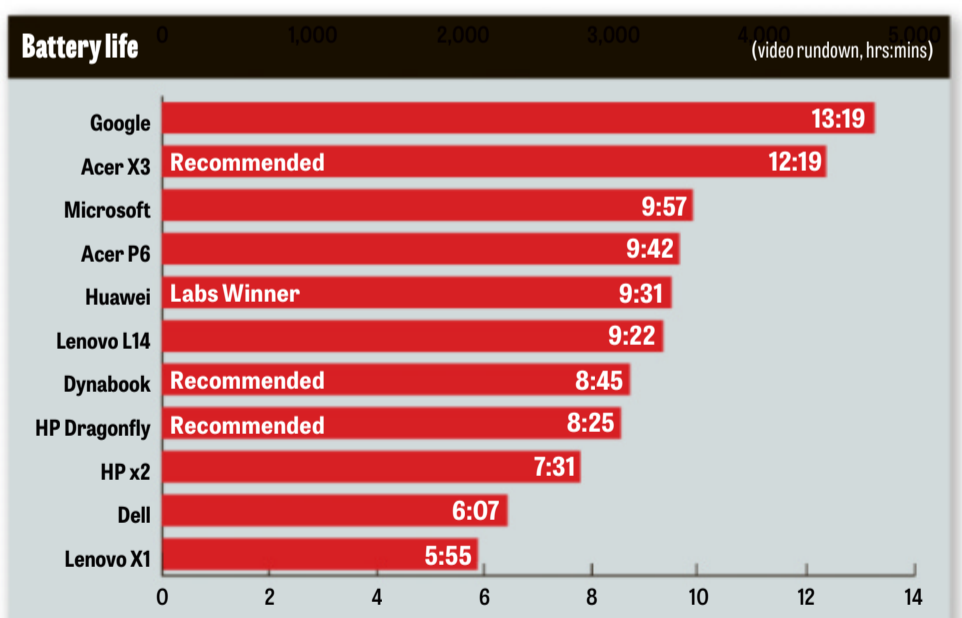
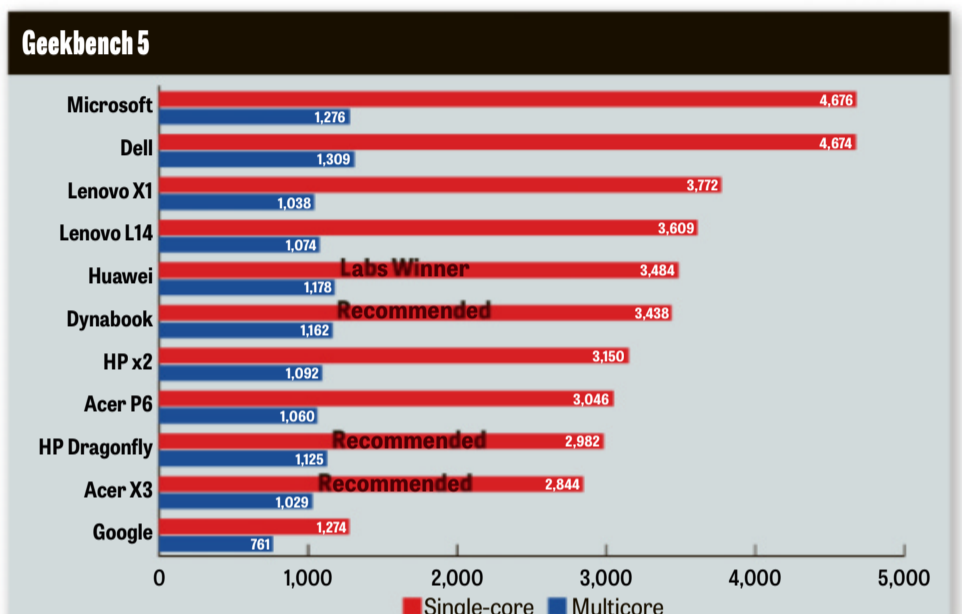
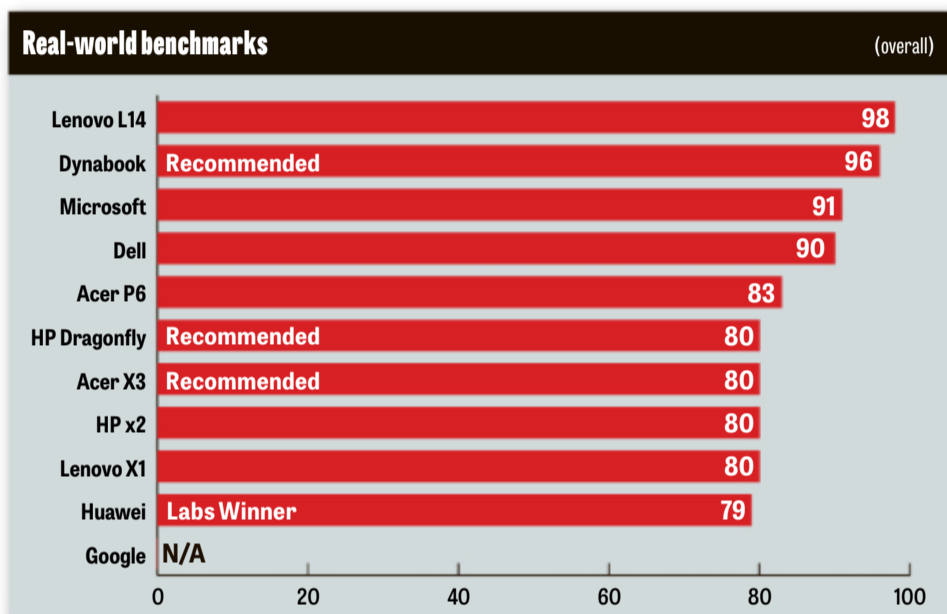
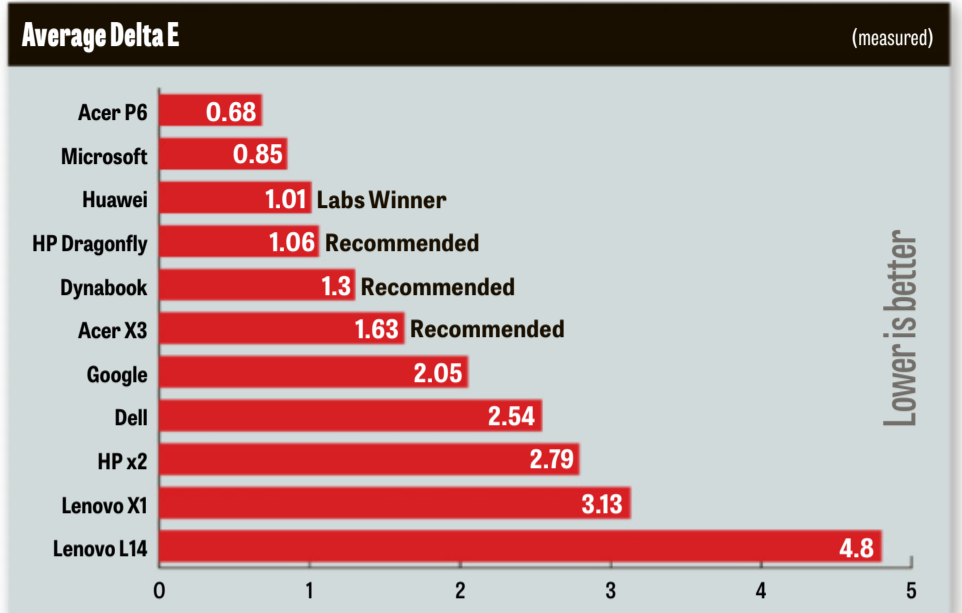
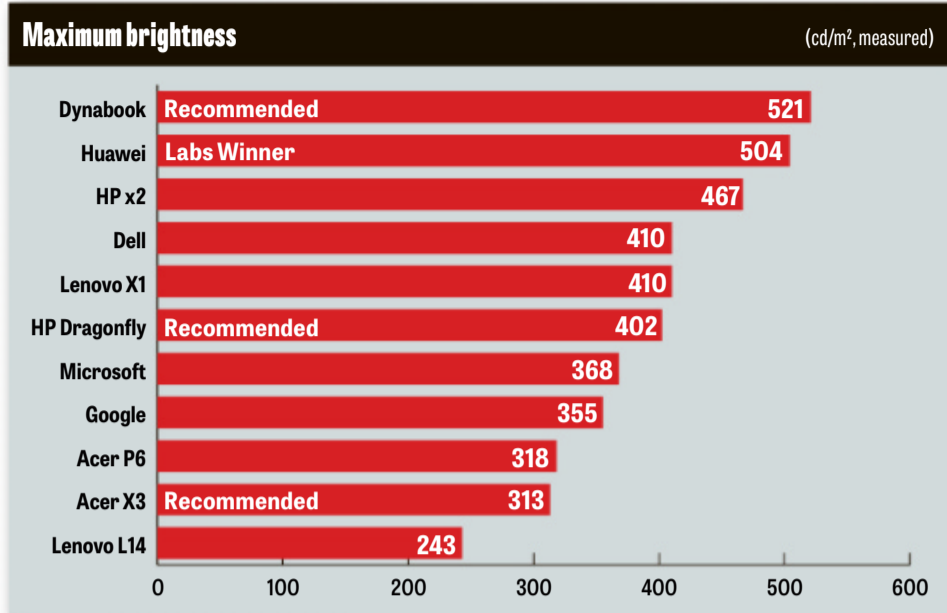
Even so, the Matebook X Pro is fundamentally a very likeable machine. No one could blame you if you opted to turn a blind eye to its limitations and treat yourself (or your staff) to this gorgeously slim, stylish and snappy little computer.

BATTERY: video rundown, 9hrs 31mins





Test results





Dynabook Portégé X30-G-11C

A high-class ultraportable with enough power and battery life to satisfy even demanding remote workers

SCORE ★★★★★

PRICE **£1,319 (£1,583 inc VAT)**
from uk.dynabook.com

Not all Dynabook Portégé X30 laptops are born the same. Two months ago, we reviewed the 870g X30L (see issue 312, p84), but the plain X30 employs a larger chassis so it can take advantage of a nominally faster processor. (If you're confused by Dynabook's naming strategy, you aren't alone; the key difference here is that the suffix "L" indicates an even lighter design.)

I say "nominally faster" because there proved to be little difference in these laptops' PC Pro benchmark scores, with the X30-G one point slower at 95 overall. That's despite the Core i7-10510 in the X30-G having a higher base frequency of 1.9GHz to the 1.1GHz of the Core i7-10710 – but the latter chip has six cores compared to four in its sibling. The phrase "swings and roundabouts" springs to mind.

In theory, that higher base frequency means the X30-G should be faster in tasks that need 3D acceleration, but in practice there's barely a sheet of "Onyx Blue" metal alloy between them: a 43.8fps result in *Dirt: Showdown* at 720p is hardly cause for wild celebration compared to the 43.1fps of the X30L. Neither of these laptops is going to set a gamers' eyes alight.

There was clear water between the machines in our battery life tests, with the X30-G lasting for an extra hour when playing back a video on loop. At a shade under ten hours, this Portégé should easily last a working day away from the mains, and it isn't a great hardship to throw

BATTERY: video rundown, 9hrs 55mins



BENCHMARKS

OVERALL 95

BREAKDOWN SCORES



the compact power supply into your bag, either.

It uses one of the two Thunderbolt 3 ports on the right to charge and, perhaps surprisingly, Dynabook finds room for an HDMI port and microSD slot too. The left-hand side is lighter on ports, with an old-style USB-A port kept company by a 3.5mm combo mic/headphone jack.

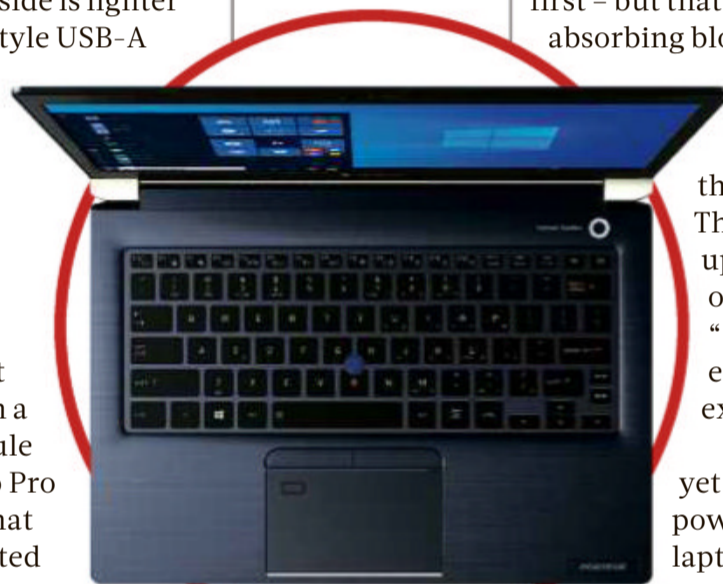
Wireless connectivity within is bang up to date, with Wi-Fi 6 and Bluetooth 5.1.

Dynabook is as vigilant as ever when it comes to security, with a Trusted Platform Module (TPM) and Windows 10 Pro combining to ensure that your data stays encrypted even if someone manages to remove the 512GB NVMe SSD (a fast unit, returning 2,411MB/sec in our sequential read tests and 1,298MB/sec for writes). There's also an infrared webcam that supports Windows Hello and a fingerprint reader built into the top-left of the trackpad.

We've criticised this design before – as we do in the review of the X40-G opposite – and it isn't a smart move to rob a compact touchpad of usable area, but otherwise this is an excellent example of its type: responsive, slick and with the supplementary option of a trackpoint nestled in the keys above. Aside from the truncated spacebar, I'm a fan of the keyboard too: each key has a solid feel that compensates for a short travel.

Given a choice, I'd always opt for the IGZO panel here compared to the panel inside the X40-G-110. While that uses IPS tech, and produces a cleaner white in Microsoft Word, the X30-G's IGZO screen delivers punchier contrast, a wider gamut (it can cover 98.3% of sRGB and 72% of DCI-P3) and a higher peak brightness of 453cd/m². Watching films on the X30 is a more pleasant experience as a

ABOVE The IGZO screen is punchy – it's just a shame about those chunky bezels



ABOVE The touchpad is impressive, but you get the option of a retro trackpoint too

result, even if the speakers lack weight. They produce crisp spoken audio, though, and the 720p webcam records passable video.

Built for life on the move, it's surprising how flexible the lid is at first – but that can have benefits when absorbing blows. Chunky bezels aside, I'm also a fan of this laptop's looks, and aside from the lid the X30-G feels robust. That said, consider upgrading the single year of cover: a three-year "Gold" on-site warranty extension costs £85 exc VAT.

All of this adds up to yet another compelling, powerful and lightweight laptop to add to the X30 canon of business laptops. Thanks to its superior screen, more compact dimensions and lighter weight, it's a clear rung above the X40.

It's more difficult to pick between the X30-G and the X30L, and the final decision will come down to how much 135g of extra weight matters to you – and the price. The figure you see above is the RRP, and I'm confident that your chosen supplier will offer more compelling deals if you're

"All of this adds up to yet another compelling, powerful and lightweight laptop to add to the X30 canon of business laptops"

buying in bulk. Both laptops are excellent machines that pack all the power a mobile worker could ask for into a compact package.

TIM DANTON

SPECIFICATIONS

4-core 1.8GHz/4.9GHz Intel Core i7-10510U processor • 16GB 2,666MHz DDR4 RAM • Intel UHD Graphics • 13.3in non-touch IGZO display, 1,920 x 1,080 resolution • 512GB M.2 PCIe SSD • IR camera • 720p HD webcam • 2x2 Wi-Fi 6 • Bluetooth 5.1 • 2x Thunderbolt 3 (with data transfer, charging and DisplayPort support) • USB-A 3 • HDMI • microSD slot • combo 3.5mm mic/headphone • 48Wh battery • Windows 10 Pro • 316 x 227 x 16.4mm (WDH) • 1.05kg • 1yr EMEA RTB warranty



Honor MagicBook Pro

Magic by name, magic by nature: this “pro” 16in laptop is an almost unbelievably good bargain

SCORE ★★★★★

PRICE £708 (£850 inc VAT)
from hihonor.com

Hot on the heels of the bargain MagicBook 14 – our A-List choice of budget laptop for three months now (see issue 311, p65) – comes the MagicBook Pro. While the price is still low, Honor has clearly lifted its sights to more premium buyers here, with many of the same elements as the Huawei MateBook X Pro (see issue 312, p86).

As Honor is a Huawei spinoff, the similarities come as little surprise. A 16.1in non-touchscreen means it’s larger than any of Huawei’s offerings to date, but its grey, “frosted” matte finish, pop-up keyboard webcam and circular fingerprint power button give the game away.

That’s great news: Huawei’s laptops have proved consistently excellent in terms of build quality, and it’s the same for the stiff, unyielding aluminium chassis here. Although the keyboard and touchpad aren’t the very best I’ve used – the spacebar rattles and I’d prefer a larger touch surface – there’s little that betrays its low price. Even the speakers, flanking the keyboard to the left and right, deliver rich, full-bodied audio that puts many rivals to shame.

Aside from the awkwardly placed pop-up webcam, the MagicBook Pro has all the hallmarks of an ideal laptop for these remote-working times. It has a big screen, which should make working from home a more pleasant experience than a smaller-screened device, although I’d prefer a sharper display than the 1080p one here.

In Honor’s defence, the screen is both colour-accurate and reasonably bright. It peaked at 345cd/m² in our

tests, which is fine for indoor use. It covers 97.8% of the sRGB colour gamut (from a volume of 99.9%) and its average Delta E within sRGB is a brilliant 0.46.

Honor also strikes the right balance between flexibility and portability. There are plenty of ports for attaching peripherals: one USB-C, HDMI and USB-A port on the left edge and two USB-A ports plus a 3.5mm jack on the right edge. All this despite being a hair under 17mm thick and weighing 1.7kg. It’s true that this isn’t as impressively svelte as this year’s LG Gram 17 (see issue 311, p56), which weighs 1.35kg and also has a higher-resolution display, but the MagicBook Pro is half the price and has much more powerful internals.

Here, you’re getting one of AMD’s high-performance CPUs, a six-core 3GHz AMD Ryzen 5 4600H, and it’s backed up by 16GB of RAM and 512GB of PCIe SSD storage. Fast storage too: it raced through AS SSD’s sequential read and write speeds with results of 2,765MB/sec and 2,144MB/sec respectively.

All of this power meant the MagicBook Pro wasn’t just a fraction faster than the LG but three times as fast: a score of 221 in our benchmarks compares to 72 for the Gram and is 13% faster than the Dell XPS 15 (see issue 313, p48) with its Core i7-10750H processor.

Where it falls behind the Dell, and other more expensive laptops, is in games and graphics-intensive tasks. Those laptops use discrete graphics where the Honor relies on AMD’s built-in Radeon RX Vega 6 graphics, and this meant it could only manage 33fps in *Metro: Last Light* at its native resolution and 72fps in the less

ABOVE The Honor could be the perfect centrepiece of your new home office



“In fact, it performs so well and at such a reasonable price that it embarrasses laptops costing hundreds of pounds more”

demanding *Dirt: Showdown*. As these results illustrate, though, it’s capable of playing less demanding games.

Battery life is respectable, lasting 9hrs 17mins in our video-rundown test with the screen set to a brightness of 170cd/m² and Flight mode engaged. For a laptop with a 16in display, a relatively small 56Wh battery and all that power, it’s a commendable result.

Looking at those scores, you could be forgiven for wondering what all the other manufacturers are doing. In fact, the MagicBook Pro performs so well and at such a reasonable price

that it embarrasses laptops costing hundreds of pounds more.

It does have shortcomings. I’d like to have seen a higher resolution display with a taller aspect ratio, and the

keyboard and touchpad aren’t quite up to the standards of the best laptops on the market, while the webcam positioning isn’t ideal.

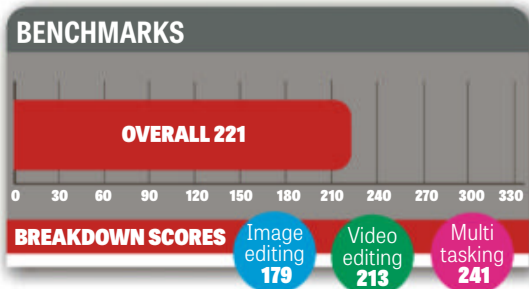
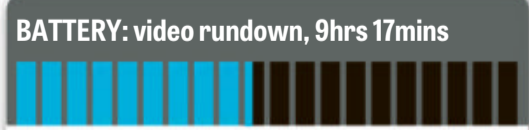
But, at £850, the MagicBook Pro is simply bonkers good. It’s fast, surprisingly slim and light for a 16.1in machine, and feels well made. If you need a powerful machine for use at home as well as on the road, but don’t have big bucks to spend, it’s the laptop you should buy. **JONATHAN BRAY**

SPECIFICATIONS

Six-core 3GHz AMD Ryzen 5 4600H processor ● 16GB DDR4 RAM ● Radeon RX Vega 6 graphics ● 16.1in non-touch IPS display, 1,920 x 1,080 resolution ● 512GB M.2 PCIe SSD ● 720p webcam ● 2x2 802.11ac Wi-Fi ● Bluetooth 5 ● NFC ● USB-C 3.1 ● 3 x USB-A 3.2 Gen 1 ● HDMI ● 3.5mm jack ● 56Wh battery ● Windows 10 Home ● 369 x 234 x 16.9mm (WDH) ● 1.7kg ● 1yr limited warranty

ABOVE The two USB-A ports on the right are balanced by a USB-C and HDMI on the left

BELOW Some Honor wizardry means that the MagicBook Pro is only 16.9mm thick



Acer Chromebook 714

A smart-looking 14in Chromebook with a 1080p display, but build quality lags behind the best

SCORE 

PRICE £458 (£550 inc VAT)
from laptopsdirect.co.uk

Chromebooks are a fantastic alternative to Windows machines for children, students and businesses, or anyone who will appreciate a fuss-free approach to OS updates and security. As the Acer Chromebook 714 proves, they're not all stubby bargain-bin machines, either.

In fact, I'd go so far as to call the Chromebook 714 stylish. Its all-aluminium chassis is finished in attractive matte dark grey, it's reasonably slim at 18mm and weighs 1.6kg: not bad considering that it includes a 14in Full HD display. There is an immediate "but": while the chassis looks great, the bottom plate doesn't fit flush with the edges, leaving an ugly overhang, and the touchpad feels loose and rattly when you click it.

That's a shame because the surface of the touchpad – topped with Gorilla Glass – is smooth and pleasant under the finger and the keyboard is comfortable to type on too. The keys offer plenty of travel and a decent level of feedback, and Acer hasn't made any compromises in terms of layout. It even finds room for a fingerprint reader, with a Trusted Platform Module (TPM) to ensure an extra layer of security.

There's a healthy selection of ports scattered around the edges. You get two USB-C 3.2 Gen 1 ports, one each on the left and right edges, and both are power and display-enabled. There's also a full-sized USB-A 3.2 Gen 1 port on the left edge alongside a 3.5mm headset jack and a microSD card slot on the right, so you can easily

BATTERY: video rundown, 12hrs 13mins



expand on the laptop's 128GB of storage.

This laptop's 14in Full HD screen is large and sharp by Chromebook standards, and a peak brightness of 267cd/m² and 962:1 contrast ratio are both solid results. A matte finish on the screen reduces glare effectively. Colour performance, however, is poor. The display is only capable of covering 55.9% of the sRGB colour gamut, resulting in an insipid overall appearance.

That's disappointing for a laptop costing more than £500, but be aware that I tested the "top-end" model. If you instead went for the Acer Chromebook 714 with part code NX.HAYEK.002, which includes 4GB of RAM, a Core i3 and 64GB of storage, then you'll pay £450 (it's on sale direct from

Acer UK). The NX.HAYEK.001 model steps up to a Core i5 and 8GB of RAM for £500 (also from Acer), or if more storage is your thing, there's the NX.HAYEK.007 variant with a Core i3, 8GB of RAM and 128GB of storage – that's £500 from John Lewis.

My test machine, which is denoted by part number NX.HAYEK.001, has a guide price of £600, but Laptops Direct is selling it for £550. That's a great price considering that it comes with an eighth-generation Core i5-8250U, 8GB of RAM and 128GB of eMMC storage. It's also fast, scoring 103 in Speedometer 1 (putting it near the top of any Chromebook speed ranking) and 366 in MotionMark 1.

More importantly, I found this machine to be nippy in general use.

The 128GB of eMMC storage isn't as impressive, though. I measured disk speed at 180MB/sec read and 134MB/sec write, which is snail-like by modern laptop SSD standards. Indeed, that's slower than most modern hard disks. Arguably this lack of disk-writing speed doesn't matter for Chromebooks because they will rarely be held back by local apps that demand instant access to disk-stored data, but you might still occasionally find it frustrating.

This laptop's battery life is much more impressive. Lasting 12hrs 13mins in our standardised video-playback test, the Acer is the only Chromebook in recent memory to get close to the superb 14hrs 15mins of the Google Pixelbook Go (see issue 312, p90). Consequently, as long as you're not using it continuously, the Chromebook 714 will last several days between charges and will easily get

you through a day of work away from the mains.

The Acer Chromebook 714 is a decent machine, then, but not a particularly inspiring one. Build quality is patchy and

the display is disappointing, although performance and battery life are both excellent.

Ultimately, unless you desperately want a Chromebook, I recommend that you spend your £550 on an Honor MagicBook 14 (see issue 311, p65) instead. The ability to run full Windows apps, a larger, faster SSD and superior build quality (including its screen) mean the Honor MagicBook is a better buy all around.

JONATHAN BRAY

SPECIFICATIONS

Four-core 1.6GHz Intel Core i5-8250U processor • Intel UHD Graphics 620 • 8GB RAM • 128GB eMMC storage • 14in non-touch 1,920 x 1,080 IPS display • 720p webcam • 2 x USB-C • USB-A 3.1 • 3.5mm headphone jack • microSD card slot • 2x2 MIMO 802.11ac Wi-Fi • Bluetooth 4.2 • battery capacity not stated • Chrome OS • 323 x 239 x 17.7mm (WDH) • 1.6kg • 1yr limited warranty • part code: NX.HAYEK.001

ABOVE The display is bright, but its poor colour performance results in drab hues

"The Chromebook 714 will last several days between charges and will easily get you through a day of work away from the mains"

LEFT Think that all Chromebooks look cheap? This stylish Acer begs to differ

BELOW A microSD slot and one of two USB-C ports grace the left-hand side





Acer ConceptD 3

While we wish its excellent screen was brighter, this is a solid entry-level choice for those on a budget

SCORE ★★★★★

PRICE **£1,083 (£1,299 inc VAT)**
from acer.co.uk

Compared to Acer's ConceptD 7, the ConceptD 3 looks prosaic. Boring, even. This is a more traditional, sensible workhorse of a laptop, leaving out the ConceptD 7's stunning 4K screen and high-end GPU for a more accessible price.

Yet if it lacks the flair of its stablemate opposite, the ConceptD 3 is certainly well balanced. You still get the six-core, 12-thread Core i7-9750H processor, albeit with 16GB rather than 32GB of RAM, and while the GeForce GTX 1650 GPU is no match for our ConceptD 7's RTX 2080, it's a sensible compromise: this graphics chip comes with enough power to accelerate lightweight 3D workloads and rendering tasks, while the powerful processor can handle number crunching in video and image editing, plus scientific, financial and engineering applications.

Like many of Acer's mid-range laptops, the construction is part aluminium (the keyboard surround and the lid) and part plastic, but it feels robust, with little flex in the lid or the keyboard and a good, solid hinge. It's also well behaved when it comes to noise, staying reasonably quiet until you push the CPU and GPU near maximum.

Yet there are some limitations on the connectivity front. Where the ConceptD 7 packed in Thunderbolt 3 support, the ConceptD 3 goes for standard USB-C 3.1 Gen 1, alongside two USB-A ports of the same spec and a USB 2 port. That will be frustrating for users looking for high-speed external storage when the 512GB SSD starts to fill up.

We're also not so keen on the ergonomics. With a full numeric pad, the keyboard's layout feels more cramped, while the touchpad shifts left of centre so that it still sits underneath the spacebar. The



keyboard itself isn't awful, but the action is flat and spongy compared to the best, and we needed to ramp up the trackpad's sensitivity before it felt really usable. Sometimes it failed to register a tap or click, too. On the plus side, this model includes a fingerprint reader, and it makes sign-in about as

quick and painless as it gets.

The screen might be a standard 1080p effort, but that doesn't mean it should be shunned. Like the ConceptD 7's display, it's Pantone approved, and we measured an average Delta E of just 0.77, so colour accuracy is pretty much perfect. It covers 99% of the sRGB gamut and 87% of Adobe RGB, not to mention 98.9% of DCI-P3. But before we get too excited, we should mention that brightness tops out at just 257cd/m², which is underwhelming in bright lighting indoors let alone when there's a lot of sunlight.

Watch or work on video – or edit photos – and it's apparent that this screen isn't as vibrant as the best displays in this month's tests, even if, in isolation, HD video still looks good.

ABOVE It may be plain compared to other laptops here, but its price catches the eye

LEFT There's only vanilla USB-C, which rules out high-speed external storage

BELOW The full numpad on the right makes the rest of the keys play sardines

Nor does it help that the sound is thin and brash. It's a laptop where you'll want to plug in headphones along with a decent mouse. You can use Bluetooth for either, with Bluetooth 5 supported, while it's good to see Wi-Fi 6 onboard.

It's not hard to see how the ConceptD 3's lower-end graphics chip makes an impact; while it's close to the ConceptD 7 in CPU-intensive tasks, it falls behind in workloads such as Premiere Pro or the V-Ray and Octane rendering engines, where laptops with more capable GPUs pull ahead. It also fell behind the pack in the SPECworkstation benchmarks, particularly Product Design and GPU Compute. This isn't a problem if you're more focused on 2D design than 3D or video, but it means the ConceptD 3 falls awkwardly between the more versatile powerhouse systems and the more slimline, ultraportable machines. Where it wins, though, is on battery life, with

its six-and-a-half hour performance in our test moving it comfortably ahead of most of the competition.

Perhaps most crucially, the Acer ConceptD 3 wins for value. If you're looking for an affordable, entry-level graphics and design workstation, this one makes its compromises in the right places.



Acer ConceptD 7

A great creative laptop with one of the finest screens you'll ever see, but you could go faster for less

SCORE ★★★★★

PRICE £2,333 (£2,799 inc VAT)

from acer.co.uk

Even with laptops aimed at creative users, it's surprising how little creativity seems to go into their design. Happily, that's not the case with the ConceptD 7; from its elegant white aluminium chassis to the understated amber backlighting under the keyboard, it looks great. Evou 3nh milles between 3"o "ru"o' at the rear of 3he machine look like 3hey've not j 't been designed, but st led.

It's not the most d.pq:d3)e' top on test thi3 monvh, but with a 2-) z 255mm footprint and 18mm thickness, you could hardly call it chunky. And the design works on a practical level. For one thing, the size allows for a cooling solution that can balance performance with noise. Even running at full tilt in our benchmarks, it was never offensively loud and there's no sign of any odious throttling. What's more, it packs in a wide range of connections, including three USB-A 3.1 Gen 1 ports and a USB-C 3.1 Gen 2 port that supports Thunderbolt 3 – this gives transfer speeds of up to 40Gbits/sec with compatible dextrkó, or up 3w xGbits/sec wr3k USB-C 3.1 Gen 2 drrxos. You can u' 5 the same port to ron a 3creen over Di' yo-oPort, wixh an HDMI pott on the right)(fsk ' k84 kyou prefer.

The ConceptD 7's screen is pretty special. It's a 15.6in IPS panel that covers 100% of the sRGB gamut and 99.7% of Adobe RGB, while also being Pantone-approved for colour accuracy: we measured a maximum brightness of 379cd/m² and an average Delta E of just 1.94. You can switch instantly between Adobe RGB and a slightly more saturated Native colour profile using an applet in the Windows taskbar, and either way it looks fantastic. It's not HDR, but the colours in movies and trailers really pop, making the most of the de3:m1 m(



4K material. If you're editing photos, it's a joy to use, even if you have to be aware that your work won't look a' -(8 k1. "int or on othe7' dreens as it's going to look right here.

There's almost as much to love about the sound. There's lots of detail, a hint of bass and a wider soundstage than most laptops conjure, even if there's some congestion in the mid-range.

The soft-touch chiclet keyboard could do with a little more spring, but the typing action is solid and the layout makes the most of the space. Our biggest complaint is that Acer has made one of the keys a Power key, and placed it right in the top-right corner where you'd normally find Delete. The trackpad, meanwhile, is wide, smooth and perfectly responsive, although we suspect most creative users will be plugging in a mouse or graphics tablet before tk50 get any r5:1 y 1"; nwuor

The ConceptD 7 skm qin a fange of configuratj19 s. All share the same Core i7-9750H processor, but the base versions match it with

RTX GPUs while the ConceptD 7 Pro line packs Nvidia's workstation-level Quadro RTX 3000 and 5000 GPUs. The use of a ninth-generation Core i7 isn't a worry here because the six-core CPU supports Hyper-Threading to give you 12 threads and a serious performance boost. Throw in 32GB of DDR4-2666 RAM and an GeForce RTX 2080, as Acer did in our review sample, and the ConceptD 7 can hit impressive levels of performance. Granted, it's not quite up there with the Chillblast (see p87) and Gigabyte (see p88) machines, but it's strong in CPU-intensive task' e?g hxn stronger wj35 3D rendering and video workloads where the powerful GPU gets its chance to shine. What's more, it doesn't leave you with a miserable battery life. In our video-rundown tests, the ConceptD 7 kept going for the best part of six hours.

This all comes at a price, with the range starting at £2,000 for the model with an RTX 2060 and rising to £3,500 for the high-end Pro version with a Quadro RTX 5000. Our test unit sits in the middle. While it's a compelling all-round package with a slightly superior screen, both its Gigabyte and Razer rivals have it beaten when it comes to speed and value for money.

ABOVE Yin to the ConceptD 3's yang, the ConceptD 7 is stylish without being showy

LEFT The zigzag grille on the hinge brings to mind the outside of the London Stadium

BELOW The amber-lit keys could do with a tad more bounce, but they're well-spaced





	Acer ConceptD 3	Acer ConceptD 7	LABS WINNER Alienware M15 R3	Chillblast Phantom 15
Overall	★★★★★	★★★★★	★★★★★	★★★★★
Purchase information				
Part code	NX.C4QEK.002	NX.C4KEK.004	P87F002	N/A
Price ¹ (inc VAT)	£1,083 (£1,299)	£2,333 (£2,799)	£2,533 (£3,064)	£1,667 (£2,000)
Supplier	acer.co.uk	acer.co.uk	dell.co.uk	chillblast.com
Dimensions (WDH, including feet)	363 x 255 x 23.4mm	359 x 255 x 17.9mm	360 x 276 x 19.5mm	356 x 237 x 19.7mm
Weight (charger weight)	2.35kg (257g)	2.1kg (470g)	2.1kg (632g)	1.7kg (583g)
Service and support				
Warranty ²	3yr RTB	3yr RTB	1yr C&R	2yr C&R parts and labour, 3yr labour-only
Manufacturer support, reliability score ³	81%, 87%	81%, 87%	85%, 88% (for Dell)	92%, 92%
Core components				
Processor	Intel Core i7-9750H	Intel Core i7-9750H	Intel Core i9-10980HK	Intel Core i7-10875H
Processor speed (Max Turbo)	2.6GHz (4.5GHz)	2.6GHz (4.5GHz)	3.1GHz (5.3GHz)	2.3GHz (5.1GHz)
Processor cores (threads)	6 (12)	6 (12)	8 (16)	8 (16)
RAM fitted (speed)	16GB (DDR4 2,666MHz)	32GB (DDR4 2,666MHz)	32GB (DDR4 2,666MHz)	16GB (DDR4 2,666MHz)
Display				
Display size (finish)	15.6in (gloss)	15.6in (gloss)	15.6in (matte)	15.6in (matte)
Resolution	1,920 x 1,080	3,840 x 2,160	3,840 x 2,160	1,920 x 1,080
Touchscreen (type)	✗	✗	✗	✗
GPU	Nvidia GeForce GTX 1650	Nvidia GeForce RTX 2080 Max-Q	Nvidia GeForce RTX 2070 Super	Nvidia GeForce RTX 2070 Super
GPU speed (Max Turbo)	1,395MHz (1,560MHz)	735 (1,095MHz)	1,140MHz (1,380MHz)	1,140MHz (1,380MHz)
GPU execution units	1,024	2,944	2,560	2,560
Storage				
Model	Western Digital PC SN520	Western Digital PC SN720	Intel SSDPEMKF512G8	Seagate FireCuda 510
Type	M.2 PCIe NVMe	M.2 PCIe NVMe	M.2 PCIe NVMe	M.2 PCIe NVMe
Capacity	512GB	1TB	512GB	1TB
Battery				
Battery type (capacity)	Lithium ion (not stated)	Lithium ion (84Wh)	Lithium ion (99Wh)	Lithium ion (62Wh)
Ports and connections				
Wireless standard	Wi-Fi 6	Wi-Fi 5	Wi-Fi 6	Wi-Fi 6
Bluetooth	Bluetooth 5	Bluetooth 5	Bluetooth 5	Bluetooth 5
Gigabit Ethernet	✓	✓	✓	✓
Memory card reader	✗	✗	SD card	microSD
USB ports	2 x USB-A 3.1 Gen 1, USB-A 2, USB-C 3.1 Gen 2	3 x USB-A 3.1 Gen 1, Thunderbolt 3	3 x USB-A 3.1 Gen 1, Thunderbolt 3	USB-A 3.1 Gen 2, 2 x USB-A 3.1 Gen 1, Thunderbolt 3
Other ports	Audio, HDMI	2 x audio, HDMI, mini-DisplayPort 1.4	Audio, DisplayPort 1.4, HDMI 2.0b	2 x audio, HDMI
Charging	DC-in socket	DC-in socket	DC-in socket	DC-in socket
Other features				
Backlit keyboard	✓	✓	✓	✓
Auto brightness	✓	✓	✓	✗
Touchpad dimensions	108 x 78mm	106 x 78mm	105 x 60mm	117 x 72mm
Webcam resolution	720p	720p	720p	720p
Windows Hello webcam	✗	✗	✗	✓
Fingerprint reader	✓	✗	✗	✗
Additional	✗	✗	Cryo-Tech cooling	THX speakers
Operating system	Windows 10 Pro	Windows 10 Pro	Windows 10 Home	Windows 10 Pro

1 Mainland UK only 2 Parts and labour, UK mainland, unless otherwise stated 3 Laptop reliability/support rating in reader-voted PC Pro Excellence Awards 2020. Where N/A, companies didn't receive enough feedback to be rated. See p24



Alienware M15 R3

A powerhouse laptop for games and creative work, with a stunning screen and a strong set of speakers

SCORE ★★★★★

PRICE £2,533 (£3,064 inc VAT)
from dell.co.uk

Alienware was one of the first companies to push high-end designer gaming laptops, but Dell (which bought the brand way back in 2006) believes these models could also double for creative duties. Looking at the Alienware it's not hard to see why. While there are signs of its gaming heritage in the angular design and honeycomb grille above the keyboard, these are relatively restrained. What's more, there's no arguing with the spec. With a tenth-generation Core i9-10980HK CPU, 32GB of 3,200MHz DDR4 RAM and a mobile RTX 2080 Max-Q, our review sample easily out-specs most workstations you could buy for the same money.

The design is nothing if not practical, bringing the hinge forwards of the rear edge of the laptop, which shuffles the screen itself closer and leaves room for a good selection of ports and two massive vents at the back. While you'll find Ethernet, audio and USB ports on the side, along with a microSD card slot, there's plenty of room at the rear for HDMI and DisplayPort outputs, a USB-C/Thunderbolt 3 port and one of Dell's proprietary graphics amplifier ports: this lets you hook up a desktop graphics card in an amplifier module and upgrade the laptop's onboard graphics later.

The position of the hinge means there's less space on the interior surface of the laptop, but while there's a little less wristrest – and touchpad area – than on some other machines, it doesn't really impact usability. In fact, the well-spaced keys, intelligent layout and easy-going feel make this a straightforward laptop to work with, and the touchpad makes up for its small size with flawless accuracy.

Our review sample shipped with a 4K OLED, and it's a beauty. It covers 100% of the sRGB and DCI-P3 colour

gamuts, and 97.5% of Adobe RGB. With a brightness level of 428cd/m², it's bright enough to showcase HDR video content, and our only grumble would be the less-than-perfect colour accuracy. An average Delta E of 3.55 isn't bad, but other laptops on test do better. Still, this is only a blocker if you are doing colour-accurate work (see Jon Honeyball's thoughts on this subject from p110).

Models with this screen also feature Tobii eye-tracking – a technology that tracks the user's gaze to alter the view in supporting 3D applications. The vast majority of these applications are games, where it takes some getting used to, and outside it's mostly used as a power-saving feature, dimming the screen while you're not looking at it. It also dims and locks the laptop if it senses you're away, and then wakes up when it spots you returning.

One advantage we often find with gaming laptops is that audio is better than normal, and that's certainly the case here. Not only is there more volume than you'd normally expect from laptop speakers but more bass, more energy and a significantly wider stereo spread. You'll want headphones or monitors for anything critical, but it's great

ABOVE A sizable gap gives the impression that the stellar screen is a separate monitor



LEFT The position of the hinge allows for more ports and larger vents for cooling

BELOW The keys are pleasant to use, while the touchpad is small but perfectly formed

for streaming video, games or background music.

In short, this is a fantastic laptop for almost any use, but what really makes it shine is its performance. For one thing, that eight-core, 16-thread Core i9 processor outperforms almost everything else out there, even if the Chillblast's aggressive cooling of its Core i7-10875H (see opposite) gives it the edge in some of our benchmarks. The Alienware stormed through CPU-intensive rendering and video-processing tests, but also had the GPU horsepower to outperform the competition in GPU-based rendering and compute-heavy tasks.

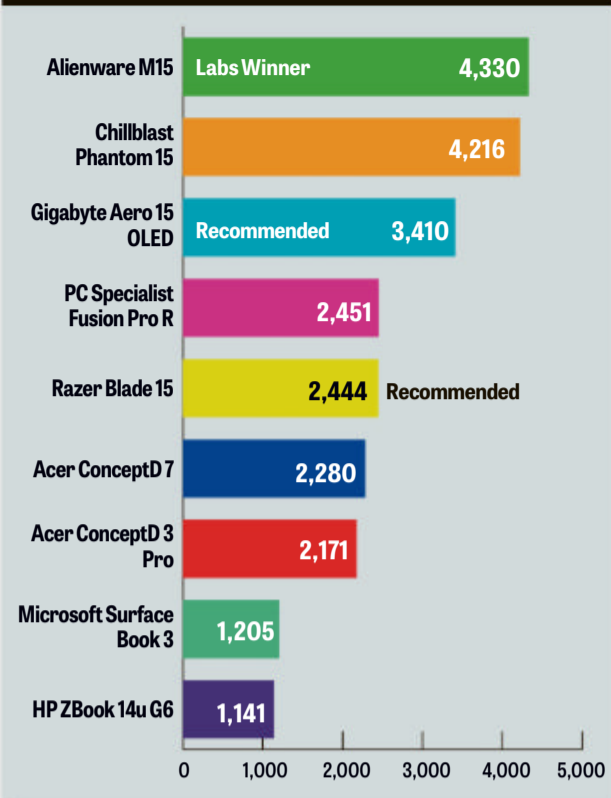
What's more, it can deliver this performance without making an ear-splitting racket. You can make it noisier by going to the Alienware Control Center and switching thermal performance profiles, but we found that the effect on performance was negligible. At default values, the machine kept mostly to a gentle hum, only occasionally reaching higher levels of fan noise in GPU-enhanced rendering tests and demanding games.

All the same, the high-end screen and high-end spec have one inevitable downside: battery life. Even just running HD video we saw the Alienware M15 R3 giving up the ghost in 4hrs 20mins – which is only slightly better than we saw from the Chillblast. However, that's the price you have to pay for such performance, and we think it's a worthwhile compromise.

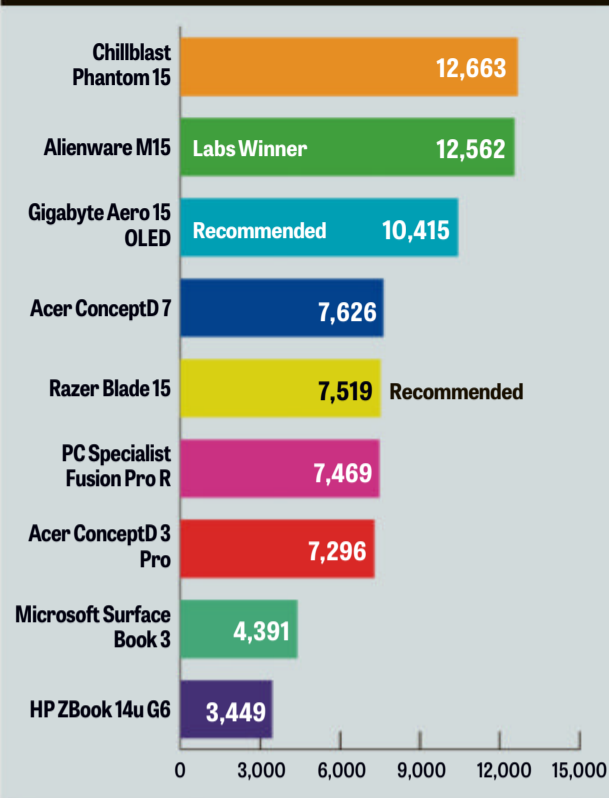




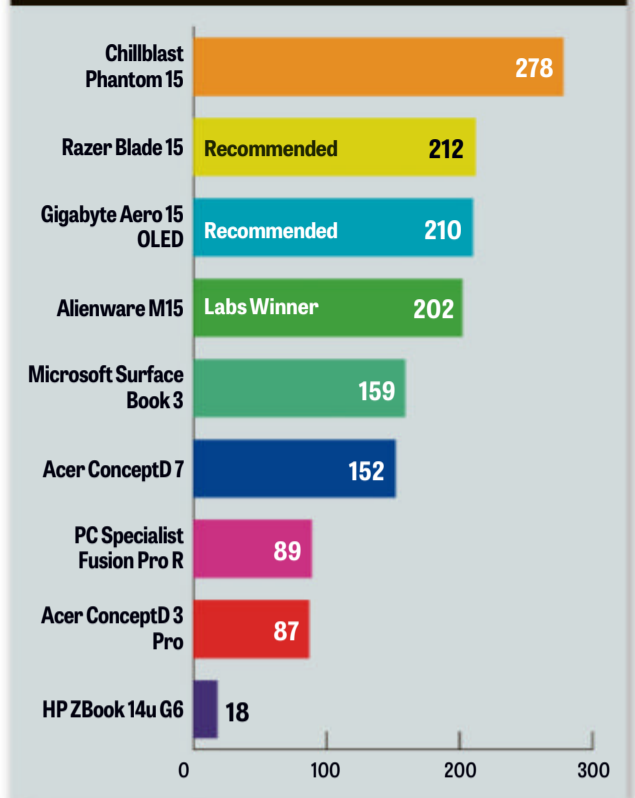
Cinebench R20 (points)



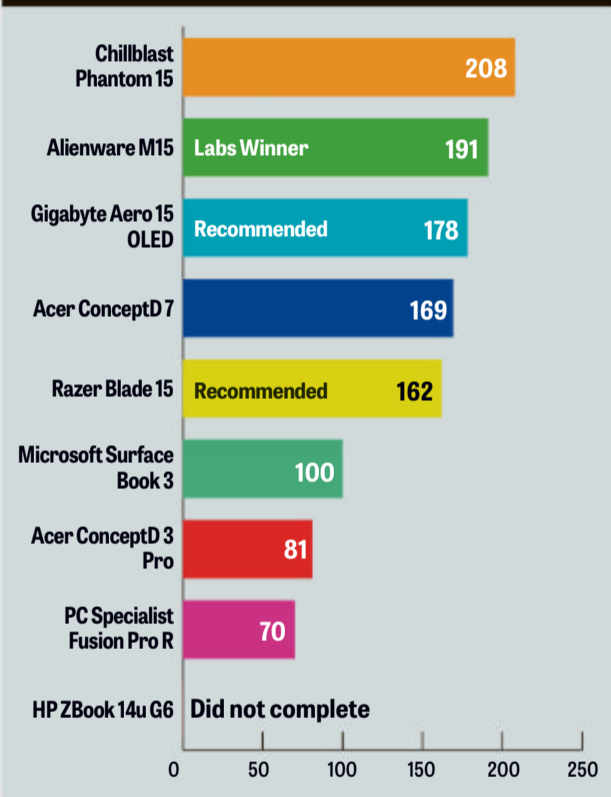
V-Ray Next (CPU)



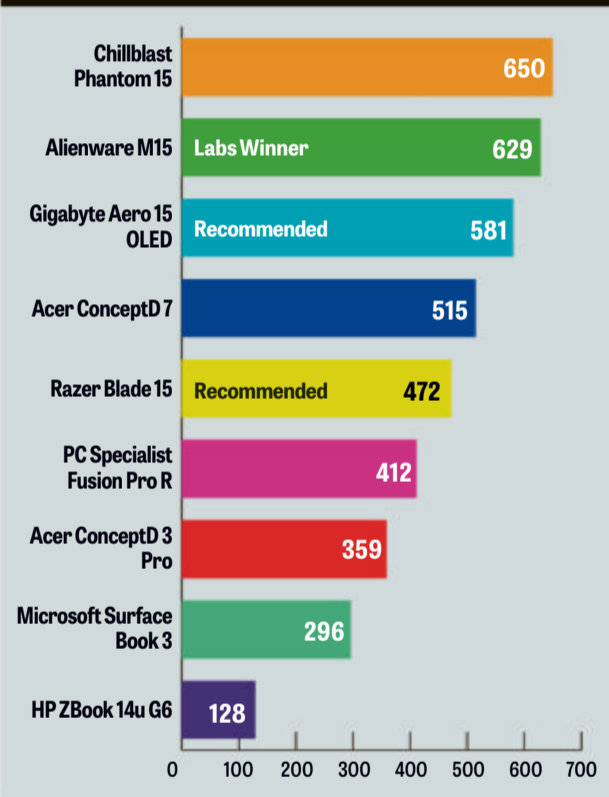
V-Ray Next (GPU)



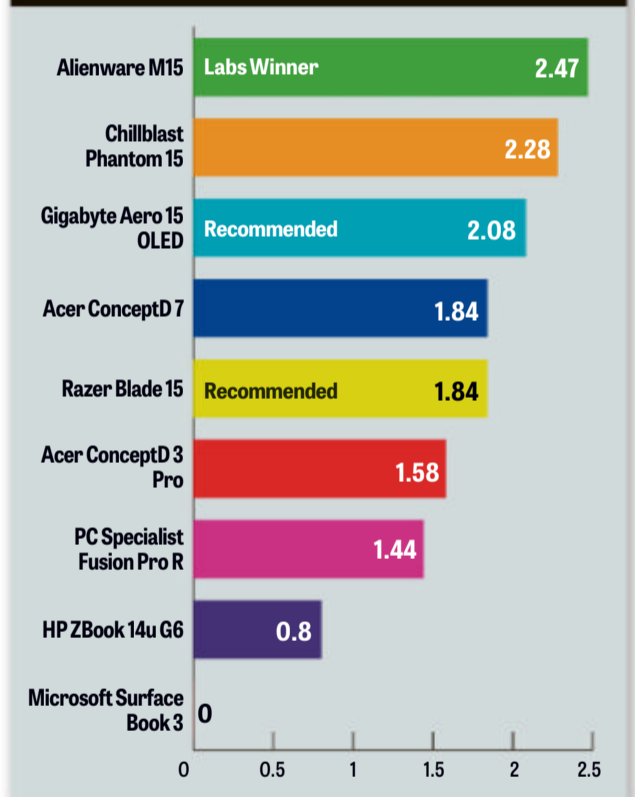
OctaneBench



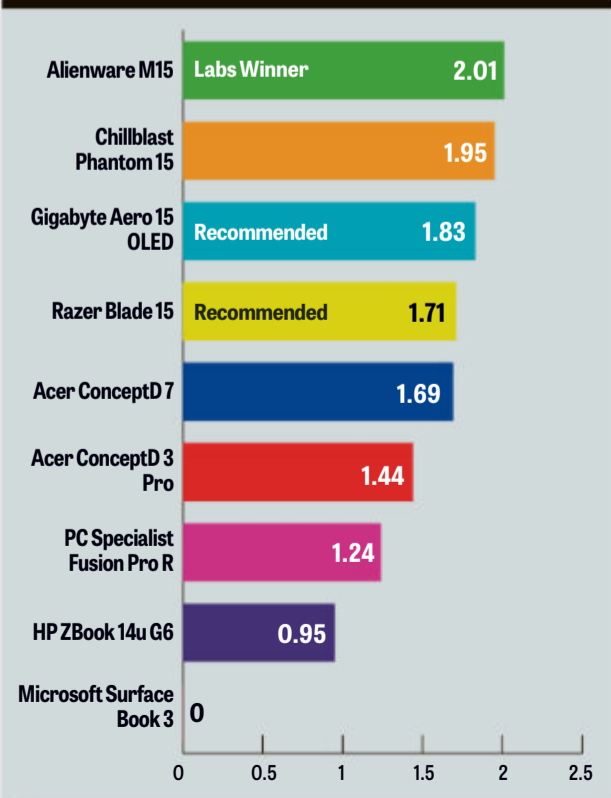
PugetBench for Premiere Pro



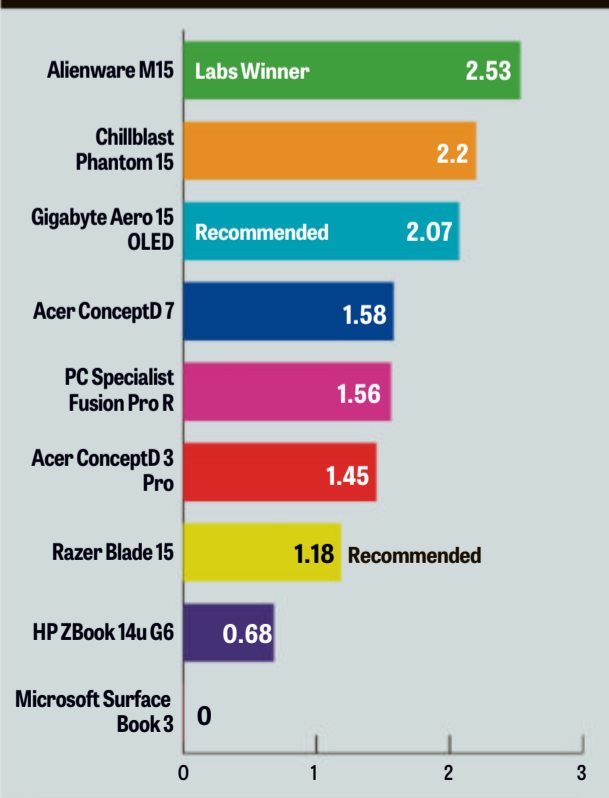
SPECwpc: Media and entertainment



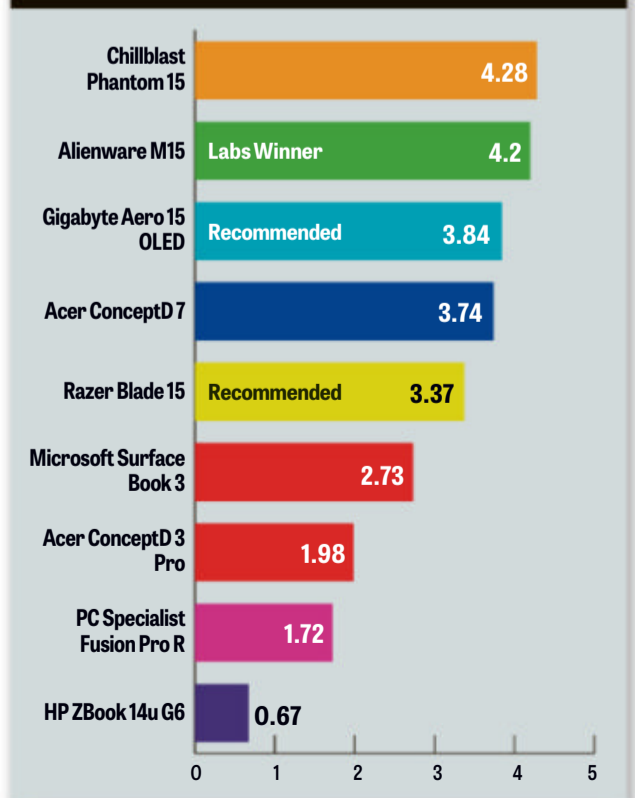
SPECwpc: Product development

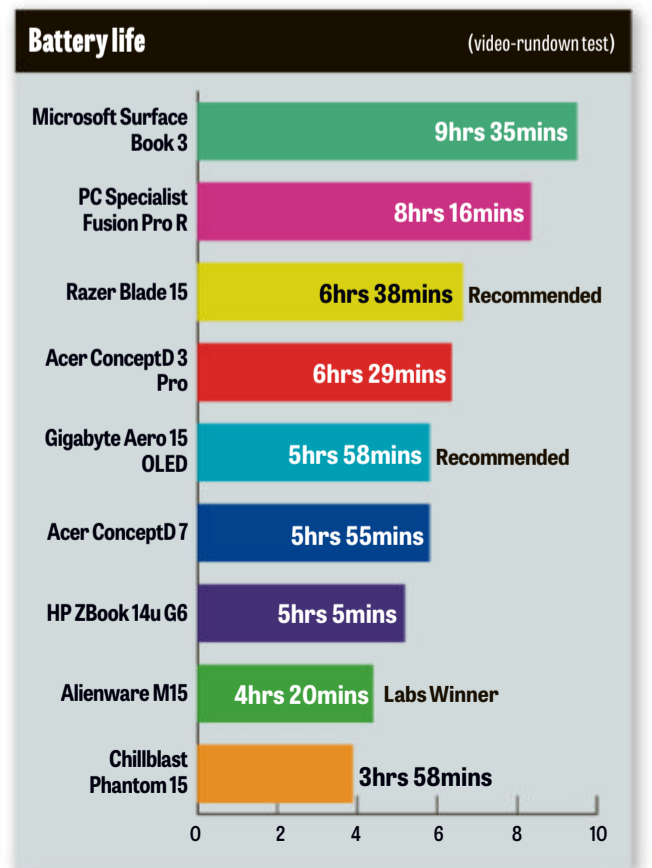
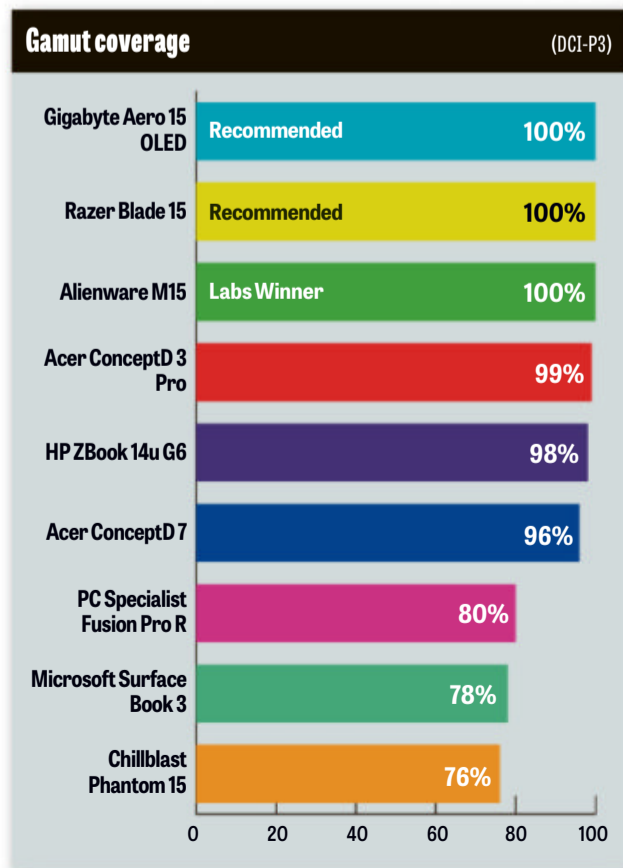
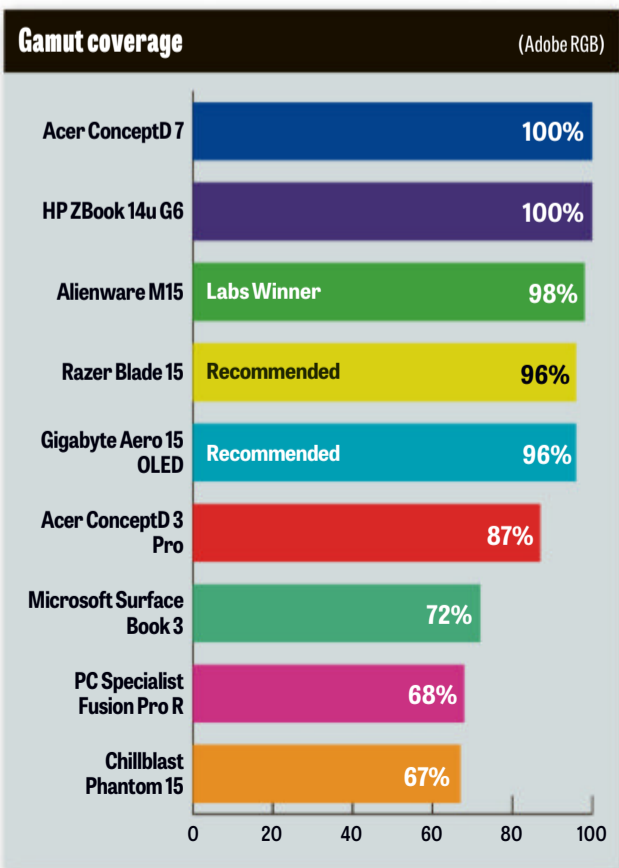
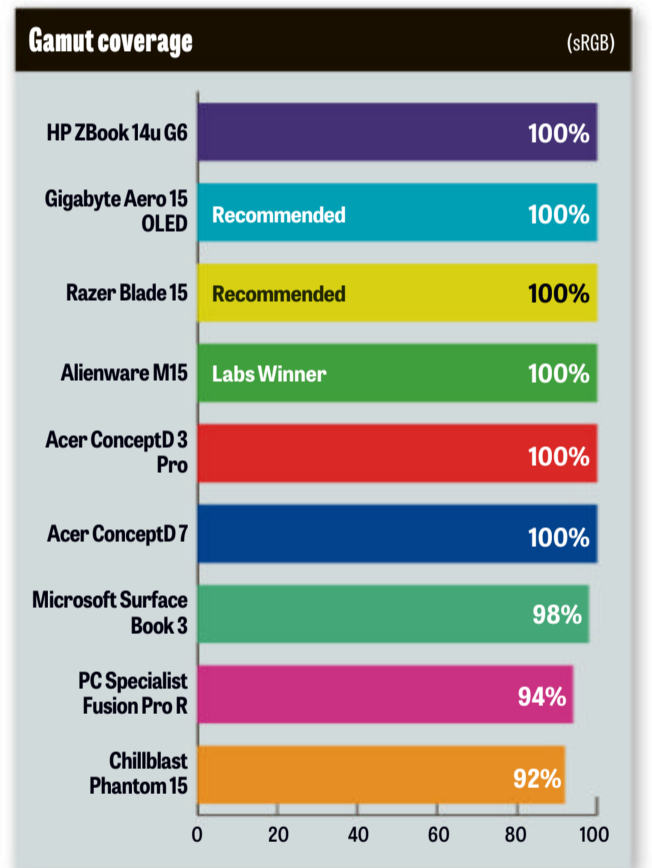
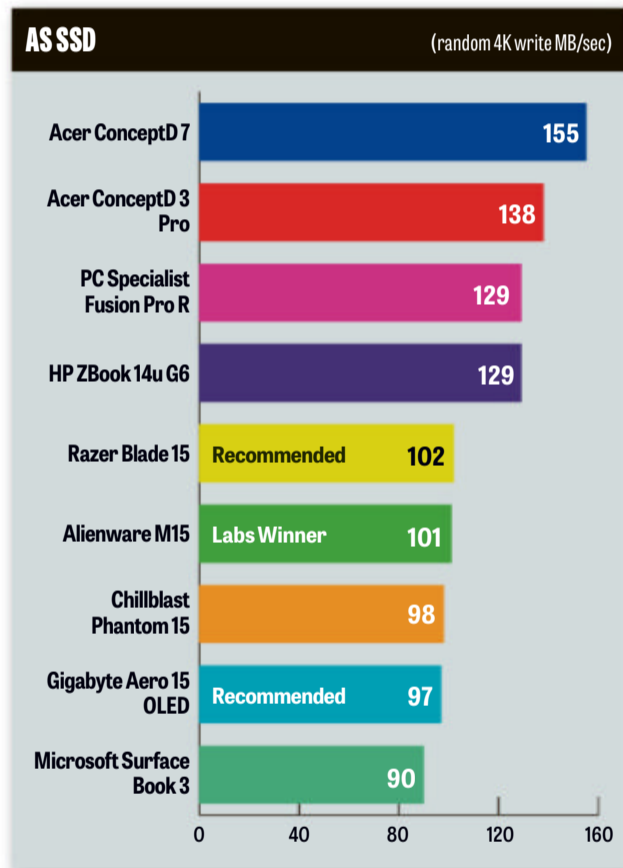
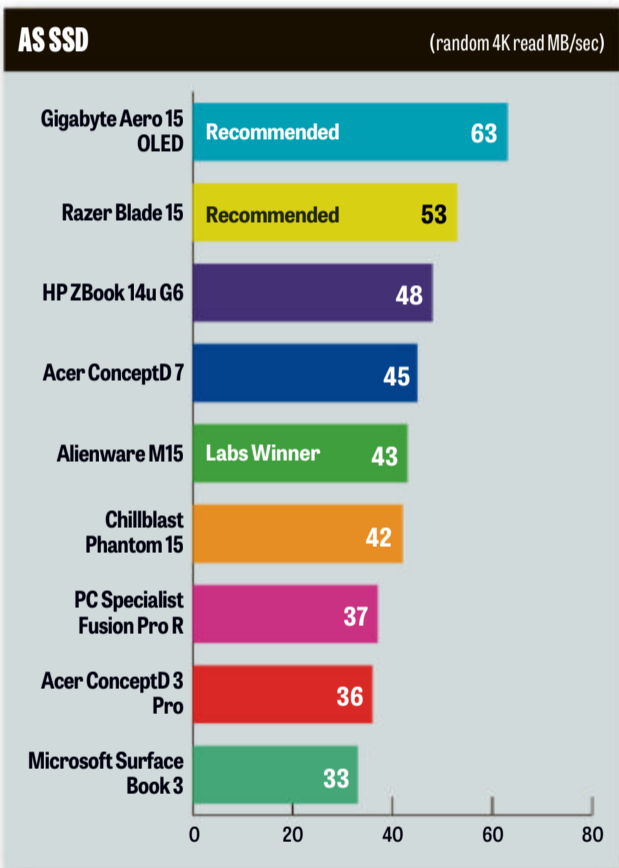
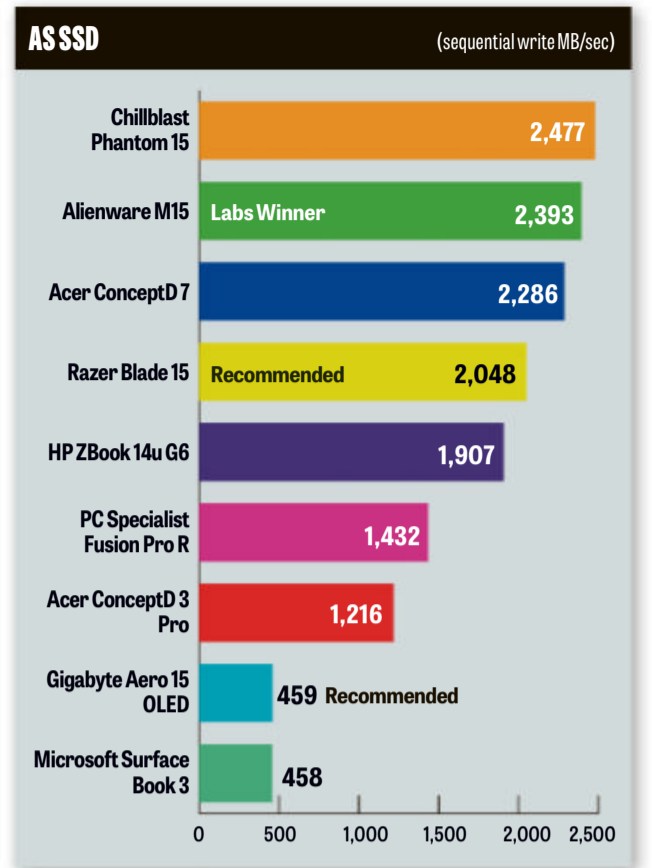
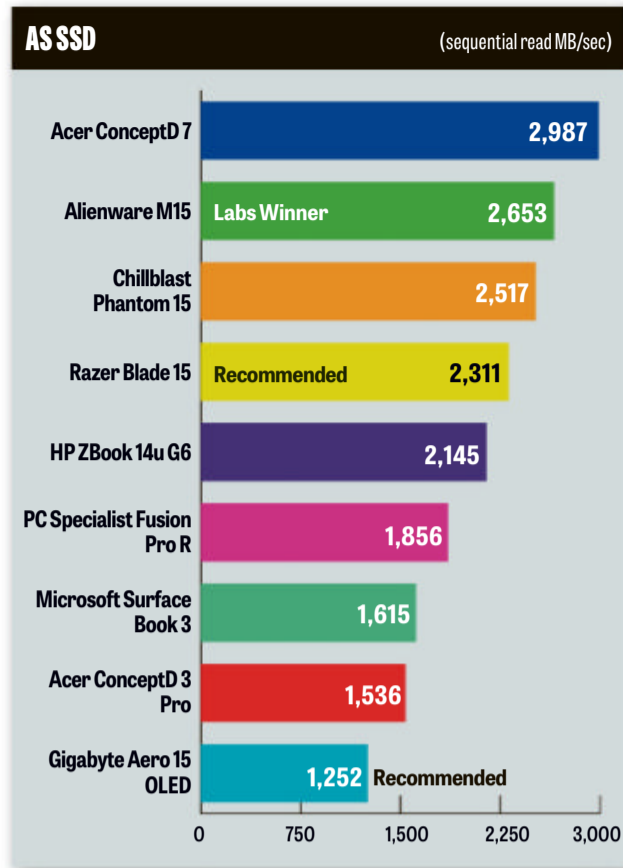
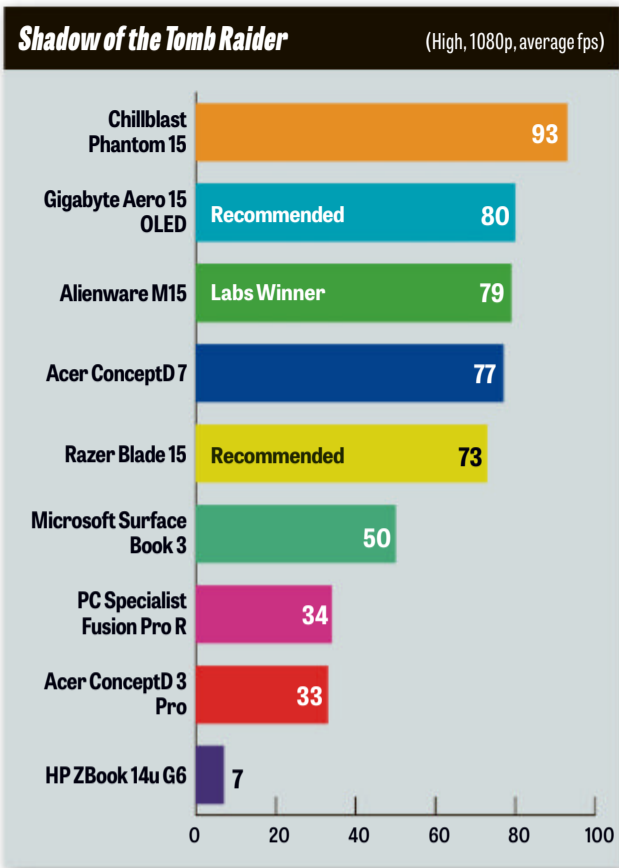


SPECwpc: Financial services



SPECwpc: GPU compute





VIEW FROM THE LABS

If you're suspicious of buying a "gaming" laptop for serious tasks, Stuart Andrews has some words of comfort

Before we start a Labs group test, we contact all the relevant manufacturers detailing the kind of machines we're looking for. In this case, I explained to them, we were on the hunt for serious creative laptops, so please could the various manufacturers either provide the kind of high-end, high-cost mobile workstations that they sell into the professional 3D graphics market or machines that focused on photography and digital design?

Yet something unexpected happened: a number of manufacturers asked if they could send in laptops that I'd normally think of as high-end games machines. There were various reasons behind this, but one message kept on coming through: these laptops had the specs, the features and the performance required for the most demanding creative applications. Why not try them and see how well they did?

Now, I'd always argue that there are good reasons to pay extra for a professional-grade device. After all, if you're going to roll out a new fleet of corporate laptops, we wouldn't recommend you cut costs by buying budget, consumer-grade devices. In business, security, reliability and long-term support all count.



Laptop maestro
Stuart Andrews is a former reviews editor of *PC Pro*

The same applies with workstation-class PCs. For applications such as CAD and professional 3D design, it makes sense to work with hardware certified by the application vendors, if only because the costs of software licensing are the real long-term expense, and you need to know that your applications will work reliably and effectively when you need them. Especially if that's what your business relies on.

Yet there's a lot to be said for putting games machines to some good old-fashioned hard labour. Their manufacturers have grown canny enough to soften some of the more aggressive design elements and

improve their core usability, and gamers are increasingly looking for screens that can do justice to the high-quality art and photorealistic assets being used in modern video

games. The explosion of streaming has created a demand for systems that can both play games and do real creative work.

Most of all, it's games, video-editing and 3D applications that keep pushing the limits of PC performance,



ABOVE Don't dismiss a gaming machine offhand – it could be the perfect fit for your design work

and the hardware that will run next-generation titles at Ultra HD resolutions at 60fps (or 1080p at 144fps) will also storm through 3D rendering and video-processing workloads. In fact, the growth of GPU-compute technologies, such as Nvidia's CUDA, aligned with GPU acceleration for some professional 3D rendering engines, pretty much ensures that gaming-grade graphics hardware will do the work. And because these laptops are commodity products rather than specialist, niche PCs, the pricing is often more attractive too.

I'm not telling you to embrace your inner gamer, or that a gaming laptop is the answer to every creative need – I just think it's worth keeping an open mind. Beneath that RGB lighting and jet-fighter design could lie a mobile graphics or video workstation that does everything you need in style. ●

“Most of all, it's games, video-editing and 3D applications that keep pushing the limits of PC performance”

PC Pro benchmarks

