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20+ REVIEWS



TV & AV

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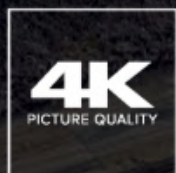
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THE HI-FI HEADLINES

NEWSLETTER No. 248

It's been a busy month at Len Wallis Audio. Firstly we were honoured to receive a 'Cinema Design Gold Award' from Sound+Image magazine for one of the dedicated Home Theatres we completed this year. This was a very special project. It is a 13.4.6 Atmos theatre featuring the highest number of Meridian Active speakers used in a domestic theatre anywhere in the world. This project also picked up a Silver award at the CE Pro awards earlier this year in the US.



STAX – the iconic manufacturer of superb headphones, has released two new headphone amplifiers. The SRM-700T and the SRM-700S are essentially the same product except one is solid state and the other is tube based. There are enthusiasts in both camps, and while Stax has always shown a preference for tube-based amplifiers at their higher level they recognise that consumer preference is torn between the two – so now you can own a Stax headphone amplifier irrespective of your preference.



Plus, we have just seen the return of a legend to Len Wallis Audio – we are stocking Technics turntables again, after a hiatus of a few decades. This has been a long time coming, but Technics were obviously content to take their time to get it right, and get it right they did. While we will not see their Reference Series here in the immediate future they have

released their \$6,999 Grand Class SL-1200G, plus the two lower models selling for \$2,749 (SL1200GR) and \$1,999 (SL1500). This is an important release: Technics was a highly regarded manufacturer of turntables in the past and is destined to continue in this vein.

We have been looking forward to this release for some time, having already seen releases at overseas shows.

At the same time Technics has

also released a high-quality Desk-Top system (the Ottawa SC-C70, pictured left) featuring CD,



DAB+ and FM radio, USB input, network connectivity (Spotify, Tidal, Internet Radio) and with AirPlay, Bluetooth and Wi-Fi. If you are looking for a compact, well-made, well-priced (\$1,649) system that does everything, including sound good – this could be the answer.

Finally, if there is a product of the moment it must be the Krell K-300i integrated amplifier. This has just picked up the Amplifier of the Year – under \$10,000 – award at the recent Sound+Image awards (for the non-digital version). It has also been the subject of an increasing number of rave reviews around the world, including one from Australia's *Best Buys Audio & AV* magazine. From the instant we turned this amplifier on we felt that it was something special – it's great to see that the world agrees.



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TV & AV

AV PROJECTOR

EPSON EH-TW7100



Epson pixel-shifts using its 4K Pro-UHD technology in this impressively priced projector that uses brightness and colour to create fine bigscreen movie images.

There are such things as native 4K UHD projectors, which have the full 4K's worth of pixels on a single chip. But these remain expensive, and are often physically large. In the sub-\$5000 AV projector market, pixel-shifting is the way to go if you want to achieve UHD resolution. Which brings us to the new Epson EH-TW7100 with its 4K Pro-UHD feature, complete with a dedicated 4K Pixel-Shift processor.

watts, but neglects to mention their size. Peering through the grilles, we'd estimate them at 75mm. Consider these for very casual use only; we always suggest that a big picture deserves at least a medium-sized sound.

For those not going the usual route of an AV receiver, you can use the 3.5mm analogue audio output to feed an external sound system. Or, indeed, the built-in Bluetooth to feed the signal

to external speakers or headphones, bearing in mind the always present possibility of latency (delay) when sending audio via Bluetooth.

But let's get back to the main game, which is presenting a large, theatre-sized image on a screen. The Epson EH-TW7100 uses three full-HD polysilicon TFT active matrix LCD panels, each 15.5mm wide. It seeks to achieve higher than full-HD resolution by means of pixel shifting. Unlike some other techniques, this one involves shifting only diagonally to two, rather than to four, separate positions per frame.

The front of the projector provides advanced optical control. The zoom range is 1.62:1 and both vertical and horizontal lens shift are provided, allowing distortion-free alignment of

EQUIPMENT

The Epson EH-TW7100 projector is an attractive and curvy design in white. That means it's well suited to blending in with most ceilings when mounted thereon, upside-down, though is less suited to darkened dedicated theatre rooms where you'd want everything to be black. So this is more one of those intermediate designs, bringing some features from semi-portable models into the home theatre.

For example, it incorporates a pair of stereo speakers on the rear. Epson says that these are each provided with ten





the picture with the screen. All the controls are manual. For a 100-inch (2.54-metre) diagonal image, the projector needs to be placed between 2.95 and 4.77 metres from the screen.

It has no analogue inputs, just two HDMI inputs. These are rated to accept signals at up to UHD at 60p: 8 bits for 4:4:4 colour resolution, 10 bits for 4:2:2.

Pro tip: UHD Blu-ray discs usually employ 10 or more bits, but only ever 4:2:0 colour resolution, so if your player gives you the option, consider choosing lower colour resolution to allow greater bit depth to come through. This is by no means uncommon with display devices.

There are two USB sockets. One provides power for whatever needs it, such as a Google Chrome device. The other is for use with Epson's Wi-Fi dongle. If you purchase that extra item, it allows you to mirror stuff from a phone or computer to the projector.

And there is, of course, the aforementioned 3.5mm analogue audio output. That provides a stereo version of whatever sound is delivered to the projector over HDMI.

PERFORMANCE

Installation was straightforward on our ceiling mount, thanks to the two-dimensional lens shift and a good zoom range.

One of the higher-impact improvements in Ultra-HD Blu-ray over standard Blu-ray isn't so much the difference between 3840×2160 pixels compared to 1920×1080 , but rather the difference between 10 bits compared to 8. Eight bits can describe 256 levels of something. Ten bits can discriminate 1024 levels. Ultra-HD discs with HDR have 10 bits per colour per pixel. Regular Blu-ray has eight bits per colour per pixel.

Now, eight bits per colour per pixel permit 16.7 million colours, which would seem to be more than enough. But if some colour or brightness gradient is of the same colour mix, it isn't defined by millions of levels; indeed, not even by thousands. It's defined by those 256 levels. That's why you sometimes see colour and brightness banding on DVD and Blu-rays, both of which are locked into eight bits.

So, deciding to take the night off from analytical thinking for one evening, and seeing as how this reviewer has started reading the Harry Potter novels for the first time, we indulged in a re-watching of the first movie 'Harry Potter and the Sorcerer's/Philosopher's Stone' on Ultra-HD Blu-ray. The opening minutes take place at night on Privet Drive, somewhere in England. The street lights, before Dumbledore steals away their illumination, provide a smoothly graduated white-to-black atmosphere over much of the screen. There were no discernible boundaries.

Would the 8-bit Blu-ray look the same? (And remember, the LCD panels Epson uses in the EH-TW7100 are capable of 10 bits.) Switching discs we expected some hint of visible lines through



► Two HDMI inputs are supported by USB slots at the rear, one of which can provide power for a media stick. There are built-in speakers, though we'd recommend a larger sound system.

the gradients. But there weren't. That's not to say that there weren't differences. On the Blu-ray, the blacks seemed to crush together a little more, losing some detail at the low-brightness end of the scale. But the most surprising difference was Professor Dumbledore's face, even though it mostly occupied only a very small portion of the frame. On the standard Blu-ray it was redder and blotchier. On the UHD Blu-ray, it was smoother and noticeably more natural.

Now let us consider brightness and contrast. Not so long ago a decent home theatre projector brightness was still less than a thousand lumens. This one claims 3000 lumens, both for white and for colour. What does that mean?

Well, here's one thing. Look at the image above right, a photographic detail of the centre of our standard UHD test pattern. This we use to try to avoid expending a thousand words describing what we saw. A summary of the thousand words shortly.

But check the the saturation of the red, green and blue elements of the picture, the contrast against the white. Pretty good, we thought. But here's the thing: the screen was under the full glare of two 36W fluorescent tubes just a couple of metres away. Normally we switch them off for this photo, but for this one? It looked too good to redo in the dark.

Don't get us wrong; never willingly watch a movie on a front projector in a lit room. You must necessarily lose an enormous amount of detail in all dark scenes. But that doesn't stop us from being impressed. And it reminded us that perhaps five years ago Epson started banging on about how its projectors were as bright in their primary colours as they were in white. We understood Epson's facts (it's a result of their 3LCD system as opposed to other projection methods using colour wheels). But here you could really see and accept the effect as real.

Now, back to that resolution. You can inspect that image for yourself. Remember, each bar of

colour consists of 12 coloured (or black) lines. The lines are each one pixel high or wide. The ten inner lines are separated from each other by one pixel of white. The outer lines are separated from the inner lines by two pixels of white. That's not what we see here. We see separation of the outer bars, which is resolvable at 1080p. The ten inner bars are represented by a crosshatch. Something more than 1080p is going on, but not actual UHD.

This projector has a kind of trade-off between processing options and power. For example, it can do frame interpolation motion smoothing on 1080p and lesser content, but not on Ultra HD. If you switch on 4K enhancement for those lesser resolutions, you no longer have the motion smoothing capability.

But in fact the motion smoothing with 1080p/24 was... well, something we'd avoid. It has three levels: Low, Medium and High. Low didn't seem to do anything with our usual Blu-ray test clip. Medium did a superb job of smoothing the judder during the Chicago flyover at the start of Chapter 21 of 'The Fugitive'. And when Harrison Ford walks in front of a steel girder shortly thereafter, with no heat-haze around him, Epson looked to have it nailed. But a moment later he's on a pay-phone (1993, remember) in front of another girder with prominent rivets. That girder is holding rails for a train. The train passes from left to right and the rivets jump around, confused about where they're supposed to be. Motion smoothing is probably best left off.

Epson projectors used to have both auto and forced deinterlacing settings. They seem to have abandoned the force-film option. So if you feed this projector an interlaced signal, you can choose from 'Off', 'Video' or 'Video/Film'. That last auto system was fairly mediocre. On our standard test clips, it accidentally chose, way too often, video when film would be appropriate. It often flickered between the

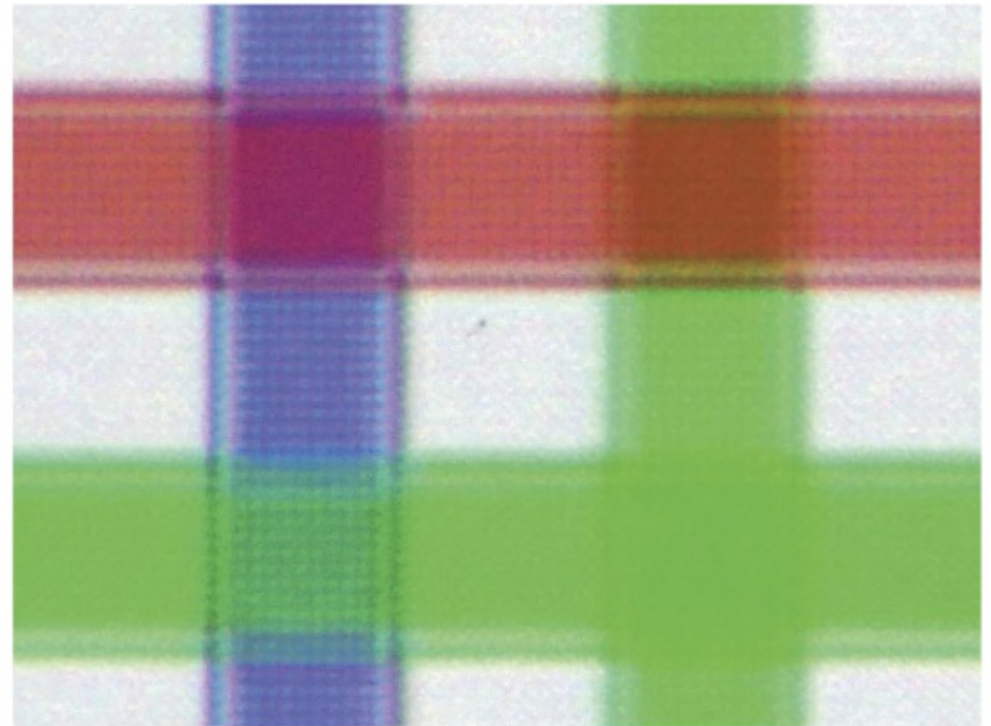
two modes very quickly. The waistcoat worn by Manuel the valet in the DVD version of 'Gigi' frequently tricked the projector into video mode, resulting in nasty moire patterns jumping in and out of existence.

Likewise, on 1080i/50 clips from 'Miss Potter', the hard stuff was wrongly treated as video when it was film, but even the scrolling credits at the end, which are generally well-handled these days, were also wrongly treated as video sourced, leading to the cross strokes on little characters chittering into and out of existence during their travels upwards across the screen.

Solution? Convert to progressive scan earlier in the chain, if your source allows, and does better. At least experiment with your other devices.

We wanted to get that out of the way because of something that was astonishing, first noticed it on that 'Gigi' clip, and then on others. Feed this projector with 576p material, and it does such a good job on upscaling to the projector's resolution that it almost looks like the source material is full-HD. When Manuel's waistcoat wasn't flickering, it was detailed and clean and sharp. Likewise for other PAL DVDs.

And at the other extreme, the very best quality UHD Blu-ray content is superbly rendered, and particularly 'Billy Lynn's Long Halftime Walk', which is held on the disc and delivered by this projector at 60 frames per second. Despite any



Our test pattern shows individual UHD pixel resolution is not achieved.

reservations about true UHD delivery by this projector — and we have noted in the past that the resolution advantage of UHD isn't all that obvious even on displays that can clearly resolve it — 'Billy Lynn' looked glorious. The higher frame rate tends to deliver a subjective boost in sharpness.

CONCLUSION

As usual, the UHD resolution delivered by Epson's pixel-shifting of lower-resolution panels remain unconvincing. But in terms of the overall image quality, deinterlacing aside, this is an excellent home theatre projector at a sensible price. ■

Epson EH-TW7100 projector

- Solid full-HD and UHD performance
- Excellent 576p scaling
- Excellent colour brightness

- Mediocre interlaced 50Hz handling

Price: \$2649

Projection technology:

3 x 15.5mm LCD panels

Resolution: 1920 by 1080 pixels

Aspect ratio: 16:9

Lamp: 250 watts UHE-E

Lamp life: 3500 hours in high mode, 4000 hours in medium mode, 5000 hours in economy mode

Contrast ratio: 100,000:1

Brightness: 3000 lumens (both white and colour)

Inputs: 2 x HDMI

Outputs: 1 x 3.5mm stereo audio, Bluetooth audio

Control/Other: 1 x RS-232C, 1 x trigger out, 1 x Mini-USB (Service), 1 x USB (for WiFi option), 1 x USB power (e.g. for active optical HDMI cable)

Dimensions (whd): 410 x 157 x 310mm

Weight: 6.9kg

Contact: Epson Australia

Telephone: 1300 361 054

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TV & AV

100-INCH 4K SHORT-THROW PROJECTOR

HISENSE
LASER TV

A TV? Not really. But it's not quite like a projector either. Hisense's 'Laser TV' brings together elements of each technology to deliver something new and effective.

A recent survey in Europe found that four out of five people think a big TV picture makes viewing more enjoyable. And frankly we can't imagine what the fifth person is thinking — of course it does, and screen size is high on everyone's wish-list when they're looking for a new telly. But clearly there's a transportation problem with big TVs. How would you even get a 100-inch TV into your home?

The more common solution for a picture of such a size has long been to have a projector. But a projector isn't a TV. It doesn't have speakers (at least, any worth mentioning) or a TV tuner or many of the other usability features of a TV. And it usually has problems with ambient light which leaves it being a solution for evening use only.

Which brings us to the Hisense 100RXL 100-inch Laser TV. It has all the facilities of a fully-equipped Ultra-HD TV, but these are built into an ultra short-throw projector. Furthermore it comes with its own 100-inch screen which has been designed to help deal with some of the problems — ambient light in particular.

This is the first Hisense Laser TV to hit Australia (expect more to arrive next year), and we were impressed enough to give it an award.

PROJECTOR + SOUNDBAR

Although Hisense calls it a 'TV', it is, of course, an extremely short-throw front projector. The unit sits near the foot of the projection screen, its leading edge less than 20cm from the wall. It's fairly wide — 690mm, but not all that deep or tall — 416mm × 207mm. On top an aperture for the projection engine is covered with glass. At the back, closest to the wall, is a panel for the connections. On the front is a cloth grille over a sturdy plastic frame and, unusually for a TV, this is removable, securely held in place on at least ten posts. What was underneath was quite the surprise — a kind of soundbar built in, something we've seen in a couple of short-throw projector launches recently. Not only that, you get a wireless subwoofer sporting a 165mm (6.5-inch) driver as part of the 100RXL package.

The 'soundbar' drivers behind the grille are fascinating. The speakers are called 'JBL Cinema Sound'

and consist of two more or less conventional 25mm dome tweeters, and two arrays, or speaker banks (see below) to deliver the midrange — two sets of six tiny 19mm inverted domes in an array of three across by two down. Each array is mounted into the same internal surface as that channel's tweeter, appearing within a 87 × 64mm rectangular hole in the console chassis. The soundbar is quoted as powered by 2 × 10W; the wireless subwoofer gets 60W for its larger driver.

This unusual speaker system certainly sounded way better than is typical for a TV. It was generally quite balanced, perhaps a little light on the upper midrange and lower treble. That invited the application of the volume control since it removed vocal clarity just a touch. The bass from the subwoofer was about typical for a 6.5-inch unit.

If you want to give the large picture the sound it really deserves, audio output is available via optical digital audio, analogue stereo (via RCA sockets) and from the Audio Return Channel of the HDMI 2 input for a device plugged into it.





THE BIG PICTURE

The 100-inch (2.54 metre) screen is a special design. It rejects ambient light quite well, being designed specifically to reflect light received from and to the angles required to fill the screen and deliver the light to viewers in front of it. And it was clearly very effective at this.

Aligning an ultra short-throw projector with a screen can be a fiddly, exacting piece of work. But for most people installation will be exceptionally easy because if you live within 25km of a 'store of display' in one of the mainland states, then the purchase price includes delivery and 'white glove' installation. Hisense had installed the unit we reviewed, so we can't comment on the ease of doing it yourself.

In terms of picture quality, the first thing to consider here is brightness. Hisense had installed it on a wall opposite large glass windows facing east over the Pacific Ocean. Even though it was afternoon and the weather somewhat overcast, this position would be a challenge for any regular projection screen.

And indeed, the edge was taken off the contrast. Colours weren't as deep and powerful as they were later when the sun had gone down. But let's be clear about this, the picture was clear and easily viewable even under those conditions. The light rejection of the screen was remarkably effective. For casual viewing it was fine.

Later we did more critical viewing. Even without entirely darkening the viewing room, there was more than adequate brightness. Fine detail was easily visible in dark scenes. Colours were quite rich. Not as rich as when watching an OLED TV back in our usual test room. But easily as good as the best we've seen with a front projector. Impressive.

Actually, too impressive in the 'Dynamic' mode which had been engaged — it punched out the reds to an unrealistic level. The Standard setting was much better.

As usual, it was best to reduce the sharpness control to zero, at least with HD and Ultra-HD material. Broadcast TV (remember, the unit has a TV tuner built in) tended to crush colours at the brighter end when the sharpness control was up. Bringing it down restored a rounded, realistic look to the human face. You may want to advance the sharpness for SD content, such as from DVD.

We normally recommend leaving motion smoothing off or low, but with this unit we'd suggest leaving it on. When we switched off the motion smoothing there was a visibly jerky cadence. It looked as though the projector was using a 60fps engine, with the 50 to 60 hertz conversion resulting in marked judder. This was also the case with 576i/50 DVDs, and potentially worse with 24fps material, with 24fps-to-60fps conversion meaning a frame cadence of AAA-BB-CCC-DD and so on. This is very similar to what

► Hisense's Laser TV won Sound+Image's Premium TV Solution of the Year for 2020

we saw in early projectors using TI DMDs with XPR, and indeed we discussed that issue direct with Texas Instruments' DLP team in the US. The later versions are now running 50Hz and 24Hz fine, so it's just possible that Hisense could fix this 60Hz-only issue in a firmware update.

Having said that, the motion-smoothing system pretty much fixed the 24-60fps judder.

There's some pretty smart video processing going on in this TV. The engine is constantly adjusting the picture for what its algorithms are hoping will be the best-looking outcome.

The big question for an UltraHD projection system is whether it clearly produces UltraHD resolution? As it turns out, no, not quite. There were two things working against it. First, the two-flash 0.66-inch DMD doesn't work as cleanly in producing UltraHD as the four-flash 0.47-inch model. But the very virtue of the projection screen also seems to work against things a little. Those closely-spaced horizontal lines, which seem to control the level of reflectivity depending on vertical angle, also form a 'beat' interference pattern with the pixel structure of the projector, so the lines of our test pattern swelled in intensity in some places and faded in others. This seemed to affect the black and blue lines more than the red and green ones. But we can't say that we ever once felt an insufficiency of sharpness during our time with the TV when using good source material.

This Laser TV runs Hisense's own VIDAA U Smart TV operating system, giving easy access to the likes of Netflix, Stan, YouTube and other apps. So this works just like a smart TV, controlled through the remote. And of course with four HDMI inputs on board, along with USB inputs which can supply power, you could plug in any media stick or player to give you full access to whatever collection of apps and streaming channels you so desire. It's this as much as anything which makes the Laser TV a 'TV'.



CONCLUSION

If you're thinking the Hisense Laser TV isn't cheap, compare it with a 100-inch TV, and the price seems more reasonable! Meanwhile against the price of any other projection system you're getting the smarts and sound system included, and the screen with its benefits against ambient light (and of installing a short-throw projector in general). The Hisense 100RXL Laser TV seems a good and practical way of achieving this kind of screen size. ■

Hisense 100RXL Laser TV

- Massive screen
- Very good ambient light rejection
- Ultra long-life

- 60Hz output
- Light-rejecting screen affects pixel-level Ultra-HD resolution

Price: \$19,995

Display technology: DLP via projection screen

Screen size: 254cm (100-inch)

Native aspect ratio: 16:9

Native resolution: 3840 x 2160 (via Texas Instruments' XPR process)

Brightness: 3000 lumens (full screen)

Contrast ratio: 30,000:1 dynamic

Picture: 10 bits, HDR and HLG supported

Inputs: 4 x HDMI (two 4K/HDCP 2.2), 1 x D-SUB15, 1 x stereo audio (3.5mm), 2 x USB (1 x USB 3.0), 1 x Ethernet, Wi-Fi, 2 x aerial

Outputs: 1 x optical digital audio, 1 x analogue line (RCA)

Audio: JBL Cinema Sound – 2 x 25mm tweeter, 2 x midrange array (2 x 10W); 1 x wireless subwoofer (1 x 6.5-inch, 60W)

Included accessories: Screen, remote control

Console dimensions (whd): 689 x 206 x 416mm

Console weight : 22.7kg

Contact: Hisense Australia

Telephone: 1800 447 367

Web: www.hisense.com.au



BIG SOUND. COMPACT SIZE.

Four years after taking the home cinema world by storm, Krix's Series MX range has now expanded with two new models - the MX-5 and MX-10 modular screen speaker systems.

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SERIES
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SOUNDBAR + SUBWOOFER + WIRELESS REARS

BOWERS & WILKINS FORMATION BAR

B&W's Formation Suite is the company's wireless multiroom platform. Here we review the Bar soundbar and Bass wireless subwoofer, used with two wireless Flex speakers for surround.

Once upon a time when you'd think of Bowers & Wilkins loudspeakers, you'd think of tradition, of leather armchairs in English clubs, of Queen and country. And of solid loudspeakers, engineered to produce fine sound.

All that's still the case with many of the company's loudspeakers, but occasionally it goes radical. It did that with the Nautilus loudspeakers. It did that with the Zeppelin. And now it's doing it again with the Formation series.

EQUIPMENT

B&W Formation is a fully networked active speaker system that works as high end stereo (particularly with the Formation Duo speakers), as a multiroom speaker system, or as a home theatre system.

Here we're looking at a home theatre configuration, consisting of the Formation Bar at the front of the room, a pair of Formation Flex speakers for surround, and a Formation Bass for subwoofer duties.

We guess the centre-point of all this is not the drivers or the amplifiers or the usual stuff, but the system of connection. All of these speakers are wireless; indeed the Formation 'Suite', as the company calls it, can be considered B&W's tilt at the wireless multiroom market — like Sonos, but classier. To that end, there is a strong emphasis on streaming and the wireless connection, which uses its own mesh network, not your home Wi-Fi.

The only unit that sports any kind of analogue input at all is the Formation Bass. The Formation Bar has an optical digital audio input, and comes with a short cable, for use with a TV. But otherwise, sound is coming via the network or via Bluetooth. All the speakers have an Ethernet connection available in addition to Wi-Fi.



Both the Formation Bar and Formation Flex speakers support Bluetooth connections, and furthermore they can handle more than the basic Bluetooth SBC codec. They can accept signals using the Apple-friendly AAC codec, and the Android-friendly (sometimes) aptX HD codec. All that's a useful convenience, but for music listening you'll probably want to go with the network. That 'robust mesh' network system lets the various components within the system work together to route the signals most reliably between themselves.

The Formation Bar features nine drivers. There are three 25mm double-dome tweeters and six 65mm bass/midrange drivers. They are grouped into three sets: each with one tweeter and two larger drivers. The set in the middle has the

tweeter between the two larger ones, while left and right have a tweeter towards the respective end of the Bar, with the two larger drivers side by side on the inner side. Each tweeter has 40W available to it, as does each pair of bass/midrange drivers.

The Bar has a flattened section towards its middle upon which it can rest, but it also comes with a sturdy wall bracket.

The Formation Flex speakers are small cylinders standing 215mm tall. Each carries a single decoupled double-dome tweeter and a 100mm bass/midrange driver. The drivers are each powered by 50W. There's no optical input on the Flex, so it's all by network or Bluetooth.

The Formation Bass is a remarkably stylish subwoofer, carrying on the cylindrical theme,

although this one's on its side. It has a driver at each end. And it's really quite small, at only 281mm on its longest dimension. The drivers are 165mm units and the total amplifier power is 250W. Again, its input is Ethernet or Wi-Fi, but it does have an RCA socket, which we assume means that it can also be used within an analogue home theatre set-up.

SET-UP

B&W has done a sterling job when it comes to setting up this system. We followed the rather slim instruction manual: download the app, plug everything in and then follow the app's instructions. We put the app on an Android phone and followed its instructions. A few seconds



after we tapped 'Let's get started', the app found all four devices. It gave us a choice: we could set up each of the four separately, or we could use the 'Home Theater' option to set up all the speakers into, well, a home theatre system.

We chose that one and continued to follow the instructions. It first connected to one of the Flex speakers and asked us for our Wi-Fi password. We entered it and the app connected the Flex to the network. Then it went through the other three. We didn't have to enter the password again.

It told us to plug the optical out of our TV into the optical input of the Formation Bar, and then to set the TV's output to optical out. Then it talked us through having the Bar learn the volume up, down and mute keys on our TV remote. We tried with our LG OLED's regular remote, but nothing happened. Then we remembered that that one uses RF. So we tried again with an IR remote we purchased to use with the TV, and it soon learned the codes.

You can set the Formation Bar to repeat IR codes to whatever's behind it, should its position be interfering with you controlling the TV.

And then the set-up was complete, so the app told us. But of course it wasn't. There was still the issue of balancing the levels of the speakers and time-aligning them. Those features are in the app settings (see right). The level feature only adjusts the Bar and Flex speakers. A different setting is used to adjust the level of the Bass, so you're going to have to rely on your own judgement for that, rather than a fixed measurement. You time-align by keying in the distances of each of the speakers, including the subwoofer.

Our initial listening was quite disappointing, because we were using the optical input and it would briefly drop out every five seconds or so. Was it our TV? We put in a CD player instead. Same thing. Was it our optical cable? We swapped it for the optical cable provided with the Bar. Same thing. Okay, with a computer when things are going strange, you perform a

reboot. A lot of modern high tech listening gear is somewhat like a computer so we found the bit of the app in which you perform a reboot. That fixed that.

PERFORMANCE

Once we'd set the unit to understand our TV's IR remote, controlling level was easy. How to select inputs wasn't obvious. In the app when we tapped on the 'Formation' — the name we'd given to the system — it often offered advice about feeding music to the system via Roon or Spotify Connect. Roon is a paid system (around \$120 per year) which gathers all your digital resources into a consistent, easily-managed, easily-used source for Roon-compatible devices, as this system is. Fine for those who have it. But we also checked out audio fed via the optical input, from Spotify and from Bluetooth.

Pairing for Bluetooth is also via the app. Our fairly expensive Android phone reported that it had connected using the aptX HD codec. That should be backwards-compatible with regular aptX. The Formation system appeared readily on

our Spotify Connect list of available speakers when we used the Spotify app.

It also appeared on our iPad as an AirPlay speaker. The Formation system supports the multiroom AirPlay 2. The system does not appear to support DLNA. We could not find a clean way of sending our music selection to the Formation system, only workarounds, such as using a DLNA-app on an iPhone connected via AirPlay. It seems that if you want a high-quality direct feed of music held on your local network you're going to have to sign up for the paid Roon service. The system does at least come with a free trial.

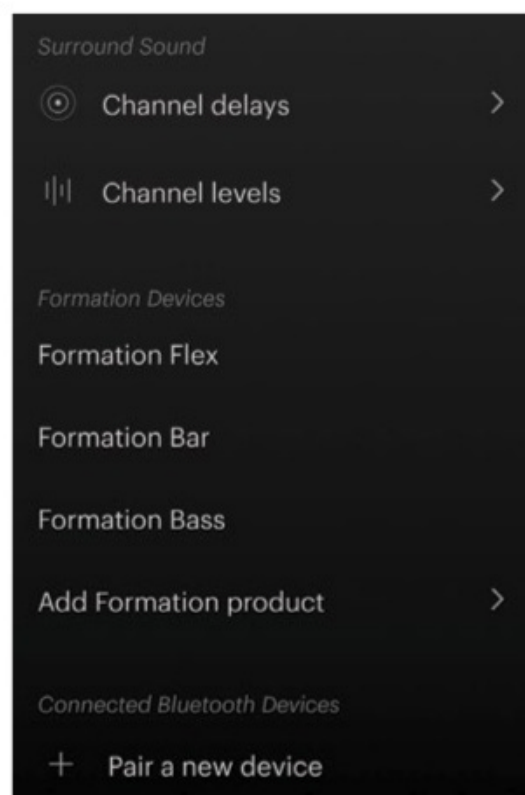
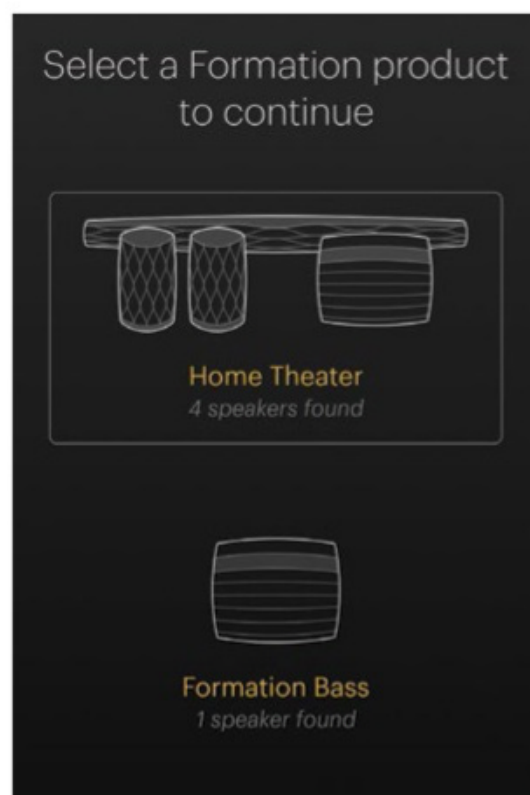
Sometimes the explanatory page mentioned above appeared in the app. Sometimes the option to select the optical input appeared. We couldn't quite work out what tipped the balance between one or the other. But tapping on bits of the app usually yielded the results we wanted. Just feeding an optical signal to the Formation Bar woke it up after a few seconds and switched it to that input.

One of the first things we checked out was surround performance. We

connected our Blu-ray player to our LG OLED TV via HDMI, and it to the Formation Bar via optical digital. We attempted to set the TV's output to Dolby Digital and the Blu-ray player's output to bitstream, but somehow the original Dolby Digital 5.1 never quite made it to the Formation Bar. Instead there was a weak stereo version. It lacked the LFE elements and of course real surround sound. Instead it played as all-channel stereo, something to which we will return.

So we went for a different connection strategy: UHD BD

HOME APP: B&W's app makes an easy job of set-up and tweaking.





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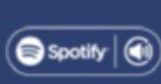
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player via HDMI to TV and via optical audio to the Formation Bar. Then we ran into a problem. Our test disc for surround sound was now delivering excellent surround and centre-channel sound, along with LFE to the subwoofer. But the left and right front channels were silent!

To cut a long story short — it involves several different players and cables and much checking of output settings — we ended up rebooting the Formation Bar. That fixed that, again.

The system is limited in home theatre contexts by the provision of only one optical input. Because of the way our otherwise very fine TV fails to pass through Dolby 5.1 unmolested, we had to choose between using the optical input with our disc spinner, and therefore not being able to use the system with broadcast TV, or using the input with the TV and having substandard movie sound.

So, with the player connected to the Formation Bar, we fed assorted material to the system. Our 5.1-channel test disc sounded excellent, with all the audio coming from the correct directions. There's a powerful 5.1 music track on that disc, and it was remarkable how 'big' the Formation made this sound.

But we soon discovered that the system seemed to be locked into a 'Five-channel stereo' mode whenever we played two-channel content. When we fed music via optical as PCM stereo, or sent Spotify music to the system, it came out using all the speakers. Which isn't great for stereo imaging. We searched the app, but could find no way to change playback mode.

But at one point we played the 'Pure Audio' Blu-ray version of Supertramp's 'Breakfast in America'. This comes with three audio options: LPCM, Dolby TrueHD and DTS Master Audio, all 24-bit, 96kHz. With the last there was no sound. We'd previously tried some DTS CDs, and all that came out was white noise. Apparently the system doesn't speak DTS.

With the LPCM we got the all-channel-stereo. But with Dolby TrueHD — the Blu-ray player would have sent the Dolby Digital embedded within the Dolby TrueHD audio — we got proper stereo. But when we went back to the LPCM track it was firmly two-channel stereo. We went back to Spotify and it was coming from all speakers with no way to bring things back to the front. We switched between the two a bit. Running Spotify kicked the system into all-channel stereo mode. Playing the Dolby Digital kicked it back into stereo mode for whatever played next. That happened with some other discs as well.

The lack of support for DTS was a limitation. We could get no sound from the main audio track on the UHD version of 'Harry Potter and the Chamber of Secrets'. Why? Because the English-language track is DTS:X and the Formation system doesn't support the core DTS that DTS:X contains. We could listen to the Dolby Digital tracks in one of several Continental languages, or

the English Audio Descriptive track. In the end, our workaround was to go into the player settings and have it turn the audio into PCM, although that then came from the front of the room only.

So, how did the B&W Formation system sound? There was no doubt that the system produced a big sound. Indeed, a giant sound. We have used many soundbar-based systems, and we don't think anything much has come close. A large part of that is due to the Formation Bass. B&W seems to have a particular talent for producing amazing bass from compact devices. It has done that yet again. This compact unit energised our listening room with enormous quantities of clean bass. Kick drums seemed occasionally a little smeared, less energetic than they might have been, but that was more than made up for by the deep, powerful energy pumped into the room.

We ran through half a dozen of our favourite surround sound test scenes in various movies, and the system delivered them all with great authority and superb surround accuracy. Clearly B&W has got the timing perfect, despite the signal being carried via Wi-Fi to most of the speakers.

CONCLUSION

We imagine that B&W will sort out over time such things as the unpredictable stereo/all-channel stereo playback. We'd like to see the app include controls to choose the surround mode. Dolby Surround processing would be welcome.

Likewise, we'd rather not have to rely on a paid service like Roon to feed the terabyte of music stored on our network server to the system, so DLNA compatibility would be welcome. As would at least basic DTS processing.

But the Bowers & Wilkins Formation system has some extraordinary strong points, starting with first-class sound quality. Getting the signals to the speakers wirelessly and in seemingly perfect synchronisation is not an easy thing to do, yet B&W has done it. ■



Bowers & Wilkins Formation Bar, Formation Bass, Formation Flex surround system

- Excellent sound
- Easy and reliable set-up
- Very stylish

- Only one optical input
- No DTS
- Unpredictable playback mode for stereo

Package price: \$5196

Tested with firmware: 1.6.1

FORMATION BAR

Price: \$1999

Drivers: 3 x 25mm double dome tweeters, 6 x 65mm woven glass fibre bass/midrange

Quoted frequency response: 40-28,000Hz

Amplifier power: 6 x 40W

Inputs: Optical digital audio, Ethernet, Wi-Fi, Bluetooth

Dimensions (hwd): 109 x 1240 x 107mm

Weight (each): 5.5kg

FORMATION FLEX x 2

Price: \$749 (each)

Drivers: 1 x 25mm decoupled double-dome tweeter, 1 x 100mm woven glass-fibre bass/midrange

Quoted frequency response: 50-28,000Hz

Amplifier power: 2 x 50W

Inputs: Ethernet, Wi-Fi, Bluetooth

Dimensions (hwd): 215 x 130 x 130mm

Weight (each): 2.3kg

FORMATION BASS

Price: \$1699

Drivers: 2 x 165mm long throw bass

Quoted frequency response: 20-150Hz

Amplifier power: 250W

Inputs: Ethernet, Wi-Fi

Dimensions (hwd): 254 x 281 x 260mm

Weight (each): 12.5kg

CONTACT: Bowers & Wilkins Australia

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MODULAR SPEAKER SYSTEM

KRIX MX-5

Krix's modular front array brings the concepts used in real cinemas home, to go behind or below a home cinema screen. The results are formidable with movies, and surprisingly musical.

Krix is well-known to Australian music lovers for the many fine loudspeakers for the home it has produced over its 45 years. And many would know that only a few years after opening, Krix started making loudspeakers for cinemas. It still does both. Clearly the Krix MX-5 modular speaker system is aimed at the home — 'For small to mid-size rooms' says Krix — but in many ways it is a merging of those two lines of speakers into something quite special.

EQUIPMENT

How to approach this unusual system? First, let's take a bird's eye view.

The MX-5 isn't a full surround system. It's the front half. It consists of a left front speaker, a centre front speaker, a right front speaker and two subwoofers. Krix, of course, has many other excellent speakers to install in your ceiling and mount behind you and to the sides for surround sound. But the aim of the MX-5 is to handle the front of the room for a home theatre installation with a projection screen.

The projection screen can be one of those acoustically 'transparent' ones or not. If the former, the speakers can be installed behind it. If not, then they can be immediately below it.

Many characteristics of this system fly in the face of how home theatre is conventionally done in 2019. First, the shape. Most speakers these days are deeper than they are wide. The general idea is to reduce diffraction effects from a large baffle. Not here: all five units, including the subwoofers, are only 190mm deep. All are 700mm tall. The

front, centre and left speakers are each 315mm wide, while the subwoofers are each 540mm wide.

And speaking of a large baffle, the five units are intended to line up, with a sub between left and centre and another sub between centre and right. It is a literal wall of sound.

Since narrow baffles on most speakers limit the sizes of drivers, cone area for woofers is increased in modern speaker design by using multiple smaller drivers. Not here. The main speakers of this system have just one woofer, a good old-fashioned 8-inch (203mm) one. Well, a good old-fashioned 8-inch driver with a large 38mm voice coil on an aluminium former, a ventilated magnet assembly and a copper shorting ring. (That last arrests over-excursion relatively gently.)

And then there is the tweeter. The 26mm doped-fabric dome unit is ferro-fluid cooled and mounted in the middle of a moderately deep (about 70mm) horn, which is called a 'Krix designed 90°×40° short-throw waveguide'. The problem with the word 'waveguide' is that it is often refers to fin arrangements over the front of a tweeter. The problem with the word 'horn' is that it has a bad reputation, primarily from crappy PA horns. A well-designed horn/waveguide controls directivity in sound and increases sensitivity. There's a tremendous mismatch between the acoustic impedance of air and drivers.

'Compression drivers' — which are horn-loaded — reduce that mismatch, increasing the power transfer efficiency. These speakers are rated at 92dB sensitivity (2.83V/1m), which doubles the effective power of connected amplifiers compared to the more common 89dB sensitivity.

The cabinets are bass-reflex loaded with a forwards-firing port. The speakers stand on rubber feet that hold them 40mm above the floor.

All the speakers, including the subs, use gold-plated spring-loaded terminals (see image). But these are good ones; the holes are large — banana plugs go right into the holes. You can use very thick cables indeed should you wish.

Um, speaker terminals on the subs? Yes, in another divergence from the norm, the two subwoofers are passive. You will need to supply two additional channels of amplification. Neither do they have any kind of low-pass filter beyond that inherent in the drivers.

Each is fitted with a 275mm forwards-facing driver. These have 50mm voice coils on Kapton formers and vented magnet assemblies. No horns here, but still a rated sensitivity of 90dB for these four-ohm units. Krix recommends amplifiers rated from 200-400W, so budget for those two additional amplifier channels. These also are bass reflex loaded, but the ports fire downwards into the space provided by the legs.

All the cabinets are finished in a lightly stippled black vinyl





AUDIO-VISUAL

finish, except for the front panel, as each unit is covered with a centimetre-thick of acoustically absorbent material, with cut-outs for the drivers and, in the case of the subwoofer, the word Krix.

INSTALLATION

It was almost as though Krix had snuck into our listening room and measured up — the speakers were the perfect height for the projection screen, and only a few centimetres wider than it.

To power them we used a Marantz SR6014 AV receiver for the front LCR speakers, and a couple of Marantz monoblock amps for the subs. The receiver is rated at 110W per channel into eight ohms. The monoblocks are rated at 400W into the four ohms of the subs. There was no shortage of power.

The Audyssey MultEQ XT32 calibration system in the receiver time aligns the two subs, and sets their levels, separately. Then it EQs the pair of them as one. We had the system set up as 5.2.4, with our own surround and ceiling speakers engaged.

We did all listening with the calibration in operation. It would be silly not to take advantage of it and Krix would have designed this system in anticipation of that mode of operation.

PERFORMANCE

This system is designed for home theatre but, hey, why not try some music? Starting firmly in the 21st century, a current favourite is Kanye West's 2010 album 'My Beautiful Dark Twisted Fantasy'. With the system set to 'Stereo' (not 'Direct', because we wanted the subwoofers in play), the music played from left and right plus the two subs.

The speakers simply loped along comfortably as we advanced the volume to a barely tolerable high level. We later measured the output and found that it was peaking up around 105 decibels, and averaging not much below 100dB. Yet the speakers were entirely comfortable with the level. One of the lesser-known advantages of higher acoustic efficiency is that cone excursion is reduced. Distortion tends to be a function of cone excursion, so distortion is lower.

A couple of tracks on this album play around heavily with phasing effects. So even though we were listening in stereo, at times elements of the music were plastered up on the ceiling, or above and behind my head.

Moving to the relentlessly acoustic 'Once I Was an Eagle' by Laura Marling, there was an unusual 'live' feel to the sound, as though she was standing there with her mixing panel plugged into the system driving the Krix MX-5 system, rather than the sound coming through various digital incarnations. This, we suspect, was the result of a complete lack of dynamic compression.

Before going to movies — what the Krix MX-5 system is really designed for — we have to report a physical assault. It was the subwoofers. We played the Overture of 'Dagger Society' Suite from the



AWARD-WINNING PERFORMANCE: The MX-5's trouser-flapping movies and sensitive music won it Speaker Installation Product of the Year 2020.



'Hugo' Audiophile CD, a disc picked up maybe 20 years ago. The music is not to my taste, but this track employs a massive bass drum that is recorded without limits. It was the seemingly uncompressed power of this that assaulted me. Cleanly. Powerfully. We were watching the subwoofer cones carefully, and while there was movement, it was modest. They push a lot of air for low excursion.

Okay, enough of that. How about movies. Well, the obvious thing to play is a DTS CD from Telarc. The 5.1 DTS Surround Sampler includes an Apollo 13 mission. The real thing.

And Telarc really didn't mind including a bunch of infrasonic content on its discs. Playing this track at -7dB on the Marantz, which is way louder than we normally have it for watching movies, the cones of the subwoofers flung themselves to and fro with wild abandon. It was something to behold, and something to worry about a little. The intense power of the bass was pummelling. It felt that the drivers were nearing the limits of their excursion.

A later track on the same disc is called *Jurassic Lunch*, and it involves approaching dinosaur footsteps, delivered first in the infrasonic frequencies only, as befits a distant thing. Again, the cones vibrated visibly and furiously. And there was a distinct sound of the cone stops being reached, whereupon they instantly stopped moving entirely. For a few seconds. And then they resumed. It seems that there is some over-excursion protection.

That's one thing with passive subwoofers. Active ones typically include various measures to tailor the signal. A passive subwoofer can't. All it can do is switch itself off if things get too rough.

Now, let's be clear. That was an utter torture test. In several high-octane action movies, most with plenty of bass, there was no sense of limitation, even when we played the opening six minutes of 'Titan A.E' at the same ridiculously high level, which contains chunks of bass down to 13Hz. The subwoofer drivers were clearly well-exercised, but nothing approaching their limits. Note, this was

after the Telarc torture. The speakers and subs were none the worse for wear.

This movie is a surround sound treat. And that bass recurs, albeit at lower intensity, throughout the movie. At a cinema-like level, playback on this on other movies was flawless. Powerful and thrilling.

CONCLUSION

The Krix MX-5 modular speaker system is for those serious about home theatre installation. The only puzzling thing is that Krix considers this system to be best 'for small to mid-size rooms', specifying rooms of 15m² to 25m² with a minimum screen of 92-inch 16:9 ratio or 90-inch 21:9. Of course, it has the MX-10, MX-20 and MX-30 systems for larger rooms. And besides, perhaps when you're used to fitting out actual commercial cinemas, a good-sized home theatre room seems small. ■

Krix MX-5

- Extremely high levels available
- Low distortion performance
- Suited to dedicated home theatre rooms

Price: \$7995

LCR SPECIFICATIONS (three in package)

Drivers: 1 x 26mm dome tweeter, 1 x 205mm woofer

Frequency range: 40-20,000Hz (in-room)

Nominal impedance: 8 ohms

Sensitivity: 92dB (2.83V/1m)

Cabinet: Bass reflex (front port)

Dimensions (hwd): 700 x 315 x 190mm

SUBWOOFER SPECIFICATIONS (two)

Drivers: 1 x 275mm woofer

Frequency range: 30-200Hz (in-room)

Nominal impedance: 4 ohms

Sensitivity: 90dB (2.83V/1m)

Cabinet: Bass reflex (downwards firing port)

Dimensions (hwd): 700 x 540 x 190mm

Distributor: Krix

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TV & AV

SOUNDBAR + SUBWOOFER

YAMAHA YAS-209

A stereo soundbar plus wireless subwoofer, with Alexa voice control built in, Yamaha's YAS-209 delivers a powerful TV and movie performance at an impressive price.

“Crazy Phil Spector was being interviewed (looking terrifyingly nuts), then the drum entry on *Wah-Wah* came in — and how huge a presentation the YAS-209 delivered...”

We had a moment during the unboxing of Yamaha's YAS-209, turning the soundbar around between our hands, feeling its weight, seeing how the blue-black fabric wraps right around to meet the sturdy base at the back, leaving a top lozenge of surface, lightly textured and studded with nine indicator lights at the front, next to touch icons. We liked it immediately, and even more so when we placed it in front of our TV and found it so very low, 62mm, that we could actually use our TV remote without having to aim it down from a raised position, arm up like a Roman emperor thumbs-downing his displeasure towards the TV's half-hidden IR sensor. Here we had clearance. A good start.

We had a different sort of moment, though, when we examined the Quick Start Guide for the YAS-209 (yes, we do read the instructions), and saw the YAS-209 declared to be a “Front Surround System”. Sounds tautological, doesn't it? And it is. Front systems that try to be surround systems so often become a cropper that such claims generate a noticeable chill in the listening room, and a silence into which such a Front Surround System is invited to ‘prove it’.

EQUIPMENT

The YAS-209 hopes to prove it with that nicely-wrapped 92cm-long soundbar, together with its associated wireless subwoofer, the ‘NS’ prefix of its item number indicating that the sub at least is aiming for Natural Sound.

Lest you are wondering, Yamaha's MusicCast platform is not here onboard the YAS-209, although there is the Sound+Image award-winning MusicCast Bar 400 bar for \$200 more, which does include that wireless multiroom streaming platform and AirPlay 2 as well, so adding a lot of useful music sources to that soundbar.

But instead the YAS-209 has Alexa built in, and it has a smartphone control app, and it has Bluetooth so you can send music to it from your phone, tablet or laptop. So there's no shortage of ways to play to this unit.

You could make do with one HDMI cable between the soundbar and your TV, not sending any video but for the TV to send sound the other way, to the bar via HDMI's Audio Return Channel. To do this your TV will need to have at least one spare HDMI socket marked ARC. If not, you can connect the supplied optical cable from TV





The Yamaha bar was low enough not to interfere with our TV's IR sensor, and feels impressively well-built for a \$599 soundbar and subwoofer solution.

to bar. There's no analogue audio input here, so this is not a soundbar to buy if you have a TV without ARC or optical output.

So with one of those connections letting you play sound from your TV, you can also plug a source of choice into the bar's single 4K-compatible HDMI input. The best choice of source would be one delivering multichannel digital sound with which to attempt its Front surround, so perhaps a Blu-ray disc player or a media player like an AppleTV.

The subwoofer is precisely the same unit that comes with that more expensive MusicCast Bar 400, and it is 42cm high, 19cm wide, 40cm deep, though the depth and width may switch depending on how you position the subwoofer. It has grilles on the front and side, but no controls at all, so all it needs is power to wirelessly link with the bar (this Quick Start section is titled "Tuning on the bar", but there's no code-breaking here).

We gave the bar an Ethernet connection to our network, and plugged in the power cables to both soundbar and subwoofer. Ready to go.

PERFORMANCE

We had our Blu-ray player connected to the soundbar, and it played through perfectly to the TV, but initially without audio; we found we also had to select 'HDMI' on the remote control to hear the audio — even though we could see the video already. But there weren't the problems we experienced recently with another soundbar which lacked any indicators to confirm which input you were selecting; the Yamaha's dedicated keys on the remote control get over that. The indicators on the bar itself are a little less useful, being on the top of the bar so not very visible from the couch; we were never quite sure even when it was on or off because 'off' keeps the left-most LED illuminated white, while 'on' keeps one of the adjacent LEDs illuminated white. A red LED for off might be a more communicative choice.

This is also an issue when selecting the various options such as 'Clear Voice', '3D Surround' and the various sound modes. You can press the remote buttons, but unless you learn that, for example, a blue light means 3D surround while a white light

means merely surround (and you have to stand up to check them), it's hard to know what's engaged. We'd recommend using Yamaha's Sound Bar Controller app for this; the 'sound settings' section is much clearer in showing what's on or off, and which program is current.

The app is a definite bonus, and you'll need it to get Alexa working. Indeed the Quickstart guide's introduction lists four features of note, but in the wrong order. First — 'play surround sound' (we'll get to that). Second is 'Ask Alexa to control the unit' — but you can't do that until you've linked your Alexa account, which involves implementing feature number three: 'Easy operation with the smartphone app'. Yamaha's Sound Bar Controller app found the bar quickly, allowed us to connect our Alexa account, and it also advised us of a firmware update, which we dutifully installed. It is also the path to linking rather more, as you can tap through to Spotify and to a DLNA section that can be used to stream music from network drives and tunes stored on your device — and these will travel by Wi-Fi or Ethernet, potentially better than Bluetooth via the network.

Our first indication of the YAS-209's sonic abilities came when we were warming up the HDMI socket with Scorsese's George Harrison doco on Blu-ray, and crazy Phil Spector was being interviewed (looking quite terrifyingly nuts), then the drum entry on *Wah-Wah* came in — and how huge a presentation the YAS-209 delivered. We'd been tweaking back the bass earlier on day-time television so it wasn't a high level of subwoofer bloat — quite the opposite, as the sub was set down at three out of ten (judging from the our interpretation of the LED indicators). It was the actual slam that impressed us, a quality which indicates speed and air movement, two attributes unusual in a discussion of a soundbar at this price. But it must be admitted that the best soundbars today are leagues ahead of the earliest and the worst at such prices, and of course it's not a surprise for Yamaha to be among the more able, since they have remained at the forefront since the beginning of this wildly successful market segment.

We tried Alexa — 'Alexa turn it up', which ducks the volume level while it listens, then makes a chime, and then raises the volume.

If this is your first voice assistant, or if you have Alexa in other rooms, this can open up not only soundbar control but access to the whole world





of Alexa abilities. If, of course, you already have another Alexa device in the room, or a Google Assistant device, it may actually be a negative to bring another one home in your soundbar. But if it gets in the way, or someone in your family has privacy concerns, you can turn the Yamaha's mike off using a button on the bar itself.

We found it a bit annoying that Alexa volume control cuts out a bit of dialogue, or indeed music, so we favoured the supplied physical remote control instead. This has separate controls for main volume and subwoofer volume, something we find very useful for tweaking bass to match different content. It also offers dedicated buttons for each input — HDMI, TV (ARC), Bluetooth and Net, a toggle to kick in additional bass extension, and an 'info' key which didn't seem to do anything except change the lights on the bar. From the sound programs we stuck largely with stereo, though 'Music' seemed to add some relatively non-destructive width and substance (it seems to add actual reverb, because if you pause it you can hear the sound hang and tail off; the sports setting also does this), and indeed the variation between any of them seemed relatively low and benign, so we wouldn't warn you off any of them; just play with them and use what you like.

The 3D Surround button, which uses DTS Virtual:X and claims to "make it possible to hear sounds not only from horizontal directions but also from varying heights", added a bit of fizz to everything — the cicadas in *Once Upon A Time in the West* went crazy under its influence, while speech went sibilant, music went thin and phasey. Useful expansion of sound heard we none. But heavens how the gun shots in that film cracked loud and alarming, with no Virtual:X required.

We kept invoking 3D Surround during other content, but never to advantage, except on one Dolby test loop, the famous leaf demo, where a little extra width seemed imparted to the background atmosphere. (These demo tracks also showed the subwoofer capable of some impressive depth at the price.) Surround, no. Height, no.

The stereo mode actually locks off 3D Surround as an option, and also delivers the clearest sound. It's a good sound for movies, TV, and for music in some cases, assisted by that easy ability to adjust the subwoofer. We kept the soundbar in place for general use for three weeks with no complaints from other users in either sound quality or ease of use. We played plenty of music through it, both

under request from Alexa on Spotify (though Alexa first tried to sell us a trial subscription to Amazon Music), from Bluetooth, and across the network from a NAS drive, from which it proved happy playing the likes of 24-bit/192kHz FLAC files (a 352kHz file played at half speed, so 192kHz seems its limit). Such direct music playback seemed a little less rich and dynamic than had music videos: a little boxy, vocals slightly pinched and edgy — we were always checking, of course, that we didn't have some unwanted sound option engaged, though the bass extension button assisted in filling out the sound for its most enjoyable delivery, using either the stereo or music sound program. (Don't hit the 3D surround button with music, whatever you do!)



Its TV and movie performance, however, was well over the odds for the price. It was full, dynamic and atmospheric by turns throughout *Indiana Jones and The Kingdom of The Crystal Skull*, able to go loud too, delivering a massive thrum to La Beouf's motorcycle as it whizzes around Marshall College. During the umpteenth viewing of *A Star Is Born* on UHD Blu-ray, cranked high (Alexa couldn't hear us), the clarity of Jack's full-on rock numbers, the opening *Black Eyes* for example, was significantly compressed dynamically, whereas the more open songs such as *Shallow* were pleasingly presented, if lacking finer details such as the resonance of Ally's footsteps on the stage as she walks out to sing her verse. For the money, it's impressive. Of course you could pay more to get more

CONCLUSION

So don't make too much of the 'Surround' in that description of the YAS-209 as a 'Front Surround System'. We prefer how it's described in the online specs, as a Digital Sound Projector. It's a strong and powerful performer at this price in delivering excellent TV and movie sound, plus it looks good, and it has Alexa to bring it into the new age of voice assistance and music requests. ■

Yamaha YAS-209 soundbar

- Great TV and movie performance at the price
- Alexa on board, and a wireless subwoofer
- Not entirely musical
- Certainly doesn't achieve 'surround'

Price: \$599

SOUNDBAR
Inputs: 1 x HDMI, 1 x optical digital, Wi-Fi, Ethernet, Bluetooth (SBC, AAC)
Output: 1 x HDMI ARC
Drivers: 2 x 25mm tweeters; 4 x 46mm midrange
Quoted power: 2 x 50W (no criteria quoted)
Dimensions (whd): 930 x 62 x 109mm
Weight: 2.7kg

SUBWOOFER
Driver: 1 x 16cm bass
Quoted power: 100W
Dimensions: 191 x 420 x 406mm
Weight: 7.9kg

Contact: Yamaha Music Australia
Telephone: 1300 739 411
Web: au.yamaha.com



SMART SPEAKERS

JBL LINK PORTABLE & MUSIC



Two smart JBL speakers — both have Google Assistant built in, both stream via Wi-Fi, AirPlay and Bluetooth. One is portable, one is permanently plugged in. So which is the one for you?

Regular readers will have seen us reviewing a chain of JBL Link units since this range of voice-controlled speakers first arrived — indeed several have won Sound+Image awards for their combination of sound quality and value at the price. The Link range has included sizeable table-top speakers, and the screen-equipped Link View, but perhaps the most successful have been the Link 10 and Link 20, smaller speakers which take the successful formula of JBL's Flip Bluetooth speaker (an extraordinary 20 million of those sold to date) and add Wi-Fi, enabling Google Assistant and Chromecast inside, in addition to Bluetooth. Further still, they are waterproofed to IPX7, which means immersion (in fresh water) to a metre depth for up to 30 minutes.

This is the area on which JBL has focused for its new Link models — one mains-powered, the other portable and waterproofed. The two new models also gain the additional streaming platform of Apple's AirPlay 2, making them even more versatile for iPhone and iPad users.

EQUIPMENT

The new Link Music is the shorter fatter unit pictured above left, and is the mains-powered unit, permanently plugged into power. We calculate the physical volume to be a third greater than that of the taller thinner Portable, so that if you don't need the portability and waterproofing, the lower \$169.95 price of the Link Music might make it a bargain. It has the same Google Assistant, Wi-Fi, Chromecast, AirPlay 2 and Bluetooth.

The Link Portable is the taller unit which sits on a charging tray and so is always ready to be picked up and taken wherever required. It is the size of the old Link 10 "but now has the sound of the larger Link 20!", we were told by the demonstrator when the new unit was presented at IFA in Berlin last year, its improved performance credited to an upgraded driver and other improvements.

Its portability is also made easier by sitting it on a charging platform, whereas with the old portable models you had to yank the power cable out. Although seemingly a small bonus, we reckon this to be a great improvement in practical use as

it encourages you to put the Link Portable back on its perch — without which it will power itself down. And there's nothing more useless than a Google speaker which is powered down. With the old models that tended to happen a lot — or alternatively they'd be left permanently cabled in and their portability under-utilised.

The Link Portable has another bonus — like the older Link 10 and Link 20 the Link Portable is IPX7 waterproofed (for fresh water), and promises around eight hours of battery life, depending on the level of playback. The battery bonus makes the Portable the more expensive model, at \$229.95. The Link Music is not waterproofed, for hopefully obvious reasons (it's plugged into the mains).

Both models are available in multiple colours in some markets, but we believe only in black so far here in Australia.

It's an irony that such cutting-edge technology is delivered in mono speakers, with the Link Music having a single 64mm driver, which cutaway images show to be downfiring and assisted by a pair of passive racetrack-shaped radiators on either side. (We've yet to see any mono wireless speaker actually advertised as being mono — JBL, for example, refers to the speaker arrangement as "JBL 360-Degree Pro Sound", which certainly sounds more exciting.)

The Portable has a smaller 49mm driver, and its frequency response is quoted not quite

as deeply, down to 65Hz (no envelope stated) compared with 60Hz for the Link Music.

PERFORMANCE

We set both up side by side using the Google Home app. Those intending to use only Apple AirPlay 2 could choose to set them up that way, and iOS AirPlay set-up is just about the easiest way to get a new product networked. But if you're wanting Google Assistant voice control, which is half the point of the Link series, then the Google Home app is the way to go.

The different options explain why we were told at IFA in Berlin that while the 'Link' prefix used to indicate Google Assistant specifically, this is now being downplayed to emphasise the Wi-Fi connection rather than the specific platform.

The Google Home app spun its coloured shapes and connected both units to Wi-Fi quickly enough, whereupon they became available both to Cast-enabled apps and to our iPhone and iPad as AirPlay 2 devices. Since AirPlay 2 differs from the original AirPlay in allowing multiple units to be addressed from an iOS device (original AirPlay could do it from a Mac), we were able to stream to both simultaneously — although not quite simultaneously, as it turned out, with the Link Music being significantly ahead of the Link Portable. We carried the Portable 30 metres away, the limit of our Wi-Fi, and it was still behind, so with sound travelling at 300 metres per second, we can safely say the delay was more than a tenth of a second, and unlistenable. Later, however, precisely the same arrangement had them firing almost perfectly in sync. For which unpredictability we can most likely blame AirPlay 2, not JBL.

It was equally apparent that the two speakers sound very different, and that despite it being cheaper, the JBL Link Music sounds significantly better. This is no surprise, as it has a larger driver, a greater physical volume, and possibly significant-

ly more power given that it has permanent access to the mains, while the Portable will have been designed to maximise its battery life by pulling less. We can also confirm that the Music sounds far better — cleaner, less processed — than either the JBL Link 10 or even the larger Link 20 which sounds positively muffled in comparison. Even the Portable outperformed the Link 20, sounding less boxy and more enjoyable. So JBL really does seem to have advanced its sonics significantly in the new generation.

Some specific comparisons: the bass line from The Chats' *Smoko* pounded out of the Link Music with an impressive size; from the Link Portable it still had size but sounded woolly and soft in comparison. The same effect was evident on Leonard Cohen's vocal on *Going Home* — full and clear on the Link Music, while still full but woollier on the Link Portable.

The Link Portable did better with female vocals; kd lang's vocal was rich and clear on *After The Gold Rush*, whereas some of the richness was thinned by the Link Music, though we still preferred its clarity and ability to go somewhat louder without any hint of stress.

But while such comparisons clearly favour the Link Music, this doesn't dismiss the Link Portable. It's still a good-sounding wireless speaker, as is evident from it outperforming the Link 20. It clearly has the advantages of both portability and waterproofing over the mains-powered Link Music. Your choice will be down to your desire for these facilities, and whether you're happy to

“The JBL Link Music sounds significantly better... but the Link Portable has the advantages of both portability and waterproofing over the mains-powered Link Music. Only you can decide that one!”

pay the extra 50 dollars for them, even though the sound isn't as good. Only you can decide that one!

Each displayed a glitch: the Link Portable got stuck with its volume down, as if 'ducked' while waiting for a Google command. Only a complete reset and connection would fix it. The Link Music twice started crackling on AirPlay, which a reconnection fixed. We also timed their Google Assistant responses against each other and against a Google Home; there was no clear winner, with most answers arriving after two seconds. Siri worked great on AirPlay with either, though of course our iPhone was doing the work there.

CONCLUSION

We can recommend both units, but we can't choose between them for you. Do you take the superior sound but stationary situation of the JBL Link Music, thereby saving yourself \$50? Or take the still enjoyable-sounding and rather more mobile JBL Link Portable to enable on-the-go streaming? You know, we may have an answer to this quandary. Get one of each. ■

JBL Link Music/Portable

- Link Music delivers great sound for the size
- Link Portable goes anywhere
- Google Assistant built-in

- You'll have to choose!
- Both designs are mono

SHARED SPECS

Wireless streaming: Wi-Fi, Chromecast built-in, AirPlay 2 and Bluetooth Wireless network: dual-band 802.11b/g/n/ac

Supported audio formats: HE-AAC, LC-AAC, MP3, Vorbis, WAV (LPCM), FLAC, Opus

LINK MUSIC

Price: \$179.95

Driver: 1 x 64mm

Quoted power: 1 x 20W

Quoted frequency response: 60Hz–20kHz

Dimensions (Dia x H): 112 x 134mm

Weight: 730g

LINK PORTABLE

Price: \$229.95

Transducer: 1 x 49mm

Quoted power: 1 x 20W

Quoted frequency response: 65Hz–20kHz

Battery type: Lithium-ion Polymer 3.6V, 4800mAh

Music play time: up to 8 hours

Dimensions (Dia x H): 88 x 170mm

Weight: 735g

Contact: Harman Australia

Telephone: 02 9151 0376

Web: www.jbl.com.au





INTEGRATED AMPLIFIER + NETWORK PLAYER

NAIM NAIT XS 3 + NDX 2

This is serious hi-fi – and yet also some of the best fun you can have with the music you love. The combination of Naim’s network streamer and integrated amp just bowled us over with its sound.

You know it when you hear it — PRaT, as high-end audio reviewers call it, or Pace, Rhythm and Timing, attributes that you might think are inherent in the music, rather than the equipment through which it is played. But then you hear it. Freshly plugged up, the Naim XS 3 was used for work before play, before run-in even, to assess and reduce a list of songs with the word ‘Like’ in the title (long story). And while it often takes some time to appreciate a new amplifier in our system, Naim’s XS 3 slotted in and made us feel right at home, punching out hits from its first delivery. An early surprise from our ‘Like’ list was Nirvana’s *Smells Like Teen Spirit*; indeed we were about to hit skip when Grohl’s drum entry pummelled our stomach with palpable dynamic energy, each attack a fresh slap, and the kick drum in-the-room present throughout the song. It was an unprecedented performance of this jaded classic, delivered from a 2011 remaster, so it had resolution to back up the source quality, but still, it was the Naim giving it life, giving it free rein to ride through the music room sounding so powerfully real, even when we were lying on the floor (along long story, back-related).

EQUIPMENT

So this is Naim’s mid-range integrated amplifier, or NAIT (Naim Audio Integrated) as they call them, and it launched simultaneous with the

higher-level SuperNAIT 3, the company’s top level of integrated amplifier, priced at \$7800. The XS 3, at \$5100, is a replacement for the XS 2, and you might be hard-pressed to tell the new from the old were there not one new input button on the XS 3, which is a phono input. It’s not a surprise inclusion given the rise of the vinyl revival, though Naim has previously gone on record as deliberately avoiding a built-in phono stage because this delicate signal is best kept away from the large power transformer of the main amplifier, and also, though less obviously, because a phono input might affect the performance of the line inputs.

Yet these are relatively modern objections — Naim’s first ever NAIT in 1983 had a phono stage, as did ongoing NAITs for the next 20 years until it disappeared on the NAIT 5i in 2003. Perhaps not coincidentally, the 5i was the first NAIT to be voiced by the company’s current Technical Director of Electronics, Steve Sells.

Now the phono stage is back, with the commercial imperative of the vinyl revival forcing Naim’s engineers to overcome the perils of building in a moving-magnet input which, because of the tiny signals involved in vinyl replay, is 1000 times more sensitive to interference than the line inputs alongside. The new phono circuit is a three-stage design, with passive EQ after an initial gain stage, followed by a second gain stage with active EQ, this achieving both

lower noise and extended RIAA equalisation. All the capacitors used in this EQ are through-hole mounted film capacitors noted for their transient performance and low microphonic pick-up. The input impedance is 47kΩ in parallel with 470F capacitive loading, suitable for moving magnet cartridges; those using moving coils would require the use of a separate phono stage such as Naim’s SuperLine or StageLine.

In addition to the phono input with its earthing post there are four line-level inputs, with their front-panel selectors labelled ‘CD’, ‘Tuner’, ‘Stream’ and ‘AV’. The RCA plugs for these on the back are joined by an additional set of DIN sockets, indeed these add an additional auxiliary input option. Naim has long championed the multipin DIN connector in several varieties for both power and signal connections, considering it sonically superior to RCA phono plugs and cables, primarily because the impedance of the DIN connectors match the likely impedance of its cables, whereas Naim points out that an RCA plug has a high-frequency capacitive impedance of around 200 ohms, but is typically used with cables of impedance around 50 ohms. *“In this situation”, says Naim, “the two RCA connectors on either end of the cable act as reflective walls at higher frequencies and bounce information back and forth, trapping the signal and extending the decay time of the signal that is trying to pass from one component to the other. These reflections have an effect on musical information and are especially harmful to low-level signals.”* Naim has a long memory, and sticks with its beliefs.

These DINs can be used for connections to other Naim gear, obviously, but they also provide fixed and variable line outputs, can supply power to an external phono amplifier, and allow an easy upgrade to the XS 3. Naim has always been keen on upgrade paths, and here you can



add an external power supply, upgrade the power cable, even go the whole hog and add additional power amps in days to come, should funds and desire coincide.

Switching between inputs can be achieved by selection from the separate front-panel input controls, or using the physical remote control, or the app. The physical switching process itself uses reed relays rather than a physical selector; these are magnetically triggered with their connectors sealed in a vacuum so that they are considered to have, effectively, no moving parts to become subject to mechanical wear.

While we're mentioning such choice componentry, the volume control used is the highly regarded Blue Velvet potentiometer from Japan's Alps component company, reassuringly specified for 15,000 trouble-free turns.

PERFORMANCE

The power end of the amp is similarly well-developed, Naim claiming it has doubled the speed of its voltage gain stage, so doubling the rate at which the speaker output stage can react. The second gain stage has been redesigned to do away with a stabilisation transistor, again increasing speed. But that's just the tweaks — at its heart the XS 3 has all the wisdom in amplification that Naim has amassed since its founder Julian Vereker set out to convince the world that some amplifiers

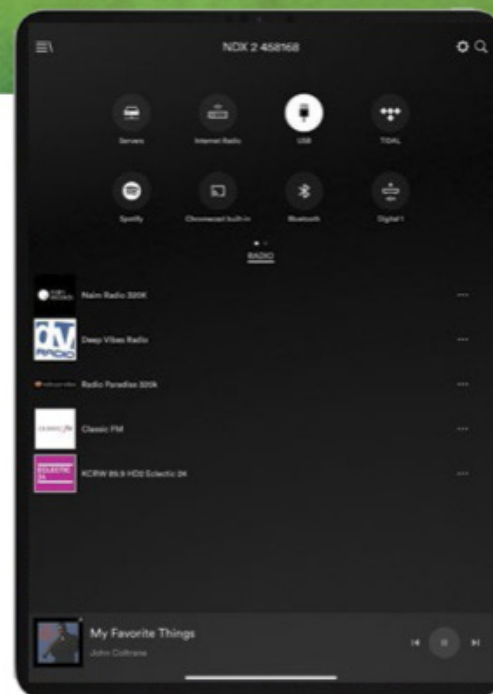
might actually be better than others, back in 1973.

So we started with some 1973 tunes. From computer through our usual Musical Fidelity DAC we played *I Know What I Like*, recorded at the Rainbow Theatre in 1973

by Genesis, a good desk recording but absolutely spot-lit into sonic reality by the Naim's delivery through resident JBL Studio Monitors; drums were slamming and huge.

We also made use of the new phono stage, playing vinyl both old and new, including the much-maligned new Jeff Lynne's ELO album, which we are much warming to after repeated listens via the Naim. It revealed the album's excessive dynamic compression in production, but still let the new songs shine through.

So far so very enjoyable. But using the Nait XS 3 with non-Naim sources proved to be just a tasting plate of the available feast to come. Things truly came into their own when we paired it with Naim's NDX 2 network player.



NAIM NDX 2 NETWORK PLAYER

Naim is a company that has maintained its core values while reinventing itself as hi-fi has changed through the decades. Once a maverick analogue amplifier company, Naim was quick to spot not only the trend of streaming but its potential advantages over disc-based replay. When digital music was all about downloading files, Naim was perfecting hard-drive storage and the art of digital signal handling. Now so many people simply stream from

online music services, they've created some of the planet's highly-quality streamers. Top of the heap is the ND 555, \$40k's worth of streamer, heavier than most amplifiers, and with a separate offboard power supply. Here at \$9750 we have the new NDX 2, termed a network player, but also handling a range of digital inputs.

It's a heavy unit for a source at 10kg, partly because of Naim's attention to high quality power, installing a low-noise power supply with a custom-designed toroidal transformer and separate windings for the digital and analogue sections. Naim again here uses power quality as an upgrade path, and here there's a massive multipin Burndy connector on the back into which you can plug an external XPS DR or 555 PS DR power supply.





Outputs are available as digital BNC, or in analogue via standard RCA sockets or on Naim's 5-pin DIN preference.



We used merely the humble supplied kettle lead (a nice one, though, as Naim's power cables are not only high quality but have sockets on top so you can gang up the plugs if you're short of sockets). So it was disconcerting that once plugged up and powered, no lights illuminated on the NDX 2 other than the green power button, which was flashing four times, pause, four more times... We couldn't find this among the online support site's error codes, but we gave it a good Paddington stare and consulted the quick start guide, finding it was our fault for not plugging that massive multipin Burndy socket on the rear with its supplied end-stop; without this, the power socket is not fully enabled. Who knows why. Go quirky Naim!

We also had the joy of connecting the NDX 2 to the Naim Nait XS 3 using the DIN plug's five-pin (in this case) connectors which went out of fashion in consumer audio roughly around the time of punk, other than for synth players connecting up MIDI keyboards, but which Naim has long retained, pleading their more suitable impedance (as noted earlier) and earthing.

While the XS 3 amp is firmly analogue in its inputs, the NDX 2 provides the digital input section. There are two optical inputs, one coaxial on RCA and one coaxial on BNC, and two USB-A slots (one front, one rear).

Then there are the 'invisible' inputs accessed through networking via either Ethernet or Wi-Fi: these include Chromecast built-in, Apple AirPlay 2, Tidal, Spotify Connect, Bluetooth (with aptX HD available if your device supports it), internet radio, UPnP high-res network streaming. It's also a Roon-Ready device if you've invested in that fine serving software.

All these enjoy the attentions of a Burr-Brown PCM1792A digital-to-analogue converter, which Naim has tweaked up with its own digital filters and a discrete current-to-voltage converter immediately after the DAC.

But our chuckling over Burndy sockets and DIN cables was rapidly curtailed when we started listening. We were only two tracks into some high-res listening from a USB drive plugged in the the NDX2's rear USB socket when we decided we had not for a very long time heard anything sound so entirely natural, so clean and clear of artifice or dynamic compression or anything at all other than

the music. We had set up the NDX 2 manually, using the remote control, after the app version of set-up got hung waiting for firmware. Via the front panel this arrived immediately, and once loaded and a few questions answered regarding location and Chromecast licences, the NDX 2 appeared in the Naim app ready for us to select some tunes.

We love the NDX 2's five-inch colour display; it bursts into life on start-up, all purple rainbow, but then during set-up it had switched to all business-like white-on-black as we entered the required information. The main input screen is equally restrained, but upon playing music it'd pop up the album artwork for, say, John Coltrane's *My Favorite Things*, or if you press a button on the remote which looks like it might mean playlist (Naim's iconography takes a while to assimilate), you can change this to show a smaller cover plus track information, showing this track to be coming through at FLAC 96kHz 24-bit. And how clean did it sound! If we were seeking a word other than musical for this delivery, it would be information-rich. Even tracks we've heard a hundred times, like Neil Young's *Walk With Me*, had nuances or soundstage details which had previously passed us by, the perfect rendering of each of Young's overdubs on this track — Lanois' production noises, the rather shocking bass content creating on this track by using Lanois' entire basement as a resonator, or so the story goes. Dion's *I Read It (In The Rolling Stone)* comes out of a lot of hi-fi sounding terribly peaky, especially in the vocal; the Naim pair revealed what the producer must have been aiming for — a full but tight band with the vocal given cut-through; it wasn't unpleasant at all. When we switched to Holst's *The Perfect Fool* by the BBC National Orchestra of Wales at 24-bit/88.2kHz, the combination of this precision delivery of soundstage, the dynamic delivery of the amp, the complete silence underlying the signal path — this was an orchestra writ either lifelike or rather larger, indeed, as we turned it up, yet without a hint of stress or congestion. We couldn't help but follow it with 'The Planets' (LSO) just to enjoy such a silence under *Venus*; it melted us into pools of delirium.

As Roon had just enjoyed its 1.7 release upgrade we spent much of our time with the Naims addressing them that way; this update seems to have sped up Roon on sluggish platforms,

making us love it still more. The presentation delighted us track after track, and the rejuvenatory combination of streamer and amp was at no point better demonstrated than when we were compiling a radio show of glam rock and played a digital file of Suzi Quatro's *Can The Can*, which emerged so fresh and crunchy that we felt we were sitting in that studio back in '73, watching Mike Chapman and Nicky Chinn twiddling the knobs.

CONCLUSION

Naim's amp is an excellent performer. But paired with the streamer, benefiting from the curated signal handling from source through DIN cable to amplifier, something very special happens. It's the low noise floor, it's the timing and pace with which the music passes through the system, it's the detail and nuance that brings such a sense of reality to track after track. There's magic in these boxes. ■

Naim NAIT XS 3 amplifier + NDX 2 streamer

- Extraordinary clarity in combination
- XXXXXXX XXXXXX
- Good speakers for music

- Naim icons and plugs take some learning

NDX 2 STREAMER

Price: \$9750

Inputs: 2 x optical, 1 x coaxial RCA, 1 x coaxial BNC, 2 x USB Type A, Ethernet, Wi-Fi, Chromecast, Apple AirPlay 2, Bluetooth (aptX HD), Wi-Fi/BT antenna, Burndy socket

Outputs: 1 x 5-pin DIN, 1 x RCA pair, BNC digital out

Dimensions: 432 x 87 x 314mm

Weight: 10kg

NAIT XS 3 AMPLIFIER

Price: \$5100

Inputs: 1 x mm phono, 4 x line-level RCA & DIN, power amp in, remote in

Outputs: sub out, biamp out, stream out, speakers out, headphone out

Quoted power rating: 2 x 70W into 8 ohms; 2 x 100W per channel into 4 ohms

Dimensions: 432 x 70 x 314mm

Weight: 12kg

Contact: Busisoft AV

Telephone: 03 9810 2900

Web: www.busisoftav.com.au

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LOUDSPEAKERS OF THE YEAR \$1000-\$5000
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Constellation MkII Delphinus

MADE IN ITALY

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SOURCES



TURNTABLE

AUDIO-TECHNICA AT-LPW40WN

Winner of Sound+Image's 2020 Turntable of the Year \$500-\$1000, this LP spinner from Audio-Technica cuts out the extra features to concentrate firmly on getting the best sound for your investment.

It's a great time to buy a turntable, with record companies continuing to ramp up the release of recordings new and old on vinyl, the second-hand LP market thriving through record fairs, and regular new turntable releases as well — when only a decade ago it was thought that the models still available might be the last vinyl spinners ever designed.

Audio-Technica, of course, had long since diversified into headphones, microphones and other equipment, but never abandoned the black stuff, and also has the merit of nearly 60 years experience in cartridge manufacture — it was founded for that purpose in 1962 by Hideo Matsushita, cousin to the founding family of what is now Panasonic (and Technics), and remains a

Japanese company of great renown. So dominant is it in the cartridge business that a great many other brands of turntable arrive bearing an Audio-Technica cartridge (even if some prefer to use unbranded versions to maintain their company pride), while in recent years the company itself has released a surge of new turntable models which have established benchmark performance at prices from entry-level up. Can the AT-LPW40WN do the same, and what differentiates it from the rest of the range?

EQUIPMENT

If you're looking for a turntable, there are a number of fundamental choices, and indeed Audio-Technica is one company that has been

expanding these choices recently with new technology. You can get USB turntables that can connect to your computer (mainly to make recording vinyl easier). There are Bluetooth turntables which can send their output wirelessly to a Bluetooth speaker or headphones. There are automatic turntables which start at the press of a button, move the arm across and drop it gently on the record, and then do the reverse when you reach the end of the side.

These can all be handy things if you want them, but they all take funds away from the truly important stuff, and some might even interfere with the audio quality. So if you can do without them, you'll likely get a higher-quality cartridge, or a better power supply and speed control, or a higher-level of plinth isolation — the things that can really contribute to the sound.

And that seems more the focus of the AT-LPW40WN. There's no digitisation of the output here; the turntable is firmly analogue. It's fully manual — you move the arm yourself, and you'll be required to lift it off again when it reaches the end groove of your LP.

The one nod to convenience is that it offers two levels of output. It can be used like any other turntable, with its phono-level output playing through a phono stage or the phono input of an amplifier. But it also has an electronics section

within. This includes its own phono stage, so at the rear you can flick a switch to deliver a line-level output instead of phono-level, making the LPW40WN suitable for any amplifier, whether equipped with a phono input or not.

This is a belt-drive turntable; Audio-Technica also makes direct drive turntables (pioneered

by cousin Technics) where the platter is driven directly by the motor. Each style has its advantages and disadvantages. For direct drive, durability and quick start-up are the pluses (good for DJs), whereas the main negative is the lack of isolation from the motor, and the possibility of 'cogging', tiny speed variations inherent to the rotor-stepping operation of any electronic motor. That's enough for most sound-orientated users to choose belt drive, the belt providing a level of isolation which can reduce vibrational noise and shocks to yield a cleaner sound. (Downsides of belts? Over time they can loosen and require replacement.)

The cartridge here is the well-regarded AT-VM95E with an elliptical stylus, coming pre-mounted in an AT-HS4 universal half-inch mount headshell. This cartridge has the merit of a replaceable stylus (some don't, so that you have to buy a whole new cartridge), though given there's not too much price-differential between the AT-VMN95E stylus (~\$50) and a new AT-VM95E (\$79.95), the main merit may be just not having to install and align a new cartridge! (Should you ever wish to mug up on all things cartridge and stylus, Audio-Technica has an excellent primer which we've linked at avhub.com.au/AT/.) How often should you change your stylus? Some say 1000 hours of play, some say less or more. We say listen, and you'll know when.

The tonearm is a straight, carbon-fibre design, effective length 22.4cm. The motor is augmented by a speed-sensor system and feedback to achieve improved speed stability, and you make the change from 33⅓ to 45rpm using the small knob on the left side of the plinth, which is itself a solid base, being MDF with the attractive walnut veneer finish shown in the images here — it presents as a high-quality traditional turntable, rather than some modernist new-fangled machine.

PERFORMANCE

Set-up proved simple enough once we'd detached the various bits from the multilayered packaging; we suspect that Audio-Technica must have a special relationship with some manufacturer of sticky tape, so much of the stuff is used to pack the mat and the platter, the headshell and the counterweight, the two lid hinges and the other pieces that require assembly to complete the deck. The belt is pre-attached around the underside of the platter so you just need to loop it over the pulley — avoid touching it with your greasy fingers if you can!

The headshell slots into the arm and is held in place by a screw-up ring collar, then you roll the counterweight up the back of the arm until perfect weightlessness of balance is achieved, dial in the proscribed 2g of tracking weight, the same amount on the tiny antiskate wheel (the arrow mark is near-invisible but the manual indicates where it is), and you're done.

All easy, and with full instructions provided, even newbies need not fear. We checked cartridge alignment and it seemed spot on as pre-installed in the headshell. The hardest bit was actually ramming the Perspex lid into the tight grip of the hinges.

The connection to your amplifier (or external phono stage) is made with detachable flying leads complete with earth spade. If using the built-in phono stage to deliver a line-level output, then you can leave the earth cable unconnected.

We listened both ways — from its straight phono-level output, and at line-level straight into an amplifier using the turntable's built-in phono stage. Of course, the quality you'll achieve from the first option, its direct phono output, is dependent on the phono stage you add. We used three different external phono stages, one of them a budget but highly regarded standalone phono box, the others built into amplifiers priced at \$1500 and \$13,000. The internal electronics held up remarkably well against these, but the best of the external phono amps showed that there is more to be delivered from the LPW40 if you do give it a good separate stage. Interestingly this was not an upgrade to more shimmering treble but rather an improvement in tone, a filling out of the lower mids along with a calming of higher frequencies in violins and percussion that could, in relative terms, start running towards edginess from the inbuilt phono stage.

But the differences were small variations on what proved an excellent turntable sound at the price — wide open, free of congestion and, depending on the quality of your vinyl, quiet. One disc given its first ever play on this deck was side two of Kate Bush's 'Never for Ever', from the first box of the recent four-volume remasters. We dropped the needle and turned up the amp, and the vinyl was so quiet we thought we were on the wrong input until Ms Bush's magnificent vocal kicked off *The Wedding List*. Imaging was also impressive, everything in its place, notably realistically tingly metallic ride in the left-channel, and the tonal differences between several sections of her vocal clear to hear. The deck's ability to resolve the layers of sound on *The Infant Kiss* we thought well above its price bracket, while the bass, quite reserved on this album, was nevertheless solid and tightly controlled, not an ounce of flab, perfectly capturing John Giblin's fretless on the always-alarming *Breathing*, Kate's answer to 'The Wall'.

A bit mellow for you? We followed up with Iron Maiden's 2016 triple live, the guitars layering up a left-right wall of sound thrillingly as we blasted out *The Number of The Beast*; the centre combination of kick, snare and vocal were perhaps dynamically compressed a little compared with our reference Thorens TD 203, but that's a little over double the price, and the LPW40 was delivering this maelstrom of sound without the





Audio-Technica AT-LPW40WN

- No-frills focus on sound quality
- Phono stage built-in if required
- Nice looker

- Fully manual

Price: \$649

Type: belt-drive, manual

Speeds: 33-1/3 RPM, 45 RPM

Output levels: 4.0mV phono, 200mV nominal line (1kHz, 5cm/sec)

Tonearm: carbon-fibre, eff. length 223.6mm

Cartridge: AT-VM95E

Motor: DC servo w. Active Speed Stabilization

Dimensions (whd): 420 x 117 x 340mm

Weight: 4.72kg without lid

Contact: Technical Audio Group

Telephone: 02 9519 0900

Website: www.audiotechnica.com.au

least confusion of its parts, and projecting pinging side cymbals and crowd singalong over the top.

Just a little more surface noise on our 1987 Virgin Records copy of Ennio Morricone 'Film Music', but that disappeared under the astonishingly organic impact of the pan-pipes leading into the soaring strings of *Once Upon A Time in America*, while *Gabriel's Oboe* (from 'The Mission') confirmed the LP40W's ability to deliver the emotion of music, this short piece raising hairs as it surged over the underpinning harpsichord, which tapped away in its own little acoustic. Selecting particular tracks on this album, we found the finger lift to be easy to use, and the dropping

between tracks nice and accurate. That lid makes an almost unavoidable microphonic clunk coming down, but it does do the job of protection against both sound and dust! RPM's speed app confirmed speed within 1%, wow and flutter within 0.5%.

CONCLUSION

By minimising the modernist additions on other decks in its range, but still including that useful built-in phono stage, Audio-Technica has delivered a manual belt-drive turntable which is musical beyond its price bracket, a classic looker as well, and with an easily replaceable (even upgradeable) stylus. Top marks for the money. ■



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HIGH PERFORMANCE AUDIO SOURCE

MERIDIAN 210 STREAMER

Meridian's small and neat 200-Series streamer delivers an output which proves to be equally perfectly formed.

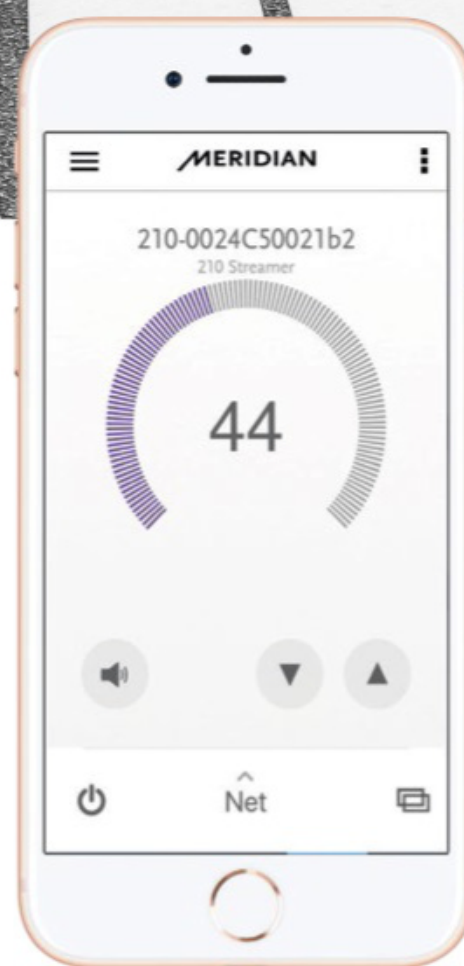
Meridian's 200 Series is something different in the world of wireless multiroom audio. Many companies have had a go at the market defined first by Sonos, delivering their own ecosystems of wireless speakers, soundbars and streaming electronics, and most follow a similar formula. Meridian, a company which operates at the highest levels of hi-fi, has done things rather differently. For starters it has gone small. While high-end Meridian components routinely tip the scales over 20kg, the 210 Streamer reviewed here weighs 660 grams, a 'half-width' component which is only 4.2cm high. It joins the rest of Meridian's 200 Series, a set of compact yet capable multiroom-equipped units that can deliver a whole house of audio, and are designed to do so while being hidden away, controlled via an app on your smart device so you don't need them on show.

So while an initial comparison with Sonos helps explain what the 200 Series is aiming to achieve, that comparison only goes so far. Meridian has long been a pioneer in high-resolution audio, originating codecs and the wonders of MQA. Just because it has gone small with the 200 Series, it hasn't left the emphasis on quality behind. This is real hi-fi, made smart, and made small. The Meridian 200 Series has shrunk your hi-fi.

EQUIPMENT

We have previously reviewed two of the 200 Series, both called Zone Controllers, one with amplifiers that can drive speakers directly (the 251 Powered Zone Controller) and one without (the 218 Zone Controller). In the Sonos comparison this amp and preamp might map to the Sonos Amp and the new Sonos Port respectively.

This new 210 Streamer has no Sonos equivalent, being more of a source, designed to work either with other Meridian gear such as those Zone Controllers or a pair of Meridian



active speakers, or to plug into non-Meridian gear via its coaxial digital output. Meridian describes the 210 Streamer as "a high-performance networked audio source providing a full set of network and connectivity protocols to interoperate with smartphones, tablets, computers, and networked servers".

It connects to your network via dual-band Wi-Fi or 10/100 Ethernet (no gigabit Ethernet, so 802.11n Wi-Fi might actually outperform the wired connection). Thereby it supports internet streaming services such as Spotify Connect, controlled from your smart device but streaming over the internet directly to the 210.

It can stream files across your home network via DLNA/UPnP, acting as a Digital Media Renderer (DMR) playing content from a Digital Media Server (DMS) from a computer share or a NAS drive.

It has a USB slot into which you can directly plug a USB stick or drive to play music, in which mode the 210 Streamer also becomes a Digital Media Server (DMS), making the contents of the USB available to other networked DMRs.

And there's direct streaming via Bluetooth, something notably absent from those Zone Controllers, perhaps because of Bluetooth's reputation for convenience over quality. But the 210 supports the aptX HD codec, which is capable of up to 24-bit/48kHz delivered with mildly lossy compression, so that Android smart devices which support that codec will be able to

achieve that higher quality. There's also the AAC Bluetooth codec to which Apple devices will default, in addition to SBC and MP3 codecs.

The 210 Streamer is also a Roon device, so that if you have a paid Roon software subscription and have a Roon core set up on your system, you can enjoy using this excellent software music interface to play both your own music collection and, with an additional subscription, music from the Tidal internet music service. Pay double for the Tidal HIFI subscription and you can make use of the 210's ability to play MQA files, which Tidal calls 'Masters'. The 210 includes MQA core technology which unfolds an MQA file once, up to 24-bit/96kHz high resolution.

CONNECTIONS

In providing these streaming and networking solutions, the 210 Streamer could be used to complement the physical inputs on either of the two Zone Controllers, and during our review we did just that, plugging the 210 into the 251 Powered Zone Controller, creating a neat and yet powerful complete zone of music. The 210 itself has no conventional analogue or digital inputs other than that USB slot. Either Zone Controller adds one each of analogue, optical and coaxial digital inputs, while the 251 adds speaker outputs and internal amplifiers to drive them.

The 210 Streamer has a coaxial digital output, which can be connected to any amplifier or pre-amplifier that has a coaxial digital input.

But the 210 also has Meridian's own SpeakerLink connections for connecting to other Meridian equipment. Used as their name suggests, these digital connections can be used to send the output direct to a pair of Meridian active speakers

— we had a pair of Meridian's attractively-conical wide-dispersion M6 active speakers to hand for this (see picture below). Being active, with their own internal amplifiers, these could be driven directly from the 210 Streamer, no other components required if the 210's streaming is all you need, yielding a magnificently simple system under app control from your smart device.

The SpeakerLink connections can also be used as digital connections between Meridian components, such as between the 210 and the 251 in our case. These connections are standard RJ45 sockets, as used for Ethernet, and standard Ethernet cables can be used between components or off to the speakers, quite the bonus in reducing the costs of audiophile cabling. The 210 can output digital audio in industry-standard SPDIF (the default), or MHR (Meridian High Resolution). If the 210 is feeding a Meridian product capable of receiving MHR it should be configured to output MHR. Perhaps surprisingly from a computer that pioneered high-resolution audio (and from which the MQA format originally sprang), SpeakerLink supports a maximum of 24-bit 96kHz. Files of higher resolution played via DLNA or USB will be downsampled by the 210 to this level (or the appropriate multiple, e.g. 88.2kHz for 176.4kHz files). Meridian's Matt Holland has previously explained this choice to us as follows, noting there is more to digital quality than bits and sampling frequency.

"We measure resolution in terms of noise, jitter, time smear, not just bit-depth and high frequency extension," he explained to us. "We also do not believe there is any technical argument to support operating at bit depths higher than 24-bit, as a correctly dithered 24-bit signal, when correctly

converted to analogue, has no quantisation noise and more dynamic range than any recording microphone or studio preamp can capture."

Having said that, he notes that their ambition in the future is to increase the maximum sampling rate of SpeakerLink.

You might think this would make the 210's coaxial digital output a higher resolution and so preferred link to either the 218 or 251 Zone Controller, but this is also limited to 96kHz, which puts an effective cap on all your high-res playback. But it's true that there's more to high-res and high quality music than resolution — low noise, jitter and time smear, as noted above, may well deliver better music than rows of redundant bits and samples which represent a whole lotta nothing. Read on for the proof in the pudding.

PERFORMANCE

So we linked the 210 to the 251, with the 251's power driving our own speakers. If you're considering this solution, be aware that the 251's speaker connections are not the usual binding posts but rather small green Phoenix screw-clamp connector blocks, good for solid connection to bare wire of below 2mm, but unable to accommodate banana plugs or spade connectors.

Even when plugging up, the merits of the reduced physical dimensions are obvious; the 210 and 251 can sit side by side in a single rackmount frame out of the way, for zero décor impact. Or in a cupboard, since your smart device will control them via a Bluetooth connection, not IR. So this can be a near-invisible hi-fi system.

Indeed the 210 is even smaller than the 251, the same height and width but only two-thirds of its depth. One possible issue for Meridian is



▲ **Simplest of systems** – Using Meridian's SpeakerLink connections, a complete system could comprise just the little 210 Streamer as source playing direct and digitally to these M6 dspeakers, or any or Meridian's digital active speaker designs.

SOURCES



perceived value of such a light and small plastic-cased unit, yet the price reflects the abilities and quality within.

We linked one of the 210's SpeakerLink outputs with Cat-5 cable to the 251's SpeakerLink input, also plugging a USB hard drive into the 210's USB socket. We gave them both an additional Cat-5 cable to our network, and opened Roon to enable them each as a Roon device (Roon can play to the 251 in the same way).

So our resident Roon software could immediately play to the 210, and separately to the 251! But if you don't have Roon, you'll need to download quite the flurry of apps for control.

For the 251, Meridian recommends its 'IP Control' app to discover and control it. The 210, on the other hand, uses the Meridian 'Control' app (pictured on the previous pages), which seems a little more sophisticated in its interface design.

You will also need to open the 251's IP address on a browser because none of its available listed inputs are labelled 'SpeakerLink'. We guessed (wrongly) that 'SLS' was the input required, but this actually refers to Sooloos, Meridian's own music serving software (in which Roon had its roots; the founders of Roon also founded Sooloos, which was later acquired by Meridian, although the 210 is not, mildly curiously, compatible with Sooloos).

When we used the browser interface to look at the 251's configuration screen (typing in its IP address taken from the IP control app), this made clear that for SpeakerLink you should select 'Disc' or 'DVD', for reasons best known to Meridian. But it's all entirely configurable so you could set up any of the inputs to play from SpeakerLink and also rename them whatever you like. We did that (and renamed the input '210'), and the 210's output immediately emerged from the 251. We had also, as suggested by the manual, switched the output from SPDIF to MHR (Meridian High Resolution).

We began with some MQA files, since this format also grew from Meridian itself. Remember that the 210 streamer is an MQA Core Decoder, unfolding MQA tracks to 24/96kHz. It doesn't do the second unfold (to 192kHz), it says; for that you'd need another Meridian product which includes MQA renderer technology.

But one of the first MQA tracks we played, Dire Straits' *Sultans of Swing*, was shown by Roon to be unfolded to 192kHz. Bonus! When we queried this with Meridian they explained that the second unfold had been performed by the 251.

By using the MHR option on the 210, it sends MQA Core content which can be fully unfolded by a Meridian MQA decoder — which the 251 does have onboard, so it was the 251 doing a second unfold to 192kHz.

All sounded cleanly etched against a dark background by the combination of 210 and 251.

We streamed tunes via Roon for a while. Both the 210 and the 251 displayed volume controls in both Roon and their respective Meridian apps, and having two volume controls in series is a bad thing — the first will bit-strip the digital output before the second. We quickly realised, however, that the 210's volume controls were having no effect; the 210's output via SpeakerLink seemed to be fixed. That's as it should be, and we used the IP Control app to adjust level on the 251.

SPOTIFY

This arrangement wasn't so easy when we switched to Spotify, controlled from our iPhone, selecting the 210 as Spotify's destination device. This is Spotify Connect, so the phone gets out of the way of the stream, which goes straight to the 210, and it simply controlled from the phone. We could select tracks and use the position scrubber fine, but the Spotify app's volume slider didn't work either, nor the phone's own volume buttons. It was highly inconvenient to call up the 251's IP control app every time we needed volume control.

But it was our bad — we had made a cabling error. The 210 has two SpeakerLink output sockets, and only one of them is labelled 'Master'. We'd used the other one, which delivered a fixed output. As soon as we switched the cable to the Master socket, we had volume control both from the Spotify app's slider and from the side buttons on the phone itself, not only way more convenient, but also allowing the 210 to pass the 'What if the phone rings?' test.

In fact, Meridian's implementation is smarter even than this, because it wishes to avoid that bit-stripping problem of having a digital volume control prior to the signal passing out of the 210. According to Meridian (who we had contacted when unable to work out the volume issue), the 210 digital outputs are actually always fixed, and

the volume commands were being forwarded on to the 251: *"When using the volume control of the sources — Bluetooth, Spotify, UPnP etc. — what we actually do is send Meridian Comms commands to the controller (218, 251, 8x8 etc) or the speakers and tell them to increase and decrease their volume. We do this to ensure maximum resolution at all volume steps; it also avoids bit truncation that you get when you increase or decrease the 'volume' of a digital signal (which is nasty and should be avoided). This gives the 210 maximum resolution on all sources and therefore the best possible sound quality."*

So the 210 is passing those received volume up and down commands from Spotify via Speakerlink to turn the 251 up and down. Problem solved, and quality fully delivered.

And whether it was down to this or Meridian's signal processing brilliance in general, we've never heard Spotify sound so crisp and hi-fi-like through our reference system. The usual slightly sluggish Spotify softness, often exaggerated by a Bluetooth connection, was entirely absent here, and classic tracks like Paul Simon's *Me & Julio* or Stealers Wheel's *Stuck in the Middle* were jangly and clean in their upper frequencies, tight and taut in bass.

So good was all manner of material sounding that we tried A-Bing the Spotify performance against tracks we own (old-school files), played from our Mac into the 251's optical socket (so making use of the same DAC). We could discern just a slightly leaner bass delivery on Bruce Springsteen's latest studio album 'Western Stars' against the thicker delivery from Spotify; we had trouble picking between the two presentations of Diana Krall's breathy vocal on the first verse of *Alone Again (Naturally)*, and this comparing a high-res file against Spotify! Sanity was restored, however, on Michael Buble's entry for the second verse, where the accompaniment definitely had more substance, clarity and soundstaging from the Mac source. But the point here is that Spotify sounded damned good. Is this another example of high-res redundancy, like Sony's admission at the highest level that they can't tell the difference between high-res and carefully-upsampled 320k?

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The A5 'plays larger', with powerfully extended dynamic range. The triple 9-inch bass drivers are backed by 5-inch pure titanium voice coils and huge copper caps with a full half-inch of linear excursion.

The A5 incorporates the company's first 5-inch pure midrange driver, an advanced Graphene carbon-fibre sandwich cone of extraordinary musicality.

And the A5 retains such Magico hallmarks as extensively cross-braced 6061 aircraft-grade aluminium and Elliptical Symmetry Crossover.

Experience the apex of the A Series.

The Magico A5.



MAGICO A5



MAGICO A3



MAGICO ACC



MAGICO A1



MAGICO ASUB

SOURCES



◀ **Mini winners** – The 210 Streamer and 251 Powered Zone Controller make a good pair, and can be as effective hidden away out of sight under app control as they are out on display. The 251 won a 2019 Sound+Image Award, while the 210 Streamer was just won the 2020 Network Music Player of the Year under \$5000.

BLUETOOTH

We hardly expected the same results from Bluetooth, although with aptX and aptX HD on board, those with phones that support aptX and are loaded with CD quality files or higher should be easily able to beat Spotify's performance.

From iOS devices you have only AAC above the base-level SBC codec, and yet again here results were impressive, and to be fair we've had this surprising experience from a number of high-quality Bluetooth-equipped DACs; our resident Musical Fidelity pulls off this trick with equal aplomb.

To connect via Bluetooth, you hold a small button on the back of the 210 to put it in pairing mode, and then connect in the usual way.

No problems at all in holding the connection from some distance (although here the hiding away of your 210 might be an issue) — and again audio quality seemed exceptional for what is still regarded in hi-fi terms as a casual connection of convenience. The same file sent the fast way from Mac to 251 was nigh-on indistinguishable against the Bluetooth-to-210-to-251 path, and we found ourselves able to run Bluetooth music for hours without a sonic clue as to its wireless origins. The worst that could be said is that volume control on the device ends up a little crude, with big steps between jumps of the button control, so that very careful screen-slider scrubbing is required to get that 'just right' level... If the 210 Streamer were coming to our home permanently, we'd certainly consider getting the optional physical Meridian remote control that is available, to deliver more precise and convenient control.

NETWORK STREAMING

Talking of control, we were surprised to find that Meridian's various apps don't include any way to run DLNA/UPnP network streaming; you need to find a third-party app. Meridian mentions BubbleUPnP and Audirvana. Two that worked well on iOS for us were AllCast and AllConnect.

Even more oddly, you can only play files from a connected USB drive again by using such a third-party DLNA app. So we had to use AllCast to access the files on the USB drive we'd plugged into the 210, then cast them back to the 210! It seems a rather roundabout way to play from a USB drive, and not very consumer-friendly, but that's apparently what Meridian is going with.

"We have not developed our own UPnP app," they replied to our query. "We have left the choice of what the end-user would like to use to control UPnP completely open. The USB input is designed specifically for UPnP use, it isn't designed to be used as a USB input from a USB drive directly."

Which will be fine if you know what you're doing with UPnP, or if someone is installing the Meridian for you and can wrap it all up in a nice bespoke app. But it's a bit much to ask of the average consumer, who would no doubt like one app that does everything, as they might enjoy from any other wireless multiroom ecosystem of significance on the market.

Still, it worked OK within the abilities of the UPnP apps. We couldn't get DSD to stream this way, but all other candidates played smoothly and beautifully. Meridian lists supported file types as AAC, AIFF, MP3, FLAC, WAV, WMA, Apple Lossless, OGG, Monkey's, and of course MQA.

We tried one final configuration, separating the 210 from its Meridian brother, using it as a streamer with its coaxial digital output playing into our usual DAC (and turning off MHR, if that's even relevant to this output). The coaxial digital output was fixed, with no response to device or Spotify volume controls, but that was OK because we were back on our usual hi-fi, using its remote control for volume. Did there seem a little less magic to the music without the SpeakerLink Meridian data treatment? Yes there did. It also occurred to us that as a streamer the 210's services are limited compared to others in the market — Spotify, Tidal via Roon if you have a subscription to both, but nothing else built-in

— though of course via Bluetooth you could access any service on your smart device. And since Bluetooth here has so little sonic penalty attached, that seems a reasonable solution.

CONCLUSION

The highlights here are music quality, especially from sometimes lesser-regarded sources Spotify and Bluetooth, coupled with the compact form factor and ability to hide the 210 Streamer and other 200 series components away out of sight. USB playback and DLNA require a third-party app; indeed all the app hopping is an initial barrier prior to the relative subsequent simplicity of operation. Such problems would melt away if these are custom installed, of course, so maybe that's the best market for the 210. Because in signal terms it delivers a superbly curated digital output to feed whatever equipment you choose to put downline from it — good enough, we reckon, to feed any system of any level. ■

Meridian 210 Streamer

- Superb-sounding streaming
- Accesses local and online music
- Compact and hideaway
- Gobsmaekingly simple systems possible

- Digital playback limited to 96kHz
- DLNA requires third-party app
- No physical remote control (you can add one)

Price: \$2099

Inputs: USB-A, SpeakerLink (RJ45), Ethernet, Wi-Fi, Bluetooth, mini-USB (maintenance)

Outputs: 2 x SpeakerLink (RJ45), 1 x coaxial digital

Dimensions (whd): 204 x 42 x 150mm

Weight: 0.66kg

Contact: Cogworks

Telephone: 07 5415 0337

Website: www.cogworks.io

**Maximum flexibility
in every room.**



LOEWE.

The minimalist design in puristic black, the ingeniously integrated loudspeaker concept and the high-quality, matt black upholstery fabric make the **Loewe bild 2** a timelessly beautiful television that blends harmoniously into any home. Thanks to various installation solutions, the TV can be placed flexibly in the room: free-standing on a floor stand, with the revolving aluminium table stand on a sideboard and on the shelf or apparently floating on the wall.

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TURNTABLE

PRO-JECT AUDIO X1

When the world was giving up on turntables, Pro-Ject was just getting started. The X1 shows how far they've come in offering high-value vinyl replay.

When the compact disc was introduced in the early 1980s, nearly everyone in the world said it was the end of the vinyl era.

The CD was smaller, played for longer, was more robust and, according to co-inventors Philips and Sony, would deliver “perfect sound forever” — hoorah! Turntables disappeared from hi-fi stores and started appearing at garage sales throughout the suburbs. Australian record companies shut down their local LP pressing plants. By the end of the 1980s, more than 400 million CDs were being manufactured every year.

Meanwhile, in faraway Austria, Heinz Lichtenegger was designing his first turntable, and in 1991 established a company to build it — Pro-Ject. Seemingly against all the odds, Lichtenegger's Pro-Ject P1 turntable went on to become a success story for the fledgling company. Skip forward nearly 30 years and Pro-Ject, whose turntables are now built in the Czech Republic and Slovakia, has released the Pro-Ject X1, which is a direct descendant of the original P1.

“We have taken our beloved original Pro-Ject 1 design and improved it in every aspect,” says Lichtenegger. *“The X1 is based on the same concept as the P1, but improved in every aspect thanks to modern materials and new production methods.”*

EQUIPMENT

One key to the success of the Pro-Ject P1 was its simplicity, and another its price. Turntables had become hugely complex devices, many requiring the attention of factory-trained technicians not only to repair and maintain, but even to simply install. A few turntables even required partial disassembly simply in order to change the platter speed from 33⅓ to 45rpm. The arrival of the P1 changed all that.

Pro-Ject has certainly maintained the element of simplicity in the new X1. Changing platter speed from 33⅓ to 45rpm is just a matter of pushing a button. It's true that it's not quite so simple to access the third speed (78rpm) available on the X1, as this requires you to remove the platter and transfer the rubber drive belt from one pulley diameter to another, then re-position the platter. But how many 78rpm records do you own?

As indicated by the previous paragraph, the Pro-Ject X1 is a belt-drive design, with electronic speed change on one pulley diameter, and belt-swapping required to access 78rpm. The drive pulley is directly attached to the drive motor shaft, with the motor itself being located below the platter, in a recess carved into the otherwise solid multi-layer MDF plinth. The motor is attached to the plinth via two ‘engine-mount’ style vibration

absorbers, while a rubber belt fixed at four places on the motor prevents axial movement. The belt drives a ribbed PFT sub-platter that rotates

on a stainless-steel/brass bearing, atop which sits, in turn, the main platter, which is a single-piece slab of precision-machined white acrylic that tips the scales at 1.5kg and Pro-Ject claims is ‘resonance-free’. Atop this sits a very high-quality felted slip-mat... a nicety we were very pleased to see, given the usual standard of slip-mats provided by some other manufacturers.

Power for the drive motor comes from an external 15Vd.c., 0.8A plug-pack style adaptor, but this does not power the motor directly. Instead, inside the X1 is a DC/AC generator board which delivers clean, stable voltage to the drive motor. Pro-Ject says it adopted this design approach because although it costs more it: *“performs many times better than a simple, direct-powered AC motor.”*

As with most Pro-Ject turntables, the tonearm comes pre-installed. The arm has a carbon-fibre/aluminium ‘sandwich’ arm-tube with a fixed cartridge mount and a Kardan-style four-pin bearing. The counterweight is said to be a newly-designed ‘anti-resonant’ type with a built-in TPE (thermo plastic elastomer) damper to reduce the unavoidable primary cartridge/tonearm resonance. The anti-skate device is decidedly ‘low-tech’, being

a ‘string-and-weight’ device. Well, Pro-Ject did say it was trying to keep things simple! The effective length of the arm is rather shorter than we’re used to seeing, at ‘8.6-inches’ (218.44mm) rather than the usual 9-inches (228.6mm), presumably in order to reduce the size of the plinth. All other things being equal, a shorter arm will have greater tracing error than a longer one.

We need to point out that despite the length, the X1’s arm incorporates adjustments for both vertical tracking angle (VTA) and azimuth — adjustments we don’t often see at this price point. The arm’s effective mass of 10 grams means it will work very well with all medium-compliance cartridges, either moving magnet or moving coil.

Lastly, three height-adjustable alloy/TPE sandwich construction feet not only allow a modicum of isolation from structure-borne vibration, but also allow you to level the platter, even if the surface on which the turntable is sitting is not level. Such levelling is crucial in reducing levels of wow and flutter, bearing rumble and bearing wear. Because of this, we find it surprising that so few manufacturers include adjustable feet. Indeed very few even include a dustcover with their ‘tables, but Pro-Ject bundles a very nice one standard with the X1. Pro-Ject also includes a set of phono cables: other manufacturers expect you to shell out extra for those all-essential cables.

Whatever painted finish you choose (and you can choose between high-gloss black or high-gloss white), the beautiful sheen you see is the result of the application of eight layers of paint coupled with extensive hand-polishing. Very nice. You can also opt for a walnut veneer. Also nice.

PERFORMANCE

In most jurisdictions, the Pro-Ject X1 comes with a Pro-Ject ‘Pick-it S2’ moving-magnet cartridge pre-installed — a cartridge that’s made for Pro-Ject by Danish cartridge specialist manufacturer Ortofon. Here in Australia, we get to

choose our own. Our suggestion would be Ortofon’s 2M Red. No, it’s not an expensive cartridge, and might seem a little underpowered for the X1, but it tracks extremely well, delivers excellent low-frequency performance, and has outstanding presentation of the midrange along with very smooth and extended delivery of high frequencies, plus outstanding stereo imaging. We thought it an excellent match.

Pro-Ject’s X1 is certainly a pretty-looking turntable, and it’s also easy to use, but a turntable has to be much more than that. Speed accuracy for starters. According to our strobe card, the Pro-Ject X1 was running at exactly 33⅓ at that speed and almost imperceptibly fast at 45rpm, which means that while a 45rpm LP might finish fractionally earlier than it should, you won’t detect any change in the musical pitch... and that’s even if you have perfect pitch.

As for wow and flutter, slow piano music is the best for establishing the audibility of this, so we used both Michael Nyman’s *Decay Music* and Eric Satie’s *Gymnopédies*. (The version by Anne Queffélec on Virgin Virgin Classics 522 0502 is the best one to use here, we think, not only because she plays so, *sooo* slowly, but also because she manages to make the music sound more ‘other-worldly’ than, say, Pascal Rogé, whose wonderful reading is probably more true to the score, and technically perfect, but not nearly so ethereal.)

Although the Pro-Ject X1 undoubtedly has some inherent speed variations (the specifications put these at 0.15% at 33⅓ rpm), these are not audibly detectable as either wow or flutter, so the Pro-Ject PSU, motor and drive train are obviously doing a great job... and if you can’t hear wow and flutter with slow piano music, it won’t be audible with any other type of music either.

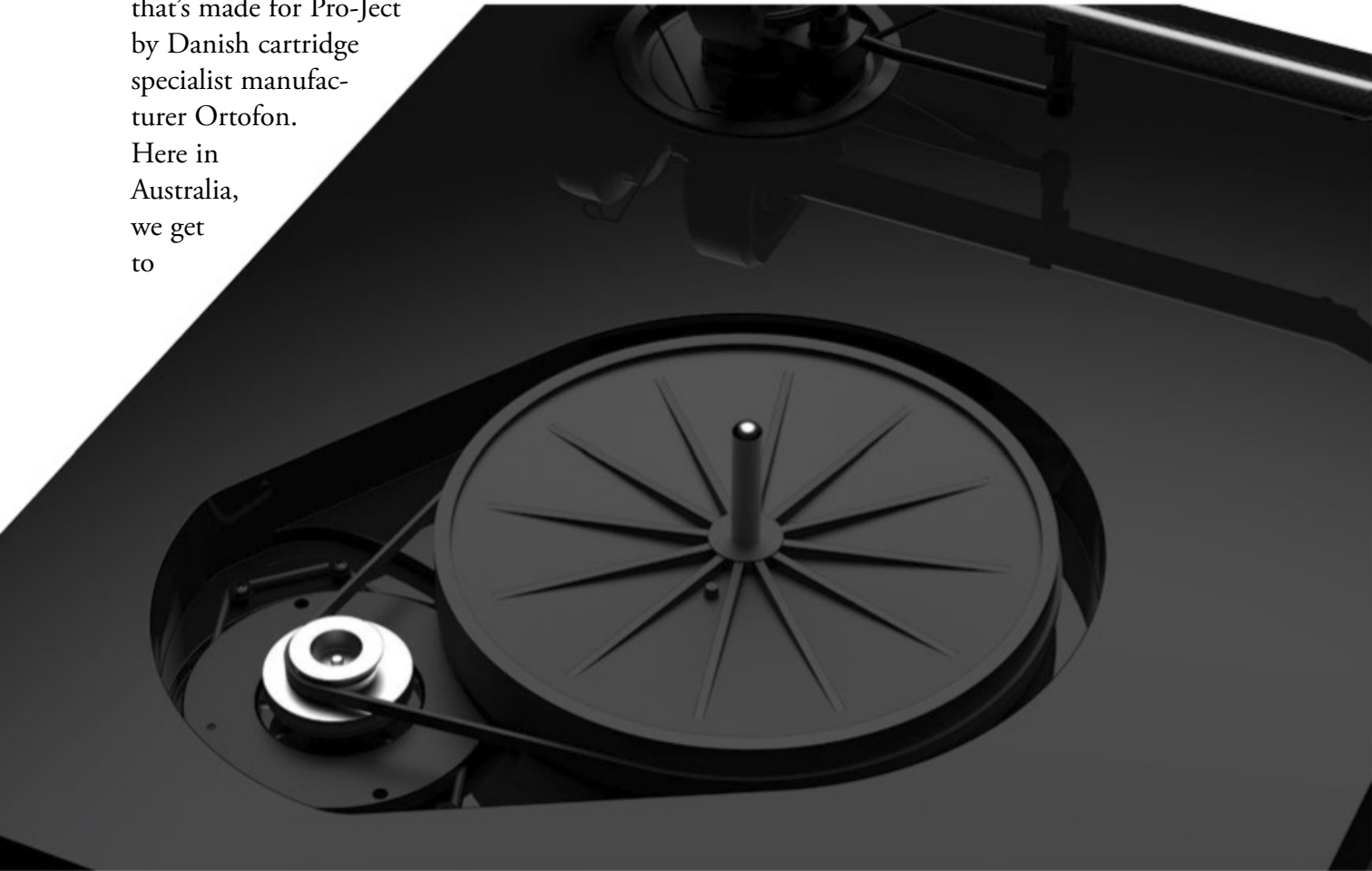
As for that other *bête noire* of turntables — rumble — again, it’s a certainty that it does have some rumble, but if there was any, then we could not hear it. The X1 does seem to allow external environmental noise in via its feet (which we only discovered when a neighbour started removing his concrete driveway with a jack-hammer), so if you live in a place that has lots of external vibration and you find it affects you, you’d need to invest in an isolation platform.

Pro-Ject’s new tonearm certainly allowed us to extract the best sound from our work-horse Ortofon 2M Red... indeed we thought it sounded as good as we’ve ever heard it sound, and it’s been in a good many turntables that cost way more than what’s being asked for the Pro-Ject X1. No matter what mode of music we span, it was more than up to the task, delivering musically satisfying performances on all counts.

On a simply practical level, we were more than satisfied with the start-up time, which brought the platter up to speed (33⅓ or 45rpm) in under four seconds, and with the cueing lever which is easy to use and will also accurately drop the stylus directly down onto the LP at whatever spot you’ve chosen (and do so repeatedly, if necessary). The solid plinth means you can also easily cue by hand if you’d prefer (something that is not possible with a sprung plinth).

CONCLUSION

The Pro-Ject X1 has lots of stiff competition in this price bracket including other models from Pro-Ject’ (most obviously the larger, longer-armed and slightly better-specified X-2). But if you’re after a high-performance turntable with a small footprint, the Pro-Ject X-1 should see off all contenders. ■



Pro-Ject X1 turntable

- Excellent performance
- VTA & Azimuth Adjust
- Dustcover and cable included

- Short arm length
- No fine speed adjustment

Price: \$1190 without cartridge
Speeds: 33⅓, 45, 78rpm
Drive: Belt (Single)
Speed variation: 0.30% / 0.25% (33⅓/45)
Wow & flutter: 0.15% / 0.13% (33⅓/45)
Platter: 20mm acrylic
Platter mass: 1.5kg
Main bearing: Stainless-steel/brass
Tonearm: 8.6” carbon/aluminium sandwich
Effective arm length: 218.5 mm
Overhang: 18mm
Effective tonearm mass: 10g
Tracking force range: 0–30mN
Power consumption: 5 watts
Standby consumption: <0.3 watts
Dimensions (WHD): 415 × 125 × 335mm
Weight: 7kg

Contact: Interdyn
Telephone: 03 9426 3600
Website: www.interdyn.com.au



PHONO CARTRIDGES

AUDIO-TECHNICA AT-OC9X RANGE

The most important part of your turntable is the bit which actually plays the music – the cartridge. Audio-Technica has just launched five new moving-coil models which take its classic OC9 design to new levels of vinyl reproduction.



What's the most important part of a turntable? Vinyl fans debate every aspect of turntable design. Should the plinth be heavy, or light and rigid? Should arms be long or short, straight or S-shaped? What material makes the best platter? Even the mat on the platter gets vigorous debate — rubber, or felt, or cork, or no mat at all?

Yet all these are peripheral to the parts of the turntable which generate the electrical signal which will be amplified into music. The rest is just a supporting system for the vinyl and the components which actually make the sound — the stylus, cartridge, tonearm and signal cables. These receive no power at all, and generate very delicate signals which require thousand-fold amplification prior to that of your main amplifier. That means that any added noise or distortion is similarly magnified, as will be other characteristics such as the quality of channel separation.

So the most crucial element is the cartridge, a device so small, so delicately constructed, that their design is a combination of art and engineering at near-miraculous levels of precision, while the rest of turntable design is about creating a platform to allow their transformation from vibration into electrical signal to take place unhindered by unwanted physical vibration.

And if the cartridge is king, Audio-Technica is a strong candidate for king of the cartridge manufacturers, having been founded for that purpose back in 1962 by Hideo Matsushita. His son, Kazuo Matsushita, is the current President.

One of Audio-Technica's most highly regarded cartridge ranges has developed from the OC9 moving-coil cartridge, first introduced in 1987, then innovative in its use of engineering processes and carefully chosen materials. Now the company has launched a fourth generation, the AT-OC9X range, which the company says is forged from "32 years of accumulated experience and customer feedback" from the 12 different models since, all inspired by the original acclaimed AT-OC9.

FIVE PROFILES

There are five cartridges in the new range, and all are of moving-coil construction, rather than the more common moving-magnet design. In a moving magnet cartridge a tiny magnet is physically attached to the diamond-tipped cantilever, the magnet moves according to the stylus motion in the groove, and thereby generates a varying electrical signal in a fixed coil which surrounds the moving magnet. The typical output of this type of cartridge is 5mV, 400 times lower than the two full volts that come from a digital source.

In a moving-coil cartridge, as the name suggests, it's the coil that moves, attached to the cantilever and surrounded by a fixed magnet. The performance advantage comes from the moving coil's lighter weight compared to a moving magnet, which leaves the cantilevered stylus more responsive to the record grooves. The weight is further reduced by the coils being usually smaller in this type of cartridge. The downside of all this is that the generated signal is proportionately lower even than moving-magnet output, in the order of 0.2-0.5mV. The goal, then, is to design the cartridge to derive the maximum possible signal with the lowest possible noise or distortion, and to achieve this through advanced materials such as high purity copper for the coils, high-energy magnets, special cantilever and housing materials, as well as different stylus profiles which require different degrees of precision manufacture.

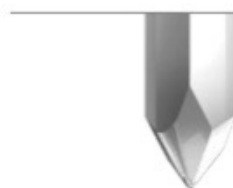
Audio-Technica's new OC9X cartridges all use a dual moving-coil structure, their coils made of pure copper extruded using the Ohno Continuous Casting method, which delivers the least possible oxides, grain boundaries and other impurities by being able, somewhat astoundingly, to draw

**OC9XEB****Elliptical
Bonded****OC9XEN****Elliptical
Nude****OC9XML****Microlinear****OC9XSH****Shibata****OC9XSL****Special Line
Contact**

STYLUS FRONT VIEW



STYLUS FRONT VIEW



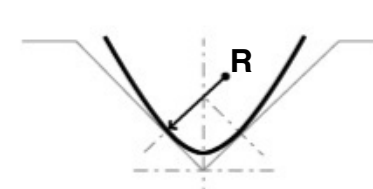
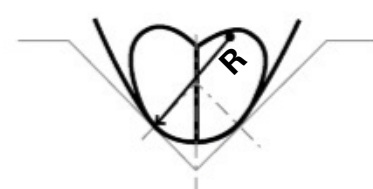
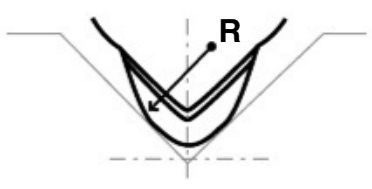
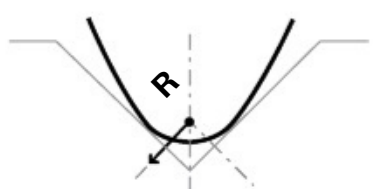
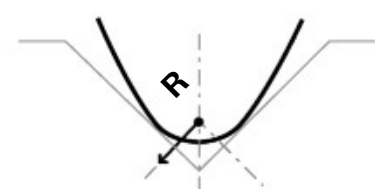
STYLUS FRONT VIEW



STYLUS FRONT VIEW



STYLUS FRONT VIEW



Five colours, five stylus profiles, and different yoke and cantilever materials distinguish the five models in the new AT-OC9X range of moving-coil cartridges.

a single crystal of copper up to 125 metres in length. The fixed magnets used in the cartridges are neodymium, the strongest type of permanent magnet commercially available,

The five models are then differentiated by incorporating different materials in their construction, and by five different stylus profiles: Bonded Elliptical, Nude Elliptical, Microlinear, Shibata, and Special Line Contact. The basic shapes of these can be seen in the images above, with the difference between the 'bonded' and 'nude' elliptical designs used on the \$469 blue AT-OC9XEB and \$699 white AT-OC9XEN respectively being the use of a steel shank on the bonded EB type, where the diamond is attached to a pin, which is then attached to the cantilever. With the 'nude' stylus, the tip and shank are constructed from a single piece of diamond, so that without the additional weight of the steel this has the advantage of lower mass, enabling nude styli to track more accurately. Audio-Technica also orientates its nude styli with their longest-wearing faces touching the record surface, so that they last longer than bonded types.

It is interesting to find the middle cartridge in the range, the \$1049 AT-OC9XML, using a Microlinear diamond profile, as this is generally considered one of the most accurate of stylus profiles, almost exactly duplicating the shape of the cutting stylus used to produce the master discs from which records are made. As the company says, "This enables it to track portions of the groove other styli simply cannot reach", delivering higher frequency response and "detail like never before experienced", while also limiting inner groove distortion.

The Shibata profile used in the \$1249 AT-OC9XSH was developed to extend the contact point with the groove from a 'dot' to a long vertical line, thereby aiming to retrieve more information and particularly higher frequencies, which became essential in the era of quadrophonic vinyl recordings that encoded surround surround information in ultrasonic sound above 20kHz. But also, by spreading the load along the longer contact, the Shibata profile is less wearing on vinyl, and this profile can achieve significantly better results on discs which have been worn over time by elliptical styli, as the line contact can read around the elliptical's dot point of contact which has become worn.

The top OC9X cartridge, the \$1399 OC9XSL, uses a Special Line Contact profile which is featured in Audio-Technica's flagship ART1000 (price \$6999). Audio-Technica credits it with "the ultimate in accurate sonic reproduction with a sense of space and realism". It is also very good for low record wear, though its larger tracing footprint may also produce more noise on heavily worn records.

DIFFERENT MATERIALS

The cantilevers also get upgraded in the higher models. An aluminium cantilever is used for for the elliptical OC9XEB and nude elliptical OC9XEM models, while the higher three gain a boron cantilever, hitting the material ideals of being strong, stiff, light and 100% inert.

The yokes, the magnetic base structure through which the cantilever passes, also vary according to model. The Elliptical and Nude Elliptical models have a pure iron yoke, which

enhances the energy of the magnet, while the three highest cartridges use a permendur yoke, a cobalt-iron soft magnetic alloy which has high saturation flux density and outstanding magnetic properties to further enhance the concentrated magnetic field of the coil gap.

The OC9X series all have rigid aluminium bodies, designed to minimise vibration, and are pre-threaded, enabling them to be easily mounted to a headshell or tonearm with just two screws, without the need for mounting nuts. (Audio-Technica has launched a new range of three AT-LH headshells of different weights to pair with the new cartridges.) Each OC9X-series cartridge comes with mounting hardware including a non-magnetic screwdriver, washers and four sizes of mounting screws, in addition to a stylus brush and other accessories.

All five cartridges are now available in Australia from Audio-Technica dealers both online and in-store, where you will also have the benefit of the advice you may need to make the right choice that will take your turntable to the next level of vinyl reproduction. ■

audio-technica AT-OC9X phono cartridges

Prices

OC9XEB (blue): \$469
OC9XEN (white): \$699
OC9XML (red): \$1049
OC9XSH (brown): \$1249
OC9XSL (black): \$1399

Contact: Technical Audio Group

Telephone: 02 9519 0900

Website: www.audio-technica.com.au



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AMPLIFICATION



SMART AMPLIFIER

CYRUS ONE CAST

Cyrus takes its already solid Cyrus One amplifier, adds a shedload of smart functionality, upgrades the power section, and connects it to all three main voice assistants. We like it very much.

The Cyrus One amplifier design has had quite the evolution. The very first Cyrus One was launched in 1984, but the friendly yet purposeful re-design pictured here arrived a few years back, as an entirely analogue amplifier. Then a version with digital inputs was added: the Cyrus One HD.

Now we have this new Cyrus One Cast which, as its name suggests, adds Chromecast to the mix, along with Apple's AirPlay 2 and Bluetooth, so making this latest amplifier an easily-selectable end-point for streaming music services, and transforming it into a smart amplifier to which you could, at a minimum, just add speakers if all you want is a high-quality streaming playback system. To make this even easier, the One Cast can be controlled by any of the three main voice assistants — Google, Alexa or Apple's Siri. "*Great music made simple*," is how Cyrus describes it.

But of course the available inputs could equally be utilised to make this new smart amplifier a hub for an expanded system including other sources, including your TV audio, thanks to the inclusion of an HDMI ARC-compatible connection.

EQUIPMENT

The recent trio of Cyrus One models are, as noted, continuing a long tradition. The very first Cyrus One was released 35 years ago, in golden days when this amplification brand partnered Mission loudspeakers in the UK and shared their rise at the centre of a veritable 'Britpop' world invasion of high-quality mid-price UK-based brands over the subsequent 10 years.

Remarkably, while many of those brands have moved or been sold multiple times, Cyrus remains in private hands, its HQ still in the UK's Cambridgeshire, where it not only designs and prototypes but also still manufactures its distinctive 'half-width' hi-fi — half-width at 22cm wide, but not exactly half-size, with the Cyrus approach being more like putting the fascia on the short end of the chassis, so their hi-fi is often unusually deep.

It's a unique look which Cyrus has made and kept its own since the beginning. And we've been loving the most recent Cyrus One front panels, just two big knobs on a black gloss fascia, with a cutaway below for the power switch, IR receiver

and quarter-inch headphone socket. Round the back are the inputs, which are varied if fairly minimal, in having one of each type.

So there is a single line-level analogue input (labelled 'AV') but pleasingly also a phono-level analogue input with grounding post for a turntable with a moving-magnet cartridge.

There is one each of coaxial digital, optical digital, and USB-B for playing directly from a computer. And there is that HDMI input which can use the Audio Return Channel (ARC) of HDMI to play from your TV, bearing in mind this will require permanent use of one of your TV's HDMI inputs, of which TVs are invariably rather under-equipped with only three or four.

Those are the visible physical inputs, but it's the invisible ones which give the One Cast its naming rights. The built-in Chromecast makes the OneCast appear as a destination in a great many apps — notably Spotify, Tidal, TuneIn, Google play, Soundcloud, ABC Listen; the list of apps is long! These will stream not directly from the phone or tablet you're using to control the music, but will be picked up by the One Cast and played directly from the internet from your Wi-Fi network, so the path is minimised and the quality maximised. On the subject of networking, the One Cast has twin Wi-Fi antenna at its rear (802.11a/b/g/n/ac), and there is no Ethernet wired connection available, so ensure your One Cast will be situated in a place where your home Wi-fi is reliably strong. With a good signal, streaming



AMPLIFICATION



Connections: in addition to streaming abilities, the One Cast offers one each of phono, line-level, optical, coaxial, USB-B and HDMI ARC inputs.

is reliable; as you'll read below we were sending high-res 24-192 files by Wi-Fi with no problems.

PERFORMANCE

Wi-Fi can be set up in a number of ways. If you're planning to use AirPlay and only AirPlay, then any iOS device will have it set up in a jiffy, finding the OneCast at the bottom of the Wi-Fi settings page and doing all that is required. But AirPlay set-up will not make the One Cast available to all those Chromecast apps, nor to Alexa voice control. So the preferable set-up is through the Google Home app. Again this is easy if you're already using Google Home, otherwise there's a fair bit of information required to get the app running before you can turn to the One Cast. Google Home will allocate it to a room, and you may wish to rename it to something easy to address in Google language, such as 'The Hi-fi' — "Hey Google, play Crowded House on the hi-fi". We found that 'Cyrus' was not easily recognised, by our Australian Google lady at least. 'One Cast' was effective, but harder to remember under pressure.

Getting Alexa to talk with the One Cast is a little harder, requiring the Alexa app (again sign-ups required for newbies), adding the 'Nuvola' skill (Alexa uses skill sets to address specific equipment whereas Google is usually more generic). This revealed the tech within as being from Frontier Silicon (the Minuet 1.0 platform), as does the need to install that company's Undok app to associate the One Cast with your Frontier Nuvola account. We have enjoyed the Undok app in years gone by, but for a while other users of the app, including Ruark and Bush, were backing away from it after glitches in their portals earlier in the year. However this seems now to be resolved, and in any case, with the Cyrus amplifier, Alexa set-up is apparently the only time you'll need the Undok app, short of a factory reset.

One nicely quirky Cyrus innovation here is to have done away with a front-panel display, while still allowing some degree of information to be available by reading the lights around the lovely knobs of the Cyrus One Cast. You get a little light show as you power it on, a circular rippling of the LEDs around the right volume knob before the Cyrus settles into its duties with a click. The top light can flash red or yellow to indicate set-up modes, and turns from green to white when casting. The lights on the right knob can be used to indicate balance settings in addition to volume. There's a handy option also to lock the controls — "useful during a party or to prevent accidental operation by children", suggests Cyrus; it takes about five seconds (press and hold power, then press OK) to unlock them again. Cyrus's manual is clear to read, and full of diagrams to help you find your way around.

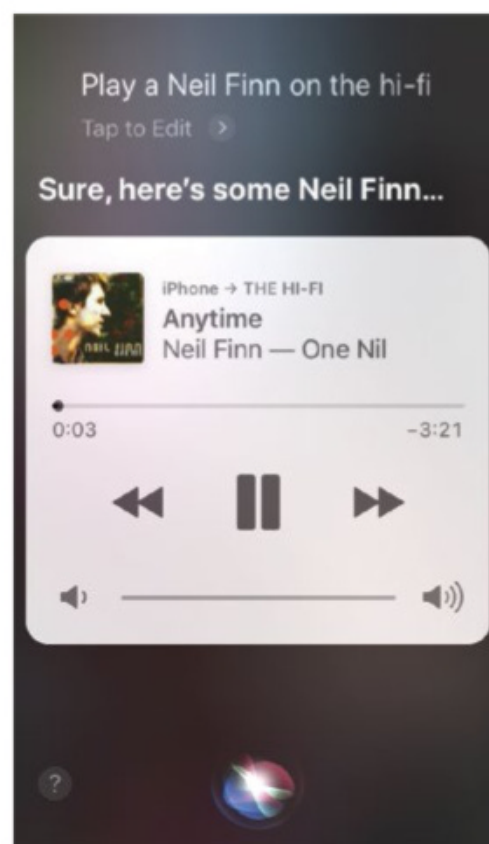
The AV (analogue) input can be set to its maximum by pressing a button on the remote control; this would seem to be rather dangerous should you be playing something at the time and do it accidentally, delivering a full level output to your speakers (gulp). But Cyrus has sensibly made this button active for only 20 seconds after you switch the amp on, so accidental use is very unlikely. This 'AV passthrough' option, as it's usually called, is there so that you can use the One Cast to power the front channels of a surround system, leaving its volume under the control of an AV receiver or preamp earlier in the chain.

We first undertook a factory reset, using the automatic mode described in the manual. Thereafter we were quickly set up using our increasingly-populated Google Home app, which connected the Cyrus like any other Chromecast speaker. Once allocated to the living room and renamed as 'the Hi-fi', we also used the app to select our Google Home device and set its default speaker to the Cyrus as well. Thereafter we could simply command "Play Tyler the Creator" and out it came from the speakers we'd connected to the Cyrus, along with a slightly annoying confirmation from the Google device: "Sure, Tyler The Creator playing from Spotify on the Hi-fi. By the way, this artist is playing in Sydney on December 31st." Shut up Google; we just want the music!

We were still more delighted to find that our Google Home could awaken the Cyrus from

standby, into which the amp will switch after 20 minutes of inactivity. There's no better way to encourage music listening than being able to walk into the room and say "Hey Google shuffle my favourites", and off you go. Google will also control the volume (assuming it can hear you once you've turned the volume up loud).

We also went through the connections required to link up our Echo Dot with the One Cast; we got it listed as a device but Alexa kept saying "Sorry that device is offline", even though it happily played under Google command.



As we were using a development version of the Nuvola skill before it became officially available in Australia, we'll forgive it this glitch.

Thanks to AirPlay 2 we could also use Siri from our iPhone, which worked well once the AirPlay connection was made. "Play Neil Finn on the Hi-Fi" would grab songs from our on-phone music collection and send them direct to the Cyrus (see screen grab below left).

The One Cast also powers up and down with your TV if playing via HDMI, and follows your TV's volume control commands via HDMI CEC (assuming your TV is compatible; ours was, and most these days will be). So you shouldn't need to turn on both the TV and the Cyrus in order to hear the TV sound. Handy. Smart!

We also played from the TV via optical, which does require powering up both separately. But the Cyrus remembers its last input setting, so this works well enough as well.

Cyrus supplies no app of its own for the One Cast. Rather it simply makes itself available to whatever apps you're already using. If you're on an iPhone or iPad using an app which doesn't support Casting (Apple's own Podcast app, say), then you can simply use AirPlay 2 instead — you'll find the One Cast waiting.

With both Chromecast and AirPlay 2 on board, it is also accessible via two paths for the music software Roon, even if it isn't directly Roon-compatible. Roon makes playing from network shares and high-res files easy, otherwise you might use a third-party DLNA app in concert with AirPlay or Casting — we enjoyed stable streaming of 24-192 files using AllConnect on an iPhone, AirPlayed to the Cyrus, and from Synology's UPNP Extreme on the iPhone Bluetoothed across

to the Cyrus. With these workarounds, there was very little which couldn't be played. Of course, if you have your computer plugged into its USB-B input, that's the easiest way of all to play such files. The Cyrus plays up to 32-bit/192kHz and DSD128 (says the website; the manual says DSD64) via USB.

It's a sign of the times that we can be this far into an amplifier review without talking about the amplification! This amp moves on from the third generation of Cyrus' hybrid Class-D amplification as used in the first of the modern Cyrus One models and is now a tweaked-up 4th generation, rated at 2 x 100W into 6 ohms (we were using six-ohm T+A speakers for most of our listening, as it happens) though measured at a fairly generous 0.1% THD+N. In addition it retains Cyrus's SID (Speaker Impedance Detection) which "automatically calibrates amplifier to your speakers". And whatever the source, we warmed greatly to the Cyrus One Cast sound. Where we found the earliest Cyrus Class-D circuit (used in the do-everything Lyric model) to sound occasionally brittle, this One Cast just rolled the music out, having plenty of drive and a true hi-fi level of clarity regardless of the manner in which the music was being streamed or played. Wi-Fi streaming sounded a little better than Bluetooth. Files sounded a little clearer than Spotify, but Tidal's HIFI streams sounded just as good as files. TV through the Cyrus and a good pair of speakers sounded better than the vast majority of soundbars. There are also pre-outs that could be used to expand the amplification, and we shouldn't forget to praise the inclusion of a high-quality headphone output. We plugged in our turntable and enjoyed a great deal of vinyl, from the new album by Jeff Lynne's ELO, which

we think rather better than most of its reviews, to the expressive tinkling of Keith Jarrett, and onto some kick-arse remastered Zeppelin.

If we're searching for criticisms, we'd say the remote feels a little cheap and clicky compared with the amp itself, though it is a great improvement on the small credit-card style remote supplied with the earlier Cyrus One. and it has 'brightness' buttons to tame the lights around the knobs, which were rather too bright by default, especially at night, so bright that when they're shining in your face it was hard to read the input names around the knobs. Talking of which, there's no indication which input is optical (it's number 6), which coaxial (it's 5), other than small numbers on the back of the amp next to the plugs. The other inputs have little symbols, but you can't read them across the room, and the remote only shuttles through inputs, it doesn't directly select them. So input selection requires some familiarisation.

CONCLUSION

The Cast version of the Cyrus One takes it from a relatively traditional amplifier to a very fine smart amplifier. We especially like the way it works with whatever apps you already use, rather than requiring you to learn a new one. However you play music, chances are the Cyrus One Cast will appear in your list of available devices and will replace your phone sound or your little wireless speaker with true hi-fi power driving a good pair of speakers. With streaming, a TV input and even a turntable input, it's a thoroughly modern system solution, and confirms our hopes for high-quality hi-fi which can handle the modern age of music. ■



Narrow frontage: Cyrus continues its habit of delivering narrow but long components.

Cyrus One Cast smart amplifier

- Inputs and streaming combination to play from wherever you already get your music
- High-quality amplification
- Voice control from all three assistants
- Input selection requires familiarisation

Price: \$1999

Inputs: 1 x live-level RCA, 1 x phono RCA, 1 x optical digital, 1 x coaxial digital, 1 x USB-B, 1 x HDMI ARC, Wi-Fi, AirPlay 2, Bluetooth

Outputs: preout RCAs, subwoofer out, speakers out

Quoted power output: 2 x 100W into 6 ohms (both channels driven; THD+N <0.1%

Quoted frequency response: 6Hz-50kHz -3dB

USB sample rates: PCM to 192k, DSD128

Dimensions (whd): 220 x 85 x 390mm

Weight: 5.6kg

Contact: Indi Imports
Telephone: 03 9416 7037
Web: www.indiimports.com



AMPLI-TUNER/NETWORK AUDIO STREAMER

MARANTZ NR1200

It's a hub for HDMI devices, for wireless multiroom streaming, it has FM and DAB+ radio — and at its heart it's a Marantz stereo amplifier. The NR1200 should make a lot of people happy.

We are happy to bet that one of the reasons you're reading this review is because you've never heard of an 'ampli-tuner.' Neither had we, but there it was, written on the side of the box. Which was weird because written on the top of the box was 'Network Audio Receiver'. But before you say 'I don't want a multi-channel receiver', we need to point out that Marantz's NR1200 is not a multi-channel receiver... it only has two channels: left and right. Yep. It's a true stereo receiver that can receive broadcast FM and DAB+ radio stations. It can also play internet radio stations, and connect to your TV via HDMI so it can improve the sound of whatever you're watching. It's also a network player, able to play content stored on your network drive (NAS) or on your computer. Plus it's also a DAC, so you can also play back digital sources... and a lot more besides.

EQUIPMENT

You might also be asking yourself why Marantz built the NR1200 at all. Surely the potential market for two-channel receivers is so small that a large multi-national company such as Marantz wouldn't be interested? This is where we think Marantz has been very clever. The NR1200 doesn't appeal to just a single market segment, but to a great many, and this is what will ensure it will be a best-seller for the company. And here's why...

First, many people in the older demographics love listening to radio. They like the variety it offers. They like that it's easy to access: they can just select the radio station they want. And what they most particularly like is the fact that radio is free. No internet connections required, no complex usage plans: they're just plucking signals from the air. And radio isn't multi-channel, it's stereo, so using any type of multi-channel unit

to play it back would be a waste. For these users, the Marantz NR1200 is the perfect component. It offers access to the FM band, which will give the best sound quality, and to DAB+ radio, which will give you access to all the stations from AM (as the NR1200 can't receive actual AM radio transmissions) but without the usual static and interference.

Then there's the demographic of rusted-on TV viewers who want to improve the sound quality they're getting from their TV, but do not want to install a full 5.1-channel sound system. (They likely also don't want the large, bulky electronic component required to drive all those speakers.) The Marantz NR1200 is small, slim, easy to use and, by virtue of its HDMI connections, will improve the sound of any TV. All you need do is add a pair of loudspeakers... even quite small speakers... and you will improve your TV sound out of sight. And if you'd rather use small loudspeakers (which aren't renowned for their ability to deliver deep bass), but you still want movie-quality deep bass, you can use the NR1200's built-in subwoofer outputs to connect a powered subwoofer (which can be hidden somewhere out of sight in your room and will still work perfectly



well) to deliver it. In fact, the NR1200 has two subwoofer outputs, so you can connect two subwoofers... a trick that will always deliver more uniform bass sound throughout an entire room.

Then you have the youthful demographic that does want to be able to stream from the internet, accessing Spotify, Tidal *et al*, play music from their network and computer, and stream music from their phone but at the same time also wants high-quality sound... which you don't get from most of the other solutions that offer this kind of playback flexibility. The Marantz NR1200 offers all this and more, with low-noise, low-distortion amplification on board: a dual-mono Class-AB output stage that's rated at 75W per channel into 8 ohms.

So what's on board the Marantz NR1200? We've pretty much given it away already, but on

the analogue input side, you have three line-level stereo inputs, plus a moving-magnet phono input. On the digital side, you have two digital inputs (one coaxial, the other optical), plus you can get signals into it via its front-panel USB input, Ethernet, Wi-Fi, AirPlay 2, Bluetooth, HEOS or via one of the NR1200's five HDMI inputs, all of which support HDCP 2.3, 4K Ultra HD 60Hz video, 4:4:4 Pure Colour sub-sampling, HLG, High Dynamic Range (HDR10), 21:9 video, 3D and BT.2020 pass-through. The single HDMI output (for your monitor) has ARC (Audio Return Channel) so you can grab the sound from your TV and feed it from the amp through to your speakers, rather than having to put up with the tinny sound from your TV's speakers.

So far as outputs are concerned, the NR1200 has both 'A' and 'B' speaker outputs, so you could run a second pair of speakers in another room if you wish, plus Marantz has included 'Front' and 'Zone 2' analogue outputs for even more flexibility... though Zone 2 doesn't talk to the HDMI or coax/optical digital inputs. Oh, and we guess it's an output, but we liked that the Bluetooth is two-way, which means you can send music to Bluetooth headphones as well as stream it from your device to the Marantz NR1200.

PERFORMANCE

As with many modern home theatre components, Marantz has provided automated set-up instructions that will walk you through the entire set-up process via on-screen instructions. All you have to do is connect a screen so you can see the instructions, and with HDMI, this is a snap!

Despite its many hard-wired options, the Marantz NR1200 has so many wireless options that you'll be able to choose the one that works best for you... or use them all. Marantz would no doubt argue that the best option would be its own HEOS wireless multi-room audio platform (shared with Denon), and it's certainly an impressive system, not least if you have other HEOS-equipped devices in your home, in which case you'll be able to share music between them, no matter where in your home they are physically located. But whichever option you ended up using (exclusively or partially), you'll be able to use voice control to select tracks, adjust volume, switch sources and so on, via the appropriate assistant (Siri, Alexa, Google Assist). These assistants are not equally capable, so if you have a specific application in mind, check it will do what you want before purchase!

When choosing any product, it's important to first look past the 'bells and whistles' and check the underlying performance, because if the underlying amplification is not up to the task,

the rest is of no use. So we're happy to be able to report that the NR1200's amplifier has adequate power for any application it's likely to be used for, and is more than happy driving low-impedance speakers. We first tried the line-level input with the analogue output from a CD player and were mightily impressed by the high volume levels, the low noise, the absence of distortion and the very clearly extended frequency response. We confess we did think the sound was a tad better in either of the NR1200's 'Direct' modes, which means that for best sound, you'd have to forgo using the tone controls as well as the featured MDAX circuit (it's supposed to improve the sound quality of compressed audio formats) but the NR1200 sounds so good *au naturel* that we don't think you'll need them. The FM and DAB+ reception capabilities were good as well, so your 'free to air' listening will be all the more pleasurable. The phono stage was OK, but if you spin lots of vinyl, you might want to consider using an outboard one.

Good news on the digital input front as well. The coaxial digital inputs are excellent, so if you have an older CD player that has a digital output, you'll definitely improve its performance by connecting it to the NR1200. No doubt a lot of this performance is down to Marantz's engineers configuring the AKM AK4458 DAC in Dual Differential Mode, thereby improving the performance of what was already a first-rate chip. On that front, the device will handle ALAC, FLAC and WAV lossless files up to 24/192 as well as DSD 2.8MHz and 5.6MHz. All the popular lossy codecs are covered as well (MP3, AAC, etc).

All up, we enjoyed our time with the Marantz NR1200 immensely.

CONCLUSION

If you want all the 'mod cons' that current audio/video technology has to offer, as well as first-rate audio and video performance, but you're not interested in multi-channel sound, you've come to the right place. Highly recommended. ■

Marantz NR1200

- Superb feature set
- Fine sound quality
- High build quality
- Phono input could be upgraded

Price: \$1299

Power output: 75W per channel into 8Ω

Frequency response: 10Hz–100kHz

THD: 0.01%

Phono input sensitivity: 2.5mV/47kΩ

Phono S/N ratio: 74dB

Line input sensitivity: 200mV

Line S/N ratio: 98dB

Power consumption: 210W

Standby consumption: 0.2W

Dimensions (WDH): 440 × 378 × 105mm

Weight: 7.9kg

Contact: QualiFi

Telephone: 03 8542 1111

Website: www.qualifi.com.au





HYBRID INTEGRATED AMPLIFIER

**MCINTOSH
MA252**

Valves that glow green mark out McIntosh's hybrid integrated amplifier – valves in the preamp stage, transistors in the output stage. It's a combination that brings magic into the home.

The McIntosh MA252 integrated amplifier is the first 'hybrid' integrated amplifier that this world-famous American company has ever built.

That's an important statement given that McIntosh has been building amplifiers for 60 years. So the McIntosh MA252 has been 60 years coming... was it worth the wait?

EQUIPMENT

But first, what is a hybrid integrated amplifier? Basically it's a component where one of the two amplifying stages uses valves — or 'tubes' as our US friends like to call them — to amplify the audio signal, while the other amplifier stage uses transistors. Any integrated amplifier has two amplifying stages — the 'pre' and 'power' stages — so there are two ways to build a hybrid audio

amplifier. One way is to use valves for the 'pre' section and transistors for the 'power' section; the other is to use valves for the 'power' section and transistors for the 'pre' section.

In the MA252, McIntosh has elected to use the former approach, employing 12AX7a and 12AT7 valves in the preamplifier stage, and transistors in the output stage. The reason McIntosh does it this way, rather than the other way around, is to attempt to achieve the best of both worlds: the sweet sound quality that's inherent in valve amplification and the very high power output that transistors make possible.

But wait! Isn't it possible to get high power output from a valve amplifier stage? Of course it is... and no-one knows this better than McIntosh. After all, its MC2301 valve amplifier is rated with an output of 300W into 8 ohms. But achieving

such high power output using only valves costs money... and lots of it. That McIntosh MC2301 currently retails for \$25,9995 and you need two of them for stereo. This MA252, on the other hand, is rated at 100W per channel into 8 ohms (160W per channel into 4 ohms) and it only costs \$7495.

Of course using transistors rather than valves in the output stage means that you miss out on one advantage of using valves, which is that it's extremely difficult to drive them into hard clipping. Valves have an inherent 'soft clipping' characteristic when they're overdriven that can actually make the sound quite attractive. (Which is why many guitar players use valve amplifiers with special 'overdrive' circuits.) To circumvent this, the high-current transistors McIntosh uses in the output circuits of the MA252 are monitored by McIntosh's patented 'Power Guard' circuitry which monitors the output signal for any signs of overdrive and makes real-time micro adjustments to the input signal to prevent the output stage from being driven into clipping. You will know if the Power Guard circuit is operating, because when it does, the colour the valves are glowing changes from green to orange.



“If you’re wondering why McIntosh uses a lot of green on their products, it’s because that’s the primary colour used in the McIntosh tartan worn by founder Frank McIntosh’s Scottish forebears. ”

We were really pleased to discover that McIntosh has included an input trim circuit that allows you to adjust the sensitivity of the inputs to exactly match the output of whatever component you’ve connected, so that when you switch from one input to the other, the volume will stay the same. Unlike some such circuits, which don’t offer much of an adjustment range, McIntosh’s trim circuit has a full 12dB of adjustment available... and in precise 0.5dB steps too.

PERFORMANCE

The first thing we realised after we’d finished the hook-up and switched the MA252 on is that it has a fantastic-looking OLED front panel display, which shows the amplifier’s model number and the words ‘Tube Warmup’ while the amplifier is warming up (which takes 15 seconds), after which it shows the source selected (which will be your last-used source), and after that the volume level slowly ramps up from zero to stop at whatever volume level you were last listening. While the amplifier is warming up, the LEDs illuminating the small signal valves glow orange, so when they turn green, you’ll know the amplifier is ready to go.

The second thing we realised (though only after a few days) is that the McIntosh MA252 ‘remembers’ balance, bass and treble settings independently for each input. So if, for example, you have adjusted the channel balance of the phono input to compensate for a slight voltage difference between your phono cartridge’s left and right channels, when you switch from your phono input to, say, your CD player on another input, the channel balance will revert to 0dB in each channel. Likewise, if you prefer to roll off the bass a little and accentuate the treble when listening to LPs, the McIntosh will apply these settings whenever you switch to the phono inputs, but revert back to a ‘Flat’ tone control setting (or whatever other tone control settings you’ve set) when you select a different input. This is a great feature... incredibly useful for day-to-day use.

The input selector on the left side of the sloping section of the front panel has a click-stop style action and in addition to selecting your desired input, it doubles up as the ‘Trim’ control (push it inwards for Trim options). If you hold the control pushed in for more than a few seconds, you skip past the ‘Trim’ options and it shows the amplifier’s model number, serial number and software version. On our sample, this last was V1.01.

The volume control on the right of the front panel has a beautiful ‘smooth as silk’ action. Pressing the control in activates the amplifier or puts it into stand-by mode. Rather confusingly, the

small LED alongside it glows red both when the amplifier is operating and when it’s in standby.

The very first time we turned up the volume control on the MA252 it was to bring the sound of Lloyd Spiegel’s ‘Backroads’ up to a volume level that made our listening room sound like a ‘blues night’ at a small night-club... and if that’s the night you’re having, Lloyd Spiegel’s your man (though on this album he’s assisted by the other Spiegels, Marty and Riley, plus a gaggle of fine musicians, with the indefatigable Tim Burnham on drum duties). Right from the intro track, *The Kick Around*, which is more boogie than blues, we could hear we were in for a treat, with the McIntosh’s solid-state bits delivering solid, driving bass and beautifully-paced rhythmic drum sound while at the same time the tube-y bits were working their magic on Lloyd’s guitar sound, so that it was simultaneously clean and accurate, yet at the same time warm and alluring. On *Bridges to Burn*, one of our favourite tracks on this album, the warmth the valves bring to Levi Harkness’s bass is exemplary, yet at the same time listen to the drier sound of Burnham’s kit, while Lloyd’s voice is put right out front, just where it should be.

At this point we can see valve aficionados scratching their heads, because when they’re operating, valves glow an orange-reddish colour, not green. The valves in the MA252 glow green simply because McIntosh has fitted chameleon LEDs underneath them, which emit a green glow that’s bright enough to outshine the glow of the valve heater, but when the Power Guard circuit triggers, the LED colour changes from green to orange. There’s one Power Guard circuit per channel, so if only one channel is clipping, only that channel’s two valves will change colour. If both channels are clipping, all four will glow orange.

And if you’re wondering why McIntosh chose green, and uses a lot of it on their products, it’s because that’s the primary colour used in the McIntosh tartan worn by founder Frank McIntosh’s Scottish forebears. This green has been used on all McIntosh products since 1949.

Unlike many recent amplifier designs, which feature digital sections and an internal DAC, McIntosh’s MA252 is an exclusively analogue affair with two unbalanced line-level inputs, one balanced line-level input and a phono input (MM).





AMPS/RECEIVERS

Then just listen to the absolutely stunningly-reproduced lead guitar solos on *Christina*, along with the acoustic and the backing vocals. The McIntosh never put a foot wrong, keeping a very tight grip on the PRaT while at the same time never once sounding clinical... if you're looking for a definition of a 'musical' sound, the MA252 is it personified. And just listen to the way the McIntosh handles the complex rhythms on *Candy Cane*... fantastic!

A switch to heavy metal, in this case Stone Temple Pilots' album 'Stone Temple Pilots' (the second and more recent) showed the band powering to even greater heights. The McIntosh MA252 proved easily capable of separating the myriad musical strands presented in STP's work, and also capable of digging through the 'grunge' and delivering the impeccable underlying musicianship. Lesser amps deliver STP as a 'wall of sound', whereas played through the McIntosh MA252 the sound becomes multi-dimensional; you can simultaneously hear all the separate layers whilst experiencing the full aural image. Listening to STP always makes us crank up the volume, and the McIntosh had so much power on tap that we could crank it to ear-shattering levels without running into clipping, or without even the sound getting hard... and that lovely valve softness remained an underlying defining sonic signature. The lack of background noise from the amplifier was made shatteringly clear by the unexpected finale to *Roll Me Under*, which comes as a sonic wake-up call.

From blues to heavy metal to... classical of course, the forerunner of both, and to a true classic, Beethoven's 5th, in the hands of Carlos Kleiber and the Vienna Philharmonic, which is likely the best recording of this work available... though we can't say we've heard all of them. Carlos Kleiber was an enigma, a conductor who barely conducted,

but when he did, wow! He could always bring out the best in any orchestra, and usually better than their best. You can hear this in this Fifth, and most particularly with the aid of the clarity of the McIntosh MA252 letting you reach into the soul of the music. The *coup de grâce* is the superb acoustic of the venue and the quality of the DG recording itself, both revealed perfectly by the MA252.

When we wanted to test the tonal accuracy of the McIntosh MA252 with piano, the recording we played first was a favourite, Hélène Grimaud's recording of famous works by Bach (titled 'Bach') in the original and in transcription. Normally we like our J.S. unadorned, but for Grimaud we'll make an exception, because her playing is like no other pianist we've heard. She doesn't so much 'play the notes' as reveal the music behind the notes. She plays *Partita No 3* (a Rachmaninov transcription) like a ballerina, her fingers dancing over the keyboard, while the way she plays the Busoni

transcription of *Chaconne in D minor* is as if she's a composer. Unreal. The recording and sonics are superb, and the McIntosh MA252's sound puts the piano in the listening room. We ask for no more.

CONCLUSION

McIntosh has a reputation as an 'aspirational' brand — a brand everyone desires to own but few can afford to buy — and certainly products such as the aforementioned MC2301 and the simply stunning XRT2.1K speakers anchor that reputation in reality. Which makes the MA252 something special. It looks like a McIntosh. It sounds like a McIntosh. It's built like a McIntosh (and in Binghamton, NY, like all other McIntosh products). But despite the fact it's certainly aspirational, it won't require you to aspire quite as much as most other products wearing McIntosh livery. Different, yet not different... and you know you want one. We certainly do! ■



McIntosh MA252

- Wonderfully musical sound
- McIntosh cachet
- Input-specific settings
- Nothing we couldn't live with!

Price: \$7495

Power output: 2 × 100W into 8 ohms, 2 × 160W into 4 ohms

THD: 0.03%

Dynamic headroom: 1.8dB

Frequency response: 20Hz to 20kHz -0.5dB; 10Hz to 100kHz -3dB

S/N ratio (phono): 80dB

S/N ratio (line): 97dB

Input impedance (line): 20kΩ

Damping factor (re 8Ω): >200

Dimensions (whd): 305 × 194 × 457mm

Weight: 12.7kg

Contact: Synergy Audio Visual

Telephone: 03 9459 7474

Web: www.synergyaudio.com



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SMART AMPLIFIER

NAD M10

NAD's Masters Series moves up from the traditional midrange hi-fi of this famous brand to something higher. Add BluOS smart multiroom streaming, and the M10 delivers something special.

If you're looking at buying a simple hi-fi system, smart amplifiers can make that job a whole lot easier. Smart amplifiers are boxes which stream music in addition to providing power — so that they can be used as an easy just-add-speakers system solution. An amplifier's traditional roles are the switching of inputs, the control of volume level and, of course, the power to drive speakers. A smart amplifier adds to these a streaming data connection to the home network and internet. And through this a smart amplifier gains near-infinite possibilities — software control, playback of local music from the network, access to the whole world of internet radio and online music services, some paid, some free.

When we did a group test of smart amplifiers in *Sound+Image* magazine during 2019, the most successful of that group (though also the priciest at \$1549) was the Bluesound Pownode 2i, which has since had an HDMI input added as a useful bonus. It went on to win Sound+Image's Amplifier of the Year under \$2000.

Bluesound also benefits from being sister company to NAD, with access to its raft of amplification technologies, which is part of that product's secret in sounding so good.

But here, with NAD's own M10, the interaction seems to go the other way. This is one of NAD's Masters Series, a higher level of component introduced in 2005, simultaneous to NAD's adoption of 'digital' amplification at a time when most audiophiles were greeting Class-D with not so much open arms as a raised cross. So the M10 takes the latest developments in that heritage, and pinches brother Bluesound's streaming platform to handle the front-end. Which makes a lot of sense.

More than this, Bluesound, or BluOS as the 'platform' is called, was developed to support this level of quality from the beginning, above most rival streaming and multiroom platforms, notably in supporting high-res audio from the start, where others added it later or still don't support it. All BluOS and Bluesound 2i products can

stream at high-res from Tidal's HIFI-level Masters albums, able to fully unfold MQA files. They all have AirPlay 2, which delivers CD-quality streaming and multiroom from Apple devices and computers. They can play high-res audio files over network shares. BluOS is a fully mature platform, and that gives it the inherent quality to be well placed as an input to a hi-fi system also of high quality, while further fully integrating that system within a home that might have Bluesound wireless speakers in smaller rooms, a TV soundbar or a NAD receiver-based home cinema, along with smart devices and tablets for control. This is thoroughly modern hi-fi!

But there's another reason why the M10 seems particularly pleasing in this coming together of traditional amplifier and smart streaming platform. NAD has been offering BluOS in amplifiers and receivers for some time, but most of these have delivered the platform as an add-on, sometimes explicitly as a 'module' within NAD's system of Modular Design Construction (MDC). MDC products have spare 'bays' at the rear, where you can choose to have modules fitted either at purchase or retrospectively. This system has advantages of upgradability when new formats or connections come along, and of versatility in having one product able to deliver several potential specifications. The modules themselves vary from product to product, with options including digital input sections, HDMI upgrades on receivers — and BluOS modules. But it did sometimes leave BluOS feeling like a bolt-on, outside the main design of the unit.

“The question becomes why one would choose to settle for less. Is the move from a \$999 Sonos Amp or that \$1549 Bluesound Powernode 2i to the M10’s \$3999 such a stretch? We hope not.”

The M10 doesn’t have modules. Instead we have a NAD amp which feels to have BluOS at its heart — you’re barely past admiring its build quality and plugging it up before you’re directed to download and open the BluOS app to connect it, to network it, to update it.

EQUIPMENT

One small thing that endeared us to NAD’s M10 very early on was that it was always ready to go. The amplifier it had replaced in our test system had the rather annoying default of powering itself down automatically after 20 minutes of inactivity; so much as a phone call and you’d be required to press its power button or fumble for the remote control before being able to listen to it again, through cold Class-AB circuits.

Not so the M10. For one thing, it uses the Ncore version of NAD’s HybridDigital amplification, and Ncore is notoriously efficient, so there’s no real warming up to do. But mainly because the M10 only appears to power down, its large 15 × 6cm TFT LCD touch-screen being fully off, but the still-glowing white NAD logo up top an indication that it is, in fact, ready to leap to life as soon as it senses an input. It’s always ready to go, and it delivers immediately to its highest level. This made all its users happy during its stay, and served as an accurate introduction to the M10, which proves an amplifier of a level able to satisfy a dedicated hi-fi listener, but which is also — gasp — impressively easy to use.

That ease of use is all the more remarkable given the wealth of modern hi-fi conveniences available from the M10. As an amplifier, it has physical inputs, though perhaps not as many as you would expect on a non-smart amplifier at this price (see right). There are two RCA analogue pairs, plus one each of optical and coaxial digital inputs, a USB slot which can play music files from thumbdrive or larger USB drives, and a nice surprise in an HDMI socket which can play from a TV’s ARC-compatible HDMI socket.

The DAC which will ultimately decode those signals is an ESS Sabre DAC working up to 32-bit/384kHz, though the final processing appears to be at 24-bit/192kHz.

There’s a preamp output and a 12V trigger out, both of which might allow the upgrade to an even higher level of separate power amplifier; there seems no way to switch the pre out sockets to a fixed output for recording use. There is not one but two mono subwoofer outputs for those adding depth or running subwoofer-satellite systems. There is no headphone output on the M10, but it can stream

to wireless headphones via Bluetooth, with aptX and aptX HD available for headphones that support it.

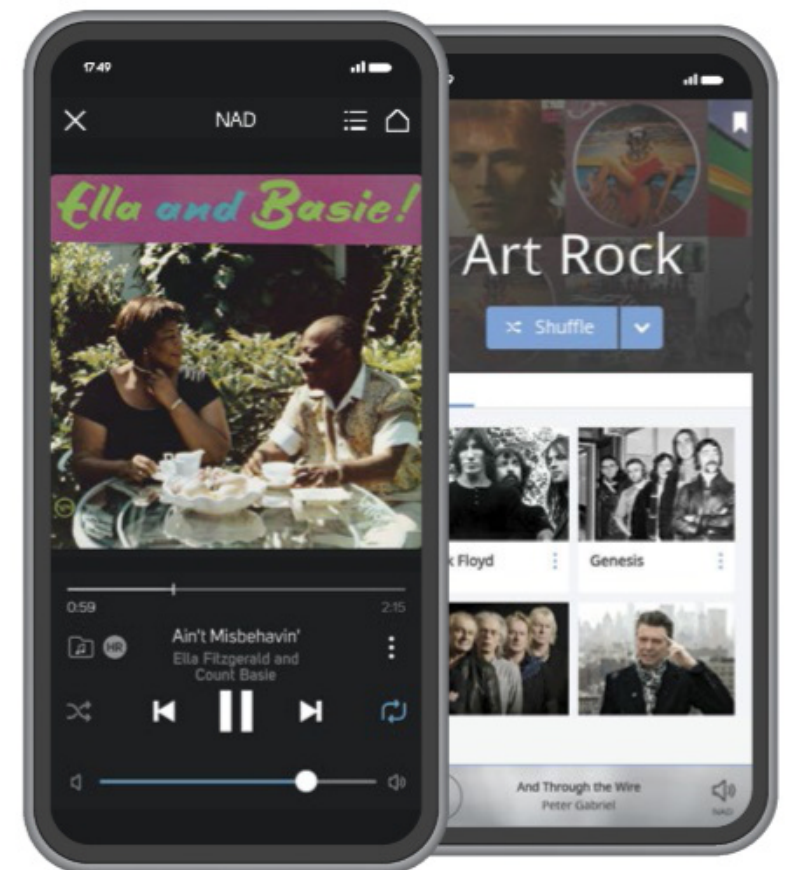
There are two sets of high-quality binding posts for your speakers; we used banana plugs but you could slip in spades or bare wires. Between the terminals is a small switch for bridged mode, which “at least” doubles the power in mono for a single speaker, with a second bridged M10 for the other.

Only you can decide if those inputs are enough for your system; at this level it feels a fairly minimal provision. The obvious omissions are USB-B for a computer connection, and a phono input for a turntable. (But you could bring your own USB DAC and phono stage.)

NETWORKING AND THE APP

But then there is the secret weapon — that network connection, which can be made by cable to the M10’s gigabit Ethernet connection; this simplifies set-up and provides the more robust and likely faster connection, especially advisable if you’re going to make the best of the M10’s high-res audio capabilities. But if cabling for your data is inconvenient, there’s also Wi-Fi.

With an Ethernet connection, the M10 networks itself once powered up. With Wi-Fi you’ll use one of several ways to connect it. Either way you’re now ready to open the BluOS app and enjoy the possibilities. We should note that the app is available for iOS and Android, but can also run on a desktop for Mac OS and Windows, or in a smart-home environment under the control of Crestron, Control4, RTI, URC, Elan, Lutron and iPort. But we expect most people will start on smartphone or tablet.



We already had the app loaded from many previous reviews, and impressively it was not confused by the coming and going of these products (some apps search mournfully for products long since departed), finding the M10 and immediately connecting. We performed a factory reset on both M10 and the app, and proceeded to rebuild our library.

The BluOS app (above left, with Roon shown on the right) is both attractive and easy to find your way around; it is particularly good at switching between control of different rooms, though in this case, the NAD M10 was the only ‘room’ we had.

You can set up the music services to which you have access — we logged into the free services TuneIn, iHeartRadio and Radio Paradise, some of which may not require an account but having one allows better control of preferences and ‘stations’. We attached paid accounts for Spotify and Tidal.

Then we started building what BluOS calls its ‘Library’. Unlike some apps which use DLNA to look in real-time at your network, BluOS makes an index of your music before you start browsing. An indexing system has both merits and disadvantages. It means that BluOS doesn’t have to constantly





check every piece of information on the network, as compared with DLNA/UPnP fetching in real-time. So indexing is ideal for stable and permanent file collections, to which it gives a zippiness of navigation. The downside is that the initial indexing takes time (about 10,000 tracks an hour during our experience). We also find that while Windows and DLNA shares seem easy for BluOS to index, Mac-based music collections can be quite the bugger, though an online 30-page guide for this is available!

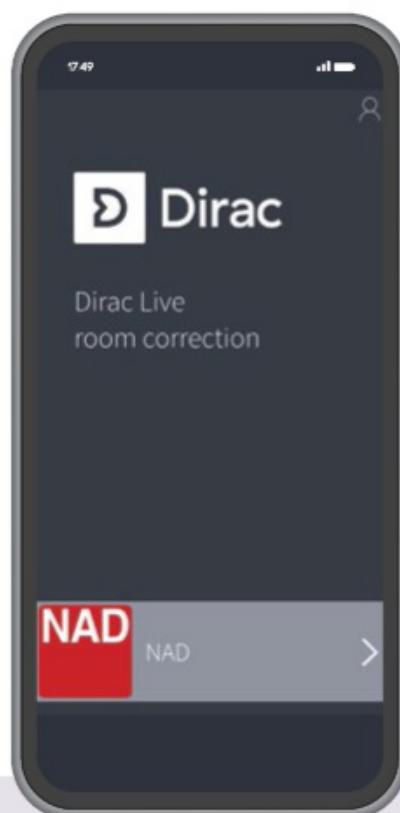
Once indexed, you can browse by artist (no pictures), albums (artwork shown), songs, genres, playlists, composers and, often useful for external drives and network shares, by folder.

HYBRIDDIGITAL NCORE

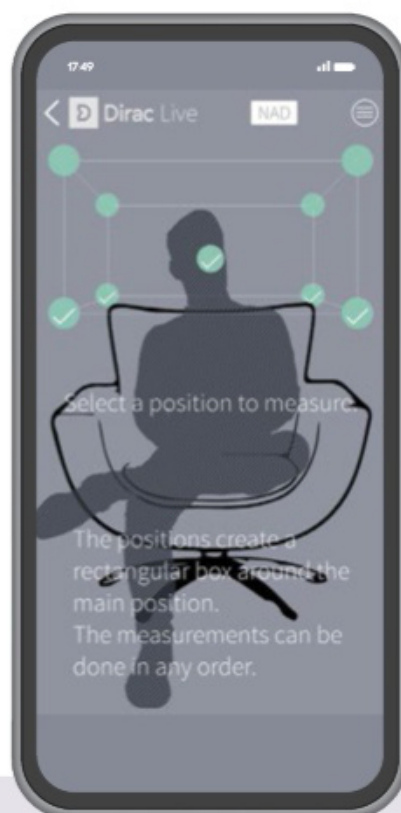
nCore amplification is not only efficient, as noted above, it is also probably the most highly-regarded implementation of what everyone used to call digital amplification, although is more accurately described as Class D switching amplification under either digital or analogue control.

NAD was an early pioneer in taking such amplification to a hi-fi level, collaborating since 2005 with UK semiconductor company Zetex on 'DirectDigital', then with Dutch company Hypex to create 'HybridDigital', as used here, combining DirectDigital concepts with the innovative Hypex "analogue Class-D" technology.

Many audio companies have since adopted and adapted Hypex's modules, with NAD using the UcD version in lower models, but the higher-level nCore type in some of its Masters Series, including this M10, which is quoted as delivering $2 \times 100\text{W}$ continuous power into either eight or four ohms, both channels across the full spectrum with THD distortion under 0.03%. That's a real power rating, properly measured, and NAD's power ratings are famously understated, so the M10 should get the benefit of the doubt if you're comparing against other brands, few of which match NAD's fastidiousness.

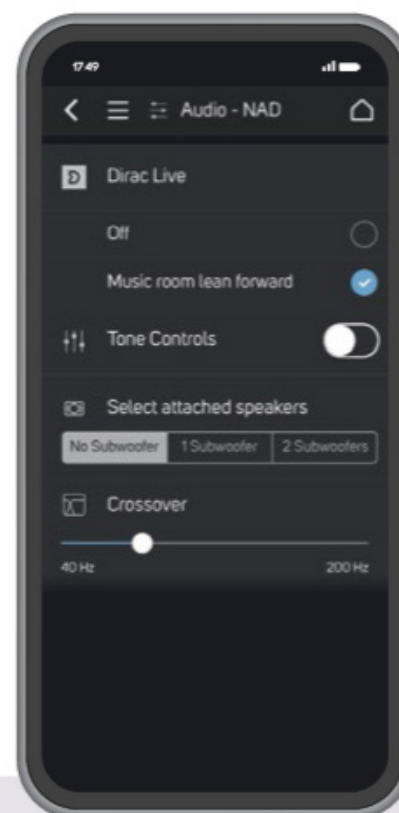


So smart is the M10 that it has Dirac Live onboard, one of the highest-regarded room correction systems. Don't think anything is wrong with your room? Try it anyway! The mike comes with the M10, and there's now a Dirac Live app for iOS and Android which makes calibration rather simpler, though you still need to make either nine or 17 posi-



tional measurements, depending on whether you want to optimise for one seat or more. After these sets of whooping measurements, a filter is offered for optimisation then uploaded to the NAD.

Did we like it? On this occasion no; we thought it softened the top (which is odd, given this version works only up to 500Hz) and took



some of the weight and power out of the music we'd been enjoying. But within the BluOS app you can switch your Dirac filter off and on, and indeed you can store up to three different filters, so have a go, do some A-B switching and see what it does for you. It's free, after all, unless you choose to stump up \$99 for full frequency Dirac Live.

PERFORMANCE

Those MQA Masters on Tidal are a joy to stream; the HI-FI level subscription is off-putting at \$23.99 a month, double the price of either Spotify or Tidal's compressed stream quality. But it's demonstrably superior, and these files through the M10 could routinely outperform CD rips played from computer via our usual DAC. The thump of the kick drum opening Morrissey's *Morning Starship* is tight and

visceral, inviting an upwards level tweak to feel its full impact; the vocal then sounded a trifle fizzy, but as the rest of the arrangement slammed in it was clear that a bit of fizziness had been dialled up to project over all that, and by the 'la-la-las' of the middle eight it was all bouncing along.

Beyonce's *Daddy Lessons* was a great demonstrator of the M10's ability to take a Masters' quality stream and deliver it pristinely, the opening cod-actuality spread wide before the rim shots and bass joined to fully flesh it out, with Beyonce herself razor-imaged in the middle.

Also clean and studio-like were the 2018 remasters of all Kate Bush's albums, so much so as Tidal Masters that we were wondering if we'd wasted our money buying three of the four vinyl boxsets, but in fact our familiarity with the vinyl sound trumped everything up to 'Aerial', from which we played the whole 42 minutes of *A Sky of Honey*, wallowing in the silences and textures which Kate and the M10 together were able to conjure from the MQA stream.

Listening is only enhanced by that class-leading front-panel display, for which various options are available depending on the input type. Large artwork and title seem the default; you can lose the artwork for a utilitarian text-only look, or have bouncing digital VU meters. Tapping the front panel brings up a volume control; settings menus were occasionally sticky via the touchscreens.



The one thing we couldn't persuade the M10 to show on the app or front panel was file quality, other than a green or blue dot next to MQA files in the app (blue is better than green, as it indicates artist or engineer sign-off). With the complexities of streaming it would be nice for us geeks to see exactly what was coming through.

If, like us, you still miss a traditional remote control, the M10 has the usual BluOS ability to learn remote codes from any old remote you have around, although in this case you will need to hang a third-party IR receiver off the rear panel IR input, as the M10 has no built-in IR receiver of its own. You can then assign remote buttons for 15 functions — input selection, volume up/down/mute, play/pause or toggle, previous/next track control for streaming sources, and five presets.

We played music many ways. Using Roon was its usual joy, of course; using the Discovery function we started shuffling the Art Rock genre, to which we seemed very well attuned (although these lists are built from your own collection, so Roon is on the money more often than not!). There was a magnificent solidity of presentation this way, delivering a perfect picture of Paul Simon's hanging-in-space vocal on his Lennon memorial *The Late Great Johnny Ace*, the detail in Steve Gadd's unmistakable shuffling snare brushes and onto the textural waft of the Philip Glass Ensemble outro. Roon served up *Los Endos* by Genesis, and we couldn't resist that; six minutes later we were quite exhausted by the drama of it all, and especially impressed by the big yet solid delivery of the bass guitar over the intro of this 2007 remastered version. It didn't manage to get any DSD files playing, and we noted later that the specs sheet says DSD is supported only through the BluOS Controller desktop app.

The NAD appeared as an AirPlay target so we streamed some tunes from our iPhone; we used TuneIn internet radio, though through revealing speakers the low bit-rate streams were obviously so. We were more impressed with iHeartRadio's stream quality, whether some oldies from Bing Crosby and Louis Armstrong or the 'Vinyl Classic' rock station with real surface noise (though also quite heavy dynamic compression). Radio Paradise had only its main mix and mellow mix on offer, but the mellow mix was a great chilled listen, with performers like The Wailin' Jennys, Gary Jules and Joe Cocker all sounding like CD quality, further showing that the M10 can do wonders with lesser sources.

We did find ourselves frequently wanting a physical remote control; if we were living permanently with the M10 we'd definitely stomp up for that infrared receiver and teach it the IR codes from an old TV remote (we know this system works well from using it with Bluesound's Powernode 2i).

Our only other question-mark is whether the input count is enough for some users, plus our general warning that products which live by the app can die by the app if it disappears.



CONCLUSION

The NAD M10 should have a strong market among audio and music lovers who appreciate the merits of this close integration between the streaming platform and the audio circuits. But there is another larger market here — people choosing between wireless multiroom platforms, and especially anyone considering a smart amplifier. The NAD M10, which went on to get Sound+Image's award for Amplifier of the Year \$2000-\$4000, demonstrably reveals the quality ceiling to some of those systems by leaping above them, either because other ecosystems don't go high enough, or because the platform itself is inherently limited, or both. Bluesound was developed at a higher level with higher resolution from the start, and is here fully integrated with hi-fi of quality in M10.

The question becomes why one would choose to settle for less. Is the move from a \$999 Sonos Amp or that \$1549 Bluesound Powernode 2i to the M10's \$3999 such a stretch? We hope not. The NAD M10 deserves to be enjoyed. ■

NAD M10

- Great sound quality
- All the streaming joys of BluOS
- Compact yet powerful

- Inputs a little limited
- No remote control provided (though you can add one)

Price: \$3999

Inputs: 2 × analogue RCA, optical digital, coaxial digital, USB-A, HDMI ARC, IR in, Bluetooth (aptX HD), Ethernet/Wi-Fi for BluOS

Outputs: stereo preouts, 2 × subwoofer out, 12V trigger out, speakers out

Quoted output power: >100W (THD <0.03%, 20Hz-20kHz, both channels driven)
Quoted frequency response: 20Hz-20kHz ±0.6dB

Dimensions: 215 × 100 × 260mm

Weight: 5.0kg

Contact: Convoy International

Telephone: 02 9774 9900

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LOUDSPEAKERS



STANDMOUNTING LOUDSPEAKERS

AUDIOSOLUTIONS OVERTURE 0202B

With unusual looks, delightful finishes and some fine sonic performance, these high-quality standmounts from AudioSolutions are an inspiring introduction to this European brand.

The Overture O202B is this small Lithuanian company's entry-level offering, and it's an unusual speaker, to say the least, mostly because of design decisions made by founder and lead design engineer Gediminas Gaidelis.

EQUIPMENT

Indeed you only need look at the exterior of the AudioSolutions Overture O202B to know that it's built like no other loudspeaker, because there are visible 'joins' at all the cabinet wall intersections. This is because the various panels, according to Gaidelis, slide into each other, then lock in, creating what he calls a 'self-locking cabinet'. "Such a concept exhibits great stability and once assembled, becomes monolithic," he says. This unusual cabinet construction method also

enables AudioSolutions to offer an unprecedented range of 13 cabinet colour options — ice white, cream white, textured white, red, high-gloss black, textured black, dark oak, light oak, tinted oak, matured oak, high gloss olive, high gloss ebony — plus a finish AudioSolutions calls 'rotted zebrano', which we'd call zebrawood.

It only takes a brief glance at the O202B to show that Gaidelis has employed the rare 'inverted' driver array, where the tweeter is mounted below the bass/midrange driver. Although this array is rare, it's not unknown, being a feature of Dynaudio's Confidence C1 Platinum and on many models made by Mission. One reason for doing this is to enable equal path lengths from the two drivers' acoustic centres to the ears of the listener when the top of the speaker is below seated ear height (which is generally the case when small speakers are used

on stands). When Henry Azima was at Mission, he said they did it to ensure a smooth phase response through the crossover point. Gaidelis says one reason he puts the tweeter underneath is that floors usually have carpets, making them better absorbing surfaces than ceilings, so putting the tweeter closer to the ground means avoiding the high-frequency flutter echoes that can occur when a tweeter is closer to a ceiling. However mostly it was to do with time delay.

"In order to avoid a complex and obviously sound-harmful time-delaying crossover, we decided to make reference point at midbass level," he said. "Lowering the tweeter gave us the average delay we wanted."

As for the drivers themselves, the tweeter is a custom 25mm silk dome custom-made for AudioSolutions by Swedish manufacturer SEAS. The bass/midrange driver is made for AudioSolutions by Tymphany. It's a 150mm paper-coned unit with a Thiele/Small diameter of 107mm, resulting in a cone area (Sd) of 90cm². The crossover point between the two is at 1.95kHz, using a crossover network that's built in-house by AudioSolutions.

Both drivers are recessed into the front baffle so their surrounds are flush with the baffle. This has allowed Gaidelis to get the two drivers as close as possible to ensure point-source sound. In fact they're so close that the tweeter's chassis almost touches that of the bass/midrange driver.

If you look at photographs that show the front of the O202B you might notice something strange.



LOUDSPEAKERS

Although the speaker comes with a grille, fitted with a grille cloth and can be used with or without that grille, it also comes with a second 'grille' that does not have a cloth at all, just two holes cut into it through which the drivers 'fire' into the room. The edge of each of the holes is bevelled to provide a 'horn' for the tweeter and to ensure minimum diffraction for the cone driver's output. Gaidelis calls this device a 'detachable baffle'. The two baffles are identical, except that one is covered with black acoustically transparent cloth. Because the baffle improves the performance of the speaker AudioSolutions says you should use one or the other of them, depending on whether you want the drivers visible or not. It says the performance will be identical, whichever one you use.

The hole in the baffle that forms the horn for the tweeter does more than simply improve the efficiency of the tweeter.

"The mini-horn counteracts an unwanted soft dome resonance problem with the happy result of not only removing the resonance but also lowering THD, increasing sensitivity and providing additional damping," said Gaidelis.

The reason Gaidelis developed his 'detachable' baffle solution was that his customers wanted the speakers in the Overture range to have grilles, but he knew that if he used a standard grille, the reflections from the grille frame would result in "inevitable sonic degradation". With his unique detachable baffle, you get the best of both worlds.

The O202B is a bass reflex design, the 57mm diameter, 70mm port tube on the rear baffle above the rear terminal plate which houses two pairs of high-quality gold-plated multi-way speaker terminals linked by buss-bars that can be removed for bi-wiring or bi-amped applications. At the base of the cabinet are four felt feet. Why felt? Because rubber feet can mark furniture.

PERFORMANCE

We have to say that we preferred the look of the AudioSolutions O202B with the 'sans cloth' detachable baffle, though its black textured painted surface, combined with the same surface being used on the top and rear and rear of the speaker, along with the gloss black side panels fitted to our review sample, gave the speakers what architects might call a 'brutalist' look. We'd opt for coloured side panels, even given the added cost.



The Overture O202B has an attractive range of cabinet colour variations available, 13 in all.

The sonic benefits of AudioSolutions' careful attention to driver placement are clearly audible from the get-go, because the ability of the AudioSolutions O202B to create a stereo image is outstandingly good. And it's not a 'sweet spot' image either... it's extraordinarily large. It also doesn't collapse when you move your head around. This means that when you're listening, it's as if you're in the best seat at a concert, and you can hear instruments to the right and left, and feel the depth of the stage, while all the while the star performers are stage centre.

Bass extension was obviously in keeping with the design — a very small bass/midrange driver in a small cabinet is necessarily restricted in bass extension by the inevitable laws of physics, but designer Gaidelis hasn't attempted to compensate by putting a lift in the upper bass, with the result that the bass you do hear is very accurate and clean, with tonally-true reproduction that has plenty of the rhythm and pace you need to ensure excitement and dynamics from bass lines and percussion. Listen to the first few bars of Mr. Big's *Free* and that crisp bass drum sound, and then, at 0.28, Billy Sheehan's fantastic bass guitar line, and that's all you'll need to hear to prove that the O202Bs can deliver great bass.

We thought that after its imaging abilities, the midrange was the co-star of the O202B's show, because it's sweet, nicely balanced and has a very natural presence. One of our favourite albums for testing midrange sound quality is 'For the Stars', the collaboration between mezzo-soprano Anne Sofie von Otter and Elvis Costello. Not all the tracks... some are miserable, but listen to von Otter sing Kate McGarrigle's *Go Leave* with the AudioSolutions O202Bs and you'll swear she's there in the room with you. At the same

time you can marvel at the controlled inflexion of her vocal delivery, revealed here in minute detail.

We don't know how AudioSolutions arrived at its above-average sensitivity specification of 90dB SPL, because in our A-B sessions with other speakers, the O202B's sensitivity proved to be only average: somewhere around 87dB SPL. This means it would be better to have a higher-powered amplifier driving them if you want maximum dynamics... say 50 watts per channel or so.

You will find SEAS tweeters in the world's most expensive loudspeakers, so you shouldn't be surprised at the quality of the highs you'll hear from the O202B's tweeter during your own audition sessions. Listen to the intro to Tears For Fear's *Shout* and we predict you'll hear what we heard — highs with a delightful 'air' around them, and a bright shimmery quality to the h.f. synth sound.

CONCLUSION

We loved the wide range of colour options that make it easy to personalise this speaker so it suits your personality (and décor) and essentially becomes of a 'one-off' design rather being just another 'me-too' loudspeaker. We also loved the sound quality, which is all we could have hoped for from such a design. And we simply adored the imaging. So lots of reasons to buy a pair then! ■



AudioSolutions Overture O202B

- Customisable
- Imaging ability
- Outstanding midrange
- Brutalist black

Price: \$2500 pair (some finishes extra)
Frequency response: 48Hz-26kHz (In-room)
Sensitivity: 90dB SPL (2.83V/1m)
Nominal impedance: 8 ohms
Minimum impedance: 6 ohms @ 300Hz
Crossover frequency: 1.95kHz
Drivers: 25mm silk-dome tweeter, 150mm paper cone mid/bass
Cabinet alignment: Bass reflex
Port location: Rear
Dimensions (HWD): 340 × 191 × 310mm
Weight: 8.5kg

Contact: Absolute Hi End
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LOUDSPEAKERS

STANDMOUNTING LOUDSPEAKERS

CHARIO CONSTELLATION II DELPHINUS





These Italian-designed and made loudspeakers offer stunning cabinetry, with unusual porting to support their bass, and award-winning performance at the price.

Some manufacturers are a little vague about the rooms in which they think their loudspeakers will perform at their best and the amplifier power most suited to their capabilities. Not Italian manufacturer Chario. For its Constellation II Delphinus model, it specifies:

“The size of the ideal listening environment should not be less than 9 square metres and not more than 20 square metres. A carpeted floor in front of the speakers is recommended. The minimum power amplification suggested to fully exploit the characteristics of the speaker is 30W per channel into 4 ohms.”

It then goes on to suggest that you can use “amplifiers rated at up to 70W per channel into 4 ohms” but specifies this as ‘average power’ rather than ‘rated’. That’s pretty specific, except for one thing, which is that the measurement is in square metres, rather than cubic metres. We can only assume that all Italian homes have ceilings of exactly the same height, which is the only way a ‘square metre’ specification could ever be accurate.



“Whereas we would usually doubt a ‘90dB SPL’ specification for a small bookshelf speaker, the Delphinus sounded every bit of this rating...”

Currently, there are four models in Chario’s ‘Constellation II’ range, all of which use the same 38mm tweeter as the Delphinus. The others are the Constellation Lynx, a two-way bookshelf with a 130mm bass/mid driver, the floor-standing three-way Cygnus, which has a 130mm bass driver and 130mm midrange driver, and the floor-standing three-way Pegasus, which has a 160mm bass driver and a 160mm midrange driver.

As you’ve no doubt already noted, Delphinus, Lynx, Cygnus and Pegasus are all constellations of stars. The Delphinus constellation (its name means ‘dolphin’ in Latin), represents the dolphin sent by the sea god Poseidon to find Amphitrite, the Nereid he wanted to marry, and the constellation was first catalogued by the Greek astronomer Ptolemy in the 2nd century. It’s interesting that Chario named only one of its other models in the Constellation II series after one of the other neighbouring constellations, those being Aquarius, Aquila, Equuleus, Pegasus, Sagitta, and Vulpecula... Cygnus and Lynx are light years away. (The original Constellation line, which ceased production in 2016, featured an extra model, the Ursa Major.)

EQUIPMENT

The chassis of the Delphinus’ bass/midrange driver chassis is 202mm at its widest part, but the moving diameter is 160mm and the most important dimension — the Thiele/Small diameter — is 146mm, which gives an effective cone area (S_d) of 168m². The cone is made from a paper compound, while the cone suspension, which has a normal ‘traditional’ roll surround, is made from a rubber compound. The central dustcap is dished, rather than domed, which gives a much cleaner look. The driver chassis is recessed into the front baffle to assist with dispersion.

The Delphinus’s tweeter has a 38mm coated fabric dome that’s driven at its periphery by a voice coil driven by a standard ferrite magnet. The large (130mm diameter) tweeter faceplate doubles as a horn, which improves the efficiency of the tweeter while at the same time also improving dispersion. Like the bass/midrange driver, the tweeter faceplate is secured to the baffle by star-headed wood screws, rather than by bolt/nut fixings, and is also recessed into it.

Rather unusually for a standmount/bookshelf bass reflex design, the Chario Delphinus’ bass reflex

port is located underneath the cabinet. It’s 67mm in diameter, 92mm long and has neither a flared exit nor a flared entry. This ‘underside’ location of the port means that it is essential that either the rubber conical feet supplied with the Delphinus — or the threaded spiked feet that are also supplied — be fitted to ensure the bass reflex port can perform its designed task of reinforcing and extending the speaker’s bass response. Using the rubber feet delivers a 20mm ‘gap’ between the bottom of the speaker cabinet and the surface it’s sitting on. Using the feet also means that the top of the cabinet is 415mm above that surface — slightly more than identified by Chario’s specification. (Similarly, Chario’s specification for cabinet depth, of 330mm, does not take into account the grille or the rear terminals which, if factored into the measurement, increase the total cabinet depth to 345mm.)

The rear terminals are of a design we can’t recall seeing previously, but are gold-plated multi-way types that accept banana plugs, spades, ring connectors and bare wire. They’re on 35mm centres, so you can’t use standard dual-Pomona plugs. Only a single set is fitted, so bi-wiring and bi-amping are out.

The speaker grille is wonderfully open, as the black acoustically transparent cloth is stretched over a wooden frame that has only a very narrow periphery: there are no cross-struts. It’s secured to the grille via the post-and-socket technique, with the posts fixed to the grille frame.

The Chario Delphinus’ cabinet is particularly attractive and not completely unlike those made by Sonus faber... perhaps not so surprising since both are Italian companies. According to Migliorini, all the wood hails from Italy, the side panels are finished by hand, and there’s no machinery used in cabinet assembly: all the work is handcrafted. He says “even the painting of the cabinet’s central body is made by hand”, which references the fact that although the side panels are solid wood, the central top, rear, baffle and bottom panels are painted with a black paint that gives an almost ‘velveteen’ finish.

PERFORMANCE

Immediately obvious from the get-go in our listening sessions was that the Chario Constellation II Delphinus is very good at converting electrical power into acoustic watts. In other words, it’s a very efficient loudspeaker, so whereas we would usually doubt a ‘90dB SPL’ specification for a small bookshelf speaker, the Delphinus sounded every bit

CHARIO BACKGROUNDER

Chario was founded in Milan, Italy, in 1975 by Carlo (Charlie) Vicenzetto and Mario Murace, who combined parts of their first names (Cha from Charlie and 'rio' from Mario) to create the unusual company name. Although Vicenzetto retired a few years ago, Murace still works as one of the company's audio engineers. Alessandro Migliorini, one of the company's three new owners, says that as far as he knows, Chario is the only audio company in the world that has been operating for more than 40 years that has had the same audio engineer since the beginning. Chario is an entirely home-grown Italian manufacturer, though its manufacturing operations are fragmented right across that country, with the headquarters located in Vimercate, a city around 20km north-east of Milan, a small factory in another town close to Vimercate, and a larger factory where all the cabinetry is done that's near Vicenza. All the drivers are made in a factory near Ancona, on Italy's eastern coast.



of this rating. This is good news not only because high-efficiency speakers sound more 'exciting' than lower-efficiency ones, but also because this efficiency means you'll get the highest performance possible from your amplifier, because more of its power will be going into generating sound in your room, and less on raising the temperature in the cabinet by heating up the drivers' voice coils.

As we kind of suspected from the compliance of the bass driver (it's quite 'springy') bass lines also had quite a spring to their step — there's nothing stodgy about the bass delivery of these speakers: It's bright, bouncy, beautifully paced, with a depth to it that in a dealer's showroom might have you looking around for a hidden subwoofer. This was particularly evident listening to the organ and double-bass on *Heavenly Voices*, from 'Lightness of Dark' (Fiona Joy Hawkins and Rebecca Daniel), but the lower octaves of Hawkins' piano are also accurately realised. A track like this would be nothing without 'heavenly voices', and these (supplied by the aforementioned) also perfectly revealed the purity and accuracy of the Delphinus' midrange sound. The speed of the cone, and the match it has with the tweeter, were illustrated by the immediacy and dynamism of the piano sound on the track that follows (*Ghosts Insanity Angels*), although we have to

constantly remind ourselves that it was composed by Hawkins, and not Michael Nyman.

This speed and dynamism are complemented by the superb warmth of the midrange sound, no better exemplified than if you audition Katie Melua's oddly named (*Belfast*) *Penguins and Cats*. You can also use this track to admire the sweet, pellucid high-frequency delivery of the Delphinus' tweeter. Make sure you listen off-axis too, because its dispersion is particularly good, no doubt partially due to that horn. Well-recorded acoustic guitar is also a joy to hear when listening to these Charios. Melua's is as good as any to try this out, though you should choose tracks that she herself has produced. If you don't have her playlist handy, any well-recorded acoustic guitar will suffice to prove the point.

CONCLUSION

It's always nice to be able to recommend speakers that have won awards, and in this case, we can report that the Chario Constellation II Delphinus is the current holder of the Sound+Image 2020 award for 'Loudspeaker of the Year \$1000–5000'. And seeing that you're going to get quite a lot of change from \$5000, that makes them something of a 'Best Buy' as well! ■

Chario Constellation II Delphinus standmounting loudspeakers

- Very efficient
- Superb midrange
- Fit'n'finish

- Choice of finishes
- No bi-wiring

Price: \$2599 per pair (RRP)

Configuration: 2-way, bass reflex

Tweeter: 38mm

Bass/mid: 160mm

Sensitivity: 90dB SPL (1 m/2.83V)

LF cut-Off: 55Hz (–3dB)

Crossover frequency: 1.5kHz

Impedance: 4 ohm (min 5.8Ω)

Phase angle: ±36°

Cabinet finish: Walnut

Dimensions (HWD): 410 × 230 × 330mm

Weight: 12kg

Contact: Audio Dynamics

Telephone: 03 9882 0372

Website: www.audiodynamics.com.au



ACTIVE LOUDSPEAKERS

GENELEC 8331A

The smallest in this Finnish company's 'The Ones' series, these highly accurate studio monitors use concentric drivers and built-in amplifiers to put you right in the producers' chair.

Radically different. Those are the words which come to mind when I consider the Genelec 8331A active loudspeakers. In large part that's because these are not designed primarily for the home. They are studio monitor speakers. Genelec is a Finnish firm specialising in this market.

EQUIPMENT

Now studio monitors from a company prominent in the field, as Genelec is, have one major advantage over consumer high-fidelity speakers: they are designed to be accurate. Sure, so are many hi-fi speakers, but how do you know they haven't been 'voiced' by a designer with idiosyncratic

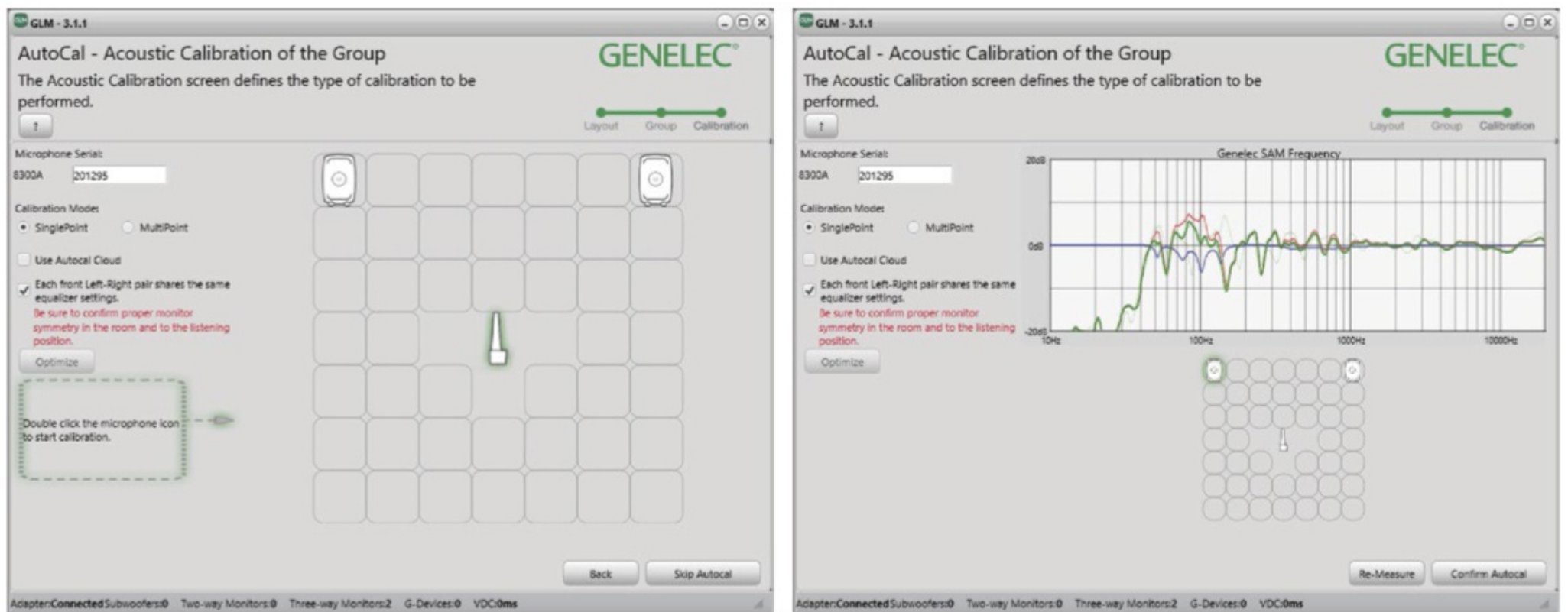
tastes? Recording professionals know what they want, and won't pay money for something that sounds too far outside of the mainstream.

And let's face it, if you're listening using studio monitors, you're getting sound very close to that heard by the engineers when preparing the music.

That shows in the specifications here. Their rated frequency response is 58Hz-20kHz, ± 1.5 dB. The -6dB points are at 45Hz and 37kHz. THD is specified at less than 0.5% for frequencies above 100Hz, for 85dB output at 1 metre. 'Maximum long-term RMS acoustic output' at 1m is 99dBSPL. Short-term sine wave output at a metre is at least 104dBSPL. 'Maximum peak acoustic output per pair ... with music material' at a metre is 110dB.

Pretty impressive for rather compact speakers: 305mm tall, 189mm wide and 212mm deep. Compact, but remarkably heavy for their size at 6.7 kilograms. That would be at least in part due to the packing of three drivers into each enclosure, plus an individual amplifier for each, plus some pretty fancy DSP technology.

The drivers are concentric, with an oval woofer behind a panel with slots at top and bottom. Genelec calls this 'Acoustically Concealed Woofers Technology', and that's concealed rather than acoustically sealed, as the woofer is bass reflex loaded via a large port at the rear. In the centre of the panel in front of the woofer is a 90mm midrange with a 19mm tweeter mounted in its centre. Genelec calls this mounting arrangement 'Minimum Diffraction Coaxial Driver Technology'. It also uses a 'Directivity Control Waveguide.' I initially thought that's the protective grille over the metallic tweeter dome (I couldn't find any mention of what material is used). But the manual explains that it extends "over the whole front face of the enclosure. The midrange driver cone also forms a part of the directivity control waveguide for the tweeter." The face of the speaker is certainly shaped, apparently with acoustic intent.



The software, once installed, was easy to use, identifying the Genelecs and after positioning (left screengrab) calibrating for the best response (right).

Genelec calls the 8331A a ‘SAM’ studio monitor. SAM stands for ‘Smart Active Monitoring’. You can use the speakers in standalone mode, but you’re not getting your money’s worth since the speakers can be calibrated and EQ’d by using the Genelec Loudspeaker Manager and software (GLM). We’ll get into that in a bit. Since these are active speakers, the drivers are powered and they employ active crossovers. Each woofer scores 72 watts, while each of the smaller drivers is pushed by 36 watts.

It’s at this point that we come into a more difficult area for some home users: there are both analogue and digital audio inputs for signal input. But both conform to studio standards rather than the more common home ones, being a choice of analogue balanced XLR inputs, or digital AES/EBU balanced inputs.

In the home hi-fi world, analogue balanced XLR is moderately common at the high end. AES/EBU digital inputs? Not unknown, but rare. Yet that’s a studio standard. It is not all that different to the S/PDIF formats used in the consumer world, and S/PDIF can be converted to AES/EBU with suitable equipment.

I’d say that most of our readers would use analogue XLR for connecting, since there are certainly plenty of hi-fi devices that can deliver this signal. We used both analogue and digital during this review.

SETTING UP

I shall assume that our readers would want to take full advantage of the capabilities of these loudspeakers, and that includes the DSP. But having said that, each speaker has a row of DIP switches which allow some frequency response tailoring, with bass and treble tilt and bass roll-off adjustments. But, note, while there is a kind of level trim control, there is effectively no volume control on the speakers.

If you’re using them standalone, then you will need a source device that controls level.

But in the studio environment, they would normally be controlled by the Genelec Loudspeaker Manager hardware, which is in turn controlled by the GLM software on a computer (Windows and Mac both supported).

The GLM hardware/software system can be used once, its results loaded into the 8331A speakers, and thereafter used by default. In a studio environment, one might prefer to keep them connected, to manage the speakers on an ongoing basis. For that you will need a computer running, of course.

I used these speakers in both available ways, with digital input and analogue. How they will be wired differs according to which of those you choose. The same XLR input is used for both analogue and digital. Two of the DIP switches select this. These are marked Digital A and Digital B. If both are off, then the input of the speaker is analogue. If either A or B is chosen, the left or right channel is used from the digital input signal. Obviously you choose A for one speaker and B for the other.

If you’re going analogue, you’ll need two XLR to XLR cables for connecting between your preamplifier or other device to the two speakers. If you’re going digital, you’ll still need two XLR to XLR cables. One will go from your digital source to one of the speakers. The other will connect the XLR output of that speaker to the other speaker.

But remember, if you’re going digital you’ll need a device that outputs the AES/EBU format, not S/PDIF. Yes, they do exist. I used a fairly ancient (I bought it in 2001) M-Audio CO3 digital format converter to change the S/PDIF TOSLINK output from a Chromecast Audio into AES/EBU format. That all worked rather nicely.

For analogue, I used an RME Babyface Pro ADC/DAC decoding digital audio from my computer.

Again, you can go standalone, but I used the GLM hardware and software. The hardware consists of a small box which connects to the computer via USB. It has an input for the supplied calibration microphone and an RJ45





“with a couple of connection work-arounds, you can hear pretty much original studio sound with these speakers...”

socket for establishing the Genelec network. You use standard network cables to connect it to one of the speakers and another to daisy chain to the next speaker.

Then you download and install the GLM software on your computer. It seems that the Windows version doesn't have proper certification. I had to push through warnings: 'Window Defender SmartScreen prevented an unrecognised app from starting. Running this app might put your PC at risk.'

Apart from that, the software worked extremely well and very reliably. Once installed, it detected which speakers were connected. (Genelec has several models on offer, including subwoofers.) I dragged the speaker icons onto the appropriate positions on a room grid (see first screen grab, previous page), then ran the auto calibration. You have choice of single or multi-position measurements. I went single. This wasn't one of those interminable calibration systems experienced on some home theatre receivers. The system delivered a very fast sine-wave sweep through each speaker, then spent about a minute crunching numbers before announcing calibration was completed. It then went through to the control screen.

That screen has a big volume slider, a couple of mute switches and an EQ bypass button.

There's a fair bit more stuff for those that want to explore. But for the moment, I'll focus on practicality. I suspect that most users will be using the analogue input. And most won't want to be using a slider on a computer screen to control the volume. So that volume control should be set fairly high, and then level-controlled by your own pre-amplifier.

LISTENING

I did most of my listening with the Genelec speakers toed in to directly point towards the listening position, having calibrated them using the microphone included with the GLM system for EQing.

The first impression was: big speaker sound from very little speakers. The -6dB point doesn't quite encompass the entirety of a kick drum's fundamental, but just about every other bass element came through at, well, a perfect level.

I listened to a rather wide range of music with these speakers, from hip-hop through prog rock to baroque. General impressions:

exceptionally dynamic and beautifully balanced in tone throughout the lot. I'm guessing that in professional contexts, the Genelec 8331A speakers would be used as near-field monitors. I used them as stereo speakers around three metres distant from the listening position. The general dynamism of the sound brought to mind true quality loudspeakers from Dynaudio or VAF Research. On the Don Burrows Quintet Live recording from 1983, the drum kit is recorded far from up-front, yet every little strike came through without limitation or compression. The acoustic bass was beautifully full and coherent.

The cymbals were precisely located on the sound-stage, gloriously sharp and precise. In *Cradle Song* the chimes were superbly well defined, dancing in space across the sound-stage. James Morrison's trombone (yes, not trumpet) on *Tin Pan* was richly rendered. But I kept on coming back to the bass. The calibration doesn't really attempt to make the loudspeakers deliver bass deeper than that at which they are mechanically competent. But it does balance it down to that mid-40s.

It was a little weird. Instead of my judging the balance of this system by my ideals, I felt almost as though the Genelec 8331A speakers were re-establishing ideals for me. That said, another octave deeper into the bass is preferable. It would have been interesting to include one of Genelec's subwoofers in this review.

Sorry... I've become a little lost in entrancing music for a dozen minutes. Or, perhaps, lost in twelve minutes of the purity, accuracy, high fidelity of the music I'm listening to on the Genelec 8331A loudspeakers. I suppose I'd like to add that 20 to 40 hertz area, but I can't say

that I'm missing it. The subjective experience of a full bass tends to be almost completely satisfied by a balanced, full response down to around 50 hertz. These speakers deliver that. And so much more.

CONCLUSION

The Genelec 8331A loudspeakers deliver. But what I'd really love to see are these speakers, almost the same in every way but with inputs conforming to conventions for home audio. Still, with a couple of connection workarounds, you can hear pretty much original studio sound with these speakers. *SD* ■



Genelec 8331A

- Exceptional sound quality
- Very compact
- Obviate the need for amplifiers
- Connections more suited to studio than the home

Price: \$3625 each; or \$7250 per pair with free GLM included

Rated power (each): 1 x 72W, 2 x 36W

Drivers (each): 1 x 130mm by 65mm oval woofer, 1 x 89mm midrange, 1 x 19mm tweeter

Inputs: Analogue balanced XLR, Digital AES/EBU balanced XLR

Outputs: AES/EBU balanced XLR (signal passthrough for other speakers)

Others: 2 x RJ45 for proprietary Genelec control network

Dimensions (whd): 189 x 305 x 212mm

Weight: 6.7kg

Contact: Studio Connections Australia

Telephone: 03 9416 8097

Web: www.studioconnections.com.au



Carbon Dome™ Tweeter for
amazing accuracy

Solid Body Tweeter for
life-like imaging

Continuum™ cone for
exceptional transparency

Decoupled FST™ chassis for
the cleanest midrange

Aerofoil™ Profile low-
frequency drive units for
deep and dynamic bass

*“...a product that few
companies would
have the ability and
resources to match.”*

The Absolute Sound Magazine (705 S2)

702 S2

Engineering is Beautiful

Presenting the latest 700 Series from Bowers & Wilkins. Globally acknowledged as leaders in acoustic design and technology, Bowers & Wilkins draws on more than 50 years of experience and know-how to deliver a truly standard-setting lineup of studio-ready, home-friendly loudspeakers. While the design of 700 Series may seem conventional, look beneath its stylish and beautifully crafted cabinet work and you'll find cutting edge, state of the art materials and the forward thinking innovations we are renowned for. Some are derived directly from our flagship 800 Diamond range, while others are completely new. The result? A range of speakers that delivers what we refer to as True Sound. Experience it at your Authorised Dealer today.

700 Series

Bowers & Wilkins



STEREO LOUDSPEAKERS

KLIPSCH RP-600

The Tractrix curve of the famous Klipschorn delivers benefits in both home cinema and stereo applications, as the punchiness and clarity of the sound from these RP-600 speakers prove.

Klipsch has been in the loudspeaker business since 1946, when founder Paul Wilbur Klipsch developed his famous 'Klipschorn', which took advantage of horn-loading technology to improve both low and high-frequency performance while at the same time using it to increase dispersion and reduce distortion. Horn-loading a loudspeaker can do all this so, not surprisingly, it's been a part of Klipsch's technological 'DNA' ever since.

EQUIPMENT

On the Klipsch RP-600, horn-loading is used to improve the performance of the company's proprietary 25mm diameter titanium-diaphragm 'LTS' (Linear Suspension Travel) tweeter. The horn geometry is also Klipsch's own 'Hybrid Cross-Section Tractrix'. The word 'Tractrix' is just a description of the geometry of the horn's curve: another word for it is an equitangential curve, and this curve shape was first used in a loudspeaker by English engineer Paul Voigt.

The beauty of the Klipsch's Tractrix horn is that whereas the more commonly used exponential

horn shapes have resonances caused by reflections at the mouth of the horn that in turn colour their sound (giving rise to that 'horn sound' so detested by audiophiles), the Tractrix horn has almost no resonances, and therefore does not colour the sound. The lack of resonances is due to the fact that the soundwaves are virtually hemispheric as they go through the horn and as they exit it. Like all horn designs, the Tractrix also enables much higher efficiency than would otherwise be possible, as well as much lower distortion (because the driver doesn't have to work as hard). However, the Tractrix shape has another benefit, which is that its dispersion pattern is perfectly suited to home theatre applications, because both horizontal and vertical dispersion are carefully controlled and identical: something that's true of no other horn geometry. But although it's perfectly suited to home theatre applications, it's equally well-suited for two-channel listening.

The bass/midrange driver in the Klipsch RP-600 is rated at 165mm diameter, but like most manufacturers, this is the diameter of the mounting holes. The moving diameter of the

cone is 140mm, the cone diameter is 117mm and the Thiele/Small diameter is 132mm, for an effective cone area (S_d) of 140cm². The cone is dished and made from a material Klipsch calls 'cerametallic'. According to Australian distributor QualiFi, this material is made of two layers of ceramic separated by a light metal substrate. The cone is made by first forming the cone shape in aluminium, after which a unique patented process is then used to 'grow' a skin of alumina on each side of the aluminium core. The resulting laminate is less dense and less brittle than traditional ceramics, yet at the same time is significantly stiffer than both metallic and non-metallic cones... plus it has the practical advantage that its properties are not affected by humidity or moisture.

Klipsch says an important technical advantage of the cerametallic cone over a standard metal cone is that while metal cone drivers are superior to paper, polypropylene and paper cones across their operating band because they operate as perfect pistons across that band, they have deleterious resonances at higher frequencies. Coating a metal cone with the ceramic material almost doubles the speed of sound through the cone, which in turn moves these resonances much higher in frequency, where they can be effectively 'removed' by the crossover network.

Whatever the practical and technical advantages of the cerametallic process, it certainly makes for a beautiful-looking cone, giving it an attractive coppery sheen. The beauty of the cone — and the almost equally good-looking Tractrix horn above it — might tempt you not to use the

protective grilles, but we'd recommend you do, about which more in a moment.

The bass reflex port at the rear of the Klipsch RP-600 is very unusual because it, too, is Tractrix horn-loaded, with Klipsch saying that this design allows "the most efficient, fastest air transfer from the cabinet, which reduces port noise for punchier low frequencies." Below the port are dual speaker terminals, enabling bi-wiring or bi-amping, should you wish. They're housed on a plate that's cosmetically similar to the port.

You can order the Klipsch RP-600 in three different finishes: Ebony Vinyl, Walnut Vinyl and Piano Gloss. The Ebony and Walnut models have satin-painted baffles with a scratch-resistant finish, while the premium Piano Gloss cabinet has a seamless finish thanks to being hand-sanded and hand-polished. The piano gloss finish does, however, command a \$300 premium on the price, bringing the RRP up to \$1699 per pair if you choose this finish.

The 'RP' in the model number indicates that the RP-600 is part of Klipsch's 'Reference Premiere' line, which currently comprises no fewer than 16 different models including five floor-standers, four bookshelf models, two bipolar surrounds, and no fewer than five centre-channels, so you can see that the line was designed with home theatre applications in mind.

Klipsch has been an American company since its beginning in 1946, but in 2005 it purchased Danish brand Jamo, and in 2006 it purchased Canadian manufacturer Audio Products International, which sold speakers under the Mirage, Energy and Athena brands. Then in 2011, Klipsch was purchased by Audiovox Corporation (itself owned by Vox International). Although Klipsch speakers are designed and engineered in Indianapolis, almost all models — including the RP-600 — are manufactured in China.

PERFORMANCE

One interesting thing we noted right at the start of our sessions is that we had to turn our amplifier's volume control up to almost the usual setting in order to achieve the 'standard' sound pressure level we use when reviewing products. This would seem to indicate that although Klipsch states the sensitivity of the RP-600 as being 96dB SPL, it's actually only a little higher than average... something we confirmed by A-B'ing it against other speakers we had in for review at the time whose efficiencies we knew. So Klipsch is either being overly optimistic about the RP-600's efficiency... or measuring it a different way than is usual. That said, the Klipsch RP-600 was still more efficient than most other speakers using the same cabinet volume and driver diameter, which means you'll get maximal performance from your amplifier, and it will always have plenty of power in reserve to ensure realistic dynamics.

The rear-firing port means you will have to play around a little to get the right balance of bass. We found that on stands, around 30cm from the rear wall was the position we liked most. Mounted on a shelf, around 15cm out seemed best. Significantly, the dispersion of the Tractrix horn means you can place the RP-600s on their sides, which is a significant advantage if you are shelf-mounting. It's presumably because of this mounting option that Klipsch supplies small 'stick-on' feet, so you can put them where you want. If you do mount them sideways, you have the choice of putting the Tractrix horns to the 'inside' or the 'outside'. Use the system that gives the best stereo imaging at the listening position.

Properly positioned, but without the speaker grilles fitted, our first session also revealed the sound to be a little forward in the high frequencies. You may like the punchiness this

gives to the overall sound, but if you don't, do what we did and listen with grilles on, which brings it back to a neutral presentation. (It also helps if you don't angle the speakers to face the listening position, which we'd done initially but quickly undid.)

Prepare to be surprised by how 'big' the soundstage is. The RP-600 is a 'peppy' speaker with impressive dynamics. Play some James Morrison and you'll hear what his trumpet sounds like when he's playing live, with a real 'bite' to the sound. Listening to his first album, 'A Night in Tunisia', titled for one of his heroes (he later became the first Australian to perform with Gillespie) via the RP-600s was a revelation.

Prepare also for the clarity of the Klipsch RP-600s with vocals. Their delivery of Ali Barter's waif-like voice on her album 'Hello I'm Doing My Best', was superb, replicating the unusual tonal qualities of her voice to perfection. And it's not only highlighting her vocals that the Klipsch RP-600s do well, they also do an outstanding job delivering the sound of all the instruments on this album. Barter's husband (Oscar Dawson) was responsible for this album's sound, and you can hear that she didn't give him the job just to keep it all in the family.

Bass response — as you'd expect of such small loudspeakers — is not overly extended, but there's more than enough bass to satisfy, and it's clean, impressively-solid bass that will respond well for anyone who wants to crank up the volume by remaining tight and tuneful even at elevated levels.

CONCLUSION

The fit 'n' finish of the Klipsch RP-600s is superb — along with the 'feel'... just run your fingers along the throat of that Tractrix horn!—and the sound will speak for itself when you hear it. At this price, you'd be mad not to give them an audition. ■



Klipsch RP-600

- Great sound
- Very efficient
- Superb finish

Sensitivity specification

Price: \$1399 (pair)
Frequency response: 45-25kHz ±3dB
Quoted sensitivity: 96dB SPL (2.83V/1m)
Impedance: 8 ohms (nominal)
Crossover frequency: 1.5kHz
HF Driver: 25mm Titanium LTS Vented Tweeter
Horn: Hybrid Cross-Section Tractrix
LF Driver: 165mm Cerametallic
Enclosure: Bass Reflex
Port: Rear-firing Tractrix
Dimensions (HWD): 400 × 200 × 300mm
Weight: 7.3kg
Finishes: Ebony, Walnut, Piano Black
Contact: QualiFi
Telephone: 03 8542 1111
Website: www.klipsch.com.au



FLOORSTANDING LOUDSPEAKERS

Q ACOUSTICS 3050i

The mid-priced high-quality speaker market is a busy one, yet Q Acoustics has conquered it in a relatively short time. The 3050i shows why, its fine performance winning a Sound+Image Award.

In an old land like the United Kingdom, full of famous, longstanding loudspeaker brands, you'd think that it'd be hard for a newcomer to find any space. But Q Acoustics managed it, starting up only a decade and a half ago, and since receiving accolade upon accolade, as well as widespread consumer acceptance. It has carefully targeted the mid-priced, high quality segment (it was filling a perceived vacuum left by Mission loudspeakers when it first emerged), and has delivered both high-quality stereo speakers and complete sets of models able to be used in home cinema configurations. Here we have the 'i' upgrading of the 3000 series, its second-from-the-top range. This Q Acoustics 3050i is the largest speaker from that series, its only floorstander.

EQUIPMENT

So, yes, these are stereo floorstanding speakers priced at just under \$1400 for the pair. That makes them quite affordable, yet they exude a sense of quality just from their styling. They stand just over a metre tall. The enclosures have curved edges where the sides meet the top and bottom panels. The wrap finish is available in white, black, grey or English Walnut (see overleaf) and our review speakers used the last of these, a superior wrap seeming indistinguishable from a real-wood veneer. It also fully covered the front baffle behind the small magnetically-secured grilles. Should you wish to use them with the grilles removed, you'll see the drivers are fitted with stylish metal rings. It's a high quality look.

The formal dimensions (see the specs box) read chunkier than the speakers actually are. They are indeed 310mm deep, but the quoted 310mm width includes the metal stabilising bar that bolts onto the bottom rear of the speakers. Its purpose is, of course, to give the speakers a wider footprint so that they are less likely to be accidentally overturned. The enclosures themselves measure only 200mm wide. At the rear is a large, smoothly finished bass reflex port.

The cabinets use Helmholtz Pressure Equalizer technology to reduce pressure within the cabinet, and thereby reduce cabinet resonances. Further helping there is the company's P2P bracing, designed to increase the stiffness of the cabinets.

Inside each enclosure is a pair of 165mm bass/midrange drivers, with a 22mm tweeter between them. The centre of the tweeter is 795mm from the floor, so pretty much right for a couch-seated listener. With speaker drivers arrayed like this, it's important for the listener to be on the same horizontal plane as the tweeter. Significant divergences from that can lead to some frequency response combing around the crossover point.



“ these loudspeakers didn’t mind style or genre. The Q Acoustics 3050i loudspeakers provide remarkable performance at a remarkable price.

Q Acoustics rates the frequency response of these speakers at 44Hz to 30,000Hz in a 9dB band and their sensitivity at 91dB for 2.83 volts input at one metre. It says they’re suitable for use with home theatre receivers rated at between 50 and 165 watts per channel, which is at least 95% of all home theatre receivers. With a 6-ohm nominal impedance (albeit a 4-ohm minimum) they should again work with just about all home theatre receivers and hi-fi amplifiers.

PERFORMANCE

You can buy these speakers as part of a home theatre pack with a specialised centre-channel and subwoofer. However we’re just looking at them in a stereo music context. Be assured, though, that loudspeakers that do well in that context also do well in home theatre.

We used them with a fine home theatre receiver from Denon rather than an audiophile amplifier. That is the appropriate context.

But we didn’t calibrate them or EQ them, listening to them in their native state, with the ‘Direct’ mode engaged on the Denon receiver to make sure there was no sound processing.

We started with Nick Cave’s heart-rending album ‘Skeleton Tree’ on vinyl. The detail and tone of these speakers delivered a close intimacy of the kind demanded by this music. On tracks like *Magneto* the deep pulsating drone was full, and complete. There’s a roundness on vinyl (no doubt due to its defects) not apparent in the digital versions, and this came through wonderfully well with these loudspeakers.

Again, the fat synth bass of (then) Walter Carlos’ rendition of *Sheep May Safely Graze* on ‘Switched-On Bach II’ was equally delivered in full, grounding the music and giving it a weight that the Moog may not have otherwise deserved. (Did you know there was a Switched-On Bach II? One of this writer’s guilty pleasures includes good synth covers of classical works. That includes Ray Manzarek’s *Carmina Burana*, but doesn’t include anything much by Tomita.)

Then we went digital, starting with a DSD128 recording of *3 and 1 – Take 2* from Kent Poon’s *Audiophile Jazz Prologue IV*. At about this point we started wondering why one would spend

more than \$1400 on a pair of stereo speakers. The immediacy of this performance was such as though it had been piped directly from studio into the listening space. The saxophone in particular was a tangible presence between the speakers. The loosely tensioned skins of some of the drums had a first-class roundness, while the snares rang out with precision and zero dynamic compression. The double bass was delivered with a fine coherence to all its constituent harmonics, melding seamlessly into a powerful fundamental.

We decided to stick with DSD for the moment, so switched folders on the NAS to Michael Jackson’s ‘Thriller’ (this one in regular DSD64). We chose *Billie Jean* and started it playing, forgetting that the Kent Poon recording is at a rather low modulation. ‘Thriller’ isn’t. We



There’s one pair of connection terminals for each speaker, so neither bi-wiring nor bi-amping is available (of which some are skeptical anyway). These terminals are partially inset into the cabinets. If you use spade terminals they’ll be poking out by perhaps 8mm. That allows very-close-to-wall placement if you wish. To that end, each pair comes with a pair of foam bungs to fill the bass reflex port, turning them into something like acoustic suspension speakers. That reduces the output levels around the 44Hz bottom-end, while extending the depth of reach of the bass a little. We used them in our standard free-breathing position, most of a metre out from the rear wall. Bung-free of course.

In addition to those metal stabiliser bars, they come with spikes and also spike caps for use on hard floors that you don’t want damaged.

Still on the terminals, they also work with bare wires and banana plugs. The holes for banana plugs also reach a little into the cabinet, so even they stick out less than the usual amount. Finally, the nuts on the terminals have a larger diameter than usual. That makes them easier to tighten.

jumped with the opening crash of percussion, and rushed to reduce the volume. Then had second thoughts. Although easily ten decibels higher than our usual listening volume, it was clean and controlled. We pulled out a digital SPL meter and set it to the C-weighted scale (which is the closest it has to zero weighting). The sound was peaking at just about 100 decibels at our listening position some 2.7 metres from the speakers.

The thing is, the speakers remained balanced. Some speakers respond to Michael Jackson with a degree of sibilance, even at normal listening levels. These kept him in place, while presenting the rhythm section at a compelling level, full and still controlled.

After turning down the volume for a while to allow the ears to recalibrate, we moved over to some solo piano in regular CD-quality FLAC format. It was Tzimon Barto playing Liszt's *Hungarian Rhapsody #2*. We've long been of two minds about this recording. The playing is utterly thrilling, but the recording is a touch too bright on an already bright piano. Again, these speakers tamed that top-end just a little. It was still clear that this was a bright piano, but by eschewing a

flashy top-end, the Q Acoustics speakers provided it as it was, not to excess. Barto's busy left hand was given the prominence it deserved, without the fundamental frequencies being overwhelmed by their upper harmonics. Meanwhile, the accelerating sections on the right-hand end of the keyboard were beautifully sweet, rather than forced.

Going from the sublime to the differently sublime, we put on Rage Against the Machine's self-titled album. How would these speakers, so comfortable with gloriously recorded jazz and solo piano fireworks, do with high powered rap metal?

Very well, it turns out. Want some speakers to produce music suitable for head-banging activities? The Q Acoustics 3050i speakers will do very nicely. It was only with this that we finally started to plumb their limits a little. With *Bombtrack* peaking at close to 105dB (C-weighted) the middle section started to become just a little confused in the low and mid treble. But that was only in the more complex sections of sustained loudness. The next track — *Killing in the Name* — is more up and down dynamically, each pulse surrounded by an instant of relative (relative, mind



you, not absolute) quietness. No confusion there, so that those brief instants allowed recovery. The driving rhythm was dominating, leaving us unable to turn down the volume, while hoping that the neighbours would hold off calling for noise police for a few more minutes. Their language isn't the nicest.

CONCLUSION

We could go on, but these loudspeakers didn't mind style or genre. The Q Acoustics 3050i loudspeakers provide remarkable performance at a remarkable price. ■

Q Acoustics 3050i

- Brilliant value for money
- Very strong sound performance
- Flexible installation

- Nothing

Price: \$1399
Drivers: 1 x 22mm aluminium-dome tweeter; 2 x 165mm bass/midrange
Frequency response: 44 to 30,000Hz -3dB
Crossover frequency: 2500Hz
Impedance: 6 ohms
Sensitivity: 91dB (2.83V/1m)
Power: 50-165 watts (recommended input)
Cabinet: Bass reflex, rear port
Dimensions (hwd): 1020 x 310 x 310mm
Weight (each): 17.8kg

Contact: Indi Imports
Telephone: 03 9416 7037
Web: www.indiimports.com

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LOUDSPEAKERS



FLOORSTANDING LOUDSPEAKERS

RICHTER WIZARD

The best-selling Australian-designed speakers, the legendary Richter Wizards, are back in a new Series 6 incarnation. Can they maintain the magic?

Aussie company Richter Audio says its Wizard speakers, now in their sixth generation — or should that be incarnation, seeing as they're wizards? — hold the record for being the world's best-selling Australian-designed loudspeakers. Given the number of years the 'Wizard' has been available, it's a claim we can well believe. In which case we would also add that they're likely also Australia's best-known loudspeakers, because anyone who owns a pair of good-quality speakers will have heard of the 'Wizards'... even if they don't own a pair themselves.

EQUIPMENT

Not surprisingly, the design of the 'Wizard' has changed dramatically over the nearly 34 years it has been available. Over the decades the cabinet has

changed in height, in width, in depth, in shape, and in internal volume... plus the exterior finishes have changed, along with the grilles. But that's not all. The drivers have changed, the tweeter has changed, the crossover network has changed, the internal wiring has changed, the terminals on the rear have changed and, on this Series 6, even the feet have changed. So what has remained the same over the years? Umm... if you don't count the model name, the only things that are still the same are that the cabinet is still a (mostly) bass-reflex design, that it's still a floor-standing model, and that the driver implementation remains a 'quasi' three-way one.

'Quasi' three-way designs were very new and unusual when the very first Wizard was designed, though back then they were often called '2½-way' designs. These days, 'Quasi' three-way designs are almost *de rigueur*. What this design approach

means is that at low frequencies, both the cone drivers on the front baffle work in unison, but at midrange frequencies, only the uppermost of the two operates to deliver the mids. And, of course, at high frequencies, the tweeter takes over entirely. The beauty of this 'quasi' approach is that you get the advantage of greater cone area and greater power handling at low frequencies, but the advantage of having a 'point source' across the midrange frequencies, which means better stereo imaging and an overall more 'realistic' presentation of the sound. Obviously it would be better to go the full 'pure' three-way route, and have two drivers handling the bass, a third driver dedicated to handling the midrange, and finally the all-essential tweeter for the highs, but the increase in cabinet size that would be required — not to mention the added cost and complexity — would push the price



of such a design beyond the comfort zone for many speaker buyers. Oh, we almost forgot. Why the descriptor 'Quasi'? It's intended to mean that it's 'kind of' a three-way design... but not a true one.

I suppose we should look at what is new in the Wizard 6, compared to the Wizard V... other than the obvious change, which is the suffix having been raised and changed from being a Roman numeral to an Arabic one.

The most important changes are the use of completely new 165mm diameter drivers, which necessitated the development of a completely new crossover network. The two cone drivers have slightly increased diameters over those of the drivers used in the previous model, so with this S6 there is increased cone area, enabling improved bass. Designed by Richter, the new cone drivers have cones made from a pulp that is comprised of paper, hemp, kapok, wool and engineered chemical fibre which is then coated with a surface sealant that's black enough and shiny enough that it makes the cone look a lot like it's made of polypropylene... which it most certainly is not.

We were intrigued about that 'hemp' ingredient. The hemp is indeed sourced from the same plant that supplies the marijuana used for medicinal purposes. This might be a nice talking point when your friends come around, but don't let them try to smoke your cones — they have no hallucinatory properties. According to Richter designer Martin Gosnell, the resulting cone is extremely lightweight and extremely stiff, which has the effect of minimising cone break-ups and roll-off resonances.

Also new in the Wizard 6 is its 25mm soft dome tweeter, powered by a neodymium magnet. Gosnell says that it has lower distortion than the tweeter used in the Wizard V, a lower resonant frequency ('well below 900Hz') and has: "*the desired phase characteristics of a gently inclined sound pressure level frequency response to beyond 30kHz.*"

The bass reflex port on the Wizard 6 is rear-firing, and has been tuned so that it can be 'closed' by fitting it with the foam plug supplied by Richter to deliver an infinite baffle alignment, or left open, for a bass reflex alignment. In a nice move, the foam is black, rather than the more usual grey colour, so if you do block the port, the foam plugs aren't really visible.

One issue that affects all modern floor-standing speakers which, because of modern décor design trends, tend to be tall and narrow, is their stability. The taller and narrower any loudspeaker cabinet is, the more prone it is to topple over in the event that it's accidentally bumped. This could be a serious issue if you have pets or small children, but it could also be hazardous for the speakers themselves... not to mention other nearby furniture and fittings.

We're happy to report that stability will not be an issue with the new Richter Wizard S6 design,

because they come with 'speaker stabilisers' that brings their stability up to furniture-industry standards. These stabilisers come included as standard with the Wizard Series 6 speakers but they're also available separately (for \$249) as an after-market upgrade that can be fitted to the previous Richter Wizard MkV. However, in very welcome news (and thanks to their extremely clever design) the Wizard stabilisers are also able to be fitted to a wide range of floor-standing speakers made by manufacturers other than Richter. So if you already own tall floor-standing speakers, we'd encourage you to see if the Richter outrigger feet will fit them, and if so, would further encourage you to buy and fit them to your speakers.

The cabinet finishes are also new for Richter. One is a 'Matte Black' colour with a very attractive textured finish, while the other is what Richter's owner, Brian Rodgers, calls 'New Walnut' which has an equally attractive but wood-grained finish.

PERFORMANCE

The increase in stability afforded by the outrigger feet is remarkable, as we were able to prove to ourselves by fitting only one of the Wizards with the feet, then comparing its stability against the other. The outrigger feet also make it easier to adjust the 'tilt' of the cabinet, should you wish to aim the tweeters at a specific point in the room.

It's easy to hear why Richter's Wizards are so popular with Australians. What's not to like? The bass is deep and extended no matter whether the ports are plugged or left open, with the alignment being dictated more by your personal preferences, the speaker location and the type of music you listen to most often. Whatever combo you use, you'll hear lively, toe-tapping bass with a true-to-life tonal quality so you'll never be double-guessing the instruments that are playing, and you'll also be hearing the pitch of a note from the instant it starts to sound. Listening to Pierre Fournier play Bach's *6 Suites for Cello*, we were mesmerised by his superb bowing — his technique is second to none — as well as by his musical sensibilities. Just listen to his rubato (perfectly delivered by the Wizards) and to the sheer joy he brings to the *Gigue* from Suite No. 1.



The midrange is very linear but has not been manipulated in such a way as to give the ruler-flat linearity that can make studio monitors sound bland and lifeless. The Wizard 6s' midrange sound is lively, dynamic, and as kind to vocalists as it is to instrumentalists, while at the same time being very forgiving of poorly engineered recordings. Even recordings whose dynamics have been quashed sound impressive when replayed through the Wizard Series 6s... and when you play a well-recorded album, wow... get ready for fireworks.

High-frequency performance was excellent, being nicely balanced against the mids and beautifully sweet, so you can really hear the shimmer of cymbals and the delicate purity of the overtones of piccolos and other high-pitched instruments.

CONCLUSION

This latest S6 version of the Richter Wizard takes a proven award-winning design to its highest level yet in terms of sound quality, visual appearance, cabinet stability and amplifier-friendliness, so it seems certain that the Richter Wizard will continue to wear the crown of being the best-selling Australian loudspeaker. ■

Richter Wizard S6

- Outstanding bass
- Lovely mids

- Only two finishes
- Not biwireable

Price: \$2299 (pair)

Type: Quasi 3-way floorstanding

Enclosure: Bass Reflex

Drivers: 25mm soft dome neo, 2×165mm composite paper cone

Frequency response: 25Hz–30kHz (–6dB)

Efficiency: 90dB SPL (2.83V @ 1m on axis)

Nominal impedance: 4 ohms (3.5 ohms min)

Dimensions (HWD): 965×221×359mm;

1003×300×359mm (inc. Stabilisers)

Finishes: Matte Black, New Walnut

Weight: 20.3kg

Contact: Richter Acoustics

Telephone: 02 9999 3176

Website: www.richter.com.au



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