

AUSTRALIA'S **NO.1 GUIDE** TO AUDIO & AV

SOUND IMAGE



**BETTER
THAN BOSE?**

B&W & Skullcandy aim
for noise-cancelling joy

TOP TVs OLED & LED



**PREMIUM
PRICES
SLASHED!**

WHICH TECH WINS?

LG OLED LAST CHANCE TO BUY!
PANASONIC OLED
SAMSUNG QLED
SONY 8K



REINVENTING PICARD

**PRIME'S STONKING
STAR TREK REBOOT
TAKES FLIGHT**



THE VERDICT

TOO MANY STREAMS?

**WHICH TO KEEP
FROM APPLE TV+
DISNEY+ & MORE**



ISSUE 332 MAR/APR 2020

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SOUND IMAGE

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MARCH-APRIL 2020

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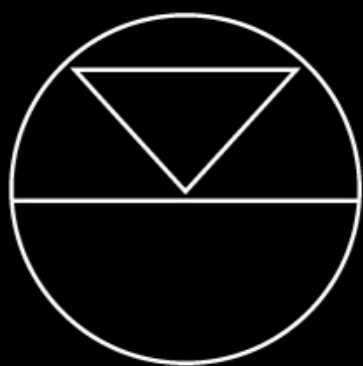
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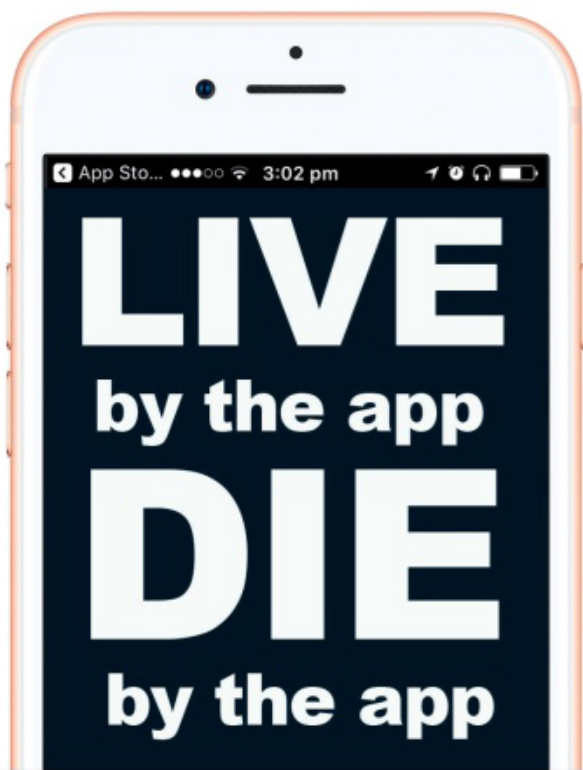
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Patrick Stewart has refused to return to Star Trek many times. Now he's back. What changed his mind, and is he still beholden to the Borg?

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4K Blu-ray delivers every twitch of Brad Pitt's micro-acting. Plus: baboon attack in space!



With traditional separates hi-fi, longevity has been a longstanding benefit. With modern smart hi-fi, not so much.

A friend has been wanting to upgrade his hi-fi for years, and this month he finally took the first step, replacing his 12-year-old Denon receiver. His choice of replacement surprised me — a 30-year-old Kenwood amp. It's quite the beauty, built in Japan, and highly nostalgic for him because he used to own the model below it, back in the day, before it was stolen in a burglary. When this one popped up for sale on the other side of Sydney he couldn't resist, and now it's in pride of place in his lounge, freshly buffed, and sounding great with both music and movies.

Being 30 years old, the amp lacks a few modern facilities — he needed to get a little DAC to handle his digital inputs, and an input switcher because (despite two phono inputs and two tape loops) it was one line-level input short of his requirements. But otherwise AOK. I couldn't tell you if any repairs have been made in its 30 years, but that amp is going strong and is most definitely an upgrade on his previous sound.

With good hi-fi, such longevity has been a longstanding benefit. Then came smart hi-fi, and lifespan immediately came into question. The addition of smarts, with app control and streaming, makes these product part hi-fi and part computer. The hi-fi part might last you 30 years, but whoever heard of anyone using a 30-year-old computer? Computer systems lose even official support far more rapidly: "Microsoft made a commitment to provide 10 years of product support for Windows 7 when it was released on October 22, 2009," said Microsoft as it dropped support for that operating system this January, the message being to 'just move on', despite NetMarketShare estimating that a quarter of the world's maybe billion Windows PCs were still using Windows 7.

But when Sonos recently attempted a similar announcement, owners loudly protested. Certain of its earliest products from 2006-2007 will no longer be supported by system software updates, and by way of apology it offered a trade-in deal giving a 30% discount on new products. Worse, if you choose to keep using the old products in a multiroom Sonos system, then none of your other Sonos products, however new, will be able to install

future updates — no bug fixes, no upgrades. That really stinks, and Sonos has since backpeddled, announcing it's working on a way to isolate the old stuff on a secondary system while still updating the newer products.

We've highlighted this problem with smart audio from the very start. Whenever we review a product which is so app-controlled that there's no other way to use it, we get nervous, and point out that products that live by an app can quite likely die by the app as well. Apps can disappear, through lack of support, through the failing of a company, or through a platform shift such as the wholesale dumping of 32-bit apps when iOS11 was introduced in 2017.

TVs have seen a similar shortening of lifespan as they've become smarter, although the shifts in resolution and screen size do add significant additional reasons to upgrade your TV sooner rather than later. But there's a difference between someone who says "I want a bigger TV" and someone saying "I need a smarter TV". In the latter case I usually ask if they're happy with the TV's picture performance, and if that's a yes, I prescribe adding an Apple TV or other media box rather than junking the telly. But of course I was raised in a home where war-baby parents would bang old soap bars together to form new ones.

Now I love a lot about smart hi-fi, and I've even become accustomed to the joys of having voice assistants all over the house. My latest triumph was using a waterproofed Google voice-equipped smart speaker while having a bath, and saying "Hey Google, broadcast 'Hey babe could you bring me the cider that's in the freezer?'" and lo, the cider did appear, although it was accompanied by some pretty loud stomps down the stairs.

But it's hard to avoid the conclusion that having smarts in a hi-fi, or dependence on software updates, effectively moves the product towards an IT product replacement cycle, and away from the longer consumer electronics cycle. For this reason it can be sensible to isolate your smarts in one source device, and for the rest of the system to stick with good old-fashioned longer-lasting dumb hi-fi.

Cheers,
Jez Ford, Editor,
Sound+Image magazine



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Musical Fidelity M8xi integrated amplifier

This is an important release from Musical Fidelity, as it's the company's first clean-sheet product build since they were purchased by Audio Tuning last year, even though Simon Quarry (the genius behind so many Musical Fidelity gems) has been retained as Technical Director and Designer.

The M8xi is a monster of an amplifier. Rated at 550 watts/channel it is designed to competently drive any loudspeaker in existence. The construction consists of a pre-amp with two mono-block power amps sharing the same chassis. Each component has its own power transformer and heat sinks. Most companies rate distortion measured at 1kHz; Musical Fidelity state a distortion rate of 0.004% at all frequencies from 20Hz to 20kHz. Its maximum peak output is 105 amps, and while that may not mean much to many people, to put it into perspective a 240V welder uses 90-100 amps, so you could probably weld with this amp!

The M8xi has multiple inputs, including 4 pairs of RCA and 2 pairs of XLR analogue inputs, plus 2 CoAx, 2 optical and 1 x USB input.

And it sounds great (after all it is a Musical Fidelity!).



Bang & Olufsen at Len Wallis Audio

There are very few brands in our industry with the appeal of B&O. In an age where many consumers are trying to hide the audio system out of sight, B&O is unashamedly designed to be proudly placed on display. This is a true merging of design and music (or as publication Wired described it "quality media delivery via striking objects").

While we have become accustomed to traditional box speakers of various shapes, B&O turns their speakers into technical pieces of art. Take, for example, the Beoplay A9 which comes in a variety of finishes, and can be floor- or wall-mounted. Despite its laidback minimalist design it features over 400 watts of amplification (1 x 400 watt amp for the bass driver, 2 x 200 watt amps for the midrange drivers, 2 x 200 watt amps for the full-range drivers and 2 x 150 watt amps for the tweeters). It has Chromecast, Airplay 2, Bluetooth and DLNA streaming, and advanced control functionality plus Active Room Compensation allowing you to place

it anywhere in the room with great results. You can also add a second A9 for full stereo effect.

Compare this to the Beolab 18, the Beosound 2 or Shape – these are all totally different concepts, yet all providing quality sound from speakers that are crying out to be seen.

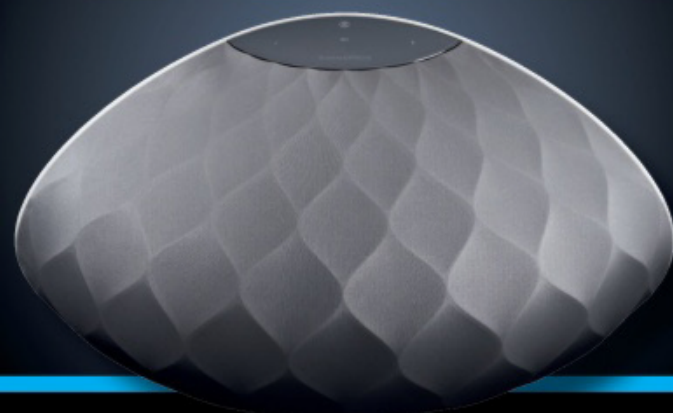
The other speaker that is making waves is their Stage – B&O's first soundbar. Firstly, this is a great-sounding soundbar (most aren't). Secondly it looks a million \$'s. Most importantly it is priced from \$2,500.

Finally, if you are looking for a TV like no other – have a look at their Beovision Harmony. Available in both 65" and 77" screen sizes this TV/integrated audio system is a great combination of technology, aesthetics and performance.

We have taken the unusual step of building a new room dedicated to the brand. There are many products that we do not have the space to cover here, so it is worth the trip to have a look at what they have to offer.

B&W Diamond Rewards Promotion

B&W are not adverse to running promotions, and the current one is excellent. This is a claim-back offer; if you spend a certain amount on B&W products (\$1,499 and over), you can claim back a reward. This starts with a pair of P13 in-ear headphones for purchases of \$1,499 to \$2,499 and rises to a pair of Formation Duo speakers, valued at \$6,400, for sales of \$40,000 and above.





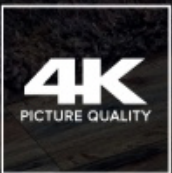
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NAD powers up new M33 with Eigentakt

NAD has used CES in Las Vegas to announce its first product to feature a new Class-D amplifier technology called HybridDigital Purifi 'Eigentakt' (which means 'self-clocking' or 'self-oscillating'), developed in collaboration with Danish amplifier module maker Purifi Audio.

The new NAD 'Masters Series' M33 is a DAC/amplifier that comes equipped with the BluOS (Bluesound) streaming and multiroom platform, and is fronted by a 178mm colour touchscreen, so that in addition to advancing on the previous M32 model it seems to be building on the success of the company's M10, while offering more inputs and, with the new technology, two sets of speaker outputs and higher power output of 200W per channel.

The new amplification is said to be 'ultra-quiet', "remarkable in that it nears the limits of even the most sensitive and sophisticated test equipment available." The 'Eigentakt' circuit is a hybrid circuit that Purifi's Bruno Putzeys takes pains to point out is "a fully analogue design with a loop structure that enables better control of the closed loop frequency response, so it's dead flat in the audio band then rolls off in a fully controlled manner with a sensible -3dB point at 60kHz." Purifi has gathered some of the best-known names in the audio business to its ranks, including Putzeys, Lars Risbo, Peter Lyngdorf, Kim Madsen, Soren Poulsen, and Carsten Tinggaard.

NAD's selection of the technology is a ringing endorsement, given its successful

pioneering of 'digital' amplification through first Direct Digital with Diode Zetex, and later HybridDigital with Hypex's Universal Class-D technology. With Hypex's nCore amplifiers well-established through use by NAD and a number of high-end brands of significance, the move to Eigentakt has been awaited with great anticipation, though others are already using Purifi's amplification, including Australia's March Audio.

The NAD M33 has six digital inputs including HDMI, and three analogue inputs including a MM/MC phono input, in addition to Bluetooth aptX HD, BluOS and Apple Airplay 2 wireless capabilities. It can be controlled by voice using an Amazon Alexa or Google Assistant device, and offers a fully discrete high voltage, low-output impedance headphone amplifier. The NAD M33 also has Dirac Live Room Correction on board, and the company's Modular Design Construction (MDC) with two 'empty' MDC slots ready for upgrade modules to guard against future developments.

Pricing and availability has yet to be announced. More info: www.nadelectronics.com.au



Hisense TriChroma 4K for Australia

Hot on the heels of winning our Sound+Image Award for Premium TV Solution of the Year, Hisense Australia has announced that the superior TriChroma version of its Laser TV concept will be heading to Australia in the second half of 2020. It uses three lasers of red, blue and green lasers, compared with the two (red, blue, with a phosphor delivering green) in the award-winning current model. The TriChroma version reaches an eye-popping 3200 lumens, and works like a TV with a smart interface and built-in speakers. Pricing is yet to be announced. www.hisense.com.au





▲ Striking looks and high performance combine in Rega's new \$5999 Aethos amplifier.

Rega's new Aethos

Rega's new reference stereo amplifier, the Aethos, has received its Australian launch, taking concepts from the UK company's award-winning Elex-R and Elicit-R amps to the next level in this dual-mono design. The Aethos combines striking looks with high-performance features, including polypropylene capacitors throughout the signal path, K-Power reservoir capacitors, and a high current output stage comprising four 160W 16A Sanken output transistors per channel. The output is quoted at 125W into eight ohms (0.007% THD+N @ 1kHz, 22Hz to 30kHz) or 156W into 6 ohms.

The Aethos uses a custom-wound toroidal transformer and regulated supplies for the sensitive amplification and driver stages, making use of the combined feedback and passive volume control plus line amplifier originally developed for the Elex-R but with improvements through the use of discrete FET input operational amplifiers using the Linear Systems LSK389 FET and the well-respected RK27 'Blue Velvet' potentiometer, an ultra-low-noise volume control of a type normally found only in professional broadcast equipment.

The headphone socket has also been integrated such that the speaker switching is performed by the output mute relay as so not

to obstruct the signal path with switches that might degrade the sound quality.

The power amplifier also builds on the performance of the Elicit-R and Elex-R with research by Rega engineers leading to the development of a new low impedance driver with Sanken Darlington transistors (with their embedded thermal bias network running at a lower standing current than usual low impedance drivers), this combination forming a complementary emitter follower emulating Class-A conditions with good thermal stability and lower standing currents in the driver stage, says Rega.

This further allows two complete output stages to run in parallel, including the output transistors, bias network and pre-driver transistor, instead of paralleling just the output transistors, as is more common practice.

It's designed to be versatile as well, with a switchable direct input and preamplifier output enabling the new amplifier to be used in a wide combination of system arrangements.

The Aethos measures 433 × 95 mm × 360mm (whd) and weighs 17.5kg. It will retail in Australia at \$5999, making it second among Rega's amplifier rankings, below only the flagship Orisis.

More info: www.synergyaudio.com



QUANTUM DOT OLED ON THE WAY

The race is on for the next generation of OLED, with Samsung Display formally announcing ₩13.1 trillion (~A\$16.5bn) over six years for investment in R&D and production lines for its Quantum Dot OLED technology, beginning with the conversion of an L8 LCD fab in Tangjong, Korea to QD-OLED production.

QD-OLED will give Samsung a front emissive technology with which to compete with OLED, although mass production could be several years away, potential issues remaining for the new technology in areas including material deposition, efficiency of blue QD-OLED emitters, and the possibility of burn-in. But the QD-OLED architecture is consid-

erably simpler than LG.Display's WRGB OLED displays and so might be significantly cheaper in the long run.

Meanwhile LG.Display's new OLED panel plant in Guangzhou began with yield problems from too many new technologies being introduced at once, and now faces potential disruption from the coronavirus outbreak.



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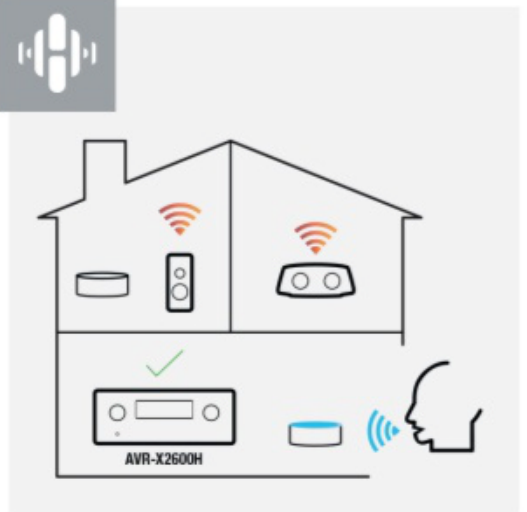


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bild 2 TVs herald revival for Loewe



Loewe's bild 2 range of televisions is now available in Australia through Indi Imports, in another indication of the revival of the German brand as it comes under the new control of Cyprus-based international investment company Skytec.

The bild 2 television comes in 43-inch and 49-inch options, both using 4K LED-E-backlit LCD panels supporting HDR and wide viewing angles, together with Loewe's usual level of intelligent interfacing including Loewe's app for smartphone and tablet, and compatibility with Alexa voice control. The bild 2 models also have integrated sound systems which benefit from the corrective audio processing of Mimi Defined.

Indi Imports also emphasises their style and versatility in being not only wall- or bench-mountable but also pairable with one of Loewe's attractive floorstands (right) for free-standing positioning anywhere in a room.

Repositioning with Skytec

New fruits from the new Skytec relationship are on a promise for announcement at IFA 2020 in September, including entirely new product categories for Loewe, one of which is likely to be smartphones.

"Skytec has immense experience in repositioning already powerful brands such as Blaupunkt and Sharp", notes Vladislav Khabliev, CEO of Skytec, referring to the 2016 business alliance between Skytec and Sharp to promote the manufacturing and sale of Sharp-branded products and services in Europe. Khabliev has also said that it will maintain and possibly expand Loewe's longstanding facilities at Kronach, Bavaria, while Loewe's relationship with technology partners such as LG Display, which provides OLED panels, and Hisense, which has been in partnership with Loewe since 2013, "should remain in the future and even be expanded".

Meanwhile the existing range of audio and video products remain available in Australia through Indi Imports, with the 43-inch bild 2 selling for \$2499 and the 49-inch for \$2999.

More info: www.indiimports.com



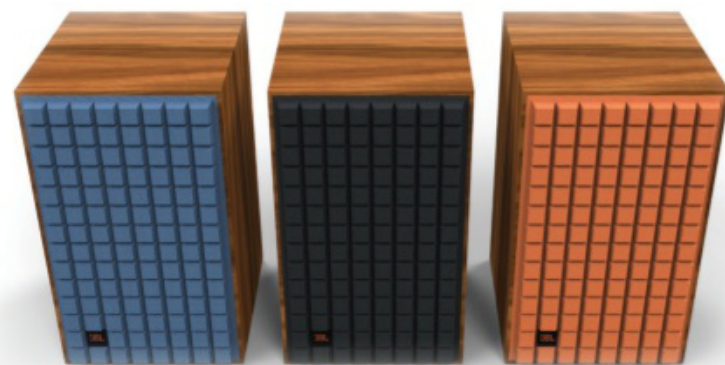
It's a JBL Classic!



JBL's updating of its L100 Classic loudspeaker has proven such a success (including a Sound+Image Judges' Choice Award) that the company has done another — and this time it'll fit on your bookshelf. The new L82 Classic stands 47cm tall, boasting the same vintage styling with a genuine walnut satin wood veneer cabinet and the iconic Quadrex foam grilles available in the same choice of black, orange or blue. But beneath the period external design, the L82 Classics use thoroughly modern acoustic components: a one-inch titanium dome tweeter mated with a waveguide — the same high-frequency components found in

the larger L100 Classic, together with a white eight-inch (200mm) cast-frame pure-pulp cone woofer operating in a bass-reflex design with a front-firing tuned port. While termed a 'bookshelf' design, the L82 Classics will give of their best when angled gently backwards on the optional JS-80 floorstands in a freestanding environment. Due soon in Australia, price to be confirmed.

More info: www.convoy.com.au



Dynaudio Performance in your wall

Dynaudio is expanding its architectural speaker offerings, with a new Performance range marking the entry point to its Custom product line-up, and also two new outdoor speaker models.

The Performance series includes both in-wall and in-ceiling speakers, plus an interesting in-surface subwoofer, the Sub RCC (pictured below), which is designed to complement both the Performance and Studio series. The passive subwoofer's rigid, compact and low-resonance one-piece extruded aluminium enclosure can be installed in walls, ceilings or even floors, mounting on the wall surface or into a 2x4 stud-bay before or after construction, with no back-box necessary. The 'RCC' stands for Reactance Cancellation Configuration, derived from Dynaudio's professional

studio subwoofers, where two sets of opposed drivers work together to cancel unwanted vibrations to leave only the desirable acoustic energy emerging from the grille in the image below. Specified down to 16Hz $\pm$ 3dB, the Sub RCC sells in Australia for \$1899.

The in-wall and in-ceiling Performance models all share a 28mm soft-dome tweeter together with different woofer implementations. Three models are priced at \$699 each: the P4-W80 in-wall and P4-C80 in-ceiling speakers, each with the tweeter and one 8-inch MSP woofer, and the P4-LCR50 in-wall with tweeter and two 5-inch woofers.

The P4-W65 in-wall and P4-C65 in-ceiling speakers offer the tweeter and 6½-inch MSP woofer for \$549, while the \$649 P4-DVC65

in-ceiling speaker has two 28mm soft-dome tweeters and the 6½ inch MSP woofer.

For these in-wall and in-ceiling Performance speakers, a shallow-depth, fire-proof metal back-box is available as an option.

The two outdoor speakers are the \$899 OW-6 with a 28mm soft-dome tweeter and 6½ in woofer) and the \$1099 OW-8 with 28mm tweeter and 8-inch woofer. Available in black or white, both designs can be connected to a regular amplifier as passive 8-ohm speakers, or daisy-chained on a 70V/100V system by using the selector on the rear.

Dynaudio is distributed in Australia by BusiSoft AV: www.busisoftav.com.au



▲ The Dynaudio Sub RCC with its grilled slot for audio egress; ▲ The in-ceiling P4-C80 and ► the in-wall P4-W80.

Sennheiser's nice-price noise-cancellers

Sennheiser announced two new over-ear wireless noise-cancellers at CES in Las Vegas, the \$299.95 HD 450BT and \$199.95 HD 350BT. They're nicely priced below the premium \$599.95 Momentum Wireless 3, yet still offer active noise cancellation and Bluetooth codec support for AAC, aptX and aptX Low Latency for devices supporting them. The compact folding

closed headphones promise an impressive 30-hour battery life, with USB-C charging including rapid top-up charging, and sound tailoring via Sennheiser's Smart Control app, including a new podcast mode. We'll have a full review of the HD 450BT in our next issue. More info: www.sennheiser.com.au





A NEW THEORY FOR SOUNDBARS

The first seven products from a new brand, Theory Audio Design, have been released and will be available in Australia through Queensland-based distributor Cogworks. Theory Audio Design is a newly-established division of Pro Audio Technologies, based in California, and while the range includes architectural speakers and subwoofers, one of the most interesting aspects is the company's approach to the much-maligned soundbar.

"Historically, soundbars and small on-wall loudspeakers have lacked the acoustic power to convincingly recreate a motion picture anywhere near reference level," says Theory's Joe Hales, explaining that Theory made this the focus of their entire business, and claims that the company's three new soundbars provide reference-level theatrical-quality sound from their contoured enclosures

(below), with the three initial soundbar releases sized to match 65, 75, and 85-inch screens when they sit underneath. These are all three-channel units and they are passive, requiring external amplification via the Theory amplifier shown above. All use six 127mm-diameter carbon-fibre coned bass/midrange drivers and three 35mm polymer compression drivers. Prices are \$4499 (SB65), \$4899 (SB75) and \$5299 (SB85).

Theory claims (and reports from demonstrations have enthusiastically confirmed) that the soundbars are capable of 112dB SPL at one meter from a single channel, with the complete soundbar able to generate in excess of 120dB sound pressure levels, making reference level at your listening position possible from a soundbar.

Since the soundbars are passive, the idea is to drive a combined system of speakers, soundbars and subwoofers (Theory's subwoofers are also passive) using the Theory ALC-1809, a nine-channel Amplified Loudspeaker Controller rated at 200W for each of its nine channels. The ALC-1809 uses a 32-bit digital signal processor to provide 80-band parametric

EQ, and automatic audio signal ducking for intercom and paging applications (useful particularly when the ALC-1809 is used with voice control). Theory describes the ALC-1809 as "five products in one: a multi-channel DSP processor, high power multichannel home theatre and distributed audio amplifier, multichannel mixing amplifier, multichannel bass manager, and high-resolution loudspeaker processor, all in a stylish, 1U package."

The first of a range of four Theory multi-use on-wall speakers released is the entry-level SB25, a two-way speaker using two 127mm-diameter carbon-fibre-coned bass/midrange drivers and a 35mm polymer compression driver housed in an aluminium case. They are sold individually, with each one selling for \$1899.

A range of architectural speakers for in-wall and in-ceiling use will also become available from Theory later in 2020.

THEORY AUDIO DESIGN'S FIRST SEVEN

- SB65 passive soundbar: \$4499
- SB75 passive soundbar: \$4899
- SB95 passive soundbar: \$5299
- ALC-1809B amplified speaker controller: \$5999
- SB25 on-wall speakers: \$1899
- SUB 12 12-inch passive subwoofer: \$3499
- SUB 15 15-inch passive subwoofer: \$4299

More information: www.cogworks.io





“Panasonic’s rationale is the same as Mercedes-Benz exiting the market because they cannot be price-competitive with Toyota.”

TALKING SHOP

LEN WALLIS *writes...*

There can be few occupations where you are working with the heart and emotion as much as you are working with the head and logic. At the same time there are things about this industry that frustrate me.

Panasonic has recently announced that it is exiting the TV market in Australia. Apparently they cannot remain competitive under the trying conditions that so many companies in Australia are currently experiencing.

My frustration is why do Panasonic, like Pioneer before them, feel that they need to be price-competitive in the first place?

It is no secret that we at Len Wallis Audio believe the Panasonic OLED screens to be the best on the market. In fact we consider them to be the best domestic screens ever released in Australia — finally outgunning the legendary Kuro screens produced by Pioneer a decade ago.

These are premium products. Surely they could tolerate a premium price-tag. Yes, Panasonic may lose some support from the major outlets, but there are still many people who will seek out, and pay for, a product that is demonstrably better.

To me Panasonic’s rationale is the same as Mercedes-Benz exiting the market because they cannot be price-competitive with Toyota.

The market for quality products in Australia is alive and well. The motor vehicle industry has just come out of a horrid 12 months with sales reportedly down 8%. Unless you were Ferrari, Lamborghini, Porsche or Rolls-Royce, who all saw growth during the same period. Try buying a Rolex Daytona watch over the counter: you will need to lodge an ‘Expression of Interest’, and then wait your turn. According to research company Statista, luxury sales of goods in Australia are tipped to rise by 2.8% this year, a very different scenario to the forecast for retail in general.

There is still a sizable demand in Australia for quality products, and people will pay a premium for these products if the price being asked can be justified, and if the product in question offers better performance than the lesser-priced alternatives. Panasonic OLED TVs are (or rather were) one of those products.

I suspect we have, yet again, taken a step backwards. It is our loss.

Len Wallis
Len Wallis Audio, www.lenwallisaudio.com



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DANISH SOUND DESIGN

EST. 1968



More Demand from Def Tech

We rated the Demand D9 very highly, one of three standmounts in the original series from Definitive Technology, so we were pleased to see two new tower models and a centre speaker at CES in Las Vegas, completing the six-strong range shown below. The new towers are the Demand D15 and Demand D17 (pictured right), and they continue the clean, modern look and bead-blasted aluminum baffles, retaining the offset annealed aluminium-dome tweeters while gaining new dual carbon-fibre bass drivers and dual side-firing passive radiators for what the company promises as “some of the smoothest, most accurate and rich reproduction of any tower on the market in its price range”. The D17 is due in Australia in March, price \$8099. More info: www.westan.com.au



◀ Technics EAH-AZ70W ♦ Jabra Elite Active 75t ▶

The age of true wireless

While high-end audio has all but left the building at CES in Las Vegas these days, there's no shortage of headphones on display, with True Wireless designs to the fore. A couple we'd seen before — **JBL's Live 300TWS** was shown at IFA in Berlin last September, offering six hours of playback from a single charge, extended to 18 hours using the battery-pack case. They work with Harman's Personi-Fi app to 'auto-calibrate' for your tastes, and have both an Ambient Aware function and Talk Thru to interact with the world without having to take an earbud out and potentially dropping it down a drain. They also connect through the app to Amazon Alexa or Google Assistant. Local price TBA: www.jbl.com.au

The prize for shininess goes to the **Technics EAH-AZ70W**, a stylish design using 10mm dynamic drivers whose diaphragms have been graphene-coated to increase their strength, and Dual Hybrid Noise-Cancelling Technology, which adds digital processing to the traditional analogue feedback, using three microphones in each earpiece. These also quote six hours battery life and another 12 from the charge case. Local price again TBA: www.technics.com/au

As with the Jabra overear noise-cancellers we recently tested, the new **Jabra Elite Active 75t** True Wireless earbuds work with an app allowing almost excessive levels of cunning

personalisation, and add a new Jabra MyControls app which lets you change what the button on each earbud does. They're nearly 25% smaller than the previous 65t, are waterproofed to IP57 rating (so immersible), with quoted battery life of up to 7.5 hours plus 28 more from the case. www.jabra.com.au

Last but not in any way least is **audio-technica's ATH-ANC300TW**, their Connect app offering three noise cancellation presets, while they have a quoted 4.5 hours of juice, topped up by another 13.5 hours from the carrycase. They're due in May, price TBA: www.audiotechnica.com.au



▼ audio-technica ATH-ANC300TW ♦ JBL Live 300TWS ▼

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Evoke is for you. It's for living rooms. Home cinema rooms. Listening rooms. Even bedrooms. It's serious hi-fi, everywhere.

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DYNAUDIO



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To find out more about the Dynaudio EVOKE range or your nearest retailer, please visit www.busisoft.com.au



Crossing the streams



Two heavyweight contenders, Apple and Disney, have muscled their way into Australia's streaming video battle royale. And they're not the only contenders in the fight to rule our lounge rooms, writes Adam Turner.

Streaming has taken over our viewing so rapidly and totally that it's easy to forget that Netflix launched here only five years ago. Prior to that, tech-savvy Australians resorted to VPNing US Netflix into their Australian homes (and many still do), until the official launch brought the promise of legal local relief, especially for Aussies who had been forking out more than \$100 a month to Foxtel in order to enjoy all that television had to offer.

But now the streams are multiplying. Let's say you want everything on offer today — all the major Australian services at the best available picture quality: Netflix, Stan, Amazon Prime Video, YouTube Premium, 10 All Access and Hayu, along with newcomers Disney+ and Apple TV+. You'd be up for \$93 every month, and that's before you cough up for any form of Foxtel, sign up for a streaming sports service like Kayo or Optus Sport, or shell out for a streaming music subscription. In some ways, we're back to where we started.

What we've gained, of course, is on-demand access to a vast catalogue of content. But even this has a significant hitch. It's not like music streaming services, which all serve up pretty much everything, so that whichever one you choose, you need choose only one. In contrast the proliferation of streaming

services has seen the increasing division of video content between multiple providers, with the side-effect of raging investment levels in original content which can offer something unique to each platform,

As Aussies tighten their belts, we're going to start questioning which streaming services are worth the money. Disney and Apple have taken different approaches to the main incumbents of Netflix and Stan. and these might see them find a place in your home. The question is likely to be — for how long?

First bite: Apple TV+

It's not like Apple to do things by halves, yet it's off to a rather subdued start with its Apple TV+ service, which will set you back \$7.99 per month after a seven-day trial.

Apple has gone all-in on original content — and nothing else, which meant launching with less than a dozen TV shows, aimed at a range of audiences. The line-up includes the Emmy-winning drama series *The Morning Wars* which takes aim at sexism and inequality, alternative history drama *For All Mankind* in which the Soviets beat the Americans to the Moon, and dystopian sci-fi drama *See* in which Aquaman runs and swims around with no shirt on. More content is already arriving or on the way, such as Oprah Winfrey's documentary series, and Steven Spielberg's remake of the 1980s anthology series *Amazing Stories*.



You can also pay extra for ‘Apple Channels’ packages, with the local line-up including 10 All Access, Mubi, Tastemade and Smithsonian Channel Plus. You can also link your Disney+ account. It’s a reasonable start but is naturally underwhelming compared to what’s available for package subscribers in the US.

While this approach seems bewilderingly unlikely to pull in many paying subscribers, Apple can afford to get off to a slow start because it’s handing out a free 12-month subscription to everyone who buys a new iGadget, Mac or Apple TV streaming box. This lets Apple brag about its millions of subscribers, while hoping they’ll find something worth watching by the time they need to start paying.

You can watch Apple TV+ on computers, smartphones and tablets, plus in the lounge room it’s available on the Apple TV box, Amazon Fire TV stick and Roku boxes. There’s AirPlay support in Apple’s TV app for streaming from iGadgets to an AirPlay-compatible smart TV, but no Chromecast streaming so you can’t fling video to a Google Chromecast dongle plugged into your TV.

You’ll also find the Apple TV+ app on some Samsung & LG smart TVs, with Sony due to follow suit. Depending on your playback device, you can enjoy Dolby Vision and Dolby Atmos. And unlike Netflix, Apple doesn’t charge extra if you want Ultra HD

or to watch multiple simultaneous streams. For your \$7.99, up to six people can watch different content on different devices at the same time and you can switch between Apple IDs on the Apple TV so that what your spouse watches doesn’t influence your recommendations.

So we reckon Apple’s TV+ service will be a slow-burn, and that the quality of its ongoing original content will govern its longterm success

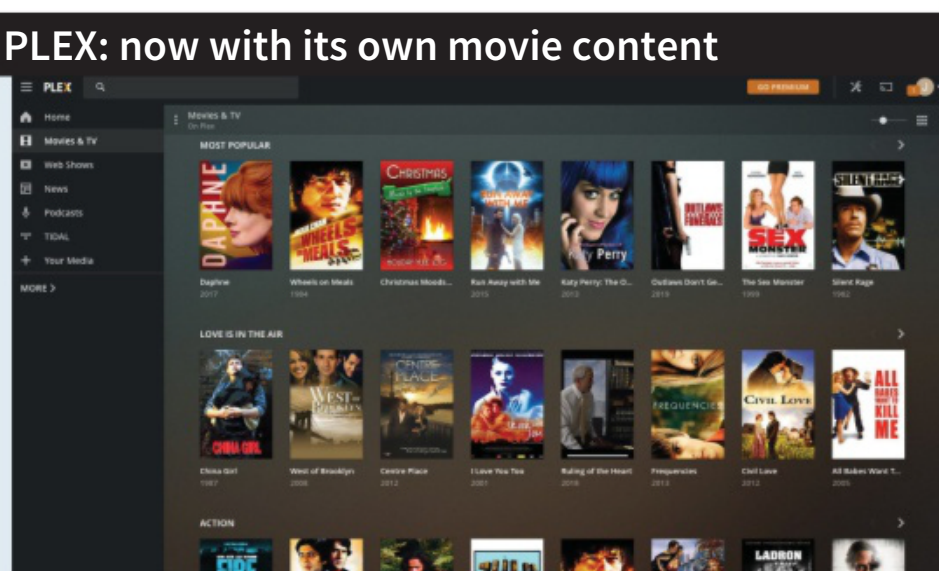
◀ OPPOSITE: Apple TV+ opened with a small opening salvo of original content; ▲: Disney+ offers more classic content.

in gathering repeat subscriptions. But it’s easy to see the sense in the strategy of focusing on originals, rather than playing the licensing game like Netflix, where you can see your library decimated as flagship content is pulled away to underpin some new streaming service providers — like Disney...

Free stuff pt1: PLEX: now with its own movie content

After years of widespread use as a home server system adept at serving video, audio and photo files around a home (and potentially beyond) from centralised home storage, Plex has clearly seen the streaming on the wall and

has begun to offer its own selection of TV and movies, alongside web shows and podcast content. Pleasingly it’s all free; less pleasingly, it’s rather ad-heavy, not too bad if you’re watching continuously, but if you’re the kind of viewer who pauses and returns regularly, the ads come



on every time you sit back down to restart. For existing Plex users the content is a bonus, while those attracted by the content (we couldn’t resist rewatching *Zulu*) will discover the versatility that the Plex app and server can deliver, even without moving to the \$6.99 premium service.

The mouse that roared

Disney is taking a very different approach to the streaming wars, bringing a set of 'studios' to its home screen as well as calling on its massive back catalogue — all the way back to *Steamboat Willie*. The Disney+ app launches with five main headings to its home screen — Disney, Pixar, Marvel, Star Wars, and National Geographic.

The Disney+ streaming video service will set you back \$8.99 per month (or \$89.99 per year) after a seven-day trial. Along with its arsenal of existing content, Disney is also investing in original programming like *The Mandalorian*, the first live-action Star Wars television series (see our review), and Disney movies such as the new live-action version of *Lady and the Tramp*. Another welcome development is the inclusion of extras with many movies, including full-length documentaries in some cases — we love our extras, and the loss of these is often cited by those still wedded to movie ownership as one of the reasons for continuing to purchase discs.

At first glance Disney+ seems like one of the healthiest content libraries in Australia. Once you scratch the surface, however, you start to find limitations. It is very family-orientated, for one thing, although this might be expected from the house that Mickey built. Most of the TV shows are aimed at pre-teens, while the movie library is targeted squarely at family movie night.

Once you exhaust the animated classics and fill in any missed Marvel and Star Wars movies, there are no fewer than 29 Simpsons seasons, and a National Geographic library including a good selection of US vet shows. But you might struggle for something to watch after the kids go to bed. Disney is playing it so safe that Marvel's *Deadpool* got benched.

Review: THE MANDALORIAN: The Good, The Bad & The Ugnought



The Mandalorian doesn't have an opening 'Star Wars'-style crawl, but if it did it could easily start "*Guerre Stallari, Episodio VI E Mezzo: C'era Una Volta Nello Spazio.*"

Because it's basically a spaghetti western in space. And that works — heartwarming so — even if it does often feel like an overly referential cover version of Star Wars.

Space westerns are nothing new: *Firefly*, *Outland* and *Battle Beyond The Stars* are obvious examples, and Han Solo is clearly a space cowboy. So turning a series spotlighting one of Star Wars's bounty hunters into a spaghetti western is a no-brainer. The unnamed Mandalorian at its heart is a taciturn Clint Eastwood analogue: not just a man with no name but no face either, since Mandalorians never remove their helmets. The story is set shortly after the fall of the Empire in *Episode VI*, so this galaxy far, far away currently feels like a lawless no man's land. Plus, all the featured planets are very desert-y.

As Disney+'s lead piece of original content and a huge draw for Star Wars fans, it's a relief that the first episode is huge fun — action-packed and unashamedly episodic. It's populated with fan-pleasingly familiar aliens, and instantly endearing (or hissable) support characters drawn in the broadest strokes, including Nick Nolte as a brusque Ugnought and Taika Waititi as an over-earnest droid. There are Easter eggs galore, a rousing score, plenty of laconic one-liners and some impressive action sequences.

It's been called "dark" in some quarters — and there's certainly a high body count — but it's a very cartoony violence. This isn't *Battlestar Galactica*; it's still very much Star Wars in tone — original trilogy, specifically. The main problems are some clunky dialogue, Pedro Pascal not having quite worked out how to use body language to act through his Mandalorian armour, and a sense that it's all very slight. Until the cliffhanger that is, which promises major revelations to come...

Dave Golder

Free stuff pt2: KANOPY: another reason to join your local library...

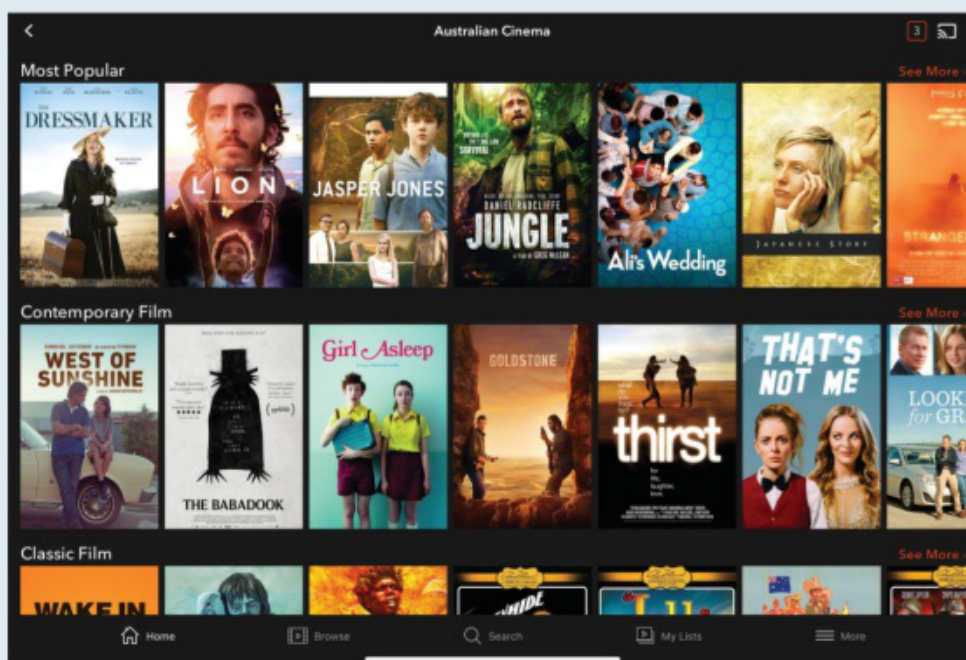
Our Editor is always banging on about Kanopy, partly because so few people are aware of its existence. It began in Perth, but has become an international cross-platform service loaded with material considered arty or educational; indeed it began as a university-only service, but has found its zenith as a service offered free — yes free — to anyone with a library card from a library which supports the service. However there is a limit on the number of items you can watch per month — five in our Editor's suburb, so you learn to make your choices wisely!

To find out if your library qualifies, just type its name

into Kanopy's home screen. (We'd also recommend investigating whether your library offers free magazines on RBDigital or free audio books and

Kindle books through BorrowBox. Libraries ain't what they used to be.)

Content may vary according to your library, but Kanopy has a great selection of movies, including well-populated Australian and foreign-language sections. Perhaps the greatest bargain for free is the selection of 'courses' from The Great Courses; it would cost you \$249.95 to stream the 24-part lecture series 'How Winston Churchill Changed The World' via thegreatcourses.com.au, yet on Kanopy the whole thing counts as just one of your monthly views. So get off your couch and go sign up for that library card!



Another Disney issue is that half of the movie library is at least 30 years old. While it's family friendly it perhaps hasn't aged that well; you wouldn't inflict most of it on today's youth and much of it bears the disclaimer "may contain outdated cultural depictions".

That said, you might want to dive back into the cheesy movies of your own childhood. We're talking *Old Yeller* and *Davy Crockett* from the 1950s, *The Love Bug* and *Mary Poppins* from the 1960s, along with *Freaky Friday* and *Bedknobs and Broomsticks* from the 1970s.

Disney+ seems like the kind of service that many homes might sign up for over the holidays but then put on ice when the kids go back to school.

You can watch Disney+ on practically any device — computers, smartphones, tablets and games consoles as well as via the AppleTV, Amazon Fire TV stick, Android TV and Roku boxes.

You'll also find the app on some LG, Samsung and Sony smart TVs, with support for both AirPlay and Chromecast streaming from the smartphone app. Depending on your playback device, you can also make the most of Dolby Vision and Dolby Atmos.

Disney has also decided not to charge extra if you want to stream in Ultra HD or watch multiple simultaneous streams around your home. For your \$8.99, up to four people can watch different content on different devices at the same time, and you can create seven user profiles for the various members of your household.

With Disney, Apple and Amazon all resisting the temptation to introduce higher pricing tiers for hi-def content and multiple streams, it puts more pressure on Netflix and Stan to follow suit. They demand \$20 and \$17 respectively if you want to stream in Ultra HD, but their expensive licensing deals might not give them the freedom to drop their prices.

Same Bat-time, same Bat-channel

It's interesting that both Disney and Apple have decided to return to the traditional weekly release schedules of broadcast television, rather than the binge-friendly practice of dropping an entire season at once.

Releasing an entire season at once rather than making viewers wait is a tactic that has served Netflix well, with the exception of a handful of titles which are tied to the broadcast schedule, such as *Star Trek: Discovery* which is a collaboration with CBS.

Returning to the weekly schedule seems wise for a service like Apple TV+, with its slow-burn strategy. Like HBO's *Game of Thrones*, Apple's original content will benefit from weekly water-cooler chats and online wrap-ups. This helps build momentum and puts peer pressure on viewers to maintain their

DON'T DISS THE DISCS: the joys of ownership & extras



Blu-rays and DVDs are in undeniable decline since the rise of streaming, while 4K Blu-ray has found a niche, but a small one. With one new Blu-ray like to cost more than a month's subscription to perhaps two streaming services offering hundreds of movies, plus the need for a player and physical storage, why would you buy discs?

The answer for video enthusiasts is quality: even if your subscription service offers 4K UHD resolution, delivery will be heavily compressed in many ways compared to the lighter compression used on discs; bit-rates don't lie. There are also often extensive extras on discs, something missing from streaming services (until recently: Disney+ is notable for its extras). And don't

underestimate the joys of ownership — that disc is yours, and it'll always be there, while content on streaming services comes and goes. As streaming users quickly discover, it's rarely successful to think of a particular movie and then look for it; if you search on a combined database like Just Watch, Murphy dictates that your choice will be on a service you don't currently pay for. Discs are (well, kinda) forever, always available.

And you can buy them secondhand. As with vinyl in the 1990s and CDs now, op shops and Cash Converters are stacked with DVDs and Blu-rays at a buck or two each. Save your Netflix dollars for a year and that's a nice little disc collection in the making, and it's yours to keep.

subscription and watch week by week, rather than signing up for one month and having a binge session through the lot.

Drawing a line in the sand

Australians have made it clear that we're prepared to pay for multiple streaming video services, but eventually something has to give.

While the likes of Apple and Amazon struggle to match the libraries of larger rivals, the fact they're not charging extra for Ultra HD and multiple streams might help them push Netflix and Stan down the pecking order in some homes. Prime also comes with the not insignificant benefits of free Amazon shipping, even from the States, along with access to Twitch gaming channels, some free Kindle books and other offers (including at the time of writing, 15% off nappies and baby wipes).

You're also more likely to see busy households put Netflix on hold over holiday periods in favour of Disney and then switch back, to help curb their streaming bills. Some people will turn back to the BitTorrent channel, while account sharing within extended families is also likely to rise — splitting the various subscriptions between households and then sharing the logins.

Others may reach subscription overload and return to the joys of free-to-air TV. It's certainly worth catching up with the catch-up apps for our broadcast channels: they offer a wealth of free content, ad-free in the case of

the ABC's iView, and not too ad-heavy in the case of SBS. Those fond of world cinema, documentaries and foreign language drama may need never subscribe to a paying service, so chocka is SBS with binge-worthy Scandi-noir and movie classics.

The ABC brings a wealth of Auntie's local content as well as shows from the BBC and more besides, all served ad-free.

The catch-up services for 7, Nine and 10 cover most of what's on their free-to-air channels, while the ability to search the apps by category can reveal shows previously unnoticed; fans of *Masterchef Australia* for example, will find multiple seasons of both *Masterchef USA* and *Masterchef USA Kids* on 10Play.

The trick with broadcast catch-up services is having the interface that supports them all; some smart TVs have apps for some channels but not others, or have catch-up but not live channel streaming, or offer the useful but less effective FreeviewPlus app. Otherwise use a media player: AppleTV supports all the separate apps, as do FetchTV PVRs.

Fragmentation of the market means there's no longer just that one streaming Netflix service to rule them all. That's good for content and variety, but it does mean you'll need to dip into them all to see which are the best fit for your household's content preferences — and your budget. +

Adam Turner. Additional: Jez Ford

TOP TVs

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WHICH TECH WINS?

LG OLED LAST CHANCE TO BUY!
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TVs ON TEST THIS ISSUE

Sony Master Z9G

85-inch 8K TV

Price: \$21,995

Panasonic TH-65GZ2000U

Price: \$8299

Samsung QA65Q90R

Price: \$6099 (but see article)

LG OLED65C9PTA

Price: \$5589 (but see article)

Sony X95G 65-inch

Price: \$2495

- + Motion processing: p40
- + Next year's TVs at CES: p41

Times were when televisions were little more than dumb displays with a TV tuner attached. Then came the advent of home video, with those clunky video cassette recorders requiring TVs to have an external input. Then LaserDisc, then DVD and on to downloads and streaming, so that today's TVs are all about processing power, streaming apps, network connections and smart interfaces.

Yet at the heart of it, picture quality remains the core by which to judge a TV. OLED has proven itself the cream among screen technologies, but it hasn't much advanced in recent years, and remains at a significant price premium, while LCDs are fighting back with ever more detailed backlighting, the colour precision of Quantum Dot displays and, not so far into the future (see our CES coverage on page 41), dual-layer LCDs and front-emissive LCDs which may match everything OLED can boast and more.

Then there's the resolution debate currently raging around 8K — 7680 × 4320 pixels, four times the number of a 4K TV. The manufacturers are keen that 8K will drive the next round of TV upgrades, but is it a useful advance over 4K in the average home? The question has to be asked when there is next to no content available and no plans for 8K discs, while foreseeable 8K streaming will require either significant compression or else huge bandwidths and data for which Australians

would need a very healthy NBN plan to stream. The technology which may finally enable 8K delivery is 5G, and TV manufacturers in Asian markets are already toying with 5G-equipped TVs. But this will require 5G services to become more widely available, and with unlimited data plans available.

Such caution about recommending 8K has been lambasted by some enthusiastic early adopters in forums — “They said the same about 4K!” is a typical comment. But we *didn't* say the same thing about 4K; we supported Ultra HD from the beginning, because there was a clear path to content, even though UHD was another push from the panel manufacturers, not the content creators. Practical 8K delivery, on the other hand, seems still years away, especially for Australia. But the TV manufacturers need a ‘next big thing’, so currently they are emphasising the effectiveness of upscaling to 8K — and for giant screen sizes (75-inch and up), all those extra pixels might just be useful, especially if you take the opportunity to move up close — see our 8K info panel opposite for more.

With 4K content and HDMI 2.0/2.1 have come wider colour gamuts (WCG: more available shades) and High Dynamic Range, which really can have a significant effect on the final image quality, as our reviews note. But there's also a lot of faking going on. Premium TVs are using their powerful processors to ‘upscale’ colour performance from non-WCG material, smoothing out the ‘banding’ you can experience from signals with lower colour resolution; they also attempt to deliver an HDR-like image



CES in Las Vegas each January remains the key launchpad for new TV models and new concepts. This year the show floor hosted next-gen 8K TVs from LG, Samsung and Sony; Panasonic's flagship 4K OLED; and next-generation mini-LED and Micro LED displays from TCL and Samsung respectively. Above, Dr. Liu Xianrong, chief scientist of Hisense Laser Displays, explains the Self-Rising Screen Laser TV, with a screen that rolls into the unit when not in use. You can read more on key releases in our CES TV round-up starting on page 41.

from non-HDR signals. Which is a noble effort, if not strictly accurate, as guesses must be made about the original material, and as with motion processing (see page 40), that's not always a good thing. At the lower end of the TV world there's some outright deception: for example an 'HDR-compatible' TV doesn't necessarily mean it displays HDR; it might just mean that it can accept the signal, yet doesn't have a big enough pipe downstream to use the extra information. So it's not HDR at all.

None of the TVs reviewed here do that. They are all premium models, starting with a true 8K LED television from Sony, then Panasonic's top-of-the-line premium 4K OLED at \$8299. Panasonic has just made the surprise announcement that it's pulling out of TVs in Australia, making this range-topper the last and best Pannie you could own — now in a 'while stocks last' situation. We then settle down with models from Samsung, LG and another Sony to finish our group around \$2000. There are, of course, good TVs below that — our recent award-winner from TCL, the X7, is a fine example, and not alone in offering great value. Finally we've included a round-up of the latest TVs on show at CES 2020 in Las Vegas, models that'll reach us later in 2020, along with concept ideas that may never be released at all. But if it's premium you want, and you want it now, read on...



Let's talk about 8K...

▲ SECOND SEASON: Samsung's second year of 8K QLED TVs on display at IFA Berlin in 2019.

The Sony television overleaf is the only 8K television in this group — and it's a cracker in many regards. But as you'll read, we're not convinced anyone needs to buy an 8K TV yet, because a lot could change before any real 8K content arrives to make the most of its higher resolution. Here's a primer on the tech, and where it's up to...

What is 8K?

8K refers to resolution — the number of horizontal and vertical pixels in an image. Pixels equal information, so more pixels should, in theory, make for a better quality image. 8K has a horizontal resolution of 7680 pixels and a vertical resolution of 4320 pixels. Ultra High Definition (also known as 4K, through strictly '4K' initially meant a slightly wider pro standard) has half the number of horizontal and vertical lines — 3840 x 2160. Ye olde Full HD is 1920 x 1080, 16 times fewer than 8K. But before you dismiss 1080 lines as old hat, remember that's the best you can see from Australian broadcast TV, and that many non-HD channels are still broadcasting a resolution of 720x576 in an interlaced format. We're so used to viewing at that resolution that high-quality 4K content, let alone 8K, can look eye-startlingly detailed and sharp.

Who is making 8K content?

Filmmakers use cameras with sensors that range from 4K to 8K, though films are still edited and mastered at either 2K or 4K. The Japanese Broadcasting Corporation, NHK, ran a series of 8K trials and launched a dedicated 8K satellite service in December 2018: it screened some Rugby World Cup games in 8K and is now aiming to "mass produce" 8K content, including the upcoming Tokyo Olympics. China and Korea are

experimenting but have yet to commit officially, and to our knowledge Italy is the only other country even to consider carrying the Olympics in 8K, with RAI considering relaying it most likely via its free-to-air satellite platform Tivùsat. Streaming site Vimeo is one of the first to offer 8K HDR support. At IFA in 2019 (above) Samsung was pushing Chili as an 8K provider (currently available only in the UK, Italy, Germany, Austria and Poland), also 'The Explorers' (eco-friendly nature documentaries worth checking out, though we can't find any 8K yet on its Australian service). Samsung also trailed an 8K Chili collaboration called *Lunar City*, a film by Alexander Bollevini made in collaboration with NASA, but its Italian press release notes it uses "8K AI Upscaling technology. Samsung did not produce any content related to the landing in native 8K resolution." We suspect there'll be a lot of that around.

8K gaming

Never underestimate gaming as a technology driver — look what Sony's PS3 did for getting Blu-ray into the marketplace. Both the PlayStation 5 and Xbox Series X (both probable November launches) are tipped to support 8K resolution.

When will we be watching 8K?

It's unlikely we'll be viewing proper 8K content in Australia any time soon, and we don't think an 8K TV should affect your buying decisions now or in the near future. Content needs to be created and the infrastructure for distribution realised before we really need equipment to watch it. But never say never... the "if you build it, they will come" theory of kit-led standard development has succeeded many times in the past. Then again, as with 3D, there have been some over-promoted failures in the world of TVs as well...



Sony KD-85Z9G

Let's start at the top. Sony's Master Series Z9G is an 85-inch 8K-resolution LED-LCD TV. The price: \$21,995. Here's why you might want one.

SUMMARY

Sony Master Series Z9G
85-inch 8K TV

Price: \$21,995

- + Utterly stunning with 8K demos
- + Upscales lesser content well
- + Great motion processing
- Where's the 8K content?
- LED-LCD rather than OLED blacks
- Er... price

Any readers following our magazine's cover-lines about slashed TV prices may want to flip a few more pages on. Sony's TV here is 85 inches on the diagonal, and it's 8K. And it's \$21,995, precisely because it's 8K and an 85-incher. Sony Australia isn't even listing the larger 98-inch version of the Z9G, perhaps because in markets where it is available, it's about six times more expensive than this 85-inch. In other words, you need extremely deep pockets if you want to be at this bleeding edge of TV tech. But if you do, there's really no downside to the KD-85Z9G. If we were in the market for a giant 8K TV, this is where we'd start.

8K is a comin' in

Regular readers will know we're not yet convinced by 8K. It'll come, for sure, because the TV manufacturers will migrate to it just as they did with 4K, and one day all the best premium TVs will be 8K whether we particularly want the resolution or not.

But for now, this is early-adopter first-generation stuff. There is very little content anywhere, almost none available to Australia, and no easily foreseeable way, except maybe 5G, that it could be delivered any time soon. There will never be 8K discs to play. Even a 100+Mbps NBN connection would struggle to stream a movie in 8K, and it'd be

a whack of data if you did — something in the region of 6GB for each and every minute, although ongoing streaming compression systems will reduce that. It's not so much that we're in a chicken-and-egg situation with 8K. The chicken looks good. It's more that nobody has yet shown us a carton capable of carrying the eggs.

So what happens next? Without more 8K TVs being sold, no one will be interested in streaming or broadcasting 8K content; our broadcasters are still developing a viable path to 4K, after all. And as long as there's no 8K content to watch, few people will justify the extra outlay for an 8K TV.

So 8K TVs are, like those on show at CES (see p41), a vision of the future in which you can choose to dabble today. And the 85-inch Sony Master Z9G certainly sets up a tempting offer for dabblers.

All-round bigness

The 85-inch Z9G is huge and imposing, not only because of its panel size, but because it's not a slim TV in terms of thickness. It's an LCD panel with direct LED backlights, which makes OLED-slimness impossible. And big TVs need to be thicker anyway, to reduce their flexibility across such a large panel. So it's refreshing that Sony hasn't attempted to disguise the set's bulk, instead coming up with a design that makes a virtue of it, also using the depth to build in more and larger speaker drivers than usual. The thickness here isn't measured in

“Why oh why would you spend this much on an 8K TV when there’s no 8K content available? We don’t know. But having said that, the Sony 85-inch Z9G is a marvel.”

millimetres; it hits 12cm, with plenty of room for connections and electronics to be housed in the main chassis. No need for one of Samsung’s separate connections boxes here.

Yet the TV still manages to look good from all angles. A chequerboard pattern makes the rear more interesting than usual, and there are panels and channels around the back hiding connections and cables.

As an industrial aesthetic, it’s elegant and stylishly utilitarian. The bezel steps back from the panel, like an inverted frame (see picture overleaf), allowing sound to emerge, while doubling as heatsinks. The TV’s size will, of course, dominate a room, despite its matte black finish. And then when it’s playing, it totally dominates your attention.

All about the upscaling

While the TV is big, the individual pixels are simply tiny — there are around 104 pixels per inch (PPI). A 4K 85-incher would have half that pixel density, and even a 65-inch 4K TV just under 68ppi. So the images, whether native 8K or cunningly upscaled 4K, have the potential to be sharper. And since we’re not expecting a native 8K library any time soon, upscaling is, for now, the key to the joys available from any 8K TV.

To achieve that upscaling effectively, the Z9G uses the X1 Ultimate chip already seen in a number of Sony’s 4K models (including the \$2499 LED reviewed later in this issue), but with certain features boosted to make the most of the 8K panel.

So there’s 8K X-Reality Pro to take care of the upscaling, using a new dedicated 8K database for more precision and detail, while 8K X-tended Dynamic Range Pro boosts brightness when necessary in specific areas and works in conjunction with the Backlight Master Drive feature, which independently controls the backlight’s LED zones.

Other features of the X1 Ultimate chip include X-Motion Clarity, which is the latest version of the company’s excellent motion processing, and X-Wide Angle, designed to improve viewing angles.

Android interface

There’s no special interface for the new generation of resolution; the Z9G has the same Android TV 8.0 operating system as its 4K siblings (shown right). That’s fine by us, as we like Android TVs. While the layout can be a bit annoying at times, and settings

are awkwardly inaccessible and sometimes split across two sections, Android has more apps available than any other TV interface, and that’s the bonus for our money. Whether it’s subscription video services, catch-up channels, Plex and VLC-style network players, or music services you’re after, Android TV has (nearly) all of them. Plus there’s Chromecast and Google Assistant built in, and the Z9G is even ‘Works with Alexa’-certified, too. Sony has built a microphone into the TV’s bottom bezel (as well as one in the remote control), making truly hands-free operation an option. During testing, we found the Z9G successfully responsive to voice commands, whether requests for useless bits of trivia, instructions to play particular shows from Netflix or Amazon, or commands to control Philips Hue lights.

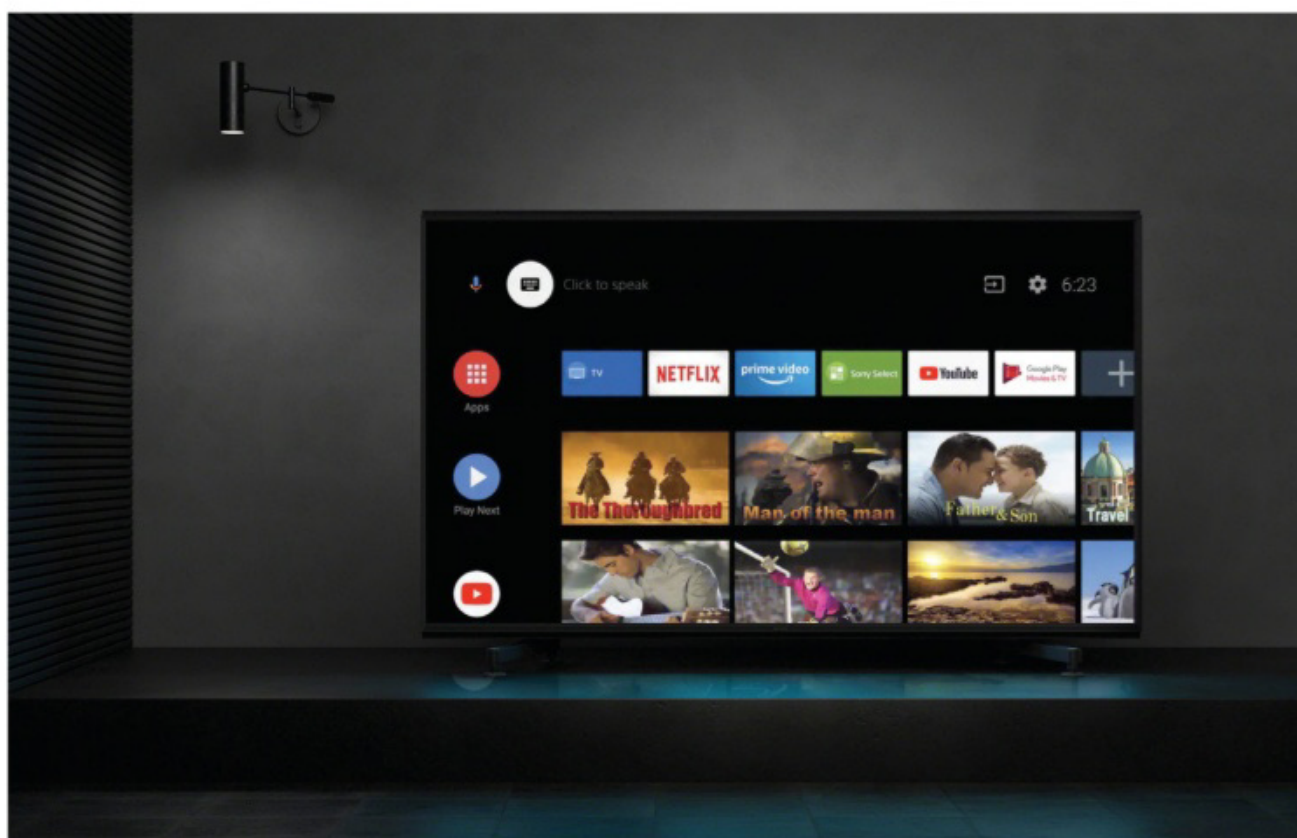
Sony continues to offer broad format support, so you get HDR in its HDR10, Dolby Vision and HLG forms, plus Netflix Calibrated and IMAX Enhanced modes. There’s no HDR10+ (the rival format to Dolby Vision), but HDR10+ content remains scarce for now.

Delight in the detail

To watch in 8K, we have only demo content available. But it is glorious. Footage of the Rio Carnival is an absolute feast for the eyes, the spectacle delivered in a way that perhaps no other TV could — punchy and vibrant colours doing justice to the costumery, but of course it’s the detail that takes things to the next level. You tend to peer around the screen, like you

sometimes do in an IMAX theatre, or indeed as we do in real life, eyes darting to take in small details here and there, yet within an overall image which is solid and lifelike. It draws you into the action.

The more subdued hues of Venice Carnival footage is equally revelatory in how it shows costume detail, with mesh-like fabrics layered





on top of each other to create extremely tricky patterns. The Sony doesn't put a foot wrong. You can follow individual threads on the ruffled shoulders of the actors and spot the individual pock marks of paint on the masks. It's just astonishing.

But you can't live on demo content. What about upscaled 4K from a 4K Blu-ray? With the dark scenes of Stephen King's *It*, the Z9G delivered a convincing black performance. An OLED TV would, predictably, beat it for outright black depth, but the Z9G's blacks look black enough, and have only slight variances in shade visible in the black bars of a widescreen presentation. During normal viewing we weren't aware of the backlight's operation at all, even when following the beams of light cast by the torches of *It's* The Losers Club, and we were able to discern the horrifying details lurking in the shadows.

Does it look like native 8K? No, it looks like 4K, but then 4K looks great, and the Z9G gives nothing away to even the best 4K TVs in terms of sharpness, detail or control. Given the amount of upscaling processing that's going on, that's impressive. While the 'Cinema' picture presets seem to make things soft and sepia-toned, the Standard setting (with Live Colour enabled) did the trick, with bright, warm hues and a natural neutral balance.

The Sony also benefits from the company's class-leading motion processing, smoothing movement without introducing halos around moving edges and without making everything look overly processed. Our preference here is to use the default 'Custom' mode, rather than 'Auto', as the latter can come a little unstuck with tricky bits of motion.

Dropping the source resolution, we played the standard Blu-ray of *True Grit*, and it

looked clean and detailed, with impeccably balanced colours. We even tried an old DVD of *Peep Show* — it was remarkably watchable: a bit of shimmer and noise crept in to tricky patterns and flat areas of colour, but the overall picture was good. Given the percentage of the picture that the TV is having to generate, the Z9G's performance with these low resolutions is little short of miraculous.

How close should you sit? As close as you like! You won't see the pixels until your face is 30cm from the screen, and with an 85-incher you wouldn't then be able to see the peripheries of the screen! Even at a normal viewing distance from the Sony, we reckon someone unprepared for 8K would instinctively know they were watching something special and next-gen.

Sound

As usual, we'd recommend having a separate sound system for a large TV like this — do the picture justice by matching its hugeness with big sound! One interesting option here is that there are standard speaker terminals on the rear, allowing the Sony's internal sound system to be used as the centre speaker from an AV receiver. Given the integration of four sets of



three forward-firing speakers into the bezel, plus four woofers around the back, that might just work. We certainly wouldn't upgrade it with a soundbar, since the TV's own sound is likely to be the equal of most soundbars, boasting a directness and clarity to voices and an impressively wide, open soundstage, even a bottom end that's weighty and deep by TV standards. But still, if you're spending this much on a big TV, surely you would want the full sonic experience to match.

Conclusion

Why oh why would you spend this much on an 8K TV when there's no 8K content available? We don't know, and we have to advise anyone other than wealthy gotta-have-it folks to hold back a few years, enjoy a far cheaper large 4K TV in the meantime, and see how the whole 8K delivery thing turns out. Remember you can be caught out when early adopting — who's to say that 8K streaming won't finally come along via an app which is incompatible with the Android of this TV?

Having said that, the Sony Z9G is a marvel. We like the attention-grabbing design, while the screen itself delivers a stunning but effortlessly balanced picture whatever the resolution of the source material.

Still in two minds? Let's flip the page to see what's available at rather lower price-tags. After all, one of the TVs that follows is a Sony 4K model with the same Android interface and processor as the Z9G, yet it's out on the street at under \$2500... +

SPECS

Sony KD-85Z9G \$21,995

Display technology: Direct LED-backlit LCD

Screen size: 214.8cm (85-inch)

Native aspect ratio: 16:9

Native resolution: 7680 x 4320

Brightness: not stated

Contrast ratio: not stated

Picture: 12 bits: HDR, HLG, Dolby Vision

Inputs: 4 x HDMI (eARC), 1 x composite video, 3 x USB, 1 x Ethernet, Wi-Fi, aerial, Chromecast, Bluetooth

Outputs: 1 x optical digital audio, 1 x minijack analogue headphone

Audio: 4 x tweeter, 8 x midrange, 4 x woofer; power quoted as 8 x 80W

Included accessories: Stand, remote control

Dimensions (whd): 1913 x 1226 x 432mm with stand, 1913 x 1141 x 120mm without stand

Weight: 74.7kg with stand; 71.7kg without stand

Contact: Sony Australia

Telephone: 1300 137 669

Web: www.sony.com.au

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Panasonic TH-65GZ2000U OLED Professional Edition

A sensational 65-inch OLED 4K television. But with Panasonic withdrawing from the Australian TV market, this becomes a ‘while stocks last’ buy.

SUMMARY

Panasonic TH-65GZ2000U

Price: \$8299

- + First-class picture quality
- + Particularly good SD scaling and processing
- + Far better audio than most TVs
- Defaults to ‘overscan on’ for full-HD content

This was a treat, followed by a blow. Panasonic has been one of the few TV companies prepared to ship large-screen models out for a full review, rather than offering limited ‘hands on’ time. And we were delighted to spend time with its top-of-the-range model, this Panasonic TH-65GZ2000U OLED Professional Edition Ultra-HD TV.

Then, after the review, came the news that Panasonic is pulling out of the Australian TV market. That makes the GZ2000 the last and best Panasonic TV that will be available here. It’s a last-chance-to-buy scenario— get it while you can.

Equipment

Perhaps Panasonic was happy to ship this TV to us because it’s tougher than your average OLED TV. Yes, it has the sheet-of-glass look typical of the breed, but it’s a thicker sheet of glass. According to our calipers it’s 6.3mm thick. We measured the thickness of an OLED panel from another maker recently, and it came in at only 3.6mm.

Is thinner better? Well, it may look a little more svelte, but it’s also way more fragile. And the Panasonic TV is tougher still because the deeper chassis containing the electronics extends more

than halfway up the back, and in fact all the way to the top in the centre section. That centre column contains a couple of speakers. We will return to those.

The TV supports all the stuff you’d expect from a premium TV, mostly obvious and expected, but one thing worth noting is the inclusion of two HD tuners. This isn’t to enable a Picture-in-Picture feature, as there doesn’t seem to be one. The twin tuners mean that if you plug in a hard-disk drive to record or time-shift live TV, you can watch a different station to the one being recorded. Note that the TV reformats the hard drive.

The panel is Panasonic’s ‘Professional Edition’ — and this is the only current model featuring that appellation. Apparently Panasonic has tweaked the drive levels to deliver greater average brightness. In addition it supports ISF calibration and works with the CalMAN calibration system. The TV supports HDR, of course, plus HDR10+, Dolby Vision and HLG. The picture processing is performed by Panasonic’s latest version of its Hollywood Cinema Experience processor, the HCX Pro, and the colour, we are told, has been tuned by professional cinema colourist Stephan Sonnenfeld.

Picture performance

Do the usual thing with the picture if you purchase this TV: take the sharpness down, and switch overscan off.

“Will the end mean that prices are dropped to run out the stock, or maintained, as in the last days of Pioneer Kuro, because it’s the last chance to buy? Certainly, if you want one, don’t delay. Once stocks run out, there will be no more.”

Overscan defaults to ‘on’ even for regular Blu-ray (though not for Ultra-HD Blu-ray, thanks goodness), and it’s simply not required. Turn it off for every input.

Then what a truly wonderful picture this TV produces. Ultra HD with HDR or Dolby Vision? Utterly unimpeachable. As you’d expect with OLED, the blacks are perfect and the colours utterly rich.

We ran test clips over our network and were extremely impressed. Then when we moved to discs, and started playing *Billy Lynn’s Long Halftime Walk*, this rare example of 4K/60p lacked the visual pop we’re used to seeing. I went exploring the disc spinner’s menu. Whoops — for some reason HDR was switched off. With it switched back on, suddenly the movie was gorgeous. The colours were rich without limits. The bright desert scenes sizzled. The 60 frames-per-second motion added an astonishing level of engagement. It shows how much HDR has added to the UHD experience beyond the benefits simply of resolution.

The HDR grey-scale test patterns on a Sony Ultra-HD disc (key in 7669 at the main menu) were gloriously smooth and showed discrimination between .1 and .01 nits. At the brighter end, the TV takes into account the totality of the picture brightness. So on the test page that went up to 2000 nits, there was only the subtlest of differences between 1900 and 2000. But on the next page, which goes up to 10,000 nits, there were clear brightness steps between 1000, 2000, 3000 and 4000 nits. Not that the TV can produce those levels of illumination; rather it scales the available range to that supported by the TV.

But here’s something a bit different, rarely discussed but important to real-world viewing. Panasonic may just have the best picture processing out there when it comes to SD content. So much so that when a regular SD TV broadcast was showing, we had to double-check to make sure it wasn’t accidentally the HD version. Panasonic’s processing manages to add a decent sharpness to the image while doing little to no damage. If you have a library of older content — especially DVDs — you will likely take renewed pleasure in them. That’s a bonus for anyone thinking a shiny new 4K TV will make all their old content redundant.

Deinterlacing of 576i/50 test clips was very nearly perfect, so there’s some confidence that broadcast SD will be equally good. It certainly



looked like it. The performance was nearly as good with 1080i/50 torture tests, being tricked into video mode from film mode only in the one most difficult spot.

It looks like Panasonic has been working on its motion-smoothing algorithms, which it calls Intelligent Frame Creation. There are three levels, plus a custom setting. The default — ‘Mid’ — did a superb job of smoothing things while generating almost no visible artifacts. ‘Low’ reduced but did not eliminate the worst judder, and produced no visible artifacts. ‘Max’... don’t use it.

There was one slight quirk with the picture: it wasn’t centred on the panel. Not that we noticed this visually during use, but when measuring the width of the ‘bezel’ (it doesn’t really have one, there’s just glass up to the thin metal edge protection), the picture-to-edge distance was 8mm at the top and the left, but 12mm at the right. The extra 4mm was just

blank screen. Yet there was perfect 1:1 pixel mapping. With other test patterns the left and right distances were different. One possibility is that the physical resolution of the TV is very slightly greater than 3840 pixels across, and that would let the TV position the image in slightly different places — though not noticeably different to the viewer — to avoid burn-in. Just a theory...

Sound

It’s got to the stage that we rarely mention in any depth the sound of a TV set in these pages. We hope that our readers will have an external sound system of a quality commensurate with the TV they use. But Panasonic has clearly put quite a bit of effort into this one — it says that the audio system is tuned by its Technics division — so let’s start at the back. That centre column mentioned earlier isn’t simply a structural element. Panasonic’s

cheaper TVs don't have one. Its purpose is to house at its top two upwards-firing speakers which provide support for Dolby Atmos.

The specifications seem to indicate that each of these has a significant 40W of power available. Each is a rectangular driver with rounded ends, measuring 75mm by 25mm. Each is also set fairly deeply into a horn-like depression, which should usefully increase their directivity.

Meanwhile underneath the panel is an integrated forwards-firing speaker bar. This houses nine drivers in three sets of three. Each set has what looks like a 19mm tweeter and a 25mm by 50mm midrange (Panasonic calls them squawkers, which is technically correct but conjures up unflattering impressions of how they might sound). Each set of three has 20W available to it.

Finally, Panasonic says that the TV has a passive radiator. Peering as best as possible through the slots in the back, there appeared to be four driver-looking devices, perhaps 75mm each, which we take to be the passive radiators.

As far as TV sound goes, the Panasonic TH-65GZ2000U is one of the best-sounding you're likely to hear. We even played some music with it (and it's worth setting the audio mode to 'music', as this definitely improved the sound). The TV delivered some quite respectable mid-bass and was reasonably smooth, quite inoffensive and able to go louder, cleaner than just about any TV. Of course you will still benefit from an external sound system. But there will be plenty of less discriminating users who'll be happy with the TV's sound. Especially since with some Dolby Atmos content it did a decent job of generating over-the-head sound.

In addition to feeding sound out via optical, the headphone output, or ARC over HDMI, the TV can be paired to an external speaker via Bluetooth. Or it can be paired with your phone via Bluetooth so that you can play music from your phone on the TV.

Networking & smarts

The TV is, of course, DLNA-compatible, making it easy to send music, movies and photos to it from network shares. Test patterns revealed that the TV did full justice to network photos and video, supporting full 4:4:4 colour resolution and properly scaling photos to Ultra



with this TV, you have to register the TV on a Panasonic site and then enable either service to access the TV via that site. It's something of a rigmarole and really, that stuff is mostly a party trick at this point; it's far easier to point the remote and press a button. But if you like such stuff, know that it is available.

Finally, we watched a fair bit of Netflix on this TV.

HD. It played all test videos, from standard-definition MPEG2 content grabbed from TV broadcasts all the way up to Ultra-HD encoded with HEVC and with Dolby Vision.

The TV allows you to adjust your picture settings on those, too, as though it were TV broadcast content or DVD/BD/UHD BD being played, which often isn't the case. No second-class treatment here.

It stuttered just a little with a 100Mbps test video, so it doesn't seem that the Ethernet connection runs at gigabit speeds. But for a T-BASE100 set-up, it was excellent, very nearly handling the test.

The TV also supported most network music: MP3 of course, WAV and FLAC up to 192kHz. And for Apple folk, it even supports ALAC (Apple Lossless) though only at 44.1/48kHz, not 96kHz.

Another nice long-standing Panasonic feature is 'TV Anytime'. You can use the Panasonic app on your phone to watch broadcast TV being received by the television.

It also supports Miracast/WiDi. Supports it, indeed, with a minimum of fuss. Both an Android phone and Microsoft Surface Pro wirelessly connected with the TV in less than five seconds.

That was a consistent theme. This TV supported just about the same range of things that you'd expect from a modern smart TV, but it supported them with speed and snappy performance.

Unlike some, the TV does not have voice control built in. Instead, you can control the TV with your voice using Google Assistant or Amazon Alexa. You will need a smart speaker compatible with one or the other to do this. Here we must confess a failing in this review: we did not test out the voice control features. To use Google Assistant or Amazon Alexa

The app delivered Ultra HD and Dolby Vision just as it should. With the speed of the interface, it was a pleasant experience.

Conclusion

The Panasonic TH-65GZ2000U is simply one of the very best TVs currently available. We are greatly disappointed to lose this TV brand from Australia. Will the end mean that prices are dropped to run out the stock, or maintained, as in the last days of Pioneer Kuro, because it's the last chance to buy? Certainly, if you want one, don't delay. Once stocks run out, there will be no more. — Stephen Dawson

SPECS

Panasonic TH-65GZ2000U OLED Professional Edition \$8299

Tested with firmware: 4.199-10200-00370aea090c

Display technology: OLED

Screen size: 164cm

Native aspect ratio: 16:9

Native resolution: 3840 x 2160

Brightness/contrast: Not stated

Energy Rating label: 3.5 Stars, 596kWh per year

Inputs: 4 x HDMI, 1 x component video (doubles as 1 x composite video), 1 x stereo audio, 3 x USB (1 USB 3.0), 1 x Ethernet, Wi-Fi, 1 x aerial

Outputs: 1 x optical digital audio, 1 x 3.5mm headphone

Audio: 3 x tweeters, 6 x midrange, 2 x upwards firing, 4 x passive radiator; 2 x 40W + 3 x 20W

Included accessories: Tabletop stand, remote control

Dimensions (whd): 1446 x 885 x 78mm without stand / 1446 x 907 x 310mm with stand

Weight : 33.5kg without stand, 40.0kg with stand

Contact: Panasonic Australia

Telephone: 132 600

Web: www.panasonic.com.au



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Samsung QA65Q90R

Current offer pricing on Samsung's flagship 4K TV makes it easier to enjoy the goodies which here take LED-LCD to its highest level yet.

SUMMARY

Samsung QA65Q90R

Price: \$6099 (but see article)

- + Authentic colours
- + Deep blacks for LCD technology
- + Wide viewing angles
- Mediocre motion processing
- Merely adequate built-in sound

Short of opting for the currently dubious benefits of 8K resolution in Samsung's Q900R series, the Q90R is Samsung's flagship QLED model until the new TV ranges arrive in April-May — and this final sales period is the time to make some remarkable potential savings (see our conclusions at the end).

'QLED' is an LED-LCD technology here the backlight is used to excite Quantum Dots, which then generate wavelengths of light that are more efficiently perceived by the human eye. This yields higher perceived brightness than standard LED-LCD (and, interesting to ponder, potentially better perceived brightness than measuring equipment will indicate).

This technology easily outcompetes OLED for brightness, but can't deliver the finer graduations down in the blacks where OLED has perhaps its great merit. Which is why Samsung is racing to develop firstly a QD-enabled OLED type of display, which may reach production in 2021, and later a true front-emissive QD display, which will take longer, if ever achieved, though not for lack of investment — late last year Samsung announced an investment of a staggering US\$11bn in QD development up to 2025 (see *News* p10).

But that's all in the future. Until then, Samsung is iteratively improving existing QLED performance to deliver its best possible image quality — and as the Q90R demonstrates, this is now at a high level indeed.

Picture

So how exactly does the Q90R take on OLED? At times, almost a little too zealously, as if Samsung has raced to compete with any advantage held by OLED, even if the advantage is a minor one that might not merit the changes. Take viewing angles. OLED is inherently a wide-angle technology, since the pixels shine their light from the front surface. LED uses backlights, which pass through an LCD filter, so can't match that. But Samsung has developed a new 'Ultra Viewing Angle' feature by adding extra layers to the panel which reduce light leakage and spread light 'uniformly'. And in terms of viewing angle, this works. Even from quite far off-axis, the colours remain vibrant and blacks remain pure.

Does this matter? Only if you routinely watch your TV from far off to one side. If you're a two-person household sitting in the usual couch position, the layers are redundant. Meanwhile this same spreading of light between pixel zones on Samsung's 8K TVs has allowed rival LG to claim that its own 8K models are better, by cherry-picking a non-pixel-spreading measurement of

Contrast Modulation (CM), then making what seems a reasonable assertion that if you can't isolate neighbouring pixels from each other, this effectively diminishes resolution. Samsung's new layers mean the panels score far lower on CM. But the measurement is made so close-up that it doesn't mimic real-world viewing. So we're not yet convinced of CM's relevance, especially given the results delivered by the Q90R, which lacks nothing in perceived resolution, and also achieves by far the best blacks we've yet seen from the technology, including the company's own 8K models. Samsung's Q900R 8K sets have been noted as sacrificing too much depth in their pursuit of detail, looking a little washed-out, whereas this Q90R strikes a superb balance, and also outperforms last year's 4K flagship in blacks performance. It doesn't go pitch black the way an OLED can, but it's pretty close.

Take the scene in *Harry Potter And The Deathly Hallows Part II* where Voldemort's army of wizards mass on a hill above Hogwarts. The dark details in scenery and in the structure of Hogwarts are impressively evident, and without any 'pushing' or washing-out of blacks, or anything that looks like artificial enhancement.

No problem on the brighter parts of an HDR picture either, with peak brightness quoted at 2000 nits, and an improved precision of backlighting in this latest model. In the same Harry Potter scene, Voldemort's white skin is creepily luminescent, where lesser TVs leave him relatively shadowed.

For non-HDR we'd suggest the usual lowering of default brightness and sharpness settings, plus switching Local Dimming to High. For HDR, you need only select your preferred degree of motion processing and turn 'Digital Clean View' off. Watch out also for the Intelligent Mode, which tweaks picture (and sound) based on your room and the content. Since

"In terms of colour, the Q90R strikes a nicely neutral balance, more authentic than the previous model but with no loss of punch or dynamism..."

this mucks with any carefully chosen settings, we'd recommend switching the picture element of this (Adaptive Brightness) off.

The processing engine here is the Quantum Processor 4K, which has a supposedly AI-based approach to upscaling. We are currently allergic to the widespread overuse of the term 'AI'; the processor here may consult a vast database of images to create a successful result, but is it actually learning as it goes? But let's not nigger; in the Q90R, the upscaling certainly results in cleaner and sharper images from non-4K content, most obvious when viewing standard-def content, which is smooth and kept free of artificiality.

Samsung's motion processing remains so-so (see also our motion processing primer on page 40). The Auto mode produces over-processed images, and even the Custom settings struggle to get the artefact-free balance which rival manufacturers manage to deliver, though we'd take its slight smoothing over turning off the motion processing entirely.

In terms of colour, the Q90R strikes a nicely neutral balance, more authentic than the previous model but with no loss of punch or dynamism, so that in the opening of *Guardians Of The Galaxy Vol.2* the ploughed fields and clouds look natural (in a cinematic way). The shot of the planets is even more convincing, solid and three-dimensional in its contrast and

definition, with gold on the surface rather than the orangey hue delivered by some sets.

It's worth noting that in HDR terms there's no Dolby Vision here, because Samsung is part of the HDR10+ consortium so the Q90R supports that, as well as standard HDR10 and HLG (for HDR broadcast, if we ever get any). While there is some HDR10+ content via Amazon's Prime and some 4K Blu-rays, implementation is still patchy, and we prefer the approach of Panasonic (also an HDR10+ consortium member) in supporting Dolby Vision as well, so whatever form of HDR arrives down the wire, you're good to enjoy it. Not so here. Nor is there a dedicated HDR10+ picture mode on the Q90R, as is usually the case with Dolby Vision where nearly all settings are locked down; here you may be using settings that tweak the HDR away from its optimum performance.

So there are things that could still be improved. But an evening in front of the Q90 is most certainly one to be savoured. Its image quality combines bright eye-popping brightness and contrast yet with natural colour delivery, all combining to convince us that this is the best picture quality that LED-LCD technology has yet offered.

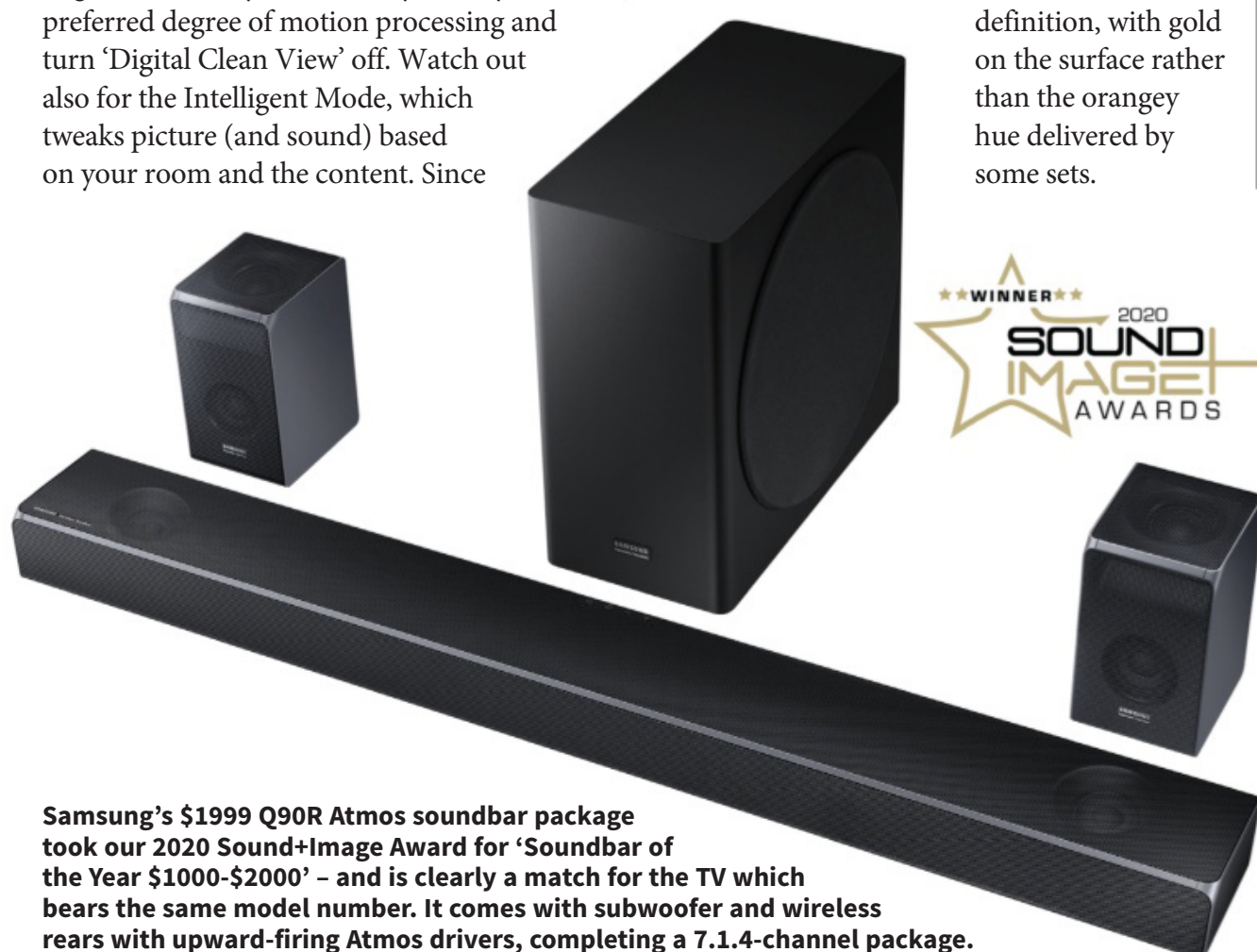
Sound

As usual, we recommend an external sound system, and if you prefer to go soundbar than real stereo or surround speakers, then you need look no further than Samsung's own, which thanks to the machinations of its California Audio Lab, are currently market leaders for sound quality. What's more, they fit neatly under the TV when on its stand, which isn't always the case!

If you're stuck with the TV's own sound, it's clean enough via its 4.2-channel system, but the size of the drivers means it lacks true dynamics and power. This makes the various 'Intelligent Mode' elements largely irrelevant — there's Adaptive Sound, optimising sound based on room size, position and, in real-time, the characteristics of each scene. Also Adaptive Volume, which "automatically adjusts to a specific volume level while you're watching TV", presumably through dynamic compression. And we don't want that in our lives.

Build and features

In appearance, the Q90R TV reminds us of a giant Apple iMac, with its curved metal stand raising it unusually high compared with most rivals — room for that soundbar, as noted, though a bit gappy-looking without. At 4cm



Samsung's \$1999 Q90R Atmos soundbar package took our 2020 Sound+Image Award for 'Soundbar of the Year \$1000-\$2000' – and is clearly a match for the TV which bears the same model number. It comes with subwoofer and wireless rears with upward-firing Atmos drivers, completing a 7.1.4-channel package.

deep, it's not a wafer-thin sheet, but it's slim enough and attractive overall. When you're not banging out a blockbuster you can take advantage of the second-generation version of Samsung's Ambient modes, showing petals falling or leaves blowing, or more usefully displaying your own photos in a variety of presentation styles.

You can choose to use it as a light source (with romantic, neon, and party modes). If you're wall-mounting the Q90R you can take a picture of the wall before doing so, then have that displayed on the TV in ambient mode, which Samsung thinks makes the TV disappear, though others may think it looks like a TV showing a picture of a wall. Artworks are available; you can have information (time, date, weather) automatically displayed, or you can get it to attempt a match with your curtains or sofa colours. This is TV as ambient décor.

As has become Samsung's way, connections on the TV itself are reduced to the wonderfully neat single five-metre slim cable which connects your TV to the separate One Connect box (pictured above). This box then plugs into power and offers four HDMI inputs (not officially 2.1 certified, so 4K/60 but probably not 8K/60, which is hardly an issue), along with three USB sockets, one component video and one composite video input (which shares the component sockets, so you can't use both at



Working down the wire

All the Samsung TV's inputs and power connect to a separate box, then travel to the TV up the single impressive-neat 'One Connect' cable.

once), plus Ethernet, Wi-Fi (2.4GHz only), antenna connection and optical audio output. The smarts in Samsung's TV operating system are not only fast, fluid and intuitive, you get Samsung's Smart Things app which could potentially position your TV as a smart-home hub. There's Bixby, Samsung's own voice assistant, though it can also work (to varying degrees) with Google Assistant or Amazon Alexa. The inclusion of Apple AirPlay will benefit those with Apple-based homes. And the Tizen open-source, Linux-based operating systems stocks the smart interface well with apps, if not entirely comprehensively — the key streaming services are all there, it's Freeview-certified, and all catch-up TV apps are available via the Samsung App Store.

Conclusion

The Q90R is an exceptional telly that does things previously considered inherent advantages of OLED. It is a backlit TV that goes almost as black as an OLED and has

OLED-like viewing angles, while retaining its own advantage of greater brightness. It boasts brilliantly judged colours and superb dark detail, and an excellent operating system packed with apps.

Let's end with a reassuring note on pricing, noting that this applies to some extent to nearly all our TV reviews. In *Sound+Image* we list the manufacturer's official price, and as we go to press the 65-inch Q90R is shown at \$6099 on Samsung's Australian website. But click on the 75-inch version, and Samsung presents no price, only links to purchase for \$5495 at JB Hi-Fi, \$5495 less airmiles at Qantas.

So how much is this 65-inch really? Clearly not \$6099! As we write, both Bing Lee and JB Hi-Fi have it at \$3495. Such 'offer' pricing changes rapidly, which is why we quote the RRP. But for genuine street pricing, shop around, or try the likes of TechRadar (our sister tech site) to find the best deals. Because while we reckon the Q90R may be the best LED-LCD you can buy at present, that doesn't mean you need pay top dollar to enjoy it. +



SPECS

Samsung QA65Q90R \$6099 (see article)

Display technology: LED/LCD QLED panel

Screen size: 163cm

Native aspect ratio: 16:9

Native resolution: 3840 x 2160

Brightness: 2000 nits

Game mode: 14ms lag

Inputs: 4 x HDMI, 1 x component video, 1 x composite video, 3 x USB, 1 x Ethernet, Wi-Fi, 1 x aerial

Outputs: 1 x optical digital audio

Audio: 4.2-channel, 60W

Dimensions (whd): 1450 x 921 x 285mm with stand, 1450 x 831 x 40mm without

Weight: 34.7kg with stand, 27.8kg without

Energy Rating label: 2.5 stars, 766kWh

Contact: Samsung Australia

Telephone: 1300 362 603

Web: www.samsung.com.au



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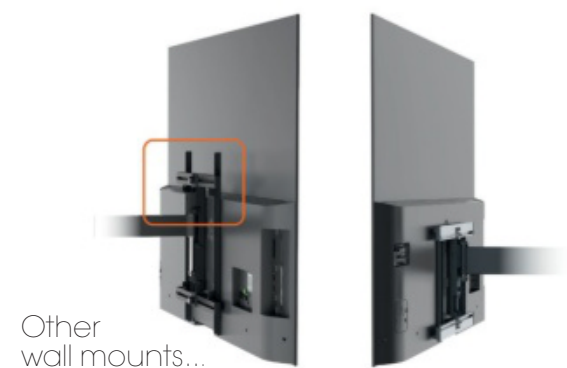
Vogel's specialised design complements the minimalist style of an OLED TV by perfectly fitting to the back of the television.

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With plenty of OLED competitors and LED-LCD also closing the performance gap, does LG's 65-inch C9 still have the 'wow' factor which the first OLED TVs delivered?

LG OLED65C9PTA



Ah, OLED. When this front-emissive display technology arrived, it made everyone go 'wow' — televisions like this had never been seen before. Not only were they super-slim, but their picture quality was to die for, especially in the blacks, because when an OLED pixel is off, it's absolutely off— black is black. LCD TVs with LED backlighting simply couldn't compete with that.

OLED vs LED

But time moves on, and as we've seen over the last couple of years in particular, LED-LCD has been tweaking its technologies to deliver many of OLED's merits, together with potentially higher illumination levels. Meanwhile OLED has not progressed in the same way. According to accepted wisdom, OLED panels hit their performance limits in 2017 and, from a hardware perspective, the 2019-released OLEDs are similar to models from back then. Furthermore while LG won the early OLED market tussles against original OLED rival Samsung (whose version of OLED was superior in some ways, but couldn't compete on price), LG Electronics' sister company, panel-maker LG.Display, now supplies them to a great many other brands who can give OLED their own spin. In our Panasonic review we saw how its 'professional' OLED has pushed up the peak brightness by overdriving the panel (and adding a big heatsink to stop it overheating), while Philips uses Ambilight backlighting to increase OLED's perceived contrast still further.

So while LG has more invested than anyone else in the continued supremacy of OLED as a TV technology, it has to look beyond the panel technology

alone. It has the 8K Z9 88-inch flagship, of course, should you have \$60k to hand. At CES it promised to roll out its thrilling roll-out OLEDs by the end of the year. And when releasing its 2019/2020 models, LG made much about 'ThinQ AI' processing — artificial intelligence — and the benefits it brings to the picture, sound and user experience. But we're cynical about 'AI', and this isn't really AI in terms of learning as it goes (pretty much the definition of AI), other than revising content recommendations based on what you've previously watched and the time of day. As the Australian LG team admitted when pressed, all the clever picture stuff happens in development and is burned into the TV. And that's what's always happened before, really.

So that leaves us back focusing on image quality. Given OLED's price differential (though see our conclusion), is OLED today still thrilling enough to top comparable LED-LCD TVs?

Build and features

LG's C-class OLED gets you all of LG's most advanced picture and processing tech in the most affordable package. There is a cheaper 2019/20 LG OLED, the B9, but it has a less sophisticated processor and lacks the new 'AI' development features. You can go more expensive with the W9, E9 or R9 — each offers different design and sound, but they are identical in picture terms. So here you get HDR with both HDR10 and Dolby Vision, though not HDR10+, which is not as yet much of a loss given the relative lack of content.

SUMMARY

LG OLED65C9PTA

Price: \$5589 (but see article)

- + Lovely, subtle design
- + Rich but natural images
- + Fabulous contrast
- + Strong sound
- LCD still rules at high brightness
- Others have better motion processing
- Some odd settings menus

And even though this range is the fourth rung down, the C9 is a lovely looker, striking from the side with its super-thin panel up top, and lower section for connections, engine and speakers. At its thickest point, the C9 measures just 4.7cm, and from the front all you see is a uniformly thin, pure-black bezel around the screen itself. It's a great solution for those adding an external sound system, having no redundant speakers on show, and not far off being a floating display when wall-mounted, particularly in a darkened room, or with its nicely low-profile stand.

The HDMI connections are genuine HDMI 2.1, with eARC (Enhanced Audio Return Channel, able to send surround as well as stereo down an attached HDMI cable) and VRR (Variable Refresh Rate, a gamer boon), which is all good future-proofing. You also get three USBs, Ethernet, optical and headphone outputs, and the aerial connection.

Under the skin is the second-generation version of the Alpha 9 processor, which does the 'AI' optimisation of picture and sound, while there's voice interaction via LG's own ThinQ, Google Assistant or Amazon Alexa.

We like LG's 'magic' remote with its waving pointy ways, though sometimes the pointer icon hangs around on screen too long or too often and we wish it had an off switch. But the webOS operating system is clear and easy to use, the latest version gaining 'AI Preview' of relevant content above the app you've highlighted, and 'Intelligent Edit', which automatically re-orders sources and apps based on usage.

The apps are well stocked with the main video subscription services and other sources, if not yet universal for catch-up.

The C9 is also usefully compatible with Apple AirPlay and Apple's HomeKit, to stream content from your Apple device and interact with an Apple smart home, and it can interact with Google Assistant or Amazon Alexa.

Picture

While webOS's front-end is snazzy, LG's menus for picture and sound adjustments take some familiarisation. The picture settings can seem overkill, with no fewer than 10 picture presets in SDR mode, six for HDR and five for Dolby Vision. Nor do the settings always offer what you expect. 'Cinema Home', for example, is aimed at rooms with ambient light, compared to 'Cinema', which assumes a darker room. Yet the Home option changes not only brightness but sharpness and colour, and even alters the way you can change settings within them, with entirely different Colour Temperature scales, for example.

Our recommendations are to stick with the 'Standard' preset unless you're gaming, switch

off Energy Saving and all noise-reduction settings, and change 'Aspect Ratio' to 'Original', to ensure pixel-perfect delivery.

You may also want to experiment with the motion processing, which can be tweaked to look better than the default 'Clear' setting. Start with TruMotion set to 'User', 'Deblur' at its maximum setting and 'Dejudder' on minimum, then go from there. Tweaked accordingly, the C9 produces a lovely picture. Playing *Star Trek: Discovery* from Netflix, black depth was as good as we've come to expect from OLED, the ability to independently light or dim each individual pixel resulting in stunning contrast. Absolute brightness is limited compared with most high-end LCD-derived sets, but even the Samsung Q90R, which achieves black depth hitherto unseen from a non-OLED, can't quite match the C9's blackness.

Colours are also lovely, the slight richness lending a charming, organic warmth to skin tones and real splendour to sunrises and sunsets. LG's OLEDs have always majored in naturalism, and it's no different here — there's real subtlety and nuance to shades, yet there's that 'pop' which gives the 'wow' of OLED imaging.

Detail levels are up there with the best in class, though surprisingly the Q90 edges the C9 in both light detail (expected) and black detail (surprising). Large areas of blacks and whites are stunning — movie credits have never looked so good — but it didn't offer some of the nuances within dark and bright areas. On *Guardians Of The Galaxy Vol.2* the golden panel on the main planet in the intro is a little washed-out, while the dark areas of space lack some of the subtler hues that the Samsung reveals.

This isn't an issue with SDR content; the LG isn't stretching itself as much in this format in terms of overall contrast. Here the TV's rich but authentic approach to colours works wonders, and the picture is supremely natural.

Throw some upscaling into the mix, whether from a Blu-ray, DVD or one of the onboard tuners, and the C9 provides an astonishingly clean, smooth image with more detail than you could reasonably expect. Some rivals go a little sharper with 1080p and 576p content, but none is as balanced or controlled.

Meanwhile, gamers will be pleased to hear that this LG has an input lag of less than 14ms, about as low as it currently gets, plus there's the possibility of Variable

Refresh Rate, which reduces screen tearing by matching the refresh rate to the frame-rate. ALLM (Automatic Low Latency Mode) means the TV should automatically switch to Game mode when it senses a signal from a console (of course you may not want this if you're watching a movie via your console).

We always recommend an external sound system, but the LG's internal system is better than most, and an improvement on the previous model, which is all the more remarkable given all the speakers are hidden, and they even attempt room-filling Dolby Atmos soundtracks, with a mode ('AI', of course) to create a similar, atmosphere-enhancing effect from lesser surround tracks. Standard two-channel TV sound is generally

best left unprocessed by LG's sound modes, but even this is weighty and open, with greater directness than from last year's screens.

Conclusion

There's no doubting that LG has again delivered a beautiful TV, with the C9 being the bargain of the current LG ranges, given it has all the picture performance without the extra price loaded on to others for, essentially, sexier aesthetics or better sound enhancement. Choosing between this and Samsung's Q90R is still no easy task; both their RRP's are confusingly high, yet both are, as we write, on the street at \$3495 for the 65-incher — and that's only a little more than half the street price of the Panasonic in this group. We reckon the Panasonic outperforms the C9, but with that current pricing differential, the LG is the more sensational OLED deal. +

SPECS

LG OLED65C9PTA \$5589 (see article)

Display technology: OLED panel

Screen size: 164cm

Native aspect ratio: 16:9

Native resolution: 3840 x 2160

Brightness: not stated

Game mode: 14ms lag

Inputs: 4 x HDMI, 1 x compocomposite video (shared audio), 3 x USB, 1 x Ethernet, Wi-Fi, 1 x aerial

Outputs: optical digital audio, minijack analogue

Audio: 4.2-channel, 60W

Dimensions (whd): 1449 x 862 x 251mm with stand, 1449 x 830 x 47mm without

Weight: 33.9kg with stand, 25.2kg without

Energy Rating label: 4.5 stars

Contact: LG Australia

Telephone: 1300 54 22 73

Web: www.lg.com/au



This 65-inch Sony launched with fairly premium pricing, but is now available under \$2500. It doesn't outperform higher-level TVs, but it's certainly bursting with value.

Sony KD65X9500G

We've been wildly impressed by Sony's OLED televisions, especially the sloping no-legs monolith designs like the current A9F, though we know these didn't appeal to all, since more conventionally-styled TVs were quickly introduced for those finding the monolith too imposing, or the angling unsuitable.

The X95G has legs, and is a full-array LED-LCD television rather than OLED, indeed the top of its LCD range excepting only the Masters series Z9G and Z9F. As such it is nicely competitive on price: it launched at \$3499 but even Sony offers it below \$2500 on its website at the time of writing, and offers a price match facility too. Sony seems not to follow the usual high website price and heavy store discounting we see with some other brands; its website just tells it like it is, which makes life easier when shopping around.

Picture

As the top 2019/20 non-Masters model, it's intended to bring some of the Master Series' authentic approach to a greater audience, and it's a real success in doing so. It's a 4K TV with a direct full-array LED backlight; Sony, like some others, doesn't get specific about the number of individual dimming zones, nor offers a peak brightness figure. Such coyness almost certainly indicates that Samsung Q90R specs are superior, but then that's also a pricier telly, even when discounted.

This TV gets the processor from the Masters series, the X1 Ultimate chip, with around twice the processing power of the X1 Extreme from the previous season. This adds extra features such as Object-Based Super Resolution, which claims to identify objects on screen, enhancing their appearance using intelligent

algorithms, an extraordinary assertion given it has to do this in real-time potentially 60 times a second with 4K images. TV processing power these days blows our minds.

The X1 Extreme's core features also carry over, so you get the likes of Object-Based HDR Remaster (for intelligent contrast enhancement), Super Bit Mapping HDR (which reduces banding), and Dual Database Processing (for cleaner, shaper upscaling).

Those are all Sony-specific picture features, but the company also includes broader TV standards such as Netflix Calibrated (a Netflix-specific set of picture settings) and IMAX Enhanced (for IMAX Enhanced content). On the HDR front, there is compatibility for standard HDR10, HLG and Dolby Vision. HDR10+ is not included, but given the relative paucity of available content, that's a small loss.

This is a great screen, but it's not perfect — let's get the negative points out of the way first. The most obvious weakness is its backlight, which may be called 'full-array' LED but does allow some light to bloom around bright objects on otherwise dark backgrounds. It doesn't allow the set to go properly dark either. A standard credits sequence is a torture test for a backlit TV, and the X95G struggles to let bright, white text shine out without sacrificing a good deal of black depth. In normal viewing, black bars at the top and bottom of a widescreen presentation show some light bleeding in from the main picture.

Viewing angles are also typical of a backlit TV, far less wide than OLED's front emissive

SUMMARY

Sony X95G 65-inch

Price: \$2495

- + Detailed, nuanced images
- + Bright, vibrant and natural
- + Excellent motion processing
- Blacks aren't that deep
- Some backlight blooming

technology, and without a cheat layer as added to Samsung's premium TVs (though that's not without side effects). Here black depth and colour vibrancy are quickly lost as you move off-axis — not a problem for a couple sitting in the zone, but affecting those in outlying positions, or if you're watching the news off-axis from the kitchen.

But the good stuff is significant compensation for these issues. Sony's motion processing again is one of the highlights, excellent even when left on the Auto setting, and significantly better than on even the most expensive TVs from Samsung and LG. Here you get smoother, sharper motion with much less shimmer and flicker, and none of the unpleasant over-sharpening or lack of realism referred to as the 'soap-opera effect'.

This is also an exceptionally bright and vibrant picture for the price, though the out-of-the-box defaults can leave it relatively dull. Try switching Live Colour to High to add punch and richness while steering clear of exaggeration. This setting maintains subtlety and nuance, combining eye-popping colour where needed but still delivering natural skin tones in the same image. On the 4K Blu-ray disc of *Alien: Covenant*, the realism of the colour palette is reinforced on this Sony. The opening scene takes place in an impossibly white room, which the Sony recreates in a bright fashion without washing out the subtle variances in light and shade.

This scene also features a number of actor close-ups, and the Sony makes full use of the merciless resolution to display every little wrinkle, scar and blemish.

For an LCD

panel, detail levels are also impressively high in dark images, so the more horrific scenes hide nothing of their gory glory!

Upscaling is also well-handled, with the Sony producing a really clean, low-noise image even if you go right down to 576p resolution. Colours remain natural and balanced (some films and TV shows will be best served by Live Colour being moved back to Medium), and 1080p films are sharp and detailed.

Build and features

Those slightly awkward-looking splayed feet necessitate a wide support — at least 120cm-wide. Sony's small soundbars fit neatly inside the legs, but since those have yet to impress us with their performance (we found the HT-X9000F inoffensive at best), we'd recommend using an external sound system for movies and TV drama. The TV's own sound is fine for casual use, using two front-firing full-range speakers complemented by two tweeters mounted to the rear panel and firing out to the sides; it places effects well in relation to on-screen action, and is crisp, even punchy, though fairly bass-light. A big screen deserves bigger sound, and the Sony will both look and sound its best up on a wall (ugly legs removed) with sound from a good external system.

Sony continues to source its TV operating system from Google, and the X95G has Android TV 8.0, responsive and snappy (that abundant processing power again). Android can be less well organised than the slick, colourful offerings of Samsung and LG, but it has the advantage of access to tons of apps — all the streaming services, all the catch-up channels including LiveTV for ABC, 7 and 9, and also the third-party likes of Plex and VLC for playing your own files, plus Spotify, Tidal and Deezer for music subscription. Android TV also includes Chromecast built-in,

so you can 'cast' from your phone or tablet, connect to the TV using Google Home, and use Google Assistant which, being native to Android, tends to work better (if still not entirely integrated with the wider TV operations) than with other platforms.

Connections are split between the left side and back, offering four HDMI 2.0 sockets, three USBs, Ethernet and Wi-Fi networking, an optical output and a dedicated 3.5mm analogue headphone connection.

Conclusion

Sony doesn't achieve the miracle of outperforming the more expensive LG C9 OLED or Samsung Q90R QLED in this group: compared with those it lacks black depth, close contrast control and wide viewing angles. But of course those TVs are at least \$1000 more expensive. At the price on offer, the Sony has many strengths — from brilliantly balanced colours to excellent detail and some of the best motion processing available at any price. It's a great TV to watch, and fine value for the money. +



SPECS

Sony KD65X9500G

\$2495

Display technology: LED-LCD

Screen size: 164cm

Native aspect ratio: 16:9

Native resolution: 3840 x 2160

Brightness/contrast: Not stated

Energy Rating label: 3.5 stars; 649kWh per year

Inputs: 4 x HDMI, 1 x composite video, 3 x USB, 1 x Ethernet, Wi-Fi, 1 x aerial

Outputs: 1 x optical digital audio, 1 x 3.5mm headphone

Audio: 2 x tweeters, 2 x midrange

Accessories: Tabletop stand, remote control

Dimensions (whd): 1446 x 885 x 78mm without stand / 1446 x 907 x 310mm with stand

Weight : 23.5kg without stand, 24.0kg with stand

Contact: Sony Australia

Telephone: 1300 137 669

Web: www.sony.com.au



Faking it

Left on their defaults, many TVs will invent more fake frames than they show real ones. Do we want that?



When *Mission: Impossible – Fallout* was released on Blu-ray, Tom Cruise sent out a surprising tweet to his fans. It was a plea from himself and director Chris McQuarrie to turn off your TV's motion smoothing before watching their (or any) films. So what's their problem, and should you follow the Cruiser's advice?

What is motion smoothing?

Motion smoothing is designed to reduce judder and blur from video sources. It generally works by introducing artificial frames of video between the actual frames provided by the source. The frame rate for almost all films is 24 frames per second, slow enough that, with fast motion, an object or person can jump from one point on the screen to another a significant number of pixels away.

Any TV is capable of displaying far more than just 24 frames per second. In countries that have a mains frequency of 50Hz, including Australia, they naturally display 50 frames per second, while in other countries, such as the USA, with a mains frequency of 60Hz, displays are based on 60 frames per second. Many TVs now refresh each frame at double that rate, while others claim to triple it or beyond (though often don't).

That leaves the telly with two choices: to display each frame twice (or thrice), or to add frames between those it's receiving, to bridge the gap. The former choice can result in a bit of judder and/or blur, while the latter is the interpolation (motion smoothing) that Cruise warns about. Your eyes often perceive this as a smoothing of motion, but it can see unnatural, or create weird artefacts around the subject in question, depending on the speed of the motion and the native response time of your TV.

Clever stuff

The creation of additional frames is pretty darned clever when you think about it. The TV is essentially predicting, at an exceptionally fast and real-time rate, what each next 'real' frame will be, then inventing a frame that's halfway there. Consider everything that's going on in every single frame of a film, and that's a heck of a lot of processing.

Inevitably, of course, the TV often gets elements wrong, and that can result in the flaws described above. The case against motion smoothing is that it can result in unnatural motion, and a fuzzy halo around the difficult moving objects, especially against complex backgrounds. In its worst instances motion processing creates what's referred to as the 'soap opera effect'. This is hard to put your finger on; it was once considered a loss of film grain in the interpolated frames, so film looked like video. But digital cameras did away with grain, yet it still happens.

A happy medium

We agree that motion smoothing is often best switched off, but that's not always the case. Its quality varies from manufacturer to manufacturer — Sony's is particularly good, for example. So in some instances, switching from the default mode to one that's a little less aggressive can result in a useful reduction in judder or blur without harming the image.

Thankfully, it is easy to turn motion smoothing off by delving through the picture settings menu until you find an option with 'motion' in the name — we've listed the manufacturers' alternative names in the panel

below, along with suggestions for the settings, at least as a starting point.

Remember that results can vary, depending on what you're watching. So a good torture test helps to see what's happening. We like the flyover scene 50 minutes into *The Fugitive*, the opening scene (with the credits making it harder) of *Prometheus*, and the two scenes shown above — the opening scene in *Guardians Of The Galaxy Vol.2* (especially when Meredith sticks her arm out of the window), and the tricky vertical and horizontal panning shots in the first minutes of *Harry Potter And The Order Of The Phoenix*, especially the moving cars in the overhead shot of town and park. Get it right, and you can make it smooth! +

BY ANY OTHER NAME...

Here are the motion controls to seek, depending on your TV's manufacturer...

- **Hisense 'Ultra Smooth Motion':** try it on 'medium'.
- **LG 'TruMotion':** turn it off, or find the User setting and adjust 'deblur' and 'dejudder' to 2 or 3 each.
- **Panasonic 'Intelligent Frame Creation', 'Black Frame Insertion', 'Clear Motion':** switch whichever yours has to minimum.
- **Samsung 'Auto Motion Plus':** turn it off, or on recent models try Custom with 'Blur Reduction' on 10, 'Judder Reduction' on 3, and 'Clear Motion' off.
- **Sony 'MotionFlow':** a good one! — just leave it on the default 'Standard'.
- **TCL 'Motion Clarity':** a 0-10 scale on the recent X7, defaults to 10 and did well.



Next year's TVs + CES: THE CLASS OF 2020

▲ Samsung MicroLED

\$TBC ◊ Launch: TBC

Samsung has showcased its MicroLED tech before, but this is the first time the panels have looked like they might fit into a normal human home. The smallest on offer is now down to 75 inches, rising through 88, 93, and 110-inches to a 150-inch model, and should you desire more their modular design and near lack of bezel mean that you can join them together into a monster video wall...

The Consumer Electronics Show (CES) in Las Vegas is the showcase of TVs yet to come, TVs they hope will come, and some outlandishly over-optimistic concepts which never make it into production. Here's our pick from CES' class of 2020...

▼ Hisense ULED XD

\$TBC ◊ Launch: 2020

Hisense had, as usual, a wealth of wonders, including the promise of its first 8K TV launch in Australia this year, and of TriChroma Laser TVs (see News p9). But of special interest is this ULED XD TV, also promised for 2020. Its Dual Cell technology features two precision-bonded LCD panels that control brightness more precisely than ever before, making blacks appear darker and colours more vivid — more competition for OLED?



▲ Sony Master Series A9S: 48-inch

\$TBC ◊ Launch: 2020

Sony's CES offerings were headlined by the mighty new 8K 85-inch Z8H (see overleaf), and also the next Sony OLED series, the A8H, coming in 55-inch and 65-inch varieties, with that cunning Acoustic Surface audio. But some may find the pictured new Master Series A9S 48-incher a useful smaller size; it still brings the best in the Master Series processing, with the X1 Ultimate Processor, Dolby Vision and even Dolby Atmos support, so that those seeking a new boudoir TV might be inclined to accept the size without compromising quality.

Next year's TVs

+ CES: THE CLASS OF 2020

▼ Samsung Q950TS

\$TBC ◇ Launch April-May

Samsung announced the Q950TS 8K TV at CES, and despite being an LCD TV it manages a super-skinny profile measuring just 15mm thick across the entire panel, assisted by the continuing use of Samsung's separate connections box, leaving the screen thin, flat, and a stunning candidate for wall-mounting. It's also almost entirely bezel-less, an 'Infinity Screen', as Samsung is calling it, and for once we'll hold our cynicism of the 'AI' here — the AI Quantum Processor on board may be one that actually does learn as it goes, promising ever better upscaling (and making it tough to review, if it gets better later!). Sound quality is also a focus here.



▲ Panasonic HZ2000

\$N/A ◇ Launch — never in Australia

Panasonic had plenty going on at CES in other fields, but just the one TV to launch — next year's version of the 4K OLED we've reviewed this very issue. But news came, after our review, that Panasonic is pulling out of Australia's TV market. So we'll almost certainly never see this HZ2000 here, which is a light evolution of the GZ2000 rather than a revolution. It brings the

next generation of Panasonic's tweaked-up Master HDR OLED Professional Edition panel, as well as an improved HCX Pro Intelligent processor, and 'Filmmaker Mode' which deactivates most processing. The Dolby Vision IQ system uses an external sensor to measure room light, then tweaks the Dolby Vision metadata to deliver the best possible HDR results.



▲ Sony Z8H Series

\$TBC ◇ Launch TBC

Anyone for 8K? Sony has already proved it can deliver as good as 8K can get, though see our TV intro article in this issue for the questions around whether it's simply too early to bother. This 8Ker will be available in 75-inch and 85-inch sizes, with 'Full Array' LED backlighting and the X1 Ultimate processor still in charge, and new ambient sensing optimisation to bugger up your carefully chosen settings, plus a whole load of smarts led by Android TV.

► LG OLED CX

\$TBC ◇ Launch TBC

Like Sony, LG is aiming to make 4K more accessible to the masses by introducing a 48-inch version, though this range also comes in 55-, 65- and 77-inch models. LG's new Alpha 9 Gen 3 processor powers all its new OLED TVs bar the entry-level BX range, offering a new Auto Genre Selection, where the TV recognises the type of content being played, and adjusts the picture processing to suit. It's also being promoted as "the ultimate gamer's TV"...



▲ TCL Vidrian Mini-LED

\$TBC ◇ Launch TBC

The TCL 8 Series Vidrian Mini-LED 8K TV is the new flagship TCL TV for 2020. Building on last year's Mini-LED TVs, TCL's new Vidrian system has added 8K resolution into the mix, and upgraded its 'glass on LED' Mini-LED panel tech, delivering what it says is the world's first TV backlight with the driving semi-conductor circuitry and tens of thousands of micro-meter class mini-LEDs directly infused in a crystal-clear glass substrate. The panels take advantage of TCL's USD\$8bn investment in a recently opened and state-of-the-art panel fabrication facility, where pure glass sheets of 65 inches, 75 inches or larger are infused with tens of thousands of tiny light sources which can be each individually controlled. The promise of greater efficiency, greater light precision and greater luminance output is a bold one! We await word of Australian availability.

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see p7 inside

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The new flagship Series MX system is here – the Krix MX-40. In a series-first, it features a 3-way design with new constant directivity dual-horn system, for improved frequency response and extremely low distortion, even when pushed to immense sound pressure levels.

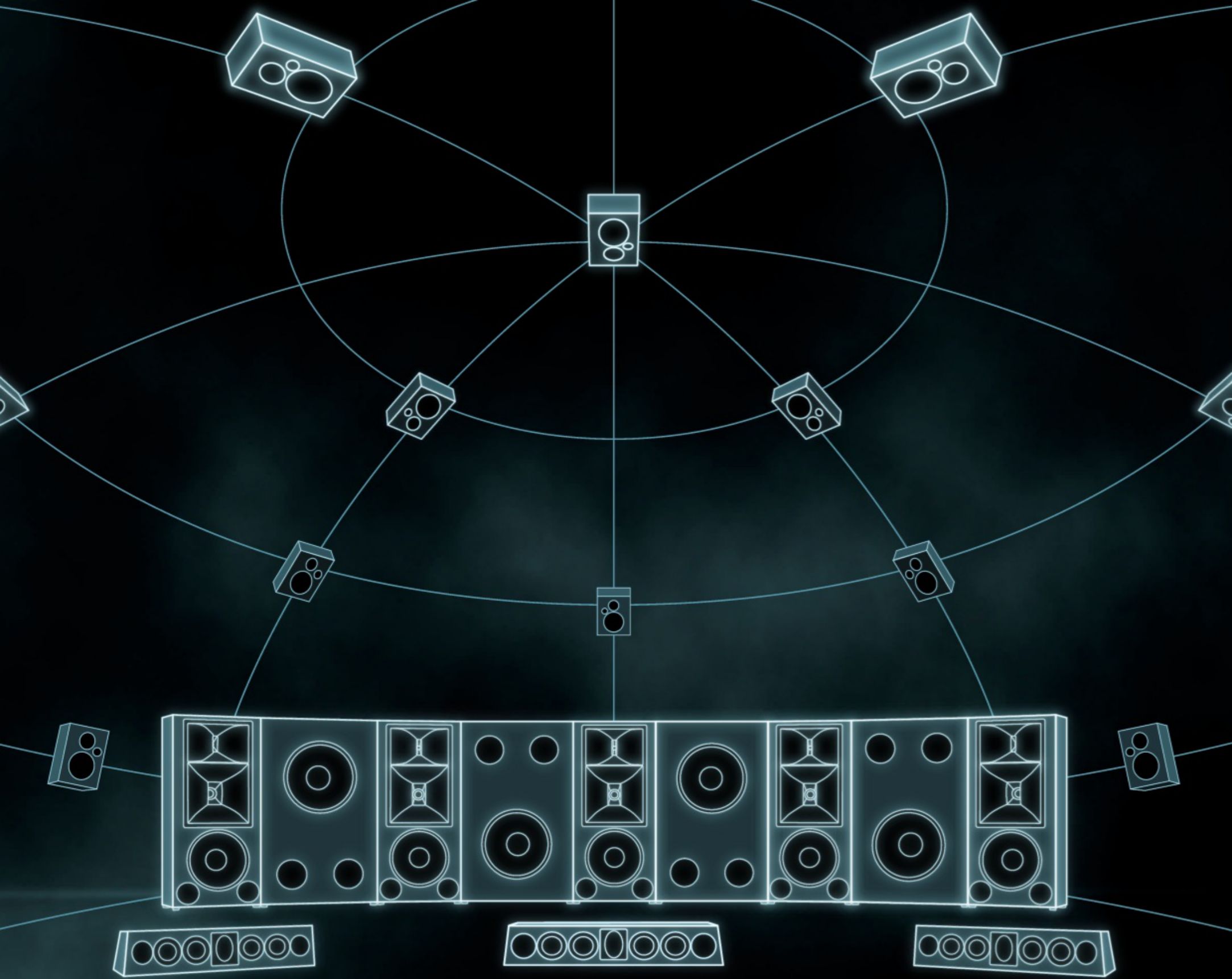
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For more information and ticket sales, head to www.hifi2020.com.



A high-end living room interior featuring two tall, black Revel Salon2 loudspeakers flanking a central black shelving unit. The unit houses a stack of audio components: a turntable, a tuner/amplifier, and two subwoofers. A framed picture of a mountain peak hangs on the wall above the unit. To the left, a large window offers a view of a city skyline at night, with a small table and a vase of white flowers nearby. To the right, a tall, clear glass vase holds red flowers. The floor is covered with a light-colored, textured rug.

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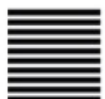
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The KAYA 25 is a two-way speaker, with the alloy-coned C125D drive unit handling both bass and mid frequencies. Adopting a technology previously used only in our GIYA bass drivers, the driver is fitted with a radial rare-earth magnet, which ensures clean, transparent sound right to the top of its range. The laws of physics (which we're bound to obey) dictate that at the upper end of the frequency range, the sound becomes more focused and directional. To match this, the D26 tweeter is mounted in a shallow waveguide, ensuring that the sound field remains completely seamless. The effect is a compelling listening experience that holds your attention and draws you into the music: perfect for more concentrated listening, and enjoying music with nuance, depth and complexity.

Fyne fare

All the way from Scotland, a new contender arrives in the Australian speaker market. How do these Fyne standmount coaxial speakers stack up?

SUMMARY

Fyne Audio F500

Price: \$1495 in dark oak/black oak
\$1695 in piano gloss white/ black

- + Nice bass weight
- + Solid midrange
- + Easy placement
- Lack a little air and rhythm
- Strong competition

Fyne Audio is a brand which is new to Australia, arriving also through a new distributor in HiFi Collective, and indeed Fyne is a new company in itself, having launched its first products two years ago, which included the standmounting F500 loudspeaker shown here. But just as HiFi Collective comes from a team with a long history in Australia and New Zealand, so the folk at Fyne have been working together for a decade or more, and boast “over 200 years’ experience” in the arts of musical reproduction.

And they’re based in Scotland, so that spelling of ‘Fyne’ is not a pun on the word ‘fine’, it’s a proud and legitimate Scottish variant!

Equipment

All that experience may explain why Fyne Audio was able to hit the ground running. The floorstanding F501 speakers took out a WHAT HI-FI? Award in their very first year, and in many ways these F500s are truncated versions of those, equally well-finished in a choice of oaks or piano glosses, but without the second woofer of the F501.



What’s left is not one driver, as it may first appear, but two; the F500 uses coaxial drivers, where the tweeter sits inside the cone of the mid/bass driver — here a 25mm titanium-dome compression tweeter inside a 15cm multi-fibre paper cone, in what the company calls its IsoFlare configuration. Coaxial drivers are favoured by others, notably KEF, as when correctly designed they deliver a single point source for the full range of sound frequencies, thereby keeping them in correct phase alignment and often with excellent imaging.

The roll of the bass cone has a series of angled depressions in it, which Fyne calls FyneFlute, the goal being to provide an uneven surface which will help dissipate cone energy and reduce coloration.

Also of note is the porting of the F500 design, as the reflex port lies underneath, firing onto the inverted cone below (visible in the rear image, left). Fyne has named this too — the system is BassTrax, and the cone a BassTrax Tractrix diffuser, aiming for 360-degree dispersion of the sound waves, which allows more versatility for positioning than a rear-ported speaker when it comes to proximity of a back wall.

Performance

The BassTrax system certainly delivers on producing low-end; the





F500s dished out an impressive portion of bass for standmount speakers, with sufficient punch to deal heavy kicks from bass drums, and the smoothness to feed bubbling pulses and luscious pedals without going entirely overboard into bloat.

It makes for a warm, welcoming sound, with that bass supporting the midrange in a cohesive performance with a smooth line drawn through the frequencies to a treble that can really sing, that centralised tweeter performing its role admirably, with detail

plentiful if not as analytical or airy as some; the focus here is on musicality and entertainment over critical listening. They benefit from high quality amplifier power, which keeps the low-end tight, so that the midrange and treble can be delivered at their best. Timing and clarity of complex passages are good, dynamics are expressive. Competitors that lack the physical and bass heft might deliver a more spritely performance, and that becomes your choice here — a little more delicacy elsewhere, or kick out your tunes with Fyne's weight and passion.

Conclusion

If you're after a mid-range standmounter with bass to impress, and don't want to miss out on detail or musicality, then the Fyne F500s are more than worth the time for an audition. Meanwhile we look forward to hearing more of Fyne's extensive ranges, which run from in-ceiling and in-wall models for a few hundred dollars, through the 300 and this 500 series, up to the F1 series which tops out at the \$60,000 93kg-each F-12 floorstanders. They're a welcome arrival in Australia. +



▲ THEY DO MOVIES TOO: Fyne's 500 Series also includes all the models required for home cinema use.

SPECS

Fyne Audio F500

Price: \$1495 in dark oak/black oak, \$1695 in piano gloss white/ black

Design: 2-way standmount, bass reflex with BassTrax downward port & Tractrix diffuser

Drivers: 25mm titanium-dome compression tweeter coaxial within 150mm multi-fibre bass/mid

Sensitivity: 89dB/W/m

Quoted frequency response: 45Hz-34kHz (-6dB)

Crossover frequency: 1.7kHz

Crossover type: 2nd order low pass, 1st order high pass

Dimensions (hwd): 325 x 200 x 320mm

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Denon AVR-X2600H
AV receiver with HEOS



Winning ways



Of the three smart AV receivers that follow, two have already won Sound+Image Awards, with this Denon taking out 'AV Receiver of the Year under \$2000'. Here's our full review.

SUMMARY

Denon AVR-X2600H
AV receiver with HEOS
Price: \$1699

- + Excellent all-rounder
- + Very good video processing
- + HEOS streaming & multiroom
- No DAB+ tuner

In recent years we've come to regard the Denon 'AVR-X2-something' level as occupying a sweet-spot among Denon home cinema receivers. That is, they have everything that a receiver really ought to have, while trimming off most of the unnecessary stuff. That continues with the Denon AVR-X2600H, together with performance at the price which brought it a Sound+Image Award as revealed last issue, to go with the EISA 2019-2020 Best Product Award it had already received from our global colleagues. We told you a little about its merits in that Awards issue; now here's our full review.

Equipment

The Denon AVR-X2600H is a seven-channel model rated at a solid 95 watts from each channel into 8 ohms, full bandwidth, low distortion. It supports all the latest audio standards. It supports advanced network functionality. It supports UltraHD video (*more* than supports it, as we'll see). And it supports good old-fashioned analogue, not just with the four line-level audio inputs, but also moving-magnet phono.

The receiver conforms to the usual Denon layout, although without the front cover available on some of the more expensive models. There's a large volume control to the right and input selector to the left with a row of control buttons under the informative blue-on-black display.

Also on the front is one

HDMI input, a USB connector for flash memory, and a 6.5mm headphone output.

The back has, in addition to the speaker terminals and analogue audio inputs, seven HDMI connectors, two optical digital audio (but no coaxial) and inputs (and outputs) for composite and component video. There are two subwoofer outputs, but they deliver an identical signal. And there are two RCA sockets to feed audio to Zone 2.

Plus, the unit has an RJ45 Ethernet socket and two antennas for dual-band Wi-Fi and Bluetooth. The network connectivity includes support for Apple AirPlay, DLNA and of course the HEOS multiroom system, with all that it provides.

A standard IR remote control provides ready access to most things on the receiver. It also has four Quick Select keys, each of which can bring into operation an input and various sound and video settings.

Setting up

The Denon AVR-X2600H has a full, comprehensive on-screen display, a detailed settings menu and even a context sensitive 'Options' menu. This will overlay most video forms (but not Ultra HD). The first time you start up the receiver it runs a wizard which guides you through setting everything up, including inputs, speaker calibration and EQ (using the Audyssey MultEQ XT

system) and the network. If you're going wireless, you can use an iOS device to automatically set up the connection.

You can control many things via a built-in web page, simply by typing the IP address of the unit into a web browser on a device attached to the same network. Well, not so simply. My browser gave dark warnings the first time about an insecure connection. I had to click an 'Advanced' button and click through the 'Unsafe' link to get it going. But after that first time, it reconnected without further troubles. Still, Denon ought to look into that.

A further method of control is by voice, if you have a Google Assistant or Amazon Alexa-compatible device. This stuff is still tricky to set up and somewhat rudimentary, but it's good to see Denon working on it.

What's changed?

There are a number of enhancements in this year's model... or will soon be. One cool one is the addition of Bluetooth audio transmission, so that you can use Bluetooth headphones with the receiver. This will be a welcome feature, not least because this receiver, in common with some others, has a ridiculously high output impedance on its physical headphone connection: around 477 ohms. That may have almost no effect on the

performance of your headphones, or it may make them sound utterly awful; it will depend entirely on the headphones' impedance characteristics (the change in impedance with frequency), something which is rarely published.

It's not clear if the Bluetooth sending supports any of the higher-quality stereo codecs, so it probably relies on the base-level SBC for a connection. Nonetheless, decent Bluetooth headphones will likely sound better than many wired headphones. We were unable to test this as the required firmware update was not available at the time of review.

Another addition is 'Dolby Atmos Height Virtualization'. That is, if you don't have overhead speakers or Atmos-enabled ear-level speakers, a new processing mode attempts to produce an overhead effect with Dolby Atmos signals. In addition the same source can now be played in surround sound (including Atmos) in the main zone, while a down-mixed two-channel version plays in Zone 2. The Denon AVR-X2600H does support such a second zone — via line-level analogue audio outputs or by assigning a pair of amplifiers — but it doesn't provide Zone 2 video.

The receiver — actually, all the new Denon 600-series receivers — features a 'Sports Bar Mode'. Basically, it lets you assign most of the inputs to more than one input selection. You can assign, say, the HDMI2 input to both the DVD and Blu-ray input selec-

tions. Indeed, to CAB/SAT as well. Likewise for each of the analogue inputs (but not the phono input) and each of the two optical digital audio inputs.

Why do this? That's where the Sports Bar metaphor (I'm calling it) comes in. That will typically have Foxtel Sports running on TVs around the place, but without the sound. What a waste. The bar could have CAB/SAT set solely to the HDMI 1 input with Foxtel, so that the receiver plays back the big game with sound. And for normal use it could have Media Player set to HDMI 1 input for video but CD input for audio. That would have the Foxtel video still on the big screen, but let the system play music at the same time.

Yes, you can do that on older models if you like, but only by reconfiguring the inputs via the settings menu when you want to switch between modes.

One thing I'd like to see to enhance this further is to add a few more input selections. Why not have an AV6, AV7, heck, AV12! Well, I suppose you wouldn't have keys on the remote control to directly select the inputs, I suppose, but that would thoroughly cover all possible input combinations one might reasonably want.

Another change: the receiver now reads and displays the equipment identifier of source devices connected via HDMI. (Remember, during the HDMI hand-shaking quite a bit of information passes between two pieces of equipment.) I had two Ultra-HD Blu-ray players plugged into the receiver. One was my trusty old Oppo. When I switched to the Blu-ray input, the front-panel display showed its model number, 'UDP-203'. I had



HDMI inputs and speaker outputs

There are eight HDMI inputs in all, one on the front and seven here at the back, all fully 4K-compatible. The seven sets of speaker terminals indicate the seven channels of amplification here, while the two subwoofer outputs deliver identical feeds.

Analogue inputs

There are analogue video inputs both component and composite, but using these would require messily running the same type of cable on to your TV, as the inputs are not converted to HDMI.

a Panasonic DP-UB820 player plugged into the DVD input. The Denon displayed 'Panasonic BD' on its front panel.

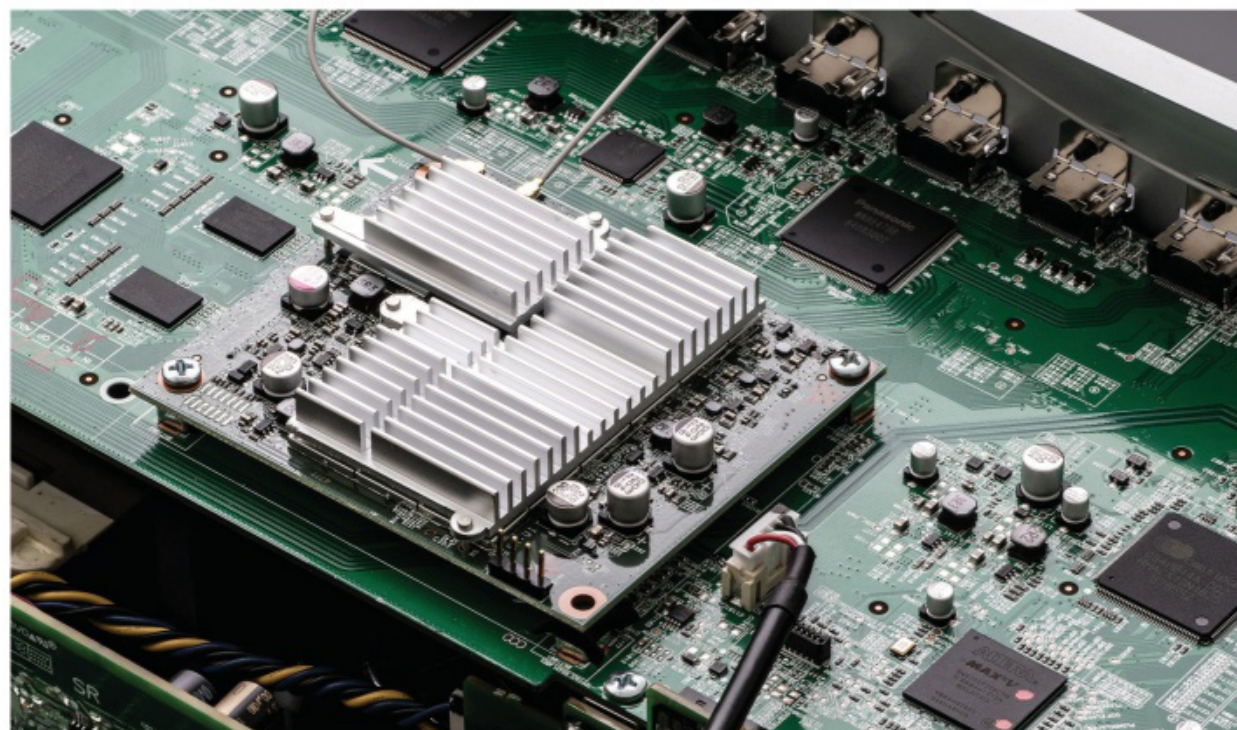
As you can see, what it displays depends on what the source device maker has programmed into it. Panasonic apparently doesn't think it needs to distinguish its models. You can still rename the input if you prefer, and that overrides the automatic display.

Video

As a receiver at the lower end of Denon's network range, the AVR-X2600H loses one feature offered at the next level: analogue-to-HDMI video conversion. If you're plugging some legacy video device into the receiver using composite or component video, then you're going to have to plug the receiver into the TV using the same form of analogue cable.

More importantly — far more so — this receiver does deinterlacing and scaling, and does it very well, for the HDMI inputs. Indeed, having recently reviewed the high-end Denon AVC-X6500H, I could see nothing to distinguish it on this front from the performance from this receiver. You can choose to bypass the processing completely, or select one of several output resolutions, up to '4K' (or rather Ultra HD). The automatic (and the seemingly identical 'Video and Film') deinterlacing settings did a very nearly perfect job of picking the appropriate mode: video or film. In the hardest, most ambiguous section of 1080i/50 there was a slight wobble of confusion. That never happened at all with 576i/50. Most digital TV set top boxes and many Blu-ray players will have their performance improved by leaving it to this receiver to perform progressive-scan conversion.

This receiver also implements eARC. The Audio Return Channel allows a TV to send audio back out from its HDMI input to a connected audio device. Enhanced Audio



Return Channel supports higher standards, such as Dolby Atmos. That matters little for broadcast TV, but we use our TVs for more than that these days. I fired up Netflix on my LG OLED TV and played *The Haunting of Hill House*. Sure enough, the receiver showed 'Dolby Atmos' on its front display.

One thing you may need to do on setting up the receiver is change the '4K Signal Format' video setting. Its default is 'Standard', which limits things to 4:2:0 8-bit video for Ultra-HD signals running at 60 hertz. If you have one of the rare Ultra-HD movies shot at 2160p/60, it won't work. Change the receiver to 'Enhanced' ... if your TV and HDMI cable supports it.

Audio

I ran the Denon AVR-X2600H as my sole home theatre receiver for a couple of weeks. It was in 5.1.2 configuration. Music or movie, two channels or Dolby Atmos or DTS:X, I was impressed.

Is 95 watts enough? Hell, yes, unless you have unusually insensitive loudspeakers. Remember, 95 watts is all of 1.7 decibels less than the 140 watts offered by the Denon AVC-X6500H. I certainly felt no lack of power from this receiver.

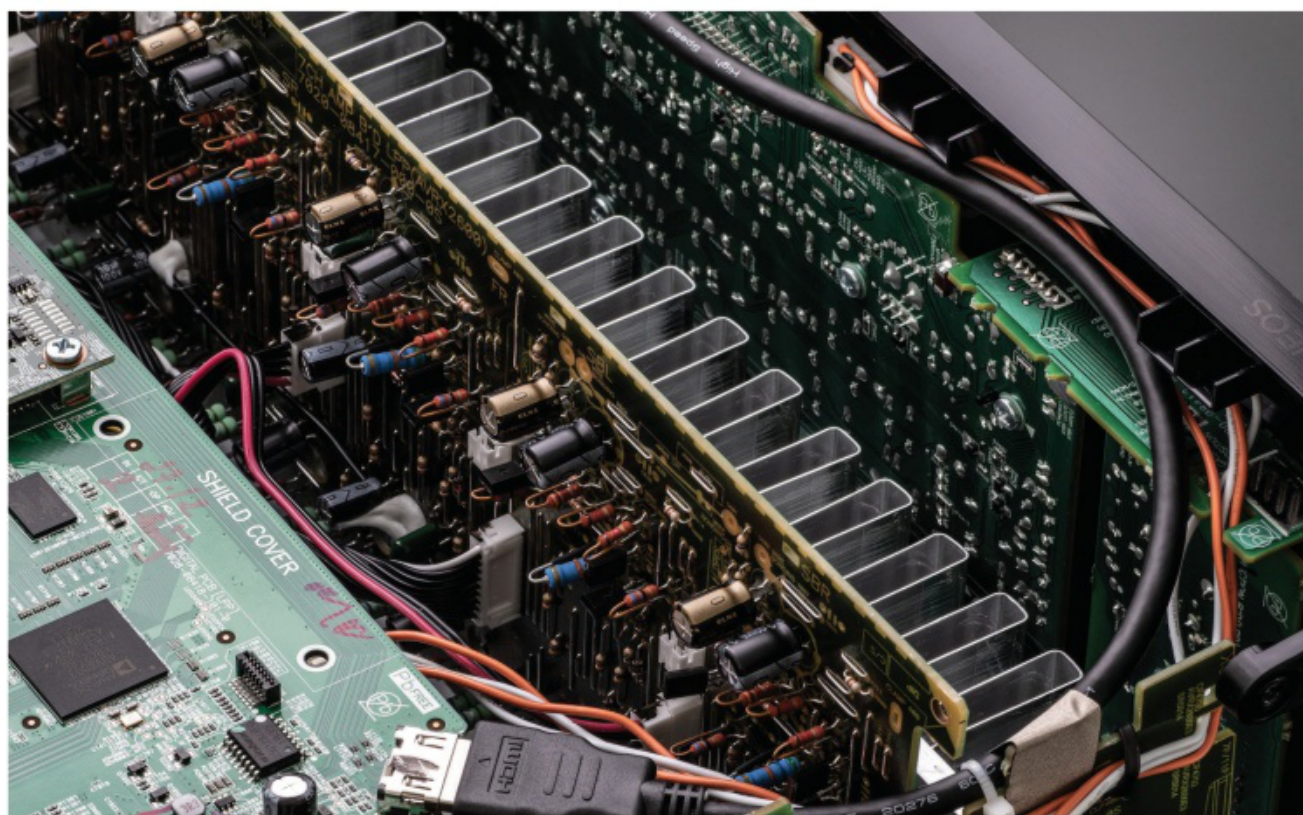
Blockbuster superhero movies on Ultra HD were delivered with great authority. But subtle content was equally well handled.

As was music. I used the HEOS app to stream CD (or better) quality music from TIDAL through the receiver. I don't think that it supported playback of DSD, but music from my SACD player, fed via HDMI, came through fine, so the receiver tells the player to convert to PCM. Likewise, the HEOS app is well aware of the receiver's capabilities, so it seemingly arranges for conversion.

Conclusion

Again, Denon has produced a sweet receiver at a respectable price in the AVR-X2600H.

✦ *Stephen Dawson*



▲ The power amp section of the AVR-X2600H; ► Top image: the HEOS module brings streaming and multiroom abilities.

SPECS

Denon AVR-X2600H

\$1699

Tested with firmware: 7000-9195-0002-0025

Power: 7 x 95 watts (8 ohms, 20-20,000kHz, 0.08% THD, two channels driven)

Inputs: 8 x HDMI, 2 x component video, 2 x composite video, 4 x analogue stereo, 2 x optical digital, 0 x coaxial digital, 1 x USB, 1 x Ethernet, Wi-Fi, Bluetooth, AM/FM antennas

Outputs: 2 x HDMI, 1 x component video, 1 x composite video, 1 x 0.1 pre-out (2 sockets), 7 pairs speaker binding posts, 1 x 6.5mm headphone, Bluetooth headphone (coming in firmware upgrade at time of review)

Zone: 1 x analogue stereo, assignable amplifiers

Other: 1 x set-up mic

Dimensions (whd): 434 x 167 x 341mm

Weight: 9.5kg

Contact: QualiFi Pty Ltd

Telephone: 1800 24 24 26

Web: www.denon.com.au



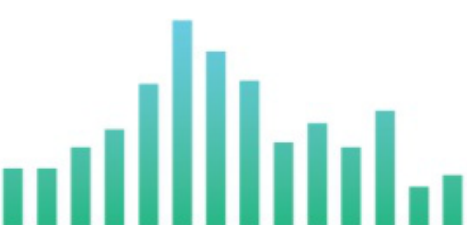
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STUDIO **CONNECTIONS**
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Marantz SR6014
AV receiver with HEOS



Class action



Second up, our full review of the Sound+Image ‘AV Receiver of the Year \$2000-\$5000’, the Marantz SR6014. It’s less than a grand more than the Denon, so what extra do you gain?

SUMMARY

Marantz SR6014
AV receiver with HEOS
Price: \$2570

- + Excellent audio performance
- + Excellent video performance
- + Excellent network performance
- No DAB+ tuner

Nine channels is a handy number when you’re putting together a home cinema system. A nine-channel AV receiver will suit a great many users — not too many channels, but not too few. And that’s what the Marantz SR6014 home theatre receiver offers. And there’s also support for 10th and 11th channels as well, should you need them.

Equipment

Why nine? Well, in the pre-Atmos days, I was a firm 5.1-channel guy. I’ve never been a fan of the rear surround speakers which spread the width of the effects in the home. Too much wiring for diminishing returns. In a theatre, rear surround helps localise centre-rear sounds for those patrons who find themselves seated near side walls. But in your home? Well, not needed in my room anyway.

So with the arrival of overhead speakers for Atmos and DTS:X, I’m satisfied with 5.1.2 (two overhead speakers), but I do genuinely prefer 5.1.4. The more expansive overhead soundfield does add something noticeable. And with its nine channels of amplification, the Marantz SR6014 can deliver 5.2.4 from its built-in facilities. (The ‘2’ is because the subwoofer outputs can be separately levelled and distanced, rather than being identical.)

And it can also support the delivery of 7.2.4. You’ll need to add two external channels of amplification if you choose that, but those who

are running a larger theatre room can thereby have full overhead coverage plus surround back. One very thoughtful inclusion in that implementation is a choice about which pair of speakers you want to use the external amplifier on. It can be the ceiling/height rear channels, or it can be the front stereo pair! What an excellent idea. You might want to run the stereo speakers with high-end audiophile power amplifiers, and with this receiver you can do that.

The nine built-in amplifiers are pretty good, though. They’re rated at 110 watts per channel continuous across the full audio bandwidth, two channels driven. By default the receiver supports 8-ohm speakers, but they can be changed to 6 ohms or 4 ohms.

The front panel of the Marantz SR6014 is a little unusual. Lately, Marantz receivers have featured a small, round front panel display as a supplement to the usual large, rectangular one which has been hidden away under a cover. This one has only the small display. I’m not sure that the lack of the large display really makes much difference, given the extensive on-screen display capabilities for overlaying information on the picture.

There are plenty of inputs, including phono (moving magnet) and both composite and component video. There are matching analogue video outputs, but the receiver does here digitise the analogue video inputs so it can output them via HDMI if you prefer. Remember, they’re going to be digitised somewhere or other, in your TV if not our receiver, and this option removes the need for additional analogue cabling to your television.

Unusually, the receiver still has a set of analogue A/V inputs on the front, like a receiver of yore. I like it — at least the audio ones. It makes it easy to plug in some audio device on an ad hoc basis.

But, of course, the receiver is a full network unit and also supports Bluetooth audio. As with the Denon receiver, a firmware upgrade will add the ability to connect via Bluetooth to headphones.

Setting up

With one exception, the receiver is about as easy to set up as any with such broad capabilities can reasonably be. The exception is that if you have a 4K/60 Ultra-HD Blu-ray disc, you aren't going to get a picture out of it unless you go into the Video settings menu and change the 4K picture handling from Standard to Enhanced. Presumably Standard gives broader hardware compatibility, but I can imagine some frustrated owners, particularly if more High Frame Rate pictures start rolling out.

The receiver uses Audyssey MultEQ XT32 for speaker calibration. It did a generally sensible job of choosing 'Large' and 'Small' for my speakers, and setting their crossover frequencies. I felt no need to change them.

Do resist the temptation to accept Audyssey Dynamic Volume and EQ at the end of the setup. These are like more effective 'Loudness' controls, which adjust bass and treble to account for the reduced sensitivity of the ear at low volumes. In fact, they make things sound artificial.

Also for the sake of purity, head into the Audio setting menu from time to time and make sure 'M-DAX' is Off for all the different audio streaming formats you're using.

M-DAX is one of those processes that purports to 'restore' stuff lost in compression. I note that by default it was on 'Low' when I was streaming lossless FLAC audio.

You might want to experiment with Audyssey Low Frequency Containment. You switch this on if you're worried about disturbing the neighbours. It removes certain bass elements from the subwoofer and puts in some less intrusive bass which is designed to give a similar subjective sense.

Performance

What can I write about the performance of a home theatre receiver that simply does what it's supposed to do? It delivers sound with all the surround elements, and when appropriate all the stereo elements, in the precise positions in which they belong. It moves sounds through space smoothly. It drives loudspeakers to the exact level they need to be. Down to 40 hertz, at least, it controls loudspeakers superbly. I won't offer a view below that because that's where the receiver set the crossover for my front speakers, and where I wanted it to be.

This was particularly the case with surround material. Whether it was good old 5.1 Dolby Digital from DVD, Atmos based on Dolby Digital Plus from Netflix, or DTS:X or

True-HD-based Atmos from Blu-ray or 4K Blu-ray, everything was gorgeous, lush and powerful. The Dolby Surround processing did a good job of expanding a flat surround field to include an overhead space. As always, that depends enormously on whether the source material has any realistic height content to extract.

The video upscaling and deinterlacing performance was also up there with the very best of them. It was tricked only by the most ambiguous 1080i/50 content, and not at all by 576i/50 material. Impressive.

Stereo music was also impressive. As I'm writing this paragraph, I'm setting in the prime listening position, spinning the vinyl version of Nick Cave and the Bad Seeds' 'Skeleton Tree'. Hauntingly beautiful, and beautifully rendered.

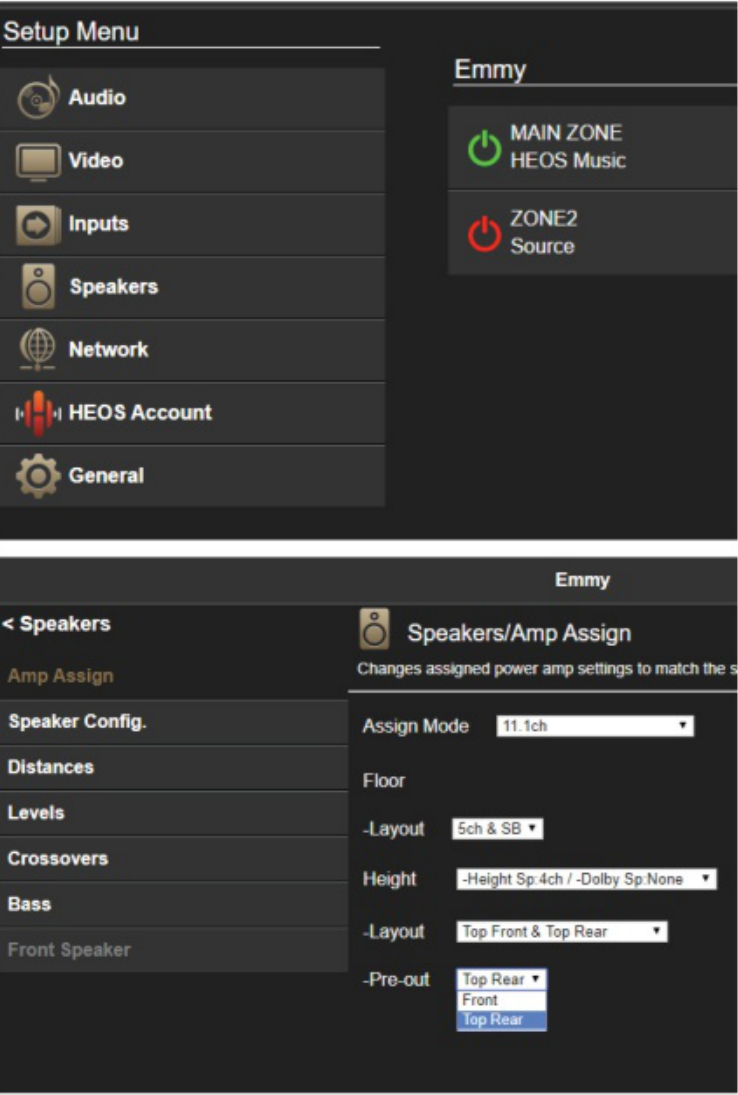


HDMI inputs & speaker outputs

There are eight HDMI inputs, including one under the front flap of the SR6014, and all are fully 4K compatible. There are nine channels of power but 11 sets of speaker outputs and pre-outs, allowing different configurations to be used without rewiring.

Analogue ins & outs

There are three component and three composite video inputs, which are converted for HDMI output for more convenient cabling, although analogue video outputs are also available.



◀ The ability to access the Marantz settings over your home network via a browser offers an often more convenient way to check status and make changes than going through the on-screen menus.
▲ The Marantz with its front flap down, playing FLAC files of Nick Cave via DLNA over the network.

HEOS & networking

Well, as beautifully rendered as the vinyl pressing facilities of the record company allows. Fortunately, these days one can enjoy vinyl, and switch in seconds to listening to the same album again streaming uncompressed from TIDAL, which is what I did. I’m not going to dwell on the differences here. I just love how with the Marantz SR6014 a whole galaxy of music is available. I can play a Jo Jo Zep album from the 1980s that appears never to have made it even to optical disc, let alone a streaming service. Or I can play stuff that is only digital, and may never hit physical media.

And that latter stuff is due to the network capabilities of this receiver. It supports Spotify, TuneIn, Deezer, iHeartRadio and the aforementioned Tidal. All that’s internet content. The receiver didn’t appear to do anything special with MQA ‘Masters’ content on Tidal. I was using HEOS to send Tidal to the receiver and it didn’t show any markers for MQA.

Locally the receiver supports both DLNA (both as a DLNA player and as a renderer, where you use an app to send music to it) and Apple AirPlay 2. With DLNA I could send music sampled at up to 192kHz to the receiver, also DSD64 and DSD128.

Voice control

Marantz network receivers support voice control from the two leading systems: Google Assistant and Amazon Alexa. To be clear, to use either one you need a smart speaker that supports the system; you can’t talk directly to your Marantz receiver. You talk to the relevant smart speaker and it conveys a digitised version

of your voice to Google’s/Amazon’s servers somewhere else in the world. Computers attached to those servers decode your words into actionable commands. Then they send those commands to the HEOS servers somewhere else in the world. The HEOS servers then send the appropriate command codes back to your Marantz receiver. So there’s a lot of stuff happening when you say, ‘Hey Google, turn down Emmy’. In my case, it typically took around four seconds from the end of the last syllable to the level going down. Worth the trouble? Maybe.

I was going to set up the receiver for both of these systems, but it turns out that they were both already set up. With some earlier HEOS or Denon or Marantz product I’d struggled through the process, connecting Assistant/Alexa with my HEOS account. But once you’ve done that, HEOS automatically notices any new network-capable HEOS-compatible devices you install and makes them available for voice control.

It’s a good idea to consider what ‘Friendly Name’ you want for the receiver. This one defaults to ‘Marantz’, but that might be a problem if you have several Marantz devices. Don’t change it to the backup default — Marantz SR6014 — because that’s too hard to say. You can choose a room name or come up with your own name. (Thus I went with the affectionate ‘Emmy’.)

The full range of voice controls varies by what’s playing. You can increase or decrease the volume (it goes by 5dB each time), or set an absolute value on a 0 to 100 scale. I found I could skip tracks, or pause and resume

play by voice when playing music from my network server or Tidal.

HEOS promises that eventually you will “be able to use voice commands to search for songs, albums and artists as well as podcasts and Internet stations, etc [and] Stream music to your HEOS compatible devices by voice.”

Conclusion

The Marantz SR6014 is a superb home theatre receiver with great performance for movies and music, and with advanced network features. + *Stephen Dawson*

SPECS	
Marantz SR6014	\$2570
Tested with firmware: 1000-9121-9002-0025	
Power: 9 x 110 watts (8 ohms, 20-20,000kHz, 0.08% THD,two channels driven)	
Inputs: 8 x HDMI, 2 x component video, 3 x composite video, 6 x analogue stereo, 1 x phono, 1 x 7.1 analogue, 2 x optical digital, 2 x coaxial digital, 1 x USB, 1 x Ethernet, Wi-Fi, Bluetooth, AM/FM antenna	
Outputs: 2 x HDMI, 1 x component video (assignable), 1 x composite video, 1 x 11.2 pre-out, 11 pairs speaker binding posts, 1 x 6.5mm headphone	
Zone: 1 x HDMI, 1 x analogue stereo, assignable amplifiers	
Other: 1 x set-up mic, Marantz R/C I/O, 1 x 12 volt DC out, RS-232C, IR in	
Dimensions (whd): 440 x 161 x 398mm	
Weight: 12.8kg	
Contact: QualiFi Pty Ltd	
Telephone: 1800 24 24 26	
Web: www.marantz.com.au	

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Onkyo TX-RZ840
networked AV receiver

Bases loaded

At \$2999 Onkyo's expandable nine-channel receiver offers a host of functions and versatility, together with effective auto-calibration and a powerful performance.

SUMMARY

Onkyo TX-RZ840
networked AV receiver
Price: \$2999

- + Excellent audio performance
- + Very flexible networking
- + Voice control
- No DAB+
- No video conversion

The last two receivers, from Denon and Marantz, both ultimately hail from their common owner Sound United. While the brands differentiate, they have had an increasing amount in common since they came together. And as we reviewed this Onkyo receiver, Onkyo too was due to be joining Sound United, along with sister company Pioneer. But the merger was stopped at the 11th hour, which from our view was a good thing, as it will avoid all four brands converging in their product lines. Sometimes a different approach is refreshing, or innovative!

As with nearly all receivers today, this is a networked receiver which connects to your router and the internet. The very first networked receiver I ever reviewed was from Onkyo, and I remember that well, because I was all at sea. Back in those days I had broadband, but it was the kind where my computer plugged directly into an ADSL gateway. I called up the distributor. I needed a router, apparently. What was that??

These days, of course, all the fancy AV receivers feature network connectivity, and most have multiroom connectivity. But they tend to lock you into one system. Not so the Onkyo TX-RZ840.

Equipment

It's the way of things that the product brochure for an AV receiver includes, somewhere near the top, a bunch of icons denoting various capabilities. This

receiver has 27 of them. Some are for internal features of the kind you'd expect at this price point, such as support for extra zones. Some are more or less mandatory at this price point: Hi-Res Audio, Wi-Fi Certified, Bluetooth, Dolby Vision, Dolby Atmos, DTS:X and so on. Some are for music streaming services: Deezer, Tidal, Spotify, Amazon Prime Music, TuneIn.

Some are less common. The receiver features THX Select certification. It works with Google Assistant. And it supports several multiroom systems: DTS Play-Fi, Flare Connect and, perhaps most usefully, it has Chromecast built in. Flare Connect is pretty much an Onkyo/Pioneer proprietary system. DTS Play-Fi was once on the way to being a pan-brand third-party streaming multiroom system, supported by a mostly higher-end set of brands, though more recently it seems to be losing out to Chromecast in particular, which isn't yet quite everywhere, but it's about as close as any network audio system is to everywhere.

The Onkyo also has a 'Works with Sonos' logo. That had me excited for a moment, but it seems that you need to purchase a Sonos Connect device (\$549) to use it. However, this receiver is Sonos Connect aware, to put it that way. So it will switch on automatically and change to the correct input when music is sent to a connected Connect unit.

Now let's look at the amplification, the core of a receiver. And with one unusual omission, the Onkyo TX-RZ840 provides what you'd expect, or more than what you'd expect, from a \$2999 home theatre receiver.

It has nine power amplifiers. So it can deliver out of the box such configurations as 5.1.4. Of course, you can redirect some of the power amplifiers to other tasks. But as with the Marantz on the preceding pages, if you add a couple of power amplifiers you can go to 7.1.4. That's a nice touch. Few receivers let you deliver more channels than those for which they have amplifiers.

The power ratings of the amplifiers are hard to interpret because the specifications use different criteria for different global zones. The specifications for Australia are 215W, one-channel driven, into 6 ohms at 1kHz at a horrendous 10% THD, or 180W for a not-quite-as-horrendous 1% THD. We've put the North American figures into the specifications box, a more apples-to-apples comparison with the competition.

There is a good range of inputs, with all the HDMI inputs supporting all that's presently on offer, including 2160p/60 with HDR. For vinyl lovers (like me), there's also moving-magnet phono turntable input, plus the usual stuff in between.

The Bluetooth supports the AAC codec in addition to SBC, so iPhone users can expect slightly higher quality. The Wi-Fi moves beyond the usual (in home theatre receivers) 802.11n to 802.11ac.

Setting up

A wizard guides you through set-up the first time you switch on the receiver. You need to tell it how you have the speakers plugged in. Incidentally, the 'Initial Setup Guide' included in the box only has connection details for 3/4.1 speaker systems. If you want some other configuration, including an Atmos type, you

have to download the manual to make sure you're plugging the right speakers into the right sockets.

Anyway, once you've done that, it provides test tones so you can make sure the right sounds are coming from the right speakers. Only problem was, it didn't work. No sound was coming out. I checked my connections. I decided to back out of the wizard and check to see if there was a firmware update. There was. Twenty minutes later that was installed and I started again.

Same problem. No sound from the speakers! Until I selected Front Right (there had been nothing from Front Left and Centre Left). And then the sound kicked in. I quickly went back to the other speakers, and now the test sound was coming from them as well. That was a bit weird, and would be rather disconcerting, though that was the only time I had that kind of a problem.

After that, the system runs its AccuEQ Room Calibration system, which sets speaker sizes and EQ. It sounded very familiar to me, and seems virtually identical to the Pioneer Electronics MCACC calibration system. That sister brand convergence thing again. Anyway, AccuEQ provides up to nine measurement positions, but after the first quite lengthy calibration, it seems that the other measurements are only for standing waves.

I must say that I was very impressed with the calibration settings. For one thing, it got the speakers right. Unlike the Pioneer systems of old, this one allows separate crossover

frequency settings for each speaker. And for my system, it chose quite similarly to what I usually dial in to 'fix' the false settings of many other automatic calibration systems.

It set all my speakers to 'Small', but sensibly small. To the Front speakers it gave a 40Hz crossover, precisely what I choose. Centre channel: 60Hz, the same. Surround: 40Hz — I normally push them a little higher, but they're perfectly capable of doing that. And the ceiling speakers it set to 50Hz crossovers. Well, they are fairly expensive 8-inch two-way models, so that's reasonable as well, although I usually go for 100Hz. I left all these settings unchanged because they were so very reasonable.

I mostly used a wired Ethernet connection, but before finishing off I checked out the wireless connection. You can connect by choosing an SSID and putting in the password or, apparently, using an iOS device to feed the password through to the receiver. I tried the latter a couple of times, but it didn't seem to work. So I went the slightly slower way, and that worked perfectly well.

Audio performance

For some years I used Pioneer receivers as my kind of standard reference. The tonal balance produced by this receiver, particularly with music, reminded me a great deal of them — a strong, largely balanced performance, but with a slight emphasis on bass.

And that was brilliant for movies. I auditioned a bunch of Dolby Atmos and



HDMI inputs and speaker outputs

Despite its higher price the Onkyo has one fewer HDMI input than the other two receivers — a total of seven, including one under the front-panel flap. There are nine speaker output pairs and preouts for the nine channels, though no additional outputs to allow easy changes of configuration.

Audio & analogue video inputs

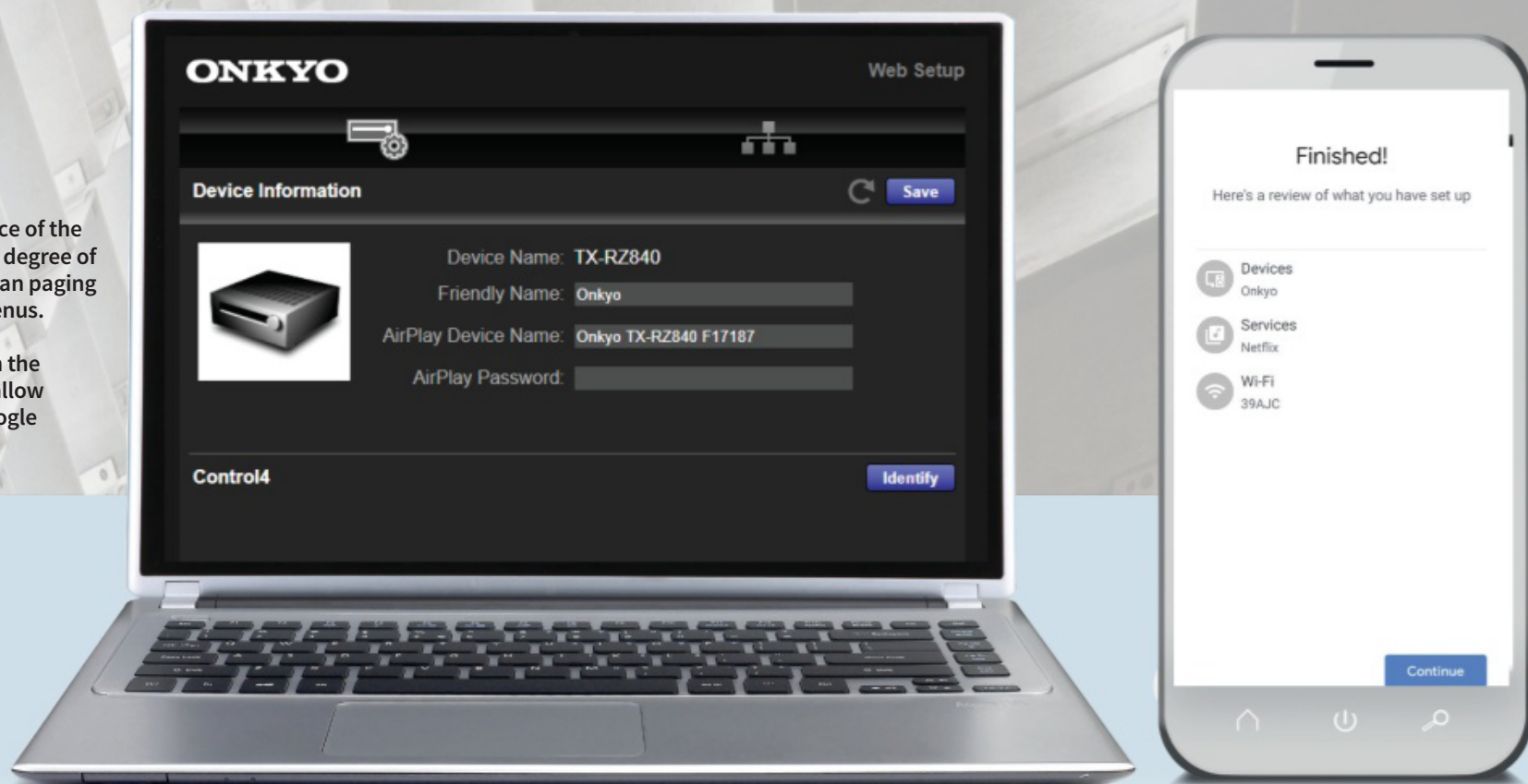
Analogue video inputs are digitised for HDMI output, with no analogue video outputs. Note only one coaxial and one optical digital audio input, a possible limitation for some users.

test

smart AV receiver

► The network interface of the Onkyo allows a useful degree of set-up, often easier than paging through on-screen menus.

►► Finishing set-up on the Google Home app to allow voice control via a Google Assistant device.



DTS:X content, and the Onkyo TX-RX840 receiver performed flawlessly. No, that's not quite right. It performed excitingly. Zooming audio elements in movies were delivered with precision. Everything sounded as though it was where it ought to be. The bass, as suggested, was a bit stronger than with some receivers. But that simply added to the performance.

Music was equally strong. The only problem I had was in engaging the Direct or Pure modes with network audio. I simply could not find a way to do it. I suspect it isn't possible.

In my endeavours to find out how to do it, I stumbled across a very unusual feature in the Quick on-screen menu. I could change 'Stereo Assign' to any pair of speakers. In other words, two-channel audio could be played from, of course, the front stereo pair, but alternatively from any other speaker pair. As I'm writing these words, *I Want You (She's So Heavy)* is playing from 'Height 2' speakers, pretty much above my head. A fun trick. I note that the subwoofer isn't engaged in these trick modes, so you're limited to the bass response of the speaker pair in question.

One thing to change: the receiver starts with the unfortunate default of 'All Channel Stereo' for two-channel audio sources on the various inputs. This is easy enough to fix, but why? Why would anyone think that all-channel stereo is a good default? Yet we find this all the time.

Video

This part is super-short. This receiver doesn't do any of that video conversion stuff. What comes into an input goes out of the output unchanged, apart from an overlay which shows such things as volume, muting, a quick menu for changing a few selected items. One complaint: when muted the 'Muting' indicator box is static at the bottom right-hand corner of the TV screen. That could lead to burn-in on some displays. This lack of

video processing is the 'unusual omission' referred to earlier.

The main set-up menu replaces whatever is on the screen and uses 720p resolution.

Network audio

I didn't experiment with DTS Play-Fi — my impression is that some of the brands which adopted it three years ago are gradually letting go. Nor Flare Connect, since I have nothing else that uses it. Instead I went for Chromecast and DLNA. Chromecast works in the usual way. As did DLNA. I used my usual DLNA program on an Android device — BubbleUPnP — and it fed all manner of music successfully to the Onkyo receiver. FLAC worked up to 192kHz but not 384kHz sampling. Even though the manual says that it supports DSD 2.8MHz only, it seemed to accept 5.6MHz and 11.2MHz content perfectly well. I think that may be the first time I've been able to send DSD256 to a receiver.

And, mind you, that was using a Wi-Fi connection. That 802.11ac really does seem to offer higher bandwidth.

One of the logos not shown on the product brochure, but definitely supported, is Apple AirPlay 2. It may have been a late firmware addition.

Setting up the Google Assistant was no more difficult than it was for any other Google Assistant device. I just used the Google Home app, hit the 'Add Device' button and followed the instructions. It all went smoothly and after a couple of minutes I could talk to the Onkyo receiver via the device and tell it to do things.

'Hey Google, play some music on Onkyo.' And shortly music from Spotify started streaming from the Onkyo-connected loudspeakers. 'Hey Google,'

I said to the Google Home Mini near my desk, 'Play Abbey Road on Onkyo.' The Mini acknowledged the request, and a moment later *Come Together* was playing on the speakers connected to the receiver.

Just to be clear, for Google Assistant to work with this receiver, you need a Google Assistant-compatible device, such as a Google Home, to hear your voice. I wasn't really talking to the receiver. I was talking to a Google Home Mini, which translates (via wherever) for the Onkyo.

Conclusion

The Onkyo TX-RZ840 AV receiver is a powerful, high performance unit. It won't suit those who want their receiver to handle video scaling, but for everyone else, it's certainly worth full consideration. — Stephen Dawson

SPECS

Onkyo TX-RZ840 \$2999

Tested with firmware: R109-0203-1021-0026

Power: 9 x 120 watts (8 ohms, 20-20,000Hz, 0.08% THD, two channels driven)

Inputs: 7 x HDMI, 1 x component video, 2 x composite video, 6 x analogue stereo, 1 x phono, 1 x optical digital, 1 x coaxial digital, 1 x USB, 1 x Ethernet, Wi-Fi, Bluetooth, AM/FM antenna

Outputs: 2 x HDMI, 11.1 x pre-out, 9 pairs speaker binding posts, 1 x 6.5mm headphone

Zone: HDMI (shared with HDMI 2), 2 x analogue stereo (configurable to Bi-amp Zone B), assignable amplifiers

Other: RS232C, IR In, 12 volt trigger out, 1 x setup mic

Dimensions (whd): 435 x 202 x 398mm

Weight: 14kg

Contact: Amber Technology

Telephone: 1800 251 367

Web: www.ambertech.com.au



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Amazon Echo Studio



After falling behind in the battle to deliver decent smart speaker audio, Amazon has finally put forward a hefty contender which aims to hold its head high aside more serious competitors.

SUMMARY

Amazon Echo Studio

Price: \$329

- + Substantial build & sound
- + Attempts spatial enhancement
- + Alexa and Zigbee functionality
- Spatial enhancement sounds poor
- Some functionality not available to Australia

Amazon's Alexa voice assistant is dominant in the US market over Google's, but here in Australia the positions are reversed. So the smart speaker market is an important one for Amazon, a point of persuasion for getting its smarts into Australian homes. In terms of musicality, however, the Echo range hasn't yet moved our souls with their performance. But the burly \$329 Amazon Echo Studio certainly looks the part to make amends, standing nearly five centimetres taller and wider than Apple's HomePod while tipping the scales at 3.5 kilos. Is this the Echo that will take on the more audio-orientated brands in the smart speaker market?

Plenty of power

The design isn't as easy to hide away in the corner of the room as some rival speakers, and the Echo Studio will struggle to find a home on the kitchen bench, but thankfully it has a 'premium hi-fi' look that's unlikely to offend technology lovers.

The physical heft is also a good initial sign when it comes to sound quality, as it enables the Echo Studio to pack a complement of five speakers — a downward-firing 5.25-inch woofer, with a quoted 330W (of 'peak power', mind you), three two-inch midrange speakers, and a single one-inch tweeter. Their arrangement is, well, unusual, for a reason that we'll come to shortly.

The Echo Studio features the same four buttons on top as the rest of the Echo range — control, mute, and volume up and down — but in keeping with its elegant styling they're a lot more subtle than on your average Amazon speaker.

There's also the ubiquitous Alexa light ring, glowing blue when Amazon's smart assistant is listening — with a ring of far-field microphones ensuring she can hear you from the next room effectively. It turns red when the microphone is muted, and white to indicate levels when you adjust the volume.

Like a few of the other larger Amazon speakers, the Echo Studio also supports the Zigbee wireless IoT smart home standard, letting you talk to Alexa to control Zigbee-enabled devices like Philips Hue smart light bulbs.

Gather round

Despite such a solid foundation, ask Alexa to play your favourite tracks and the Echo Studio can make a poor first impression.

The problem is that Amazon has opted to enable 'Stereo Spatial Enhancement' by default, processing tracks to create a virtual 3D sound. That's why the drivers are positioned the way they are, with two of the midrange two-inches firing left and right (if you're looking at the front), but the third two-incher firing up from the top. Then the single tweeter aims straight forward, presumably delivering the upper frequencies from both channels in mono.

This embracing of Stereo Spatial Enhancement ties in with Amazon's push to support 3D audio, supporting the Dolby Atmos Music format, along with Sony's new multilevel audio format, 360 Reality Audio. That's great if

you live in the US where the streaming giant has recently added 3D audio tracks for listeners with an Amazon Music HD subscription, but there's no sign of this coming to Australia.

It's another example of how Amazon is more inclined than Apple and Google to treat Australia as an afterthought. That said, the jury is still out on whether 3D audio will find mainstream success anyway, so we might not be missing much, especially if we judge from the performance here. Stereo Spatial Enhancement supposedly makes for a more immersive listening experience but, in most cases from our listening, it simply makes the music sound flat, dulling the highs and muffling the bass.

In Amazon's defence, the result sounds like you're listening to a performance in a music hall, where you can hear the acoustics of the room at play. The problem is that most music suffers for it, tarnishing the reputation of what should be a better speaker.

The effect tends to work best with vocalists backed by only a few instruments, such as *Come Away With Me* by Norah Jones, making the vocalist sound a bit further away, more like a live performance with a larger soundstage. But fire up something like The White Stripes' thumping *Seven Nation Army* and it sounds like you've placed the speaker in a hessian sack.

“With the Echo Studio smart speaker, Amazon has staked a better claim for music replay...”

The toggle to disable Stereo Spatial Enhancement is hidden away in the advanced settings of the Alexa iOS/Android app where you might never find it were you not determined to discover why Amazon's new musical heavy-weight is pulling its punches. Leaving this on by default and not bringing it to the listener's attention seems a recipe for unhappy customers.

Listen up

Once you've figured out how to put the kibosh on Stereo Spatial Enhancement, however, the Echo Studio comes to life. It packs the grunt to rock a large room or a backyard, although it has its limits, and the music suffers a little once you push the volume beyond 90%.

Like its rivals, the Echo Studio fits into a multi-room audio set-up and supports linking two speakers as a stereo pair. In terms of raw volume, it can hold its own against the HomePod or Sonos One, but which of these you prefer will come down to your ear and your taste in music. The Sonos, for example, sounds more composed, offering a more cohesive sound and higher quality bass, though it can't summon the 3D processing of the Echo Studio.

On the upside, the Echo Studio offers a crisp, precise sound which is evenly balanced to ensure the low-end doesn't get murky. Its strengths shine through when listening to the likes of Miles Davis' 'Kind of Blue', ensuring every member of the jazz ensemble gets some respect.

On the downside, the Echo Studio can sound a bit clinical compared to the richer, warmer sound from its rivals — especially if you're a rocker who's after thumping bass lines.

It's not that the Echo Studio doesn't have the low-end grunt to belt out the icon bass-line of Pink Floyd's *Money*, it's just that it doesn't sound — or feel — as breathtakingly sweet and smooth as it does on an Apple or Sonos speaker.

Watch this

The Echo Studio has another trick up its sleeve: an optical digital input on the back for connecting digital music sources, including your television. Mind you, while most AV gear features the standard square-ish Toslink optical digital input, you'll need to rummage through your drawers for a 3.5mm mini Toslink adaptor to put the

Echo Studio to work. (If you come up empty-handed, Jaycar sells them for \$6.)

Connected to the television, the speaker offers a nice wide soundstage and crisp audio, although it's naturally found wanting in the impact department compared to a decent soundbar or speaker system. Also in positioning terms, the speaker is clearly not a very practical size or shape to be put to work as a make-shift soundbar.

Also, don't get excited at this point about support for Dolby Atmos helping your TV sound, as Atmos can't travel over an optical digital cable, so the speaker is left to make the most of Dolby Digital 5.1.

Amazon recently unveiled the ability to set up Echo speakers for 2.1-channel sound in the lounge room, connected to Amazon's Fire TV streaming video stick with the ability to handle Dolby Atmos. However, this requires the Amazon Fire TV Stick 4K, 3rd-gen Fire TV or 2nd-gen Fire TV Cube — but Amazon sells only the clunky old 1st-gen Fire TV Stick in Australia and won't even ship the others from the US unless you use a freight forwarding service. The Apple TV 4K is on Aussie shelves, as is Google's Chromecast Ultra; once again Amazon treats Australians as second-class.

Conclusion

Until now, Amazon's speakers have focused on giving smart assistants a voice, with music more of an afterthought. The old Echo Plus was a step in the right direction, but with the Echo Studio, Amazon has staked a better claim for music replay — even if its Australian ecosystem lags painfully behind the US.

The Echo Studio delivers impressive sound, although its bulk will make it a tight fit in some corners of your home. The price per pound makes it attractive, though some will prefer the warmth of rivals from other multiroom systems — some of which also support Alexa. **+** Adam Turner

SPECS

Amazon Echo Studio

\$329

Drivers: 1 x 25mm tweeter, 3 x 51mm midrange, 1 x 13,3mm woofer

Quoted amplification: 330W 'peak output'

Supported music services: Amazon Music, Apple Music, Spotify, iHeartRadio, TuneIn

Dimensions: 275mm diameter x 206mm height

Weight: 3.5kg

Contact: Amazon Australia

Web: www.amazon.com.au



Over and on

Bowers & Wilkins PX7

wireless noise-cancelling headphones

While Bowers & Wilkins has been making speakers since the 1960s, it entered the headphone market only a decade ago with the on-ear P5 Mobile Hi-Fi headphones. Those strongly leveraged B&W's reputation for luxury, all leather and shining metal, connected stethoscope-like with twisting metal rods — in our review back then we called them “truly drop-dead gorgeous things shouting executive luxury from every curve”, though they were then priced accordingly at \$500, above the market-leading noise-cancellers of the day, despite the P5s being smaller and lacking noise-cancelling.

It was another three years before B&W launched an over-ear model, a more serious headphone at the same price, again linked up with sculptural swirls of steel, and we loved them, though again, no noise-cancelling, and back then no wireless operation either.

The first Bluetooth model came in 2015, returning to the P5 sizing, while in 2017 the P9 Signature arrived, a luxurious wired home headphone which remains available.

But now this PX7, and the on-ear PX5 reviewed overleaf, bring the company fully up to date with a technological full monty of wireless (or wired or USB) playback, active noise-cancellation, and app control.

Carbon-fibre

And at \$599.95, the PX7 arrives at price parity with other premium wireless noise-cancellers like the latest Sennheiser Momentum Wireless



B&W's over-ear PX7 and on-ear PX5 wireless noise-cancelling headphones bring new materials and new technology to challenge market leaders. First up, the full-size PX7.

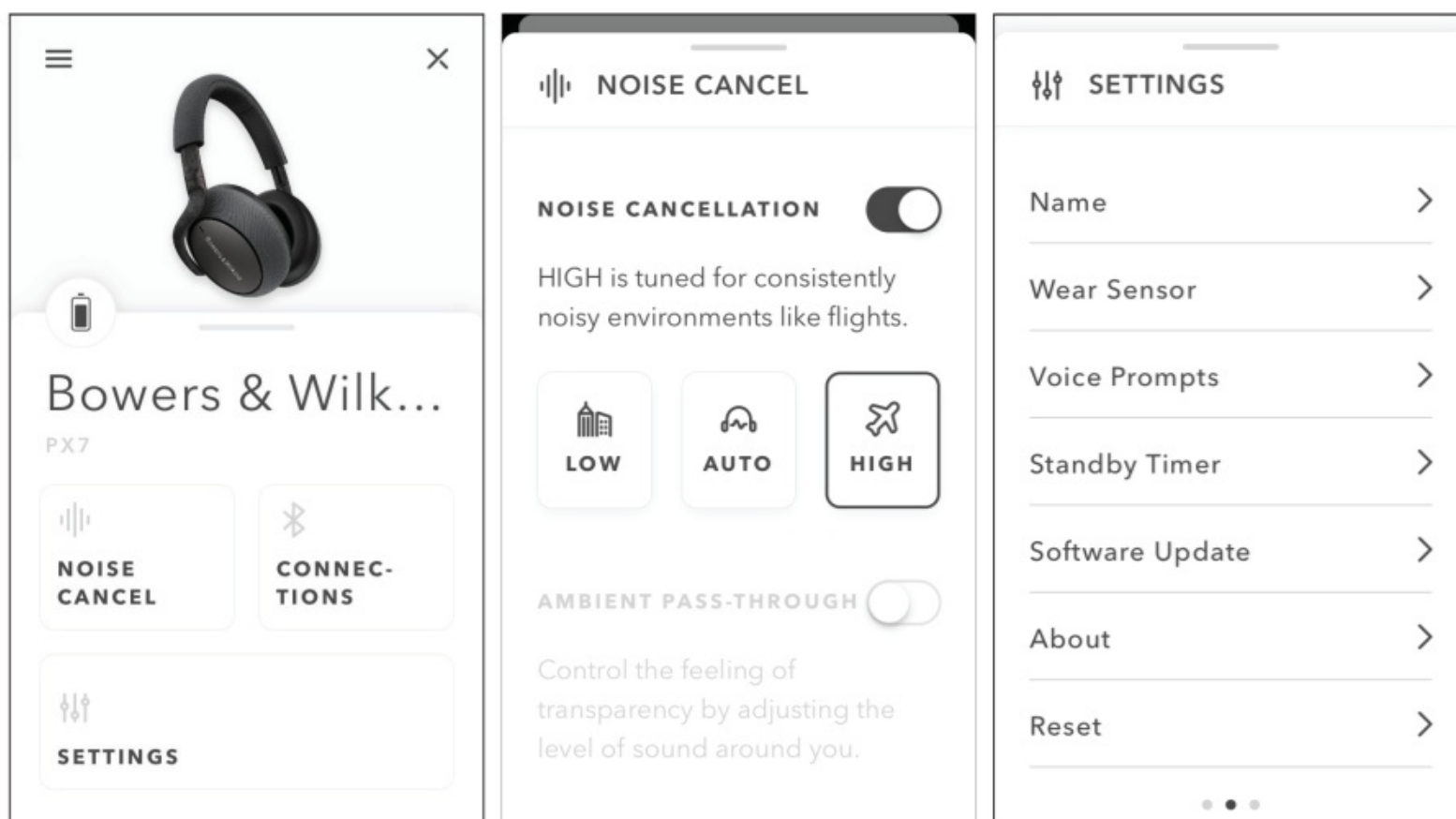
and Bose 700 designs. Yet their build and construction now seems focused more on solidity than the overt executive luxury of previous designs. The PX7 is initially available in black or grey, not the browns, golds and silvers of previous launches. The cascades of steel connectors have been replaced by remarkable moulded arms made of a composite which includes carbon-fibre, yielding a slightly strange patchy matte native finish, but positively screaming strength and rigidity, while also keeping down the weight, which is 310g, not bad for a full-size headphone. They sit comfortably for long periods — a little firm for pressure out of the box, but happy to endure a bit of stretching to the very top (non-carbon fibre) centre section in order to loosen up as you wear them.

The headshells and headband are covered in a tightly woven fabric which has a stain and moisture-repellant coating, and which can, says B&W, be cleaned by a gentle wipe or dab from a soft, damp microfibre cloth.

All in all, the effect is to make these headphones look solid and purposeful, rather than simply luxurious for the sake of it. The hard grey case is similarly practical — kept as slim as possible, and using more of that cleanable fabric wrap, mercifully free of bling.

Smarts and the app

The PX7's smart functionality is also up with competitors at the price. Both headshells have wear sensors so that lifting



◀◀ Using the app you can select from three levels of noise-cancelling, or turn it off using the slider. You can also do this using the buttons on the headphones.

◀ The settings menu accesses unusually versatile customisation of 'wear sensor' sensitivity, time to standby, and more.

A new codec

Still more to the point, these are the best-sounding B&W headphones we've yet heard, delivering a big, wide, almost open sound, assisted no doubt by the PX7's over-size 43.7mm drivers, and a full range of Bluetooth codecs, with SBC, AAC, aptX and aptX HD, but also a new

an earcup will pause the music. These are headphones with a proper on/off switch, which we much prefer, but the wear sensors can also put the PX7 into standby when you take them off your head entirely, pausing media playback, disconnecting Bluetooth and switching to a low power state. When worn again, PX7 will wake and reconnect to the last connected Bluetooth source (or two, if both are nearby and awake).

We've found such auto-off functionality can get a bit annoying if it happens too quickly, but B&W's Headphone App lets you customise how long the headphones will wait before switching to auto standby (from five minutes to an hour), or you can disable this feature entirely. Either way they claim 30 hours of battery power when listening via Bluetooth with ANC, and can be boosted back up quickly for an extra five hours play given just a 15-minute charge.

The Headphone App is clean, even basic in its design (see screengrabs above); we note it lists its developer as B&W Group rather than Eva Automation, the Silicon Valley company which bought B&W in 2016 and is listed as the developer of the 'Home' app for B&W's latest wi-fi hi-fi Foundation series.

The Headphone App finds and connects to the headphones, then offers three main sections: 'Noise Control', 'Connections', and 'Settings'. But in contrast to some headphones where the app is obligatory to make many adjustments, B&W's buttonry is comprehensive enough that you may rarely need to open the app. For example the 'Noise Cancel' section of the app lets you select from three NC options — low, high and auto, with a separate slider for the important option of 'off'. But really it's easier just to use the button on the left headshell which quickly shuttles through the NC modes. Indeed we

were pleased by a small thing when pressing the NC button on the headphones — on first press it says 'noise cancelling auto', or whatever is the current/next setting, but thereafter it says only one word — 'high', 'low', 'off', where all other headphones we've tested say 'noise cancelling high', 'noise cancelling low' etc. B&W's sensible abbreviation speeds up selection considerably.

A long press of this button invokes Ambient Passthrough, which feeds through the external mikes, of which the PX7 has six — four for noise cancelling and two for calls, these using CVC2 (Clear Voice Communication v2) to maximise call quality.

The app's Connections setting allows you to choose two active Bluetooth connections out of the eight that can be stored; if both devices are nearby and powered up then the headphones will connect to both simultaneously, so that music started on either device will interrupt the other one from playing.

The Settings section accesses that standby timer selection to govern how long before the headphones turn off if you don't throw the power switch, and you can also adjust the Wear Sensors sensitivity between three levels or turn the sensors off entirely. The voice prompts can also be disabled, and you can check for software updates. That last function aside, we found the app to be pretty much set and forget, and we found B&W's button layout so intuitive and comprehensive that we rarely opened the app.

one — aptX Adaptive. This is Qualcomm's latest Bluetooth codec which aims to deliver the higher resolution of aptX HD in a more robust way, while also incorporating the advantages of aptX Low Latency, a codec which it will apparently replace.

It is also backwards-compatible with aptX and aptX HD; indeed to enjoy aptX Adaptive's full abilities we'll need to wait for phones which specifically support

aptX Adaptive — at press only two ASUS phones were listed on Qualcomm's site as compatible, but we'd expect many more in the next generation of Android devices. (And here's a startling factoid:



Qualcomm reckons that there are now around seven billion aptX-enabled devices in the world.

We note that aptX Adaptive achieves its quoted 24-bit/48kHz streaming quality using remarkably low bit-rates, typically 279kbps to 420kbps, far below the actual 2304kbps of native 24/48 files. This indicates that as with aptX HD the transmission is not lossless (confirmed by Qualcomm). Lossless transmission can usually roughly halve a bit-rate while maintaining the file's full integrity, so it seems that in aptX Adaptive a further lossy compression is used to drop the bit-rate to between and half and a third of that required for lossless 24/48.

Of course the lossiness would be significantly less when transmitting a CD-quality file of 16-bit/44.1kHz.

Since even the quoted lower rates could cause glitches in transmission in difficult areas, the new aptX codec allows a further reduction to now happen on the fly, and this is the 'Adaptive' part, designed to remove the occasional glitchiness of the fixed-rate aptX HD, which runs at 576kbps when at maximum quality.

"Dynamic bit-rate adaptation designed to ensure consistently robust audio streaming in challenging RF environments, based on handset user application focus without user intervention," says Qualcomm.

We reckon that's still significant lossy compression, especially if the Adaptive reduction kicks in without you knowing it. The question, then, is whether you would be able to hear its effect. We couldn't tell you, having no aptX Adaptive source, but Qualcomm offers a very interesting snippet in the form of a quote, saying *"No statistically significant difference between Qualcomm aptX Adaptive at 420kbit/s and Linear Audio at 24bit / 96kHz"*. The quote is attributed to "Salford University independent test results, June 2018". So that's Salford Uni in the UK, which has a legendary Electroacoustics department (as well as the longest bar of any UK university), claiming no measurable let alone audible difference between the best level of aptX Adaptive and the native file.

This might seem quite the claim, except that we've heard a very similar statement before from an equally impeccable source, when Sony's Chief Sound Architect told us in a face-to-face Q&A that Sony could neither hear nor measure any difference between files of 256k up when played through Sony's DSEE HX upscaling technology in comparison to a high-res version. The exceptions, he said, were dense high-information musical files, but these were rare.

Both these statements, then, point once again to the argument that high-res files are excessively large containers which are largely empty – memorably described by TAS's Robert Harley as "like shipping a paperback book in a box the size of a filing cabinet". The problem is you're not sure exactly where the book is, so if you keep

only half the filing cabinet, you might miss some important bits of the book. Most of the time, on the other hand, you'll not notice the difference.

Besides, we reckon anything which aims to improve the quality of wireless Bluetooth transmission is to be welcomed!

Meanwhile there's no separate listed support for aptX Low Latency, of particular use for gamers on headphones, and for viewing videos with the audio played over Bluetooth, where delays can cause lip-sync issues (or sudden death for gamers), so presumably that's not available until you have an aptX Adaptive device in your hand.

But we used the PX7s for video watching on iPad with absolutely no discernable lag (and with the Wear Sensors even politely pausing the video when we lifted the earcup), so no problems there anyway.

Listening

We also did much of our listening on Apple devices which, since Apple has yet to give aptX the Cupertino tick, still use the AAC codec. And the PX7 shows what a well-designed wireless headphone can achieve with such an input.

Bass was rich, solid, and low — our sweeps barely had time to start playing before the PX7's bass was audibly rumbling down at and even beyond 20Hz; with one organ recording on which the bottom D is rarely delivered by headphones, here it was present and just slightly curtailed in power. The bass in the 30s of hertz on Neil Young's *Walk With Me* came through loud and huge. The synth-bass opening The Ohio Players' fabulous *Funky Worm* was positively forehead-thrumming, indeed there seemed a little emphasis down low in general: the usually bass-light early 80s' recording of *Colours Fly Away* by The Teardrop Explodes received unusually broad bass support, which was particularly welcome on the move, though this slightly softened the track's edginess on the heavier sections when we were listening in quieter environments.

But it's the overall balance which impresses. Midrange and treble were both strengths, with spoken word very close to the original tone (deep male voices perhaps a little overfull), while the light and airy portrayal of higher frequency detail was a delight for the cues of jazz and classical music, with a rich yet delicate portrayal of Chick Corea's 'Australia' piano concerto from its rich yet percussive piano tone to the light flute and

"We don't recall ever hearing an entire frequency sweep sounding so flat in its delivery: no dips, and no bumps..."

tapping ride cymbals. Their low frequency prowess showed up our digital file of Dinah Washington's *Mad About The Boy* as having something akin to turntable rumble going on underneath, yet we don't recall ever hearing an entire frequency sweep sounding so perceptually flat in its delivery: no dips, no bumps. Male and female vocals were tonally accurate, no thinning of males, no spitting or sibilance on females, and even the wideband voice of Leonard Cohen was delivered as an integral image, with no smearing. So if there is a bass lift here, it's impressively benign.

You can use a cable for playback, but it won't save you if the PX7 power runs out, because it needs power even to play from an analogue source. This likely explains why the sonic balance remains so similar, though that background rumble of bonus bass content disappeared when using the cable; male vocals and spoken word were lighter and things felt a little faster. But there are not the significant tonal differences common on many headphones when switching from Bluetooth to cable, including previous B&W designs.



test

wireless NC headphones

Conclusion

Undoubtedly B&W's best yet headphone, the PX7 combines high

tech design with top-notch sound at the price both wirelessly and wired, plus good and variable noise-cancelling when required. There's no EQ, even in the app (but then, they don't need it), nor any button to invoke a smart assistant, as do some rivals. But the PX7s score over such rivals in their ease of use — all the buttons clear, obvious and requiring no training, and an app which really just gets out of the way so that you can enjoy your music rather than fiddling about. We recommend them wholeheartedly. +

SPECS

Bowers & Wilkins PX7

\$599.95

Type: active, noise-cancelling, Bluetooth, overear, dynamic

Driver: 43.6mm

Bluetooth codecs: SBC, AAC, aptX Classic, aptX HD, aptX adaptive

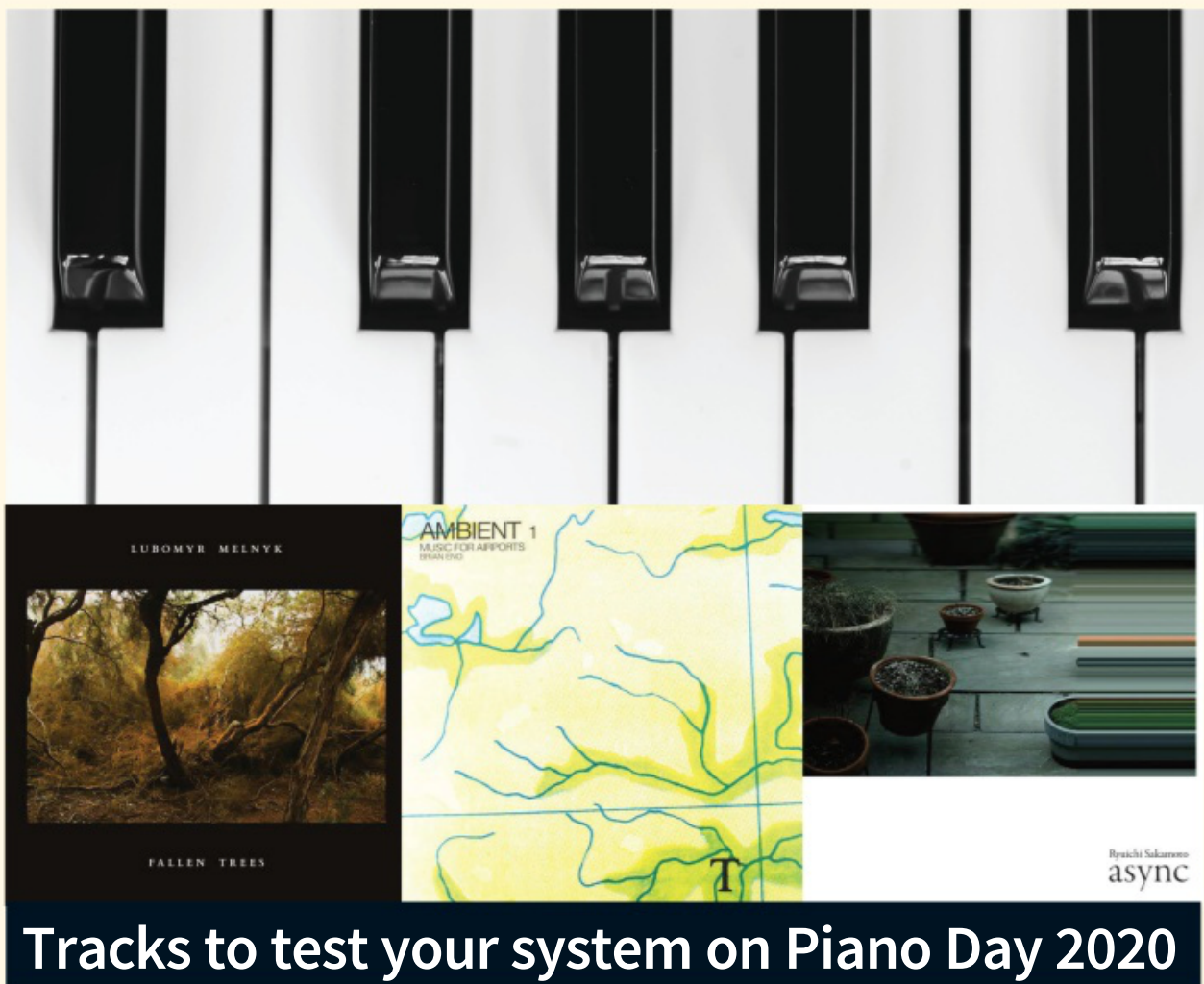
Quoted playback time: 30 hours Bluetooth with NC; rapid charge 5 hours playback in 15 mins

Weight: 310g

Contact: Bowers & Wilkins

Telephone: 02 9196 8990

Web: www.bowers-wilkins.net



Which day do you choose for piano day? Why, the 88th day of the year, of course, matching the number of keys on this instrument which is one of the hardest for any audio system to nail perfectly. Not only does piano have one of the widest frequency ranges of any instrument, the nuances of attack and sustain, the tonal subtleties of an accomplished player — these things challenge lesser audio systems and sing out on a good system. We're happy to join the piano party on 28th March this year, with its aim of being a platform to continue sharing the centuries-old joy of playing piano, so we've put together some favourite piano music for testing your system.

Son of Parasol by Lubomyr Melnyk

A label-mate of Nils Frahm on Erased Tapes, Lubomyr Melnyk is a pioneer of what he terms continuous piano music, a near-transcendental style where both hands are in constant motion and silence is welcomed only between each piece. Strong organisation is key to picking out overlapping patterns, as is a firm grip on timing and dynamics.

1/1 by Brian Eno

The opening track from the seminal ambient record Brian Eno's 'Ambient 1: Music For Airports' – 1/1 is dependent on the rich textures of its instruments and subtle dynamics within its sparse arrangement to lift the recurring piano line from the tarmac to the clouds.

Music For Gymnastics by Jordan De La Sierra

Jordan De La Sierra, a student of both Terry Riley and Pandit Pran Nath, recorded his 1977 work 'Gymnosphere: Song Of The Rose' in a small basement studio before playing the tapes at the walls of San Francisco's Grace Cathedral and capturing the resulting echoes and reverberation. Mixing the two recordings together, the result is an ethereal sonic mist in which detail, timing and dynamics are put firmly to the test.

Nuclear War by Sun Ra

One of more than 1000 recordings by the indomitable Sun Ra, *Nuclear War* is a wry meditation on the effects of its title matter, set to a playful, jazzy relationship between piano and drums. Expect a disjointed performance from poorly timing hi-fi systems.

Vessel by Jon Hopkins

From Jon Hopkins's 2009 album 'Insides', *Vessel* juxtaposes its lilting main piano line with fairly industrial manufactured beats and synthesizer buzzes. It's well textured and digs deep into low frequencies to test mid/bass drivers for restraint and tonality. Try also Four Tet's equally marvellous reimagining.

Let's Fall In Love Tonight by Lewis

Few things are so pleasant on the ears as a rich and full-bodied midrange. This, from Lewis's once-lost debut record, revels in such atmospheres. The piano and accompanying pad synths are awash with loving warmth, while Lewis's croon coats the arrangement like soft caramel.

ELEMENT. by Kendrick Lamar

While 'DAMN.' might not be so sprawling an example of genre experimentation as Lamar's preceding record, 2015's 'To Pimp A Butterfly', the Californian rapper is never pedestrian with his instrumentation. The ominous repetition of the sampled piano line in here is only truly revealed by a rhythmically-aware system.

U by DJ Seinfeld

Despite being heavily treated with digital effects by DJ Seinfeld, the piano in *U* is proof of the instrument's recognisable character despite what a producer may do to it. The tonality and attack are unmistakable, as is the need for a well-organised and well-balanced system to make the most of this lo-fi house gem.

disintegration by Ryuichi Sakamoto

Somewhat the antithesis of Lubomyr Melnyk's continuous piano, this piece from Ryuichi Sakamoto makes as much use of the spaces as the notes, letting each staccato jab decay before the next, as it does any kind of melody. Detail and sonic insight is key to realising the experimentation of this piece.

Gnossienne: No. 1 by Erik Satie

One of the most famous works by likely the foremost architect of minimalism, *Gnossienne: No. 1*'s sombre march relies on strong expression as much as detail, timing or balance to display its near-surrealistic sense of movement. The Gymnopédies, equally, ought to feel decidedly lavish in spite of their bare instrumentation.

Getting it on

Bowers & Wilkins PX5

wireless noise-cancelling headphones

Why choose the on-ear PX5 over the full-size PX7? Cost and convenience are just two possible answers.



On-ear headphones — supra-aural rather than circum-aural — are often neglected as a breed in favour of either in-ear buds or full-size overear headphones. Some don't like the permanent press of fabric against ear; the fit can feel tighter, even when, as with the PX5, the softness of the earpads are more like having little pillows either side of your head.

Besides, the advantages are considerable. They avoid, of course, the invasion of your ear-canal and potential hazardous pressure development of in-ear designs, while they score significantly for size compared with over-ear models, as is immediately apparent when comparing the PX5 design directly with the PX7. They weigh 241g compared with the PX7's 310g, and they take up significantly less storage space, though again here the headshells turn flat but don't pivot inwards into a foetal fold for more compactness still. That's likely due to the limited flexibility of the injection-moulded composite carbon fibre arms used here as on the PX7, which again look a little dirty in their patchy matte finish (right), but which contributes to that reduced weight along with the strength of this futuristic material. Overall the PX5s look very sleek indeed, with the logo-embossed metallic housings contrasting with the woven headband and leather memory foam earcups. We tested the sporty blue model, but they also come in more purposeful black.

The trade-off for the smaller size and lower weight is a smaller driver, 35.6mm diameter

compared to the PX7's 43.6mm, not that this affects either their frequency response or distortion levels, which are quoted identically to the larger model. Their quoted battery life is 25 hours compared with the PX7's 30 hours, but that aside everything else is the same — the intuitive controls with four settings of noise-cancelling available (one being 'off'), the same app to oversee your selections and perform firmware updates, and the same aptX Adaptive codec onboard to support better-than-CD Bluetooth transmission from those devices able to support it.

Perhaps most impressive is the way they combine their luxurious look and feel with their delightful sonic performance, which loses a little in spaciousness and dynamics compared to the PX7's overear imaging, but

they maintain the natural balance and detail, delivering one of the most enjoyable on-ear performances we've heard; we used the PX5s as our commute phones of choice for several months. Their natural midrange was a delight with Billie Holiday's 'Songs For Distingue Lovers' album, her raspy story-telling dead centre while the band ping-ponged from either channel in tight support, sax and trumpet right, drums and piano left; all the languor and swing of *One For My Baby* was impeccably imparted. Bass frequencies are warm and well-balanced on modern material; on Michael Kiwanuka's *You Ain't the Problem*, the meandering bass lines complemented distorted guitar lines and Kiwanuka's centrally-boxed vocal without overpowering the complex rhythms beneath.

Only when critically listening do a few flaws become more evident, notably some of the lower-mid support being curtailed, so that vocals can thin out — kd lang sounded slighter than her usual velvet tones, Leonard Cohen's vocal tone descended less deeply than he should, and the PX5s left Dion's *I Read It (in the Rolling Stone)* sounded overly edgy. But that's not to say they can't take a modern bass line and run with it: Tyler, The Creator's *EARFQUAKE*

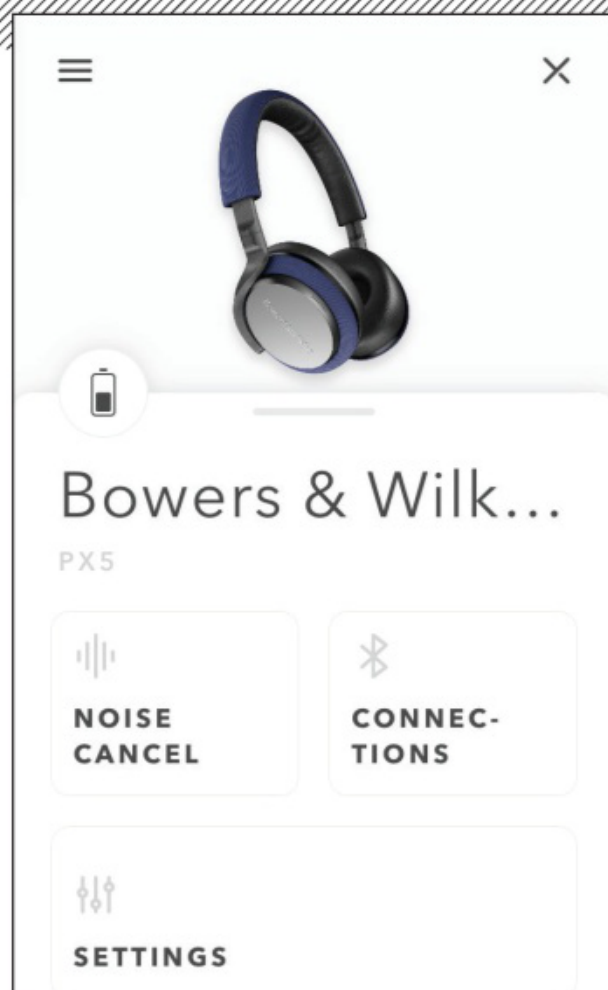


◀ Strong but patchy: the carbon-fibre-molded arms are high-tech but look a little dirty in their finish.

sounded fine and fizzy on its open bars before the massive descending bass notes flooded out full and dominant.

If you are out for a spell of critical listening, plug up the cable. It returns some of that lower midrange, better supporting both male and female vocals, and it also sharpens timing, something particular notable when comparing performance on dynamic solo piano pieces, where the edge and attack were significantly improved by taking Bluetooth out of the circuit. As with the PX7, though, you still need power to play via cable, so it won't save you in a battery crisis, though again the PX5 can refill for five more hours play time from just a 15-minute charge.

We didn't need to reach for the cable to improve latency, however; the PX5s had impressively low audio delay when watching videos or playing games, avoiding that annoying lag between audio and visual that sometimes occurs over Bluetooth. With just the slightest delay in lipsync over Bluetooth AAC from an iPhone, even our resident sync-phobe had no problem watching spoken-word video content over the PX5s. This should be still further reduced once you have a device supporting aptX Adaptive (or indeed, if you use the supplied cable).



As for noise-cancelling, this was only marginally less effective than from the bigger brother PX7, the on-ear design not providing quite the passive seal and acoustic control of the best over-ear noise-cancellers, but they still hugely reduced the bus commute rumble to allow a quieter background for our music

and podcasts. As usual, screaming kids or chattering teenagers still break through, since noise-cancelling is more effective at lower frequencies than high.

Overall, the Bowers & Wilkins PX5 wireless on-ear headphones sound fantastic, with a detailed, natural-sounding profile. They have slightly smaller drivers than the flagship PX7, sounding less spacious and full, but their compact design may be a better fit for those looking for sound on a regular commuting run. +

SPECS

Bowers & Wilkins PX5

\$469.95

Type: active, noise-cancelling, Bluetooth, on-ear, dynamic

Driver: 35.6mm

Bluetooth codecs: SBC, AAC, aptX Classic, aptX HD, aptX adaptive

Quoted playback time: 25 hours Bluetooth with NC; rapid charge 5 hours playback in 15 mins

Weight: 241g

Contact: Bowers & Wilkins

Telephone: 02 9196 8990

Web: www.bowers-wilkins.net



Tim Holehouse: a bluesman breaking out of his lane.

NEW BLUES

Tim Holehouse *Come*

In a genre that can be stubbornly conformist, it's always a pleasure to hear a bluesman breaking out of his lane. Tim Holehouse has never exactly been a dogma-reciting 12-bar bore – the highly prolific Plymouth UK songwriter's lo-fi mutant blues on 2016's *Odd/Even* would probably have made Eric Clapton's *Crossroads* Festival crowd drop a bollock. But 'Come' adds another string to his bow, wearing its country influences lightly while birthing the most accessible songs that he's shown us in a career now spanning 15 years.

These tracks are often little more than skeletons, with adornment limited to a handful of rudimentary acoustic chords, the whale song of a bottleneck guitar and the slice of a Nashville-referencing fiddle. But emotionally they linger on, with Holehouse's sad-eyed talking-vocal grizzling so close in your ear as he riffs on the wrench of the road (*One Day At A Time*) and the pangs of nicotine addiction (*24 Hours*) that it often feels like he's playing for an audience of one. By the time you read this, he'll most likely have transmogrified into something else entirely.



Sonny Landreth *Blacktop Run*

Landreth might look like Professor Yaffle from *Bagpuss*, but 'Blacktop Run' reminds us he is more of a musical rebel than his tattooed brethren. Here, the great Louisiana slide man cuts loose with fearless improv, leftfield tunings and a Leslie speaker that makes *Many Worlds* deeply trippy. Bravest of all, he ditches his slide on *Lover Dance With Me*, which is a bit like Iron Man heading into battle without his suit.

Tensheds *Deathrow Disco*

Trading as alter ego Tensheds, Matt Millership is the king of the square pegs: a classically trained pianist, incorrigible peacock and musical trolley-dasher, whose leaps between the electro-crunk *Youngbloods* and *Slag's* garage-conservatoire fusion would make any label boss weep. But when he alights on the ZZ Top-ish fuzz-blues of *Gold Tooth*, he shows that route one works too.

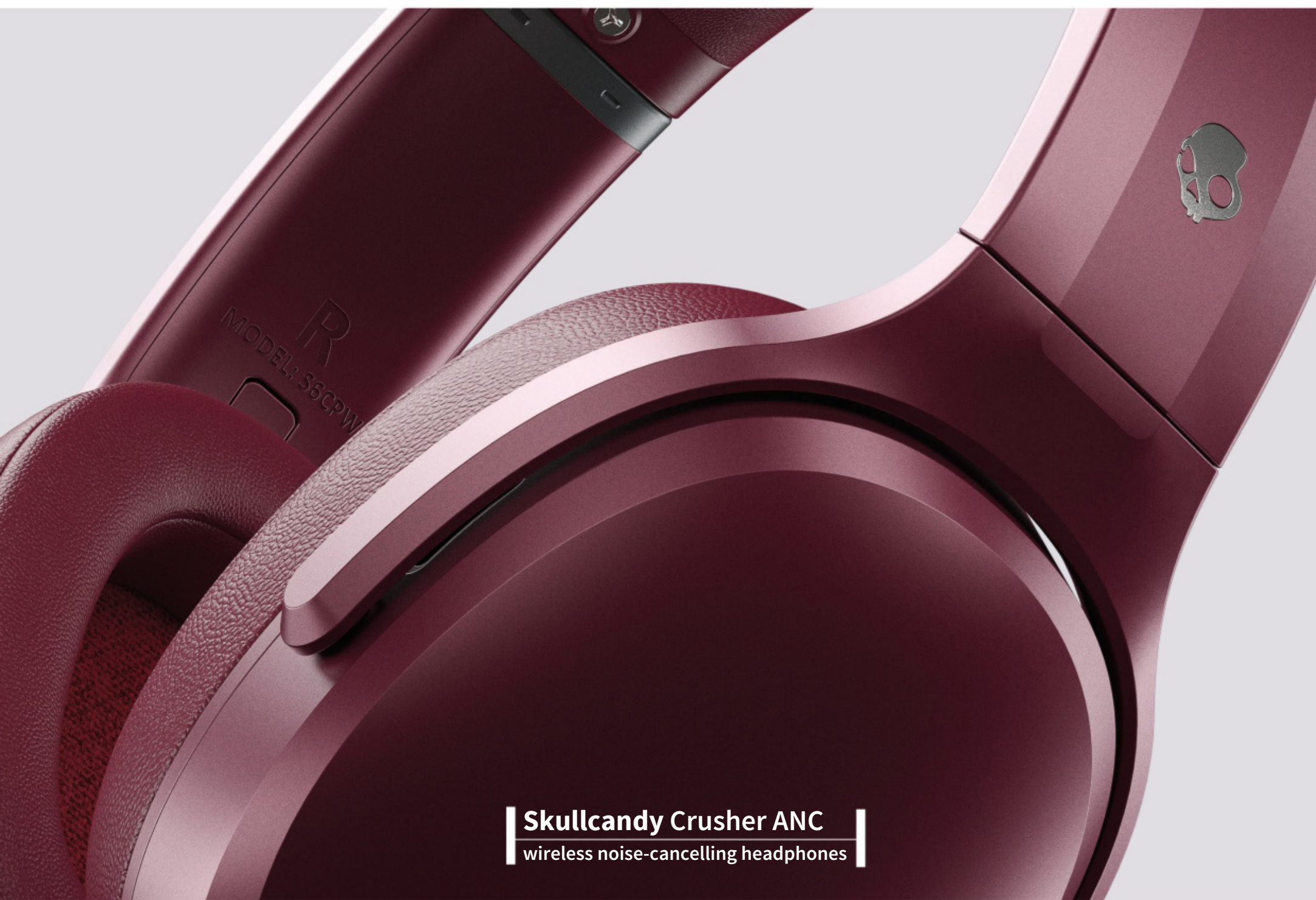


Son Little *Invisible EP*

A five-song EP is always going to leave you hungry, but LA's Aaron Earl Livingston, aka Son Little, makes 'em count. *Hey Rose* and *About Her Again* are punched-up vintage soul, while *I'm A Builder* banks left into flamenco, and *Skid*, borrowed from Love's late-period *Black Beauty* album, is R&B by way of Sergio Leone, with a timely clarion call on homelessness in the States.

Ben Poole Trio *Live '19*

Standing on a monitor, stripped to the waist and throwing the horns, Ben Poole gives us due warning on the sleeve that he's about to kick our teeth in during this cut-and-shut of three live sets. While always staying within touching distance of the blues, Poole can rough it up; listen to the crunchy *Further On Down The Line*, and file him among the best of the new breed. Henry Yates



Skullcandy Crusher ANC
wireless noise-cancelling headphones

Three technologies headline these wireless noise-cancellers from Utah-born Skullcandy. Firstly there's noise cancellation to provide a quieter background for your music in noisy environments. Secondly, there's 'personal sound', where an associated app gives you a three-minute hearing test and adjusts the sound accordingly. And lastly there's 'adjustable sensory bass', with a slider on the left earshell to vary an ear-trembling physical vibration which seeks to accentuate the bass response of the Crushers.

Only one of these — the noise-cancelling — is missing from Skullcandy's other wireless Crusher overear headphones, and yet the price is near doubled, from the non-ANC \$279.95 up to a premium \$599.95. Noise-cancellation alone wouldn't justify that jump, but the specs show that there are more changes here. The quoted distortion level drops to a third of the lesser model's level, and they go louder while doing that, their quoted output rising from 90dB (± 5 dB) up to 105dB. Given each 3dB represents a doubling of power, that's a fair whack, and indicates a better amplifier within, and potentially better acoustic drivers too. They're also fully up to date with Bluetooth 5.0 technology.

Face shakers

Skullcandy brings the haptic bass buzz...

An additional bonus, shared with Sennheiser's latest Momentum Wireless at the same price, is the inclusion of Tile technology, where the separate Tile app lets you track lost headphones within Bluetooth range, and potentially beyond if you activate Tile's wider community of users in the hope one of them will walk past your missing 'phones.

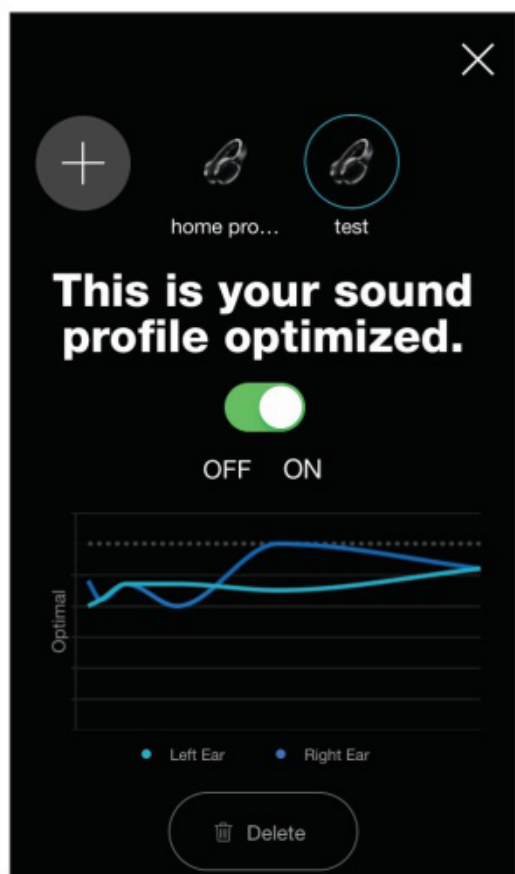
Build and controls

We must confess to a disappointment with the Crusher ANC's overall appearance, given their premium pricing. They're nicely packaged, with a solid case provided and a cable for when the quoted 24-hour charge might be exhausted (a rapid recharge ability yields a couple more hours from just 10 minutes charge). Kudos to Skullcandy for providing the analogue cable with an inline lozenge to

control playback from your smartphone, something rarely seen now that cables are a secondary accessory for most users.

The headphones themselves are solid enough, with a steel-reinforced headband slider, but the rest is all moulded plastic in a deep red (Queenslanders might say maroon) or black, with inset controls and connections, including USB-C charging. The large 'sensory bass' slider looks like something from a pair of kiddies' headphones, and the overall design exudes little of the sophistication displayed by rivals like Sennheiser and B&W at this price.

The maroon extends to the faux-leather earpads which are soft enough, though the headphones themselves felt a little tight, and sweaty on hot Australian days — though they do have the merit of sweat resistance.



▲ The app uses Audiogo technology to test your hearing and adjust the Crusher ANC's sound.

The controls, though large and kiddie-like, are nicely intuitive. We used the Crusher ANC's for two full weeks without recourse to the instruction manual, guessing easily how to pair them, how to control volume, hold volume controls for skipping, even how to toggle between ambient mode (letting outside sounds in) and noise cancelling (cancelling outside sounds) by covering the left headshell with your hand. You can answer calls and invoke your phone's voice assistant. You can turn noise-cancelling off (an essential for any headphone), though there are no intermediate or variable modes for the NC, as many rivals offer at this level.

Listening (and feeling)

Let's start with that 'Adjustable Sensory Bass', which physically vibrates both headshells to emphasise the bass content of music. This kind of 'haptic' tech is more common in gaming headphones, and while we've seen (and felt) headphones before that do this, those have offered only an 'on' or 'off' options, where the Crushers' chunky slider allows variable control. This is a good call, since we did enjoy the effect, but only at its very minimum of levels. As with subwoofers, the trick is to turn it up until you can feel it, then turn it down again until you can't, and that's roughly about right. It then augments rather than distracts. The effect can certainly be virtuous, giving kick drums the gut punch of weight they might gain through a large floorstanding speaker compared to a piddly Bluetooth speaker. And the Crusher's bass is fast enough to give this an enjoyable impact rather than a softened thud.

But raise that slider too far and it's a vibration that is superficially exciting but soon becomes slightly silly, and tiring. Even at lower levels it works best with either rapid staccato pulses of bass, or continuous bass tones, such as the Taurus bass pedals on live versions of Led Zeppelin's *No Quarter*. Extended bass content can just get swampy. Play Sigur Ros's *Gobbledigook* and the Skullcandy Crusher ANC shudders with a continuous barrage which is less a musical experience, more like you've slipped into the artillery scene of '1917'.

With the sensory bass low or off, we enjoyed the wide and three-dimensional soundstage delivered by the Crusher ANC. The tone is reasonably well balanced, though not particularly airy or sparkling up top, and with a tendency to thin female vocals slightly, recessing kd lang's vocals on *The Air That I Breathe* behind a dominant upper bass (even with the sensory slider down) and introducing a bit of spit up top.

They have no trouble going low, delivering full strength to the three bass notes leading Tyler, The Creator's *Earfquake*, though again swamping up the overall delivery somewhat. If you want your whole head to buzz, this is a great track to demonstrate the sensory bass!

Audiogo and ANC

The personal sound profiling offered in the app (and there's nothing much else in the app) comes from Sweden's audiogo. It aims to check your hearing and adjust the sound response accordingly. There have been a number of such corrective audio systems come onto the market recently, including Audeara and Nuraphone, and the Mimi Defined system used by both Beyerdynamic and Loewe.

Here you get a three-minute test of tones at different frequencies — you press buttons to indicate whether you can hear them or not. This sets up curves for your left and right ears, which you can select or deselect in the app, to see if you like the results. You can store multiple profiles, and we got different results by repeating the test, the later ones delivering better results than the early ones, perhaps as we became more accustomed to the test. For our results it certainly made a difference, filling out the sound somewhat, and we'd deem it a function worth trying. The more defective your hearing, the more useful it will be, presumably.

Last up — noise-cancelling, perhaps the Crusher's most disappointing result. There is a low hiss from the Crusher's amplification circuits at all times, and this is all the more audible when you turn NC on. The cancelling itself is effective enough, choosing a middle path which avoids the eyeball-sucking effect of extreme circuits, though therefore less effective than the best, and without the variable noise-cancelling available for different environments from the leaders in this field, notably Sony and Sennheiser.

Conclusion

Overall the Crusher ANC's don't compete at this price against the best of premium noise-cancellers. If they were \$300, we'd be more enthusiastic, but at \$599.95 the build, the sound, the NC are all below the leaders, none of these elements being outright bad, just not as good as the competition. That leaves the head-shaking bass slider as a unique attraction, to which we largely say 'gimmick', though its variability makes it more useful than earlier versions we've seen from others. Unless that's your main reason for purchase, you'll get better value elsewhere. +

SPECS

Skullcandy Crusher ANC \$599.95

Type: active, noise-cancelling, Bluetooth, over-ear dynamic

Driver: 40mm

Bluetooth codecs: SBC, aptX HD

Quoted playback time: 24 hours plus rapid charge.

Weight: 308g

Contact: Skullcandy

Telephone: 02 6639 5555

Web: www.skullcandy.com.au



test

wireless NC headphones



Ausdom ANC7S

wireless NC headphones

The price is right

If they perform well, then they're a real bargain. So do they?

These wireless noise-cancelling headphones came to us from Altronics, the 44-year-old Perth supplier which still produces the chunky great mail-order catalogue which graced the shelves of every electronics hobbyist back in the 1980s. Altronics has also now moved online, of course, offering 9000+ products with everything from tiny parts to full consumer products, many of which appear a bargain.

Take these wireless noise-cancelling headphones, listed on Altronics site simply as the C9021A, although they are identified there and on the packaging as being the ANC7S by Ausdom, a company founded in California, with manufacturing and assembly in Shenzhen, China.

Their price is just \$139, making them far more affordable than premium noise-cancellers like the others reviewed in this issue. The question, then, is how much of that experience they can bring, and how much is lost in the compromises required to hit the wallet-friendlier price.

The Ausdoms certainly feel light, weighing in at 216g, and while this may reflect lower quality componentry, it also keeps them light on the head during wear. The main headshells are plastic, the over-ear cushions a comfy soft fake leather tucked into a red ring, and the outer surfaces are slightly pliant and covered in a cloth layer patterned with light reflecting zigzags, as is the headband. The headband is steel with plastic ratchets, though we found its maximum extension only just enough to get the headshells low enough for the biggest of our testers' heads. They pivot flat for storage, without the extra hinge to fold inward to the foetal position. The Ausdoms come with a soft cloth bag and minimal packaging, a sensible place to save the pennies.

Controls are simple headshell buttons, straightforward to interpret — an on-off power switch, volume/skip buttons, and an on/off slider for noise-cancelling. There's no variability available for the noise-cancelling, nor any 'ambient passthrough' mode, as is now the norm on premium models.

Nor is there any ability to personalise their response via an EQ profile, and no smart extras like a button to invoke your phone's voice assistant, or auto-pause when you remove the headphones. We can't say we much missed these extras, and indeed there's something to be said for keeping it simple. The one easy early mistake is to turn off the noise-cancelling switch when you mean to power them down. But you quickly get used to that.

They charge via a micro-USB socket on the left headshell, and on power up there's a low-fi voice prompt to welcome you as the Ausdoms autoconnect to the last paired device, or on first use go straight into pairing mode. Their connection to our phone stayed strong throughout use.

Sound quality varies significantly when you turn noise-cancelling on. Without NC, they can sound a bit brash, their upper frequencies bright, the midrange leaving vocals in a boxy acoustic, and the bass underplayed. The opening twin basses on Lou Reed's *Walk On The Wild Side* had none of their real resonance and depth, while Lou himself suffered a sibilant boxy vocal.

On a less acoustic mix like Tyler, The Creator's *Earpquake* the synths sounded fine and fizzy, but the massive descending bass notes lost their lowest octave entirely, and again the vocal was strangely boxed in tone.

Flick the NC switch on and the tone is drastically softened, the mid and highs flattened down so that the bass regains something closer to its rightful position, though there's a sense of compression and a general muffling of the overall openness. The NC mode we found a reasonable listen over the rumble of a daily commute; it doesn't assault your ears, and the music can make it



test
headphones

“As a commuting headphone, or to get you through the long-haul, they’ll do the job.”

through. The noise-cancelling circuit itself is actually rather noisy, with a light hiss as soon as you throw the switch, not that you’ll hear this if you’re in the noisy environments where the circuit is required. Its effect is nowhere near class-leading, but it successfully reduces the lower frequencies of background rumble or aircraft drone, giving a quieter bed for your listening.

You can connect a cable should the quoted 12 hours of battery life fail you, but this is one pair of headphones where we won’t say that a better quality is delivered by cable; there’s more level available, certainly, but the sound was brighter still, and discouraged us from turning it up. The sound profile seems to have been optimised for Bluetooth use, and sensibly so, since that’s how they’ll be used the vast majority of the time.

So we found the sound not satisfying enough for a full recommendation here. As a commuting headphone, or to get you through the long-haul, they’ll do the job and deliver tunes or in-flight entertainment against a noise-reduced background. But they don’t deliver well-balanced music in quieter environments, so we wouldn’t recommend them for extended home or office use; you could get a far better sound for this money by going for non-NC from the major brands. +

SPECS

Ausdom ANC7S (C9021A) wireless NC headphones \$139

Type: over-ear Bluetooth noise-cancelling, dynamic

Driver: 40mm

Bluetooth codecs: SBC, aptX

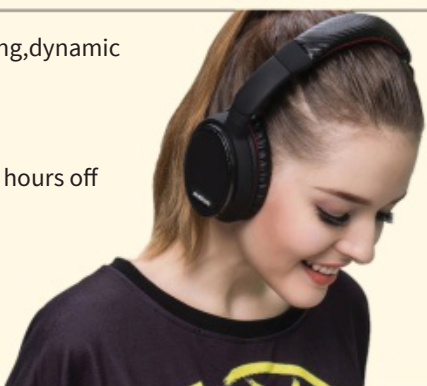
Quoted battery life: 12 hours NC on, 18 hours off

Weight: 216g

Contact: Altronics

Telephone: 08 9428 2188

Web: www.altronics.com.au



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REVEL
by HARMAN

Party piece



JBL's Pulse 4 aims to light up your life.

JBL Pulse 4

portable Bluetooth speaker

Smart lighting is all the rage, and everyone needs a Bluetooth speaker — so why not put the two together? JBL's Pulse is now in its fourth generation, a right rippling piece of party electronics ready to deliver your personal combo of *son et lumière*.

With each generation the Pulse's light show has got bigger and smarter. The original Pulse back in 2014 hid its visual glories behind an outer protective grille. The Pulse 2 and 3 clarified the covering but each had a closed lower area to house the essential electronics. With the Pulse 4 the electronics are miraculously squirrelled away into a mere centimetre at the bottom, leaving a full 19cm of its 21cm height and the entire 360-degree circumference to do the rainbow thing and light up your life. Buttonry up top is limited to volume, play/pause and next track, plus a Bluetooth pairing button, and a PartyBoost button to link two Pulses as a stereo pair or dozens of them in a giant group. There are no mikes on board, so it can't operate as a speaker-phone when you receive calls.

Lighting up

A final button shuttles through the Pulse 4's four lighting presets of Spiritual, Campfire, Wave and Equaliser, each of them an active vibrant swirl of moving colour, with the last of these being the most responsive to the music. We have no idea what configuration of LEDs could create the Pulse's shifting kaleidoscopes of colour — it is a little miracle, and in no way looks cheap or gimmicky; it's a sophisticated show.

Download the JBL Connect app and you get greater control over each mode, able to customise the brightness and the colour gamut, even use your phone's camera to match colours in the environment (right). A custom mode lets you choose the directional sweep of the light flow — we thought upwards might

simulate the lava lamps of our youth, but the Pulse is just too frenetic; there's no speed control to slow things down when you're feeling contemplative. If it all gets too much, or you need to conserve power, a long press of the light button allows you to have the *son* without the distraction of the *lumière*.

Pulsing music

And the sound? Very enjoyable and well-balanced for near-field listening; across a room it sounds lighter on the bass than most JBL Bluetooth speakers, which is the price you're paying for the lights. It farts on most surfaces around 60Hz, delivers a low output up to 120Hz then really kicks in above that. It's worth noting that the JBL Link Portable and non-portable Link Music both have far richer more powerful sounds, and that they also bring Google Voice Assistant and a neat charging platform on the Portable, while costing \$50 and \$130 less respectively.

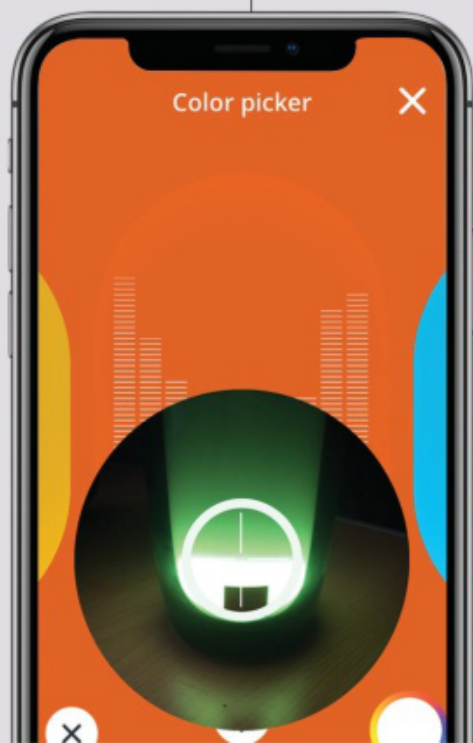
But the Pulse 4 is clearly something different, a combo package of light and sound, and it still delivers an enjoyable sonic performance of respectable size. It's mono, mind you (unless you pair them up) — the sound is delivered by a single 2¼-inch driver firing up plus a passive radiator firing down into a gap at the base, so you can listen from any direction (and turning it sideways hides the JBL logo that breaks the light show from the front). You can also experiment with different surfaces and wall/corner effect to mould its tone somewhat.

Equally impressively, JBL has managed to maintain both portability, with a quoted 12 hours of battery life (varying with volume and brightness), and a waterproofing rating

of IPX7, which allows full immersion up to a metre depth (in fresh water, it's worth noting, not salt); the casing is more rugged than you might expect given its transparency. The lights are not, however, light — the Pulse 4 weighs 1.25kg, well over double the weight of the Flip 5.

Conclusion

If it's sound you're primarily after, you can get better value elsewhere in JBL's ranges. But if your night-time is party time, the Pulse 4 makes playback a multisensory experience. We loved it. +



SPECS

JBL Pulse 4

\$299.95

Type: IPX7-waterproof Bluetooth speaker

Driver: 1 x 57mm + passive radiator

Quoted battery life: 12 hours

Dimensions: 207mm high x 96mm diameter

Weight: 1.26kg

Contact: JBL Australia

Web: www.jbl.com.au



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Atacama

Points of Pride

The disc release of *The Lion King* computer-animated remake shows off the extraordinary detail of the film. We talk with VFX Supervisor Elliot Newman from Technicolor's MPC Film.

The Blu-ray, 4K Blu-ray and Disney+ releases have completed the journey for Disney's photo-realistic computer-animated remake of *The Lion King*, which opened in cinemas in July 2019, quietly going on to overtake *Frozen* as the highest-grossing animated film of all-time (US\$1.6bn worldwide to date), and the seventh-highest of all-time.

Its commercial success was perhaps never in doubt. But artistically, it was an epic creative venture, stacked high with challenges.

"It was probably just the scale of it and that it's a remake of such a classic movie," Elliot Newman, VFX Supervisor at MPC in London, told us. "It was enormous for us; the expectations were incredibly high and it doesn't

get much bigger. It was super-exciting and it's a special thing to be a part of. But there's always the pressure of expectations that were so high."

MPC in London was the centre of the company's work on the movie, assets for the film built at the London studio and then made available to the production base in Los Angeles, where the virtual production work of 'shooting' the movie took place under the lead of director Jon Favreau and production visual effects supervisor Rob Legato. Animation for the movie was then undertaken by Newman's team in London with input also from MPC's Los Angeles and Bangalore studios.

"I started in January 2017," Newman recalls. "We did some pitch work and had conversations about the process of shooting approval. My

involvement began with preparing a teaser, comprising 25 shots, for D23 [the Disney fan club convention] which took place in August 2017. That teaser was 90 seconds of the opening scene, and every shot was a different location and involved different lighting conditions. And all done on a very rapid schedule."

Newman explains that no motion capture was undertaken in making the movie and that the characters are all key-frame animated. As such, the film's foundation in long-standing animation traditions has been reset within the context of virtual production.

"The camera and focus-pulling moves were recorded from the virtual camera,"

With *The Lion King*, London studio MPC has further refined and nuanced previous approaches to character work and the interplay of light, colour and shadow. ALL IMAGES: DISNEY



TELLING THE STORY

For VFX Supervisor Elliot Newman, the stand-out challenge for MPC was in the animation and environment work undertaken for the emotional scene depicting the tragic death of Mufasa, Simba's father.

As one of the scenes that the studio worked on in the earlier phases of the involvement, securing approval for it gave the crew a level of confidence with which to move forward.

"The visual storytelling has to be very subtle and those subtleties can make or

break a shot," says Newman. "Having a shot of Mufasa and Simba just sitting required a lot of tricky lighting: for example, we didn't have a key light to work with and the work was additionally difficult because of the dust that features in the scene."

The crew used bounce cards and shadow blockers to achieve the complex lighting scheme that emphasised the use of indirect lighting, and that also created the illusion of dust evaporating, and accentuated the detail of hair and fur interactions.

Newman explains. "We built the master scenes and then Jon [Favreau] would put VR goggles on and they'd then work out their shots. In converting reality into a render, we were always concentrating on simulating depth of field in the composition of a shot."

Of the virtual production process used for the project, Newman says, "It was fun to watch the filmmakers realise this freedom, that the physical constraints are gone. If they shoot something and then aren't happy with part of a camera move, they can now just work with layers. It's like visual dubbing. You can correct just one part of a camera move. If a move was too exaggerated you could adjust it."

That said, the production would impose certain limits on creative choices in pursuit of consistent believability. As with MPC's work on its previous collaboration with Jon Favreau, *The Jungle Book*, Newman notes that

he and his team on *The Lion King* realised that "we had to research the colour of hair and fur, right down to the melanin".

A shoot in Kenya provided Newman and his team with motion reference material, still images and records of animal behaviour. Additional reference footage of animals was then captured at Disney's Animal Kingdom. But — "No animal was put on a scanning stage," Newman adds, explaining that, for Jon Favreau, it was essential not to interrupt the natural activity of the animals as they documented them.

Some of the film's finest nuances are in the simulated environments and natural light that MPC brought to the plates at an astounding level of detail.

"If we wanted to, we could emulate real sun falloff and exposure, and we put a virtual camera on it (the sunlight) to get the right kelvins. We got quite 'techy' and when we

went to Africa we worked on capturing the feeling of the landscape there, and correctly profiled and calibrated our cameras to capture the exposure values of the sun.

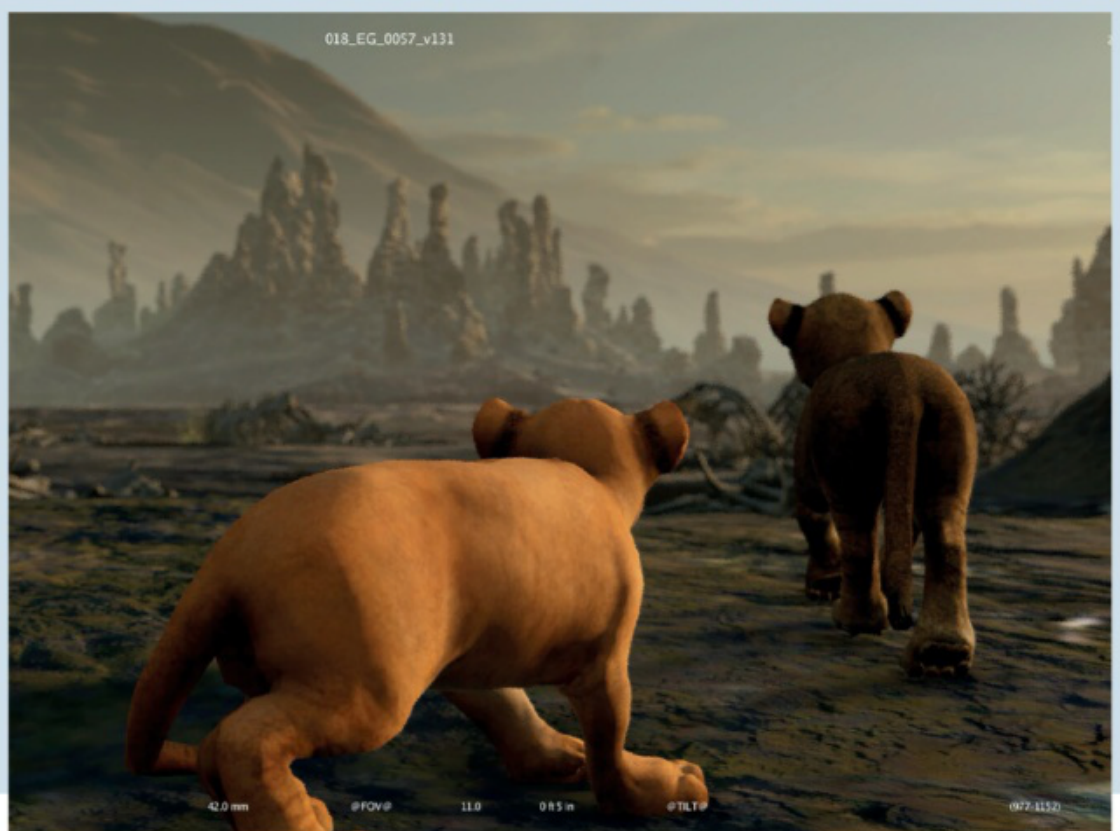
"Jon Favreau's modus operandi was 'don't fall into the trap where you over-beautify everything.' Sometimes the sky is blown-out, sometimes it's overcast and so on. We didn't overwork the shots and we made sure that Jon's realism and documentary quest was backed up with Caleb Deschanel [director of photography] and Legato's visual sensibilities."

Of the collaboration between MPC and Deschanel, Newman notes how much he and his colleagues valued working with a cinematographer of more than 50 years' experience on movies that have embraced terrain and wilderness settings: *The Right Stuff*, *The Patriot*, *The Spiderwick Chronicles* and, perhaps most notably, *The Black Stallion* and *Fly Away Home*.



“Sometimes in our work, it can get quite technical and you don’t always experience the moviemaking,” says Newman. “Caleb came and was often in the reviews and was very engaged. He’d lit all the shots on stage, in the game engine, and so the plates came back to us with his intention in mind. He had to adapt to the virtual production tools but he was able to author the shot. He knew what level of detail to get into: he always gave you direction but allowed you to interpret and emphasise what was important on a given shot.”

Given that a film like *The Lion King* has the potential to inherit and then push the envelope of earlier films’ creative and technological achievements, MPC’s work on the movie marks another watershed in the long-standing relationship between animation and VFX. The movie is a step towards a kind of filmmaking that continues to dissolve the lines between pre-production, production and post-production, between computer and reality. +



▲ Work-in-progress shot indicating blocking and layout of character animation before full lighting and texturing work.

▼ The final shot, showcasing the live-action lighting sensibility applied to environment and characters built and animated by MPC. ALL IMAGES: DISNEY



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Black humour

‘Joker’ has divided viewers, horrifying some, nailing the zeitgeist for others. What’s not up for debate is that Todd Phillips’ disturbing vision has become a startlingly huge hit...

How many times has a comic-book movie been described as the darkest, or most adult, ever made? Well, *Joker* really is that film, dumping quips and capes, ostentatious VFX and large-scale action set-pieces into a vat of chemicals. It emerges, stripped to the bone, as a distressing character piece, concerned not with a man’s elevation to the Clown Prince of Crime but his descent into squalor and madness.

Made for US\$65m — a quarter or less of many comic-book movies these days — and leaning heavily (perhaps too heavily) into Martin Scorsese’s meltdown classics *Taxi Driver* (1976) and *The King Of Comedy* (1982), *Joker* sees Arthur Fleck (Oscar-winning Joaquin Phoenix) lose his job and his family, fail miserably at his dream of becoming a stand-up comic, and slip through the cracks (chasms?) of America’s healthcare system. But a shot at fame beckons with a guest spot on the TV show of his hero Murray Franklin (Robert De Niro). And Arthur, who asks to be introduced as Joker, becomes an inadvertent idol...

Scenes of Joker leading an uprising of mad-as-hell malcontents led a barrage of think-pieces fearing societal collapse, with Todd Phillips’ film accused of fascism. Fleck was a poster boy for the incel movement, it was declared, and such was the intensity of the furore — it began when *Joker* won the Golden Lion at the Venice Film Festival in early-September and continued unabated until its general release in October — that Warner Bros deemed it necessary to release a statement supporting the film’s artistry and responsibility. The studio was correct. *Joker*’s courage, and great skill, is in placing viewers firmly into Arthur’s dog-eared shoes. Phoenix’s haunting creation is a long way from the bonkers bon vivant of Burton’s *Batman* or the twitchy terrorist of Nolan’s *The Dark Knight*; he’s the kind of forlorn, damaged antihero prevalent in great American cinema of the 1970s, and he elicits genuine empathy... until he goes too far, of course, when we become appalled.

That *Joker*, plugged as it is into Trump’s divided, elitist America, has struck a chord is undeniable — it’s the first R-rated movie

to break the billion-dollar barrier, due in no small part to the repeat business it’s attracted. It’s neither right-wing nor nihilistic, but a fearless studio picture set in an all-too-real, broken world: the darkest, most adult comic-book movie ever made.

Jamie Graham +



JOKER (DVD, BLU-RAY, 4K BLU-RAY)

MOVIE: ★★★★★

EXTRAS: ★★★★★

STARRING: Joaquin Phoenix, Robert De Niro, Zazie Beetz, Jolie Chan, Marc Maron, Frances Conroy

DISC RELEASE: DC Comics, Jan 2020

MOVIE RELEASE: 2019

RATING: MA15+

2001: A SPACE ODYSSEY

"It's not a message I ever intended to convey in words," said director Stanley Kubrick of his 1968 science-fiction epic. "2001 is a non-verbal experience."

And of course music plays a huge role in that, with around half of it used in the movie either before the first line of the film's limited dialogue, or after the last. We might pity the composer Alex North, whom Kubrick commissioned to score *2001*. Only when he went to see the movie did he discover that none of his pieces had been used. In their place were works by Richard Strauss, Gyorgy Ligeti, Aram Khachaturian and Johan Strauss II, pieces which the director had originally used as guide tracks, but which adopted such significance once tethered to this cinematic masterpiece that the genius of Kubrick clearly made the right decision to leave them in place.

Also worth noting, the originally-released soundtrack had different versions of several pieces — including the iconic *Also Sprach Zarathustra* — than those used in the film; the 1996 re-release restored them.



Inexplicably, *Daisy Daisy* never made it onto the *2001* soundtrack album...

Top compilation soundtracks to set your system singing

We're not talking multichannel soundtracks here, the actual movie sound you play through your home cinema system. Rather these selections are of soundtrack albums, in stereo, and specifically those which aren't loaded high with the film composer's original soaring strings and such stuff. Many of our favourite soundtracks are those which bring together classic hits and obscure pieces which have been used by the director to underpin their on-screen visuals. Quentin Tarantino, for example, is among the masters at finding the perfect tune to raise film to new heights — and his canon presented an especially difficult choice.

And we reckon we should follow up this selection with another collection focusing on the best in Australian compilation soundtracks — which would be stacked with the likes of G. Wayne Thomas' contributions to the 1971 classic surf film soundtrack of *Morning of the Earth*, or perhaps Baz Luhrmann's dynamic collection for his *Romeo & Juliet*. Your suggestions would be joyfully received!

Meanwhile here are six soundtrack albums that will set your system humming with fine tunes and some new discoveries — unless like us, you're already spinning them regularly anyway...

TRAINSPOTTING

Though Irvine Welsh's novel was set in the bleak surroundings of Thatcher-era Edinburgh, Danny Boyle's film adaptation provides a window into mid-90s Britain — thanks to a soundtrack that has become as iconic as the book and film

themselves. Alongside music from artists named in the novel (Renton's 'Choose Life' monologue over Iggy Pop's *Lust For Life* probably gets as many spins as the original), Boyle compiled the ultimate mix tape of Britpop (Pulp, Sleeper, Blur) and dance (Bedrock, Leftfield, Underworld). Boyle was turned down by Oasis, as apparently the Gallagher brothers didn't want their music associated with a film about trains...

LOST IN TRANSLATION

"They were just songs I liked and had been listening to," director Sofia Coppola said of *Lost In Translation*'s soundtrack. Responsible for a mid-2000s rebirth of the 'shoegazing' genre, the film featured five original songs by Kevin Shields, including the single *City Girl*, as well as giving new prominence to tracks by The Jesus and Mary Chain and Shields' band My Bloody Valentine. More than an accompaniment, though, music plays a starring role in the narrative of the film itself. Central to the relationship between the characters played by Bill Murray and Scarlett Johansson is the scene in a karaoke bar where they sing along to The Pretenders' *Brass In Pocket* and Roxy Music's *More Than This*.

KILL BILL VOL. 1

Oh, the Tarantino question — what to choose? *Pulp Fiction*, *Reservoir Dogs*, *Jackie Brown* — they're all great soundtracks, but his martial arts revenge flick *Kill Bill Vol. 1* holds a special place in our soundtrack collection. Sprawlingly eclectic yet never disjointed, it somehow brings together in harmony the likes of Nancy Sinatra,

Isaac Hayes, James Last, Quincy Jones, Ennio Morricone, Tomoyasu Hotei and the chilling whistling of 'Twisted Nerve' by Bernard Herrmann (he of the *Psycho* stabbing strings), which is also the sample behind Rob Stone's *Chill Bill*.

THIS IS ENGLAND

The British Midlands might seem an unlikely place to gather together a banging compilation, but Shane Meadows' *This Is England* mines the 80s' West Indies influence in ska, rocksteady, reggae and soul, with Toots & The Maytals alongside UK Subs, The Specials and Percy Sledge. It was also an introduction to the minimalist classical piano of Italian Ludovico Einaudi, whose pieces provide a sobering backdrop to the film's consequences.

SUPER FLY

Curtis Mayfield's *Super Fly* soundtrack surpasses the 1972 Blaxploitation crime drama itself in terms of legacy, being one of the most politically-charged funk and soul albums of the decade.

"Somewhere between New York and Chicago, late 1971, sitting on an airplane, the *Super Fly* script in his lap, Dad couldn't stop the music," recalls Mayfield's son Todd. "Curtis said, 'I didn't put [Youngblood] Priest down. He was just trying to get out. His deeds weren't noble, but he was making money, he had intelligence and he survived. All this was reality.'"



Making it so...

Amazon Prime has snagged the rights to *Star Trek: Picard*, marking Patrick Stewart's unexpected return to the role.

The forgettable *Star Trek: Nemesis* (2002) was no way for a starship captain as iconic as Jean-Luc Picard to retire his commission after 15 glorious years exploring the final frontier, across seven TV seasons and four movies. Nearly two decades on, the long-serving commander of the USS Enterprise is now boldly going once more, in new spin-off *Star Trek: Picard*, streaming on Amazon Prime.

Running from 1987 to 1994, *Star Trek: The Next Generation* was the series that took Sir Patrick Stewart off the boards and bit-parts and made him a star. Yet the actor was hesitant about engaging the warp drive once more.

"I had been for a long time saying, 'Thank you but no,'" Stewart says. "Then, as the subject matter of this new proposed series became clearer and clearer to me — and when I began to meet our incredibly distinguished writing team [which includes Pulitzer Prize-winning author Michael Chabon] — I knew that something very unusual was going to happen and I wanted to be a part of it."

"[Patrick] was reticent for all the right reasons," adds executive producer Alex Kurtzman, overseer of *Star Trek: Discovery*, *Star Trek: Picard* and the rest of the franchise's rapidly expanding TV universe. "He did not want to repeat what he had already done — he had done it perfectly, so why do that again? He really challenged us. That forced us to think outside the box, yet also forced us to say what is

important about the box as it existed for people who love *The Next Generation*. What is it about this great captain that they love so much?"

Data recovery

The older Jean-Luc we meet in *Picard* is very different to the man who served on the Enterprise bridge all those years ago. Although he received a long-overdue promotion to admiral, his subsequent experiences left emotional scars, particularly the death of android officer Data in *Nemesis*, and the failure of the mission he led to save the Romulans from a planet-killing supernova — the event that sent pensioner Spock back in time in J.J. Abrams' first *Star Trek* movie.

When we meet Picard, he's retired from Starfleet, making his home on the family vineyard in France, with a dog named — in a lovely nod to *The Next Generation* — Number One. He's dragged back into space when a mysterious young woman called Dahj (who appears to have superhuman fighting skills) comes asking for help. He then assembles a ragtag crew to help him on a mission that takes him light years away from the comfort blanket of Starfleet, where — particularly in *The Next Generation* era — every crew member is traditionally a model citizen.

"All the characters are pretty broken in very interesting ways," reveals Alison Pill, who plays 'researcher' Dr. Agnes Jurati. "It's different from a lot of what we've seen [in *Star Trek*]." There are also some familiar faces along for the ride, with *Next Generation* regulars Will Riker (played by Jonathan Frakes), Deanna Troi (Marina Sirtis) and Data (Brent Spiner), as well as *Star Trek: Voyager*'s resident Borg, Seven of Nine (Jeri Ryan), all featuring in the new series. Indeed, iconic aliens the Borg and the Romulans look set to play a key part in the show.

Beyond our Gen

But don't expect *Picard* to be *Star Trek: TNG 2.0*. "We pointedly wanted to not make a sequel to *Next Gen*," explains





executive producer Akiva Goldsman. “I think that tonally it’s a little bit of a hybrid. You will see, I hope, that it is slower, more gentle, more lyrical, and it is certainly more character-based. What we get to do that *Deep Space Nine* got to do a little bit and then *Discovery* has done [but *TNG* did not] is to tell a serialised story, and in serialised storytelling the characters can evolve. We think it’s a new kind of Star Trek show, made by a lot of people who love the old kind of show.”

Bring back the Borg

As a fan himself, Alex Kurtzman acknowledges there are plenty of characters he’d love to see back — but knows he’s already struck gold. “I would have put Patrick at the top of my list there,” he says. “I’ve had the incredible privilege



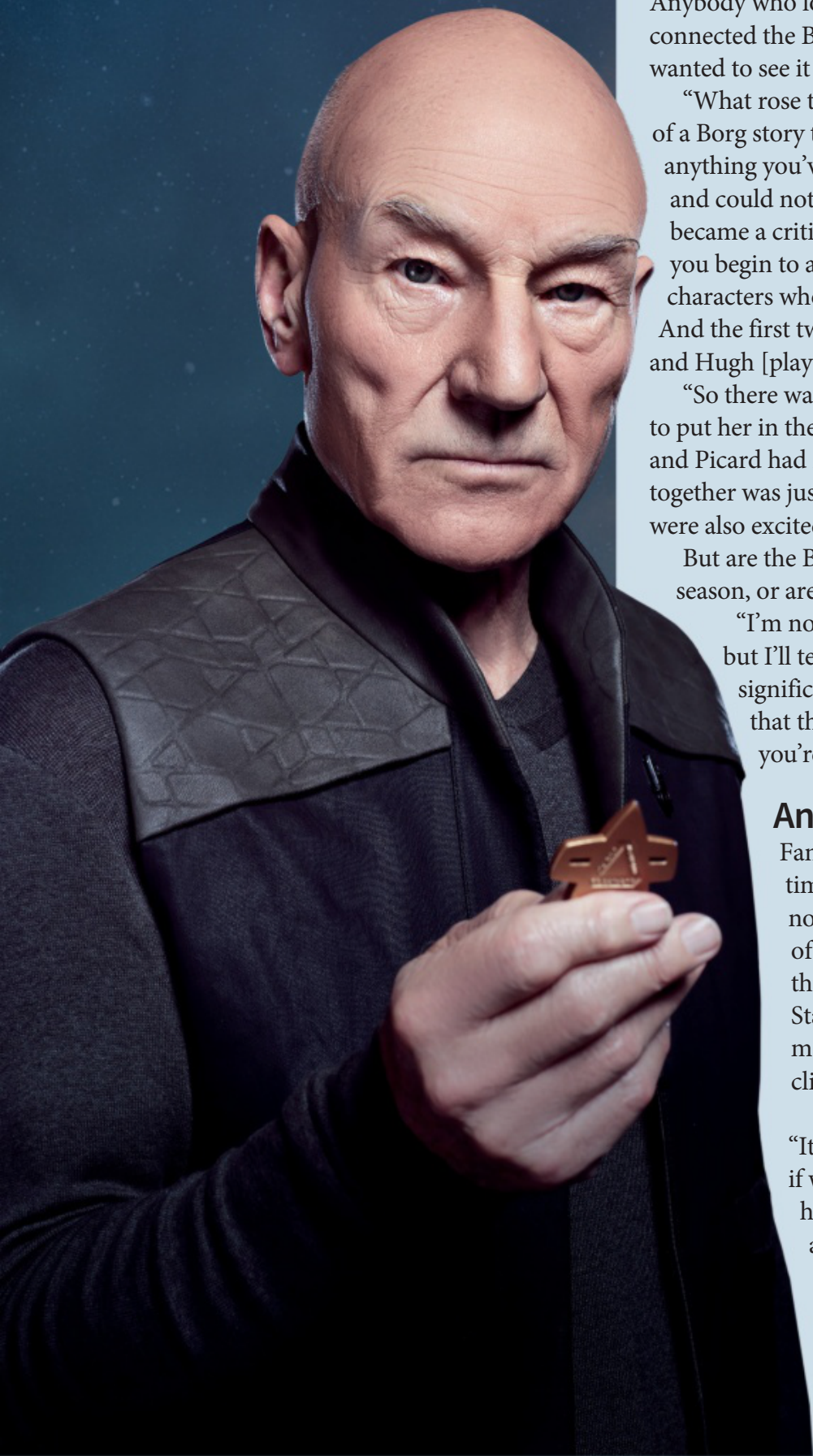
▲ **NEXT NEXT GEN:** Stewart’s Picard gets on board with a new crew, although several old hands like Voyager’s Seven of Nine ► also appear in the new series.

at this point of getting to work with Patrick and Leonard Nimoy and all the incredible actors that I grew up loving. There are so many incredible actors on so many different iterations of Star Trek. I always have my feelers out for reasons to



ALL IMAGES: Amazon Prime Video

bring them back, but I don’t want to do it just ‘because’ — I want to make sure there’s a story reason to do it.” Which begs the question — why Seven Of Nine from *Star Trek: Voyager*? ►



“Initially, our first instinct was to do a Borg story,” Kurtzman recalls. “And from that point of view, actually, there was a lot of the Borg in the initial document. But Patrick, in his infinite wisdom, was very resistant to the idea, because he did not want to repeat things that had already been done, and he was totally right about that. Anybody who loves *The Next Gen* knows how connected the Borg are to that, and so as fans we wanted to see it — but he was right to resist it.

“What rose to the surface was a version of a Borg story that was entirely different to anything you’ve seen on *The Next Generation*, and could not have been told then. Once that became a critical pivot point in the season, you begin to ask yourself, ‘Who are the other characters who are impacted by the Borg?’ And the first two that came to us were Seven and Hugh [played by Jonathan Del Arco].

“So there was, again, a very organic reason to put her in the show. The fact that Seven and Picard had never actually been on screen together was just a delicious prospect that we were also excited about.”

But are the Borg just one potential threat this season, or are they the Big Bad?

“I’m not going to answer that question, but I’ll tell you that their presence is significant. And I’ll underscore the fact that their presence is not entirely what you’re expecting them to be.”

An admirable admiral

Fans have wanted a post-Voyager time-period series for some time now — what’s the current state of the Alpha Quadrant? With things seemingly not all well at Starfleet, comparisons have been made to the current political climate globally.

“Absolutely,” says Kurtzman. “It wouldn’t be a *Star Trek* show if we didn’t do that. *Star Trek* has always been that. It’s been a mirror that holds itself up to the world as it exists. All of our *Trek* series have this as a mandate right now. The key is always to keep it very entertaining, but also we have

to have something to say about the state of humanity. And we have a lot to say.

“One of the biggest thematic connections is the idea of how disconnected we are from each other now, and how divided people are. We look in our shows to explore the reasons why that is the case, but also to present what *Star Trek* has always presented, which is a belief that it will work out — a belief that our best selves will emerge in the future.

“And certainly Picard, as a captain — my favourite captain — reminds us that we need leaders who are thoughtful, who are human, who don’t seek to divide, but in fact seek to unite. And also recognise through their own experience how complicated the grey areas of the world are right now.

“Picard is a really thoughtful and considered leader. He isn’t optimistic because he’s naïve; he’s optimistic because he has seen the best of people, and he always manages to find the best of himself under the worst of circumstances. That’s the kind of leader we need, here and abroad, right now. And that’s the hope that we want Picard to remind people of.

“But I can say that we are 20 years after the events of *Nemesis*, and a lot has changed. Much has changed in the universe; much has changed about Picard’s life. He’s not necessarily living the life that he had expected to live. We’re not seeking to reinvent *The Next Generation*. We’re not seeking to say ours is better, or that we’re doing the dark version of *TNG*. But Picard has to soul search and to soul search you need a dark night of the soul in order to come out the other side lighter and brighter. And in order to make the world brighter, he has to face that part of himself. He’s still fighting for all of the things he would have fought for in *TNG*, but because the circumstances of his life have changed, he doesn’t have the same resources, and he has to dig even deeper into himself in order to get there.

“We all want to believe that in the darkest times the best part of ourselves will emerge. And that is Jean-Luc Picard.”
— Richard Edwards

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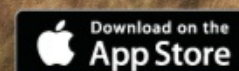
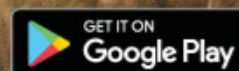


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No laughing anti-matter

Brad Pitt micro-acts his way through 'Ad Astra', which looks great on 4K Blu-ray, and is saved from torpor by a baboon attack in space.

It hit cinemas close to the 50th anniversary of the Moon landing, and *Ad Astra* feels like a glimpse of some alternate future where the space program never sputtered into public indifference and Apollo was a straight arrow to the stars.

It's a film that wears its influences like mission patches: not just the sterile, utilitarian beauty of Kubrick's *2001: A Space Odyssey*, or a moonbase that looks like Gerry Anderson was bankrolled by the American government, but every moment of NASA footage that made the future look shiny and glorious. Rockets reach for the heavens above pillars of fire and smoke; Mars is all unexplored ochre promise; an impossible Meccano-gasm of a structure stands bolted between Earth orbit and the planet below, like one of Arthur C Clarke's daydreams.

But the tension of the film is between inner and outer space. Brad Pitt is Major Roy McBride, a man seemingly carved from pure alpha-male efficiency. When an anti-matter catastrophe threatens the entire solar system, McBride is sent into space in search of his missing father, who may be key to the looming disaster: a touch of 'Heart Of Darkness' here.

Pitt's performance as the repressed astronaut isn't so much acting as microsurgery, dialling down all his Hollywood wattage to tiny, glinting pin-pricks of emotion. That fits an inward, sombre film that feels at times like a psychiatrist's session with special effects. There's just enough intrigue and spectacle — absolutely ravishing spectacle, not to mention the surreal sight of an astronaut battling a baboon — to keep it this side of leaden, but chilly characters and Pitt's cripplingly literal voiceover ("What happened to my dad? Did it break him? Was he always broken?") clip the wings of this interplanetary flight.

As extras the director James Gray supplies an erudite and genuinely informative commentary. There are a meagre two deleted scenes (three minutes), one of which would have served as an epilogue and feels like an essential emotional resolution, albeit with a hint of ambiguity — a pity it was cut. The behind-the-scenes material is spliced into five brief, reasonably decent featurettes: 'To The Stars' (eight minutes) is worth it for screenwriter Ethan Gross confessing that his first words to future collaborator Gray were "I don't like you..."; 'A Man Named Roy' (nine minutes) focuses on the film's hero and

star; 'The Crew Of The Cepheus' (nine minutes) showcases the effects required to turn a human being into "baboon brunch". 'The Art Of Ad Astra' (seven minutes) pays tribute to the costume and production design, while 'Reach For The Stars' concentrates on space travel. Plus: trailers. — Nick Setchfield



JOKER (DVD, BLU-RAY, 4K BLU-RAY)

MOVIE: ★★★★★

EXTRAS: ★★★★★

STARRING: Brad Pitt, Tommy Lee Jones, Ruth Negga, Liv Tyler, Donald Sutherland

DISC RELEASE: Walt Disney,

MOVIE RELEASE: 2019

RATING: M

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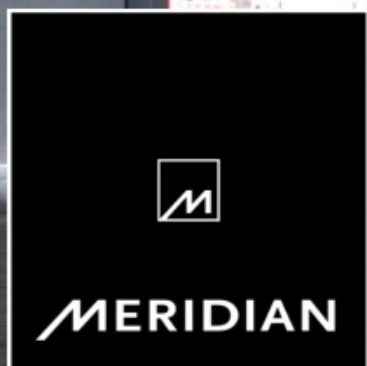
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