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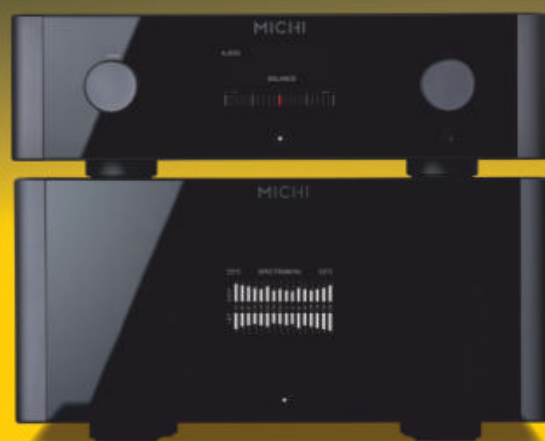
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ISSUE 515 SEPT/OCT 2020 A\$9.99

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EDITOR'S LEAD IN

GETTING INTO THE AUDIO BUSINESS

There was a time when I thought about going into the hi-fi manufacturing business. After all, I'd been in the pro audio business, building amplifiers, foldback speakers, guitar cabs and PA systems before I'd entered the publishing game. But somehow, I just couldn't seem to extricate myself from hi-fi magazines and newspapers, not least because there was always another deadline looming and I just couldn't seem to see my way clear to telling a publisher and/or an editor that we would soon be parting ways.


Actually, truth be told, I did really nothing not because of deadlines, but because I was born both a procrastinator and with a highly risk-adverse personality. And while being risk-adverse has often worked against me in my life, both personally and professionally, it has at least prevented me from being sued for defamation, or worse... though I have come close on a couple of occasions. But all of this didn't stop me thinking about it though.

At least one famous hi-fi company was started by a teacher and a freelance writer. But then that company was H.H. Scott, and who's even heard of that company now? There are also many other famous companies that have been founded in garages or back-yard sheds. I am thinking of Infinity Systems and Mark Levinson, but I'm sure you can think of more. There are also, of course, some very well-known hi-fi brands that started off in back rooms or garages and are still operating out of those self-same accommodations.

In retrospect I am very glad that I did not go into hi-fi manufacturing, because I am now absolutely certain any business I started would have failed spectacularly, not least for the reason that having a successful business is less about having a product that people want to buy than it is about, well, good management.

It's pretty easy to be "in business" if that business is just a sideline to having a real job (which, by the way, described my 'pro audio business' perfectly), or a weekend hobby that happens to make some money on the side, but if you're planning on earning a living from a business you need a lot more than a product people want to buy and good managerial skills.

For a start, you'll need money. Lots of it. Having sufficient capital is a prerequisite for any start-up. As is a preparedness to lose it all. Which mostly means having to take out a huge loan, getting investors on board, or having a rich uncle. But as well as all this, you also have to be a creative accountant, an excellent salesperson, possess outstanding copywriting and computer skills, be a great 'people person' and not least, have the optimism of an indefatigable entrepreneur, plus the ability to uncomplainingly and efficiently turn in sixteen-hour days and seven-day weeks, for as many years as it takes.

I could go into quite a bit more detail about all this, but I really don't need to, because someone else has done it for me. If you really are thinking of getting into the hi-fi manufacturing business, I recommend that your first step should be to read an outstanding book written by Jason Stoddard and Mike Moffat called "Schiit Happened, The Story of the World's Most Improbable Start-Up," which tells the completely true and utterly compelling story of how the pair founded Schiit Audio. And if, after reading this book, you still feel like starting out in the hi-fi business, don't email me for advice, because you're already beyond help.  greg.borrowman@futurenet.com

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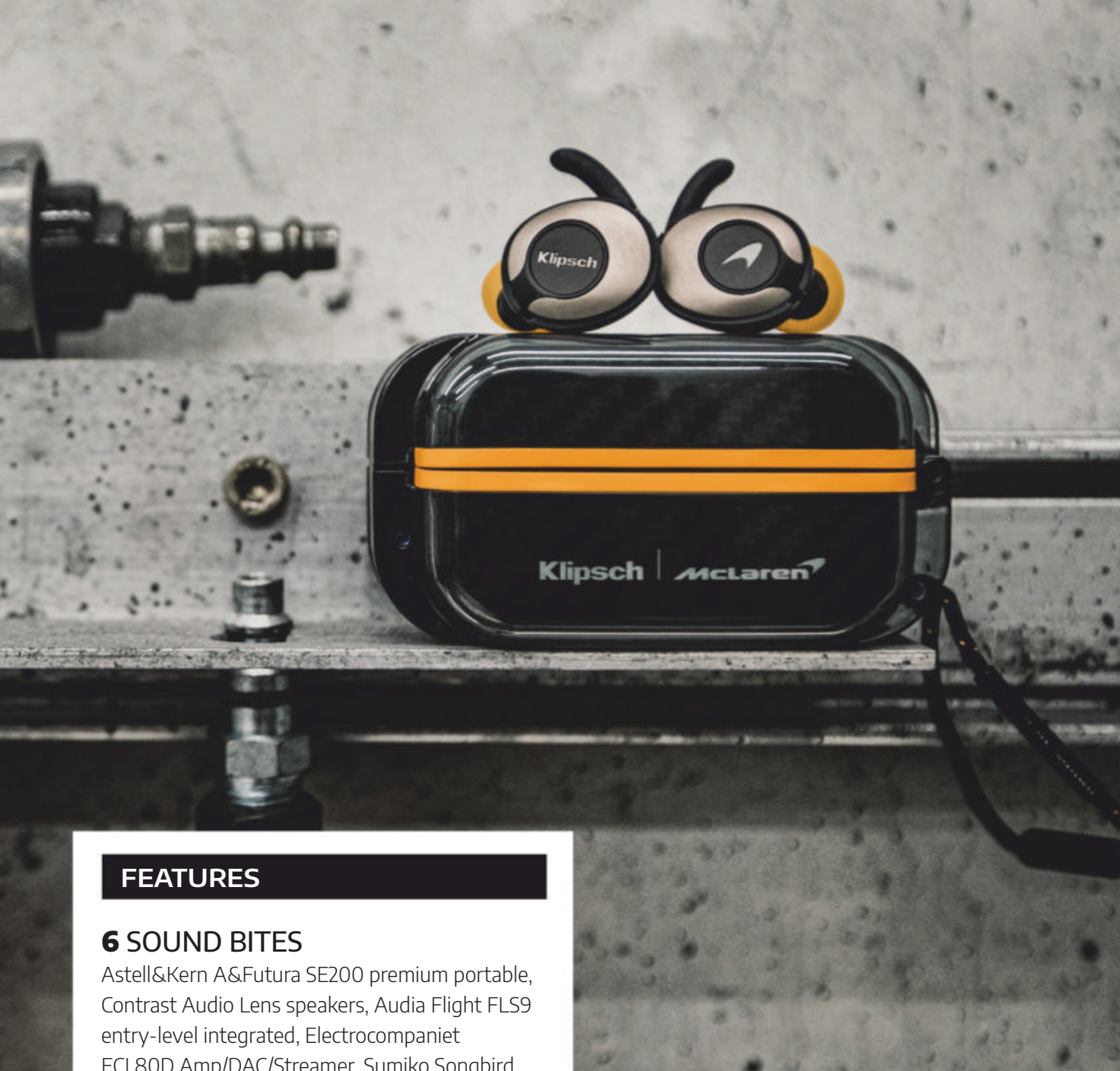
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esoterica

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OUR FRONT COVER

Yamaha’s top-line GT-5000 turntable sets a new standard for performance and upsets a few conventions in turntable design. You’ll find everything you need to know in our expert review on page 16.



ASTELL&KERN A&FUTURA SE200

Astell&Kern has released the second model in its A&futura line of premium portable audio players, the SE200. This newest model is most notable and unusual for using DACs from two different manufacturers.

The Astell&Kern SE200 is equipped with DACs from two of the world's leading DAC manufacturers. It uses two ESS ES9068AS DACs and one AKM AK4499EQ. "This is the first time that two different DACs have been used in the one device," said **George Poutakidis**, of BusiSoft, which distributes Astell&Kern in Australia. "It has allowed Astell&Kern to fit the SE200 with two different amplifiers to optimise the different characteristics of the AKM and ESS DACs so users can select one or the other to provide the sound characteristics they want, according to the music genre they're playing. They can then customise their sound even further by choosing from a wide variety of different output filters."

Interestingly, battery life varies significantly depending on which DAC you're using. If you listen via the two ESS DACs, you'll get 14 hours of playback before needing to recharge, whereas if you listen via the single AKM DAC, you'll only get 10 hours of playing time. Playback time will, of course, be affected if you use the SE200's WiFi and/or Bluetooth options during playback, as well as by the volume level you use and the impedance of your headphones. And, when it comes to headphones, unlike the SE100, which offered only unbalanced connections, the SE200 offers both balanced and unbalanced options. The SE 200 also has twice the onboard memory of the SE100, at 256GB.

The SE200 supports up to 32bit/384kHz PCM and DSD256 playback, with an LED on the volume control changing colour to show not only volume range, but also the bit-rate of the track that's playing and the DAC that's being used to convert the music from digital to analogue. Rather than using glass to create the SE200's case, Astell&Kern has instead used ceramic materials which direct light to 'flow' around the player. "The SE200 was created from the thought of how to express premium value," said **Baek Chang-Hum**, director of Dreamus (formerly iRiver), which is the company responsible for the design and manufacture of all Astell&Kern products. Available now, the Astell&Kern A&futura SE200 retails for \$2,999.

For more information, contact BusiSoft on (03) 9810 2900 or visit www.busisoft.com.au

CONTRAST AUDIO LENS

Contrast Audio loudspeakers are now available in Australia for the first time. All Contrast Audio speakers are hand-made in Kiev, Ukraine, by the Sapega family, which along with its small team has developed a range of 2-way and 3-way speakers that do not use standard two and three-way crossover networks, but instead use just a single capacitor to prevent low frequencies from reaching the tweeter.

Contrast Audio says that it makes its own drive units "in-house" using both cast and machined chassis and cones and domes made of natural materials such as paper, cotton, balsa, and silk. "Only natural materials can provide the tonal quality the Sapegas demand from their speakers, and when these materials are used for cones, it enables the drivers to exhibit a very gentle natural roll-off at their upper frequency extremes so that a low-pass filter is not required, in accordance with Contrast Audio's desire to keep as many electronic components away from the music signal as possible," said **Anthony Sawyer** of GrizzlyWorks, which distributes Contrast Audio in Australia.

The first model to go on-sale in Australia is the two-way, bass-reflex 'Lens' loudspeaker which marries a paper-coned bass/midrange driver with a distinctive solid timber phase plug to a 25mm silk-dome tweeter via a single Mundorf capacitor that acts as a first-order high-pass filter. The Lens has an unusual front baffle design whereby the oversized 25mm thick solid beech front baffle is decoupled from the cabinet by a cork gasket. The cabinet itself comes standard with a piano gloss finish, but can also be supplied in any standard RAL colour. Different baffle finishes can also be made to special order. The reflex port is based on a convergent-divergent geometry invented by Swedish inventor **Gustaf de Laval** in 1888, that's now known as a "Laval Nozzle". It's used in rocket engines to accelerate the hot, pressurised gases flowing through it, but in the Lens, the Sapegas say it is used to eliminate port noise.

"The Contrast Audio Lens has higher-than-average efficiency and portrays enormous spatial information with detail, dynamics and a wonderfully natural non-fatiguing tone," said Sawyer. "And although it delivers a truly honest sound, it delivers it tactfully, rather than brutally. The Lens is not only a refreshingly different loudspeaker, but is also a perfect match for single-ended tube amplifiers thanks to its componentry delivering a rated sensitivity of a very high 95dB SPL, a benign 16Ω (optionally 11Ω) impedance, and virtually zero phase shift."

Available now, the Contrast Audio Lens speakers sell for \$3,700 per pair (RRP), and come with custom satin slip covers and a 12-year transferable warranty. Buyers also have the opportunity to purchase Australian-made stands as an option.

For more information, contact GrizzlyWorks on (04) 0412 1155, email grizzlyworks@outlook.com or visit www.grizzlyworks racks.wixsite.com



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AUDIA FLIGHT FLS 9

Famous Italian high-end audio manufacturer Audia Flight has released a new, entry-level integrated amplifier, the FLS 9. Despite being entry-level, it's very high-powered, with Audia Flight rating its power output at 150-watts per channel, both channels driven into 8Ω and 500-watts per channel when driven into 2Ω loads.

Audia Flight has trickled-down technology from its more expensive amplifiers for use in the FLS9, one being that it uses the same fully-balanced preamplifier stage boards as the FLS1. The amplifier's 1000-watt shielded toroidal transformers delivers the voltages for eight separate power supply circuits, with the primary circuit for the 12-device output stage fitted with low-impedance, low-noise 120,000μF capacitors.

As with most Audia Flight amplifiers, the new FLS9 can be fitted with up to two optional plug-in boards if required. Available is a phono board that adds both moving-magnet and moving-coil inputs, an RCA board that adds two unbalanced line-level inputs, and a DAC board that adds an asynchronous USB input (32-bit/768kHz PCM and DSD 5.6) and five digital inputs (Optical, AES/EBU, 2xSPDIF, and an Audia Flight SACD link). These last accept up to 32-bit/192kHz data. A DAC streaming board is currently under development.

"The new FLS9 maintains the acclaimed Audia Flight tradition of speed, power, driving capability and control ability," said **Boris Granovsky**, of Absolute HiEnd, which distributes Audia Flight in Australia. "Its high-power, high-current output makes it perfectly suited for driving low-efficiency, impedance critical loudspeaker systems."

Audia Flight specifies the frequency response of the new FLS9 at 0.3Hz–500kHz (–3 dB), the THD at less than 0.05% and the S/N ratio at 110dB A-weighted. Damping factor is claimed to be more than 500. Available now, the Audia Flight FLS9 Integrated Amplifier sells for \$10,900 (RRP).

For more information, contact Absolute HiEnd on (04) 8877 7999 or at www.absolutehiend.com

ELECTROCOMPANIET ECI 80D

Most modern amps don't even offer one. This new amplifier from Norwegian manufacturer Electrocompaniet has two!

We're talking about headphone outputs, of course. Electrocompaniet released its budget-priced ECI 80D in January this year, but underestimated demand and it sold out right around the world. This small Norwegian manufacturer has been able to ramp up its production quantities so you should now be able to audition an ECI 80D at your nearest retailer, Covid-19 permitting.

Despite being an entry-level amplifier, the ECI 80D has both a moving-magnet phono input and two-way Bluetooth, so in addition to streaming music to it from your phone or tablet, you can also stream music from it to a pair of Bluetooth headphones. And although it's a bit shy on line-level analogue inputs (just two balanced inputs, via gold-plated RCA terminals), it has five digital inputs, though they're all SPDIF (three optical and two coaxial).

As you'd expect from Electrocompaniet, the output stage is all-analogue, in the form of a linear Class-A/B amplifier that's rated with a power output of 80-watts per channel into 8Ω and 150-watts per channel into 4Ω. The frequency response is claimed at 1Hz to 150kHz –3dB and the signal-to-noise ratio as 102dB, though it's important to note that this spec is realistically refer-

enced to an output of one watt, rather than rated output,

as is stated by most other manufacturers. Referenced to rated output, the S/N ratio would be much higher.

The two headphone out-

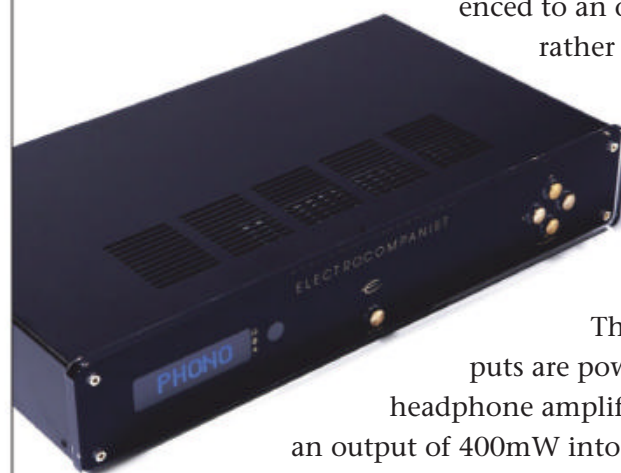
puts are powered by a dedicated

headphone amplifier that is rated with

an output of 400mW into 16Ω. Our only gripe

might be that both headphone sockets (one 6.35mm, the other 3.5mm) are rather inconveniently located on the rear panel rather than the front. Nothing that can't be fixed with an extension lead though.

Available now, the newly-available Electrocompaniet ECI 80D Integrated Amplifier/DAC/Streamer sells for \$4,999.



For more information, contact Audio Dynamics on (03) 9882 0372 or visit www.audiodynamics.com.au

SUMIKO SONGBIRD

The Sumiko Songbird is not only the latest addition to Songbird's Reference Series, it's also now the company's lowest-priced reference level cartridge. It seems that Sumiko, which has been building phono cartridges in Japan for more than forty years, and is renowned for its high-priced 'reference' models, has decided to build what, for it, is an 'entry-level' reference cartridge. What's more, it's available in both low output and high-output versions at the same price.

Sumiko says the design of the Songbird is largely based on its best-selling model, the Blue Point Special, which is the reason there is no cartridge body. According to Sumiko, this avoids 'unwanted external resonance storage.' Also, whereas almost all other moving-coil cartridges use butyl suspensions, the Songbird uses synthetic rubber. "This allows us to more tightly control the hardness and repulsion factor plus to create a suspension



whose mechanical parameters will remain within design tolerance for a longer period of time so the cartridge will perform as designed for a considerably longer time than other designs," says the company. "The Songbird comes in at a much-needed

price-point perfect for launching the part-time audiophile into some serious listening," said

Philip Sawyer, of Synergy Audio Visual, which distributes Sumiko in Australia. Sumiko rates the frequency response of the Sumiko Songbird as 12Hz - 40kHz, with channel separation of 30dB at 1kHz. The high-output version of the Songbird

has an output of 2.5mV, with Sumiko recommending a load impedance of 47kΩ and a load capacitance of 100–200pF. Available now, the Sumiko Songbird retails for \$1,599.

For more information, contact Sumiko's Australian distributor, Synergy AV, on (03) 9459 7474 or at www.synergyaudio.com



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INTRODUCING THE NEW NAD MASTERS M33 AMPLIFIER

Precision-timed audio is what the M33's state-of-the-art amplification technology is all about. Eigentakt™ or 'self-clocking' technology achieves measured distortion and noise levels near the limits of the most sensitive test equipment available. But it's the music that will leave you reeling: completely relaxed, flowing and natural, with astounding detail and transparency.

The M33 is also smart, moving beyond even the M10's award-winning integration of BluOS streaming and multiroom to add more inputs (including HDMI and high-quality MM/MC turntable provision), more

wireless flexibility (networking with AirPlay 2, and Bluetooth with aptX HD), and the ability to add new developments later using NAD's unique MDC modules.

Control the M33 by app, by remote, or using its spacious colour TFT touchscreen. Use Dirac Live Room Correction to have the M33 optimise your speakers and your room. However you listen, you will be astounded by the power and precision of Eigentakt working in concert with the many decades of NAD amplifier innovation. The M33 is the modern streaming amplifier without equal.



TRIO OF KLIPSCH T5 II TRUE WIRELESS EARPHONES

Klipsch has released the second generation of its T5 True Wireless series earphones, the T5 II True Wireless, in three different versions. The major difference is that the standard T5 II version is not dust/waterproof and does not come with a carrying case with a built-in battery. The two other editions, "Sport" and "McLaren", are dustproof and waterproof (IP67) and come standard with carrying cases, while the McLaren version also comes standard with a wireless charging pad. All these new earphones replace the original T5 models and feature new and thinner three micron thick 5mm diaphragms which are claimed to enhance clarity and improve audio quality across the frequency spectrum.

All three new Klipsch T5 II earphones are approximately 25 per cent smaller than the originals and have been moulded to more closely mimic the shape of the ear. Klipsch has doubled the number of ear tips it supplies, so you now get six pairs rather than three, and there's also an improved wireless antenna, which the company claims delivers a superior Bluetooth connection. The brushed metal storage/

charging case supplied with the Sport and McLaren versions is slimmer than the one supplied with the older T5 equivalents, is dustproof and waterproof (rated IP67) and contains a moisture-removal system that Klipsch says will remove water or sweat from the earphones whenever you put them inside the case. The case has its own batteries, which enable you to extend the 'away from power' time of the T5 IIs from 10 hours to 32 hours before both need to be recharged, which can be managed via USB-C or via a wireless charging pad that comes standard with the McLaren model, or is available as an optional extra for the Sports model.

In addition to the ear tips, Klipsch also supplies with the Sport and McLaren versions a pair of memory foam ear tips, and three sizes of what it calls "no-budge ear wings" that can be used to ensure a more secure fit when you're using the earphones while exercising. "Engineered from the ground up to deliver powerful performances from the smallest package, the T5 II True Wireless dynamic drivers combine high output, neutral sound and deep bass extension," said **Ralph Grundl**, of QualiFi, which distributes Klipsch in Australia.

Klipsch's free "Connect App" can be used in conjunction with all three versions of the T5 II to enable equalisation adjustments, battery status monitoring and to control a 'transparency' mode that can allow sound from the outside world into your ears in situations where you need to be aware of your environment, such as urban running. The four microphones built into the T5 II use beamforming techniques to enhance voice clarity so that anyone you call will be able to hear your voice clearly, even if you're in a noisy environment. If you use a digital assistant, the T5 IIs allow 'single press' access.

The Klipsch T5 II True Wireless and True Wireless Sport earphones are available in three colours—black, white, and green. The "McLaren" version, which Klipsch created as a result of its partnership with the McLaren Formula 1 racing team, comes in McLaren's hallmark Papaya Orange/Carbon-fibre race livery. Available now, the Klipsch T5 II True Wireless retails for \$400 and the True Wireless Sport for \$450. The T5 II True Wireless McLaren Edition earphones retail for \$500.

For more information, call QualiFi on (03) 8542 1111 or visit www.qualifi.com.au

HANA UMAMI RED MC CARTRIDGE

The Hana E, S, and M Series moving-coil cartridges, all designed by famous Japanese cartridge designer **Masao Okada**, have won accolades and critical acclaim from reviewers and customers worldwide for the highest achievement of sound quality in their respective price ranges. Okada-san says that his latest design, the Hana Umami Red follows in that tradition but delivers an even more satisfying level of audio enjoyment and satisfaction. "The Umami Red moving-coil cartridge combines brilliant materials and classic Japanese techniques with modern audio engineering," he says. "Ebony wood, rare-earth magnets, a precision-cut diamond, high-purity copper wires, Urushi lacquering, and CNC machined Duralumin are all used in this new model."

Okada named his newest cartridge 'Umami', which is the word for the fifth taste category, the other four being salty, sweet, sour, and bitter, and is usually defined as "a pleasing or delicious flavour on the palette, a synergistic effect resulting in higher taste intensity" because he says: "The synergistic relationship in MC generators between magnet, armature, and coil windings is a critical aspect of outstanding cartridge design; and like a signature dish at a Michelin 3-star restaurant, every element and detail working in concert results in a memorable and emotional experience."

The Hana Umami Red body has a multi-layered Urushi lacquer finish that originates from the famous Japanese Makie-artistic tradition, a classic and complex procedure that consists of a black Urushi painted undercoat, followed by an elaborate red-colouration process incorporating fine silver powder, pure gold powder, and a final lacquer coating with multiple polishing steps.

The stylus of the Hana Umami Red is a Microline-shaped diamond that is attached nude to a solid Boron cantilever. "The Microline shape mimics the shape of the cutter head stylus used to cut all vinyl records," says **Aleksandar Maksimovic**, of Audio Magic, which distributes Hana cartridges in Australia, "so it's this shape that offers the most precise fit into the vinyl groove where, unlike all other stylus profiles, it can trace even the most delicate musical nuances."

The magnets in the Hana Umami Red are rare earth samarium/cobalt types, while the coils are hand-wound from cryogenically-treated copper wire onto a classic square plate Permalloy armature. "This same cryogenic 'cold annealing' process at near absolute zero temperature is used to treat many of the components in the Hana Umami Red," says Maksimovic. "The cryogenic process alters the molecular structure of the materials, producing a transformative quality similar to molecular gastronomy, and is in part responsible for the musical richness and intensity you experience when listening to the Hana Umami Red hand-built moving coil cartridge."

The Hana Umami Red will become available in Australia in November. It will retail for \$6,200 (RRP).

For more information, contact Audio Magic on (03) 9489 5122 or visit www.audiomagic.com.au



MAGICO M9

The newest four-way, six-driver floor-standing Magico M9 loudspeaker system, designed and built in California by Magico, is claimed to be the first loudspeaker enclosure to encapsulate an aluminium honeycomb core between two layers of carbon fibre. It also features drivers with aluminium honeycomb cores and outer layers of graphene nano-tubes plus a 28mm tweeter with a diamond-coated beryllium dome.

"Magico has used Beryllium tweeter domes for some time now" said **Boris Granovsky**, of Absolute HiEnd, which distributes Magico in Australia. "But with the new M9 the company has taken a significant step forward by using chemical vapour deposition to coat the M9's 28mm beryllium dome with a layer of diamond. The result is high-frequency reproduction of extraordinary accuracy, revealing musical details with even greater clarity, so you'll hear microdynamics of even greater subtlety."

All the cone drivers in the M9 use eighth-generation 'Nano-Tec' cones which have an aluminium honeycomb core that's sandwiched between two graphene/carbon-fibre layers. "These cones are incredibly lightweight," says Granovsky, "but they're so rigid that if they're inverted and put on the ground, you can run over them with a car without deforming them." Three different cone drivers are used on each M9. Bass is delivered by two 381mm (15-inch) drivers with 123mm voice coils, and a linear excursion capability of ± 15 mm. These drivers are crossed to a pair of 280mm mid-bass drivers at such a low frequency (120Hz) that Magico has had to use an electronic crossover which is

provided in its own enclosure and requires a separate external power supply. These mid-bass drivers each have two 120x8mm N48H grade Neodymium ring magnets and 102mm voice coils. Crossover from these drivers to a single 153mm midrange driver with a 75mm voice coil and N48H grade Neodymium ring magnets is achieved via an internal 24dB-per-octave Linkwitz-Riley crossover that uses Magico's elliptical symmetry circuitry to preserve maximum frequency bandwidth with minimal inter-modulation distortion.

"All the cone drivers in the M9 have underhung voice coils and oversized Neodymium magnets," says Granovsky, "and rather than use an array of small Neodymium magnets, Magico has instead used uncommonly large Neodymium ring magnets in combination with a matching magnet that results in a prodigious flux density of up to 1.7 Tesla (17,000 Gauss) that's maintained right across the air gap. The result is a claimed "distortion-free" output right up to 120dB SPL across the frequency range from 18Hz up to 50kHz and a claimed sensitivity of 94dB SPL."

Each Magico M9 loudspeaker cabinet weighs 454kg, plus you have to factor in the weight of the external crossover, at 18kg, and the weight of the crossover's power supply, at 27kg. Each cabinet stands more than two metres high and in order to drive a single pair of Magico M9s you need to use either two stereo power amplifiers or four monaural amplifiers.

Available now, the Magico M9 loudspeakers sell for \$1,270,000 per pair (RRP).

For more information, contact Absolute HiEnd, on (04) 8877 7999 or at www.absolutehiend.com



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RICHTER HARLEQUIN S6

Australian-owned Richter Audio has launched its long-awaited Harlequin S6 loudspeaker, the until-now missing member of Richter's Series 6 range. According to **Brian Rodgers**, of Richter, the rationale for the design of the new Harlequin S6 was that it "provides an affordable floor-standing model between the Merlin S6 and the Wizard S6 that delivers a level of build and sound quality well above what the price would suggest."

The new Richter Harlequin S6 is fitted with a brand-new 165mm lightweight coated paper bass/midrange driver that operates in a bass reflex environment, with the port venting at the rear of the speaker, where it can optionally be fitted with an acoustic foam plug to

modify the bass output, according to speaker position, room acoustics and/or just the owner's preference for bass extension. "The new driver effectively minimises cone breakup and roll-off resonances," says **Dr Martin Gosnell**, Richter's award-winning designer. "Together with our all-new low distortion 25mm neo soft-dome tweeter, which has a resonance well below 900Hz and the desired phase characteristics, the overall frequency response of the new Harlequin S6 extends from 31Hz to 30kHz within 3dB."

To make the most of the higher performance of the new drivers, Gosnell developed a new minimal crossover for the Harlequin that uses high-quality polypropylene capacitors and both air-cored and ferrite-cored inductors.

Cognisant of the stability concerns of tall, floor-standing designs, Richter has developed new S6H speaker stabilizers that improve sideways and forward cabinet stability while at the same time improving the acoustic performance.

Richter rates the sensitivity of the new Harlequin S6 at 88.5dB SPL (2.83V/1m) and the nominal impedance as 6Ω. Available right now in a matt black finish for \$1,899 per pair (RRP) the Harlequin will also soon be available in a Walnut finish at the same price.

For more information contact Richter Audio on (04) 1886 3309 or at www.richter.com.au



VELODYNE MICROVEE MKII

Velodyne Acoustics has released the first product since being purchased by its new German owner, Audio Reference. Well, it's not exactly a "new" product, because it's the MkII version of the Velodyne MicroVee that was first released in 2006, but Velodyne says that despite its MkII designation, this version of the MicroVee is "not a re-invention, but an evolution keeping the strong performance the product was known for and adding some welcome enhancements."

The MicroVee MkII is still the smallest subwoofer in the current line-up, as well as being the smallest subwoofer Velodyne has ever built (229×229×244mm), and it still has a 165mm bass driver with 50mm voice coil and two 165mm passive radiators, but it now has a new Class-D amplifier that is rated with an output of 1,000-watts continuous and is said to have lower distortion than the previous model, thanks to a new DSP profile. The new MicroVee MkII also benefits from an upgraded switch-mode power supply, which Velodyne says "allows better stability, more definition, extended dynamics and more well-defined bass on the lower-end frequencies."

Velodyne says that although listeners will notice a much tighter and cleaner bass delivery, with lots of control and speed, the MicroVee MkII is not meant to shake the earth. "This clever, compact unit is for high-rise apartments and smaller residences where huge amounts of bass extension are not needed and where loud noise can also cause problems with neighbours," said **David Hall**, of Audio Reference Germany. "It's made for smaller living spaces and for modern homeowners who also do not want a huge box that they don't have room for, or that will compromise their interior design."

As with all Velodyne subwoofers, the MicroVee MkII has anti-clipping circuitry to prevent distortion caused by amplifier clipping, a "subwoofer direct" feature that bypasses the internal crossover so you can use your system's LFE output, and its DSP is programmed with Velodyne's "Digital Drive Control System" algorithm to control the driver's frequency and distortion characteristics. Velodyne claims that its DDCCS algorithm reduces distortion to 1/6th that of competitive subwoofers. Velodyne rates the MicroVee MkII with a frequency response of 38Hz to 120Hz ±3dB, which can be modified by a low pass control that's calibrated from 50Hz to 200 Hz and has a crossover slope that's adjustable from 12dB per octave to 48dB per octave.

Available now, the Velodyne MicroVee MkII retails for \$1,699 (RRP).

Velodyne is distributed in Australia by Oceanic Distribution, which can be contacted at 1300 556 303 or (02) 9531 1336 or at www.oceanicdistribution.com



HOLBO AIR-BEARING TURNTABLE

Is the Holbo the best value air-bearing turntable currently on the market? “Emphatically yes!” says **Anthony Sawyer**, of GrizzlyWorks High Fidelity Audio, which has just been named its first Australian distributor.

The Holbo Air-Bearing Turntable System features both a substantial 5kg air-bearing belt-driven platter and an air-bearing linear tracking tonearm. “Both are supported by a microscopically thin cushion of air,” says Sawyer. “This has a twofold benefit, the first being exceptionally low inertia, while the second is that it effectively decouples both components from the plinth, so there is no path for harmful vibrations to reach the cartridge.”

Designed and built by hand in Ljubljana, Slovenia, the Holbo turntable is the result of years of research and development by Holbo Audio’s founder, **Bostjan Holc**. It comes with a separate power supply for the d.c. motor, plus a very quiet pump that delivers filtered air to the platter and tonearm. The tonearm has VTA on-the-fly functionality and enables precise azimuth adjustment. “The exceptional fit, finish and design are testament to Bostjan’s obsession for perfection,” says Sawyer.

The Holbo turntable’s platter has electronic switching between the two available speeds (33 1/3 and 45 rpm) and exact speed can be adjusted manually so you can ensure pitch-perfect replay of orchestral and other works or simply adjust speed so you can play along with a fixed-pitch instrument. The straight, linear-tracking arm uses silver and copper Litz wiring, has a tonearm tube made of aluminium alloy/carbon and has an effective length of 163mm, an effective vertical mass of 7.5g and a total mass of 31.6g.

TNT Audio said of the Holbo Air Bearing turntable that: “It produces a wonderfully clean and detailed sound with fabulous instrument delineation and tone” while HiFi Advice published that: “There is no beating around the bush: the Holbo air bearing turntable offers a reference-level performance that will be hard to beat.”

Despite its air-bearing design, Holbos’ Air-Bearing Turntable System is relatively compact, measuring 430×400×150 (WDH) and it weighs only 12kg. It comes with a two-year warranty and retails for \$10,950 (RRP).

For more information, contact GrizzlyWorks High Fidelity Audio on (04) 0412 1155 or email grizzlyworks@outlook.com or visit www.grizzlyworksracks.wixsite.com



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The REF160S belongs in that category of amplifier that defines the uppermost calibre of performance.

– Ken Kessler, Hi-Fi News





METRONOME LE PLAYER 3

Metronome Technologie has added the first pure CD transport to its entry-level Classica range. The fact that this famous French company is now into its third generation of this particular product line is clearly evidenced by the player's name. Unlike most CD transports, the new Metronome Le Player 3, in addition to delivering SPDIF to its multiple digital outputs, is also able to deliver the same data up-sampled to DSD64. And in a rare move, one of those multiple digital outputs is an I²S HDMI output.

"Our Classica range was missing a pure transport, which was widely requested by our customers," said **Jean Marie Clauzel**, of Metronome. "So my design goal was to give much more added value than adding a simple digital output to an existing model. The electronics inside the Le Player 3 are completely new and have been specifically designed for a CD Transport."

The new Le Player 3 has four digital outputs: coaxial (via RCA), AES/EBU (via XLR), optical (via Toslink) and I²S (via HDMI). In keeping with its name, there is no analogue output at all. "Le Player 3 was designed to meet the new requirements of audiophiles who now mostly use streaming, but still need to listen to their old CDs, especially when a specific edition or recording can't be found on streaming platforms," said **Nigel Ng**, of Advance Audio, which distributes Metronome in Australia. "With this high-end CD transport music-lovers now have the option to listen to CDs with top sound reproduction quality via their own DAC, using upsampled PCM or DSD." Available in both silver and black finishes, Metronome Technologie's Le Player 3 CD Transport sells for \$7,995.

For more information, contact Advance Audio Australia on (02) 9561 0799 or visit www.advanceaudio.com.au

COLOURFUL KIWI AMPLIFIERS

New Zealand's most famous Rugby team may be the All Blacks, but New Zealand's most famous amplifier manufacturer, Perreux, is making its newest integrated amplifiers available in all the colours of the rainbow... plus there is also an "All Black" model.

The two new models are both integrated amplifiers with integrated DACs. The Perreux 155iX is rated with a power output of 150-watts continuous into 8Ω, and the Perreux 255iX is rated at 250-watts continuous per channel into 8Ω. Both models have multiple line-level analogue inputs (five unbalanced, one balanced), dual MM/MC phono inputs, and also incorporate the same headphone circuitry that's used in Perreux's renowned SXH2 Class-A

headphone amplifier to drive their front-panel headphone socket. Both models also have the full gamut of digital inputs, both wired and wireless, with decoding via an ESS Sabre Pro 9038 384k PCM/DSD DAC. Remote control is via app (iOS/Android).

Myriad colour options are available because the amplifiers are hand-painted. **Paul Sammes**, Global Sales & Marketing Manager for Perreux, says the finish is "to luxury automotive paint standard", and that Perreux will paint either amplifier: "in any colour of the customer's choice."

Perreux was founded in 1974 in Napier, New Zealand by **Peter Perreux** and rapidly expanded from a one-man operation into a multi-million dollar business that in 1987 was exporting Class-A preamplifiers and MOSFET integrated and power amplifiers to 17 countries. Perreux was sold to **Martin Van Rooyen** in 1995, who moved the company to its current location of Mosgiel on New Zealand's South Island. Two years ago, Van Rooyen sold the company to electronics engineer **Edwin Nieman**, founder of the award-winning Dunedin-based electronics design company Kamahi Electronics.

For more information, contact Perreux's Australian distributor, Sound and Music, on (03) 9555 8081 or visit www.sound-music.com



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YAMAHA GT-5000

TURNTABLE

Don't be fooled by any photographs you might see of it, including the one above. They all make the Yamaha GT-5000 look like it's a standard-sized turntable. It's not. Take the platter for a start. The platter on most turntables is 30cm in diameter. The platter on the GT-5000 is 35cm in diameter. That's a big difference. So whereas the chassis of most turntables is around 42cm wide and 32cm deep, that of the GT-5000 is around 55cm wide and 40cm deep.

And then there's the height. Let me tell you about the height.

The chassis itself is 12cm thick, to which you need to add another 4cm to account for the four support feet, then a further 8cm for the height of the tonearm. So, overall, that's a total height of 24cm. And if you use the Perspex dust-cover, it just gets even higher!

So it's big, but given the stonkingly good looks of the Yamaha GT-5000, you'll probably be wishing Yamaha had made it even bigger!

It's finished in high-gloss piano black and, given that Yamaha is the world's leading manufacturer of pianos, that means it's had plenty of experience with this particular finish, so as you'd imagine, the piano black gloss finish on the GT-5000 is absolutely superb. It's mirror-like, with not even the smallest flaw to be seen in its almost mirror-like surface.

The superb piano black finish is made to look even better because of the contrast between it and the massively thick (35mm)

silvered platter. The reflection in the black surface of the platter as it rotates is simply mesmerising.

THE EQUIPMENT

As with almost all turntables, some assembly is required, but with the GT-5000 it's minimal, and doing it gives you the chance to appreciate the insanely high quality of all the component parts.

Once you've unboxed it (no small task in itself, given the GT-5000's size and weight, so it's definitely a two-person job) the first thing to do is fit the 2.025kg, 140mm diameter subplatter over the spindle. I'm not too sure what this subplatter is made of... maybe it's bronze, or it may be brass, but it's certainly heavy and it press-fits down over the slightly tapered lower section of the spindle so closely that I'd doubt you could fit a single atom between them.

It was the first of my many insights into the stupendously good machining of the GT-5000.

Then it's time to attach the single, short (480mm) flat rubber belt firstly around the subplatter and then around the alloy drive pulley. The drive pulley is very slightly flexible, which suggested to me that the motor itself is isolastically isolated from the chassis. As with most vendors, Yamaha supplies white cotton gloves with the GT-5000, and you most certainly should be wearing these when

I can confidently state that the Yamaha GT-5000 sets a new standard in turntable performance

fitting the subplatter and drive belt, to avoid oils from your skin from making the surface or the belt slippery.

The main silvery alloy platter is unusual, not simply because it's so heavy (4.88kg), but also because of its diameter, which I've already mentioned, but additionally because of the unusual semi-circular 'gutter' that runs around its periphery. Once you have fitted the platter, a rubber mat virtually press-fits down over the entire surface, thanks to a matching 'gutter' moulded into it, which can be topped (or not, as you choose) with a final anti-static slip mat.

Although I don't normally talk about disassembly in my reviews, because the only time you'd do this is if you're moving house, I just have to mention it in this particular review because it highlights the superior engineering of the GT-5000. Firstly, the fit between the rubber mat and the platter is so glove-like that you'll be hard-pressed to remove it. That's amazing for a moulded product. As for removing the main platter from the spindle, well it's so close to the surface of the turntable that you can't really get your fingers under it, and the fit around the spindle is so tight (and gets tighter the longer you use the turntable) that Yamaha provides two lifting handles that screw into the platter in order that it can be removed.

As I hope I've made perfectly clear, the precision of the machining and moulding on the Yamaha GT-5000 is incredibly good. You can really see/feel the difference between turntable manufacturers that just "do it themselves" using off-the-shelf machinery or get a local engineering firm to just "do it for

them" and a company like Yamaha, which is obviously using state-of-the-art equipment to achieve what I imagine to be sub-micron tolerances.

You'll be able to admire the engineering even if you're looking at a Yamaha GT-5000 turntable that's already been assembled. All you have to do is get the platter rotating at 33.33 rpm (or 45 rpm, if you prefer) then crouch down and get an eye-line across the periphery of the platter at a spot on a wall behind. You will immediately see that there's

absolutely no vertical motion at all... it will be as if the platter were stationary.

If you do this same check with any other turntable, I'm pretty sure you'll see a tiny up/down motion as the platter rotates, showing that it is not rotating evenly. The Yamaha

GT-5000's rotation is dead flat. Amazing!

And if you look at the edge during rotation, using the same eye-line trick (or even a laser, if you want to go high-tech, like I did) you'll see there's no rotational eccentricity either, which is even more amazing.

The GT-5000 comes with its own custom, straight arm-tube tonearm already installed, but you will have to firstly install a cartridge and then adjust the height of the tonearm to establish the correct vertical tracking angle (VTA) for the particular phono cartridge you're using. You'll also have to set tracking force, but this is via the completely conventional method of having a threaded counterweight. Yamaha actually provides two counterweights of different mass, which you select according to the mass of your particular phono cartridge.

Tonearm height is adjusted by loosening a hex head screw on the side of the tonearm post, after which the post slides up and down. I found making this adjustment quite tricky, because the tolerances are so fine that

it's difficult to accurately move the post up and down by sub-millimetre increments, particularly since it has to be done by hand: there's no mechanical adjustment system.

Because of this, I'd recommend buying a really, really, cheap cartridge with the same dimensions as the one you intend to use, along with an after-market head-shell, and fitting this while making the adjustment. I'd also recommend doing it while using an LP you don't play so that if there's any mishap of some kind, there will be no chance of damaging a stylus or an LP or both, because it's very hard to get micrometer-like precision on the arm height when you're reduced to doing it by hand.

If all this seems a bit complex, another method I thought up would be to work out how high the 'collar' of the tonearm post needs to be above the base, then make a shim that's exactly this height and then raise the tonearm post and lower it down on the shim, after which you could then tighten the hex-head screw. Given the almost unbelievably high level of engineering expertise that's gone into the rest of the turntable, I was rather puzzled that an equal level did not seem to have been applied to the tonearm height adjustment methodology.

Yamaha has gone out on a limb with the design of its tonearm, because it has a shorter effective length than most other tonearms, and lacks an offset angle, which means that its arc across the grooved area is more pronounced than would be the case if it were longer. Also there is no anti-skating device fitted. I thought I should ask Yamaha about its rationale for the tonearm length and the lack of anti-skating, and received a reply from no less a personage than Kiyohiko Goto, Chief Engineer at Yamaha Japan's AV Division.

Regarding the tracking error he says: "A short straight arm has excellent tracking performance because the inside force is generated at the point of contact between a stylus tip and groove of vinyl and is always variable with the variate of the music groove. In the case of a short straight arm, its null



point (= balanced point) is at the middle of the grooved area (so) the maximum tracking error is 10 degrees at innermost and outermost grooves. The distortion caused by this small error angle is inaudible because it is lower than both the tracing distortion and the residual noise. Furthermore, tracking error appears as phase shift between the left and right channels, and even at its maximum (10 degree) error the phase shift that results would be the same as caused by a difference in the distance from the left and right speakers to the listener of only 2mm. This also does not cause any problem for sound."

As for the lack of anti-skating, he says: "A short straight arm does not require anti-skating because [at maximum error angle] if the vertical tracking force is 2g, the frictional coefficient is 0.3, and so the inside force (outside force) will be approx. 0.1g. In the case of a conventional offset arm with a maximum tracking error of 2 degrees, the inside force will be approx. 0.02g so the difference of the max inside force between a short arm and an offset type will be 0.08g at the maximum, thus the difference in force is very small."

"On the other hand, when anti-skating is employed, because it applies a constant force it never cancels the inside force which constantly changes as it follows the music signal. The constant differences between the variable inside force at the stylus tip and the constant force by the anti-skating adversely affects the cantilever, hence the tracking performance is not stable. In a short straight arm the tracking performance following (the) music groove is excellent because the variable difference of force between the stylus tip and tonearm (cartridge) is not generated."

Whatever you think of Yamaha's approach to tonearm tracking/tracing (and I should point out that in the previous paragraphs that I have paraphrased a translation of Kiyohiko Goto's original Japanese-language explanation, so any errors are mine alone), the practical result is that you cannot use a conventional Baerwald, Stevenson or Loeffgren cartridge alignment tool to align your cartridge in the tonearm.

The assembly process gives you the chance to appreciate the insanely high quality of all the component parts.



You instead have to use the alignment tool Yamaha supplies with the GT-5000.

Yamaha's alignment tool comes in the form of a black metal disc that slides down over the spindle and has the necessary cartridge calibration marks scribed in it. This disc also doubles as a speed calibration device, by virtue of the strobe marks inscribed on it... though you'd be hard-pressed to instantly recognise these as strobe markings because rather than provide them in the form of straight lines, as with most other strobe 'cards' I've ever seen, Yamaha has instead provided the markings in an 'arrow' formation.

I initially thought these arrows were bit of a gimmick, but when I compared Yamaha's strobe with my own (which has straight lines) Yamaha's strobe was actually the easier one of the two to use, and also the most accurate. Yamaha's strobe lines also look better, but that's probably by-the-by.

Interestingly, there were only two strobe rings (one for 33.33 rpm and the other for 45rpm) on the calibration disc, which means that Yamaha must be supplying completely different calibration rings depending on whether the turntable will be used in a coun-

try with a 50Hz mains frequency (Australia and the UK, for example) or in a country where the mains frequency is 60Hz (such as the USA or Japan).

As for the strobe light that's necessary for the strobe card to work, any fluorescent light will suffice for this purpose, but on the off-chance that you don't have one handy, Yamaha provides a small strobe light with the GT-5000. It's at the end of a piece of flexible cable that plugs into a power supply at the back of the turntable.

So what does the post at the front of the GT-5000 do if it's not a strobe post? That's where you adjust the speed of the platter. This means that you have to hold the strobe light with one hand while you use the other hand to adjust platter speed. I have to say that while this is a perfectly practical way to do this, it felt a little 'odd' and just a bit 'Heath Robinson'. I wish Yamaha had thought of another way to implement this.

Speed change is achieved by pressing the small button behind the large Start/Stop button at the right side of the turntable plinth.

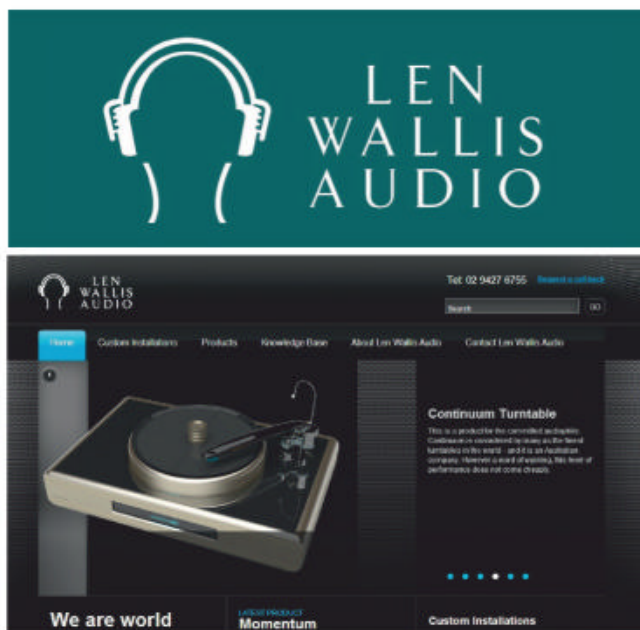
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When you change speed by pressing it down and releasing it, the relevant (33 or 45) LED blinks green twice very brightly then glows steadily at reduced brightness. When the switch is at 33, it sits exactly flush with the bezel around it, whereas when it's at 45 the top of the switch sits 2.5mm proud of the bezel.

The same physical action is true for the platter Start/Stop button and the Power button (at the left of the plinth). When the Start/Stop button is in 'Start' mode, the button is flush with the bezel, and when it's in 'Stop' mode, it sits proud of it. And when the power button is set to 'On', the button is flush with the bezel, whereas when it's off, it sits proud of it. This is not only elegant engineering, it also means you can instantly tell the status of the control even when your eyes are closed, or in complete darkness.

Around the rear of the GT-5000 you'll find something completely surprising, which is that it has not only a pair of standard unbalanced RCA outputs (gold-plated of course), but also a pair of balanced XLR outputs (also gold-plated). Even the essential ground terminal screw is gold-plated. All these are located on one mounting plate at the left of the turntable. At the right is another plate that has a standard 3-pin 240V mains socket and a smaller, 3.5mm socket for the strobe light.

Also on the rear are four chromed knurled screws, in two pairs. These are to attach the heavy-duty clear perspex dust cover that in many countries is apparently an optional extra but here in Australia comes standard with each turntable, but packaged separately, so that owners can choose to fit it or not.

Yamaha Australia also offers a very generous ten-year warranty on the GT-5000.

LISTENING SESSIONS

Yamaha does not supply a phono cartridge with the GT-5000 and, so far as I could ascertain, does not supply a list of cartridges that might be suitable for it. When I say 'suitable' I intend this to mean a list of phono cartridges which can be installed in it such that their stylus is able to be correctly calibrated according to Yamaha's gauge.

I mention this because several of my cartridges had their stylus so far back in the cartridge body that I could not get the stylus to the alignment point on Yamaha's gauge even when the mounting holes at the top of the cartridge were at the extreme end of the adjustment slots on Yamaha's head-shell.

As a professional hi-fi reviewer I was in the enviable position of having many different cartridges on-hand, and was fairly easily able to find several that I was able to align as per Yamaha's instructions.

I also had quite a few different head-shells available, several of which allowed a greater range of adjustment than the one Yamaha supplies, which then allowed me to use the 'shorter' cartridges. In the absence of a list from Yamaha, you will need to depend on your hi-fi retailer's knowledge with regards to phono cartridge suitability.

My ability to fit alternative head-shells was made possible because Yamaha's tonearm has a standard 'universal' head-shell fitting.

The very first thing I had to do after cartridge alignment was to use the strobe to ensure the platter was rotating at exactly 33.33 rpm. Having not done this initially, I found it a bit difficult to locate the strobe cord's plug in the socket at the rear, so you should bear this difficulty in mind if you're planning on regularly inserting and removing the strobe light... and I certainly wouldn't recommend leaving it switched on permanently.

In point of fact, the only reason I can think of that you'd have to regularly insert and remove the strobe light is if you regularly play 45 rpm LPs, because I found that if I set the speed to 33.33 rpm using the strobe, then switched to 45 rpm, the strobe showed that the platter was running slightly slow, which meant tweaking the platter speed up a little. If I then switched back to 33.33 rpm, the platter ran slightly fast, which meant another platter speed tweak.

But any constant speed adjustments using the strobe would assume, of course, that you actually want the platter to be rotating at exactly 33.33 rpm or at 45 rpm and there's really very little reason you would actually want to do this. The simple fact is that a great many LPs need to be run slightly off-speed if you want the music that's contained on them to be true to the pitch at which the music was originally played.

This comes about because of the limited playing time available on an LP meant a work that was played and recorded at the right

pitch (i.e. A=440Hz) would often be too long to fit onto the two sides of an LP. Recording engineers would then 'solve' this problem by speeding up the tape recorder feeding the cutting lathe, which then reduced the duration of the work so that it would fit.

However, speeding up the recorder in this way also raised the pitch of all the instruments (and voices), so that if the turntable used to play the LP was set for 33.33 rpm (the so-called 'correct' speed) the pitch of those instruments and voices would be higher than it should be. Being able to set the platter to rotate slightly slower than 33.33 rpm (via a pitch control) allows corrections for such pitch inaccuracies.

Another situation where you might not want a turntable to play at exactly 33.33 rpm is when you want to play along with an LP with a notionally fixed-pitch instrument, such as a piano, and you find that, for whatever reason, your piano is slightly out of tune with the LP. A little tweak on the pitch control (either up or down, as appropriate) will have you playing along in perfect harmony. And if you sing along, and can't quite reach the very highest notes (or the very deepest) an appropriate touch on the pitch control will fix both these issues as well.

Call me slow to twig, but I had not realised why there was a groove at the periphery of the GT-5000's platter until it came time to actually place my very first LP onto the platter, at which point it suddenly dawned on me that because the Yamaha's platter was 'way bigger than the LP, the groove was essential in order to allow LPs to be easily positioned and removed.

Which got me to thinking why the platter was so much larger than usual in any case, and another light in my brain went on: Inertia, or probably (I forget the physics and didn't google it), Moment. Basically, the larger the diameter of any wheel (platter), the greater the 'flywheel' effect, and thus the greater the stability of rotation.



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Clever, very clever! (And here I'm not talking about me, but about Yamaha's engineers.)

The large, heavy platter has one slight drawback, which is that it's a bit difficult for the single flat drive-belt to coax it up to speed. I discovered that every time I pressed the play button, there was initially a tiny bit of slippage, after which it took 15 seconds for the platter to stabilise at 33.33 rpm. And if you press the play button again to stop the platter, it takes a full 23 seconds for the platter to come to a complete halt.

It won't come as a surprise to regular readers to find that that very first LP I placed on the Yamaha GT-5000's platter was my new favourite recording of Eric Satie's 'Gymnopédies' as performed by Anne Queffélec (Virgin Classics 522 0502) whose tempi are perfect and whose rubato is glorious. I just love the liberties she takes with the score, which elevates it from just being 'another virtuoso performance' into another league completely. (Though as another reviewer was insistent I point out, she was not brave enough to omit the final chord.)

The reason for playing Satie was, of course, that slow (very slow, insanely slow) piano music will immediately reveal if a turntable's platter is 'wowing' (slow speed variations) or 'fluttering' (higher speed variations) as it rotates. I can happily report that I heard zero wow and zero flutter when auditioning the GT-5000. I also did not hear any cogging effects which, of course, is precisely the reason Yamaha elected to use a belt drive rather than a direct drive for its GT-5000 in the first place.

In the words of Yamaha's Kiyohiko Goto: "A belt drive has been adopted to minimise the effects of uneven rotation due to motor cogging."

"Feedback used for direct-drive control cannot fundamentally eliminate the response time regarding rotation unevenness caused by cogging, and this affects the sound. To avoid this, a motor drive that does not require feedback technology has been adopted."

Cogging is a strange phenomenon, but it's certainly audible, and the GT-5000 obviously doesn't have it. But in a world of superior belt-drive designs, the GT-5000 to me stood out as being even more superior, because the sound was just so smooth (and I stand by the extra "o" in that word, because the sound from the Yamaha GT-5000 is actually smoother than smooth, but I just didn't have a word to describe it). There was a beautiful ease and 'flow' to all the music I played on the GT-5000 that transported me to a higher plane.

Having been a bit concerned about the tracing ability of a shortish arm and the lack of anti-skating, I put the combo to the test with a couple of my favourite albums only to find that it absolutely sailed through Emerson Lake and Palmer's first and second albums (they being 'Emerson Lake and Palmer' and 'Tarkus') both of which are notable for possessing far more bass energy than most ordinary phono cartridges (and tonearms) can handle and therefore are very difficult to track. (Though not as difficult as the cannon-fire in Tchaikovsky's *1812 Overture* with Erich Kunzel and the Cincinnati Symphony Orchestra on Telarc, which the GT-5000 also sailed through with flying colours.)

ELP is a *tour-de-force* of an album, not least because of the individual musicianship of the band members—particularly Emerson—but also because two of the tracks (*Barbarian* and *Knife Edge*) were partly written by those three famous rock musicians Béla Bartók, Leoš Janáček and Johann Sebastian Bach.

(For confused readers, *Barbarian* is a reworking of Bartók's *Allegro Barbaro*—from whence the name—and *Knife Edge* sounds a lot like a melding of the first movement of Janáček's *Sinfonietta* with the *Allemande* from Bach's *French Suite in D minor*, BWV 812.)

If you're at all surprised by this revelation, you shouldn't be. Many of the greatest rock classics of recent times are just knock-offs from the great classical composers. One of Billy Joel's most famous compositions is almost a transcription of a well-known classical piece, indeed I very recently saw a TV interview where when Paul Simon was being praised for a particular tune that bore his name he quite happily admitted that it wasn't his, and played the original, classical version on the guitar he just happened to have in his lap to prove the point. And just in case you were wondering, it's all perfectly legal and legit. The copyrights lapsed a few hundred years ago, and you don't even have to credit the original composer.

When it was pointed out that what is possibly Procol Harum's most famous song (*A Whiter Shade of Pale*) was a Bach knock-off, with even Wikipedia coyly noting that: "The similarity between the Hammond organ line of 'A Whiter Shade of Pale' and J.S. Bach's Air from his Orchestral Suite No. 3 BWV1068, (the '*Air on the G string*'), where the sustained opening note of the main melodic line flowers into a free-flowing melody against a descending bass line, has been noted." Gary Brooker, who is credited with the composition (and still owns the copyright!) told *Uncut* magazine: "I wasn't consciously combining rock with classical, it's just that Bach's music was in me."

Just to be fair and even-handed, all the greatest classical composers also "knocked off" tunes from other composers, as well as blatantly recycled their own best themes and melodies into other of their compositions, but back then, copyright wasn't a thing, and due to a lack of recording/playback facilities, any liberties taken by composers who knocked off others' compositions were unlikely to be discovered.

Rumble, signal-to-noise ratio... call it what you will, you don't want any in a turntable and you certainly won't find (hear) it issuing from Yamaha's GT-5000. This is one silent turntable. Super silent. I eventually gave up trying to hear any rumble or bearing noise when listening to music and instead resorted to using a stethoscope borrowed from my brother-in-law to listen to the plinth in a dead-quiet room. While I could hear some noise at the 'motor' (left) side of the plinth, I could hear nothing at all at the all-important (tonearm/right) side of the plinth.

CONCLUSION


Yamaha’s GT-5000 is such a mind-blowingly fantastic turntable that the only way I think it could be improved is for Yamaha to offer a version without a tonearm. Admittedly such a model would most likely appeal only to those audiophiles who already own a favourite tonearm, such as ‘The Wand’ from Simon Brown, or a Sorane ZA-12, or maybe even a classic such as an SME Series V, but I think there’s a fair few of them around, and given the level of performance of the GT-5000, they’d be absolutely queuing to buy one!

But if you don’t already own a favourite tonearm, then you have absolutely no excuse not to buy a Yamaha GT-5000: it’s just that good! 🎧 *Andrew Frazer*


Readers interested in a full technical appraisal of the performance of the Yamaha GT-5000 Turntable should continue on and read the LABORATORY REPORT published on the following pages.

CONTACT DETAILS

Brand: Yamaha
Model: GT-5000
Price: \$12,995 (RRP)
Warranty: Ten Years
Distributor: Yamaha Music (Australia) Pty Ltd
Address: Level 1, 80 Market Street
South Melbourne
VIC 3205
T: 1800 805 413
W: au.yamaha.com



- Superb performance
- Fabulous looks

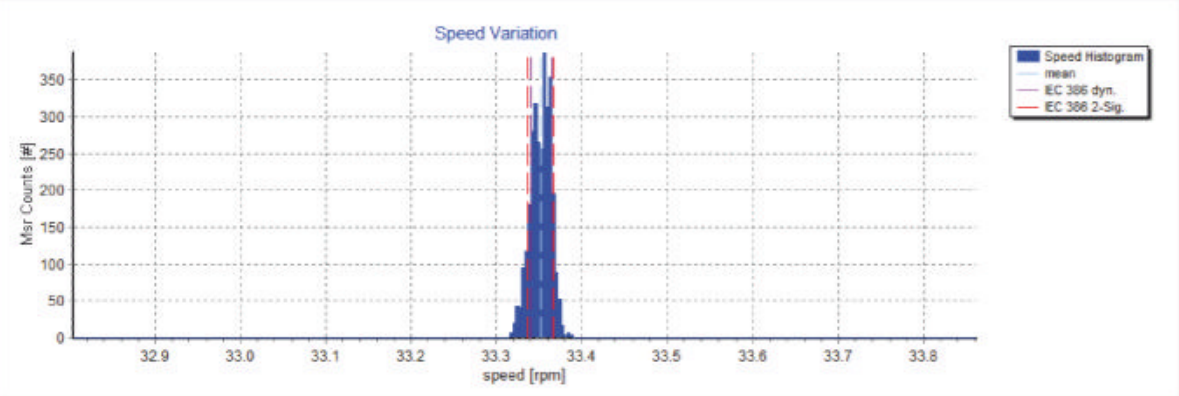


- Plus-sized
- Tonearm height adjuster

LABORATORY TEST REPORT

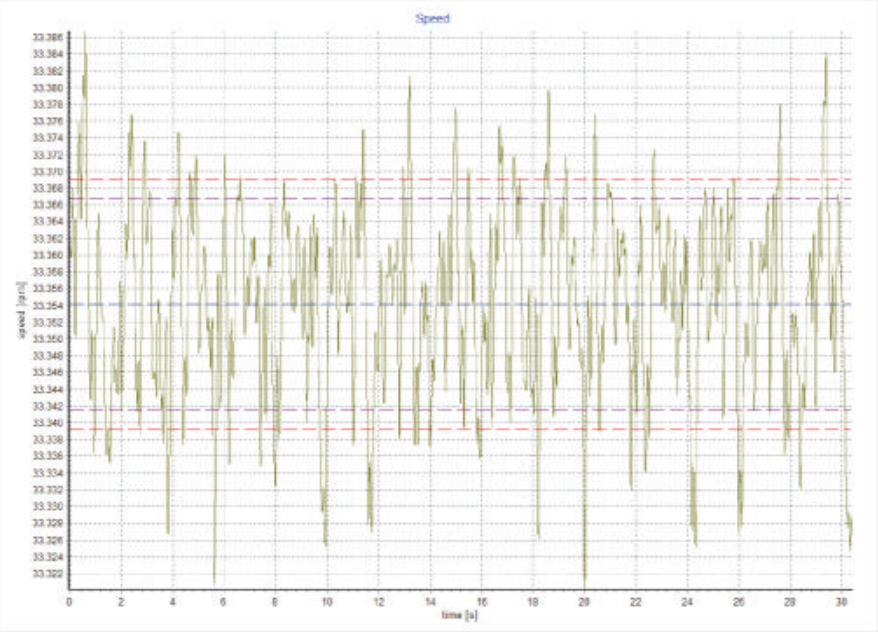
The absolute speed accuracy of the Yamaha GT-5000 will be down to how accurately the user can set the speed using the strobe light and disc, because there is no ‘default’ or ‘0’ setting on the pitch control knob, so Newport Test Labs instead used a test record with a 3kHz test tone and set the speed using a frequency counter to ensure the most accurate measurements.

Once the GT-5000’s speed was set to exactly 33.33 rpm, the lab switched the platter speed to 45 rpm and played a 3kHz test tone that had been recorded at 45 rpm. The frequency counter

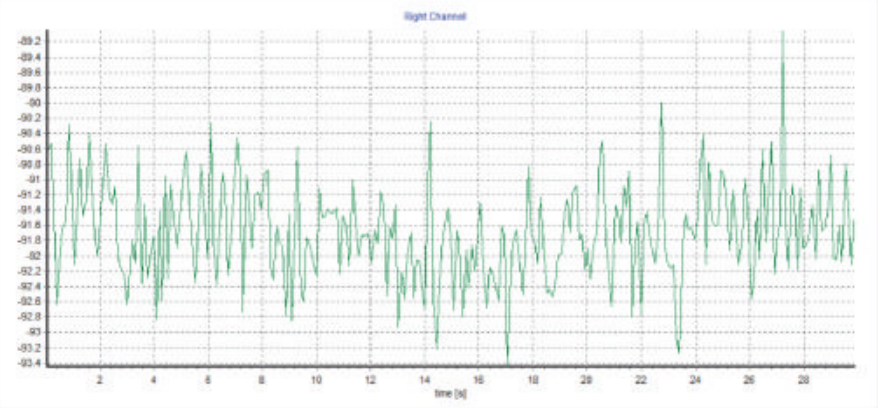


Graph 1. Long-term speed variation histogram (see copy). Note that the measurements shown on this graph include speed inaccuracies in the test pressing used to make the measurement.

Graph 2. Rotational stability over a 30-second period. Raw variations are shown by the khaki coloured trace. The mean speed over the period is indicated by the dashed blue line. The overall wow and flutter, measured according to the IEC 386 standard is shown for a dynamic measurement (purple trace) and for a 2-Sigma analysis (red trace). Note that the measurements shown on this graph include speed inaccuracies in the test pressing used to make the measurement.



Graph 3. Signal-to-noise ratio (rumble) measured over a 30-second period using a Messkoppler and referenced to a recorded velocity of 3.54cm/second.



reported the frequency as 2990Hz, 10Hz lower than it should have been. This is only 0.3% low, and not much in terms of absolute pitch so you may not want to bother about adjusting it, but of course it’s easy enough to do if you do care.

Long-term speed variations were vanishingly small, as you can see from the histogram accompanying this review. (Graph 1.)

Rotational stability, as measured by Newport Test Labs, and as graphed in Graph 2, was also excellent. This test measures the speed for a full 30 seconds. The raw variations are shown by the khaki coloured trace. The mean speed over the period is indicated by the dashed blue line. The overall wow and flutter, measured according to the IEC 386 standard is shown for a dynamic measurement (purple trace) and for a 2-Sigma analysis (red trace).

Newport Test Labs used separate Me-guro and MTE instrumentation to measure long-term (20-minute) speed variations and reported wow and flutter as being 0.06% RMS unweighted and 0.08% CCIR weighted. The wow and flutter the laboratory measured was identical for both 33.33rpm and 45rpm speeds, for both the RMS and CCIR standards.

Graph 3 shows the noise (rumble) of the Yamaha GT-5000, referenced to a 315Hz test signal recorded at a velocity of 3.52cm/sec. You can see that it’s mostly more than 90dB down, which is an outstandingly good result: the best I have ever seen, in fact.

The Yamaha GT-5000’s power consumption is negligible, with the turntable drawing only 0.41 watts (+0.845 PF) in standby, and only 10.67-watts (+0.755PF) at 33.33rpm.

On the basis of these outstandingly good test results I can confidently state that the Yamaha GT-5000 sets a new standard in turn-table performance. 🎧 *Steve Holding*



FOCAL ARCHE

DAC & HEADPHONE AMPLIFIER

French company Focal makes loudspeakers and headphones. Some of its headphones are pretty high-end. As are some of its loudspeakers. So the company has lately taken to producing high-end electronics to drive them. For example, the Focal Astral 16 A/V processor and amplifier runs to more than \$30,000. Here we're spending some time with the more modestly priced Focal Arche DAC and headphone amplifier.

THE EQUIPMENT

In one way the Focal Arche looks very different. It comes with a curved section of metal. The straighter end has a home amongst the heat sink slots on top of the unit. Install it there and it forms a stylish headphone stand for your Focal (or other) headphones.

Apart from that, the layout of the unit is fairly conventional for this kind of product: deeper than it is wide, a flat well-built (over 4kg) slab of electronics.

On the front is a blue-on-black display screen. To its left is a 6.35mm stereo headphone socket. And to the left of that is a 4-pin XLR socket for balanced headphones. To the right of the display is a combination rotary control/press button. The principal use of that is for output level and switching the unit in and out of standby. But it also invokes the main menu, in which turning the wheel takes you through the options.

On the back panel are the line outputs: a pair of unbalanced RCA sockets and a pair of balanced XLR sockets. The inputs are also at the back. There's a USB Type-B for plugging into your computer, an optical digital audio input, a coaxial digital audio input and a pair of RCA sockets for analogue inputs. The USB Type-A socket is only there for upgrading the firmware of the unit. As we write, the Focal Arche is on its original factory-installed firmware and no newer version is available for download. The regular digital audio inputs support PCM up to 192kHz sampling with 24-bits of resolution.

With a connection to a computer via USB, the unit supports PCM with up to 384kHz sampling and 24-bits of resolution and Direct Stream Digital in regular, double and quad speed versions (i.e. DSD64, DSD128 and DSD256). The driver objected to 32-bit audio. For Windows, it's best to choose the ASIO driver rather than WASAPI. The latter worked with everything except for DSD256. Every time I tried DSD256 with the WASAPI driver, not only did no sound come through, but it broke something in the driver, requiring a re-boot of my computer before the DAC would produce any sound at all (with any format).

The Focal Arche employs dual AK4490 DAC chips for digital to analogue decoding. These are specified to support sampling rates up to 768kHz, use up to 32× oversampling, use 32-bits of resolution, offer five filter curves and run with a THD+Noise figure of 112dB.

The Class-A headphone amplifier is dual-mono and is rated at 2× one watt at 1kHz for impedances less than 32Ω. The frequency response is specified at 10Hz to 100kHz, S/N ratio at 116dB and THD at less than 0.001%. No additional criteria are provided for those numbers. I guess that these specs are for the amplifier alone. (16-bit PCM is going to bottom-out at a signal-to-noise ratio of around 97dBA for example.)

In the settings menu the unit can be set to 'Low' or 'High' gain and an amplifier mode can be selected for each of the current model Focal headphones, plus there are non-Focal settings labelled 'Voltage' and 'Hybrid'. There was a definite mechanical click from within the unit when switching from some settings to others, suggesting to me that there's a relay doing something in there.

INSTALLATION

I did the great majority of listening and testing using my computer as the source.

If you are after a high quality DAC to drive your Focal headphones (or really, any brand or model of headphones at all), the Focal Arche is a fine unit.

For full use that required that I install USB Audio Class 2.0 drivers from Focal's website.

Keeping one's web presence in alignment with slower-moving formal documentation can be tricky, nonetheless it's a good idea to take some effort. So when reading the 'Firmware Update' section of the manual, in which the first step is to 'Go to <http://www.focal.com/arche>', one really should not be confronted with a '403 Forbidden' message. Oh, you can navigate your way there through the usual links—it's at <https://www.focal.com/en/headphones-0/headphones/headphones-electronics/amplifier-dac/arche#download>—but why put it in the manual if it's going to be wrong? And why not put a redirection on the now-defunct page to send new owners to the correct page?

That wobble aside, there were no problems installing the drivers, and no problems with any of my Windows player software in using them. Windows reported supported PCM resolutions of 16- and 24-bits from 44.1kHz up to 384kHz.

LEVELS

I found I had to be a little careful using the line outputs. There wasn't a 'fixed' line level output. It was controlled by the front-panel level control, just as the headphones were. I initially made the assumption that, like some other DACs which lack a fixed line-level output, the appropriate thing to do was simply to advance the gain to the maximum position—an indicated '99' on the front panel—and then use my amplifier's volume control for level. When I later checked the manual, that is indeed what Focal suggests. Note, also, that there is only one system-wide level. The unit does not maintain separate levels for headphones and line output. Indeed, inserting headphones does not stop the line output. If you have it on 99 for your main system and then decide to listen with headphones, do make sure you turn down the level.

But as the unit always switches on with the volume level set to '20', which is way too low both for headphones and the line output, I'd recommend you never switch the unit off at all. This will also mean that you will also

need to go into the settings menu to switch the Arche's automatic standby function off.

Also, I would further suggest that you don't use the 'High' gain setting. I tried it at one point while the RCA outputs were connected to my audio system. It did seem rather louder than usual for a given system output level setting. But as I played the bonus 'Yes' cover of Simon and Garfunkel's *America* from 'Fragile', there was this weird crackle on the right channel. Well, not precisely a crackle, but rather a 'crack' on certain very loud notes. For a few moments I revelled in this: a little something previously unheard! But then I started to worry. Was there something wrong with the right-hand KEF LS50 speaker I was using (supplemented by a Krix subwoofer, but that's not relevant here).

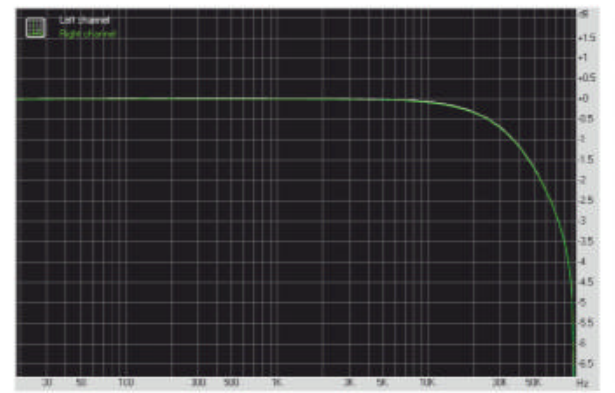
So I started fiddling with levels. I turned the Focal Arche down to '80' output instead of '99', and turned up the amplifier to restore the speaker output to the same volume level as previously. There were no more 'cracks'... which I found a bit odd, because it was presumably input overload distortion, but input overload distortion doesn't normally sound like that.

LISTENING SESSIONS

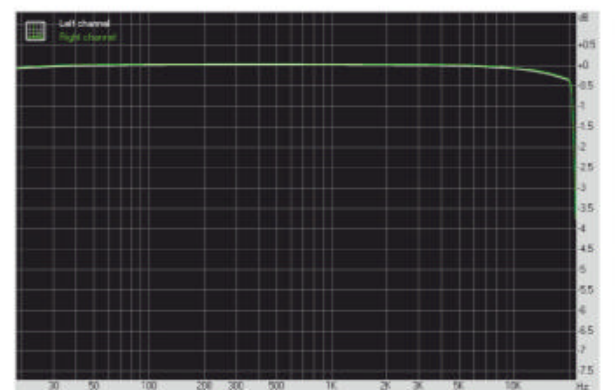
I should note that the unit does not decode MQA. If you use TIDAL, the TIDAL app will unfold any MQA high-resolution content and the Arche will indicate on its front panel display the higher sampling rate... or at least it will if you press the front panel control button or rotate the knob.

The default state of the display is a large pair of digits indicating the output level, with the selected input source in smaller type above it. To see sample rate and digital audio format you have to manipulate the control. After a few seconds it reverts to the previous state. There's no option for changing the display mode permanently.

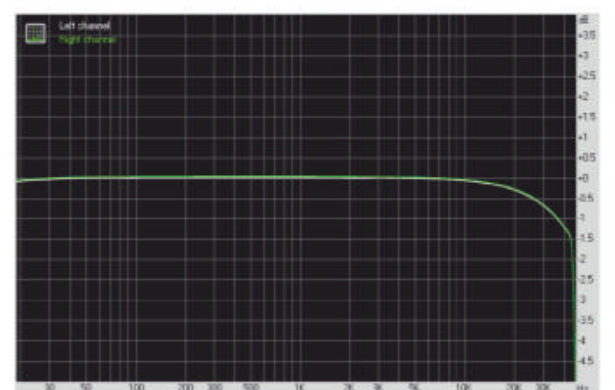
It's good that the format and rate can be seen, but I'd prefer to have them showing by default. This was brought home when I discovered at one point that 192kHz tracks were coming out at 96kHz. I was using JRiver Media Centre and had previously set it to convert anything above 96kHz sampling to



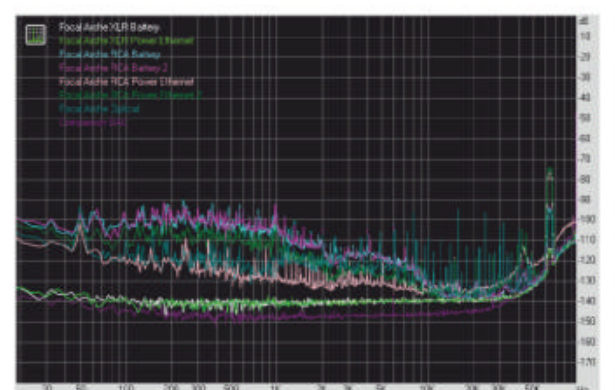
Graph 1. (See copy)



Graph 2. (See copy)



Graph 3. (See copy)

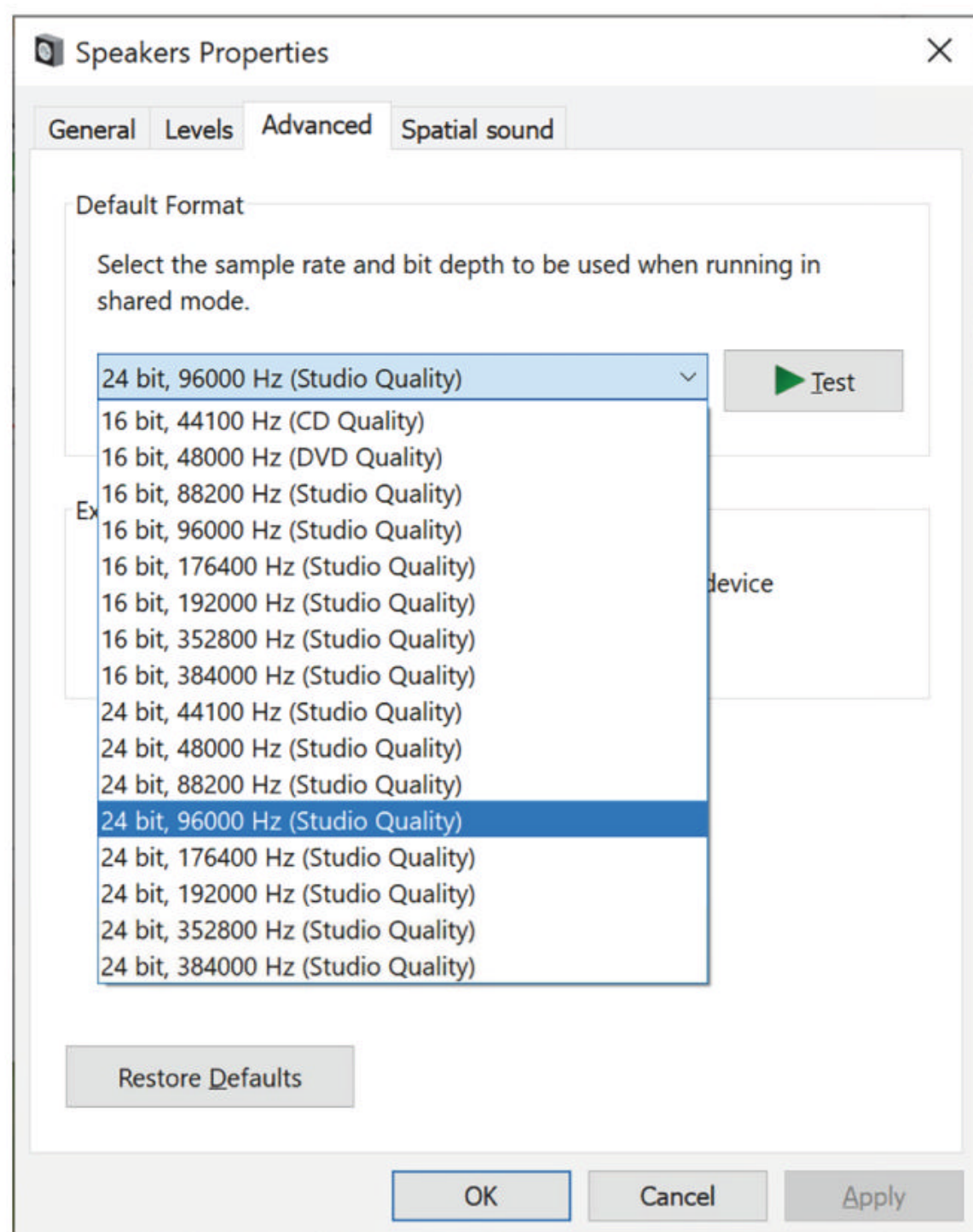


Graph 4. (See copy)

88.2kHz or 96kHz as appropriate because it had previously been used in conjunction with my review of an AudioQuest DragonFly Cobalt DAC. As I keep saying in all my reviews, it's very easy to accidentally use the wrong output settings, but, of course, most normal people are not hi-fi reviewers and will therefore be setting up their computers for just the one DAC, not darting around between different ones.

I didn't have an amplifier with XLR inputs available, so for loudspeaker listening used the RCA outputs. Generally the unit sounded excellent, just as I'd expected. But every so often there was just a little background noise, sounding somewhat like random electrical noise. Which of course had me suspecting some breakthrough of the noise from my home computer network, delivered by the USB connection.





I therefore unplugged the computer from the network as well as from mains power, but it made no difference. I only heard it in one listening session, so after a while I started to doubt that I'd heard it at all.

There was certainly no such noise when using headphones. And, of course, it's with headphones that one is most likely to hear such untoward things.

I used a pair of Focal Elear dynamic headphones—Focal's 'entry level' model, priced at \$1,599—as well as Oppo PM3 planar magnetic headphones (the brand has now ceased to operate in this space), a pair of ancient Sennheiser HD-535 open-back models and a set of Final Audio B3 in-ear monitors (\$729). The Arche's output was set to 'Elear' for those headphones, of course, and to 'Hybrid' for the others.

The first thing to note was that with none of the headphones was there any chance of the output limits of the Focal Arche being approached. 'Ample' is not the word to describe the output on tap. It could be destructive if one wanted. You need not worry about your headphones being supplied insufficient power.

And that translated into a real authority in performance. At this point I'll pause to slightly regret the order in which I did things. As is my usual practice, the measurements were made after the listening sessions had been completed. I do that intentionally because I'm fearful that my listening impressions may be coloured by knowledge of the unit's objective performance. But in this case I was later to discover that the one thing done by the named amplifier output settings was switch between three different output impedances. That means that to the extent that a set of headphones has an uneven impedance curve, its tonal balance will vary according to the setting of the amplifier.

That seemed to have an affect upon the performance of the Final Audio B3 in-ear monitors. These use dual balanced-armature drivers (*sans* crossover) and delivered a fuller, richer, more balanced performance with the Focal Arche than they did with the DragonFly Cobalt mini-DAC. It turns out that the 'Hybrid' setting of the Arche implements a 10Ω inline output impedance, and I'm thinking that this provided a fortuitous adjustment of tonal balance.

The effect was subtle, and the B3 buds sounded excellent anyway with the Cobalt, but they sounded even better with the Arche. I would have liked to experiment more with listening using the different modes, but the loaner review unit was by then already overdue for return.

With the Oppo PM-3 headphones, the sound was more traditional (they are closed back). They have an even impedance across the audible frequency band so they don't really care about (modest) output impedances. They delivered an extremely solid performance with the Focal Arche amplifier. I went back in time to the debut Black Sabbath album. The thunder at the opening of the first track was utterly clean and deep. When the first riff cuts in, the drums pierced through the mix to hover above it all, even the toms. They were surrounded by substantial air, filled with their natural reverb. The hi-hat bit appropriately.

Going back to the Final Audio B3 in-ears, there was enormous life and dynamic range across all the music genres I tried (including prog rock, jazz, female vocalist, baroque and classical). The best sound came from the open-backed Elear headphones. Focal knows what it's doing by providing a first-class signal to drive its own products: The Elears were open and airy, limitlessly detailed and beautifully balanced.

ON TEST

I calculated the internal impedance of the Focal Arche's headphone output at 2.5Ω. It delivered 1.9VRMS into a 300Ω load, which is around 12mW or nearly 11dB above the sensitivity rating used by most headphones. Into a 16Ω ohm load, it delivered 1.65VRMS, or 170mW and more than 22dB above sensitivity rating.

I figured that was that... but a couple of days later I started to wonder about the different amplifier settings. The Voltage setting is supposed to be a voltage amplifier, in which the unit need not provide much current. The Hybrid setting is supposed to combine voltage and current amplifier functionality. And the other five settings feature outputs optimised for particular models of Focal headphones. Would they make a difference?

Indeed they would! To four significant figures at nine different measurement criteria, the Voltage output setting was unique, while the Hybrid and Elear settings were the same, and the Utopia, Clear, Elegia and Stellia settings were the same. It was with the Voltage setting that the internal impedance of the Focal Arche was around 2.5Ω. With the Hybrid and Elear settings, it was around 10Ω. With the Utopia *et al* setting it was around 17.5Ω.

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I did not repeat the measurements on the 'High' gain setting, just did a quick check to see what effect that had on level: it boosted it by 12dB. Into high-impedance loads you can expect the maximum output from the headphone amp to be about 7.5VRMS. Clearly there's never going to be a shortage of power even with high-impedance, low-sensitivity headphones.

The unit has fairly aggressive output protection. Everything went smoothly at low gain, but when I tried to measure maximum output at high gain into low impedance loads (16Ω), I kept tripping the protection. Oh, don't worry that this may constitute some limitation on performance. Oh no... the last measured output voltage with a 1kHz test signal into that low impedance was around 5.2VRMS. That equates to 1.7 watts—not milliwatts, *watts*—output. Add 32dB to the sensitivity rating of your earphones or headphones, and that's the maximum it will deliver with the high gain setting. Enough, in other words, to do major damage to you or your ear gear in very short order. All that was in voltage mode, which you will recall has a low output impedance. In Hybrid mode, with an output impedance of around 10Ω, the unit could be wound up to the maximum level at which point it was producing a 'mere' 4.7VRMS output. Or 1.4-watts and 31dB above the sensitivity rating.

The unbalanced line level outputs were a bit lower in voltage than the norm, delivering around 0.95RMS in 'Low' gain mode and 3.8VRMS in 'High' gain mode. Of course, that's with the level control set to maximum in both cases.

Speaking of the level control, it has 100 indicated levels. Down very low each numerical increment amounts to around 1.5dB. At higher levels that drops to 1dB per indicated number, then 0.5dB and then from level 60 and up, 0.5dB per two number increments.

Graph 1 shows the frequency response of the Focal Arche with 44.1kHz signals and

you can see that the frequency response is sensible: it rolls off a little above 8kHz to be down by around 0.35dB at 20kHz, then drops rapidly beyond that. There's also a very slight roll-off in the bass, with output down by 0.4dB at 10Hz.

Graph 2 shows the frequency response with 96kHz sampling, and you can see that the bass was the same while output was down by 0.3dB at 20kHz, 0.7dB at 30kHz and 1.2dB at 40kHz.

Graph 3 shows the frequency response with 192kHz sampling, and you can see that the 96kHz performance is simply continued: -1.8dB at 50kHz, -2.6dB at 60kHz, -3.4dB at 70kHz and -4.3dB at 80kHz.

Clearly Focal has chosen the DAC filter settings to return a flatter, more extended frequency response than many other DACs.

With 24-bit audio, tested with both 96kHz and 192kHz sampling, the noise performance I measured from the Focal Arche was simply weird. Let's start with the easiest bit.

With the XLR outputs, the noise was at -108dBA consistently with repeated measurements. And that figure was maintained irrespective of whether my Surface Pro 2017 was plugged in or not. When it was plugged in, it was connected by wire to my home network, and that is one horribly noisy affair. The great majority of DACs let some of this noise out into the analogue output.

The Focal Arche did not. Measurements, plugged in or not, were identical... at least they were when I was using the XLR outputs. But when using the RCA outputs, things were very different. First, the results I gained were inconsistent. From measurement to measurement they ranged from -79dBA to -97.6dBA. Again, it didn't matter whether the computer was plugged in or not. To double-check that, I pulled out a network streamer and connected it to the Focal Arche by optical digital audio, just to ensure that there was no way any electrical interference could be carried. It resulted in a middling -89.8dBA noise level.

To double-check the test setup, I then switched in a different DAC which I knew to provide good performance. Its RCA outputs delivered a noise performance of -114.5dBA when using exactly the same rig I used for the Arche.

Graph 4 illustrates the variance of the noise levels depending on the output used. I have included a couple of the RCA outputs with and without the connected computer plugged in, plus the optical connection. They are the five traces up relatively high. The white and green traces near the bottom are via the XLR outputs. The purple trace right at the very bottom is the RCA output from the comparison DAC. The point of that is demonstrate that the test arrangement wasn't the problem.

Note, also, that all the output measurements—apart from the one for the comparison DAC—had a weird bump in the noise around 60–70kHz of varying levels. This would not, of course, be audible, but it is just a little bit strange.

CONCLUSION

If you are after a high quality DAC to drive your Focal headphones (or really, any brand or model of headphones at all), the Focal Arche is a fine unit.

My same enthusiastic recommendation will also be the case if you intend to use the Focal Arche in your main system... but only if you're using the XLR outputs. ⚡

Stephen Dawson

CONTACT DETAILS

Brand: Focal

Model: Arche

Price: \$3,799

Warranty: Two Years

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MICHI P5 & S5

PREAMPLIFIER & STEREO POWER AMPLIFIER

Can a famous brand be a victim of its own success? Ask any professional marketing person that question and their answer will be a resounding “Yes!” Take, for example, one of the world’s most famous motor vehicle manufacturers, Toyota.

Toyota is not only one of the most famous car companies in the world, it also sells more passenger vehicles than any other car manufacturer. But when it first tried to enter the luxury vehicle market to compete against the likes of Rolls Royce, Mercedes Benz and Daimler, with its fabulous—and famous—Century model, it could not gain any traction on the world market. No-one wanted to buy one, despite its technical superiority and the provision of luxury fittings no other vehicle

had, such as reclining rear seats with built-in massage systems, and doors that opened and closed electronically at the touch of a button. Still in production, the Toyota Century is the vehicle that is used to transport both the Japanese Emperor Naruhito and the Prime Minister of Japan, Shinzō Abe.

It wasn’t the money that stopped those who could afford it from buying a Toyota Century (the current model will set you back more than \$250,000), it was the badge on the bonnet. Because anyone could own a Toyota, it seems that the rich didn’t want to be seen in one. Motoring enthusiasts didn’t want to be seen in one either. Imagine if, when asked what type of exotic vehicle they drove, they had to answer “a Toyota”.

So what did Toyota do? It started building luxury vehicles that didn’t have the Toyota badge on them, but another one. That name?

You know it already: Lexus. And they sold like hot cakes (and still do), because, quite frankly, not everyone can own a Lexus.

Which brings us to Rotel.

At the start of the hi-fi era, in the 70s, Rotel was by far and away the best-selling hi-fi component manufacturer in Japan and, indeed, in all probability the best-selling hi-fi brand right around the world, with a well-deserved reputation for delivering top quality at reasonable prices.

However, as more and more manufacturers entered its particular niche in the hi-fi market, Rotel’s market share diminished, so that in the early 90s, the company decided to start building high-powered, high-performance ‘luxury’ models to compete against the likes of Luxman and Accuphase in its home market, and against the likes of McIntosh and Audio Research on the world stage.

The models it built were undeniably fabulous and were certainly completely different visually from all other Rotel products, exemplified by the appearance of the RHC-10 preamplifier and RHB-10 dual mono power amplifier, to name but two. The company also learned from Toyota's marketing

The Michi S5's extensive menu system allows owners sophisticated customisation options for all inputs.

faux pas and branded the models 'Michi', which is often translated from the Japanese as meaning 'Righteous Way'. But instead of leaving it at that, it marketed the brand as 'Michi by Rotel'. You can guess the rest.

This time around, twenty years into a new century, the Michi brand name is just 'Michi', the marketing is for 'Michi' and the brand writ large on the front panels is also just 'Michi'. It's only if you look around the back that you'll find small lettering that says 'By Rotel'. "Michi is taking Rotel's values of excellent performance and value into the high-end segment with models that offer new levels of engineering, build and design while setting new reference standards for audio performance," says managing director Peter Kao. "We have used all of our 55 years of design and manufacturing experience to create our best-ever products."

MICHI S5 PREAMPLIFIER

The front panel of the Michi S5 Control Preamplifier's austere exterior, with its black glass plate and two large rotary controls gives absolutely no clue as to the complexity of

what's inside it... at least it doesn't until you switch it on and its brilliant full-colour OLED panel springs into life.

Then, if you spin the left-most control to see what sources might be on offer, you'll discover that the P5 has no fewer than six line level inputs, four of which are unbalanced (via RCA inputs) and two of which are balanced (via XLR) plus a single phono input which you can switch between being most suitable for either moving-coil or moving-magnet cartridges.

On the digital side, you get six SPDIF inputs, three optical and three coaxial, as well as USB and Bluetooth. Curiously, there is no AES/EBU input.

The Michi S5's extensive menu system allows owners sophisticated customisation options for all inputs, so you can switch off the ones you're not using so they don't appear when you're scrolling through inputs, rename any or all of the inputs to more accurately reflect whatever component you have connected to them, plus you can use the Michi's bass and treble controls to make specific tonal modifications attach to the specific input you're using.

You can also fix a specific volume level to each input that will override any other volume setting and cannot itself be changed using the front panel volume control or the infra-red remote control's up/down buttons. Michi says of this feature: "This is useful for input sources that include their own volume setting like common Apps on phones or tablets."

Look around the rear of the amplifier and you'll find some additional digital connections, but the network port is only for firmware updates and control over IP, and that

USB-A socket is only there to power external devices. It has no digital signal capability. The RS232 connector is there, of course, to facilitate custom installation integration.

Also on the rear panel are six pairs of stereo line outputs, labelled 'Line Out', 'Mono Sub Out', 'Pre Out1' and 'Pre Out2', 'Balanced Out1' and 'Balanced Out2'. The 'left' and 'right' subwoofer outputs are not stereo: as the labelling suggests, each one outputs a summed signal derived from both channels. You also get two digital outputs, one coaxial and the other optical.

The USB input supports 16-bit and 24-bit PCM from 44.1kHz up to 384kHz as well as DSD64 and DSD128, but to do this via a PC, you'll have to load a Windows Driver, which Michi helpfully supplies on a USB stick. Mac users, of course, don't need a driver: their computers will just work properly with the Michi. The SPDIF inputs support 16/24 PCM up to 192kHz. Digital decoding is accomplished using an AKM4490EQ 32-bit/768 kHz dual DAC, one of the best of the currently available devices.

Whereas Rotel equipment was once manufactured in Japan, like the great majority of Japanese hi-fi manufacturers (and many other hi-fi manufacturers around the world), it is now manufactured in China, and the same is true for components bearing the Michi name. However, Rotel retains a point of difference from most manufacturers because it owns its own factory in Zhuhai in China, which it established in 2005. Rotel says that although Michi components are manufactured at that same facility, they are made in a separate section of one of the factories.

MICHI P5 POWER AMPLIFIER

Me saying earlier on that the front panel of the Michi S5 was austere doesn't leave me much to say about the Michi P5 stereo power amplifier's front panel because, as you can see for yourself, it's even more umm... austere.





There's just a single button at the bottom centre of its front panel, which is actually a standby power switch, since the main power switch is on the rear panel. Since power amplifiers consume a lot of power even when they're not being used, and particularly so in the case of the Michi P5, which is rated with a power output of 500-watts per channel into 8Ω, you can choose to have the Michi P5 switch itself off automatically after a no-signal period of 20 minutes, 1, hour, 2 hours, 5 hours or 10 hours. Alternatively, you can disable the automatic power-down circuit completely so it never switches off.

As with the S5, the P5 has a very bright OLED display whose primary feature is its ability to act as a spectrum analyser, showing the spectrum of the music being played in your choice of 8, 12 or 16 bands, or you can choose to have the display act as a VU meter, for which there are four different options (VU/×2/×4/×8). For either setting you can choose between four different brightness levels, or you can choose to switch the display off entirely.

What's most impressive is the totality of the very real and tangible feeling that a musical event is taking place right there in your own room.

The display also shows the input voltage at the top right of the display and the temperature of the heatsinks at the top left. The voltage shown on the display (240V) didn't actually reflect the mains voltage in my home at the time, which was 244V, so it might just show the intended operating voltage, rather than the actual voltage being delivered to the amplifier.

Being a power amplifier, all the action is around the rear, and you should be able to see from the photograph that the Michi P5 has two sets of inputs, one balanced (XLR) and the other unbalanced (gold-plated RCA). The rocker switch that selects which of the two will be active is located above them, with a network port and RS232 to its left, and 12V trigger inputs and outputs to its right.

There are two pairs of high-quality speaker terminals that are colour-coded and have collars that make it very easy for the knobs to get a grip on bare wire, plus you can also use banana plugs. In a really welcome move, the knobs are completely removable, so you can use ultra-secure insulated eye terminal terminations on your speaker cables if you like.

As you might have guessed from the size of the Michi P5's chassis, the rated power output into 4Ω (800-watts) and the relatively limited amount of heatsinking—along with the fact that the heatsinks are covered by a protective layer of aluminium—the output devices are fan-cooled, for which purpose there are two large (90mm diameter) holes in either side of the rear panel. These holes are the exits for air-cooling ducts at the other end of which are located ultra-quiet, low-speed fans that switch on when the output transistors reach a temperature of 39°C. These fans are so quiet that when they're operating you'll only be able to hear them by putting your ear up to the duct exit, and even then you'll hear only

a very soft sound; one that sounds uncannily as if someone is exhaling softly through their fully opened mouth.

As for those output transistors, there's quite a few of them to be cooled—32 of them, in fact. The power delivered to them issues from a pair of 2.2kVA transformers made in-house by Rotel itself. This is not surprising, because Rotel has been making its own mains power transformers for many years. What is rather surprising is that the four 47,000µF capacitors linked (two each via regulators) to each of these transformers are made in the UK.

I say "surprising" because Rotel is also famous for making its own capacitors, but its website informed me that it "always sources the best capacitor for each specific application", which means that in the case of its Michi components, it uses slit-foil and T-Net-work electrolytic capacitors from the UK; Rubycon electrolytic capacitors from Japan; and LCR polystyrene capacitors from Wales. The integrated circuits come from Analog Devices, Texas Instruments and Burr-Brown, companies that are all domiciled in the USA.

Can I warn you in advance not to attempt to lift—or even manoeuvre—a Michi S5 on your own? Its dimensions (485×238×465mm) would make it an awkward lift at the best of times, but no matter what its dimensions, its dead weight of 60kg would make it impossible... unless you're an Olympic weightlifter.

IN USE & PERFORMANCE

Rather unusually these days, Michi includes interconnects with its components. I say "unusually" because most manufacturers try to cull favour with their retailers by not including interconnects, so those retailers can make additional income by adding interconnects to the sale.



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While I have to admire Michi for doing this, the quality of the interconnects it supplies would have me asking my friendly retailer what other interconnects he might have available. The quality is, however, a moot point, because Michi provides only unbalanced interconnects, and given the choice between using balanced or unbalanced connectors to link a pre-amplifier with a power amplifier, I'd choose balanced connectors every time, so that means I'd have to spring for balanced interconnects anyway.

Each component comes with its own remote control, but the two are identical, so you can keep one for a spare. The remotes are of extremely high quality and very attractive. If only Michi had seen fit to supply high-quality name-brand alkaline (or even lithium) batteries to install in them rather than the ones it does provide. I didn't chance it, and used my own Eveready batteries instead. Why Eveready? Because the company guarantees that its batteries will not leak, and a remote control can be ruined by a leaking battery as, to my chagrin, I once discovered.

Both units not only have identical remote controls, those controls also use identical infra-red remote codes. This has the advantage that the same remote signal turns both units on and off, and adjusts display brightness, for example. But in this case it also introduces a curious quirk so that when you're using the remote to tell the P5 to do something, the same remote signal will tell the S5 to do something completely different... which may be, for example, to switch the display from spectrum analysis to VU.

Since any changes implemented on the P5 by this behaviour are completely benign (i.e. they have absolutely no affect on the amplifier's sound quality or its performance or, in fact, anything that could affect the music playing at the time) I didn't worry about it and just regarded it as a quirk. However, if you're particularly bothered by it, you could just obscure the P5's IR receiver so it couldn't receive the signal.

Set-up is quite intuitive, so you are unlikely to have reason to have recourse to either of the two Owners' Manuals, but if you do you'll be pleased to find that they're well-written, well-illustrated and highly informative. During set-up please resist the temptation to place the P5 on top of the S5, despite the obvious physical and visual temptations to do so. Both devices will return better performance if they're placed side by side, or one above the other on separate racks of a proper hi-fi component shelving system.

My review units were obviously relatively new, so I made sure to burn them in continuously for several days using pink noise at relatively high volume to do so, avoiding any sonic annoyances by wiring one of the two speakers out of phase then facing it directly in front of the other loudspeaker so almost everything cancelled out. (If you haven't ever tried this, it's not only a great burn-in aid, but also a great party trick!)

After the long wait I was pretty eager by the time the listening sessions were scheduled and I'm here to tell you it was well worth the wait. The sound was absolutely enthralling, totally realistic and completely captivating.

I knew I was in for a treat because there was no need to acclimatise myself to anything or work my way into the listening session. Right from the outset it was all just wide smiles and toes a-tapping and allowing tracks to play right through, rather than switching to other tracks to evaluate different areas of performance.

The result of all this was that I spent rather more time listening to the Michis than I really should have given the time constraints involved in preparing a review for this issue, but there were no complaints from me. If the Michis had been performers, I would certainly have been on my feet calling for an encore.

This same high level of performance proved true for whatever input I used, because the Michi P5's digital and phono stages are truly excellent. If you're a true *vinylista* you'll want to use an external phono stage that enables greater precision with cartridge matching than the P5's 'one input fits all' phono stage, but if you play vinyl only irregularly, I think you'll be more than happy with the sound of the phono stage... I certainly was. I couldn't fault the digital inputs either, whether I used SPDIF or USB. They're so good that there would be absolutely no need to invest in an external DAC unless you're one of those audiophiles that actually likes fiddling with different filter settings and oversampling rates. So full marks to Michi here as well.

What did I find so enthralling about the sound? Everything really. But overall, I'd have to say that what's most impressive is the totality of the very real and tangible feeling that a musical event is taking place right there in your own room. The sonic presentation is so lively and so true-to-life it will take your breath away.

And if you're into trying to achieve true-to-life listening levels, then the Michi S5 is amongst those very few amplifiers that will be able to realise this for you effortlessly, without stress, without distortion, without impacting on your mains power bill... and without its chassis becoming so hot you need to ruin the ambience by turning on the air-conditioning. That said, the Michi S5's chassis can become warm if you work it very, very hard, so do give it some room to breathe, but that said, I found that it runs far cooler than most amps of its ilk.

'Massive' would be the best descriptor for the bass I heard from this Michi combo, but it was at the same time delicate and tuneful. I can think of no better demonstration of these twin virtues than to suggest that you listen to the tympani in the second movement of Beethoven's Ninth, the famous *Choral Symphony*.





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Yes, their sound is impactful, impressive and thunderous, but many high-end amplifiers can do this. What most can't do is reveal that there's only two being played, or that they're tuned an octave apart. But using this Michi duo, I could hear this instantly... and that's a metric I'd call not just revealing, but a revelation. But if the Michi's ability to reveal *minutiae* in the bass regions is impressive, its ability is equally impressive across the midrange... if not more so. And if you want to check the mid-range ability of any component, one of the best albums to use is the one that debuted Chick Corea on electric keyboard but also has two of my favourites, Joe Farrell and Flora Plurim. Despite being recorded in 1972 (or perhaps because of it), the recording is stunningly good, whether it's Plurim's rich scat singing or the clarity with which Corea's staggeringly lyrical electric piano playing is revealed, and the Michis revealed everything with crystal clarity.

On this album, you can really hear how an amplifier's ability to deliver air in the midrange aids one's ability to hear multiple instruments clearly, no matter how closely they compete for space. Whereas I think that many of the once-revered jazz fusion albums now sound dated, 'Return to Forever' sounds as though it could have been recorded yesterday.

The Michis' high-frequency performance didn't disappoint either. I'm generally a great fan of Ludovico Einaudi (though perhaps not of his more minimalist stuff) and his album 'Elements' from 2015 is one of my favourites for testing the extreme highs, and most particularly the second track, *Night*. Just listen to that ethereal opening synth as it loops and then the way Einaudi layers all the other sounds over it. The stabbing piano notes are interjected at the perfect moments. It's a great example of why timing is everything, and why component-chain timing is crucial for an authentic high-fidelity listening experience.

Great stereo separation and magnificent stereo imaging are crucial to tricking the ear and the brain into imagining the reproduced sound is 'live', and the Michis demonstrated both to perfection when replaying Canadian *chanteuse*

Holly Cole's *Train Song*, from her 1995 Tom Waits tribute album 'Temptation'. Although it's also a great tester of bass, I prefer to use the myriad sounds of Cyro Baptista's tinkly percussion to evaluate high-frequency reproduction, stereo imaging and, for amplifiers, channel separation. And what I heard from the Michis was as good as I've ever heard from any pre/power combo. Bravo!

CONCLUSION

You need to see the Michi P5 and M5 in the flesh to see how superbly they're built. Words can't really begin to describe that. But you also need to hear for yourself how music that's played through them sounds, because words can't even begin to describe that... though if you started off by saying "totally and completely natural", you'd be off to a very good start.

This Michi P5/S5 combo gets it right. Really nails it, in fact. If you want good looks, insanely high power output, low noise, superb performance and, most importantly, great sound, you've arrived at your destination. ⚡ *greg borrowman*

CONTACT DETAILS

Brand: Michi
Model: P5 Control Preamp / S5 Power Amp
RRP: \$5,999 (P5) / \$10,399 (S5)
Distributor: Interdyn
Address: Level 1/116 Cremorne Street
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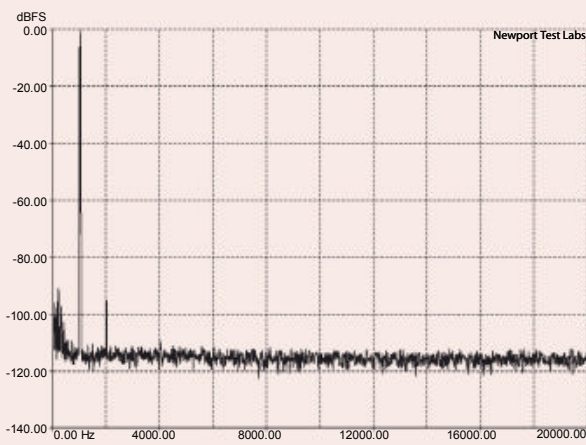
- AES/EBU input
- Display interactivity
- Size and weight

Readers interested in a full technical appraisal of the performance of the Michi P5 Preamplifier and Michi S5 Stereo Power Amplifier should continue on and read the Laboratory Report published on the following pages. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

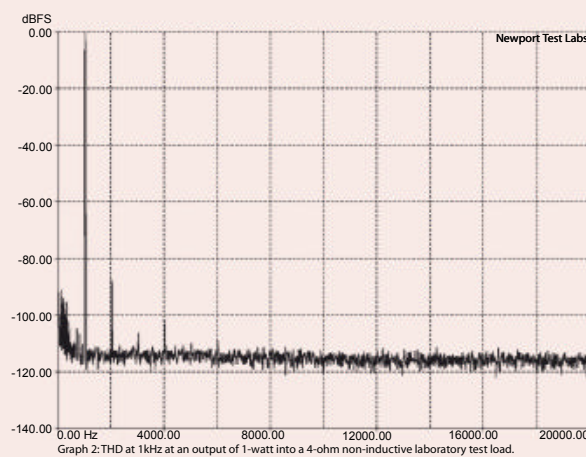
LABORATORY TEST REPORT

Before going into detail about the results of Newport Test Labs' test results, it's extremely important to note that for the purposes of this test, Australian Hi-Fi specified that all tests had to be conducted with both the Michi S5 and Michi P5 in the 'test loop'. Therefore there are very few results that can be compared with Michi's own specifications, which are gained by testing the components individually, or indeed against the results from any other audio test laboratory that has not tested the two amplifiers as a 'combo'. This means that, in effect, we're reporting 'worst case' results because for results such as distortion, the distortions inherent in the Michi S5 are here added to those of the Michi P5, which obviously does not occur if the components are tested individually.

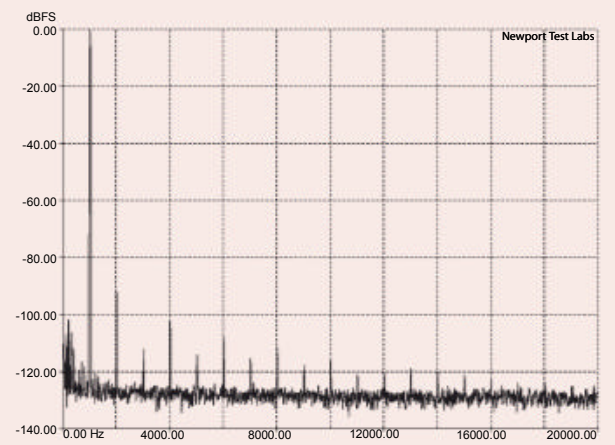
One of the few outcomes that would not change is power output, of course, and Newport Test Labs measured the power output of the Michi S5 at 612-watts per channel (27.8dBw), both channels driven into 8Ω, when it was delivering a 1kHz test signal. It was also able to deliver this exact same power when delivering a 20Hz test signal. However, when Newport Test Labs used a 20kHz signal to test power output, the Michi P5's protection circuitry kicked in when the output voltage reached 45 volts RMS, which is around 253-watts (24.0dBW) into 8Ω, and around 506-watts (27.0dBW) into 4Ω. The fact that the protection circuit kicked in was not a surprise in itself, because 20kHz is a very high frequency to use for testing power output, and the power spectrum of music is such the Michi P5's rated output power (500-watts into 8Ω) would never be required at this frequency. But because the protection kicked in a little earlier than we expected, we checked with Michi, which told us: "The S5 has been engineered and tested for contin-



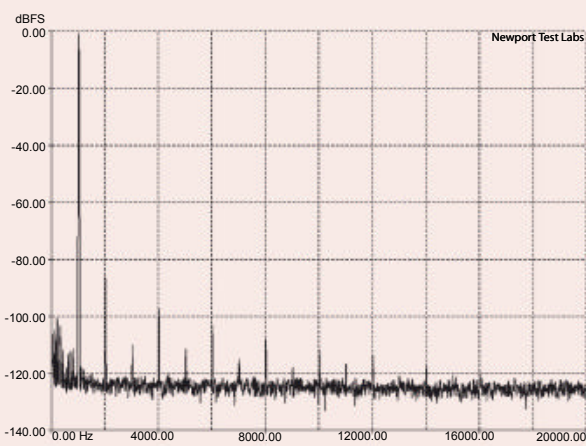
Graph 1: THD at 1kHz at 1-watt into an 8-ohm non-inductive laboratory test load.



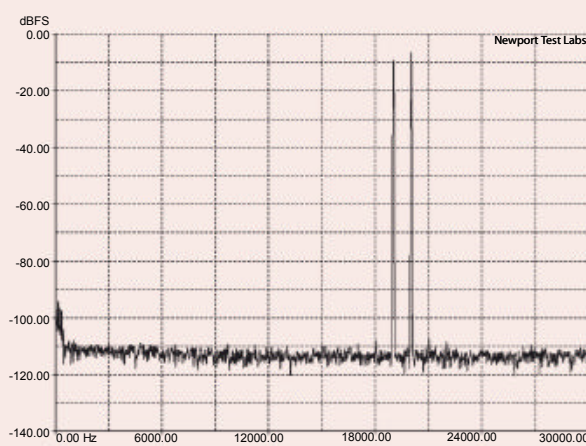
Graph 2: THD at 1kHz at an output of 1-watt into a 4-ohm non-inductive laboratory test load.



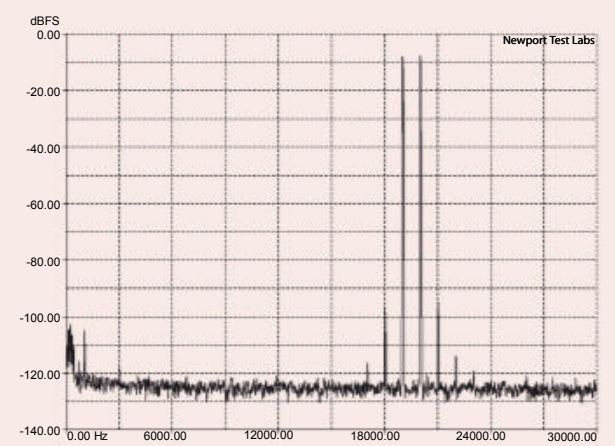
Graph 3: THD at 1kHz at an output of 20-watts into an 8-ohm non-inductive laboratory test load.



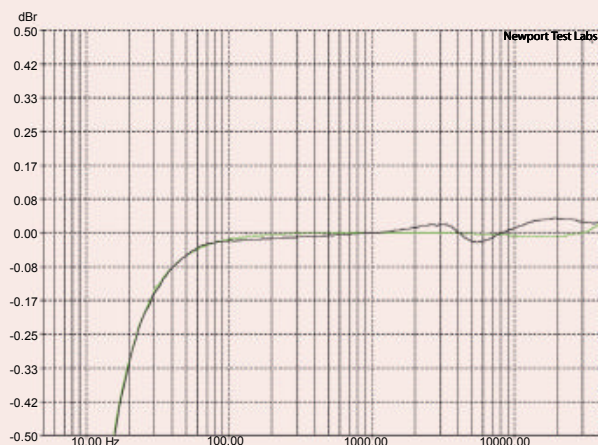
Graph 4: THD at 1kHz at an output of 20-watts into a 4-ohm non-inductive laboratory test load.



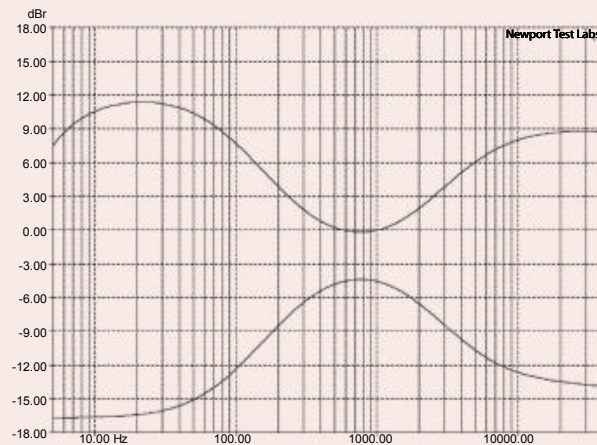
Graph 5: CCIF-IMD (19/20kHz 1:1) at an output of 1-watt into an 8-ohm laboratory test load.



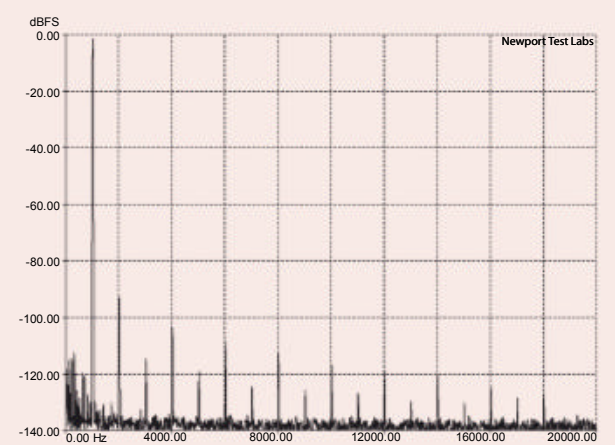
Graph 6: CCIF-IMD (19/20kHz 1:1) at an output of 20-watts into an 8-ohm laboratory test load.



Graph 7: Freq. Response into an 8-ohm test load (green trace) and into sim. loudspeaker load (black trace)



Graph 8: Frequency response showing effect of bass and treble tone controls.



Graph 9: THD at 1kHz at an output of 500-watts into an 8-ohm non-inductive laboratory test load.

uous power output of 20Hz–20kHz but as you noticed we have protection circuitry to monitor what is considered abnormal operating conditions including short circuit, d.c. voltage on the outputs and over-current. As normal operations would not typically have a signal of this type (frequency/power) we do shut down the unit into protection at high power outputs at high frequency. We found it best practice to monitor and use an abundance of caution with the power output generated by the S5.”

When Newport Test Labs tested the power output of the Michi S5 into 4Ω loads, the same protection circuitry kicked in with 20kHz test signals, but the Michi S5 easily delivered 1052-watts (30.2dBW) per channel with 1kHz test signals, both channels driven into 4Ω and 1,024-watts (30.1dBW) per channel with 20Hz test signals (both channels driven into 4Ω). These independent laboratory test results at 1kHz and 20Hz show power

output levels that are well above Michi’s power output specification for both loads.

It should also be noted that if Newport Test Labs had tested dynamic (short-term) power output, the Michi S5 would have delivered its rated power output, because the test signal used for this purpose is so short-term that it would not have triggered the protection circuitry, but the Australian amplifier power measurement standard specifies that the power output of high fidelity audio amplifiers must be measured (and stated) on a continuous, rather than a dynamic basis.

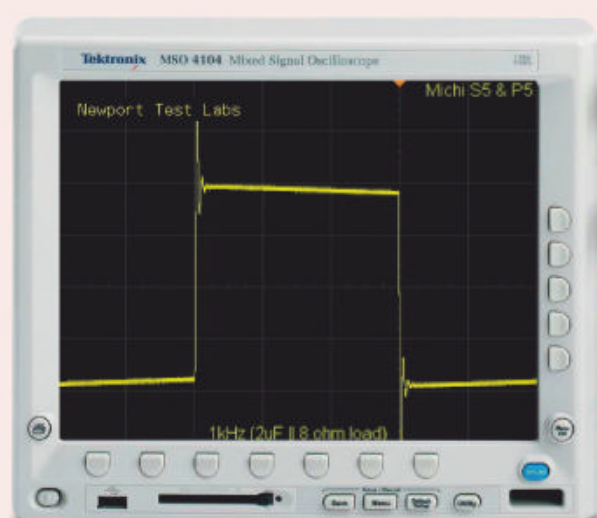
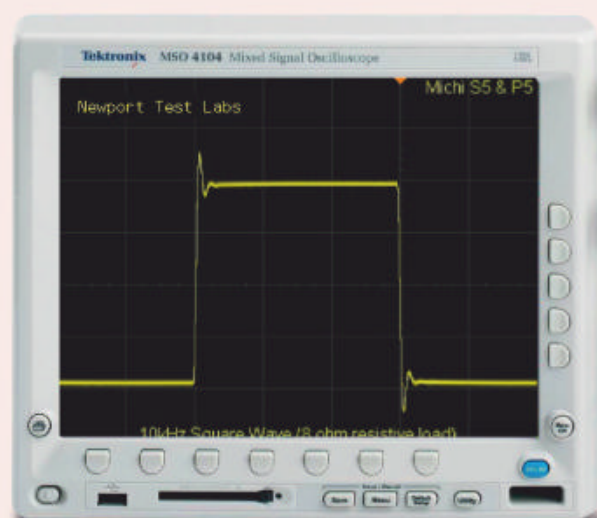
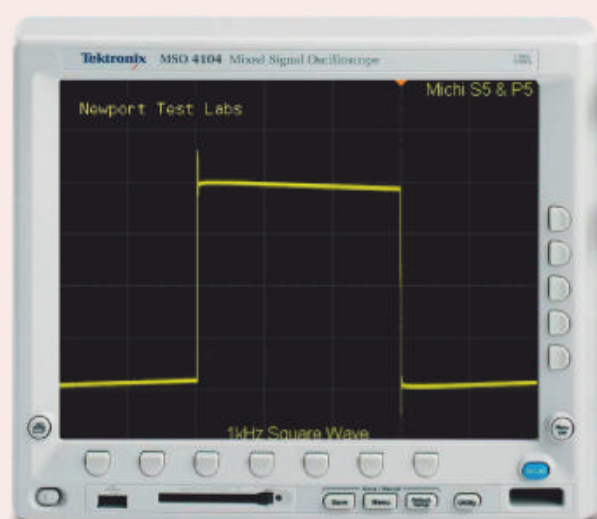
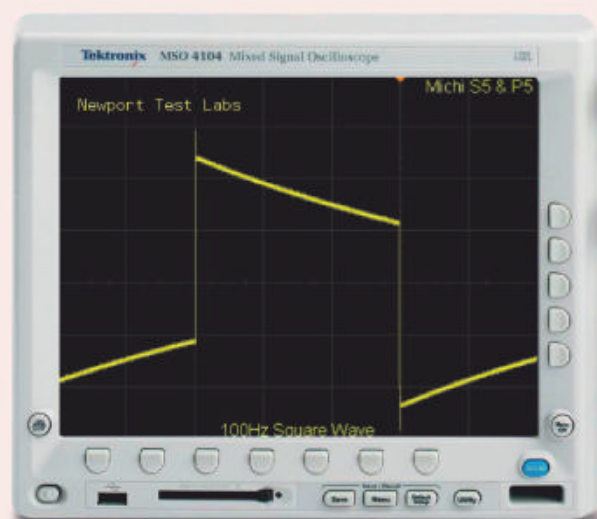
Frequency response is one test that would certainly be impacted by measuring both the P5 and S5 as a combo, yet as you can see from the tabulated results, the Michi combo delivered superlative performance, with Newport Test Labs measuring a response of 5Hz to 480kHz –3dB. The Michi combo’s frequency response across the audio band, which is shown in Graph 7, was measured as 20Hz to

20kHz ±0.18dB, which is self-evidently an excellent result.

The frequency response measured when the Michi S5 was driving a test load that simulates the load that would be presented to it by a typical hi-fi loudspeaker system is shown by the black trace on Graph 7.

Newport Test Labs measured the power output of the Michi S5 at 1kHz as 612-watts per channel (27.8dBw), both channels driven into an 8Ω load.

You can see that it tracks the response gained with a non-inductive load almost perfectly, which shows that the Michi S5 will sound the same no matter what speakers you connect to it, and will also be able to perfect-



ly control the back-emf from speakers that have large bass drivers. Although the Michi S5's damping factor was more than will be required by any speaker system, it's not overly high, with Newport Test Labs reporting it as DF61, on the back of an output impedance (at 1kHz) of 0.13Ω.

Channel separation was outstanding at low and midrange frequencies, as shown in the tabulated results, with the Michi combination returning test results of 105dB at 20Hz and 98dB at 1kHz. The 72dB result at 20kHz is excellent, and more than will ever be required in order to deliver perfect stereo imaging and separation, but a little shy of what I might have expected. However, this could easily have been influenced by where the amplifiers were placed on the test bench relative to each other, as well as by the interconnects connecting the two, so even-better results might be achieved under different conditions. The same could be said for the inter-channel phase results, even though these, too, are really excellent results.

Channel balance was amazingly good. Taken merely on its value of 0.019dB, no-one would ever have guessed this would be the result of testing a pre/power combination; It's more like you'd get by testing a state-of-the-art stereo power amplifier on its own. This is a superb achievement by the engineers responsible for designing the Michis.

Newport Test Labs measured the A-weighted signal-to-noise ratio of the Michi P5/S5 combination as 76dB referenced to an output of 1-watt, and 103dB referenced to rated output. The 103dB result is excellent, but further suggests that the result at 1-watt, although good, could be further improved by careful component placement and interconnect routing.

Graph 1 shows the total harmonic distortion measured by Newport Test Labs when

the Michi combo was delivering 1-watt into an 8Ω load. You can see there's a second harmonic component at -95dB (0.00177%) and a fourth harmonic at -110dB (0.00031%) and that's it: otherwise the noise floor above the fundamental is perfectly clean, and also sitting right down at -115dB (referred to one-watt). This is an excellent result, as both harmonics are harmonically related to the fundamental, which will ensure good sound.

Graph 2 shows the total harmonic distortion measured by Newport Test Labs when the Michi combo was delivering 1-watt into a 4Ω load. You can see the second harmonic component has increased slightly, to -88dB (0.00398%), and the fourth to -112dB (0.00025%) plus a third harmonic has appeared at -108dB (0.00039%) and a fifth at -113dB (0.00022%). Once again, this is excellent performance.

Graph 3 shows the total harmonic distortion measured by Newport Test Labs when the Michi combo was delivering 20-watts into an 8Ω load. As you'd have expected given the increase in power output, additional distortion components have been introduced, but the essential structure of the lower-order components is maintained, with the second harmonic component at -93dB (0.00223%), the third at -110dB (0.00031%), the fourth at -112dB (0.00025%) and the fifth at -115dB (0.00017%). The difference in the visual appearance of the graph is due to the noise floor of the amplifier having dropped down to around -130dB, which speaks for itself.

You can see that the noise that contributed to the overall result mentioned previously and tabulated in the results is low-frequency in nature, as evidenced by the spikes at the extreme left of the graph. Graph 4 shows the total harmonic distortion measured by Newport Test Labs when the Michi combo was delivering 20-watts into a 4Ω load.

Essentially the distortion components are the same as when driving an 8Ω load, but interestingly, there’s a slight increase in the noise floor. This, together with the one-watt results, would seem to suggest you should prefer 6Ω or 8Ω designs when choosing loudspeakers to partner with the Michi S5.

CCIF-IMD distortion (19kHz and 20kHz test signals at equal levels) into an 8Ω load is shown in Graph 5. As you can see, there’s nothing to be seen at all. Sensational performance! Not only are there not any of the side-bands around the high-frequency test signals I normally expect to see, there’s also no sign at all of a regenerated difference signal down at 1kHz.

When Newport Test Labs used the same CCIF-IMD test signal, but increased the power output to 20-watts (Graph 6), both the side bands and the regenerated signal were introduced into the output, but at very low levels: around –90dB (0.00316%) for the two primary side bands at 18kHz and 21kHz, and at around –105dB (0.00056%) for the regenerated signal. Once again, these are all outstandingly good results.

The tone control action of the Michi P5 is shown in Graph 8. You can see the bass control delivers around 11dB of boost that is nicely shelved at 20Hz, then rolls off below this, which is excellent design. It delivers rather more cut: around 17dB. This same graph also shows the action of the treble control, and you can see it offers 9dB of boost that shelves nicely at 20kHz. Again, this is excellent design.

As with the bass control, the treble control offers rather less high-frequency attenuation, but still a more-than-adequate 13dB at 20kHz. If you attenuate both bass and treble you will also reduce the overall volume slightly across the midrange, but this is of no import, as it could be easily corrected by increasing the volume slightly.

The Michi combo’s distortion at the S5’s rated power output (500-watts per channel into 8Ω) is shown in Graph 9. Once again, Michi’s engineers have excelled themselves, with distortion completely under control, such that the second-order component is at 93dB (0.00223%), all the even-order components are more than 100dB (0.001% down, and all the odd-order components are

more than 120dB down (0.0001%). All these distortion components are too low in level to be audible, but even if they were, even-order distortion is pleasing to the ear, so it wouldn’t be an issue. Note on this graph that the noise floor right across the audio spectrum is now down at –140dB, and even the low-frequency noise at the left of the graph, which is higher in level, is still more than 110dB down. Once again, excellent performance.

Square wave testing using a 100Hz square wave revealed what the frequency response already showed, with the tilt on the waveform indicating the Michi combo’s frequency response rolls off at low frequencies and does not extend to d.c. The slight curvature in the tilt also shows a tiny amount of group delay. The overshoot on the leading edge shows that there is a rise in the Michi’s frequency response at an ultrasonic frequency. Further investigation into this by Newport Test Labs revealed that the rise was 3dB, and that the frequency of the peak was at 302kHz. This is interesting, and obviously measurable, but will have zero affect on the amplifier’s sound quality.

The 1kHz square wave shows the same h.f. overshoot, and some slight tilt on the horizontals, so it’s not a perfect result, but it’s so close to perfect as really doesn’t matter. The 10kHz square wave’s horizontals are on the other hand, perfectly flat, and the rise-time is super-quick, so if it were not for the overshoot caused by the high-frequency rise to 302kHz, it would be a perfect result.

Newport Test Labs determines amplifier stability by placing a 2μF capacitor in parallel with an 8Ω load and driving the amplifier into this load using a 1kHz square wave as the test signal. As you can see from the oscillogram, the Michi was beautifully behaved, with just a quarter wave height overshoot that was completely damped within three cycles, so I can say that the S5 will be completely stable into even the most highly reactive loudspeakers.

When both units are in standby mode, they will still draw 2.41-watts from your mains power supply, which is rather higher than the Australian Government’s mandate for standby power consumption, but low enough that it would have almost zero effect on your utility bill. When you’re using this Michi combo to listen to very loud music, the two will pull somewhere around 200-watts from your power supply, which is surprisingly modest considering the S5’s power rating. Combined power factor was measured at +0.627.

Overall, Newport Test Labs measured outstandingly good performance from this high-powered, low-distortion pre/power combination. 🎸 *Steve Holding*

Michi S5 Stereo Power Amplifier – Laboratory Test Results – Power Output

Channel	Load (Ω)	20Hz (watts)	20Hz (dBW)	1kHz (watts)	1kHz (dBW)	20kHz (watts)	20kHz (dBW)
1	8 Ω	612	27.8	630	27.9	253 (Pro)	See Copy
2	8 Ω	612	27.8	612	27.8	253 (Pro)	See Copy
1	4 Ω	1056	30.2	1089	30.3	506 (Pro)	See Copy
2	4 Ω	1024	30.1	1052	30.2	506 (Pro)	See Copy

Note: Figures in the dBW column represent output level in decibels referred to one watt output.

Michi P5 Preamp & S5 Stereo Power Amp – Laboratory Test Results

Test	Measured Result	Units/Comment
Frequency Response @ 1 watt o/p	10Hz – 410kHz	–1dB
Frequency Response @ 1 watt o/p	5Hz – 480kHz	–3dB
Channel Separation (dB)	105dB / 98dB / 72dB	(20Hz / 1kHz / 20kHz)
Channel Balance (Direct/Tone)	0.019	dB @ 1kHz
Interchannel Phase (Direct)	0.38 / 0.08 / 1.87	degrees (20Hz / 1kHz / 20kHz)
THD+N	0.014% / 0.002%	@ 1-watt / @ rated output
Signal-to-Noise (unwghted/wghted)	71dB / 76dB	dB referred to 1-watt output
Signal-to-Noise (unwghted/wghted)	97dB / 103dB	dB referred to rated output
Power Factor	+0.627	
Output Impedance	0.13Ω	at 1kHz
Damping Factor	61	@1kHz
Power Consumption	2.41 / 147	watts (Standby / On)
Power Consumption	187 / Not Tested	watts at 1-watt / at rated output
Mains Voltage Variation during Test	239 – 253	Minimum – Maximum



LUMIN U1 MINI

NETWORK MUSIC PLAYER

Lumin has not only garnered huge support from audio-philosophes right around the world in the relatively brief time its components have been available, but it's also expanded its range dramatically so that it now caters for almost all applications and covers all price-points.

That's all been made possible largely because the company behind Lumin is the famous Hong-Kong-based electronics firm Pixel Magic.

If you think you've heard of it but can't place the name, it might be because you remember that it developed the world's first Linux-based video processor, or maybe because you once owned a MagicTV HDTV receiver (which it designed and built).

As for why the company is able to release new products so rapidly, this is partly because rather than relying on freelance designers and external factories Pixel Magic has its own team of highly-experienced digital engineers, and it builds its Lumin-branded products in its own factory in China. But it's also in part because it uses the same software throughout its range, as well as much of the same hardware and circuitry.

And when I say 'much of the same hardware', the U1 Mini is a perfect example, because it uses almost exactly the same circuitry as the Lumin U1. Indeed the only differences between the U1 and the U1 Mini of which I am aware, other than, of course, the size, is that the U1 has a very large external linear power supply whereas the U1 Mini's power supply is a compact switch-mode type that's actually built inside the chassis.

And of course the chassis itself is also different, because whereas the full-sized U1 has Lumin's 'classic' chassis, which is CNC-routed out of solid aluminium, the chassis of the U1 Mini is simply a sheet of aluminium that's been folded and then anodised (in either silver or black). That said, it still looks very classy...but it's clearly not the same standard as Lumin's premium chassis.

THE EQUIPMENT

Just in case you were wondering, a 'Network Music Player' (or an 'Audiophile Network Music Player', as Lumin calls the U1 Mini) is a device that finds music that's stored on your Home Network or available from a streaming internet service via your Home Network and converts it to a digital signal. That's pretty much it. So you still need to use an external

DAC to convert that signal to analogue, then an amplifier and speakers to reproduce it in your listening room.

If you don't use one of the many streaming music services available (Spotify, Tidal, Qobuz, etc) I'd recommend you store your music on a dedicated Network Attached Storage device (NAS). If you do this, you should have a Media Server enabled, and if you're using a Lumin U1 Mini, I'd recommend using one called MinimServer, not because it's particularly good (though it certainly is this) but because Lumin uses it to develop its software and therefore it supports all the features of the U1 Mini. As for the NAS drive itself, there are lots of very good ones available but again I'd recommend you use one made by either QNAP or Synology, firstly because MinimServer provides excellent installation support for both these brands, but also because Lumin itself is able to provide far more extensive and detailed on-line technical support when you use either of these two brands.

The U1 Mini doesn't come with any form of hardware controller. Lumin instead provides an app that you'll need to load onto either an Apple iPad or iPhone, or onto an Android device (preferably a tablet, because the larger screen size makes control easi-

er). And when I say you will ‘need’ to load the app, it’s actually compulsory: you can’t use the U1 Mini if you don’t have the app loaded. Having been bitten in the past by an app-controlled product for which the app later ‘disappeared’ I am a bit twice-shy about products that are exclusively app-controlled. I’d like it better if Lumin had an alternative control system available.

Getting the U1 Mini up and running should be dead easy, because it really involves just connecting it via the Ethernet port on its rear panel to your home network’s router, plugging the power cord into a 240V socket and then starting up the Lumin app. The App will then automatically detect both the Miniserver and the U1 Mini (and your computer if it’s on the same network, which I’d expect it would be), after which your music library will load and you’re in business... always assuming that you’ve already connected your DAC, amplifier and speakers, of course!

Connecting a DAC is made pretty easy, because as you should be able to see from the photo of the Lumin U1 Mini’s rear panel, there’s a sextet of them to choose between: AES/EBU, BNC, RCA, Optical, and two USB. You might also be able to see from that photo that although all these outputs (along with the Ethernet jack and the 3-pin mains power socket) are fixed directly to the rear panel, the top and sides of the aluminium case overhang this panel by 32mm. This means that you could, if you wished, place the U1 Mini in quite an open area yet have no visible wiring if you ran the wires down into holes cut into the surface of which it was resting. I rather like this design, even though it can make the plugs a tad difficult to insert.

If anything does go awry, the fact that you’re using components recommended by Lumin will make it really easy for the hi-fi dealer that sold you the U1 Mini to sort things out. Of course, if you’re at all bothered by the technology, it would make sense for your hi-fi dealer to install everything you’ll need and get it up and running for you, after which you’ll find that using the system to play music will be as easy as falling off a log.



As I suggested earlier, the The U1 Mini can connect directly to Spotify and supports Tidal but what I didn’t mention is that it’s also Roon Ready and supports MQA from TIDAL and Qobuz... and in high-res too, if that’s what you’d prefer.

Another feature of the Lumin U1 Mini (though actually, it’s a feature that’s now available for all Lumin products) is that you can now control volume using an innovative new digital volume adjustment algorithm called Leedh Processing that was developed by French designer Gilles Millot, of Acoustical Beauty. Leedh Processing allows volume control in the digital domain, prior to conversion to analogue, without any of the drawbacks that plague other digital volume controls.

Gilles claims that his Leedh Processing algorithm modifies the digital signal amplitude exactly, without any changes to its shape, and with absolutely no loss of information, plus it also uses whole number volume values to maintain audio information integrity during subsequent digital-to-analogue conversion.

But if you’re old-school, and would prefer to control volume via analogue means, you

You can now control volume using an innovative new digital volume adjustment algorithm called Leedh Processing that enables bit-perfect control

can switch the Leedh Processing off: Lumin doesn’t force it on you.

In order to enable super-smooth scrolling through your music library, the Lumin App caches all your album art on your device. So the larger your music library, the more memory space you’ll need, but the upside of this memory consumption is that your album art will pop-up on-screen instantly. Also, you can have up to forty images on-screen, which is great for quickly finding an album whose name you can’t quite put your finger on.





And if you can't visually deal with 40 images on-screen at the same time, you can adjust the actual number that will be displayed during scrolling all the way down to just the one if you wish.

The Lumin App is fantastically intuitive and easy to use, which is just as well, because there is no manual for it, nor is there one for the Lumin U1 Mini itself. Despite this ease of installation, and ease of use, I'd personally still like to have manuals for both please. But perhaps now it's me that's being too old-school.

Basically, there isn't much that you can't do with the Lumin App. You can arrange your music library by album title, track title, artist, composer, genre, and lots more. You can even order your library by the date and time you added the particular piece of music if you want. You can also use the app to edit track or album information. Indeed it might be the problem of explaining the myriad things that you can do with the app that made Lumin baulk at writing a manual for it in the first place. It'd be a difficult task.

As you'd expect, you can get the Lumin app to search through your library for you for a particular work or works, with the Lumin App offering two methods of doing this: 'Find' and 'Filter'.

You won't fail to be impressed by the sound quality from the Lumin U1 Mini.

The 'Filter' mode is essentially just a standard Search function. The 'Find' mode, on the other hand, steps through your music library and finds every instance of whatever word you typed in, so if you search for a common word, it can take rather a long time. There's probably a better way of searching via the App, but I couldn't find it and, like I said, there's no manual to consult.

Once you start playing an album, you won't fail to be impressed by the sound quality from the Lumin U1 Mini. On Sarah Brightman's album 'Harem', for example, I have found that if the digital conversion is not handled properly, it's very easy to think that she's singing "Hold my hand, I'm a strange-looking parasite" when in fact the line is actually "Hold my hand, I'm a stranger in paradise." As rendered by the Lumin U1 Mini, there was never any shadow of a doubt what she was singing: the reproduction... and diction... were absolutely perfect.

When I played the late Eva Cassidy's 'Eva By Heart' via the Lumin U1 Mini, the sound of Eva's guitar seemed more authentically natural than I have previously heard it sound, and the U1 Mini was absolutely ruthless in exposing the differences in sonic quality between the keyboard cellos and Dan Cassidy's live violin.

But the bass... oh the bass! The Lumin U1 Mini reproduced the very deepest organ notes pitch-perfectly and with true authority. Further up in the spectrum I found the sound of kick-drum was similarly impressive, always hearing an instant transient, with no pre-echo, and the sound never lasted longer than the strike. I assessed the tonal quality of the bass and low mids using cello works, mostly Bach's *Cello Suites*, which I own as performed by both Pablo Casals and Yo Yo Ma.

The Lumin U1 Mini painted both artists in their best light, but at the same time allowed me to easily differentiate between them, so I was always able to instantly recognise which of the two was playing.

On Jackson Browne's 'Naked Ride Home', the drummer's obvious passion for his cymbals means there's a surfeit of high-frequency energy, yet the Lumin U1 Mini was still able to let me hear the wind chimes behind, which it reproduced with life-like clarity, delicacy and realistic harmonics and decay.

CONCLUSION

The Lumin U1 Network Music Player retails for \$9,900. The Lumin U1 Mini Network Music Player retails for \$3,290.

Need I say more? Kenneth Zhang

CONTACT DETAILS

Brand: Lumin

Model: U1 Mini

RRP: \$3,290

Warranty: Two Years

Distributor: Audio Magic Pty Ltd

Address: 23/22 French Avenue
Northcote VIC 3070

T: (03) 9489 5122

W: www.audiomagic.com.au



- Superb execution
- Flawless sound
- Fantastic app



- No user manual for device or app
- Exclusively app-controlled
- Not as flash as other Lumins

HEADLINES

The Newsletter of Len Wallis Audio

Spring 2020



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Inside...

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The surprises sprung by Covid-19, and the perils.
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- 10 New for old.** Trade back your old soundbar to enjoy one of B&O's best!
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- 17b Musical Fidelity Win** M8xi wins EISA Award!
- 18 Two real streamers!** NAD M10 and C658 BluOs.
- 19 Auralic upgrades Aries** G2.1 and takes wireless streaming to a whole new performance level.
- 20 The best-selling Australian speaker in history** now has a lower-priced sibling!
- 22 Limited Edition** Technics SL-1210GAE turntable. Be quick... only two are left out of seven.
- 24 Running-out Ruark's R4** and demoing Inakustik's newest Micro Air cables.
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- 27 A TV screen as thin as a framed painting?** LG's Gallery Series is here.
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- 29a A Five-Star review** from What Hi-Fi? magazine for Rega's new io integrated.
- 29b Meze Audio Empyrean** 'phones are now available in two glorious new finishes!
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- 31 Award-winning audio** accessories. Do your Christmas shopping early!



FROM THE DESK OF LEN WALLIS

These are very uncertain times that we are navigating, and at the time of writing I have no idea what the situation will be by the time you read this. What I do know is that it will take a long time to return to some sense of normality, whatever that may be. In the meanwhile, all of us at Len Wallis Audio hope that you and your loved ones are safe and healthy.

There is no doubt that the impact of this pandemic will be felt for some time. Thankfully at this stage we have been able to stay open, and we hope that this remains to be the case.

One of the immediate issues that we are facing is stock shortages. When the pandemic broke most distributors anticipated that demand would fall and reduced orders with manufacturers

accordingly, but due to people being isolated at home this did not happen and demand quickly outstripped supply.

At the same time factories around the world closed, and when they did re-open, in many instances they did so with reduced manufacturing capacity. To add further fuel to the fire, shipping has become extremely difficult and expensive because of the pandemic. The result of all this is that we are anticipating stock shortages, in some cases severe, for the rest of this calendar year.

One of the inevitable consequences of the situation is the gravitation to on-line shopping. While this has many benefits, it also has its downsides. A quick poll among our twenty-plus staff showed that no two people in our organization have the same speakers in their system. So despite having access to a vast array

of – and some of the best – speakers on the market, everyone has chosen, for their individual reasons, different products. Every one of our staff members could post an honest and compelling article as to why you should purchase their personal choice. So how do you make a decision? The only way is to listen for yourself.

I could wax lyrical about my favourite audio products, but this does not mean they are right for you. On many occasions I have taken highly-rated and well-reviewed products home, only to find that they did not suit my needs at all.

I know that this is not the best time to be out shopping, but your choice of audio equipment is something that should last for many years to come. Give yourself the best opportunity to get it right and audition for yourself.

And listen with your heart.



MERIDIAN DSP750 IN-WALL DIGITAL ACTIVE LOUDSPEAKER ULTIMATE POWER AND FIDELITY



The class-leading DSP750 is Meridian's highest performing architectural loudspeaker. Engineered using Meridian's core principles of acoustic design, the DSP750 delivers high resolution audio that is perfect for architectural installations and dedicated home theatres.

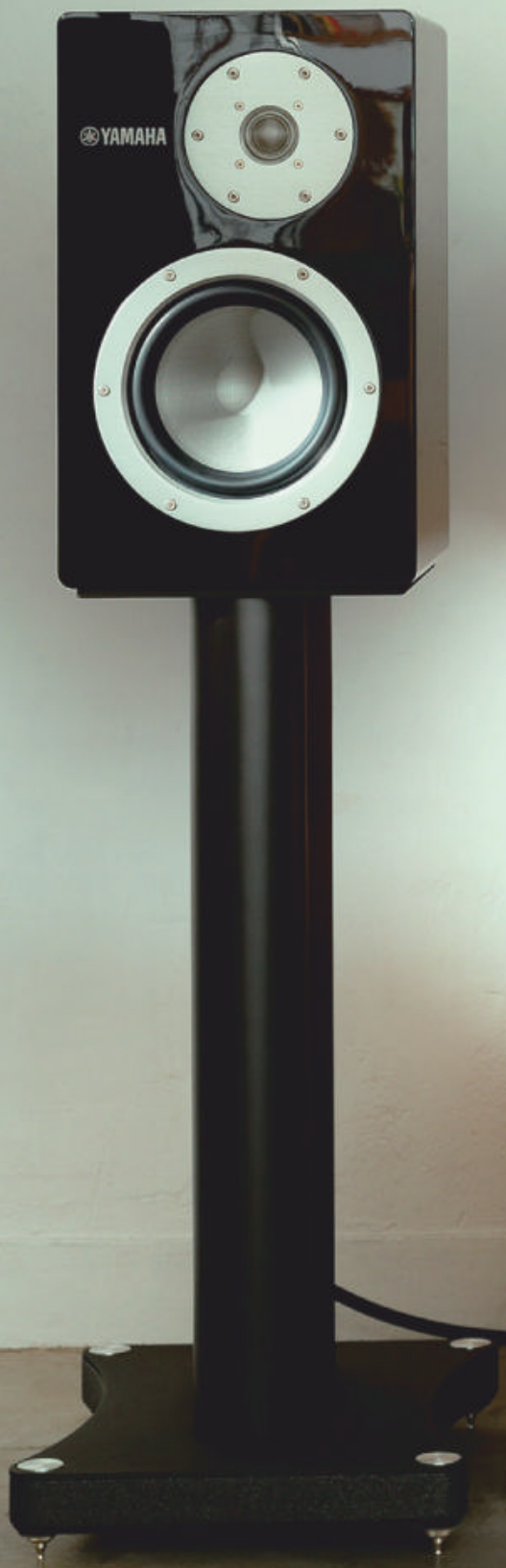
Featuring all new drive-units, including a beryllium tweeter, the DSP750 produces a natural and lifelike sound with high fidelity and perfect tonal balance. Its high dynamic range, incredibly low distortion and outstanding signal-to-noise ratio combine to provide full-range audio with exceptional headroom and low listener-fatigue.

Used in combination with Meridian's full architectural range, including the DSW600 shallow-depth, digital active in-wall subwoofer, the DSP750 resets the standard of architectural loudspeaker performance.

- Five new drive units unleash the full potential of the Class-M DSP engine and Dynamic Hi-Res amplifiers.
- Fit-and-forget easy installation with ultra-shallow 100mm mounting depth.
- Custom tweeter with Beryllium dome and diffraction expansion technology for wide dispersion and pinpoint imaging.
- Five pairs of Class-D amplifiers - each pair bridged capable of providing greater than 100W into 8 ohms.
- Fully engineered, sealed cabinet delivers a reliable, repeatable performance regardless of installation.
- On-board DSP leverages unique Meridian technologies including Enhanced Bass Alignment (EBA), Centre Elevation and Upsampling.



A-S1200: Rated at 90 watts/channel
into 8Ω: \$3,499.





A-S3200: Rated at 100 watts/channel into 8Ω: \$9,995

A-S2200: Rated at 90 watts/channel into 8Ω: \$4,995

NEW FOR YAMAHA

One of the most respected companies in this industry is Yamaha. While known primarily for producing well-made competitively-priced products, particularly their A/V receivers, in recent years they have also produced some extremely high-performance components. They have proven that they are not afraid of mixing it with the exotics of our industry and have more than held their own.

Yamaha have recently upgraded their Premium Series integrated stereo amplifiers – three new models in all. There are no groundbreaking or ‘black-magic’ technologies employed with these amplifiers. These are traditional, basic designs that have been superbly applied and magnificently engineered, resulting in some of the best-sounding amplifiers on the market. We have seen the criticism of ‘over-engineered’ being levelled at these models.

In this environment of building down to a price and disposable hi-fi we don’t see how you can ‘over-engineer’ a product unless it is meant to imply that these components are overpriced compared to the opposition, and they are not; or if they don’t sound as good as they look, and they do. You can be assured that very few companies in our industry manufacture components to this level of detail.

Yamaha have also released a high-level turntable, the GT-5000. This is a substantial unit, as it weighs in at over 26kg and has a 5kg platter.

The ‘GT’ in the model number stands for ‘Gigantic and Tremendous!’ (although SoundStage changed this to ‘Gorgeous and Tuneful’ in their review).

Yamaha’s GT-5000 is belt-driven and utilises a unique short straight tone arm – less than 230mm in length, whose height is completely adjustable. This turntable is also unique in that it offers both balanced and unbalanced outputs. This is a very serious unit – and a very bold statement from Yamaha.

The Yamaha GT-5000 sells for \$12,995 and comes with a 10 year warranty.





Meridian Custom Installation

A long-time client of Len Wallis Audio had recently purchased a substantial new home in one of Sydney's most prestigious suburbs. An avid music and technology lover, he has a very good understanding of the high-level, luxury offerings in the marketplace.

Len Wallis Audio had completed a reference 'Focal Utopia' immersive cinema installation in his previous home; so the client had experience with the Focal brand and their expertise. He had always wanted a pair of this French company's flagship Grande Utopia speakers.

When the recent EM Evo series were announced and the new home was purchased, the time was right. Len Wallis Audio sourced the only pair of Grande Utopias available in Australia at that time, presented in striking metallic blue.

The task was then set to find a suitable electronics package to complement these amazing loudspeakers.

Len Wallis Audio have had extensive experience with many high-end amplifier packages driving these speakers in the past; being one of the few companies to feature multiple pairs in their showrooms for demonstrations. The theory behind this particular system design was simple: Apply more than enough clean power to ensure the speakers could perform at their optimum output.

An avid fan of Meridian Audio, Len Wallis Audio's Senior Custom Consultant, Jono Dorset, knew of such an amplification package, one that was more than capable of delivering immense power and clarity. Enter the Meridian Reference 857 two-channel power amplifiers, offering around 1,500-watts when bridged.

For this project, Jono specified four (4) of these 857 amplifiers, two (2) per speaker in a bridged, bi-amplified configuration.

It was decided that ROON would handle the music management with TIDAL streaming and locally stored hi-res music being the primary sources. Control of the entire system from an App was considered to be crucial to ensure ease-of-use for this client. In addition, a customised ROON 'Rock' music player was built to handle the supply and storage of the lossless music.

Meridian Audio are pioneers when it comes to digital music reproduction. A Meridian 818v3 Reference Audio Core was selected as the processor, DAC and ROON end-point. This was done to ensure maximum flexibility with the system and to allow for a statement turntable to be added in the future.

The Meridian 818's host of digital and analogue inputs make it perfect for this.

Jono's extensive experience with the 818v3's MQA decoding capabilities and the extended bandwidth 857 amplifier made for easy choices. This design ensured the highest resolution available into the speakers and is ideal for high-performance two-channel systems.

With the core componentry chosen, it was then necessary to carefully select the cabling and accessories required to complement these products and ensure as little signal degradation as possible.

Jono chose German manufacturer InAkustik's high-end hand-made 'AIR' cabling technology for every interconnect. This was complemented by Isotek power cabling and filtration to ensure clean power from the grid. The entire solution is housed in a pair of customised SGR Signature V racks which feature advanced isolation techniques.

Challenges

One of the challenges with a system of this size is managing logistics. When delivered, there was over a metric tonne of equipment that had to be carefully moved into position in the home, so extreme care and planning was needed through the installation phase.

Another unique challenge with a system of this scale is that clients have often not envisaged just how large the speakers are going to look in their space. Although scale drawings of the room can give some indication, there is still some uncertainty as to how a client will feel on that all-important first walk into the room... thankfully, he loved them!

When pulling together an ultra-high specification system like this, it's important to have confidence from the manufacturer that the equipment is going to be able to deliver. The impedance curve is particularly demanding on these speakers, so Jono wanted to ensure that the amps wouldn't be breaking into a sweat when the client was using the full capabilities of the system. Jono consulted with the technical team at Meridian and shared the speaker

impedance curve information with them, upon which they confirmed that their 857s would be the perfect choice to drive Focal's Grande Utopias.

As a result Jono commented, "I have no doubt of the 857s' high resolution fidelity as I have now specified them on numerous systems and have witnessed first-hand the effortless power that they're capable of, with even the most demanding speakers."

Jono continues: "This is the first time I have spoken to the Meridian Design and Specification Service regarding a two-channel system, though I have worked closely with them on a number of cinema designs in the past, and once again, the clear, concise and honest feedback on my system proposal gave me the confidence to sign off on the design."

SUCCESS!

The system has effortless performance and the sheer power behind the speakers provides exceptional dynamics. The bass response from the 16-inch electromagnetic drivers is particularly strong, with proper full-range extension. The Focal drivers and tweeter have amazing detail and are able to deliver frequencies that extend far

beyond the capabilities of human hearing. Jono provides the final confirmation: "I have now listened to many favourite tracks and been delighted to discover details that have never been reproduced by other systems. The sound stage is wide, deep and enveloping. Experiencing music with this level of focus is an absolute treat. It is however, unforgiving with poor quality recordings and files... it is just so highly revealing of the music!"

PRODUCTS

- **Focal** Grande Utopia EM Evo – Metallic Blue
- **Meridian** 818v3 Reference Audio Core
- **Meridian** 857 2ch Power Amplifier (x4)
- **InAkustik** – Referenz LS2404 AIR Speaker Cable
- **InAkustik** – Referenz NF1204 AIR Balanced Interconnects
- **InAkustik** – Referenz Network Cable
- **Isotek** – EVO3 Sirius Power Filtration
- **Isotek** – EVO3 Premier Power Cables
- **ROON** 'Rock' - customised music player
- **SGR** Model V Signature – Isolated Racking Solution

B&O: Stage Soundbar Upgrade Offer

The use of soundbars is now commonplace. The space limitations inside most TV screens are so severe that it is impossible to install speakers inside them that are of good quality, which severely affects the intelligibility of the spoken word.

A common solution has been to add a soundbar, but the soundbar market has become so competitive that the downward pressures on price has resulted in many soundbars performing little better than the televisions they are connected to.

One of the best soundbars around is the 'Stage' by B&O. It also has the advantage of being one of the most attractive, and despite its heritage and

performance it is also very well priced.

There are three different finishes and two different price points, depending on your selection.

The Silver Frame with Black Fabric Grille or the Bronze Frame with Taupe Fabric Grille both have a recommended retail price of \$2,500, OR you can select the Natural Oak Wood Frame and Grey fabric grille by KVADRAT which has a recommended retail price of \$3,500.

- Silver Frame with Black Fabric grille **\$2,500**
- Bronze Frame with Taupe Fabric grille **\$2,500**
- Natural Oak Frame with Grey Fabric cover **\$3,500**

Until the end of September Len Wallis Audio is offering a trade-back to the value of 20% on all three B&O models (i.e. \$500 or \$700 depending on the model) on your existing soundbar, irrespective of its brand, quality, or condition.

Trade back your existing soundbar on either of the Silver Framed and Bronze Framed models and pay only \$2,000 or for the Natural Oak Framed model, trade back your existing soundbar and pay only \$2,800.




PS Audio

Save \$1,000 on a Stellar Power Plant 3

Our industry has been aware of the many advantages of treating the incoming 240-volt power supply for a long time now, and one of the leaders in the field is PS Audio.

Their Stellar Power Plant 3 is a power regenerator. It takes the incoming mains voltage, the waveform of which is nearly always distorted, and rebuilds it into a

perfect AC sine wave, in the process eliminating all noise and all distortion and at the same time also ensuring a perfectly steady 240-volt power delivery.

The Stellare PP3 has three independent 240V power outputs that deliver 300 watts of pure re-generated power, 500 watts of short term power and an impressive 900 watts for short term dynamics (up to 30 seconds).

Key benefits include:

Immediate and noticeable improvement in sound quality.

Protection for all your equipment from voltage dips, spikes, electrical noise and distorted waveforms.

We are currently offering the Stellar Power Plant 3 for \$2,995 – a saving of \$1,000 on retail.

Prima Luna


Evo 300 integrated valve amplifier

In a previous newsletter we mentioned the new range from Prima Luna, the valve amplifier manufacturer out of Norway. Since then we have added the Evo 300 integrated amplifier.

This amplifier has an output power of 42-watts per channel in its Ultra-Linear mode and an output power of 24-watts per channel in Triode mode.

The Evo 300 has five (5) stereo inputs plus a Home Theatre bypass. There is also a dedicated phono stage that can be added for an additional \$355. **Evo 300: \$5,895**



Bowers & Wilkins New 700 S2 Signature Series

B &W have taken two of their very popular '700 S2' series speakers, the 705 S2 bookshelf and the 702 S2 floor-standing speakers and upgraded both the finish and the crossover, to create 'Signature' versions. This series features Datuk Gloss Ebony-coloured timber veneer cabinets with a distinctive grain sourced from renowned Italian timber supplier Alpi.

The speakers blend a new crossover design with ideas and technologies first conceived and developed for B&W's 800 Diamond Series product line, including a solid-body tweeter-on-top design, Continuum midrange drivers, and Aerofoil Profile bass drivers.

The Bowers & Wilkins 705 S2 Signature stand-mount speakers are a two-way design fitted with 25mm carbon dome tweeters and 165mm mid/bass cones in a vented enclosure. Available now, they retail for \$4,995/ pair.

B&W's 702 S2 Signature floor-standers are a three-way design with the same 25mm tweeter, a 150mm FST midrange driver, and three 165mm Aerofoil Profile bass drivers in a vented enclosure.

The cabinets for both 700-series Signature speakers are wrapped in an Ebony-coloured wood veneer sourced from Alpi, an Italian wood company that follows sustainable harvesting practices. B&W applies nine coats of finish to the cabinets, including a primer, a base coat, and final coats of clear lacquer. Bright metal trim rings surround the mid/bass (on the 702) and midrange cones (on the 705) to provide a visual accent, and the tweeters have silver-finished grilles.

A unique "Signature" identity plate is fastened to the rear of each speaker.

705 S2 Signature: \$4,995/pair – plus stands

702 S2 Signature: \$8,500/pair





Sonus faber Il Cremonese Ex3me

The Il Cremonese is one of the best-known and most respected speakers in all the Sonus faber range. Named as a tribute to Antonio Stradivari's most famous violin, this loudspeaker represents a musical piece in its own right. Like the instrument it was named after, Sonus faber's goal in creating the Il Cremonese was that its sound would be absolutely neutral – and many would agree that they have been successful in this goal. Jules Coleman's review on Enjoy the Music.com commented 'Sonus faber's Il Cremonese speakers tell a story, and the more you listen, the more you not only get lost in the music, but the more you also appreciate and admire both the story itself and the telling of it.' The goal of any good speaker should be to connect you with and involve you in the music, and not to distract you with certain parts of the music or indeed the system itself. (If you have the inclination – and the time, it is a long article – I would suggest you read this review. It not only covers the speaker itself, but also what Jules says he looks for in a loudspeaker).

Deon Schoeman, in his Audio Video review simply said 'Always truthful, always musically satisfying and built to exceptional standards of craftsmanship, the Sonus faber Il Cremonese is a remarkable loudspeaker. Would Antonio Stradivari approve? I think so...'

Sonus faber has a history of producing limited versions of some of their better-known products and have done just that with the Il Cremonese – releasing just 50 pairs worldwide of the Il Cremonese Ex3me, which, among other technical upgrades, includes a return (appropriately) to the historical Sonus faber finish known as 'Red Violin'.

Len Wallis Audio is proud to say that we have secured one pair of these speakers. They are selling for \$84,995, \$10,000 more than the price of the standard model. This would be your opportunity to secure a true, and never to be repeated, classic.

Sonus faber Amati Tradition

Another addition to our line-up of Sonus faber is the Amati Tradition. Despite carrying

Sonus faber for several months this is the first time that we have had the opportunity to put this model on the floor. This delay was unfortunate as it's one of their most highly-regarded offerings, but the wait has been worth it. We have fallen in love with both the build quality and the performance of the Sonus faber range – and this model is a stand-out in both respects.

Amati Tradition: \$45,000/pair





Legendary LEAK Revived!

In recent times there has been a growing market for vintage audio with equipment in good condition from the 60s and 70s bringing big dollars. This has dovetailed nicely with, and is possibly even driven by, the continuing resurgence in the popularity of vinyl.

One of the legends of that era was LEAK, a British company formed in 1934. The LEAK Delta 30 and Delta 70, both released in the early 1970s, were classic amplifiers of their day and are still sought-after by enthusiasts.

After a hiatus of 40+ years LEAK has released a new amplifier and for the first time, a CD transport. The LEAK Stereo 130 amplifier is based on their Stereo 30 amp, released in 1963, which was the world's first commercially-based all-transistor amplifier. However, this is a very modern design incorporating the very best of British technology. As expected it features a high-performance phono stage, while analogue line-level inputs and optical, coaxial and asynchronous USB digital connections accommodate external CD

players, computers, network streamers, TVs and more. The Stereo 130 also allows you to stream music from your phone, tablet or music player over aptX Bluetooth.

It also sports a high-quality headphone amplifier and, surprisingly in this day and age, bass and treble controls.

The most distinctive aspect of this amplifier, however, is its appearance, which is a throw-back to the designs of old. Despite the modern advanced technologies used inside it, this amplifier looks like it comes straight out of the 1960s.

To complete the package LEAK have also released a matching CD transport – LEAK's first foray into optical disc technology. The LEAK CDT CD Transport is, as the name implies, a transport only. Given the fact that most amplifiers today have excellent DACs on-board it surprises us that more companies have not gone down this path. This unit features a slot-loading mechanism and uses a read-ahead digital buffer to reduce disc-reading failures.

LEAK Stereo 130: \$1,999

LEAK CDT: \$1,399





Musical Fidelity: \$450 Bonus Offer

When Musical Fidelity released their 'M2' amplifier and CD player and broke new ground by taking their legendary sound to a new lower-priced market, they did so not by sacrificing any performance, but by stripping out a little functionality.

The Musical Fidelity M2si integrated

amplifier and M2SCD CD player sell for \$2,000 each. For a short time Musical Fidelity will be including a \$450 Inakustik NF-803 RCA interconnect with each combination sold. Inakustik has quickly established itself as one of the finest cable brands available and is an obvious pairing with Musical Fidelity.

Simply add a suitable pair of speakers

and you may be surprised at how good this amplifier/CD player combination is. Any quality system should involve you in your music, whatever your genre of choice. Unfortunately, most do not! Here is the opportunity to put together such a system at an affordable price.

The Musical Fidelity M2 combination is available in silver or black.

We said it was good!

When we first heard the Musical Fidelity M8xi we were more than impressed. Given that this is a \$12,000 integrated amplifier I guess that this was to be expected – but then again that is not always the case.

It appears that we are not alone: the Musical Fidelity M8xi has just been named the EISA High-End Integrated Amplifier of the Year (2020-2021).

The EISA Awards are recognised as the most prestigious awards in our industry. EISA is a unique association comprised of 56 specialist magazines across 29 countries – so there is a lot of credibility here! The M8xi was an important release for Musical Fidelity – it was the first



totally new MF product to be released by the current owners – Audio Tuning, a company that is based in Austria. This was a VERY impressive debut!

Musical Fidelity has a long history of manufacturing high-performance integrated amplifiers, commencing with the A1000 in 1990. The M8xi is the latest

of this breed. Rated at 550-watts/channel it is effectively a separate pre-amp, DAC and two mono-blocks in the same chassis – all with their own power supplies. This is not only arguably the best integrated amp in the world, it will rival many separate pre-power amplifiers costing considerably more than the \$12,000 asking price.



NAD M10 Streaming Amp

As much as we may be drawn to the biggest pair of speakers in the showroom, or the largest, shiniest piece of electronics, as an industry we recognise that things are changing.

While there is (thankfully) still plenty of life in the likes of Sonus faber Reference speakers and Krell electronics there is also a marked move towards high-performance yet discrete systems. It's a move that is driven by an ever-increasing awareness

of interior design, the availability of streaming services that reduces the number of components necessary in a system and most importantly by the increasing abilities of companies to squeeze exceptional performance from ever-smaller-sized components.

Famous brands such as Naim Audio, Auralic, Devialet and Chord have been producing well-made, high-performance electronics with small footprints for many years now.

NAD C658 BluOs Streaming DAC

The NAD C658 BluOs Streaming DAC sits beautifully between the budget streamers from the likes of Sonos, Heos and BlueStream and the hi-end offerings from such companies as Auralic. Despite being relatively inexpensive (\$2,599) NAD's

C658 has a lot to offer. First and foremost, it is a sterling performer, as we have stated elsewhere not all streamers are created equal. Just as important is the interface, which is excellent. Irrespective of how good a component is, it's next to worthless if it is difficult to operate. One of the big drawcards for BluOs (which is embedded in the NAD C658) has been their excellent

control app.

The other advantage of BluOs is that it is the backbone of BlueSound, meaning that if you want to develop a multi-room wireless streaming system this is a great start – simply add additional BlueSound wireless speakers to the NAD C658.

The NAD C658 is a high-res player, and is Roon enabled, opening up access to MQA recorded tracks. It is the first NAD component to feature Dirac Live room correction, a circuit that allows you to calibrate your system to work best in the unique acoustics of your room.

The C658 can also operate as a basic pre-amplifier – it even has a phono input! – plus a subwoofer out and a headphone socket.





Auralic: Aries G2.1 Music Streamer

Auralic have updated their excellent Aries G2 wireless Streaming Transporter.

The biggest change involves the chassis, with the G2.1 now equipped with a "Unity Chassis II" where there are two separate chassis, one inside the other, underneath which is a new heavy metal base. The external chassis is aluminium, the internal chassis is copper. This design enhances EMI shielding, providing an audible improvement to performance, while the substantial base adds overall mass to the product and further builds on Auralic's modest elegance and improves the sound of the product overall.

Auralic has also added CD player/ripping functionality, using Lightning OS7.0. You can now connect an external CD drive via USB to play CDs or rip them for storage.

When used as a ripper, Lightning's CD function reads each disk sector several times to ensure data accuracy, before saving to memory, to ensure completely jitter-free sound that bests the performance of other, far higher-priced, stand-alone CD players.

Auralic has also added unique sprung feet, each one of which has six separate coil springs tuned to different resonance frequencies. These effectively absorb potentially harmful vibrations, delivering greater sound clarity and a more open sound field.

The original Auralic Aries G2 streamer was already considered to be one of the finest units of its class on the market, but with the new Aries G2.1 Auralic have managed to take it to another level. If ever you needed convincing that all streamers are not created equal, drop in and have a listen to this unit.

Aries G2.1: \$7,295



Speaker companies have been going down the same path as well, with companies such as Serhan & Swift and Bowers & Wilkins getting exceptional performance out of small boxes.

One of the best examples of this is the NAD M10 streaming amplifier. This is a very compact piece of kit measuring 210mm wide, 100mm high and 260mm deep. It is rated at 100-watts/channel, and before we get into what this product can do we need to establish that it is a very fine performer. It may not compete with the likes of Krell – but it will stand up to anything in its price category – and you can't ask for much more than that.

As you would have gathered, this is a streaming amplifier capable of handling Hi-Res files. It has Bluetooth and Apple AirPlay2 and is controlled by BluOs through one of the best apps in the game – or via the touch screen on its front panel. It has an ARC-enabled HDMI input to connect your TV ('way better than a soundbar), and the BluOs system will allow you to add speakers throughout your entire house to create a wireless whole-of-home entertainment system.

If we listed here all the capabilities and features of the M10 it would be an exceptionally long list indeed, so we would instead suggest that you explore its many attributes further on our website.

It obviously does what it does well though, as the NAD M10 has so far been the winner of the following Awards:

- AVForums Product of the Year, 2019
- EISA Best Product (Smart Amplifier Category)
- StereoNet Applause Award 2019
- AVTech Media Best Hi-Fi One Box Solution 2019/20
- DArko product of the Year 2019
- SoundStage Product of the Year 2019 ...and counting.

The NAD M10 retails for \$4,495 and, given its many qualities, represents excellent value. Combine it with a quality pair of bookshelf speakers from B&W, Sonus faber or Triangle and you will have a versatile, compact, high-quality system at a realistic price.

Richter: Harlequin S6 Speakers



Richter is one of the most successful Australian brands in this industry. The company was formed in 1986 and went on to produce what is reputedly the best-selling speaker in Australian history – the Richter Wizard – which has undergone numerous variations throughout the ensuing decades.

In 1991 Richter was named 'Small Business of the Year' and 'Manufacturer of the Year' in the NSW Small Business Awards and its speakers have won a great many 'Speaker of the Year' awards. Richter's Merlin S6 is the current holder of Sound+Image Magazine's award for 'Loudspeaker of the Year \$500–\$1,000', plus its Thor 10.6 subwoofer was awarded 'Subwoofer of the Year below \$5,000' (an achievement

which becomes even more impressive when you find it retails for only \$1,599).

Richter's current speaker range is very focused (three models of speakers plus a subwoofer), and the work that has gone into bringing this range to market is obvious. Richter's latest release fills the gap between their bookshelf Merlin S6 and their Wizard S6, both of which have been on the market for some months. As the name implies, this series is the sixth generation of this legendary range.

The Harlequin S6 is a two-way floor-standing design with a neodymium-powered 25mm soft-dome tweeter and a 165mm mid/bass driver. Although the Harlequin S6 is currently available only in black, Richter says it will soon be building Walnut models in limited quantities.

Above: The new Richter Harlequin S6 floor-standers sell for **\$1,899 pr.**

Below: Richter's award-winning Thor 10.6 subwoofer sells for **\$1,599.**





INTRODUCING HARLEQUIN Series 6



MERLIN S6
2020 LOUDSPEAKER OF THE YEAR
\$500-\$1,000



THOR S6
2019 SUBWOOFER OF THE YEAR
UNDER \$5,000



Re-imagined and re-engineered
for an award-winning entertainment experience

Bring your favourite music to life with our new Series 6 range of loudspeakers and subwoofers. In a new clean modern look, we've taken a new approach and designed this range to deliver clarity and realism with an exceptional sound stage, so you can immerse yourself in an engaging entertainment experience.

For more information and to find a dealer visit www.richter.com.au



Technics: Limited Edition SL-1210GAE Turntable

Technics have a long and enviable history of producing quality turntables. They recently announced the release of the SL-1210GAE – their 55th Year Anniversary Edition model. Production is limited to 1,000 units worldwide. Australia will be receiving only 40 turntables.

This model is based on the current SL-

1200G, which is the premium Technics turntable available on the local market. The upgrades include:

The top panel sports a meticulously anodised black brushed hairline finish. In addition, the operation buttons and tonearm also employ a high-quality black finish that results in a uniform, premium appearance.

The SL-1210GAE is hand-made in Japan by skilled artisans to ensure the highest quality possible. The top panel features a special badge, inscribed with a unique serial number to signify that it is a 55th anniversary model.

The specially-developed zinc insulator feet feature αGEL™, a soft gel-like material with excellent shock-absorbing



properties, the same feet that are also used on Technics' highly-acclaimed, 'flagship' SL-1000R reference turntable (not available in Australia). The high-density zinc die-cast housing offers superb vibration damping characteristics and excellent long-term reliability. The new high-performance insulators effectively isolate the turntable from external vibrations, ensuring completely undisturbed music reproduction whilst preserving every fine nuance and detail within the musical signal.

The strobe light can now be turned off as required, allowing the listener to simply concentrate on the music, especially in a dimmed environment.

The best news is that this limited-edition turntable is offered at the same price as the existing SL-1200G, i.e. \$6,995.

Of the 40 Limited Edition SL-1210GAE turntables coming into Australia, Len Wallis Audio has been able to secure seven, with the final shipment arriving in September – however at the time of writing we have already pre-sold five!

Be sure to take advantage of this very limited opportunity to secure a piece of hi-fi history: a magnificent turntable that is surely destined to become a classic!



RUARK R4 DESK-TOP SYSTEM SPECIAL RUN-OUT DEAL

The Ruark R4 desk-top system is soon going to be superseded and as a result we have been running out our remaining stock at a very attractive price.

The Ruark R4 is a very complete and comprehensive hi-fi system that is presented in a small and very attractive package. The system includes CD, both DAB+ and FM radio tuners, plus you can stream music to it via Bluetooth from a phone or tablet. It even has a clock with an alarm. Designed in the UK, it is not only an attractive system, but also a surprisingly good-sounding one that is very compact and very easy to use.

The Ruark R4 retails for \$1,499: **We are offering our existing stock for \$1,199 (black only).**



Inakustik New Micro Air Cables

In a very short time Inakustik has established itself as a major cable (and accessory) brand in Australia. There are several reasons for this – the depth of their offerings, the quality of manufacture (a large percentage of their range is still built by hand in Germany), plus technical ingenuity and pricing. But most important is their performance.

One recent ingenious technical development introduced by Inakustik is their AIR Technology, where their cables now incorporate air as part of their dielectric. This has been so successful at the top end of their range that they have now expanded the concept into their lower-priced Micro Air range.

This range consists of two models of

speaker cable which come in three-metre lengths and are factory-terminated with either banana plug or spade connectors:

- LS104 with banana terminations **\$850/pair**
- LS104 with spade terminations **\$950/pair**
- LS204 XL with banana terminations \$1,350/pair
- LS204 XL with spade terminations **\$1,450/pair**

Inakustik also has two versions of interconnect cables, available with RCA or XLR terminations and in 0.75m, 1.0m and 1.5m lengths. These range in price from \$400 to \$750.



TO TUBE OR...



NOT TO TUBE...



STAX IS THE QUESTION.

Introducing the new **SRM-700T** vacuum tube type and **SRM-700S** semiconductor type headphone amplifiers from Stax.

STAX

SONOS: TOTALLY NEW ARC SOUNDBAR

A new model from Sonos is a relatively rare occurrence – their models have a long lifespan, and we guess that their philosophy is that “if it works – why change?”

However there has been a flurry of activity over at Sonos HQ during the last few months with three of their models being updated. Both the Play:5 and the Sub have been updated to Sonos Five and SubG3 respectively. The changes have been subtle with both units featuring updated internals including larger memory, increased processing power, and a new wireless radio. There have also been some minor cosmetic changes, but

from a performance aspect there are few differences between the old and the new.

The big news is the upgrade of their soundbar. Now called Arc, this is a complete makeover and replaces both their earlier PlayBar and their PlayBase. And, as the PlayBar was more than 8 years old, a revamp was well in order.

The Sonos Arc is a totally new – and larger – design with a 270-degree grille and built-in microphone support for both Alexa and Google Assistant. It also supports Apple AirPlay 2. As with the Sonos Five and Sonos SubG3 the processing power has been increased, plus the Sonos Arc now supports Dolby Atmos.

The Arc outputs more bass, and it will play at higher volume levels. It features eleven drivers, eight woofers and three tweeters, compared to the six woofers and three tweeters in the PlayBar. The sonic soundstage it presents is much larger thanks to the use of dedicated ‘surround’ speakers, which was a feature not found on the PlayBar. Obviously all the streaming features (Spotify etc.) that have made Sonos famous are still part of the package, plus it retains the simplicity of control for which Sonos is renowned.

The Arc is a substantial improvement on its predecessor and, as you would expect, it comes at a higher price.

The Sonos Arc sells for \$1,399.

Sonos Upgrade Program Continues!

The (somewhat controversial) upgrade program that Sonos introduced some months ago continues. Sonos maintain that some of their older models no longer have the processing power to operate with the new software updates being released, including the new S2 operating system. Sonos have offered a 30% discount on new models if you are trading back ZP100, ZP120, Connect:Amp,

ZP80, ZP90, Connect S5 or Play:5 Gen1. Please note that all affected products will continue to function normally as long as you do not download the recent S2 App.

Initially Sonos intended that the traded-back product was to be decommissioned and recycled but have since decided to leave them operational. As a consequence, we have undertaken to sell off this equipment (given that it still works with the old App) and donate 80% of the funds to charity – in this case the Wayside Chapel in Potts Point (the remaining 20%

is applied to defray the servicing, shipping and administrative costs). This initiative has proven to be a better-than-expected success: at the time of writing we have so far raised in excess of \$13,000.

The selling prices for these second-hand units are:

- Connect Amp: \$250
- ZP120 or ZP100: \$200
- Connect: \$150
- ZP90 or ZP80: \$100
- Play:5 Gen 1: \$200



LG GALLERY SERIES Looks Like Art!

The Holy Grail for television manufacturers is to produce TV screens that sit as close to the wall as possible.

LG have come up with a very clever idea which goes a long way to achieving this ideal. Their current 'CX' range of OLED screens are as good as you will buy

today – they are excellent, and surprisingly well-priced given their high level of performance.

LG have also released a limited range of 'GX' (Gallery Series) screens. Basically these use the same screens as the models in the CX Series, but they have a unique wall bracket that folds away into the TV

itself, so that once it's mounted on the wall you can push it back so that the TV itself is completely flush against the wall, just like a piece of art.

The LG 'GX' Gallery Series is available in 77", 65" and 55" screen sizes.



Triangle New Borea range plus Esprit EZ in Golden Maple

Borea is a new budget range from French speaker company Triangle, one that we have not even heard yet, but which should be in-store by the time you receive this newsletter.

We have taken the unusual step of ordering these unheard, based on the interest that they have already stirred-up overseas – in fact we have already taken client orders based on this international feedback.

The range has been available for some

months overseas with the Borea BR03 already picking up 'Product of the Year' (speakers) award from Hi-fi Trends which commented: 'Their design, clarity, and range are head and shoulders above anything in their price range.'

They also received a prestigious 5 Star review in What Hi-Fi? and an Applause Award from StereoNet UK (with the latter saying 'this baby box will blow your mind'). The Triangle Borea BR03 is one of the lowest-priced components ever to receive this award, plus it's already amassed a slew of very impressive reviews. You can understand why we thought a pre-order audition was

not going to be necessary!

The initial release in Australia is going to consist of four models, with at least another two models due later in the year.

BR02: The most compact speaker in the range. A perfect introduction to the world of hi-fi, this small speaker will surprise you by the immersion and sound amplitude it provides. **\$650/pr**

BR03: The bookshelf speaker creating all the fuss overseas. **\$850/pr**

BR08: A speaker inspired by the iconic Antal speaker from Triangle's more expensive Esprit range. This is an elegant three-way floor-standing speaker with 4 drivers that represents exceptionally good value. **\$1,900/pr**

BRC1: The matching centre-channel for the three models above. **\$500**

There is also a new finish for the popular Esprit EZ series from Triangle – Golden Maple. This timber veneer cabinet replaces the current vinyl Walnut and Black Ash finishes, meaning the three Esprit EZ options now are Golden Maple, High Gloss White and High Gloss Black.



The entire Triangle Borea range was recognized by EISA experts as "Best Buy Home Theatre Speaker System"



Rega: New io Integrated Amplifier

We have been a huge supporter of Rega turntables for four decades now but have not carried their electronics aside from their excellent phono pre-amplifiers.

However their newly-released io amplifier was just too good to pass up. This small package is unashamedly designed for anyone looking for a compact, no-frills, yet great-sounding analogue-based audio system.

It's the recent recipient of a 5-star review from British hi-fi magazine What Hi-Fi?. And no wonder! The 30-watt per channel Rega io delivers a performance well beyond what you'd expect given its price point and its power output. As you would expect, there is a high-quality built-in MM (moving magnet) phono stage, two line-level inputs, a remote control and a high-quality headphone output that is cleverly integrated to deliver optimum performance without compromising the main audio circuitry.

Add a turntable (preferably a Rega!) and a pair of compact speakers (from Triangle or B&W) and you will have a simple, compact and surprisingly good-sounding system at a realistic price.

The Rega io integrated amplifier is priced at \$899.

Meze: New Finishes for Empyrean

We don't usually associate Romania with the leading countries in audio manufacturing, but that is where Meze Audio – which manufactures some of the finest headphones in the world – is based.

Meze Audio have just announced two new finishes for their impressive Empyrean headphones: Jet Black and Black Copper. These two new finishes are applied to the headphones' striking outer sculpted aluminium skeleton which is precision CNC-milled from a single billet of solid aluminium.

With a blend of premium materials, exquisite craftsmanship and detailing that makes it unmistakably a Meze, the Empyrean is one of the most technologically innovative planar magnetic headphones in the world. There are few manufacturers



who could claim to make a better headphone.

Authoritative review site Headfonia.com commented: "What a masterpiece. Double thumbs up. A new

king is born. This is a headphone everyone will still be talking about in 20 years." Impressive words from someone who really knows what they are talking about.

Meze Empyrean in either Jet Black or Black Copper: \$5,500.

Free Audio with Every Duo!



B &W sits in the top tier of the ever-increasing number of wireless streaming brands with their Formation range.

The premium product in the Formation range is the Duo, an active wireless pair of speakers based loosely on B&W's excellent 700 Series of passive speakers.

In a market where the race has been to the bottom with scant attention given to performance, the B&W Formation Duo has been a welcome release. Priced at \$6,400 a pair, these speakers are designed for

the client who wants the convenience of wireless network streaming, and is willing to pay for performance and quality.

B&W have announced a promotion through till the end of September where they will provide a free Formation Audio with every purchase of a pair of Formation Duos – valued at \$1,149.

The Formation Audio is a streamer. Connect it to your existing (non-streaming capable) system and to the internet and it becomes another input,

allowing you to stream 96k/24-bit high-resolution audio through the system.

PLUS: The best music management system on the market is ROON. This is available on an annual subscription base of \$170. When you purchase a pair of Duos you will not only receive a B&W Formation Audio (as above), but also a pre-paid 1-year subscription to ROON.



Open-Box Marantz CD Player Special

We have a small quantity of Marantz CD5005 and CD6006 CD players (black only) that for one reason or another have been opened. These are being sold as new, for bargain prices.

We do not have the individual histories of these units, but we do know that they are all either ex-demonstration or

ex-display models and/or factory or customer returns. Their condition is such that the distributor of Marantz in Australia considers them as "sold as brand new" so they will all qualify to be covered

and supported by the full One Year manufacturer's warranty and are sold on that basis.

CD5005: RRP \$699 Sell \$499
CD6006: RRP \$1,250 Sell \$899



DragonFly Cobalt DAC

AudioQuest's best-selling portable Dragonfly Cobalt Headphone Amplifier/DAC is now the proud winner of an EISA Award for 2020-2021. It boasts a more advanced DAC chip than any other in the Dragonfly range, an improved processor and improved power supply filtering to reduce Wi-Fi, Bluetooth and cellular noise, so you hear perfect sound no matter whether you're using it with a phone, a laptop or even in a full-sized hi-fi system. **And it's just \$630!**



Yamaha WXAD-10 Wireless Streaming Adaptor

For just \$259 this award-winning device will upgrade any older system to allow you to stream music to it from your smartphone or tablet, as well as play music from your computer or network storage, plus access online streaming services—as well as Internet radio—so you can play music in your home from anywhere around in the world.

IsoTek Cables

IsoTek manufactures a very large range of power cables specifically designed to improve the sound of your system. Prices vary depending on the range (there are five in all) and the required length, but they start out at just \$129 for the 1.5-metre EV03 Initium cable through to \$12,000+ for the 5-metre EV03 Ascension.



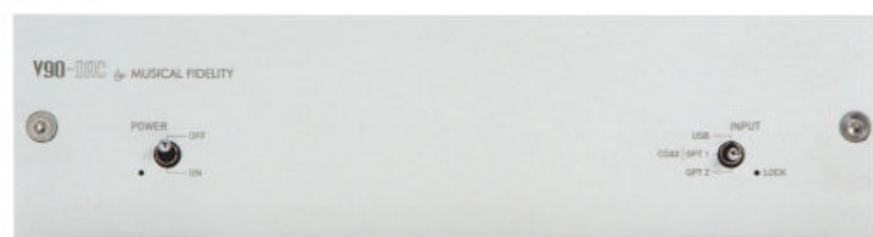
Spin-Clean Record Washer Mk2

Clean LPs sound better, last longer and reduce wear and tear on your stylus, and this low-priced, easy-to-use machine is hailed by experts as one of the easiest, most effective—and most affordable—solutions for cleaning records.

So go on... get that grunge out of your grooves for only \$169!

IsoAcoustics GAIA Speaker Isolators

Totally transform the sound of your loudspeakers, making them sound better than you ever thought possible by adding a set of GAIA's to remove lateral movement and oscillations and isolate them from structure-borne vibration. You will be amazed how the sound 'opens up' after you've installed a set. **There are three sizes, depending on speaker weight: \$349.50 (up to 32kg), \$499.50 (up to 54kg), and \$1,099.50 (up to 100kg).**



Musical Fidelity V90 LPS

The RIAA correction of the phono input on most integrated amplifiers tops out at 20kHz. The V90-LPS phono stage delivers accurate RIAA correction that extends beyond 80kHz. That may sound extreme, but there is a good deal of information above 20kHz that needs proper correction to avoid ringing and overshoot. This very high-performance external phono stage accommodates both MM and MC cartridges, plugs into any line-level input on your amplifier and will prove to you that a great phono stage can really bring more "life" to your records. **It's available for \$430.**



5000 SERIES



GT-5000 TURNTABLE
C-5000 PRE-AMPLIFIER
M-5000 POWER AMPLIFIER
NS-5000 SPEAKERS

Now auditioning at:

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esoterica

B&W 702 SIGNATURE

A rich, musical and
exciting sound that's
almost larger than life
yet at the same time is
so true to life...



B&W 702 SIGNATURE

LOUDSPEAKERS

I was a great fan of B&W's 702 loudspeaker design, and of the Series 2 version of it that followed, which was a significant improvement. So I was intrigued when the famous British company announced that it was releasing a special 'Signature' version of the 702, because I wondered how such an evolved design could be further improved. I was lucky enough to be given the chance to find out, and what follows is what I discovered.

UNIQUE CABINET FINISH

Extracting the first of my review pair of speakers from its packaging revealed one difference straight away: a new finish, one that I'd never seen before on any B&W speaker (or on any other brand I can think of). It turned out to be a veneer B&W calls Datuk Gloss that is apparently unique because B&W says that the veneers on any pair will be slightly different to the veneers on any other pair, because no two models share the same grain pattern.

B&W 702 SIGNATURE LOUDSPEAKERS

B&W sources this essentially “ebony-coloured” veneer from a specialist timber company called Alpi that is based in Italy, and says it sources its timbers only from sustainable forests. Bowers & Wilkins then adds value and improves the appearance by adding nine clear finish coats to the veneer, including multiple lacquers, to give every 702 Signature cabinet a deep, lustrous appearance.

I decided to examine the unpacked speaker very closely before unboxing the other of the pair, and noticed two other small changes, which were that B&W has changed the colour of the metal trim rings around its tweeter and midrange driver from black to silver. Presumably these silver trim rings are also unique to the 702 Signature.

One thing that did surprise me about my examination was that it wasn’t until I looked at the rear panel of the speaker that I discovered a fairly small, unobtrusive and decidedly discreet but quite elegant metal badge with the lettering ‘702 Signature’ and ‘Bowers & Wilkins’ on it. If I’d been responsible for the design, I probably would have put this badge on the front baffle or the grille, so it was more ‘in your face’.

Look as hard as I might, I could not find any other differences between the 702 Signature and the models that preceded it, but it transpired that the other difference were ‘under the hood’, so to speak.

B&W says that it has significantly upgraded the quality of all the capacitors and resistors used in the 702 Signature’s crossover network, increased the voltage rating of the low-pass section’s bipolar capacitor and sourced its bypass capacitors from famous German manufacturer Mundorf.

TWEETER ON TOP

Unlike most loudspeakers, where the tweeter is installed on the front baffle, usually at the top, the 702 Signature’s tweeter is mounted in a separate, acoustically and mechanically isolated housing that sits on top of the cabinet. This housing is made from black-painted aluminium and, including the tweeter, weighs around one kilogram.

B&W started positioning its tweeters like this when the late John Bowers and his research team discovered that the frequency response errors and phase irregularities produced when a tweeter was mounted on a baffle disappeared when it was located separately from the main cabinet.

The 25mm dome diaphragm contained at the front of the housing has what B&W calls a ‘carbon’ dome and a unique construction whereby the front portion of the dome is formed from a 30-micron-thick sheet of

aluminium onto which an ultra-thin carbon coating is applied by vapour deposition. This is attached to an inner section of carbon material that’s 300-microns thick and profiled to match the curve of the main dome. B&W says this dual-layer construction pushes the frequency of the dome’s first break-up mode up to 47kHz, or more than an octave above the highest frequency perceptible by the human ear.

FIXED SUSPENSION TRANSDUCER

The midrange driver in the 702 Signature is exactly the same as the one in the 702 S2 apart from the difference in colour in the trim rings. However, it’s a driver that is unique because whereas most cone midrange drivers have a flexible rubber or foam surround suspension, this particular B&W midrange driver does not. It is what the company calls a ‘Fixed Suspension Transducer’ or ‘FST’, so-called because the cone is attached to a narrow polymer ring that stretches and contracts to accommodate the cone’s movement.

B&W says FSTs have improved transient response and, because there’s no flexible suspension to reflect energy back across the cone surface, they have less dynamic distortion. The FST’s cone is made from a woven composite fabric B&W calls ‘Continuum’.

As for that trim ring, it’s not just cosmetic, to hide the driver fixings—it does double duty as a tuned mass damper (TMD).

Also, despite it appearing to be solidly mounted to the front baffle, the 702 Signature’s FST is isolastically mounted so that its performance cannot be adversely affected by cabinet vibrations.

The three 165mm diameter bass drivers on the 702 Signature have cones made using the same triple-layer ‘sandwich’ technique B&W originally developed for its 800 Series, where two outer layers enclose an inner layer. The outer layers on the cones of the 702 Signature’s drivers are made from paper and the inner layer from expanded polystyrene (EPS). The company says that the multi-layer construction technique avoids the abrupt transition from piston to break-up mode behaviour that usually impairs the openness and neutrality of drive units with cones made from a single uniform material.

As with all recent-model B&W speakers, the flared exit of the 702 Signature’s rear-mounted bass reflex port is made from a dimpled polypropylene material that minimises air turbulence at the mouth of the port... a design trade-marked by the company under the name ‘Flowport.’

As you’d expect of a model in the 702 Signature’s league, the speaker terminal plate facilitates bi-amping or bi-wiring through the provision of two pairs of large, multi-way colour-coded terminals.

Also as you’d expect of any pair of tall, heavy speakers with fairly narrow cabinet





dimensions, the 702 Signatures have a relatively high centre-of-gravity. This would normally mean they'd be relatively easy to tip over except that B&W supplies two very substantial base-plates which should be attached to the speakers before installation to improve stability.

LISTENING SESSIONS

The rear-firing ports on the 702 Signatures mean that the speakers' bass response will be affected by their proximity to the rear walls, but it will also be affected if you elect to install the foam port plugs that B&W supplies, which are two-stage types so you

can block off a port completely, half-block it or, of course, not use the plugs at all. B&W's *Owner's Manual* has an excellent description of the different sonic effects the different combinations will have on the bass response, plus it also has three very good—and very accurate—graphs showing how the low-frequency response will be affected.

I found that no matter where I positioned the speakers in relation to the rear wall, or what port configuration I used, the bass response from the B&W 702 Signatures was impressively extended, so that with music, it easily accommodated the lowest note on a piano (27Hz). And from using them as front channels when watching movies, the movie sound effects proved to me that the low-frequency response went even lower than 27Hz.

The B&W Signature 702s were also capable of playing loud at these low frequencies. I was able to achieve room-shaking levels when playing Bach's *Tocatta and Fugue in D Minor*, for example. The tonal quality of the bass was also wonderful, with beautifully rich-sounding 'Ds' at the bottom of the runs and a resonating chordal sound at the conclusion of the arpeggios.

But it wasn't just organ music that demonstrated the rich bottom-end sound of the B&W 702 Signatures. The speakers' bass response also worked wonderfully well for all musical genres—the sound of kick drums

was full-fledged and meaty, and the sounds of both double-bass and electric bass were rendered rich and full, with nice detailing.

This excellent bass response was perfectly matched to the midrange response, so that combined, the two presented a soundfield that presented aurally as a gloriously full sound-stage extending right across the space between the left and right speakers. If you listen to Claudia Tellini sing her multi-tracked interpretation of Roger Waters' classic Pink Floyd hit, *Money* (from *Stazioni Sonore—Who's Got Its Own*), which has everything from solo vocal to speech to scat as well as 'harmony' you can't fail to appreciate how B&W's FST midrange driver delivers the sound of her voice to perfection. Its low distortion will also allow you to admire the perfection of Tellini's articulation and pitching.

I am a huge fan of getting tweeters away from front baffles, indeed removing them from anything that could possibly affect the motion of their domes—and therefore their sound quality—but the sweet, pure and uncoloured treble sound I heard from the 702 Signatures wasn't just down to the facts that the tweeter is physically isolated and radiates its sound without any interference from the main front baffle; it was also down to that new carbon dome design.

A great way to test the ability of any tweeter is to play the title track of Norah



The best thing about these B&W 702 Signature loudspeakers is that everything you play through them will sound great!

Jones' 'Day Breaks' where the tweeter has to simultaneously handle cymbals, violin, pedal steel guitar and Hammond B-3 organ along with the harmonics of the soprano sax... it can get very busy and, if the tweeter is not up to the task, it will sound congested and mushy.

The B&W 702 Signature's carbon-dome tweeter handled all these sounds in its stride, whilst still maintaining that sense of 'air' around the highs that only the finest tweeters can manage. The resolving power allowed me to hear each sound in its own acoustic, with the tonalities of the individual instruments separated from each other. If you listen, make sure you pay attention to the sound of the harmonics of the higher notes of Jones' piano on the following track (*Peace*) as well as the higher harmonics of Wayne Shorter's soprano sax.

CONCLUSION

The best thing about these B&W 702 Signature loudspeakers is that everything you play through them will sound great, because they will make whatever music you play through them sound richer, more musical, and more exciting and, in a way, almost "larger-than-life", yet at the same time not, because they also deliver true-to-life sound... albeit without monitor-like accuracy.

As to whether you think it is worth paying the premium over the standard B&W 702 S2 to gain the improvement in sound quality, the exclusivity of the Datuk Gloss finish and the cachet of owning a 'Signature' version, that will be a matter between you and your wallet. 🎵

CONTACT DETAILS

Brand: B&W

Model: 702 Signature

Price: \$8,500 per pair

Warranty: Five Years

Distributor: Bowers & Wilkins Australia

Address: Suite 303, 754 Pacific Highway
Chatswood NSW 2067

T: (02) 9196 8990

E: info-au@bowerswilkins.com

W: www.bowers-wilkins.com



- Rich and musical
- Extended bass and highs
- Room-filling sound



- Lowish impedance

Readers interested in a full technical appraisal of the performance of the B&W 702 Signature Loudspeakers should continue on and read the LABORATORY REPORT published on the following pages. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

LABORATORY TEST REPORT

The overall in-room frequency response measured by *Newport Test Labs* for the B&W 702 Signature is shown in Graph 1. Acquired using pink noise as a test signal, this response is not smoothed, but it is averaged to compensate for the inherent random nature of pink noise and for microphone position relative to the midrange driver and tweeter in particular. However, although the speaker was floor-standing for this measurement, it was more than four metres from any other boundary, so there's none of the usual

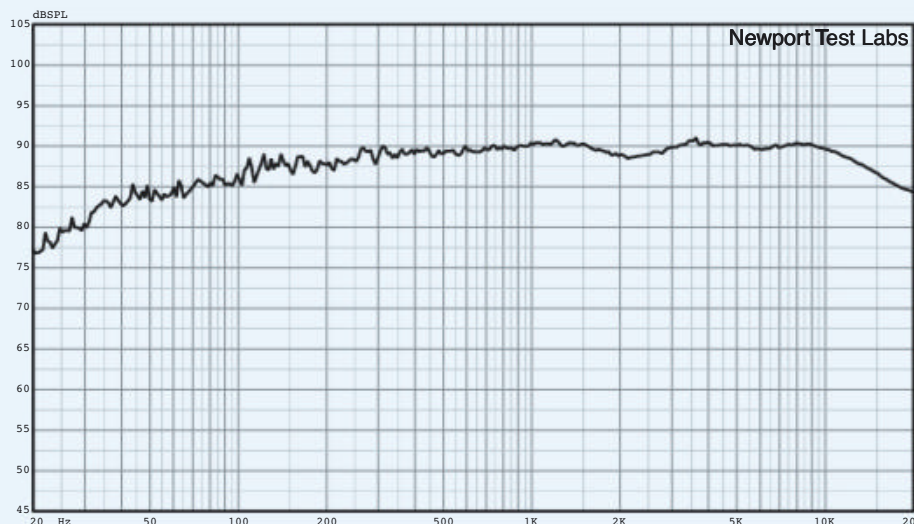
low-frequency boundary effects that would be found in a typical domestic living room.

You can see that the response between 100Hz and 13kHz is very flat and exceedingly linear, so that it can be contained in its entirety with a 2.6dB envelope. So normalised, the response would be 100Hz to 13kHz ± 1.3 dB. However, using the industry-standard deviation of ± 3 dB, the response as graphed is 44Hz to 20kHz ± 3 dB, though in this case the upper graphing limit is 20kHz (see next paragraph). This correlates almost perfectly with B&W's specification for this model of 46Hz–28kHz ± 3 dB.

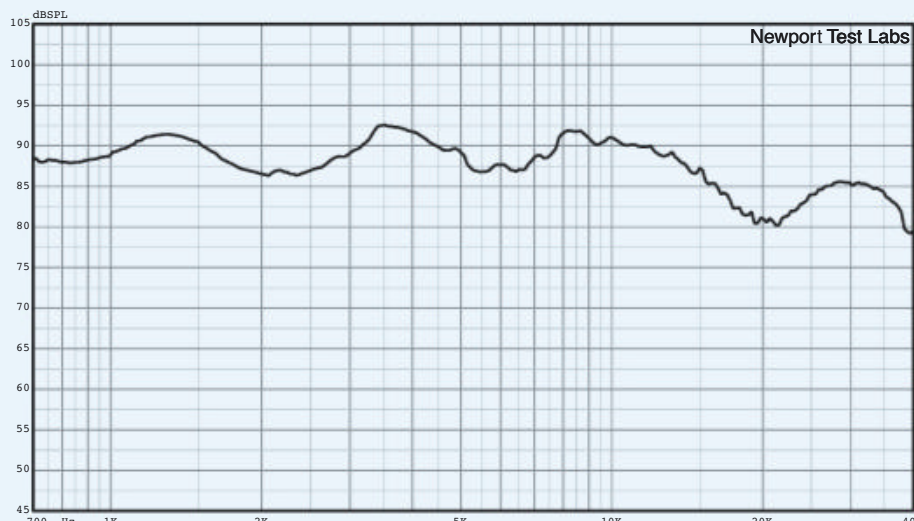
In order to more closely examine the high-frequency response of the B&W 702 Signature, particularly above 20kHz, Newport Test Labs switched to a gating measurement technique that simulates the response that would be obtained in an anechoic chamber and allows up to 1Hz frequency resolution. This response is shown in Graph 2.

The increased resolution shows the response between 700Hz and 10kHz is not quite so 'flat' as the pink noise measurement suggests, yet the peaks and dips shown in Graph 2 would not be audible to the human ear: it would 'hear' the response shown in Graph 1. Nonetheless the peaks and dips are still within ± 3 dB, therefore fall within specification.

Graph 1. Frequency response in-room. Pink noise unsmoothed, averaged, at 3 metres.



Graph 2. High-frequency response, gated at 1 metre, tweeter axis.



You can see that although Graph 1 shows the B&W 702 Signature's frequency response falling to -3dB at 20kHz , it actually rises above 20kHz to peak at around 30kHz before falling again to -3dB at 38kHz . This means that if you combine the results gained from the two tests, Newport Test Labs measured the response of the B&W 702 Signature as being significantly better than B&W's specification, with a measured result of 44Hz to $38\text{kHz} \pm 3\text{dB}$.

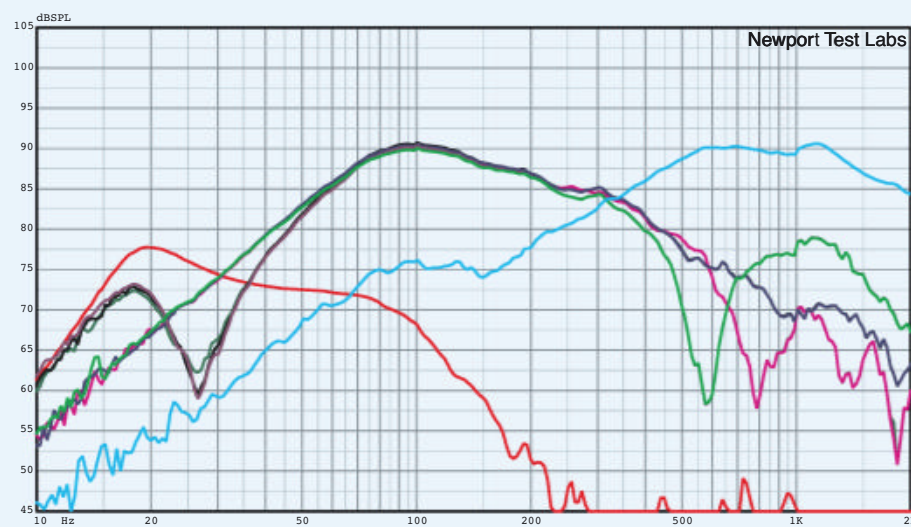
I was interested to see how the frequency response Newport Test Labs measured of the B&W 702 Signature compared with its measurement of the B&W 702 S2 and they're to all purposes identical. So I feel I can recycle the comment I made about the S2 model at that time, to wit: "Although its frequency response is not as flat as some B&W speakers Newport Test Labs has measured in the past, [its] frequency response is still admirably flat and linear and Newport Test Labs' measurement of it exceeded B&W's own specification by a good margin."

The low-frequency response of the B&W 702 Signature, as measured by Newport Test Labs using a near-field measurement technique to eliminate room effects, is shown in Graph 3. You can see that the bass drivers' output rolls off more steeply below about 80Hz to a minima at 26Hz when the cabinet's ports are not blocked (bass reflex) but less steeply when the port is blocked (infinite baffle). Interestingly, the peak output of the bass reflex port occurs right down at 20Hz , well below the frequency I'd have expected it to be, namely 26Hz , to coincide with drivers' minima. This would partly be to ensure better alignment in infinite baffle mode, but I'd guess was also the result of listening sessions, rather than computer sessions.

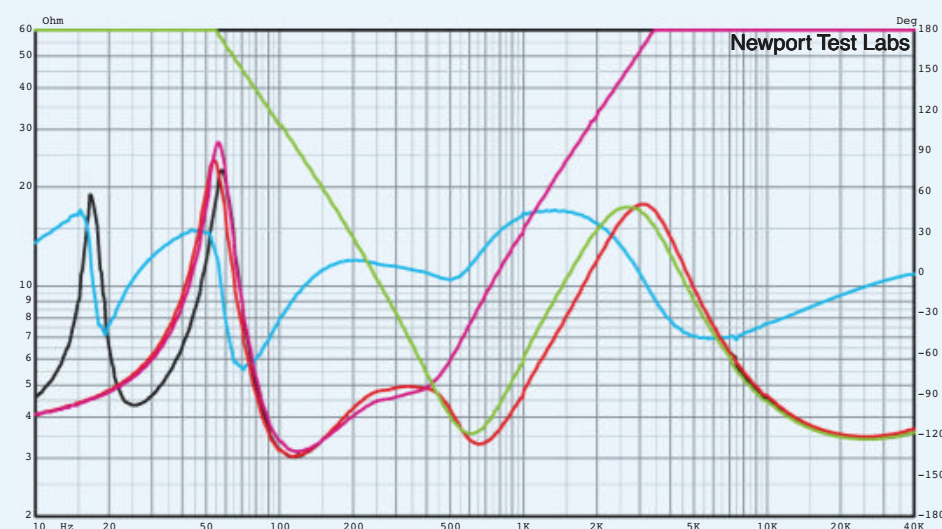
You can see that B&W's engineers seem to be allowing the midrange driver's response to roll off naturally, without any electronic filtering, with the roll-off commencing at 550Hz , but the measurement technique is not reliable at this frequency, so I won't place too much importance on this. Nonetheless, it is obvious that the midrange driver is flat up to around 1.3kHz , after which it's rolled off so the tweeter can take over.

Graph 4 shows the impedance of the B&W 702 Signature, and it's pretty low, with a minimum impedance of 3.1Ω at 120Hz , and staying at or below 5Ω from 80Hz right out to 1kHz . This would seem to be rather at odds with B&W's 'nominal' specification of 8Ω . I would personally have put the nominal impedance of this curve as $4\text{--}6\Omega$ and if pushed to hang a single figure on it, rather than a range, then 4Ω . It will certainly present a challenging load down at 80Hz , where you

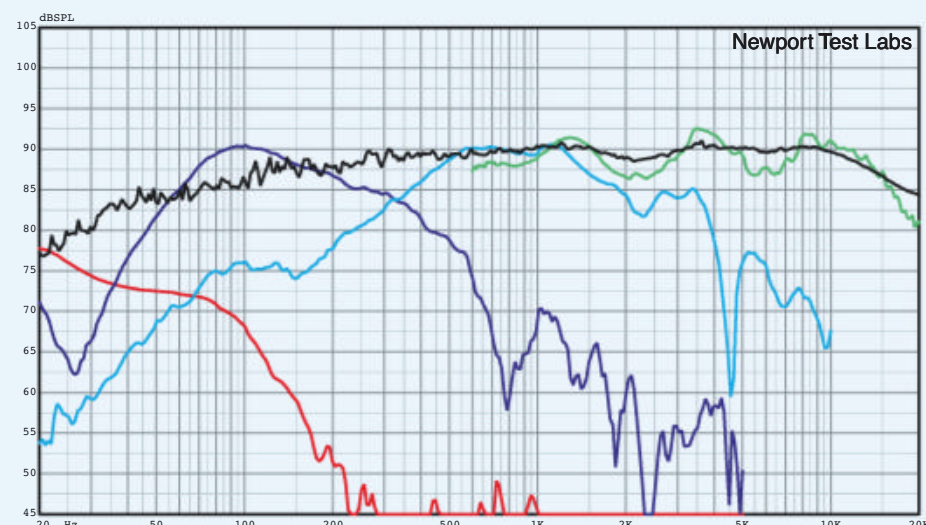
Graph 3. Nearfield LF responses for all three bass drivers (measured individually), midrange driver (blue) and bass reflex port (red).



Graph 4. Impedance and phase (blue) for bass reflex, sealed, and LP/HP sections.



Graph 5. Composite response graph (see copy).



can see a 4.7Ω impedance combined with a -68 degree phase angle (the phase angle is shown by the light blue trace).

Impedance graphs are also pretty good for identifying cabinet resonances, and I can't see anything on these traces that suggests there might be any, so good work on the cabinet. Allowing for inevitable sample and measurement variances, the impedance of the B&W 702 Signature is identical to that measured by Newport Test Labs for the B&W 702 S2.

As is mostly usual, Newport Test Labs has included a composite graph (Graph 5) that combines the various different measurements to give an overall picture of the B&W 702 Signature's performance. Newport Test Labs measured the sensitivity of the B&W 702 Signature as being 90dB SPL at 1m for 2.83V_{eq} under its standard test conditions, which

means this design has well above average sensitivity and also confirms B&W's own specification of 90dB SPL for this parameter. This is exactly the same result the lab measured for the B&W 702 S2 several years ago, about which I commented at the time: "The B&W 702 S2 also met its specification for sensitivity, which is a rare achievement for any loudspeaker."

Overall, Newport Test Labs' tests prove the B&W 702 Signature to be a very well-designed loudspeaker whose frequency response is extraordinarily linear and extended (in fact, surpassing its manufacturer's specifications) whose sensitivity is admirably high and whose distortion levels are sensibly low.

My only proviso would be to recommend using an amplifier that is completely comfortable driving 4Ω loads. **Steve Holding**

THE FUTURE OF MAGAZINES



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EISA AWARDS

2020-2021

Australian Hi-Fi Magazine is proud to be a member of the world-wide Expert Imaging and Sound Association (EISA) which each year gathers together expert reviewers from 56 technology magazines and websites specialising in hi-fi, home theatre, in-car electronics, mobile electronics, photo and video from 29 countries around the world to judge the best product of the year in each class and reward the manufacturer with a coveted EISA Award. This year, as always, Australian Hi-Fi Magazine voted on the awards given in all

the Hi-Fi categories in a complex process that involved nominations, short-lists, listening sessions, extensive laboratory testing and an exhaustive final voting session, all of which were complicated by the Covid-19 pandemic which meant that all collaboration had to be by electronic means. On the following pages you'll find all the products that won a 'Best Product' prize in the 2020-2021 EISA Award categories individually showcased, along with the final Judges' Citation for each product. A full list of 2020-2021 EISA Award winners in other categories can be found on page 88.



EISA BEST VALUE FLOORSTANDING
LOUDSPEAKER 2020-2021

Focal Chora 826

Drawing on its extensive expertise, from the manufacture of drive units to final assembly, Focal has developed an affordable floorstander able to sound great on demonstration and in the home. At the heart of the Chora 826 is a new 'Slatefibre' driver, for speed and bass extension, and the speaker has a sound that'll make you want to keep on listening, with both bass weight, treble clarity and sparkle. It's also easy to set up and position, will work with modest amplification, and sounds good in almost any room. However you look at it, this speaker offers a lot of performance for the money.



EISA LOUDSPEAKER 2020-2021

SVS Prime Pinnacle

Sitting at the top of the SVS Prime range, this classically-styled floorstanding model is of simple design and construction, yet delivers a clear, crowd-pleasing performance – not least due to its trio of 16.5cm bass drivers and rear-facing ports. The woofers are drawn from the company's Ultra Tower flagship model, and ensures music driven by bass and percussion is always thrilling, just as the midband and treble are crisp and sweet. In practice the Prime Pinnacles are svelte enough to slip into all but the smallest rooms, so if you crave a warm and a full-bodied sound, these towers will have your system glowing.

EISA AWARDS: 2020-2021



EISA BEST VALUE BOOKSHELF LOUDSPEAKER 2020-2021

Monitor Audio Bronze 100

Monitor Audio has built an enviable reputation for superb small speakers, winning the EISA Award for its bookshelf model last year and building on this performance for its latest, sixth-generation series in 2020. They're admirable performers across a wide range of musical styles, with a killer combination of bass weight and sweet treble from the brand's in-house-designed Ceramic-Coated Aluminium Magnesium (C-CAM) drivers, and a reflex port 'rifled' for smoother airflow. Their contemporary looks and easy-to-drive nature add to the appeal of these very sophisticated little speakers.



EISA SMART AMPLIFIER 2020-2021

NAD Masters M33

NAD won this category last year with its compact Masters M10 – not just an amplifier but also a complete 'just add speakers' streaming system. This year it has comprehensively evolved the concept with its Masters M33, combining state-of-the-art Class D amplifier technology from Purifi Audio with in-house streaming know-how. The result is just about all the amplifier anyone could need, combining massive power and beautiful clarity and finesse with broad connectivity, streaming and DIRAC room correction, all presented on a large front-panel touchscreen. It's definitely an amp for the third decade of the 2000s.



EISA WIRELESS LOUDSPEAKER 2020-2021

System Audio legend 5 silverback

Danish company System Audio took an entirely logical approach with the legend 5 silverback speakers: they're active, with dedicated amplification for each drive unit, and become wireless when you add the full function Stereo Hub or third-party transmitter. Operating using WISA technology to avoid interference and carrying sound up to 192kHz/24-bit, the system can connect to a wide range of sources, from a digital connection from a computer to TV sound. It also has multiple streaming options, from DLNA/UPnP to GoogleCast, AirPlay and Bluetooth. It's a beautifully elegant, and fine-sounding, wire-free music solution.



EISA AMPLIFIER 2020-2021

Arcam SA30

Arcam joins the 'all-in-one' streaming amplifier trend with its flagship integrated. Within the elegant but purposeful casework the SA30 combines the company's Class G amplification, for both finesse and power, with a raft of digital technologies. It will stream, and you can plug in everything from your TV to a turntable, while DIRAC room correction is offered to optimise the sound, using a computer and the supplied microphone. It's not just a technical tour de force, it's also a storming amplifier: Arcam may be streamlining its product range, but hasn't lost its focus.



EISA HIGH-END PRE/POWER AMPLIFIER 2020-2021

Michi P5/S5

Rotel's high-end sub-brand is back, some three decades after its first appearance, and the Michi P5 control amplifier and S5 power amp bring a welcome breath of weight, scale and entirely natural music-making to the high-end arena. With cool black looks and stunning build quality, the duo displays a wide-ranging ability across a broad spectrum of musical genres. Michi is all about the emotion and spirit of the music, delivered on an entirely human scale. The amps are flexible too, the preamp offering a wide range of digital and analogue inputs, and the quality is assured by painstaking hand assembly, from the basic components upwards. It's a stunning return.



EISA BEST VALUE
TURNTABLE 2020-2021

Pro-Ject T1

Pro-Ject has been making turntables for almost three decades, starting with the original Pro-Ject 1 and, along with the later Debut models, it more or less reinvented the budget turntable market. The T1 is the latest version of that design – a budget audiophile record-playing package with excellent sound for the money. The company also offers versions including a built-in phono stage and Bluetooth transmitter. With its machined plinth, high precision bearing, glass platter and newly-designed one-piece aluminium tonearm, it offers a wonderfully weighty and detailed sound – and even the Ortofon OM 5E MM cartridge is pre-installed, making it completely plug-and-play.



EISA HIGH-END INTEGRATED AMPLIFIER 2020-2021

Musical Fidelity M8xi

Musical Fidelity has always designed fabulous big amplifiers, following its belief that you can never have too much power. Now under Austrian ownership, and sharing a stable with Pro-Ject Audio Systems, it's delivered the M8xi, offering a massive 550W – which it comfortably exceeds from its dual-mono construction. Inputs extend to both digital and analogue audio options, but this isn't just a big prize-fighter of an amp: it's also fast and nimble, delivering music with both speed and accuracy, not to mention masses of detail. If you want your amp all in one box, and superlative performance, this is the one to buy.



EISA TURNTABLE 2020-2021

Thorens TD 1601

The Thorens name has been associated with turntables for almost 120 years, and while the TD 1601 has a look reflecting classic turntables of the past, under the skin it's all new. It retains the three-point sprung suspension of the TD150 of the 1960s, but brings the company's latest decoupled synchronous motor for speed accuracy, and an electric arm-lift and end-of-side stop for convenient playback. A fully manual version of the deck, the TD 1600, is also offered. All this plus a balanced audio output alongside the usual connections, for even lower noise, makes for a turntable that combines heritage with bang-up-to-date sound quality.

EISA AWARDS: 2020-2021



EISA BEST VALUE DAC 2020-2021

iFi Audio ZEN DAC

The appeal of the iFi Audio ZEN DAC is simple: with eye-catching looks, flexibility, solid engineering within and a remarkably grown-up sound, this entry-level DAC is a conspicuous hi-fi bargain. It proves that desktop audio doesn't have to be the poor relation of 'proper' hi-fi, and is a real giant-killer, whether as a DAC/headphone amp or a simple digital preamp. Buy this to boost the sound of your computer and you may well find you're listening to it most of the time. Best of all, it does all this at a very affordable price – this is amazing value for money.



EISA DIGITAL SOURCE 2020-2021

Volumio Primo

This unassuming-looking little black box is a highly affordable solution to all your digital streaming needs, for not only will it play music stored on home network devices, it also allows you to access a huge range of online music services. With simple operation via web browsers or apps, and an on-screen GUI delivered over HDMI, the Primo includes digital outputs to feed any DAC while also playing music via USB stores. Compatible with music formats all the way up to DSD, via Ethernet or Wi-Fi, this small wonder is the perfect way to start your streaming adventure.



EISA AUDIO ACCESSORY 2020-2021

Pro-Ject VC-E

Having spearheaded the vinyl revival with its excellent – and very affordable – turntables, Pro-Ject has now turned its attention to looking after your precious LP collection with its compact VC-E record cleaning machine. Not only is it small, it's also very affordable and fast, spinning the disc at 30rpm to enable it to be cleaned in just a few rotations. In fact, Pro-Ject says one spin in each direction should be enough, while the clamp keeps the record label dry and the suction arm cleans the surface effectively. The result? Less noise, less stylus and vinyl wear, and even better sound from your favourite LPs.



EISA PHONO PREAMP 2020-2021

Primare R15

Housed in a compact case just 35cm wide, Primare's R15 phono amplifier offers two levels of gain for both moving-coil and magnet cartridges, with further adjustments of resistance and capacitance to optimise loading for the cartridge in use. Built with the same care the company brings to its main amplifiers, its low-noise design is informed by the flagship Primare R35 model just as its sound is the familiar 'Primare' mix of weight and substance allied to detail and resolution. It's the ideal interface between a high-quality record player and the line input of your amplifier.



EISA MOBILE
AUDIO PLAYER 2020-2021

Fiio M11 Pro

This portable music player packs best-in-class functionality into a high-quality chassis with bezel-free touchscreen display. Format support and listening options are unrivalled – the M11 Pro can be used as both a Bluetooth receiver and transmitter, as a USB DAC and USB audio player (with native DSD output), or playing direct from its onboard storage (expandable to 2TB) or streaming apps. A Samsung Exynos hexa-core SoC ensures seamless music management and a responsive user experience. Two AK4497EQ DACs with Velvet Sound architecture, meanwhile, support hi-res audio to 384kHz/32-bit, plus MQA decoding. The player's trio of headphone outputs benefit from powerful, low-distortion amplification. And that all-important sound quality? In a word: exceptional.



EISA PORTABLE DAC/HEADPHONE AMPLIFIER 2020-2021

AudioQuest DragonFly Cobalt

The latest addition to AudioQuest's DragonFly range is its best yet. The Cobalt model not only converts a huge range of audio formats from your computer, it also features a high-quality headphone amplifier, as well as being able to deliver great sound to a hi-fi system – and all in a package no bigger than a USB thumb-drive. It's an ideal portable audio companion: simply pop it into a USB port on your computer or 'smart device' which will both power it and supply the music. Then just plug in your favourite headphones, and you have all you need for superb music wherever you happen to be.

COMBINED WITH THE MOBILE EXPERT GROUP



EISA HEADPHONES 2020-2021

DALI IO-6

Many loudspeaker companies have diversified into headphones, but none has done so as spectacularly as Danish manufacturer DALI. Not only is the IO-6 a wireless design, it also incorporates excellent active noise-cancelling, adding to its closed-back design three modes of cancellation. As if that wasn't enough, it then adds best-in-class battery life to keep you listening longer – up to 30 hours between charges, in fact. Add to that a superbly powerful yet open and informative sound, and you have nothing less than a sensational début.





EISA AWARDS 2020-21 FULL LISTING

HI-FI EXPERT GROUP

EISA LOUDSPEAKER 2020-2021
SVS PRIME PINNACLE

EISA WIRELESS LOUDSPEAKER 2020-2021
SYSTEM AUDIO LEGEND 5 SILVERBACK

EISA BEST VALUE BOOKSHELF LOUDSPEAKER 2020-2021
MONITOR AUDIO BRONZE 100

EISA BEST VALUE FLOORSTANDING LOUDSPEAKER 2020-2021
FOCAL CHORA 826

EISA AMPLIFIER 2020-2021
ARCAM SA30

EISA SMART AMPLIFIER 2020-2021
NAD MASTERS M33

EISA HIGH-END INTEGRATED AMPLIFIER 2020-2021
MUSICAL FIDELITY M8XI

EISA HIGH-END PRE/POWER AMPLIFIER 2020-2021
MICHI P5/S5

EISA TURNTABLE 2020-2021
THORENS TD 1601

EISA BEST VALUE TURNTABLE 2020-2021
PRO-JECT T1

EISA DIGITAL SOURCE 2020-2021
VOLUMIO PRIMO

EISA BEST VALUE DAC 2020-2021
IFI AUDIO ZEN DAC

EISA PHONO PREAMP 2020-2021
PRIMARE R15

EISA AUDIO ACCESSORY 2020-2021
PRO-JECT VC-E

COMBINED WITH MOBILE EXPERT GROUP

EISA HEADPHONES 2020-2021
DALI IO-6

EISA MOBILE AUDIO PLAYER 2020-2021
FIIO M11 PRO

EISA PORTABLE DAC/HEADPHONE AMPLIFIER 2020-2021
AUDIOQUEST DRAGONFLY COBALT

HOME THEATRE AUDIO EXPERT GROUP

EISA HOME THEATRE SPEAKER SYSTEM 2020-2021
ARENDAL SOUND 1961 SERIES

EISA BEST BUY HOME THEATRE SPEAKER SYSTEM 2020-2021
TRIANGLE BOREA SERIES

EISA SMART SOUNDBAR 2020-2021
HARMAN KARDON CITATION MULTIBEAM 700

EISA PREMIUM SOUNDBAR 2020-2021
BANG & OLUFSEN BEOSOUND STAGE

EISA HOME THEATRE RECEIVER 2020-2021
DENON AVC-X4700H

EISA HOME THEATRE SUBWOOFER 2020-2021
SVS SB-2000 PRO

EISA HOME THEATRE HIGH-END 2020-2021
TRINNOV ALTITUDE PLATFORM

EISA HOME THEATRE HEADPHONE 2020-2021
JVC EXOFIELD XP-EXT1

EISA HOME THEATRE AMPLIFIER 2020-2021
EMOTIVA XPA GEN3

EISA SOUNDBAR 2020-2021
LG SN8YG
LG DSN8YG (GERMANY, AUSTRIA, SWITZERLAND AND THE NETHERLANDS)
LG SN8
LG SN8Y

EISA BEST BUY SOUNDBAR 2020-2021
TCL TS9030 RAY-DANZ

COMBINED WITH HOME THEATRE VIDEO&DISPLAY EXPERT GROUP

EISA HOME THEATRE MEDIA PLAYER 2020-2021
ZAPPITI PRO 4K HDR

HOME THEATRE VIDEO&DISPLAY EXPERT GROUP

EISA 8K TV 2020-2021
LG 75NANO99
LG 75NANO999NA
LG 75NANO996NA
LG 75NANO99UNA

EISA BEST PREMIUM OLED TV 2020-2021
LG OLED65GX
LG OLED65GX6LA
LG OLED65GX9LA
LG OLED65GXPUA

EISA LARGE SCREEN TV 2020-2021
SAMSUNG QE75Q950TS

EISA BEST BUY TV 2020-2021
TCL 65C815
TCL 65C815K (UK)

EISA HOME THEATRE TV 2020-2021
PHILIPS 65OLED935

EISA BEST BUY OLED TV 2020-2021
PHILIPS 55OLED805

EISA PROJECTOR 2020-2021
OPTOMA CINEMAX UHZ65UST
OPTOMA P1 (AUSTRALIA)
OPTOMA CINEMAX P1 (NORTH AMERICA)

COMBINED WITH HOME THEATRE AUDIO EXPERT GROUP

EISA HOME THEATRE MEDIA PLAYER 2020-2021
ZAPPITI PRO 4K HDR

EISA AWARDS: 2020-2021

PHOTOGRAPHY EXPERT GROUP

EISA CAMERA OF THE YEAR 2020-2021
FUJIFILM X-T4

EISA BEST BUY CAMERA 2020-2021
NIKON Z 50

EISA APS-C CAMERA 2020-2021
CANON EOS 90D

EISA FULL-FRAME CAMERA 2020-2021
NIKON D780

EISA ADVANCED FULL-FRAME CAMERA 2020-2021
SONY ALPHA 7R IV

EISA PROFESSIONAL CAMERA 2020-2021
CANON EOS-1D X MARK III

EISA PHOTO/VIDEO CAMERA 2020-2021
PANASONIC LUMIX DC-S1H

EISA COMPACT CAMERA 2020-2021
FUJIFILM X100 V

EISA VLOGGING CAMERA 2020-2021
SONY ZV-1

EISA CAMERA INNOVATION 2020-2021
CANON EOS R5

EISA LENS OF THE YEAR 2020-2021
CANON RF 70-200MM F2.8L IS USM

EISA WIDEANGLE ZOOM LENS 2020-2021
SIGMA 14-24MM F2.8 DG DN ART

EISA STANDARD ZOOM LENS 2020-2021
CANON RF 24-70MM F2.8L IS USM

EISA TELEPHOTO ZOOM LENS 2020-2021
TAMRON 70-180MM F2.8 DI III VXD

EISA TRAVEL ZOOM LENS 2020-2021
TAMRON 28-200MM F/2.8-5.6 DI III RXD

EISA SUPER TELEPHOTO ZOOM LENS 2020-2021
SONY FE 200-600MM F5.6-6.3 G OSS

EISA PROFESSIONAL TELEPHOTO ZOOM LENS 2020-2021
NIKON AF-S NIKKOR 120-300MM F2.8E FL ED SR VR

EISA WIDEANGLE LENS 2020-2021
SONY FE 20MM F1.8 G

EISA PORTRAIT LENS 2020-2021
NIKON NIKKOR Z 85MM F1.8 S

EISA LENS INNOVATION 2020-2021
CANON RF 600MM & 800MM F11 IS STM

EISA CAMERA DRONE 2020-2021
DJI MAVIC AIR 2

EISA PHOTO SOFTWARE 2020-2021
NIK COLLECTION 3 BY DXO

EISA MONITOR 2020-2021
EIZO COLOREDGE CS2740

MOBILE DEVICES EXPERT GROUP

EISA BEST SMARTPHONE 2020-2021
ONEPLUS 8 PRO

EISA ADVANCED SMARTPHONE 2020-2021
OPPO FIND X2 PRO

EISA FOLDABLE SMARTPHONE 2020-2021
SAMSUNG GALAXY Z FLIP

EISA MULTIMEDIA SMARTPHONE 2020-2021
SONY XPERIA 1 MARK II

EISA SMARTPHONE CAMERA 2020-2021
HUAWEI P40 PRO

EISA IN-EAR HEADPHONES 2020-2021
SENNHEISER MOMENTUM TRUE WIRELESS 2

EISA ON-EAR HEADPHONES 2020-2021
BOWERS & WILKINS PX5

EISA MOBILE SPEAKER 2020-2021
LG XBOOM GO PL7
LG XBOOM GO PL7W

EISA BEST SMARTWATCH 2020-2021
HUAWEI WATCH GT 2

COMBINED WITH HI-FI EXPERT GROUP

EISA HEADPHONES 2020-2021
DALI IO-6

EISA MOBILE AUDIO PLAYER 2020-2021
FIIO M11 PRO

EISA PORTABLE DAC/HEADPHONE AMPLIFIER 2020-2021
AUDIOQUEST DRAGONFLY COBALT

IN-CAR ELECTRONICS EXPERT GROUP

EISA IN-CAR HEAD UNIT 2020-2021
KENWOOD DMX9720XDS

EISA IN-CAR SOUND PROCESSOR 2020-2021
HELIX DSP ULTRA

EISA IN-CAR BEST VALUE DSP 2020-2021
GROUND ZERO GZDSP 4-8XII

EISA IN-CAR AMPLIFIER 2020-2021
MOSCONI GLADEN ATOMO 2

EISA IN-CAR DSP AMPLIFIER 2020-2021
ETON STEALTH 7.1 DSP

EISA IN-CAR SPEAKER SYSTEM 2020-2021
ESB 8.6K3U LE

EISA IN-CAR SUBWOOFER 2020-2021
HIFONICS ZRX6D2

EISA IN-CAR HIGH END COMPONENT 2020-2021
AUDISON BIT ONE HD VIRTUOSO

EISA IN-CAR DASHCAM 2020-2021
KENWOOD DRV-A501W

EISA CAMPER VAN HEAD UNIT 2020-2021
ZENEC Z-E3766



MAGICO ASUB

POWERED DSP SUBWOOFER

I don't think Magico's latest top-of-the-range M9 speaker is going to sell very well here in Australia, for the very simple reason that a pair of M9s will cost you around one and a quarter million dollars, depending on the prevailing exchange rate with the US, where Magico loudspeakers are made.

That's the bad news.

The good news is that Magico's ASub subwoofer, while not exactly inexpensive, is going to cost you a good deal less than one hundredth of that figure, yet it has much of the same DNA, which includes the fact that, like all Magico speakers, its enclosure is made from 10mm-thick sheets of solid 6061 T6 aluminium that's internally braced and damped.

But I have even better news.

Magico's ASub is not only a phenomenally good-sounding, high-performance subwoofer, which has by far and away the best and most flexible room tuning and speaker matching circuitry I have ever seen, it's also the most fun to use.

Fun? Yep, fun! And lots of it: I have never, ever, had quite so much fun setting up, play-

ing with, tuning and (eventually!) listening to a subwoofer as I did with the Magico ASub.

THE EQUIPMENT

If you have ever read any interviews with Magico's founder, Alon Wolf, you won't have to ask whether his ASub is a bass-reflex or a sealed design, because you'll already know that he's railed against bass-reflex enclosures for many years, intimating that (and I'm paraphrasing here, based on his spiels at CES show demos) that you "get more boom than bass extension". But if you want an on-the-record quote, Wolf once told Stereophile's Jason Victor Serinus concerning bass extension that: "Many audiophiles, including reviewers, are fooled into thinking that most ported speakers extend far lower than they do."

As for the material the ASub's cabinet is made from, it is, as I suggested in the introduction, 6061 T6 aluminium. Magico makes much of its use of 6061 T6 aluminium in its advertising and promotional material, but it would actually be surprising if it didn't use this type of aluminium, because according to the people who actually make the stuff,

it's the most versatile of all the heat-treatable aluminium alloys, being strong, resistant to corrosion, easy to weld, easy to extrude and widely available in a huge variety of sizes and forms. Indeed it's the second-most popular grade of aluminium alloy.

First developed in 1936, 6061 aluminium is a precipitation-hardened alloy that uses magnesium and silicon as its major alloying elements. The 'T6' designation means that it's 6061 alloy that has been tempered, solutionized and artificially aged, whereas the standard 'O' type is not: It's only annealed. (There is another grade, called 6061-T651, which is not only tempered, solutionized and artificially aged but also stress-relieved.)

6061 T6 aluminium's most common use is in the manufacture of bicycle frames, but possibly its most unusual use was when NASA used it to create the plaques carried inside the Pioneer 10 and Pioneer 11 space-craft that have pictorial messages in the event that they're ever intercepted by aliens. These plaques depict the nude figures of a human male and female along with several symbols that are designed to provide information about the origin of the spacecraft (i.e. where we are!) These nudes were the first human-made human images ever to reach interstellar space.

Don't be fooled into thinking that because it is made from aluminium the Magico ASub does not weigh much. Despite its relatively compact dimensions (it measures just 458×369×447mm) it weighs 49kg which, as the courier who delivered my review sample told me grumpily, "is heavier than my wife."

But forgetting the weight of the courier's wife and continuing on with my aluminium theme, or should that be Magico's aluminium theme (though Magico of course uses the American spelling: aluminum), you most likely won't be surprised to learn that Magico makes the cone of the ASub's driver out of... yep, you guessed it, aluminium.

But although the cone is made from aluminium, the very large (120mm diameter) dust-cap at its centre is, I think, made from woven carbon-fibre. Magico claims that many of its cone drivers are so strong that you can drive a motor vehicle over them without them collapsing, but I would not suggest you try this at home.

Magico rates the diameter of the ASub's cone as "10 inches", which translates to 254mm (at least it does if you're weren't involved in the design of the Columbia space shuttle), but in fact this dimension is actually the distance between the mounting holes across one of the driver's diameters rather than the overall diameter, or even the Thiele/Small (T/S) diameter.

WHAT IS AVAXHOME?

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Confusing though it might be, almost all the world's loudspeaker driver manufacturers use this same system to specify driver diameter. It would make more sense to use the T/S diameter, which is the distance across the driver from half-way across the roll surround on one side of the driver to half-way across the roll surround on the opposite side.

A phenomenally good-sounding, high-performance subwoofer with the best control and calibration circuitry I have ever seen.

It would make more sense because it's this dimension that gives the effective cone area of the driver, technically known as S_d , and it's the S_d that informs how much 'grip' the driver has on the air in front of it. It's also the dimension that loudspeaker designers plug into their computer programs when they're designing a cabinet to house a specific driver: They certainly don't plug in the distance between the mounting holes!

As for that roll surround, it's a standard inverse profile and appears to be made of some type of rubber compound, so it should be very long-lived. (Driver roll surrounds that are made of foam will inevitably fail at some point in the not-too-distant future.)

If you purchase a standard Magico ASub, you'll be looking at that driver quite a bit, because the ASub doesn't come with a front grille. And if you'd prefer a grille, you'll need to dig out \$695, because that's the RRP.

The data sheet for the Magico ASub rates its internal amplifier with an output of '500-watts' but doesn't go into any detail about the amplifier's design. However, seeing that it's powering a subwoofer it doesn't need much in the way of bandwidth and out-of-band noise will not be an issue, so it really doesn't matter what 'Class' of amplifier it might be—Class-A, Class-B, Class-A/B... even Class-H—but given the stated power, the lack of any obvious heat-sinking and the fact that the plate ran so cool during all the time I was reviewing the ASub, I'm putting my money on it using a Class-D topology of some variety.

There are two ways of getting audio signals into the Magico ASub, both involving wire. You can input a balanced signal, via a single XLR female socket, or an unbalanced signal, in which case you have the choice of two gold-plated RCA sockets, or both.

Why only a single XLR input but dual RCA inputs? Magico's logic is that all stereo systems and home theatre receivers have RCA unbalanced outputs and use short cable runs, so unbalanced connections are all that's required. It anticipates that the XLR balanced input will be used only when customers are running a very long cable to the ASub, as

would be the case in very large home theatre systems and professional sound systems. "On more expensive subs we have only two XLR inputs since we almost always have XLR outputs on pre/processors in the matching price-point," said Yair Tammam, CTO at Magico. "We didn't

see the need for two input XLRs on this product."

You may be able to tell from the photograph below on this page that there actually are two XLR sockets on the rear panel of the ASub. The second one (a male XLR) is actually an output or, as the label on the rear panel more accurately identifies it, a 'Through' socket. This means that whatever signal you input to the 'Analogue In' XLR input will appear unaltered at the 'Through' XLR output. In other words, it won't be filtered or modified in any way. This is to allow you to easily and conveniently 'daisy-chain' multiple subwoofers. (Magico strongly recommends using two subwoofers, rather than just the one, presumably to more effectively deal with room modes).

I was intrigued about the orientation of the two XLR fittings.

The female fitting is oriented so the earth pin is the lowest of the three pins, while the male fitting is oriented so the earth pin is the highest of the three. This seems a bit strange, and a tad illogical, but means that if you do use both fittings the XLR plugs will look a bit odd, as one will

appear to be 'upside down'.

Alongside the RCA inputs is a vertical array of four LEDs, plus a small press-button. The topmost (red) LED is labelled 'Pro', while the lower three green LEDs are labelled Pre1, Pre2 and Pre3. The press-button allows you to choose which of these three Preset crossover filter set-ups you'd like to use.

So far, I have not mentioned the elephant in the room here, which is that there are no actual user controls on Magico's ASub. No volume control, no low-pass filter control, no phase control... no nothing. This is because you have to use a computer to control it, for which Magico provides a ready-made software package that it supplies on a USB stick.

That said, you can actually get up and running with the ASub straight away without having to connect a computer at all, because the three presets all come factory pre-programmed with an 80Hz, 24/dB/octave low pass filter. However to do this you would have to be able to control volume level externally, because there's otherwise no way to do it without connecting a computer. Computer connection is via a USB Type A mini-jack, a type that seems a bit outdated these days. I would have thought for such a premium product, USB-C would have been a better choice. I was also perplexed as to why Magico puts exactly the same filter on all three presets. I really think that two should each have a completely different filter, and the third





Top-most screen shots only hint at the complexity of what it's possible to do using the Magico ASub's DSP. The EQ curve immediately above is the one that gave the frequency response in Graph 4.

should have no filter at all.

Preset 1 should come with a 50Hz low-pass filter (which would be perfect for the Magico A3). Preset 2 should come with a 60Hz low-pass filter (which would be perfect for the Magico A1) and Preset 3 should not be filtered at all, to cater for those who will use their AV receiver's crossover software to pre-filter any signals sent to the ASub.

Pre-programming the filters in this way would be very, very easy for Magico to do, and Australian Hi-Fi editor Greg Borrowman says he has discussed it with the company already, so don't be surprised if it has been done by the time you read this. But if it hasn't, never fear, because it's super-easy to do yourself... at least it is once you know what you're doing.

COMPUTER CONTROL

The software Magico provides on its USB stick is a customised version of software originally developed by famous Netherland-based company Hypex to control various of its Class-D amplifiers, one of which is obviously what powers the Magico ASub. I am not giving away any company secrets here, because you will be informed of Hypex's involvement as an integral part of the software installation process. When your Windows user account controller asks if it's OK to install the ASub software on your computer, it not only shows the program name as "Magico Sub Control Installer" but also the name of the Verified Publisher as "Hypex Electronics BV."

The installation process is rather arcane, so unless you get your hi-fi dealer to do it for you (which I'd recommend) you will

certainly have to use Magico's "Quick Set-Up Guide" to do it. This actually wasn't on my USB stick but apparently will be by the time you are reading this review. The version I received after asking for it appeared to me as if it was an early draft rather than a finished work, because the descriptions in it didn't really reflect what I was seeing on-screen during the installation and filter set-up processes and some essential steps were incompletely described. After a few emails I was then sent a video that walks the viewer step-by-step through the entire installation process, after which I had no trouble finishing the install... though adding a voice-over to the otherwise silent video would have been a nice touch. I understand this video also will in future be included on the USB stick that comes with the ASub. Again, if it's not there, ask your dealer for a copy.

SETTING THE LOW PASS FILTER FREQUENCY

To ensure correct crossover from the ASub to your main speakers, you need to set the ASub's low-pass frequency and phase, both of which are usually achieved via rotary controls. On the ASub, the easiest way to do this is load a config.xml file from the Resources Folder on the USB stick.

This will load a preset filter, the turnover point of which will be indicated by a blue dot. Clicking on this will turn the dot green and a small box with "BQ1 on/off" and "BQ2 on/off" will come up. Click on BQ1 and a dialogue at the left of the screen will open to show you the frequency at which the filter is currently set. You then just then type in the frequency you want into the "Cut-Off Frequency" box (say, 90Hz) and press "Return". The blue dot will then move to 90Hz and turn green. You will then see a second blue dot appear back at the 80Hz vertical. You then need to click on this second blue dot and repeat the process just outlined. This is because what you're actually doing is constructing and joining two separate 90Hz 12/dB octave filters to create a single 90Hz 24dB/octave filter. Once you've done this, you click anywhere on the page and you've made your filter.

However, in a trap for new players, you have neither saved your filter, nor actually loaded it into the subwoofer.

Load or save? I'd recommend doing both. Save it using an obvious filename (e.g. "90Hz LP filter 24dB per octave"), then just click the "Load filter to DSP" button and you're done—the 90Hz filter will be loaded into Preset 1. You could then repeat this entire process, but set the low-pass frequency to 100Hz low-pass, save it as such, but load it into Preset 2. Do this and then whenever you press Preset 1 on the rear panel of the sub you'll load your 90Hz filter, and whenever you press Preset 2, you'll load your 100Hz filter. After this you'll have no more need for the computer (unless you want to change volume). It's really that easy.

More advanced users might want to add extra filters (such as a high-pass filter in order to remove frequencies below, say, 30Hz, so you could use the ASub late at night and not upset the neighbours. (Settings such as this are sometimes called 'Apartment Mode', or 'Night Mode').

You can also adjust filter slope, Q, phase, in fact pretty much any parameter of the filter you like, and everything you do will be shown graphically on your computer screen. Like I said, it's not only flexible, it's fun!

But if you're not a fun kind of guy, and you like your filters to come ready-rolled, it has been suggested to Magico that it should think about creating and loading a complete

set of ready-made filters with different turn-over points into the Resources folder on the USB stick to make it even easier to do. But it would not be nearly as much fun.

USING THE PARAMETRIC EQUALISER

In order that you can take advantage of the extremely powerful DSP processing inside the Magico ASub to compensate for any deficiencies in your room's acoustics, the ASub has a nine-band parametric equaliser built in, which you access by pressing the "EQ" button on the Magico Sub Control Screen (as shown at left).

Initially the nine equaliser bands are set at 20Hz, 40Hz, 60Hz, 80Hz, 100Hz, 120Hz, 140Hz, 160Hz and 180Hz, but you can change these frequencies to whatever frequency you like to suit the correction curve you want to use. You can do this by 'click and dragging' to the frequency you want, or by clicking followed by keyboard entry.

If, for example, you find your room has excess energy at 85Hz so you want to reduce the volume level the ASub delivers at this frequency, you'd change the 80Hz filter to 85Hz, then enter the reduction in level you wanted (−6.5dB, for example), then set 'Q' of the filter to adjust how much the frequencies either side of 85Hz will be affected (large numbers for a steep-sloped filter, low numbers for a shallow-sloped filter). The shape of the filter you've designed will then

be shown on the computer screen, so you will easily be able to see which frequencies the filter affects, and by how much each one is affected. The screenshot of the filter page shown at the left shows a notch filter that has been created to deliver a 12.5dB notch at 100Hz. The effect this filter had on the Magico ASub's response is shown in Graph 4 in the Test Results section of this review.

Of course in order to adjust the parametric equaliser, you need to know which frequencies you need to attenuate (reduce) and by how much. This means you will need to measure the subwoofer in your own room. (And remember that you should always be using the EQ to attenuate, not to boost!)

Magico suggests you should do this by purchasing a microphone and installing in your computer a free loudspeaker measurement program called Room EQ Wizard, (the name of this program is usually abbreviated to just 'REW'). If your computer does not have a suitable soundcard, you will need to purchase a suitable external USB audio interface as well. This REW software not only allows you to measure the ASub's in-room frequency response, but also to create a filter that will correct for it which can then be loaded directly into the Magico ASub.

This all sounds like a great idea—and it is a great idea!—but my personal opinion is that if you are not already familiar with the theory and practise of loudspeaker measurement it would be necessary to put some time and effort into becoming conversant with REW before you would be able to make useful measurements in order to create suitably effective equalisation curves for the ASub.

However, if you watch the Magico video I mentioned earlier, it will take you step-by-step through the entire measurement and curve-creation processes, so you'll be able to judge for yourself how difficult you might find it to do simply by watching the video. And if it turns out that you are at all uncertain about your ability to do it, you could then instead ask your hi-fi dealer to do all the measurements and equalisation for you.

But I'd also suggest you could use another method entirely, which is to do it manually, using a real-time analyser app on your mobile phone—either Music & Audio's AudioTool (Android) or Studio Six Digital's AudioTools (iOS)—and a pink noise source (www.audiocheck.net/testtones_pinknoise.php) which will allow you to adjust the filters and equalisation in (almost) real time. Admittedly this method isn't as slick or accurate as the one Magico recommends, but it's cheap, accurate enough and possibly a bit easier to do.



LISTENING SESSIONS

I have to say that initially I was a bit put out that the ASub was not equipped with a physical volume control but once I became more familiar with the software, and had everything up and running, I realised I had no need to use the control at all, either when the ASub was installed in my two-channel audio system or when it was installed in my multi-channel home theatre system. Once you have calibrated it, there is no further need to make any adjustments. And if you do prefer to use slightly different settings for movies than you do for music, you could simply make those settings in advance, then program them into the presets. But if you didn't want to fiddle with the presets, you can adjust volume by connecting a computer to the ASub and using the main screen to adjust it. If the computer you connect is already switched on and loaded with Magico's software (which it would have to be, of course!), you could use it to adjust volume in less than 60 seconds. Incidentally, there are no restrictions on the number of times you can install the software, so you could leave an older computer permanently connected to the ASub if you wanted instant access. But like I said, I can't see why you would.

However, if you follow Magico's recommendation, which is to use your AV receiver's LFE circuitry to adjust the volume of the signal going to the ASub (as well as take care of filtering, etc), you can ignore my previous two paragraphs entirely, because you will have total control of the Magico via your AV receiver and its remote control.

I always like to start my subwoofer evaluations with a Bach organ work, so because it hadn't had an outing for a while, I dropped the stylus on his spritely *Fugue in G Major* (BWV 577). OK, so it doesn't quite have the bass of his famous *Toccat and Fugue in D Minor* or even his gorgeous *Passacaglia in C Minor*, but it's a lovely work, and there's a goodly assortment of 16-foot pipes in the *finale*. The advantage of it being a gigue is that it was able to prove to me the speed and transient abilities of the Magico ASub, and I can report that the ASub performed brilliantly. I heard instant responses to both keyboard and pedals, with no unwanted overhang whatsoever and when the 16-footers did come in at the end, the depth and quality of the low bass was impressive.

Of course you don't have to be a pipe organ aficionado to benefit from the extended bass afforded by adding a subwoofer to your system. All the lower notes of the larger orchestral instruments will be improved by using a subwoofer (percussion, harp, double-bass, cello, and so forth) and when playing rock, jazz and other popular genres, the sound of drums, bass

guitar, electric guitar, and all keyboards will also benefit. You can demonstrate this for yourself with a track you're bound to have in your own collection, which is *Speak To Me/Breathe* from 'Dark Side of the Moon'. Those 'heart-beats' are at a frequency of 27Hz. You'll probably also have Jennifer Warne's 'Famous Blue Raincoat' in your collection, so listen to the Magico ASub playing *Joan of Arc*, and revel in the quality of the low bass at 35Hz.

If you'd rather experience the Magico's superior bass performance with a movie, it's worth digging out Steven Spielberg's version of H.G. Wells' *War of the Worlds* if only for the scene where the Martian machine emerges. The ASub delivers this sound effect with startling realism, as it then also does with all the FX later on in this movie, including the death rays and the plane crash. And if you haven't experienced the Lightcycle Battle, from *Tron:Legacy*, you owe it to yourself to experience it with the Magico ASub. Do watch the volume levels, but be prepared to be seriously impressed. The tympanic bass line and the pulsing super low frequencies add to the battle sounds to deliver a sonic masterpiece.

CONCLUSION

I know that I have already said it once, but Magico's ASub is just so good that I just have to say it again: it's not only a phenomenally good-sounding, high-performance subwoofer, and one which has by far and away the best and most flexible room tuning and speaker matching circuitry that I have ever seen, it's also the most fun of any subwoofer I have ever reviewed. But I don't want one... no, no, no... I want two! 🎸 *Kailu Chen*

CONTACT DETAILS

Brand: Magico
Model: ASub
RRP: \$10,900
Warranty: Two Years
Distributor: Absolute Hi End
Address: PO Box 370
Ormond
VIC 3204
T: (04) 8877 7999
E: info@absolutehiend.com
W: www.absolutehiend.com



- Outstanding sound quality
- Best crossover circuitry ever
- Fantastic parametric EQ



- Cost of speaker grille
- Control only by computer
- Some user skill required

Readers interested in a full technical appraisal of the performance of the Magico ASub Powered Subwoofer should continue on and read the LABORATORY REPORT published on the following pages. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

LABORATORY TEST REPORT

Newport Test Labs first measured the frequency response of the Magico ASub using a near-field technique that effectively gives the response that would be obtained in an anechoic chamber, without the contribution of room effects. This technique does however, remove the beneficial effect of an in-room response, which is a boost in volume level at the very lowest audio frequencies.

Graph 1 shows the result of this test for three different filter settings and for when no filter is used at all. Looking first at the unfiltered response (the black trace) you can see that it is superbly linear, extending from 35Hz to 500Hz ± 2 dB. Below 35Hz the low-frequency response rolls off at 12dB per octave, exactly the slope loud-speaker enclosure theory predicts for this alignment. I should point out that despite this exceptionally linear and extended high-frequency response, you should always roll off the Magico ASub's response

The unfiltered response of the Magico ASub is superbly linear, extending from 35Hz to 500Hz ± 2 dB

at 200Hz or lower, so the sound is not too directional.

The pink trace on Graph 1 shows the Magico ASub's frequency response when the low-pass filter is set at 200Hz and you can see that relative to the driver's output at 60Hz, the response is around 9dB down at 200Hz. The light blue trace shows the response with a 120Hz low-pass filter and relative to 55Hz the response is around 6dB down. If you look at the slope of the response resulting from this filter between 200Hz and 400Hz (which is one octave) you can see that the slope is exactly 24dB/octave. The red trace on Graph 1 shows the response with a 40Hz filter and you can see that response rises to a maximum output at 35Hz before rolling off, putting the overall frequency response at this setting as 17Hz to 55Hz \pm 3dB.

Graph 2 shows three of the same traces that are shown on Graph 1, but the green trace shows the response with an 80Hz 24dB/octave low-pass filter and a 27Hz shelving filter. The shelving filter could be used to attenuate super-low frequencies to avoid them transmitting to another dwelling.

The in-room response of the Magico ASub, measured at a distance of three metres without any filters or equalisation, is shown in Graph 3 (green trace). This time Newport Test Labs has used an upper measurement limit of 200Hz as this is a little higher than the maximum frequency you'd normally expect any subwoofer to deliver. You can see the in-room response even without equalisation to compensate for room effects is very smooth, extending from 30Hz to 200Hz \pm 3dB. When equalisation is added, the response becomes even smoother and even more linear, which is shown as the black trace. This response extends from 18Hz to 200Hz \pm 2.5dB.

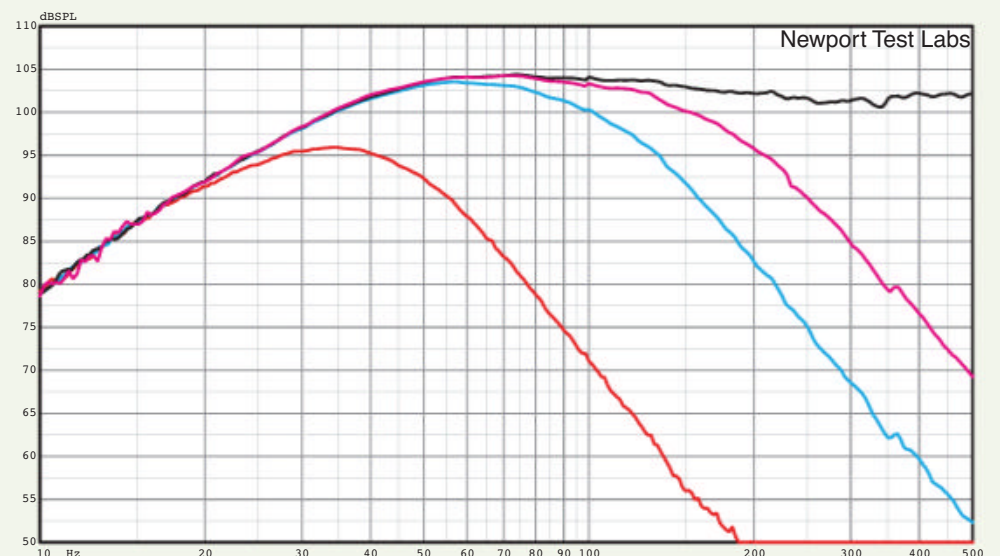
Graph 4 shows the frequency response of the Magico ASub without any filters or equalisation (black trace) and with a filter with a centre frequency of 100Hz, attenuation of -6dB and a Q of 12. The setting of Magico's equaliser that was used to obtain this graph is shown in the screenshot published earlier in this review. It's a very good demonstration of the power and accuracy of the software.

Self-evidently, the frequency responses returned during Newport Test Labs' tests were outstandingly good, easily exceeding Magico's specifications, but these same frequency responses also show the enormous power and flexibility of the digital filtering and equalisation enabled by Magico's software-driven DSP module.

In sum, the Magico ASub offers more effective room tuning and equalisation than any subwoofer I have ever seen, irrespective of size or price. *Steve Holding*

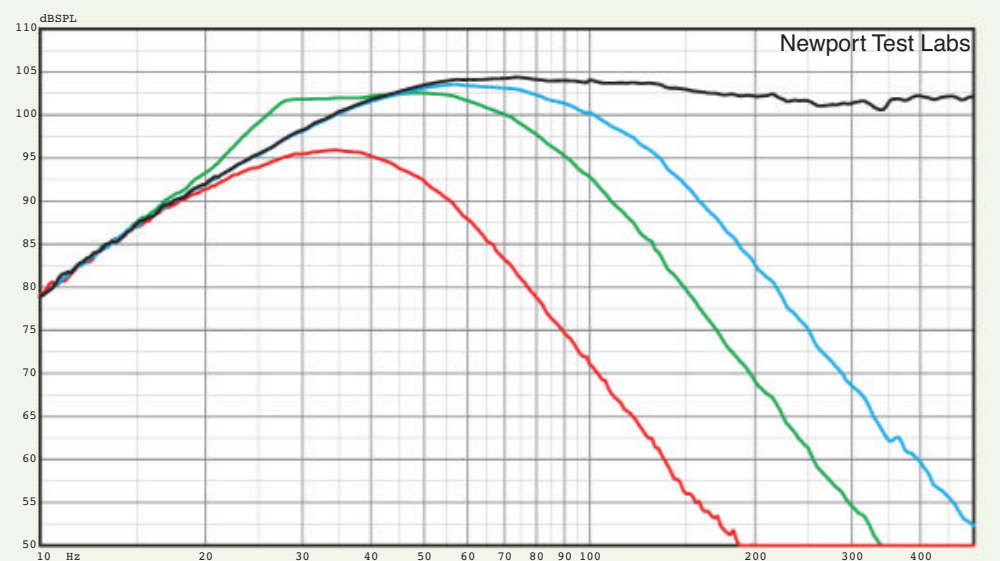
Graph 1:

Near-field frequency response with 40Hz (red trace), 120Hz (blue trace), 200Hz (pink trace) 24dB/octave low-pass filters and with no filters in circuit at all (black



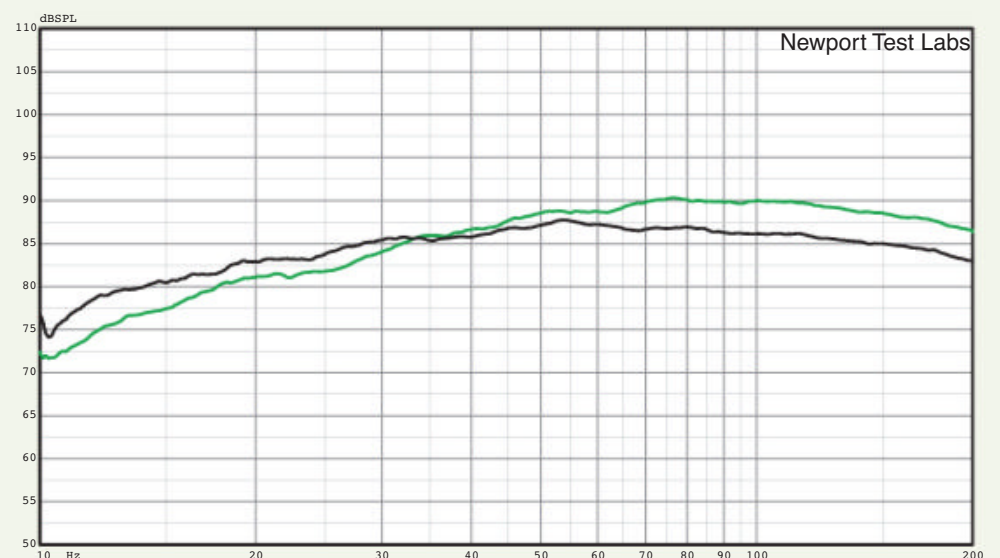
Graph 2:

Near-field frequency response with 40Hz LP (red trace), 80Hz LP with LF cut (see copy) 120Hz LP (blue trace) and with no filters in circuit (black trace).



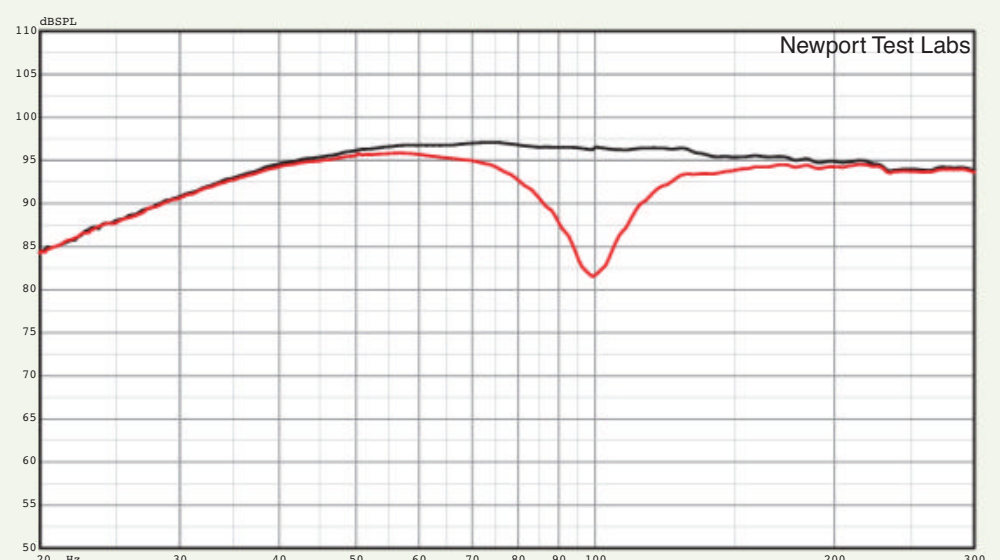
Graph 3:

LFE in-room frequency response without EQ (green trace) and with EQ (black).



Graph 4:

Nearfield LFE frequency response (black trace) showing effect of 100Hz, 6dB notch filter as a result of equalisation setting shown in EQ screenshot on page 92 (see copy).





AUDIO-TECHNICA ATH-AWKT

HEADPHONES

These are truly luxurious headphones. Their packaging even proclaims their greatness, because they arrive in a huge 390mm-high slip-cased box, stylishly emblazoned with Japanese calligraphy and an anticipatory circle of wood-grain, this outer casing seemingly so enormous that you might expect it to yield headphones built to adorn the head of some monumental sumo wrestler.

Then, in the manner of a Russian doll set, inside the first box is a second, and inside that second a third, this last being of a light

wood construction. It is only when you open the third box that the headphones are finally revealed, nestling in satin-like fabric (which smelled very nice indeed).

And what a reveal! It's the cups of these headphones that immediately grab your attention, though with the most sophisticated and gentle of grabs. They are beautifully carved and hand-finished from solid wood, a striped ebony called Kokutan, which I gather to be a rare hardwood renowned for exceptionally deep colourings that range from jet black to a rich brown. On my review pair the semi-gloss finished wood grain was a very deep brown across the entire right

shell, while under a bright light the left shell revealed a swirl of rich lighter grain through its lower half. Full-black pieces of Kokutan are exceptionally rare and are prized in Japan for use in pens, brushes, and traditional wooden swords—the treasured tools of the daimyos, shoguns and samurai of Tokugawa-period Japan no less. But there's more to the attractions of Kokutan than its colouring and its traditional associations. This is a hardwood dense enough to sink in water, and in audio terms this assists it to suppress unwanted resonances, thereby increasing the accuracy of reproduction from the drivers it's enclosing. It's for this same reason Kokutan is also used in musical instruments, both blown and stringed.

CONSTRUCTION

Clearly, then, these are closed-back headphones which won't let sound spill out to others in the same room. The internal chambers chiselled into the Kokutan cups use Audio-Technica's patented D.A.D.S. (Double Air Damping System), first developed for the Limited Edition W2002 headphones made for the company's 40th anniversary in 2002.

As its name suggests, D.A.D.S. uses partitions and damping materials inside a closed-back design to divide the space into two separate but connected chambers, aiming for the highest possible attenuation of sounds either trying to get from the outside into the capsule or in the opposite direction.

While Audio-Technica generally points to this as delivering deeper and smoother bass response, it also allows better dynamics and a higher signal-to-noise ratio given the improved isolation... always subject, of course, to a good ear-seal at the earpad.

The ear-pads and headband use genuine sheep-skin leather, the width of which varied significantly around my review pair to be 18mm wide at their widest points, making for a soft, comfortable but solid seal around my ears.

Take care if you audition a pair fresh from the box, as what you hear may not be the ultimate sound that they are capable of delivering.

Yet there is no pressure: these headphones sit remarkably lightly despite their total weight of 405g, so that long-term listening was not only possible, but positively encouraged by their sound, as I will reveal shortly.

The Kakutan ear-cups are supported and angled by yokes of black-finished magnesium alloy which are both strong and rigid, and have a good aviator-style extension that should allow them to fit even the largest head. There's nothing to twist or fold to minimise the size to enable compact storage—indeed given that their storage box is made of wood, I don't think Audio-Technica has the slightest intention of you using them in your travels!

The all-important drivers inside are large 53mm types which Audio-Technica says are found exclusively in its own designs; it specifies titanium flanges but not the diaphragm material itself, though previous models at this high level have used tungsten coatings for rigidity. The voice-coil uses high-purity 6N-OFC copper (6N means six 'nines', so 99.9999% purity), while the magnet system used does specify the use of permendur, a ferromagnetic alloy of iron with cobalt, which Audio-Technica says it sources from Germany for use in the ATH-AWKTs.

Permendur is used in the medical industry (as well as in other applications) for the magnetically-guided transport of drugs through the body to inaccessible crevices, and it is favoured for having one of the highest flux densities available in any commercially-available soft magnetic alloy—typically 2.3 to 2.4 Tesla, which is double that of neodymium. This combination of this high-strength magnet with the 53mm diaphragm and the 6N voice-coil results in the Kokutans having a nominal impedance of 48Ω and a sensitivity of 102dB SPL @1mW. Their frequency response is specified as 5Hz to 45kHz.

Nestled below the headphones in their tertiary wooden box is a small soft sack containing the paperwork and two high-quality cables, which attach to both headshells using A2DC detachable jacks which click reassuringly into place. Both cables are three metres long, encased in a rubber-like synthetic polymer, one ending in a standard 6.35mm

gold-plated plug, the other offering a 4-pin XLR-mini (3.5mm) balanced connector, should you have available a headphone output of this type to deliver a suitably balanced signal.

PERFORMANCE

As for listening, this review was hopelessly elongated by the distractingly involving nature of these headphones. Time and again I'd start a track, only to find myself intently listening or drifting away so that nothing was written before the end of the album. I played the entire 'Hamilton' soundtrack, and was able to follow every rapid word and character strand thanks to the clarity of separation delivered.

As for emotion, the combination of *Helpless* and *Satisfied* through the Kokutans should be enough to reduce any Hamilton fan to blubsville. Paradoxically, the one thing the ATH-AWKTs don't sound like is closed-back headphones—there's no sense of restraint or enclosure; they sound entirely open, airy and widely spread, presumably the result of the capacious cups and Audio-Technica's double-air damping system therein.

They also appreciate the attention of a high-quality headphone output, though they flattened-down less than some when I listened via a run-of-the-mill midrange integrated amplifier's headphone socket. If you want their ultimate partner, I could recommend no better than Audio-Technica's own AT-HA5050H headphone amplifier, which sounds as gorgeous as it looks, were you up for the additional not-insignificant expenditure.

For all the charms of these headphones, however, I had an initial problem with their sound—this system's promise of great bass wasn't entirely delivered. The bass was natural, strong and certainly even, but never particularly full, so that many tracks lacked meatiness, while midrange voices had plenty of clarity but often lacked the fullness necessary to create an illusion of reality.

Joni Mitchell's vocal on her adult re-recording of *Both Sides Now*, for example, was far too thin. But I noticed that this shortcom-

ing could be entirely corrected by pushing in hard on the earcups, thereby flattening the thick earpads; this raised the bass level and filled out the sound. But there was no easy way to increase the clamping pressure because, as noted, these headphones are very lightly held by their yokes.

Then it occurred to me that while I had fully run in the ATH-AWKT headphones by leaving them playing to themselves overnight for nearly a week, this process would only free-up the drivers' suspensions, whereas actual listening use might also slightly flatten the foam of the earpads over time, bringing the drivers inwards.

So I left them for another week, clamped over a dummy head, and sure enough the flattening effect was enough to bring the bass back where it belonged, as confirmed by bouncing through some Buju Banton, where both the bass and kick drum on his skanking Jamaican duet with Stephen Marley (son of Bob) on *Yes Mi Friend* were positively thumping with energy. That Joni vocal gained useful underpinning, the treble content of her voice now being useful enunciation on a shaped image rather than the dominant content. Needless to say, this improvement had me lost in music for more evenings before reluctantly returning the Kokutan headshells to their boxes within boxes for return.

CONCLUSION

Given the effects of running in these fine headphones, take care if you audition a pair which are fresh from their boxes, as what you hear may not be the ultimate sound that they are capable of delivering. If they still impress, however, the good news is that they will only get better. **✶ Jez Ford**

CONTACT DETAILS

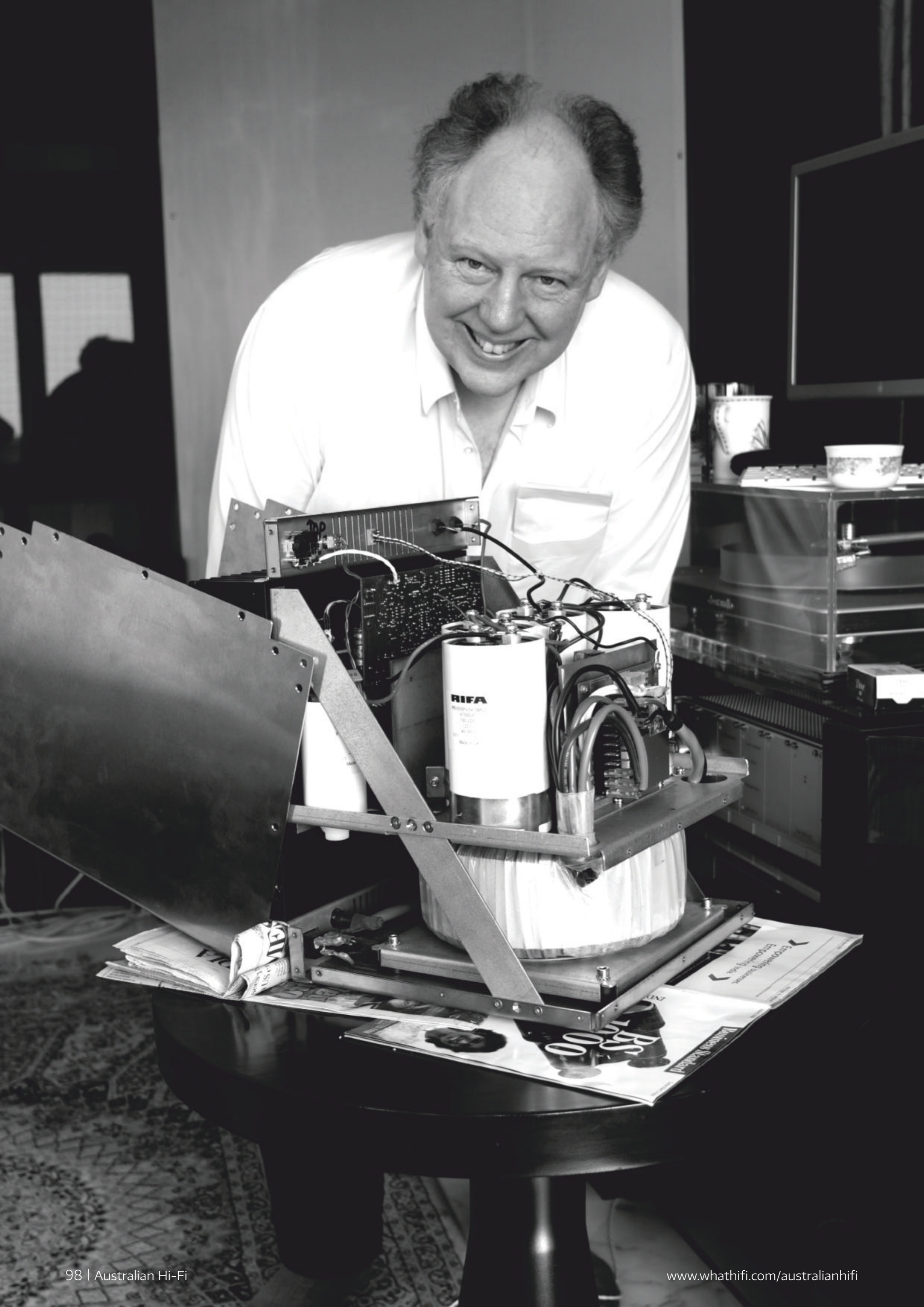
Brand: Audio-Technica
Model: ATH-AWKT
Price: \$3,499
Warranty: One Year
Distributor: Technical Audio Group
Address: 43-53 Bridge Road
 Stanmore
 NSW 2048
T: (02) 9519 0900
W: www.tag.com.au



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INTERVIEW

Ole Lund Christensen

Ole Lund Christensen is something of a bona fide legend in European high-end audio circles, because he's an engineer who is skilled in electronics, acoustics, mechanics and production technologies and has worked for literally dozens of hi-fi manufacturers both in-house and as a 'gun for hire'.

Interview by Ian Kuah

Christensen made his first mark in the audio industry by designing the highly acclaimed Focus and PUK recording studios in his native Denmark during the 1980s.

Amplification followed almost by accident as he could not find units that met his expectations to power the integrated in-wall speaker installations he designed for these studios. As has happened before in the industry, this led to Christensen designing his own bespoke amplifiers. He later began manufacturing a domestic version of these amplifiers under the name SiriuS, and these received high praise in local audio magazines. In 1995 the SiriuS DM200 made its production debut as the world's first 'single MOSFET' 200-watt per channel power amplifier.

Single MOSFET? I'll let Christensen explain: "Single MOSFET here means that there was a single current path through one MOSFET only from the positive voltage, and another single MOSFET from the negative voltage in a push-pull amplifier. This meant that the task of measuring and selecting the many matching MOSFETs in parallel that normally share the current and power load was no longer required. Today several companies manufacture amplifiers using my unique MOSFET circuit, which uses just two driver stages, one for each MOSFET. This design removes the requirement for matching plus and minus MOSFETs, both MOSFETs being N-channel with no need for a P MOSFET whose data characteristics are inferior."

Inside Christensen's power amplifiers were some large capacitors in the power supply that few other companies ever use. "Nobody else seemed to want to pay the price" he says. "They're hospital grade emergency backup quality capacitors. They are specified to 100kHz, whereas most large power capacitors are not high frequency devices."

"I worked hard on making my power amplifier sound good even when it is clipping," says Christensen. "In my recording studio days I learned the importance of nice-sounding clipping. In the SLT 250 power amplifier from 1982 we installed a very advanced clipping circuit in the input stage. This ensured that the output stage never clipped, so it never goes in and out of the feedback loop. This clipper is not needed in the DM200 because the amplifier is extremely stable. This fine stability also meant I could use a direct output without the industry standard coil and resistor pair in series with the loudspeaker."

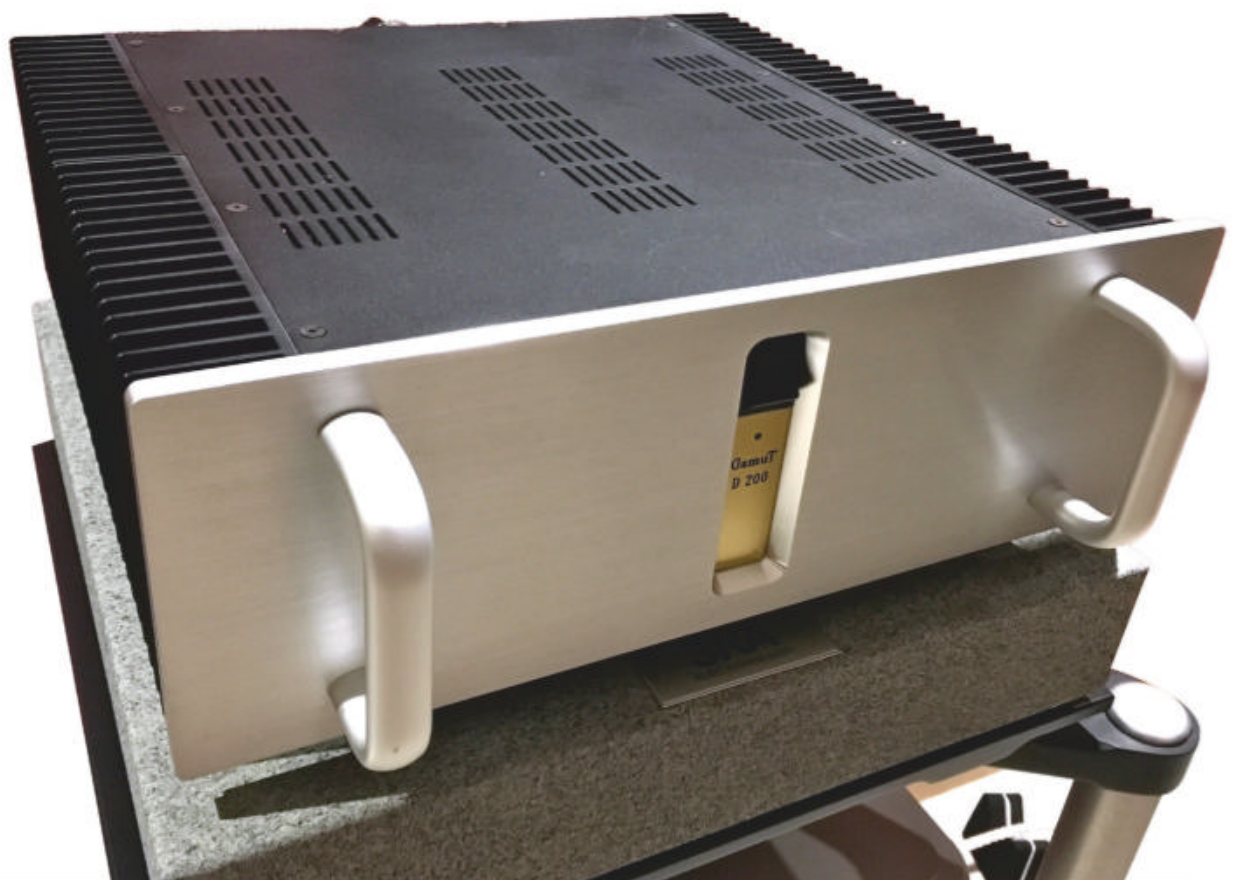
The DM200's combination of the open midrange and soaring highs of a valve amplifier with the iron-fisted bass control of a transistor unit led to rave reviews in the European press. Across the Atlantic, US audio journalists initially had problems understanding that a 200-watt amp of this quality did not have to weigh 50kg, heat your listening

room in winter, and cost as much as the average family car.

At this time an American radio station wanting to buy the Sirius name from him approached Christensen. He accepted the offer and changed his company name to the even more appropriate GamuT. By the time the by-now-GamuT D200 Mk3 was launched, the legend of this Danish MOSFET amplifier had been established.

This period also marked the debut of the dual mono GamuT S300. Aimed at the US market, it weighed 182kg. This behemoth made such an impression on audiophiles with its combination of natural sound and effortless power that it is still spoken of with great reverence to this day.

The product that Christensen said was to eventually lead him and his company into trouble was a CD player. "German audio enthusiasts are keen on buying complete systems from one manufacturer, so my German importer eventually badgered me into developing a CD player to match our pre-amp and power amp," he recalls. "At the same time he suggested I should look at the German-made CD transport to use as a base," Christensen continued. "The unit turned out to be very good, so I requested that they make a version for us with some improvements. This became our CD1. To my great surprise the review Harry Pearson did for *The Absolute Sound* proclaimed the GamuT CD1 as more musical than his reference CD player."



“His reference was a Burmester 069, a two-box CD player with a price tag that was multiples greater than the CD1.”

The fallout from this glowing review in 2002 was huge demand for the GamuT CD1, and that was where the trouble started. “About 50 per cent of the units developed faults after about six months,” said Christensen. “Ironically, the rest were fine and I still have one which has performed perfectly for the past 18 years.” It turned out that the German manufacturer of his players had been buying the CD transports from another German company, which in turn was having them made in China. “Initially these were replaced under warranty at no cost to us, but suddenly the flow of replacement drives dried up despite a clause in my contract that

guaranteed ongoing supply. With no warning I suddenly had a ton of faulty CD players and no spare parts,” said Christensen. The cost to fix the players was more than GamuT could afford, and Christensen was at the point where he would have to either close down or find someone with the financial resources to buy the company and rebuild the CD players.

This is when Poul Rossing of Rossing Electronics, the Danish importer for Audio Research, Luxman, Cabasse and other well-known brands, enters the story. Rossing was also the founder and owner of Danish speaker manufacturer Avance Audio. He had sold the Avance Audio trademark to his Chinese importer and needed a new trademark, specifically GamuT. “Poul had been negotiating with me for some time to buy or invest

in GamuT,” Christensen recounts. “I called him and told him this was his chance to buy GamuT. We negotiated a deal to look after my CD1 customers, and he paid a symbolic sum for GamuT, created GamuT International which took over all the rights, solved all the technical issues with the original CD1 to create the Gamut CD1 Mk2 and everyone was happy.’

INVESTIGATOR FOR HIRE

Soon afterwards Christensen was headhunted as an investigator for a Danish investment incubator—the rung below a venture capitalist—looking to make an investment in consumer audio. “The incubator’s panel of experts was an interesting combination of engineers and financial specialists funded by the Danish Government and Danish banks,” says Christensen. “Their idea was to select a university graduate with a bright idea and provide funds to see if the idea would fly. If it did, they’d then “sell” the person and the idea to a venture capitalist to take forward with the exit strategy being a stock exchange IPO.”

“I must say I enjoyed the experience immensely, especially because although I visited big and small audio companies I was not limited to the audio industry and had the chance to interact with other disciplines, such as hearing-aid manufacturers. Hearing-aids are very profitable!” Christensen found a few interesting potential candidates during his two-year association with this investment organisation and they were happy with that. “It was an eye-opener and I gained a lot of knowledge about a side of my own industry I had not really known in depth before,” he reflects, “and while I have to keep the information I gleaned confidential, I am allowed to use the knowledge myself.”



At Amphon Christensen first set about creating two new loudspeakers. One was a larger version of their successful Ion (above left) which they called the Ion L (above right).

"It was very interesting to learn from these financial experts and see the world through their eyes. A tome of wisdom I took away from them was that it is easier to teach an engineer finance than it is to teach a financier engineering!"

Another conclusion Christensen reached in the course of his work on this project was that the speaker business is the most profitable segment of the audio industry. He says the reason for this is that the products are so different. "If a customer wants Quad electrostatics they are clearly not going to compare it with JBL Studio Monitors, only against other electrostatic brands," he says. "On the other hand, for many people a power amp is a power amp. While admittedly there are differences in quality, most people can live with them, except perhaps when you are at opposite ends of the spectrum with a 25-watt 300B single-ended valve amp compared to a 1,000-watt solid-state amp. But generally the differences between amps of similar power are much less than those between speakers, and it is precisely because there is less competition between speakers that they are more profitable than electronics."

MOVING NORTH TO AMPHION

In 2007 Christensen was approached by Anssi Hyvönen, the owner of Amphion. "So I thought why not go to Finland," he recalls. "It was the depths of winter so I asked him how cold it was in Kuopio and how much anti-freeze I should put in my car. He said it was -25°C, but by the time I arrived the big sign in the town that was both a clock and a thermometer was displaying -39°C! I realised that if I switched off my engine it would be over so I found an underground garage and walked. I can tell you this was not pleasant at all. After half an hour the water in your breath has frozen and you desperately want to get inside. Interestingly my body adjusted to the extreme temperatures, and now the normal cold we have in Denmark no longer bothers me."

"After a couple of weeks at Amphion I concluded that while they had good products, they needed some new ones so I set about creating two new loudspeakers for them as a matter of urgency. One was simply a larger version of their successful Ion, which we called the Ion L. The second was a D'Appolito configuration floorstander that sold at a very reasonable price. Both these new speakers began selling very well."

"At the time Amphion was heavily invested in cardioid loudspeakers, which is a good design for certain types of room. If you have a room with a lot of glass and concrete, as is normal in Finland, the cardioid speaker is an excellent choice because the direct energy vs. total radiated energy is about 5dB better with a cardioid design, so you hear about 5dB less



'A tome of wisdom I took away from them was that it is easier to teach an engineer finance than it is to teach a financier engineering!'

of the sound from the room. Also you can put a cardioid design reasonably close to a wall because it does not radiate as much to the rear and sides as a normal speaker."

"This was all fine and good except that Amphion wanted to increase their export sales, and a cardioid speaker is more expensive to make in terms of components and complexity. There were so many 'normal' speakers out there that what I thought they needed were more 'normal' loudspeakers to reduce costs and increase profit margins."

With this in mind Christensen says he created 18 new speakers for Amphion while still keeping their unique waveguide for the tweeter. He explains, "The ear is most sensitive between 2,000 and 4,000Hz... up to 8dB more sensitive, in fact. The advantage of the waveguide design is that you can lower the crossover point to, say 1,600Hz or 1,200Hz, so the woofer is not in play at 3,000Hz with the result that you get increased clarity from the lower distortion and a smaller moving mass."

"This advantage is emphasised at higher volume levels when the woofer begins to distort. Thus when you play a two-way speaker loudly the waveguide contributes to a major increase in midrange clarity simply because you are not asking the woofer to deliver 30Hz and 3,000Hz at the same time."

In January 2009 Christensen slipped on the ice at Kuopio and fell heavily. After two weeks on pain-killers an X-ray revealed that he'd been walking around for two weeks on a broken fibular. Further investigation revealed the break was likely due to a lack of calcium in his bones, which his doctor suggested could be corrected by a diet of fish and exposure to sunshine. "There is not much sunshine in Finland in winter, and I don't like fish because when I was a young boy I almost choked to death on a herringbone," he explained. "So I took the doctor's other recommendation and moved to a warmer, sunnier place."

COLD CALLING AT CES

After leaving Amphion, Christensen literally cold-called around hi-fi manufacturers to offer the services of his company, Christensen Audio [www.christensen.audio] including at CES. He says his sales spiel was basically: "Hello I'm a Danish audio engineer and I have a team with a lot of interesting technologies and products already developed that we would like to supply to companies with marketing channels already in place."

He recalls that people reacted very positively. "Some of them knew me from my work for the Danish investment fund or from my GamuT days so I was not exactly a nobody when I approached them."

"Most companies want to keep the external consultants behind such work a secret, feeling that it bolsters their reputation if people think all the ideas are generated in-house. However, from a business perspective it is actually cleverer to find someone who has already done the heavy lifting so you don't have to reinvent the wheel and pick up the tab for doing so."

"Your risk of failure is much lower if you buy in ready-made expertise," Christensen explained. "Even the likes of LG and Samsung do not make their own DVD and

CONTINUED ON PAGE 114 ►

TOP PICKS

BENNY WALKER

Chosen Line [Independent]

CHOSEN LINE



On his smoky and raw—yet at all turns inescapably groovy—third album, Benny Walker embraces the guitar as a tool to reckon with, affirm and (most importantly) conjure emotions. He dips into funk territory on the silky and upbeat *All Ya Gotta Do Is Call*, loose and jangly noodling carried along with a deep bassline and simmering keys; on *I Don't Blame You*, where he pushes the

subject to chase the fire in their heart, he digs deep into his own and emerges with a downright gnarly solo. Most noteworthy is how much ground Walker covers in the 14 tight and temperate cuts—from roaring blues and passionate soul to tender folk and rugged country, glimmers of pop and that aforementioned funky spark: We're treated to a wealth of ups and downs, almost all of them immediately captivating.

GEORGIA MARLEY

Yearning [Hungry Time]



Twirling dry, twangy folk guitars around ethereal synths and clicky, minimalist beats, Georgia Marley makes a strikingly sharp first impression on *Yearning*. The singer-songwriter deals in slow-burning slithers of emotional intensity, cut from the same cloth as indie stalwarts such as Angie McMahon and Gretta Ray, yet shining with a spate of

tones and tenacity entirely of her own. From the simmering lull of *What I've Realised* to the crystalline bounciness of *Radiators*, we're taken on a colourful (if sometimes gut-punchingly gloomy) journey deep into the mind of a lovelorn storyteller with a massively lucrative future ahead of her. Every dusty, angular prong of her acoustic and low, luminescent hum rings out with astonishing power; the spacial breadth of Marley's soundscapes is truly transcendental.

OCEAN ALLEY

Lonely Diamond [Independent]



Despite coming out in the dead of winter, Ocean Alley have brewed up the perfect summer soundtrack in LP3, which was Triple J's feature album in the week leading up to its release, and co-incided with the release of the band's fourth single, "Hot Chicken". Fuzzy, low-fi quips of '70s gel with blindingly bright indie rock hooks, the whistling keys and

punchy drums a radiant backdrop for Angus Goodwin's sharp and soaring leadwork to shine. His ripping solo on *Way Down* is an early highlight, but rest assured there's plenty of kaleidoscopic ebbing and flowing across this 45-minute mind-melter to keep fans old and new alike gripping their arm-rests. At times jammy and others jazzy—sometimes cool and sometimes chaotic—Lonely Diamond is not just the Sydney sextet's most sonically diverse and interesting set of tunes to date, but is also undoubtedly their best.

FONTAINES D.C.

A Hero's Death [Partisan/Liberator]



Year 2020 is officially the year of doom and gloom, so it feels fitting that LP2 from these trailblazing post-punks would be distinctly crushing. The guitars are tuned low and simmer with a ghostly, almost unsettling angularity. The melodies they warble out are lustrous and catchy, but spun through a filter of flagrance à la Grian Chatten's dull, numbing howl that leaves the whole

affair feeling like a car crash that you just can't help but stare intently at. This all surely reads as negativity, but let us be clear: *A Hero's Death* is certainly worth diving into. It's an album that revels in the kind of off-kilter garishness that a good horror flick does—certainly not for kids, and admittedly rather niche, but for those to whom it does appeal, there's a damn good time to be had.

IN HEARTS WAKE

Kaliyuga [UNFD]



With its predecessors focused on the Earth, sky and water elements, In Hearts Wake turn their enviro-conscious ire towards the flames on *Kaliyuga*: the world's first carbon-negative metalcore record, and one of the Byron Bay quintet's strongest efforts yet. It's a fitting theme, given how absolutely scorching the riffs on this LP are. Strewn

between the nu-metal spark of *Crisis* and the slick, acidic soloing on *2033* is a full spate of six-string sadism; standouts come in the numbing final breakdown on *Hellbringer*, the Southern warbles on *Crossroads* and the all-authoritative crunches on *Force Of Life*. Braided with luminous flickers of melody and groove, *Kaliyuga* shines as an exceptionally dynamic showcase of intense passion, emotion and talent. And, true to the band's form, it's gonna sound insane live.

STAND ATLANTIC

Pink Elephant [Hopeless]



Like the pop-punk greats in whose footsteps they follow, Stand Atlantic have taken their coveted sophomore album as a chance to build upon the nexus of plucky, distorted hooks and booming, singalong-ready choruses that made their debut turn heads in 2018.

The production is beefed up, the guitars are tighter (and on key cuts such as

Jurassic Park and *Hate Me*, downright inhumanly catchy), and scattered amongst the standard stack of 4/4 push-pit bangers are a few left-field gems that highlight the sprawling scope of the Sydney foursome's polychromatic chemistry—see *Drink To Drown* and *Silk & Satin* especially. The way rifflord David Potter weaves his playingaround Bonnie Fraser's every volatile howl and heartstrung twill is simply magical. Prepare to smash the heck out of your replay buttons. 🎶

JOE SATRIANI

Shapeshifting [Provogue]



With every new Satriani album we're assured of killer tones, and strong tunes. and this one has his trademark big riffs and bigger melodies and he channels styles from Chuck Berry all the way to modern rock. The title track sets the scene; the time signature may be waltz but the tone and octaves are proudly rock as Joe's guitar blazes. *Big Distortion* is a new wave groover

with great melodies and punchy unison rhythms. The spacey *All For Love* has a half-time feel that his guitar sings high over. *Ali Farka, Dick Dale, An Alien And Me* has a hiccupping groove, euphoric tremolo picking, sliding melodic phrases and ambient sonics. *Teardrops* is stripped back and sultry, brimming with blues sass. *Nineteen Eighty* is appealingly big and rocking, and check out the last track!

GORDON GILTRAP

Woman [Angel Air]

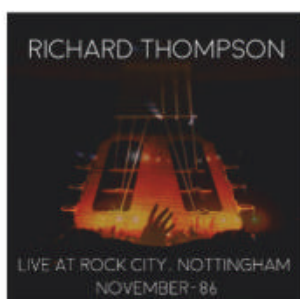


Gordon Giltrap has been a revered acoustic virtuoso for decades. *Woman*, his latest release, is a 14-track album dedicated to remarkable women. Armed with rich-sounding acoustics and his trademark pick and fourth-finger technique, it's an endearing journey of mainly solo guitar. Giltrap has a wonderful way with harmony; he has a strong Celtic

sensibility linked with folk and classical-like foundations producing a sound that makes you want to join him on a musical journey. The *Anna Fantasia* features guitar and (cathedral) organ playing in harmony, evoking long ago times. *Rachel's Reflections* swirls with picking patterns and chord shifts that evoke an almost pianistic sound. *Fiona's Smile* is like a lilting jig, brimming with rich chords and warm tone. *The Stars Look Down On Linda* features ringing strings, cascading lines, sonorous low notes and chiming harmonics. Throughout, Giltrap reminds us all of the joys of pretty picking!

RICHARD THOMPSON

Live At Rock City [Angel Air]



Richard Thompson (OBE) burst onto the scene in the late 60s as the lead guitarist and songwriter for the famous UK folk/rock group Fairport Convention. There are two contrasting sides to Richard Thompson's music: his fiercely introspective solo acoustic work and the effervescent band stuff that we find here. The ensemble that accompanies Thompson on this previously

unreleased two-CD live set includes Christine Collister (guitar/vocal), Clive Gregson (guitar, organ, vocal), John Kirkpatrick (accordion), Rory McFarlane (bass) and Gerry Conway (drums). The material draws in part from Thompson's 1986 "Daring Adventures" album with the tracks *A Bone Through Her Nose*, *Jennie*, *Nearly In Love*, and Al Bowlly's *In Heaven* scattered through the set. But those who favoured Richard's work with his ex-wife Linda Thompson won't go away from this album empty-handed as the excellent Richard and Linda track *Shoot Out The Lights* gets an airing here, too.

JANUS STARK

Angel In The Flames [Time & Matter Recordings]



Perhaps more widely known for ripping up the fretboard with The Prodigy as that band's touring guitarist in the 90s, Graham 'Gizz' Butt's impressive punk roster goes back to the 80s and includes the likes of English Dogs, The Destructors, UK Subs and The Stupids. Honing decades' worth of chops in recent projects with goth rockers Fields Of The

Nephilim and German metallers Pyogenesis, Gizz's innovative style has been flawlessly captured on *Angel In The Flames*—a virtuosic punk-metal masterpiece you can even hum along to (or as Dave Grohl recently put it, "A great melodic kick up the arse.") Just check out the stand-out track, *Crucify All the Leaders*, which, in these Covid-19 Trumpian *et al* times, should be a real call to arms.

KING SOLOMON HICKS

Harlem [English Electric]

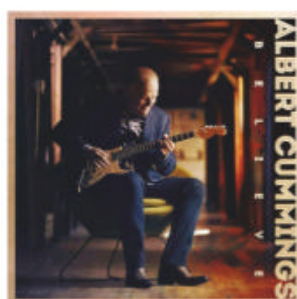


Hicks has been playing guitar since the age of six. He was regularly seen at Harlem's famous Cotton Club with its in-house 17-piece band, studied at Harlem School Of Arts and then played in Europe, including opening for Jeff Beck and Ringo Starr. What makes his debut notable is it's the 'good stuff' where blues, R&B, jazz and gospel meet, all courtesy of growing up in Harlem.

The 11 tracks brim with soulful guitar work that crackles with energy and taste. Imagine Robert Cray meets BB King. He's smooth and savvy when riding sweet melodic lines over a good groove (very BB!). He can dig in too, like Chuck Berry; his guitar on *Everyday I Have The Blues* barks out great lead licks graced with a rich vibrato. *What The Devil Loves* has an infectious toe-tapping feel to it, sung with conviction. For the swing blues of *421 South Main* his guitar is right up front, making bold statements with bite and punch. By any measure, *Harlem* is a very strong album and Hicks really is one to watch out for.

ALBERT CUMMINGS

Believe [Provologue]



Bluesy Strat players are pretty common these days. But what makes Albert Cummings stand out is the variety of songs on offer here, with guitar tones that evoke Strat icons such as Robin Trower, Rory Gallagher and SRV. Among the 11 songs is Sam And Dave classic *Hold On* (the album's opener), the raucous rocker, *Red Rooster* and

funky closer, Freddie King's *Me And My Guitar*. Albert, with his heavy-gauge strings and a singing approach to soloing, gives guitar fans plenty to latch onto. Although undoubtedly a blues guitarist, *Believe* has a heavy dose of soul, courtesy of the fat rhythm section and (perhaps) the fact that he recorded it at Muscle Shoals, Alabama. As for soloing, Albert's keen on taste and passion; his string bending, vibrato and slippery fretting is really quite something. If you want great, song-focused guitar-playing, strong grooves and rich vocals, Albert is your man. 🎸

BLACK SWAN

Shake The World [Frontiers]



This may be a new rock band to you but if I mention it has Reb Beach on guitar, you should become curious. This is straight down the line, hard rock with big vocals, blazing leads and tasty harmonies. Alongside Reb is Jeff Pilson on bass, Matt Starr on drums and Robin McAuley on vocals. The title track opener's doom-laden opening morphs into a pounding down-picked riff; the solo blazes

bigtime with pick tapping and legato runs, while *Johnny Came Marching* has some gnarly wah licks from Reb. It's not all pounding riffs though, as the ballad *Make It There* is rich with keys and an eighth-note 80's-styled bass line. Talking of 80s, GN'R fans will love *She's On To Us*—a peachy low riff graced with screaming wah lines. If a new hard rock act is what you crave, check out Black Swan!

ERIC CLAPTON & BB KING

Riding With The King [20th Anniversary Edition]



It certainly doesn't feel like 20 years ago that Eric Clapton and BB King teamed up to make this album, which picked up a Grammy for "Best Traditional Blues Album" when it was released in 2000. In celebration, Reprise has re-mastered the original and thrown in a couple of previously unreleased tracks for good measure, so Muddy Waters' *Rollin' And Tumblin'* and Willie Dixon's *Let*

Me Love You, Baby, both recorded at the time, now join the ranks. The former finds Clapton working out on acoustic slide with King punctuating every phrase as only he could. The Dixon classic is medium-paced with both guitar men taking passionate solos and, despite King claiming post-take that he "screwed up in a couple of places", it sounds great to me. Don't look for Clapton stretching out, he's mostly content to play second guitar to his idol, and sing a little on what's probably the bluesiest album he's ever been on. The standout track for me is King's classic, *Three O' Clock Blues*.

PAT METHENY

From This Place [Nonesuch Records]

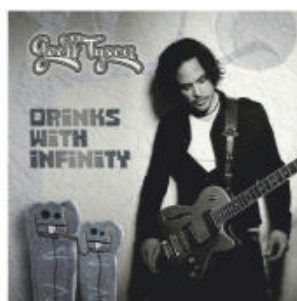


The care that goes into any Metheny creation warrants deep submersion. His new album *From This Place* is no different. With a core of Antonio Sanchez on drums, Linda May Han Oh on bass and Gwilym Simcock on piano, its harmonic palette and deft arranging make it so much more than just a 'guitar album'. That said, Metheny's Ibanez's

hollow-bodied tone is at the heart of the music and his playing remains a masterclass as he slips and slides around with a jazz-blues zest that evokes Wes Montgomery and Jim Hall. This could be classed as social art music, but that would suggest you need a weighty musical education to enjoy it; not so, this is for everyone. *America Undefined* is a staggering piece that keeps growing, while the title track is beautiful, with both band and an orchestra supporting Meshell Ndegeocello's vocals. If you're a glutton for Metheny ballads, the closer *Love May Take A While* will take you for a seductive sonic ride. Utterly gorgeous.

GEOFF TYSON

Drinks With Infinity [Geoff Tyson Music Records]

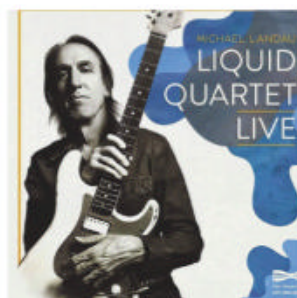


Geoff Tyson was a student of Joe Satriani and then guitarist for the early 90s band, T-Ride. Geoff is back out with this new instrumental album and those chops are still there. Over ten tracks, Geoff runs the gamut of soaring leads, racing legato phrases, bluesy licks and vibrant acoustic guitar work. It's an appealing mix, perfect for car journeys or focused listening as Geoff creates strong

melodic hooks and improvises around themes. Opener *Six Weeks Of Tina* is an uptempo stomp with vibrant lead guitar throughout. *Shag* is a filthy grunger as Geoff riffs and soars over the track. *Strawberry Napalm* offers unique harmonic context and some exciting lead lines from Tyson, while *Are You With Me?* is a tasty ballad. If you find the new generation of rock instrumentalists to be somewhat devoid of melody, listen here!

MICHAEL LANDAU

Liquid Quartet Live [The Players Club]



When James Taylor refers to someone as "the complete virtuoso" backed up by Steve Lukather saying, "he is one of the finest players in the world" you know they must be talking about someone pretty special. They were talking about Michael Landau, who has enjoyed a stellar career playing with a *Who's Who* of music's elite, including Joni Mitchell,

Ray Charles, Miles Davis and Pink Floyd, among many others. In November last year Landau took his band to LA's infamous Baked Potato club and delivered a blues-driven set featuring some of his back catalogue, peppered with a few new tunes, such as the fantastic *Well, Let's Just See* and the inspired *Can't Walk Away From It Now*. Needless to say the guitar work throughout is immaculate—check out the frenzied soloing on *Greedy Life*, and the stunning *Killing Time*. This album is a six-string *tour de force* that I can recommend most heartily.

SONS OF APOLLO

MMXX [InsideOut Music]



The prog-metal supergroup is back with a new album, MMXX, that thrills with almost an hour of power riffing, blazing solos and searing vocals. Their stylistic breadth is breathtaking, from the ominous build on *Goodbye Divinity*, to the staggering 16-minute closer, *New World Today*. Within the quintet is Bumblefoot, who plays guitar on a par with Guthrie Govan; precisely, fast

and with great imagination. He can match the blazing synth chops of Derek Sherinian and they trade off in ways that few bands outside of Dream Theatre can pull off; on *Wither To Black*, Derek's synth blaze is followed by Bumblefoot's stunning chromatic flurries over a pounding half-time groove from Mike Portnoy and Billy Sheehan. Binding the four instrumentalists is singer Jeff Scott Soto who has a rich vocal style that straddles rock and metal with aplomb. While he can scream, his performance on the ballad *Desolate July* is passionate. *Fall To Ascend* has one of the most jaw-dropping extended sections, as Derek and Bumblefoot weave and blaze. Buy to be astounded and inspired! ⚡



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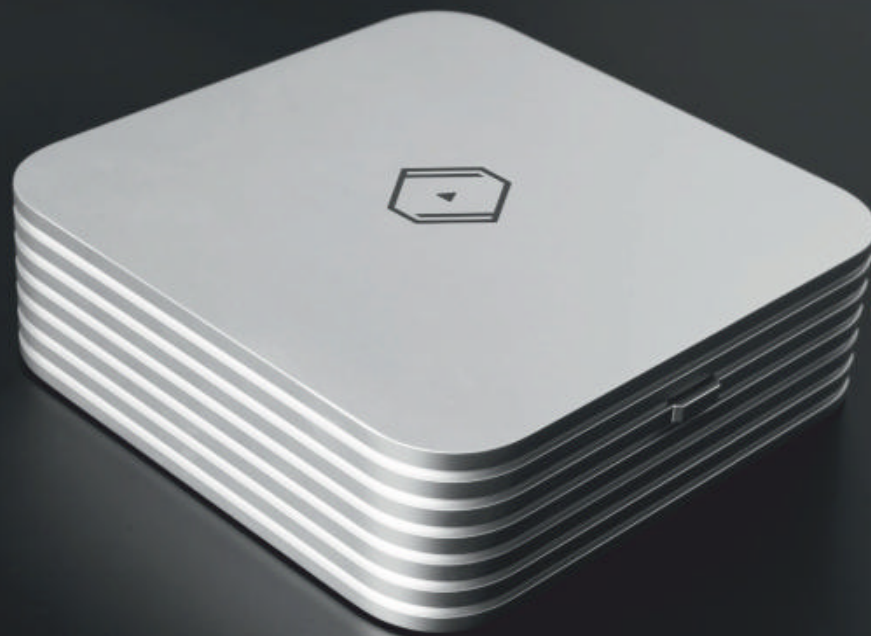
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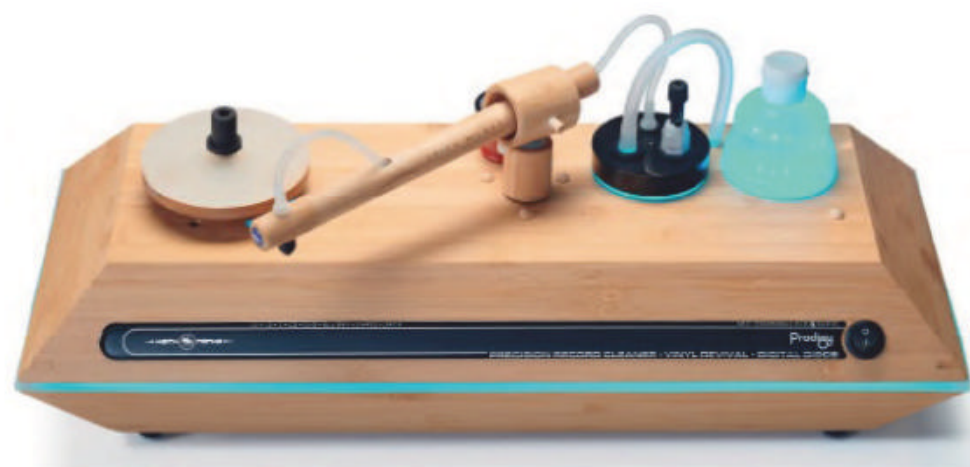
Keith Monks breaks the price barrier for precision record cleaning

The Keith Monks company has been making record cleaning machines since 1969 using a precision point suction system to quietly clean records more thoroughly than any other technique.

Now they have produced a machine that utilises the point suction technique at a price point much lower than previously possible.

What is "Precision Record Cleaning" ?

- A tiny precise suction tip, scanning across the disc a little at a time, removing every last trace of contaminated fluid - especially the mold release oils from the pressing stamper. Noise reduction is of course important, but removal of oils and residues is the biggest benefit of "proper" record cleaning.
- Removing oils from outgassed materials and excess mold release agents from the original manufacturing (newer audiophile pressings being a prime example) allows the stylus to track the groove more faithfully, optimising the clarity of sound, and allowing the rest of your wonderful system to really sing.
- Precision Record Cleaning restores and preserves your treasured records and also your precious stylus
- Safe, proven method and results
- Yes, "miracles do take a little longer" ... but longer makes perfect. And with the auto shut off (Redux, microLight) or drop-down suction wand (Prodigy) for unattended cleaning, you really won't notice. And as it is quiet you can be playing your favourite music while you clean.
- Keith Monks discOvery Natural Precision Record Cleaning



The Prodigy precision record cleaning machine

- Unique Universal Disc Cleaner for 12" 10" & 7" records and 5" digital discs
- New Unique Threadless Point Suction system for easier, even better performance
- Breaking the price barrier for Precision Record Cleaning
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- Compact 55 x 22cm footprint for even the smallest home
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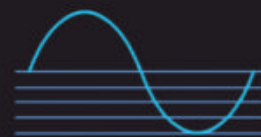
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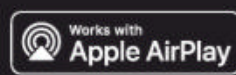
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► CONTINUED FROM PAGE 101



Blu-ray players, and use a third anonymous company to make the products for them. This makes commercial sense because every time you double production numbers the unit cost is dramatically reduced, which helps them compete with the Japanese. In fact back in the 1970s almost all the Japanese manufacturers used the same external supplier for their cassette mechanisms.”

His cold calls bore fruit. “I was hired to solve various production and sales problems by several companies,” Christensen continued. “Sometimes it was simply a matter of helping them with their price calculations which is especially difficult when you start exporting to unfamiliar markets. You really have to know how to price your products. For instance understanding how to ship a product to Japan and still make decent money was a very strange concept for many. The shipping company has to make money, duties and insurance have to be paid, the importer has to make money, and then a wholesaler has to make money too, because in Japan a lot of the business goes through wholesalers. Next the dealer has to make money and at the end of it all there is sales tax. All these things nibble away at your bottom line and make a very big difference to how much you have to add to your export price.”

‘Nobody is forcing anybody to buy these products. People should stop bitching about prices. After all, nobody complains about the price of a McLaren P1.’

“In one case I had to recommend that the company increase its price by roughly a factor of 10 because the maximum world market volume was very small. But even then it was still very competitive because it was originally very under-priced considering its abilities.”

“What many people continue to underestimate is how small the market is for very expensive esoteric products,” says Christensen. “The high-end segment is really very, very small compared to the market for Bose or Sonos.”

“In fact things have only got more insane in terms of price differentials,” he explains. “If you have visited Munich High-End in the last few years the prices attached to products in the glass rooms upstairs have gone up and up. While not trying to justify the telephone number prices Christensen is firm that the prices are simply an example of the law of supply and demand. “Nobody is forcing anybody to buy these products,” he says. “People should stop bitching about prices. After all, nobody complains about the price of a McLaren P1 or LaFerrari, which both sold out within days of being announced.”

JERN

For the last two Munich High-End shows I have found Christensen on the front line with his musically transparent Jern 14 speakers. Working with grey cast iron is a revelation as this very dense metal is an inherently acoustically inert material. But it comes with its own set of problems not the least of which is the need to get the casting process absolutely spot on.

“When I get a new idea for a shape for a cabinet it takes six months to get a prototype because that’s how long it takes to make the tools for the casting,” Christensen explains. “And I am not allowed to make a mistake because that would throw a large amount of money down the drain and trigger the restart of another six-month long project.”

“Unfortunately we can’t 3D-print grey cast



iron as the molecular structure that comprises graphite mixed with silicon and iron is far too complex. But 3D printing is used to create an initial prototype shape used to cast from, although it is of poor quality.”


“In fact it is difficult to cast the actual speaker housings,” he continues. “Once the tooling is made the major problem for the casting people is ensuring that the molten iron flows into all the corners and cools uniformly before the sand around it collapses.”

Initially the Jern satellite speakers were paired with a REL T5i subwoofer, but at Munich High-End 2019 Jern debuted its own cast iron subwoofer. “I use a hospital grade mains inlet filter in this subwoofer to optimise performance as much as I can,” he says.

HIS NEW VENTURE

When he heard that GamuT had ceased making and selling electronics Christensen decided to get back into the amplifier business, and formed a new company to do this, while at the same time finishing a successor to the D200 power amplifier that he had slowly been fettling on and off between other projects.

“I always wanted to take the D200 to the next level, so for now I am using the working name of DM200 to emphasise the Dual Mono design,” he says. It’s so dual mono that it even has two power cords. “The new DM200 amp will be close to the M250 in terms of power at 2Ω, and slightly better in overall performance.” Christensen says the printed circuit boards he is using in his new DM200 can also be used to upgrade existing GamuT and SiruS power amplifiers.

Christensen’s original plan to debut both his new company and the new DM200 at Munich High-End 2020 was, unfortunately, thwarted by the Covid-19 pandemic. So for the present he, and all of us, will have to wait.  **Ian Kuah**



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