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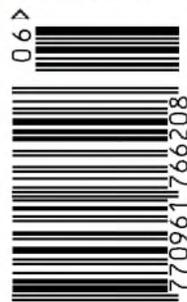
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**COMPETITION**



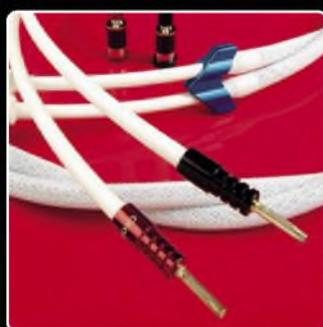
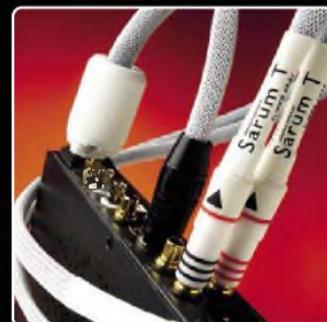
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Paul Rigby, Martin Pipe, David Tutt,  
Chris Frankland, John Pickford.



**Y**ou see, valves are historical. And Audio Research's latest Reference 80S amplifier that you can find on p10 raises a few nuggets. Being designed and manufactured in the USA it is a "tube amplifier". And Americans prefer to use what is made there, which historically was the 6550 output tube in Audio Research amplifiers. I was quite taken aback when they dropped the rugged and reliable 6550 a few years back, replacing it with the KT150 – made in Russia no less! The Reference 80S has four of them.

The main reason is that the KT150 was designed from the ground up to be reliable, as well as sound good. Likely because of U.S. influence, since the Russian plant producing this valve is linked to New Sensor Corporation of Long Island, New York. This is run by Mike Matthews, who was a personal friend of Hendrix back in the 1960s when he was on the road touring in the USA, meaning before arriving in the UK. Another valve amp manufacturer, Icon Audio of the UK, told me it was Mike Matthews who financed Hendrix's visit to the UK, at the invitation of Chas Chandler on what is now considered to be a pivotal event, well catalogued.

The link between Mike Matthews and Russian Sovtek is explained by him in a YouTube interview (June 2010) where you get to hear the problems he had working with the Russians, up to the point of intervention from President Putin. So now we're into politics as well as history!

All of which is to explain that the Audio Research amplifiers we review in this issue invoke a lot more than you might be aware of, there are whole historical threads within their background.

Martin Pipe alludes to another technology with a chequered past, the Planar Magnetic drive unit – see his review of the Aeon 2 Open headphone on p34.

There's often more background to the products we feature in Hi-Fi World than you might imagine, something we try to mention. I hope you enjoy the view.

**Noel Keywood**  
**Editor**



## hi-fi world

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## verdicts

|       |                    |                   |
|-------|--------------------|-------------------|
| ●●●●● | <b>OUTSTANDING</b> | amongst the best  |
| ●●●●  | <b>EXCELLENT</b>   | extremely capable |
| ●●●   | <b>GOOD</b>        | worth auditioning |
| ●●    | <b>MEDIOCRE</b>    | unremarkable      |
| ●     | <b>POOR</b>        | flawed            |
| £     | <b>VALUE</b>       | keenly priced     |

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To ensure the upmost accuracy in our product reviews, *Hi-Fi World* has extremely comprehensive in-house test facilities, and our test equipment - from big names like Rohde & Schwarz and Hewlett Packard - is amongst the most advanced in the world.

Loudspeakers are measured using a calibrated Bruel & Kjaer microphone feeding a Clio-based computer

analyser, using pulsed and gated sinewaves, in a large room to eliminate the room's influence. Pickup arm vibration is measured with a Bruel & Kjaer accelerometer.

No other UK hi-fi magazine has in-house testing, and none has access to such advanced tests across all types of equipment. That's why you can depend on *Hi-Fi World* reviews.



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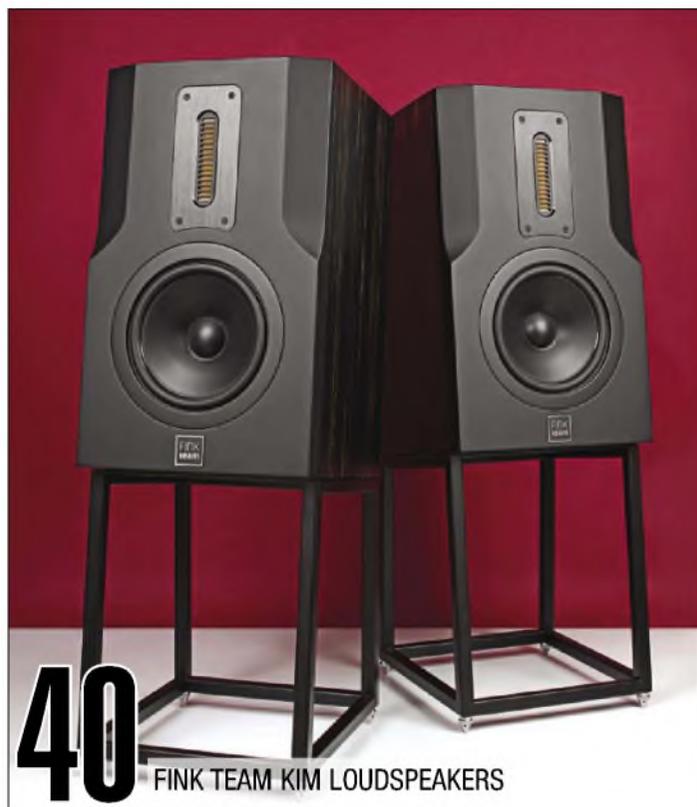
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# news

## LUX RE-COILS

To those of us who remember Luxman turntables – especially the famous PD-555 direct-drive, with its vacuum disc stabiliser – the appearance of the belt-driven PD-171 in 2011 was a welcome move. Since then, Lux has also brought us the PD-171a and PD-151. For all three, you had to choose a third-party cartridge – because Luxman haven't made one for many years. Indeed, we haven't seen a new Luxman MC cart since the early 1980s. All this changes with the 'reference-class' LMC-5. It aims to replicate the character of highly-regarded 'oldies', like the LMC-1 and LMC-2, using today's technology. Introduced to mark Luxman's 95th anniversary, the 8.5g LMC-5 is built into a solid machined-aluminium body. Inside are a samarium-cobalt magnet and 4.7 Ohm coils symmetrically-wound from 30µm wire; to these are coupled a 0.5mm aluminium cantilever with Shibata stylus tip. The LMC-5 tracks at approximately 2g, delivers an output of 0.4mV (1kHz, 3.5cm/s) and responds to frequencies between 10Hz and 35kHz. No UK launch has yet been announced, but in Japan the LMC-5 is priced at 230,000 yen (just over £1,500).

Luxman, [www.luxman.co.jp](http://www.luxman.co.jp)



## TOUCH WOOD

The well-received second-generation version of the Naim Mu-so wireless speaker, which appeared in 2019, has been given a 'premium' wooden makeover. Naim has specified Ayous, a sustainable hardwood, conditioned for a light oak finish. It's said to complement the furnishings of modern living rooms, kitchens, home offices and bedrooms. There's also a complementary woven front grille and tinted heatsink.

In functionality terms, the Wood Edition is pure Mu-so Gen 2 – app-controlled Roon-Ready streaming of CD-quality or hi-res music, Bluetooth, HDMI ARC for transformed TV sound, room compensation, USB playback, external inputs (analogue/digital) and multi-room capability.

Among the wide range of services supported are Spotify Connect, TIDAL, Qobuz, AirPlay 2 and – via Chromecast Built-in – Deezer, Google Play Music and others. Voice control via Google Assistant or Siri is another possibility. Expect to pay £1,599 – a £300 premium over the standard model.

Details: [www.naimaudio.com](http://www.naimaudio.com)

## RX GOES RS (OR 'SPOOL'S GOLD')

Quarter-inch reel-to-reel tape is, once again, arousing interest. Tape production has restarted, pre-recorded music is (expensively!) available in the format and there is talk of new hardware. Even if you've obtained a carefully-maintained vintage deck, you'll need an empty reel to 'take up' your precious tape as the transport pays it out. Older plastic or aluminium spools are prone to warpage, and the tape snags on their flanges as it's taken up. Kevin Root from RX Reels – based in the US, where magnetic greats like Ampex and Crown once thrived – recognised this. He started making new reels from upcycled aviation-grade carbon-fibre, held together by precision-machined aluminium hubs. Thanks to the toughness and durability of carbon-fibre, RX's 10.5in. NAB-hubbed reels won't warp or bend. Although obviously modelled on the black Technics reels you always saw loaded onto RS1500-series machines, the \$239 RX Reel is available in a variety of six snazzy finishes.

Details: [www.rxreels.com](http://www.rxreels.com)





## HEADS UP

Who remembers Audio Pro? This Swedish firm was into active speakers in the late '70s. It even designed, specifically for in-car use, a sub that closely resembled one of today's ubiquitous soundbars. Its latest offering, the limited-edition (500) lemon-yellow T3+ speaker, probably has more in common with the latter than the former – although its uncluttered design gives it a cutesy 'face-like' appearance. This can be attributed to the arrangement of the front-panel drivers – two 0.75in. textile-domed tweeters and a 3.5in. woofer in a ported cabinet, powered by 25W (in total) of Class D amplification. Audio Pro claims a frequency response of 60Hz-20kHz for the £180 unit, which connects to playback sources via Bluetooth 4.0. There's also a 3.5mm analogue input, inbuilt mains supply and USB port for charging mobile devices. The T3+ is genuinely portable, with a leather handle and up to 30 hours of listening from the (user-replaceable) rechargeable battery.

Available from: [www.electricshop.com](http://www.electricshop.com)

## DAC'S THE WAY TO DO IT

In 2007, Linn surprised many by launching the Klimax DS. This, reckons the Glasgow firm, was the first high-performance streaming-music player. Latest in the line is the Klimax DSM, said to be a "complete reimagining" of Linn's flagship streamer. As well as helping you enjoy locally-stored personal music collections, experience streaming services like Tidal or Spotify, transform computer audio or make the most of soundtracks, there are analogue inputs for sources like vinyl. The 'Room-ready' Klimax DSM is built into a distinctive machined aluminium enclosure that combines acoustic isolation with a luxury aesthetic.

The most interesting feature of the Klimax DSM is its new Linn-developed DAC circuitry. Natively-supporting 24-bit/384kHz PCM and DSD256, the 'Organik' DAC uses Chord-style FPGA processing and discrete conversion. Klimax DSM isn't cheap, both 'audio-only' and HDMI-equipped 'AV' variants selling for the same £30,000 – you'll need amp and speakers too. Also available is a DAC-less £15,000 version for Exakt Link systems. Existing Klimax Exaktboxes and Klimax 350s can be upgraded to Organik.

Further details: Linn, [www.linn.co.uk](http://www.linn.co.uk)



## ROOM FOR TWO MORE?

Arcam and JBL Synthesis, both part of the Samsung-owned Harman Group, have announced that some key products now support – or can be freely-upgraded to support – the proprietary multi-room music technology of Roon Labs (funnily enough, also a client of Harman's UK PR agency). Roon makes even large digital music collections easily and quickly navigable from your smart device. It supports streaming services and is claimed to be 'bit perfect'. Among the newly 'Roon Ready' Arcam gear in question are three AVR receivers (the AVR10, AVR20, and AVR30), the AV40 AV

processor and SA30 integrated amp. The welcome new feature has been added to v1.46 (AV/AVR) and V867 (SA30) of the Arcam firmware. Meanwhile, with firmware v1.46 (pure coincidence!) the JBL Synthesis SDP-55 AV processor and SDR-35 AVR become Roon Ready. New kit should already have the new firmware installed – existing owners should follow the manufacturer's upgrade procedures.

Further details: Arcam, [www.arcam.co.uk](http://www.arcam.co.uk); JBL Synthesis, [www.jblsynthesis.com](http://www.jblsynthesis.com); Roon Labs, [roonlabs.com](http://roonlabs.com)





## HENLEY'S LATEST ITALIAN JOB

The Italian hi-fi manufacturer Synthesis – completely-unrelated to the JBL brand featured elsewhere in this section – is coming to the UK. A deal has been struck between Synthesis and Henley Designs, which is best-known for bringing Pro-ject gear to these shores. Synthesis, which joins Italian stablemates Opera (speakers) and Unison Research (valve amplifiers and sources) in the distributor's portfolio, concentrates on visually-distinctive valve amplifiers that will drive modern speakers with the vintage technology's "rich, musical sound" intact. Among the Synthesis products being brought here by Henley are integrated amps ranging between

15W (the £1449 Soprano LE) and 80W (the £3599 Roma 510 AC), plus the £6199 A50 Taurus 50W amp with onboard DAC. Also available are the £2099 Roma 79DC MM/MC phono stage, £2099 Roma 69DC DAC and Roma 14DC+ - a £2499.00 'premium' CD player with DAC facilities.

Details: [www.henleyaudio.co.uk](http://www.henleyaudio.co.uk)



## HEARING DOUBLE

The average Android device lacks credible audio, but a dedicated music player isn't always practical. Astell&Kern might just have a solution – the chewing-gum packet-sized Dual DAC Cable. Use is simplicity itself; plug its trailing USB-C plug into your mobile, and your 'cans' into the 3.5mm socket at the other end of the £109 device. This distinctly-A&K zinc alloy-encased device will also work with Mac and Windows computers, although iOS hardware isn't compatible due to power issues. This, A&K tell us, can (ironically!) be attributed to the current demanded by the Dual DAC Cable's key selling point – a pair of Cirrus Logic CS43198s, one for each channel. These DACs natively-support high-res audio (up to DSD256 or 32bit/384kHz PCM) and drive on-board headphone amps of commensurate quality. Use the appropriate app, and you'll be able to enjoy music playback of the elevated standard that owners of A&K's personals have come to expect.

Details: Astell&Kern, [www.astellkern.co.uk](http://www.astellkern.co.uk)



## BLACK OPS

The increasing popularity of computers as legitimate music sources hasn't gone unnoticed by interconnect manufacturers. With this in mind, we now have the Operetta USB from Black Rhodium. Designed specifically to interconnect the playout device and DAC of a "high-end music-playing system", the Operetta USB features inbuilt filtering to minimise the effects of any noise that may be present on the 5V line of the interface. Black Rhodium has also screened the Operetta USB to prevent RFI and EMI from audibly-contaminating your music. "Acoustic braiding" is specified too. The new cable, which has standard connectors – USB-A for the source, and USB-B at the DAC end – sells for £450 in 'stock' 1m form. Lengths up to 4.5m are available on request.

Details: Black Rhodium, +44 (0)1332 367261. [www.blackrhodium.co.uk](http://www.blackrhodium.co.uk)

## RUNNING IN THE FAMILY

The great thing about having a respected hi-fi brand under your umbrella is that the fruits of its research and development can be deployed elsewhere within the organisation. And so it is with Panasonic's top-of-the-range SC-PMX802, a compact £549 hi-fi system with network playback functions. Its elegantly-finished 3-way speakers, which feature silk-dome tweeters allegedly capable of reaching 50kHz, are powered by 'JENO (Jitter Elimination and Noise-shaping Optimisation) Engines', Technics' proprietary take on Class-D amplification. Other features include Wi-Fi, Bluetooth, Chromecast and AirPlay 2 support, USB playback, external analogue and optical digital inputs, DAB tuner, CD transport and 'High-Res Re-Master' signal processing. According to Panasonic, the latter will bring "CD and Bluetooth playback...closer to hi-res" standards.

Further details: [www.panasonic.com](http://www.panasonic.com)





# Hot Reference

**Audio Research turn up the heat with their new Reference 80S valve power amplifier. Noel Keywood warms to it.**

**V**alve amplifiers – you have to admit – are wacky and gorgeous. That’s in appearance and in sound. Here’s one that meets both criteria – the new Audio Research Reference 80S (70W) power amplifier, price £14,998. Built in Minneapolis, USA and aimed at a market more receptive to such esoterica than the UK, the 80S is certainly gorgeous, and also wacky too I think – although I’m sure Audio Research would contest that.

Importers Absolute Sounds wanted us to run it with a suitable preamp – so it’s reviewed here with the Audio Research Reference

6SE preamplifier, price £16,998. There’s good reason for this as I’ll explain later.

You won’t find many reviews of the Reference 80S power amplifier because at 28.2kgs (62lbs) it’s difficult to handle: a two-person lift. Measuring 483mm (19in) wide, 470mm (18.5in) deep and 260mm (10.5in) high we were challenged getting it photographed, tested, then into a hi-fi system. Because of size, weight and internal complexity this is very much a dealer installed and maintained item I’d suggest, something I’ll also go into further later.

Because the rear casework measures 18.5in (47cm) wide it

will fit a 19in rack but the fascia of both units measures exactly 19in and is likely to protrude – and even appears to be chamfered to do so. Just think ‘big’ here. “Suitable for the larger home” an estate agent might say. Much of the casework is alloy, most weight being in the single mains and dual output transformers at chassis rear, beneath a black screening cover. The front panel, with its handles, is firmly attached to the chassis by cast alloy brackets in order to withstand the load of being used to lift the entire amplifier but we didn’t try this: it was a man at rear and one at front to move it. There are plenty of transistor amplifiers

around that match or exceed this weight – the Musical Fidelity M8xi at 46kgs for example (Dec20 issue) – but they usually offer more power.

To develop 70 Watts per channel Audio Research use the rugged and reliable KT150 valve that is to my mind undoubtedly the most practical proposition available nowadays, since it offers a consistently smooth sound, unlike the higher powered KT90 and KT120 valve that I never got along with and were, I'm told, not especially reliable. All the same, I noted straight away Audio Research say on their website the output valves have fuses to guard against catastrophic failure, as can happen if run past their suggested (handbook) life span of 3000 hours, due to physical distortion of the electrode structure from thermal cycling. This phenomenon applies to all valve amplifiers.

The valves are run in before the amplifier is shipped, necessary to catch early valve failures caused by manufacturing defects. We once had to return an entire batch of new KT88s at World Audio Design because none worked properly; QC in East European factories was somewhat lacking in the 1990s. Audio Research use Russian Tung-Sols, linked to New York's New Sensor Corporation



**Behind, a KT150 power output valve. In front a 6H30 double-triode with damping rings.**



**The Reference 80S can be run with cover removed. Then the "ghost meters" become ethereal. At rear the black case screens mains and output transformers.**

whose founder Mike Mathews financed Hendrix into the UK no less. A nugget of important useless information! KT150s are known for being consistent and reliable but Audio Research play safe by running them in first.

The Reference 80S is a fully-balanced design, Audio Research say, for best sound quality. This makes it quite a lot different to most valve amplifiers that are single-ended (unbalanced) up to the phase splitter stage. There are however standard unbalanced inputs via phono sockets as per usual, the handbook noting that both cannot be used at the same time. Ideally the amplifier should be run from a balanced preamplifier via XLR cables, explaining why Absolute Sounds wanted it paired with the Reference 6SE preamplifier. I used Chord Company Epic balanced cables between them.

Biassing is automatic – in effect fixed bias that does not need to be user-adjusted. It compensates for changes in valve characteristics over time, running the KT150s at 65mA. There is a small elapsed time meter on the rear panel to show how many hours are on the valves and is user-resettable to zero when a new set are installed. The handbook states 6550s, KT88s and KT120s will run in the amplifier

but give less power, whilst EL34, KT77 and 6L6 types are unsuitable.

The perforated top cover is user removable for a clear view of the valves and to improve ventilation. It's suggested 8in is needed above the amplifier to allow hot air to escape but four KT150s don't run super-hot, unlike the Russian 6C33C double-triode 'trawler tube', even though the heaters draw a few more Watts than usual. A 'quiet' fan is fitted to the bottom plate to draw cool air in from below and help expel it above, but it can be heard to gently whirl from close up, if not at a distance.

Audio Research state the bottom panel should not be removed of course, since it exposes lethally high voltages. We did so for photographic purposes and to check out the fuses but they run up to F15 and are not clearly identified on the circuit board for rating or function; a service manual is needed here – best left to a dealer.

The front panel carries what the company describe as "illuminated ghost meters" that show power output. Surprisingly, they are traditional analogue meters with white needles, lit from below by white LEDs. The scales are white too, printed onto clear acrylic background. Behind



**At left the 80S power amplifier with perforated grille behind the meters. At right the grille has been removed to show valves at rear. Two different views, easily set at home.**

this clear panel lies a removable perforated cage panel that gives a visually peculiar background I thought, but it can be removed to show the valves behind; I preferred it removed.

The amplifier can be switched from Ultralinear mode to Triode mode just by pressing a front panel button. A relay clatters in the background and the power warning light turns from green to blue. Triode mode always gives less power, in the Reference 80S 36 Watts per channel, but many prefer the slightly easier sound on offer, unless that is the loudspeakers need pepping up.

The Reference 6SE preamplifier is specifically suited because it too uses balanced circuitry in a single

gain stage that employs six 6H30 tubes – a Sovtek double-triode that's unlike anything else (so no alternatives available) and preferred by Audio Research (as they once only used 6550s). Talking of which, they use a 6550 and 6H30 in this preamp within a regulated power supply.

As you might guess then, the Reference 6SE focuses on balanced inputs, no fewer than four of them. There are two sets of balanced outputs, plus fixed-gain Record balanced outputs. All balanced inputs and outputs are duplicated by unbalanced phono-socket inputs and outputs for convenience, but the preamp, like the power amp, majors on being a balanced design. This is its *raison d'être*. Not fitted

are digital inputs, nor a Phono stage.

The amount of gain available is also limited to x4 or 12dB from XLR in/out, or phono in/XLR out. If only the phono sockets are used then gain falls to x2 or 6dB. This gives an input sensitivity value of 350mV for the preamplifier in conjunction with the power amplifier – not high, if sufficient for digital sources. Low gain external phono stages may need volume to be turned right up.

Warm up after switch on takes about 45 seconds, after which Mute releases. Alongside the right hand volume control lies a massive green dot-matrix fluorescent display that runs from 0 to 103 (don't ask) and a remote control is supplied for this purpose too. The remote also switches inputs, alters balance, has mute, can select mono or phase invert and even display-brightness. The preamp has a 12V trigger to the power amplifier so they can be switched on together and there's an input for an external remote control sensor for enclosed use, although with valves always best not to enclose to avoid overheating. There are many side functions such as auto shut-off, tube hours, volume re-set, input naming – all aids to use.

The Reference 6SE preamplifier is as wide as the Reference 80S power amplifier, measuring 483mm (19in) across the front panel, 419mm (16.5in) deep and 198mm (7.8in) high. Behind the front panel the case is 465mm wide so will fit into a 19in (483mm) rack. A weight of 17kg (37.5lbs) makes the unit liftable, but it is still weighty. Inside sits a large C core mains transformer as part of its linear power supply, all visible through the clear acrylic top panel.



**From below the Reference 80S power amplifier board is packed with smoothing capacitors (centre), safety fuses and special parts. At right is the mains transformer (yellow) and – above and below – output transformers with connection boards.**



*At rear the 80S power amplifier has three loudspeaker impedance options: 4, 8 and 16 Ohms. A small window showing hours of use sits at left of the central power input. There are balanced XLR sockets at left and right, as well as unbalanced phono sockets.*

**SOUND QUALITY**

The Reference 80S power amplifier was connected to our Martin Logan ESL-X hybrid electrostatic loudspeakers through Chord Company Signature Reference cables. I also hooked it up to the Fink Team KIM loudspeaker as a more conventional but sufficiently revealing alternative.

Sources were an Oppo UDP-205D spinning CD through its ESS ES9038Pro DAC, connected balanced through Chord Company Epic cables. Hi-res and DSD were fed into the Oppo over USB, from a MacBook Pro running the

Audirvana+ software player.

Being a balanced analogue amplifier I had to feed it balanced analogue from LP. To this end I used our Timestep Evo Technics SL-1210 Direct Drive turntable, its SME309 arm with Audio Technica OC9X MC connected up balanced to a Pro-Ject RS2 phono stage whose balanced output was fed into the Reference 6SE preamplifier.

I'll kick off, as I prefer to, by outlining basic properties – what to expect. As with Audio Research amplifiers I have reviewed in the past, this pre and power were far from many people's expectations

of valve sound – not warm, not languorous, instead speedy and revealing. There was clean, solid bass free from wallow, because of the way Audio Research handle feedback around their output transformers, explaining our very low bass distortion figures. But you get the aural benefits of valves all the same – the smoothness and the sense of air and space around images.

As I played through a selection of high quality modern LPs, plus older not-so-high-quality ones, certain traits emerged. Running all-balanced sets up a manicured



*The Audio Research Reference 6SE preamplifier has a very large green dot-matrix display of volume level, plus input in use at left. Below are push-buttons for Ultralinear/Triode mode. Mono, Phase invert, Mute, option Select and Power – all available by remote control also.*



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sound stage and that's what I heard from our audiophile LPs, such as 2L's superb recording of Marianne Thorsen playing Mozart violin concertos, backed by the Trondheim Soloists. The sound stage was wide and open, backing violins separated from each other and with distinct lateral position. Marianne Thorsen's violin floated out with sublime ease, smooth, natural in tone and perfectly rendered. I could hear the strings suffering under the bow, appreciate her ability and effort. Funny how a communicative amplifier draws you in and this the Reference 6SE preamplifier and Reference 80S power amplifier did, staring right into what was happening in this recording.

The sheer clarity and separation of threads within a performance was an outstanding feature and, curiously – perhaps bizarrely you might think – I got to hear it in a strange place, my old 12in 45rpm disco singles. These things from the 1980s were cut at huge levels, as you can do with a track that lasts 10 minutes on 12in of vinyl. With Billy Ocean's Get Outta My Dreams, Get Into My Car the manic mix was better sorted – less confused – than I have heard it before. Similarly, Carol Kenyon's Dance With Me was clinically clean yet strabblingly powerful – not what you might expect from a 1984 cut.

Moving on to digital, Josefine Cronholm was put up in clear but almost barren form singing In Your Wild Garden (CD) and here the balanced nature of this combo

became even more apparent. Balancing subjectively strips the sound to its bare bones, or so it seems. Gone is something you don't consciously hear, a subliminal mush I speculate

**Most preamplifier functions are available on the remote control.**



**A top view of the 6SE preamplifier with clear acrylic cover removed. At right a C-core mains transformer, and at top centre 6550 and 6H30 valves to provide power regulation. Six 6H30s provide balanced amplification.**

– and this is what faced me with the Audio Research combo: less! Singers and instruments came over as starkly defined and less hazy, for want of a better explanation. This isn't about dynamic drama so much as insight and stage composition. In photographic terms, losing haze and gaining better image focus.

In terms of dynamics this Audio Research pair were strengthly if tight and controlled. The Reference 80S delivers fast and clean bass but it is free of wallow or bloat. This took me by surprise a few times, tracks like Loreena McKennitt's Gates of Istanbul suddenly shaking the room low down with its introductory bass line after a seeming absence of subsonic bass from preceding tracks. I did however notice that with LP the Reference 80S was driving big bass into both our Martin Logans and the Fink Team KIMs, so was aware the Reference 80S packs a punch lower down.

With preened hi-res recordings such as Cyndee Peter's House of the Rising

Sun (DSD64) fine cymbal taps rang out clearly whilst plucked bass laid down a firm backing. Her vocals hung in a clear open space it seemed, the whole performance having that strong sense of live



**The 6SE has a valve regulated power supply for better sound quality. It comprises a 6550 power valve (rear) and smaller 6H30 double triode.**

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Four sets of XLR balanced input sockets (left) take up space on the preamplifier's rear panel. They are accompanied by matching phono sockets. Two sets of balanced and unbalanced outputs sit at right, plus a fixed-level Record output.

presence valves bring.

I found the mono function on the remote control useful with John Coltrane's Easy to Remember (24/96) as his saxophone is placed in one channel, backing quartet in the other, which comes across as a trifle odd – bit like The Beatles early stereo! But the Audio Research combination brought a magnifying glass to Coltrane's sax, every small breath and keystroke made obvious. Again there was a washed-clean sense of clarity from balanced working.

In case you're curious I used Triode mode for the most part, rarely getting past a few Watts on the meters even when playing loud in a large room; 40 Watts

"The Reference 80S delivers fast, clean bass free from wallow or bloat"

is enough for me and most loudspeakers. Volume hovered around 30 on the display for the most part (103 is maximum).

**CONCLUSION**

Fully balanced amplifiers are rare beasts at present; many now have balanced inputs – but they are unbalanced internally. The Reference 6SE preamplifier and Reference 80S power amplifier are fully balanced throughout – and

that makes them unusual. Run from balanced sources – as I did for this review – they offer almost unique cleanliness, deep insight and pin sharp stereo imaging across a wide sound stage. With a good range of facilities, these all-analogue amplifiers are highly specialised and well worth hearing if you want to know where the world is going in terms of sonic direction. A fabulous duo from one of America's top manufacturers.

**MEASURED PERFORMANCE**

The Audio Research Reference 80S power amplifier delivered 72 Watts into 8 Ohms and 64 Watts into 4 Ohms, just before clipping (Ultralinear mode). It is rated at 70 Watts into 8 Ohm in the published spec. Switched to Triode mode power fell to 36 Watts. For full output, an input of 0.7V is required via the phono input sockets and 1.4V via the XLR input sockets.

Frequency response ran flat from 3Hz to 80kHz (-1dB limits) and distortion measured 0.25% in the mid-band (3rd harmonic) but just 0.1% at 10kHz and 0.06% at 40kHz (all 1W). Just below full output the result was 0.5% at all frequencies, all fairly typical for a valve amplifier using fixed bias. Bass distortion was very low as valve amps go.

The accompanying Audio Research Reference 6SE preamplifier had a modest gain of x2 (6dB) from phono socket inputs to phono socket outputs and x4 (12dB) from XLR in-XLR out, or phono in to XLR out. Useful but not large gain values. If the two units are coupled through balanced XLR cables, as they should be, input sensitivity is 350mV for both phono and

XLR sockets.

Frequency response ran flat from 3Hz to 100kHz at full volume (103) but fell to 25kHz (-1dB) at 80 then rose to 35kHz at 50 and 80kHz at 20. So bandwidth depends upon volume control position – not ideal. At normal control positions of below 50 the upper limit was acceptably above 35kHz. There was minimal noise at -100dB and distortion was negligible too, measuring 0.01%.

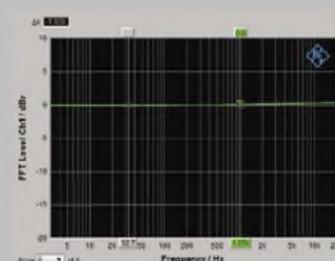
The Reference 80S measures well. The Reference 6SE preamplifier turns in a satisfactory if not impressive measured result due to low gain and bandwidth varying with volume position. **NK**

**REFERENCE 80S POWER AMPLIFIER**  
**Power** 72W  
**Frequency response (-1dB)** 3Hz-80kHz  
**Distortion (10kHz, 1W)** 0.1%  
**Separation (1kHz)** 94dB  
**Noise (IEC A)** -114dB  
**Sensitivity (phono/XLR)** 0.7V / 1.4V

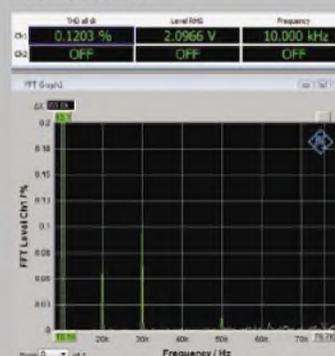
**REFERENCE 6SE PREAMPLIFIER**  
**Frequency response (+/-1dB)** 3Hz-30kHz  
**Gain / overload** x4 (12dB) / 72V

**Noise** -100dB  
**Distortion (10kHz, 1W)** 0.01%

**FREQUENCY RESPONSE**



**DISTORTION**



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**H**ere's your chance to win the superb Exposure XM CD player we reviewed in the March 2020 issue. Read the review excerpt below and answer the questions.

"Exposure's XM CD player features all aluminium casework with an extruded front panel said to control resonances and stray electromagnetic fields. It's also compact at 218mm x 94mm x 348mm (WxHxD). Put it together with the XM integrated amplifier and they blend in seamlessly.

Unlike most CD players nowadays Exposure has eschewed slot loading or a flimsy slide-out tray. Instead it's a top loader – slide

back the panel, place the CD on its hub then place the supplied puck on top before closing and you are ready to go.

Exposure believes this provides a more solid, stable platform for digital replay.

Inside, the CD XM is built around a Burr Brown PCM 1716 24-bit DAC with multi-level delta-sigma modulator architecture and 8x oversampling digital filter. It's an interesting choice when most other players now go for the almost ubiquitous ESS Sabre DAC.

Double-sided printed circuit boards are employed with special attention applied to minimising resonance and the influence of electromagnetic fields – a growing problem with the number of gadgets in households today.

There's also a large toroidal transformer with separate windings for the CD transport mechanism and audio stages.

At back there are standard RCA phono-socket outputs, plus coaxial and digital outputs for connection to an external DAC.

The front panel carries a slim display window indicating track and elapsed time as well as Stop, Play/Pause and Forward and Back buttons. All these are replicated on the supplied remote control which is uncomplicated and easy to use. Loading a CD is a bit of a joy – the digital equivalent of dropping a needle onto a slice of vinyl. OK, it's not as simple as a slot-loading device but it feels more satisfying".

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## QUESTIONS

**[1] What is placed on top?**

- [a] umbrella
- [b] puck
- [c] cork
- [d] elephant

**[2] The casework is made from -**

- [a] aluminium
- [b] brass
- [c] cast iron
- [d] wood

**[3] The DAC is -**

- [a] CS34156
- [b] ES9018
- [c] XMOS Centaur
- [d] PCM1716

**[4] At back there are -**

- [a] phono sockets
- [b] loudspeaker posts
- [c] RJ45 socket
- [d] Pentaconn socket

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# Zen and the art...



**Small as the Zen CAN headphone amplifier from iFi is, it packs a big punch. But can it deliver when it comes to sound quality? Chris Frankland listens closely.**

**B**oasting trickle-down Class A balanced circuitry from its £1,700 flagship Pro iCAN, the £149 Zen CAN headphone amplifier from iFi is my first exposure to this brand.

The Zen CAN is its cheapest dedicated headphone amplifier, but the company also makes an extensive range of headphone amps, DACs, a Bluetooth streamer, various accessories, an all-in-one music system and a 'Retro' integrated amplifier and LS3.5 speakers, which iFi says are a reworking of the BBC design.

iFi was started in the UK in 2012 by high-end brand Abingdon Music Research (AMR) to deliver portable and desktop products designed to give consumers better sound from their headphones, TVs, phones and portable devices. Products are designed at iFi's HQ in

Southport (UK), but I note that the Zen CAN is assembled in China.

The Zen CAN should easily drive most headphones, with a quoted power output of 1.6W (7.2V) into 32 Ohms single-ended or 1.8W (11V) into 64 Ohms balanced. A balanced output is unusual at this price level.

It is reassuringly weighty (515g) despite its small size (35mm H x 160mm W x 117mm D) and has a dark grey, wraparound trapezoidal aluminium case with brushed silver front and back panels. On the front there is an on/off button, input selector, four gain settings (0dB, 6dB, 12dB, 18dB), a volume control, a 6.3mm standard headphone output jack, a 4.4mm Pentacore balanced headphone jack output, then a final button that selects the XBass and 3D functions.

The rear panel carries three inputs: phono, a 3.5mm jack and a

4.4mm jack. There is also a balanced jack output that could feed an active speaker.

The Class A symmetrical dual-mono discrete output buffer, which it shares with the flagship Pro iCAN, uses four of iFi's own custom-made wide-bandwidth FET op-amps. In addition, the Zen CAN uses high-grade surface-mounted components, such as TDK C0G and Panasonic EPCU capacitors, low-noise thin-film resistors and a Tokyo Cosmos volume potentiometer.

The XBass function is an active EQ circuit to give low frequencies a boost, while '3D' is claimed to give an "out of head" experience to make it sound as though the music is in the room.

## SOUND QUALITY

I hooked the Zen CAN up to Pro-Ject's excellent Stream Box S2 Ultra streamer and PreBox



**Front panel sports a power switch, input selector, gain selector, rotary volume control, a 6.3mm headphone jack and a 4.4mm Pentaconn balanced output. Buttons on far right select the XBass and 3D functions.**

RS2 Digital DAC to stream from Tidal. Headphones used were Sennheiser HD599 and Focal Clear; the 0dB gain setting was more than adequate with these 'phones. An L30 headphone amp (£125) from Topping was on hand to serve as a useful benchmark. I listened to the 6.3mm single-ended headphone output as well as the 4.4mm balanced and, as expected, the sound was superior on the latter – cleaner, with subtle vocal and instrumental detail better conveyed.

Starting with Groovin' from guitarist Peter White's superb album of that name, I was impressed with Zen CAN's detailed and dynamic sound. Percussion was crisp and snappy and well focused with good inner detail, while White's guitar had body, note shape and attack. The bass line was tuneful and moved the track along well. The Topping L30 was also good and detailed, but the bass line was lighter and just a tad sloppier, while White's guitar seemed a little lacklustre after the Zen CAN.

On Broad Daylight from Ben Sidran's The Doctor Is In, the iFi once again was tight and tuneful on the bass line, while Sidran's vocals were open and expressive. Piano also had good body and dynamics. The Topping lacked some of the dynamics of the iFi and it was not as easy to follow what was happening on drums and percussion.



**iFi supplies a 3.5mm to 6.3mm headphone adaptor with the Zen CAN. Shame they don't supply an XLR to 4.4mm Pentaconn adaptor!**

Switching to March Winds in February from Van Morrison's Three Chords and The Truth, I again found vocals more open and articulate on the Zen CAN, with more delicacy on percussion and more weight and movement in the bass line.

Before I hung up my headphones, I just had to try the XBass and 3D functions. XBass certainly added weight to bass lines. Some may find that exciting, but I found it also muddled detail

on percussion and guitars as well as vocals and saxes. Unless your headphones are noticeably lacking in bass, I am not sure it would be needed.

Then there was the 3D 'experience'. I have to say that when I played Racing in the Streets from Bruce Springsteen's Darkness on the Edge of Town, I thought piano took on a strange, closed-in quality and was less dynamic using 3D. Vocals too seemed more natural and open without it. Did it move the sound out of my head and into the room? Not that I noticed.

**CONCLUSION**

All in all, I found the Zen CAN to be an excellent product. Its sound was detailed, articulate and dynamic and I thoroughly enjoyed my time listening to it. It is well made and delivers where it matters. I highly recommend it.



**Rear panel provides RCA and 3.5mm single-ended outputs and a 4.4mm Pentaconn balanced input. A balanced output allows it to be connected to an active speaker.**

**MEASURED PERFORMANCE**

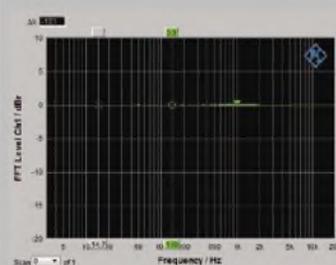
Frequency response ran flat from 3Hz to over 100kHz (-1dB limits) and distortion measured 0.004% at 1V out (6dB gain setting), which is more than enough to drive most headphones shatteringly

loud. However, headphone amps carry a lot of margin these days to cope with low sensitivity magnetic planars and the Zen CAN is able to swing up to 7.5V out before overload, to drive such types. This upper limit only lessens with the 0dB gain setting where (input) overload of 3.5V sets the ceiling. With 6/12/18dB gain settings the 7.5V output limit becomes effective so most range is available at these higher settings.

The gain values stated were accurate, 100mV in giving 800mV out with '+18dB' selected for example, from the 6.3mm (1/4in) stereo output jack. However, the balanced 4.4mm Pentaconn output doubles all values measurement showed.

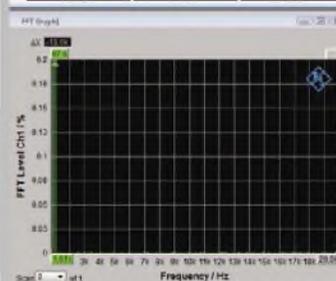
The iFi Zen CAN headphone amplifier measured very well in all areas. **NK**

**FREQUENCY RESPONSE**



**DISTORTION**

|           |            |           |
|-----------|------------|-----------|
| THD @ 0dB | Signal RMS | Frequency |
| 0.0043 %  | 1069.7 mV  | 1000.0 Hz |
| OFF       | OFF        | OFF       |



|                                      |                   |
|--------------------------------------|-------------------|
| <b>Frequency response (+/-1dB)</b>   | <b>3Hz-100kHz</b> |
| <b>Gain</b>                          | <b>x1 – x8</b>    |
| <b>Noise</b>                         | <b>-118dB</b>     |
| <b>Distortion (1V out, 6dB gain)</b> | <b>0.004%</b>     |
| <b>Maximum output</b>                | <b>7.5V</b>       |

**iFi ZEN CAN**  
**£149**



**OUTSTANDING - amongst the best.**

**VALUE - keenly priced.**

**VERDICT**

Sounds as good as it looks. Packs a lot of performance into a small box.

**FOR**

- great sound quality
- well made and finished
- balanced output

**AGAINST**

- instructions don't give a lot away!
- XLRs would have been nice for balanced output

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Answers by: NK - Noel Keywood; PR - Paul Rigby; MP - Martin Pipe; DT - Dave Tutt; JP - John Pickford.

## LETTER OF THE MONTH PRIZE



### KEF Q150 BOOKSHELF SPEAKER

<https://uk.kef.com/products/q150-bookshelf-speaker>

[subject to availability - Satin Black / Satin White]

**A PAIR KEF Q150 LOUDSPEAKERS are on their way to MIKE FARROW, Letter of the Month winner in our MAY 2021 issue.**

## Letter of the Month

### LOUDSPEAKERS & TURNTABLES

I enjoyed reading Noel and Paul's opinion articles on loudspeakers and turntables respectively (February 2021).

I personally have not had a good track record in the turntable department. I got my interest in hi-fi in 1978 after leaving school, reading a magazine and all the items on offer in the now defunct COMET.

I've had a Garrard SP25 MK IV, Strathearn STM4A!!! (I just wanted a direct drive turntable but could not afford a JBE), BSR Quanta 600, Connoisseur BD2A chassis, which I placed in my parents HMV radiogram and worked very well it was a big improvement, Griffin RHI, ADC 1700 (looked great but plinth light weight and poor mat).

I currently have a Thorens TD 280 MK II. I did at some point have a demo of the Linn against a Logic DM101 and the result was I was confused, they both sounded outstanding to my ears but I did not get fully enthused. Maybe my music selection choice did not help at the time. I ended up getting the Griffin RHI turntable but I am not sure why. I did eventually upgrade



"The biggest revelation I have heard is when I visited a friend and his set up had some Q Acoustics 3050i speakers" says Kevin Youde.

the arm to a Rega RB250 and that was an improvement to what I was listening to at the time but still no 'va va vooom'. Even with a plethora of cartridge changes. Yes, turntables are weird, my purchases; even weirder!

In another instance of my hi-fi naivety, around 8 years ago I ended up getting a Nytech CTA 252 XDII off eBay but I couldn't get it to work unless I used the NAD as a slave amp. Now it turns out I did not have the link plug that goes in the preamp out/ power amp in socket. I discovered this after eventually getting it refurbished last year at Nytech Audio. Phil Balaam you are a legend.

The Nytech sounds beautiful, so glad I got it sorted out rather than going for a modern amp. I always wanted one since first getting interested in hi-fi in the 70s.

I have also got a Chord Electronics Mojo and am using that with my phone to connect to the Nytech so I can use Spotify as a source. I actually had trouble with the USB connection on the Mojo due to pilot error so I have to use a Douk Audio U2 USB in to Optical out so that Mojo works and I was amazed that my logic worked. I love my Mojo; it sounds fabulous when I use it with my Sennheiser 650s and it has been the biggest leap in hi-fi quality for me personally.

I don't listen to any vinyl at all these days due to my turntable being 200 miles away. I use Spotify from my phone to the Nytech and that works really well. Why is the Nytech not in your Classic section? I guess there are a multitude of items to list that can't quite make the final entry.

Regarding Noel's column on loudspeakers which was a good insight, the biggest revelation in hi-fi sound I have heard is when I visited a friend and his set up had some Q Acoustics 3050i speakers positioned in a near field location connected to a Chord Electronics DAVE. Closing my eyes and listening, I would not be able to guess where the sound was coming from but the soundstage was unbelievable.

Having a dedicated room is a huge boon in obtaining a scintillating sound, I was blown away, the sound stage was incredible – I've honestly never heard anything like it. They have recently got Vivid speakers and a Chord Electronics amp, although I have not had a chance to listen to the new set up due to the strange year we had in 2020. I had



**"I love my Mojo; it sounds fabulous when I use it with my Sennheiser 650 headphones" says Kevin Youde.**

Sondekitis in the 20th century but never committed to it; my friend has Chorditis in the 21st century.

I guess one of the simplest upgrades that doesn't cost is to take some time and position your speakers to get the best out of them. At the end of the day, if your system gives you a pleasurable experience then sit back and enjoy the ride.

Finally, I would like your input on what speakers would you think I should earmark to shortlist on a budget that would work well with my Nytech?

Kind regards

**Kevin Youde**  
**London W4**

Hi Kevin. You don't say what loudspeakers you are using but since your Nytech CTA 252 XDII produces 25 Watts you need a sensitive loudspeaker and the obvious suggestion here is

the Q Acoustics 3050i that you have heard and liked so much. It's a fine loudspeaker that with 90dB sensitivity needs just a few Watts, so a perfect match – and at just £650 you can't go wrong! If it is too large consider one of their smaller loudspeakers, but ideally you are best off with a sensitive floorstander. **NK**

#### **I BOUGHT QUAD**

How refreshing to read Noel Keywood's opinion on loudspeakers in the February 2021 issue. Being a fan of hi-fi for some fifty years plus, it was good to read something that took me quite a few years to get a grip on. When is it true fidelity or hyped(sonically) fidelity? Over the years I have been suckered into super forensic, super dynamic and super fast and transparent hi-fi equipment. I have spent a number of years auditioning amplifiers and speakers



**Quad Artera Pre. "I went out and bought the QUAD pair" says Steve Hollingbery.**

always chasing that elusive happy medium! Only to find at home most of these items seem hell bent on shredding my ears, but they sounded great at audition!

For years I settled on Exposure amplification which seem the middle-road for me. Not being unhappy with the overall performance. They do like to run loud for best results.

To cut a long story short, I took temporary ownership of a Quad Artera Pre and Artera Stereo. Result being amazement: it has made reevaluate my view on fidelity. OK, I know this is very subjective. To me their tonality is spot on. They are in a Rega CD player via Chord Qutest DAC then into PMC TwentyFive.23 speakers system. Everything is nicely balanced and sounds good at any volume. The overall sound reminds me of my early days: Lenco GL75 turntable, Nagaoka MPI I/Goldring 1040 cartridges with home brew arm. Marantz 151 amp and Toshiba SS33 speakers (Ingram specials) only 100% better.

Your review of the Artera Pre is spot on, lovely kit in every way. Needless to say I went out and bought the QUAD pair and they have kept me happy through this lock down. Keep up the good work. Kind regards

**Steve Hollingbery.**

Hi Steve. Quad continue to produce that lovely smooth sound, replete with warmth and deep bass. Experienced long-term listeners like yourself (and me!) tire of pumped up theatrics in the end it seems: nothing like getting back to balanced yet sophisticated sound that makes music easily enjoyable, rather than an edge-of-seat ordeal.

**NK**

### DAVE CLARK FIVE

In Paul Rigby's review of David Hepworth's book: *Overpaid, Oversexed and Over There*, I was surprised there wasn't any mention of The Dave Clark Five's success in America. Between 1964 and 1967 the DCS had 40 hits, and 18 appearances on the Ed Sullivan Show, more than any other British invasion group.

Regards

**Mike Bickley.**

The Dave Clark Five are featured in the book from p.49 onwards. In fact, Clark's business acumen gets pointed praise. He paid for the costs of his band's first single



**A Croft Micro 25 valve preamplifier. "You really should review this marque more often" says Mike Milne. "Value for money is high".**

from a spot of work on a film set. "He then leased [the single] to EMI, where he immediately made three times as much as he would have made if he'd had a standard record contract". This, in a time when most artists had to run to a dictionary when they first heard the word 'contract' spoken aloud in their presence. **PR**

### CHEAP UPGRADES

I have a mid-range system with a few non-mainstream bits, a few relatively rare-ish bits and a few much more mainstream bits.

The non-mainstream are my Croft hybrid valve amps, a Croft Micro 25 and a Series 7 power amp. You really should review this marque more often as although the appearance is utilitarian at best, the value for money is high – money has been spent on what's inside.

The rare-ish bits are my SO The Source turntable – you don't see many of these in readers letters – and PMC LBI Signatures – the speakers that arguably made the brand's name excluding the previous professional application models. The Signatures are said to be slightly better than the normal PMC LBI model.

And finally I have a Brocksieper Earmax Pro, a dinky little SET headphone amp.

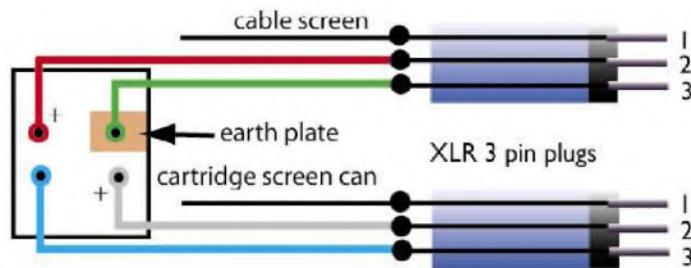
The mainstream bits are my Cambridge Stream Magic streamer – virtually redundant now as I use a Raspberry Pi running Volumio, a Cambridge CXC transport and a Beresford Caimen Seg DAC with a Dorado PS. Cabling is Mark Grant interconnects, Audioquest USB cable and Van den hul CS122 speaker cable. Headphones are Ergo 2 (Jecklin floats and very odd to look at) and

Sennheiser HD650s, many people's favourite mid price phones. All this sits on a 2nd hand Atacama rack that I got for £100.

I am semi-retired now so money is at a premium. I have got Glenn (Croft) to upgrade both my pre-amp with a better phono stage and power amp Series 7 power has increased to 100 Watts to help drive the PMC LBI's better. They are often paired with big transistor Brystons. Cost of both upgrades in total was £350. Same boxes better sound.

I damaged my Hana MC cartridge so I was on the market for another cartridge. Tried an Audio Technica VMS 540ML which was a good £240 cartridge, but then discovered a guy that upgrades and renovates Rock Turntables on a Hi-Fi forum I am a member of. He supplies wooden bodied cartridges based on a much more expensive model which will remain nameless; he got really good feedback about the cartridges he supplied. You need an Audio Technica AT95 donor body – which I had – and to buy the AT Shibata stylus (ML also possible) and purchase a wooden body of your choice from him. I chose Cocobolo wood as it matched my Source turntable. This cost me £250 (excluding the AT95 donor body) and is a big step up on the AT VMS 540 ML in my opinion – and also better than the now £390 Hana. Add a £25 Cartridge Enabler from Origin Live and you have a very decent cartridge option for less than £300.

Finally, there was the Raspberry Pi /Beresford DAC and USB cable to replace the Cambridge Streamer. The Pi was £60, Beresford DAC and PS a further £280 and an Audioquest Coffee USB cable purchased 2nd



**The earth plate electrically ties the cartridge coil screening case to Right channel ground (Green). This can be removed with a little surgery.**

hand for £125 from a well respected forum where members really help each other: Hi Fi Wigwam. All in £465. The DAC doesn't do DSD or MQA but that's not something I miss. The total cost is the same price as the USB cable alone a good friend let me borrow which the Audioquest is every bit as good as.

What next? Well whatever it is it will be a reasonably cheap and careful purchase. Probably some cheap fettling on my Source turntable via help from Hi-Fi Wigwam owners forums or a 2nd hand Audio Note tonearm again probably from the same forum. None of the hassles you can get with eBay purchases as it's all hi-fi enthusiasts helping each other on the road to Nirvana. Sadly, an Odyssey tonearm whilst a good match for my turntable will always be way outside my price range.

The moral of my story is you don't have to spend a lot to get a good sound. Make do and mend.

**Mike Milne  
Worcester, England**

### REGA IN BALANCE

I read with interest the article on Balanced cartridge connections in your April 2021 issue. In the past I have experimented with a balanced connection of a moving magnet cartridge with an on-board balanced phono amplifier, but I immediately encountered a problem using standard off-the-shelf MM cartridges and that the earthing of the internal metal and screening parts typically goes to the Green Right -ve connection.

Normally this is fine, as this grounds out to the Right ground connection on the phono amplifier, however, with a fully floating balanced connection the internal metal and screen parts will now connect to the Right -ve (cold) input on the balanced phono amplifier and not to ground. This increases the susceptibility to RFI noise pick up via the internal metal

and screen parts feeding noise into the phono amplifier Right -ve input and not to ground. This is worsened as the input of a -ve input of a MM balanced phono amplifier will be at a relatively high impedance and not a common mode signal, which a balanced input will reject. The internal metal and screen parts will also have reduced screening effectiveness as they do not return to a ground.

As part of my musings as regards the balanced connection of a cartridge and the siting of a phono preamplifier close to the tone arm internal leads, I've recently made up an experimental turntable using a fully balanced tone arm on a P2 turntable with an onboard balanced MM phono amplifier based on an instrumentation amplifier circuit I used back in my days in professional audio designing mixing desks.

To get the best results out of this I made a special MM Rega cartridge with two completely floating Left and Right +ve/-ve outputs and a separate earth connection for the internal metal and screening parts, which connected to the arm earth which is separately connected to the earth on the phono amplifier. This greatly reduced the noise compared to a unit where the internal metal and screen parts were connected to Right -ve green connection.

Regards

**Terry Bateman  
Rega**

Hi Terry. As you say, there is a problem when that pesky little link is in place. This has always been the case though: in the distant past I used to cut them off when hum was a problem caused by an earth loop between metal body grounded to arm and ground also established via that link to the green grounded signal pin, as some models were constructed long ago – possibly in anticipation of non-

grounded arms.

A cartridge body, when made of metal, is earthed to the arm, but when plastic the screening can is earthed to the green ground pin. Two different earthing methods are in use. The condition you have set up is technically correct; as you say the screening can will potentially inject noise into a balanced system otherwise, although how serious this would be I would not like to say. The potential advantage of balanced working may well outweigh this drawback, depending upon local hum fields / RF radiation.

Ortofon's 2M cartridges with synthetic bodies have an earth link to the green pin, but metal bodied Ortofons (e.g. Cadenzas) do not and are fine for balanced working. Metal bodied Audio Technica cartridges have no such link to the green pin either so they can be run fully balanced. Budget Audio Technica's with synthetic bodies use the same scheme as Ortofon.

Poking our Ortofon 2M Black with a fine bladed modelling knife under a bench magnifier I see the metal earthing link is removable but the screen will then become disconnected from ground. What effect this will have I do not know. Dextrous DIYers may well be able to get this link off and an earth wire on, grounded to the arm.

I'll note that arms are not designed to provide an electrical path to ground: ground currents have to pass through mechanical headshell connectors and bearings – hardly ideal. And what about arms made from carbon fibre, titanium – or bamboo! They do not provide an ideal ground path, or even any ground path suitable for metal bodied cartridges. Something of an issue here.

Of their carbon fibre arms Pro-Ject told us –

"The carbon tube itself is quite a good conductor of electricity. But the lacquer layer on it is an insulator.

The carbon tube itself is grounded by a screw, just beside the gimbals. So if you want to ground the cartridge directly to the tube at the headshell side, you need to remove the lacquer layer where the cartridge is touching the headshell. This will couple them".

This appears to suggest non-metal



**Pro-Ject's carbon fibre arm tube. "The carbon tube itself is quite a good conductor of electricity. But the lacquer layer on it is an insulator" Pro-Ject tell us.**

arms need an earth wire to the body of a metal cartridge. Or do they? Perhaps there's no need to electrically ground the metalwork for screening purposes: I'm lost on this one. Metalwork like a cartridge body or internal screening cans may act as a shield without an electrical earth. An earth wire seems sensible all the same, it's certainly common practice.

Ortofon think a shield (screen) – usually a mumetal case around the signal coils – must be grounded. Here's what they told us -

"In our MMs the shield is connected to green to make sure that the shield is grounded somehow. Shield could have been connected to chassis but that connection is not easy to obtain. For 2M it would require that shield should connect to top plate which then through screws - headshell - tonearm - would end up at ground wire in tonearm cable. For MC it would be more easy.

Would be good for a customer to have balanced tonearm-cable. But there is not ground (XLR pin 1) from the cartridge. And a customer should of course not connect pin 3 to pin 1 as it often done. Then balanced benefit is gone. Most amps with balanced inputs will create ground by themselves.

Many amps claiming balanced operation is only allowing for balanced input which is then converted to single-ended

operation. Potential benefit from the cable run is still there, but you need the extra circuit (balanced to single ended conversion) in the signal chain. In such a case single ended all the way would probably be better".

Ortofon identify the need for a ground connection to cartridges, something that currently does not exist. The provision of a ground line would solve all issues, but cartridges would then need to carry a ground connector of some sort.

Running balanced does raises some difficult issues, but I consistently find it worth doing. Plastic bodied cartridges – typically budget MMs – are potentially unsuitable, but metal bodied cartridges appear generally suitable. **NK**



**"In a review of Ortofon's new 2M Black LVB 250 MM one of the photos (p63) shows an earth plate" says Jean-Christophe Xerri.**

### PLATE PROBLEM

In the April 2021 issue I've been particularly interested in your article 'Going balanced' i.e. connecting the cartridge to the phono preamp with a balanced cable. In the same issue there's a review of Ortofon's new 2M Black LVB 250 MM. One of the photos (p63) shows an earth plate.

Isn't this earth plate a problem? I've read that "The output of a cartridge is in principle balanced until one side (usually the negative) is connected to ground".

On their website 'Shure', who names the 'earth plate' 'the grounding tab', shows how to remove it. [https://service.shure.com/s/article/how-to-remove-grounding-tab-on-a-shure-phono-cartridge?language=en\\_US](https://service.shure.com/s/article/how-to-remove-grounding-tab-on-a-shure-phono-cartridge?language=en_US).

Should it be removed before going balanced when there's an earth plate around a cartridge negative pin?

**Jean-Christophe Xerri  
Australia**

Hi Jean-Christophe. Ideally, it should be removed but an earth connection then put in its place. Interesting to see that Shure tell us how remove this link – but only to avoid hum loops. For balanced working an earth should ideally be re-established to the internal screening can. All this is explained in my answer to Rega's Terry Bateman who raises the same issue as you.

Note it relates mainly to budget MMs using synthetic bodies. Cartridges with metal bodies



*Here is a balanced cable with SME-style plug, as used in Project's RPM9 arm. Note that although the 5-pin plug looks identical to SME's it did not fit our SME309 arm, due to minor pin position or spacing differences it appeared.*

generally don't have such a link and this problem does not arise. **NK**

#### **BALANCE A 309**

In his review of the Ortofon 2M Black LVB 250 MM cartridge (Hi-Fi World April 2021), Noel Keywood used unbalanced connections between the SME 309 arm & the phono pre-amp. I have an SME 309 arm, the supplied leads being terminated in RCA phono plugs. Because the outer shields of the plugs are not connected to the screens of the leads (the screens being brought out to earth tails), it is possible, by using short adapter leads, to connect the centre pins and the screens of the plugs to pins 2 & 3 of XLR plugs & thus use balanced inputs. I have done this, albeit by connecting the unbalanced inputs of my phono stage to their corresponding balanced inputs and it worked fine.

If this were done with short flying leads, as suggested above, it would be advisable to cover the outsides of the phono plugs with insulation to avoid them either touching each other or any other metal work.

I had contemplated changing the SME phono plugs for XLRs, but was put off by the fact that the cores of the leads are silver Litz wire which can be difficult to solder.

Kind Regards  
**Mike Ford**  
**Bromsgrove**

Hi Mike. I am a bit puzzled here. It sounds like you are connecting up the unbalanced leads to a balanced

input, but then the outer braid is 'live' as it were and there's no screening.

With the SME309 it's best and cheapest to buy an SME style arm plug and make up a lead with

balanced cables terminated by XLR male plugs. You can then swap between unbalanced and balanced just by changing the leads. I know SME offer balanced cables and perhaps others do too. **NK**

#### **MAGNEPLANAR .7**

*I've been an avid reader of Hi-Fi World for many years and am responding to your request for info on listening to the new Magneplanar .7 loudspeaker, reviewed in your May 2020 issue.*

*I live in Aberdeen Scotland where hi-fi outlets are very scarce – like one (oil capital of Europe ha ha). I eventually moved from Quad 22 amps from the late '60s to other manufactures in my quest for better sounds. Still have 3 x 33&303 Quad set-ups with tuners which have all been modified and unrated. All of my old kit is still boxed, in use or stored as I never part with anything.*

*My first new modern speakers were the ADD Silver 5s as reviewed by Adam Smith in your mag many*



*Magneplanar .7 "The Maggie's sounded great, the music coming from the auditorium in front as well as beside me" says Michael Canale-Parola.*

years ago. Still got them along with the review from your mag but I'll need to sell soon as the restrictions are lifted for demoing.

I bought a pair of new Wharfedale Lintons with stands and was actually surprised by their performance but after a few more months I was getting a bit fatigued by them. Probably by some occasional screechy tweeter behaviour. Again another of your mag's recommendations which was spot on and not a wasted buy but I need to sell soon as well.

Then I read about the Maggies .7 in your mag so sent off for a pair. I had Quad 57s back in the late 60s which I later sold complete with the Quad 22 valve amps to some collector in Japan, which was a bonus as I couldn't shift them in the UK.

The Maggies sounded great, the music coming from the auditorium in front as well as beside me which reminded me of the old Quads when I first bought them. I tried various cables from those big silver chunky QED Silver Spirals, to Atlas Hyper 3 and various others but they sounded great with Chord Shawline speaker cable.

I eventually settled on heavy wee home made wood stands with spikes with granite tops with felt pads to isolate the LRS legs from the granite. Made wedges so the 'speakers could be used in total upright position as well. When the speakers were in any of the 3 positions the overall bass balance shifted upwards so the flooring was having less of an impact which made things more realistic. A bit of bass bloom disappearing with better impact and order.

The top end was fine with no use of resistors as my walls are well damped – but I like side reflection. Very smooth, more detailed than previous loudspeakers and with the Phill Spector wall of sound magic to boot. But, after almost a year, I've gotten tired of them as I need a healthy higher volume to hear them perform to their best which my neighbour's were not impressed with. They are still facing me today as they sit by my old Celestion 1.5s which I use all the time, still.

My room is 5m long x 4m wide and 2.6m high with my hi-fi firing down the length with plenty of heavy furniture, thick carpets and underlay with rugs on top. The clap test shows my hi-fi wall area is dead while the listening area seems to allow the likes of Tangerine Dream style of music to

float around easier. Saw them at a live practice session at York Minster when I lived in Leeds around 75-76.

Had my MingDa MC-7R preamp upgraded by Malvern which sounds awesome and another of your mags great recommendations. New super valves from a Canadian supplier work a treat.

Other items I bought in my search through your mag for listening pleasure are: Roksan Kandy L2 power amp which still sounds fab. Quad Artera Play, Quad 24 P phono stage and not forgetting David Price and his rave about the Michell Gyro SE many years ago along with the OL

unrestricted, easy listen without all the diagnostic ramblings of sterilising everything into a forensic issue means I've reached a sound that I am happy with – it has been worthwhile.

Regards and keep up the good work.  
**Michael Canale-Parola**

### RIP DAC MAGIC PLUS

I think we should doff our hats at the passing of one of the greats of budget hi-fi: the Cambridge Audio DAC Magic Plus (with Wolfson DAC chip). It seems that it is being replaced with the DAC Magic 200M containing the all conquering ESS Sabre DAC.

The DAC Magic Plus came out in



**"One of the greats of budget hi-fi: the Cambridge Audio DAC Magic Plus" says Mike Tartaglia Kershaw.**

Encounter arm over the SME V.

Still got my original Leak Delta 30 from the 70s but now thinking of trying out the new Leak 130 but only as a pre amp as I do miss the bass/treble controls. It's a bit cheaper than the new Marantz 30 which I'm still deliberating over but I'll try the Leak 130 first.

So what is my system? A Michell Orbe turntable with Origin Live Conqueror 3 arm, fitted with an Ortofon Cadenza Black MC cartridge. I have an Orbe record flattener, with an over-3000 'as mint' collection of LPs dating from mid '60s to some new releases. Never been one for CDs so the Quad Artera play was a pointless purchase unless my old hands develop the shakes – but in that case I'll go for this new streaming stuff, but not yet!

All cables are now Chord Shawline, mix of balanced and phonnos.

With the Celestion 1.5 loudspeakers I feel I've found my hi-fi heaven after starting this hobby back in 1965. Perhaps the choice of 'speakers are not up to the Cyrus/Michell/OL standard but the

October 2011. It has lasted nearly ten years in the fastest developing area of hi-fi. The lower specification Cambridge Audio DAC Magic came out in 2010 and soldiers on for the present as one of the few Wolfson based DACs.

The DAC Magic Plus was one of the first DACs I bought. It was way ahead for the price at that time and it is still in use in my den feeding a Quad 77 amp and Quad ESL63s and other assorted 'speakers as the mood takes me.

ASR measured the DAC Magic Plus in 2019 and found it to have 110dB dynamic range unbalanced and 111dB via the (unbelievable at the price) XLR outputs.  
<https://www.audioscience.com/forum/index.php?threads/review-and-measurements-of-cambridge-dacmagic-plus.6887/>

These figures were way ahead in 2011 in budget DACs and are still highly competitive today. The 'Plus' came with 192/24 file compatibility, a built in headphone amp, volume control and, for a small extra sum, you could add a free standing Apt-X Bluetooth receiver (I did).

So, I doff my hat to the

Cambridge Audio DAC Magic Plus, and look forward to the HFW review of the DAC Magic 200M.

Best wishes,

**Mike Tartaglia Kershaw**

Hi Mike. Thanks for the history of Cambridge Audio's DacMagic. We measured Dynamic Range of DacMagic Plus as 114dB (April 2012 issue) but times have changed and the latest DacMagic 200M now manages a breathtaking 126dB, as you'll read in this issue's review. That's better than most other DACs available, irrespective of price. It remains an impressive digital convertor. **NK**

### MOONRIVER COMPLAIN

Moonriver (Sweden) did not like our review of their Model 404 amplifier (May 2021 issue). I asked them why. Here's their reply, criticisms being answered in turn by **Noel Keywood**.

#### Remote control housing material.

"The Moonriver remote is made from aluminium, not plastic. It is inaccurate that it is plastic. Plastic and aluminium are not the same. This is misleading. It should be mentioned in the next issue of the magazine as a correction".

Please accept my apologies for calling your remote control plastic when it is aluminium.

#### MC loading resistor

"It is clear from the photos in our website and the user manual that the MC loading resistor of the phono stage is removable and exchangeable by the user without the need of soldering. It should be mentioned in the next issue of the magazine as a correction".

I read your manual, accompanying info sheet and website and did not see any mention of a removable loading resistor, not soldered in.

This is, shall we say, an unusual way to do things, DIP or relay switching of load being expected at the price, not resistors that people must pull out.

#### MM/MC variations in frequency response

"There are many reasons why the MM is not as accurate as the MC stage. With only 2 gain stages in the circuit for more transparency

and the need for lower noise floor, a hybrid passive-active de-emphasis circuit was necessary: it is not possible to have the same accuracy with different gain factors when you switch the negative feedback on the opamp. On the other hand the MM cartridges never reach 20kHz electrically. They reach it with the mechanical resonances that vary from cartridge to cartridge and they never have absolutely flat frequency response anyway. A variation  $\pm 1$ dB across the spectrum is acceptable for MM. We had to choose between transparency, noise levels and the accuracy of MM vs MC. We chose the MC for obvious reasons".

All phono stages we receive for review have identical MM/MC response. Having designed many phono stages I know it is easy to achieve.



#### "Comparing the Moonriver 404 with SRP of £3300 with models costing £1000 is not serious." say Moonriver Audio.

Modern MM pickup cartridges have flat response our measurements show. See Ortofon 2M LVB250 (Apr 21 issue), Audio Technica VM750 (Dec 17 issue) and budget Audio Technica AT-95 series (Jan 19 issue). Nowadays the electrical generator of an MM has lower impedance due to more powerful magnets needing fewer coil turns. Your view relates to designs from the 1970s.

#### Volume variations across the frequency

"There is something wrong in the measurement. The variations from 20Hz to 20kHz are maximum  $-0.4$ dB in any volume position across the spectrum. The measurement should be done with a single ended generator output, not balanced and

the maximum output resistance must be up to 1K. The input impedance of the preamp is 24K. The published measurement is wrong. It should be mentioned in the next issue of the magazine as a correction".

The signal entering an unbalanced input is, by definition, unbalanced. There was, therefore, an unbalanced input (with a generator impedance of 10 Ohms). This real-time measurement from an advanced Rohde & Schwarz UPV analyser is applied to all amplifiers and most show no variation. Yours did.

#### Comparisons with other brands

"Any comparison with other brands is welcome within the given price range. Comparing the Moonriver 404 with SRP of £3300 with models costing £1000 or even £2000 is like a comparison between apples and oranges and it

is irrelevant and not serious. With just £750, you can buy a Japanese home cinema receiver with 7x100watts, a multichannel HD DAC with Dolby Atmos, Bluetooth, FM and DAB radio, HDMI switching and upscaling, subwoofer management, network player for Spotify and Tidal, UPnP and smart phone control via app".

The Quad Vena 2 and Leak Stereo 130 both deliver 50 Watts, but with better measured performance, more facilities and comparable sound quality – at one-third the price. This is a valid comparison.

"We would like to note that: Engineering is the art of compromise".

Best regards,

**George Polychronidis,**  
Chief Engineer.

# Planar Talk

**Martin Pipe tries the very unusual Aeon 2 Open planar magnetic 'phones, from Californian outfit Dan Clark Audio.**

**H**eadphones using 'planar magnetic' (PM) transducers – also known in some quarters as 'isodynamic' or 'orthodynamic' – have been with us for some time. Wharfedale and Yamaha made PM headphones way back in the 1970s, but after that they mostly disappeared... mainly because they were inefficient

and had to work off loudspeaker terminals. Firms like Oppo reintroduced PM 'phones in the mid-2010s, using more powerful magnets and cutting-edge materials to realise the almost-forgotten concept's full potential.

The PM driver attempts to improve upon standard moving coil drivers by using a flat and ultra-light diaphragm, within which the signal-carrying coil is embedded. Located on either side of the diaphragm are permanent magnets of opposing polarity, which react with the alternating field produced in the coil by an audio signal. Magnepan of the USA produce full size PM loudspeakers.

Dan Clark Audio, known until recently as "MrSpeakers" is – like Magnepan – based in the US. Of its current products, the bottom and middle ranges are both PM (at the top are electrostatics). Here, I am reviewing the sporty-looking entry-level Aeon 2 that – unusually – is available in both open-backed (as reviewed here) and closed-back variants. There are black ('Noire') and red colour schemes, but the 'closed-only' Noire features slightly-different "Harman Curve" tuning. Note

in passing that Dan Clark also offers a 'cost-reduced' version, the Aeon RT. That'll still set you back £500, in open or closed forms; the Aeon 2 and Noire, meanwhile, both sell for £900.

The first thing I noticed about Aeon 2 were its distinctively-shaped earcups – they not only look good but are, in Dan Clark's words "ear-hugging". However, this veritable Brompton of the headphone world also features a unique titanium headband with 'patented folding gymbals', that allow the full-sized Aeon 2 to "fold in on itself to about half its normal size". Clever and practical stuff.

The supplied carrying case is indeed much smaller than you'd expect – a boon for commuters, as well as the backpackers specifically name-checked by its manufacturer. The cables are detachable for transportation and upgradeability; lockable four-pin connectors are mounted on the base of each cup. A choice of cables, balanced or unbalanced in a number of lengths, can be specified when ordering.

The PM drivers Dan Clark describes as 'proprietary'. Small magnets are used to minimise weight – a frequent criticism of PM 'phones. Indeed, at 340g the Aeon 2 weighs less than many audiophile-grade MC headphones. Attention has also been paid to the improvement of internal airflow, for claimed benefits in the portrayal of detail. The surface of the diaphragm



is textured, as this was found by Dan Clark to improve stability and low-frequency performance. The drivers have a very low impedance (13 ohms) and – at 94dB/mW (92dB/mW for the 'closed' version) – are not particularly efficient. Most headphones are 40-300 Ohms, a much lighter load. Be sure that your headphone amp or personal music player is up to the job of driving them; USB-powered 'headphone DACs' wouldn't be ideal partners.

## USE AND SOUND QUALITY

In comfort terms, the Aeon 2 Open gave me nothing to complain about – its shape, earpad construction (memory foam, covered by synthetic leather) and reasonably-low weight allowed me to wear them for long periods of time. As with a Brompton, folding and unfolding them takes practice – but you'll soon get that (as you must, if damage is to be avoided). I used these headphones with a number of devices. One was the clever little Ikko Music Patch, also reviewed this month. This struggled to drive the Aeon 2 Open at times, resulting in notable bass distortion and a loss of clarity.

More orthodox headphone amps (Prism Callia, ANT Amber 3T and Chord Toby TT – fed by a Cambridge CXN digital source) were however able to take the lowish-efficiency of these 'cans in their stride.

Prominent treble emphasises shortcomings in recordings, no matter how minor. With the triangles and cymbal crashes of Sibelius' Finlandia (Sir Malcolm Sargent/Vienna Philharmonic) a slight edginess could be perceived at times. Likewise, a trace of splashiness affected the cymbals forming part of the poly-rhythmic backdrop to Talking Heads' Born



**A unique mechanism allows the full-sized Aeon 2 to fold down to about half of its head-worn size. Although constructional quality is excellent, improper handling – folding the cups one at a time, for example – can cause damage.**

Under Punches. And string sections, although undeniably detailed, were perhaps a little too sweet here.

Dan Clark helps you to tailor this tendency towards brightness by supplying a set of filters ('tuning pads') of different thicknesses. With the most appropriate tucked into the inner cavities of the earcups, I could better-enjoy the music. Also among our selections were the lush cinematic soundscapes of Goldfrapp's Felt Mountain; harpsichords, strings, pianos, synths and percussion kept their proportion in the mix while every seductive breath of Alison's closely-miked vocal could be followed. Also resolved astoundingly well were the staccato guitars of the Talking Heads track.

What also made the Aeon 2 Open stand out was its agility. Quite frankly, the speed at its disposal really does help to convince. Brass instruments were endowed with the well-defined bite that we may remember from pre-Covid live concerts, while fast rhythms – Talking Heads, for example – stopped and started

with precision and freedom from overhang. This percussive snap complemented electronic and dance music in particular; the Aeon 2 Open's low-frequency performance wasn't however quite as complementary – certainly in quantitative terms.

Bass – whether from a Pearl kick drum, a Fender four-string or a Mini-moog – retained the texture that allows an experienced listener to tell it apart from other instruments. However, you don't get the visceral impact that high-grade MC types are capable of.

Dan Clark's designers have done a bang-up job with the soundstaging performance of the Aeon 2 Open – an aspect of performance for which PM headphones have been criticised in the past. When listening to Sibelius, I found that instruments and performers were resolutely locked into the positions expected, the stereo image extending from ear to ear. Together with the clarity and detailing, this ensured that listening to music with the Aeon 2 Open was a rewarding experience.

## CONCLUSION

The more I listened to the Aeon 2 Open, the more evident their resolving power became. The shortcomings of even old or mediocre recordings weren't pushed into unlisten-ability.

Their treble emphasis can be tamed with Dan Clark's filters, but lack of deep-bass – my criticism of these superb 'phones – can only be remedied with an equaliser. All the same they are well above most others and worthy of a five globe rating. Get a listen if you can.



**The Aeon 2s are supplied with three sets of 'tuning pads' – foam inserts of different density, placed inside the earcups. They help tame the intrinsic brightness of the PM drivers.**

**DAN CLARKE  
AUDIO AEON 2  
OPEN £900**



**OUTSTANDING - amongst  
the best**

### VERDICT

Practical in design and detailed in sound, the Aeon 2 Open is fast as the sports car its lines were inspired by.

### FOR

- fast and detailed, but not at the expense of musical enjoyment
- eye-catching but practical design

### AGAINST

- rather bright and bass-shy tonal character
- relatively-low efficiency limits choice of ancillary equipment

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# In a twist

Martin Pipe discovers that Kimber, with Russ Andrews help, makes a pretty decent mains 'kable'.

**R**ay Kimber's very distinctive 'woven' cable came about in the mid-1970s. The American entrepreneur worked for a firm kitting out the discos. The flashing strobes and musically-modulated lighting was electrically-noisy; its effects could be heard as high-frequency interference on the sound system.

Kimber built cables with interwoven "counter-rotating" sets of conductors to cancel out this unwanted noise, discovering that sound quality was better than with conventional speaker cables – even without the lighting switched on. Suitably encouraged, in 1979 he started offering it to Californian audiophiles.

Since then, Kimber has refined his designs through experimentation

but the basic concept remains unaltered. It's now used for power cords as well as speaker cables, albeit in forms optimised for their respective duties. UK accessory specialist Russ Andrews was so impressed he decided to sell it in the UK. Over 35 years later Kimber remains the only cable brand stocked by Andrews because – in his words – "it works...brilliantly!".

Which brings us to the Evolution-300 'PowerKord' featured here. It's recommended for pretty much any home-entertainment product with an IEC socket. The IEC connector that precisely and firmly mates with it is a hefty, audio quality Wattgate Evolution W320 type that has been cryogenically treated. Its size gives the connector grip, but might not be accommodated by crowded rear panels. Also substantial

is the 13A mains plug at the other end, fitted with a Russ Andrews fuse. For some reason there was a tamper seal over one of the screws that holds it together, so we dared not investigate further.

And the Kimber Kable that joins the two? Woven of course, it features sixteen Teflon-insulated 'hyper-pure copper Vari-Strand' conductors and – new to Kimber's Evolution range, of which the 300 is the mid-range contender – a larger-gauge earth supported by what Kimber calls 'wide-format woven geometry'.

The Evolution-300's design is claimed to "reduce the cable's impedance", better-equipping it to "supply the instant current-delivery required by an amplifier to accurately reproduce fast

Aurum Wotan VIII speakers; other gear, including a Prism Callia DAC driving Focal Utopia headphones, was also tried. With the source, there were subtle but palpable improvements to the 'space' given to well-recorded orchestral CD rips and audiophile DSDs of 'minimal' performances (the latter, among them Blue Coast recordings of Greeninger and Kai's uncluttered Looking For A Home and the atmospheric solo violin of Emily Palen's Light in the Fracture, were particularly-revealing).

However, I found

#### RUSS ANDREWS SAYS -

"Inside is a Russ Andrews specification fuse made by Bussmann which has been DCiT treated before installation. The label is a factory seal, partly to discourage people from taking the plug apart as it's generally best that people don't tamper with mains components".

that using it with amplification was the better option; the lower strings of Gorecki's Third Symphony (Polish National Radio SO/Gibbons/Pendercki, CD FLAC rip), for example, were better-defined and given more depth.

#### CONCLUSION

In terms of performance, the Evolution-300 justifies its existence – Kimber's unusual geometry is evidently as valid for mains cables, as it is for links between amplifiers and 'speakers.

musical transients".

We're also told that the increased complexity of the weave boosts the cable's "natural interference-cancelling ability". It's all neatly-jacketed with noise reduction sleeving, which uses two different

diameters of nylon thread to achieve "flexibility, with a softer, more tactile feel".

#### SOUND QUALITY

The Evolution-300 was switched between a Cambridge Edge NQ streamer (source) and Edge A (amplification) driving Quadral



#### SIZES AVAILABLE

1.5m: £446.00  
2m: £526.00

#### RUSS ANDREWS EVOLUTION 300 £366.

(1M, AS REVIEWED)



**EXCELLENT - extremely capable.**

#### VERDICT

Subtle improvements bring your music that little bit closer.

#### FOR

- well-constructed  
- audible difference, especially when used with amplification

#### AGAINST

- fuse replacement evidently frowned upon

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# Patch me in!

Martin Pipe turns his smartphone into a tangible music player with Ikko's Music Patch

'Port-powered' DAC/headphone amps, intended to bring the sound quality of smartphones and tablets closer to that of dedicated music players, are nothing new. In recent years we've reviewed several of these devices, which may be practical options for listeners intending to travel with as little electronic baggage as possible. Whenever a spot of music is fancied, plug the DAC into your smart-device. The headphones, in turn, plug into the DAC rather than directly into the device's own sound system. Note in any case that some smartphones no longer make provision for analogue headphones, their rationale being that the user would be reliant on Bluetooth or transducers that plug into the phone's USB or Lightning port. The latter have miniature DACs and amps built in. As they – and, for that matter, audiophile-standard mobile

'headphone DACs' – draw power from the host device, they can impact battery life. Those who rely on their phones, but can't guarantee the availability of a power source for charging, should unplug the DAC whenever it's not required.

The £220 ITM05 Music Patch, from Chinese manufacturer Ikko, is quite a distinctive take on the headphone DAC concept. A small lozenge that's fastened to the underside of your smartphone with self-adhesive strips (two sets are supplied), it would be positioned near the base – where you'll usually find the phone's charging port. This mates with a retractable cable stub built into the Music Patch; USB-C (Android) and Lightning (Apple) versions are available, and it's important to choose the correct one when ordering (each is available in black or white). You can unplug the 'stub' when the Music Patch's services – and battery drain – aren't required, but as the 23gm device is semi-permanently attached to your phone it always has to be carted around with you. The case may be padded, but its limpet-like presence can be felt as a 'pregnant bump' when carrying it on your person. My advice is to attach the device to a phone case instead; the stub can easily-accommodate it. When high-quality music isn't required, simply swap the 'Patched' case for one that isn't. Phone cases are cheap enough, after all.

Usefully, the Music Patch caters for both balanced (2.5mm) and unbalanced (3.5mm) headphones. The 3.5mm socket is positioned at the charger end of the device, meaning that the

headphone plug/socket is at risk of damage, if you don't remember to turn your phone 'upside-down' before stowing it in a pocket. The phone's screen will usually 'flip' automatically to accommodate this; mikes aren't guaranteed to follow suit – bear this in mind, if calls are expected.

No such problems with the 2.5mm socket, which is positioned at the opposite end of the case. Using balanced phones is therefore the best option in practical terms, as the connector is not only facing upwards but further protected by the body of the phone.

Driving the headphones are amplifiers with some impressive 'paper' specs. For the Music Patch, Ikko claims a total harmonic distortion (THD) of 0.0008% and 122dB signal-to-noise ratio. On the other side of the amps lurks a pair of Cirrus CS43198 DAC chips – one per stereo channel. According to importer Advanced MP3 Devices, the Music Patch supports 32/384 PCM and DSD256; whether you get their full potential or not depends on the connected device and playback software.

As your phone's USB/Lightning port would be permanently-occupied if used to Ikko's expectations, a 'replacement' socket is provided for charging and phone accessories. There's no volume control on the device itself, the phone's being used instead.

The Music Patch worked first time with my Google Pixel 3a Android smartphone, a dim LED confirming activity. Music was thereafter diverted to my headphones – I tried Dan Clark Aeon 2 Open and Focal Clear Mg models (both via unbalanced connections) during the review





**The 3.5mm headphone socket is positioned alongside the connector stub, at the base end of the Music Patch. Both face downwards and are at risk of damage.**

period. Music, in lossless form, was played using the native Google software and VLC. I also found that the Music Patch worked with a Dell Latitude 7290 Windows 10 laptop, no drivers being required.

**USE AND SOUND QUALITY**

Clarity is a definite strong point, certainly at sensible listening levels; the CS43198 may be a budget DAC, but it's evidently well-implemented here. The textures of the hard-panned Moog call-and-response in Joni Mitchell's The Jungle Line were evident, as was the delicate acoustic guitar that strums through Edith and the Kingpin – another track from the exquisite Hissing of Summer Lawns album.

Switching genres, it was easy to make out the structure of a sampled percussion loop lurking in the background of Underworld's



**This cable stub mates with the charging/accessory connector at the base of your phone – it can be extended by as much as 10mm to accommodate different case depths.**

Jumbo (Beaucoup Fish). I was also taken by the open and wide stereo image that's imparted to orchestral music – my familiar Noseda/LSO recording of Britten's War Requiem, for example. Thanks to the Music Patch, I've never heard this music sound so convincing via my Pixel 3a, the onboard sound system of which doesn't – as with most commodity smartphones – meet hi-fi standards.

Unfortunately, strong bass can overwhelm this little device. Listening with the relatively inefficient (94dB/1mW) Aeon 2 Open 'phones I found that the lower registers of Black Box Recorder's distinctively-deadpan Uptown Top Ranking cover and the danceable electronic pop of Calvin Harris's Bounce both took on an unpleasant muddy complexion if the volume was turned up. It appears that the Music Patch doesn't have integral DC-DC converters to widen the headphone amp's voltage swing, presumably to minimise power consumption.

The output spec – 2.1V for unbalanced, 2V for balanced – would appear to bear this out (the USB-C or Lightning ports of mobile devices can only supply 5V to connected gadgetry, like the Music Patch).

As the Music Patch has no integral battery (an Ikko selling feature, would you believe?), its reliance on your host device for power has an obvious effect. I estimate that the battery life of my Pixel 3a was almost halved, when listening to music at a comfortable level though the Aeon 2s; there's an improvement if headphones of higher sensitivity (e.g. the 104dB/1mW Clear Mg) are substituted. Bizarrely, plugging a charge cable into the unit's 'loophrough' USB-C port switches playback to the phone's own audio

system before charging begins. The unfortunate upshot is that you can't listen through the Music Patch and charge simultaneously – a bit of a downer, should your device's battery start flagging halfway through an album. The spec claims that such activity should be possible, and so maybe a quirk of my phone is to blame.

**CONCLUSION**

One has to congratulate Ikko for caring to be different – and, on the whole, succeeding. Most of the Music Patch's design limitations can be circumvented through careful use. It can sound very good indeed, bringing the mediocre audio performance of



**Self-adhesive strips attach the Music Patch to the back of a smartphone; a spare set is supplied. The unit can get warm after long use, but the adhesive isn't affected.**

the average smartphone up to a far more musical standard. However, the use of efficient headphones or IEMs is recommended.



**A 2.5mm 4-pole socket is provided for balanced headphones, positioned at the opposite end of the Music Patch to the 'stub'. It's protected by the 'phone body'.**

**IKKO ITM05 MUSIC PATCH £220**



**EXCELLENT - extremely capable.**

**VERDICT**

A quirky design that's intended to become a semi-permanent part of your phone. It can work well, but is not without issues.

**FOR**

- fast and detailed presentation
- turns a smartphone into an agreeable music player
- easy to use

**AGAINST**

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With its AMT ribbon tweeter, Fink Team's KIM loudspeaker delivers sweet sound thinks Noel Keywood.

# Pretty Ribbon

**T**hink: ribbon tweeter. Domes measure well but my ears tell me ribbons sound better. Others think likewise: they are slowly creeping into main-

stream loudspeakers. Not so much in the UK, more in Germany where the ribbon appears to be popular, with companies such as Quadral for example, who make their own. Unsurprising then that German

designer Karl-Heinz Fink should use them in his Fink Team 'speaker range, including the recent KIM I am reviewing here, price £8900.

That's quite a price tag, so you might hope for something special

here. The press info doesn't say much about basic design ethos but I designed a loudspeaker with a ribbon tweeter in the early 90s and know the trade-offs. Graham Bank of Celestion produced a large, wide range ribbon for the Celestion 3000 loudspeaker back in the 1980s and Gilbert Briggs, founder of Wharfedale, interestingly attributes the drive unit to Schottky and Gerlach, developed by Siemens, who patented it in 1923 no less – so this type of driver has a German background.

At this point buffs of audio history may well be getting irritated – the KIM doesn't use a ribbon, it uses an Air Motion Transformer (AMT) – but this is a folded ribbon developed by Dr Oscar Heil, so a ribbon variant. With more surface area, AMTs typically run lower than ribbons and that is what Fink Team leverage here. The idea is to cover more of the audio band with the ribbon so it makes a greater contribution to the overall sound. All of which is to explain that the AMT ribbon tweeter of KIM contributes strongly to sound quality.

Quadral make their own, I said earlier. Why do that? Well, the AMT in KIM comes from Mundorf of Germany who are well known for their wide range of AMTs. But prices are breathtaking at Euros 580 for the Concert 100X for example, which looks much like the unit in KIM. Add in the usual multipliers for manufacturer and dealer margin and these two items account for a big chunk of the KIM's price. We're talking around Euros 5k of the retail price here – half the price of the loudspeaker. That's why Quadral make their own!

Fink Team confirmed to me the unit was from Mundorf, but modified to meet their specifications. So when listening to KIM this gave me a handle on design ethos, but also an understanding of retail price. Make what you will of the issues of course. This is a specialist loudspeaker that uses expensive AMT drivers, instead of a dome tweeter that comes in at less than 1/10th the price.

Covering bass and midrange is an 8in paper cone drive unit with rubber surround. It has a central dust cap to radiate higher frequencies, as per usual. It is acoustically loaded by a rear port.

The cabinet is solidly built with internal bracing and double-layer internally damped acoustic panels to eliminate cabinet colouration. The cabinet measures 500mm high, 300mm wide and 315mm deep, but comes with integral stands that take height to 860mm. Weight is quoted as 25.1kg and the 'speakers certainly feel solid.

Connection is through mono-wire terminals and there are three-position treble level and bass damping controls at rear. During tests the treble control had no measurable affect and the bass damping control minimal affect, position 1 giving -0.5dB less bass than position 3.

Karl-Heinz Fink told me that the treble control was meant to be subtle, compensating for "cable differences". With the bass damping control Karl told me that internally the crossover network needs a 0.5 Ohm resistor for correct alignment in conjunction with low output impedance (high damping factor) transistor amplifiers – position 1 on the switch. At position 3 resistance is lowered by 0.25 Ohms to better match high output impedance valve amplifiers that insert their own resistance.

That's the theory. In use the bass cone is relatively undamped (acoustically) at subsonic frequencies, causing it to move substantially when playing modern (i.e. flat) LPs and the damping control did not affect this. I used the warp filter of our Pro-Ject RS2 phono stage to avoid LF cone movement that became large, if only at high volume. This is not an issue with digital, where there's rarely any energy below 20Hz analysis shows.

### SOUND QUALITY

The KIMs were connected to our Creek Voyage i20 amplifier through Chord Company Signature Reference cables. Signal source was a MacBook Pro feeding in CD, hi-res and DSD to the i20's AKM digital convertor. I run the laptop from battery in this circumstance because measurement reveals earth currents can degrade digital dynamic range, but Mike Creek tells me the i20's digital inputs are all isolated to avoid such problems – an interesting aside!

Also used as a signal source was our Timestep Evo modified Technics SL-1210 Mk2 Direct Drive

turntable with SME309 arm and Audio Technica OC9X SH MC cartridge connected balanced to a Pro-Ject RS2 phono stage, itself connected balanced to the Creek amplifier through Chord Company Epic cables – all-balanced LP for total silence and a clean, clean sound.

In basic essence the KIM is full bodied in presentation and with a sweet, natural sense of unforced clarity. Where I mentally complain to myself about harsh treble from so many loudspeakers, the AMT

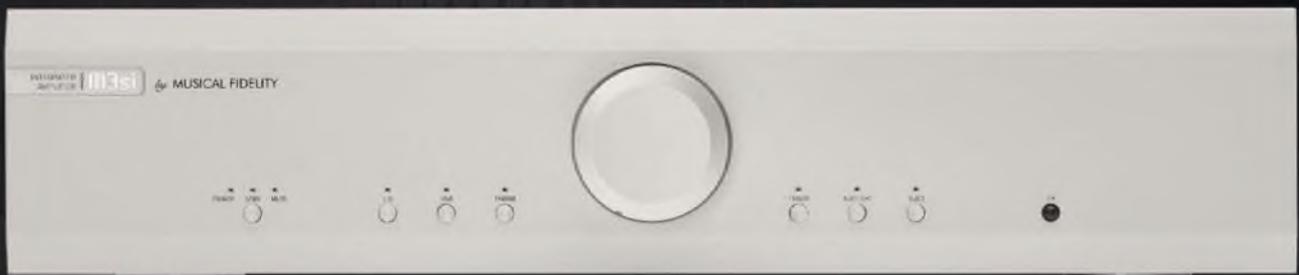


**Rotary switched Bass Damping and Treble Level controls sit at either side of the mono-wire terminals at rear. At top a reflex port.**

driver of KIM delivered highs in their full glory without harshness; it's seemingly not a bright loudspeaker in balance but it is well lit.

There's plenty of low end heft, allowing KIM to deliver my standard CD test tracks with calm ease: the stabbing synth kick drum that dominates Safri Duo's Samb Adagio had thunderous strength, powering this track along nicely. Less dry than many modern loudspeakers, KIM had the old fashioned quality of a "good big 'un", brought up to date with modern materials and construction to be svelte and composed, even when pushed hard.

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What about bass damping? The deep subsonic rumblings these speakers revealed with Samb Adagio were slightly more controlled with position 1 than position 3 with the iA20 – but differences were small quite frankly. I suspect many would prefer position 3.

Where I heard subsonic rumblings and eerie low events that surprised me, there were more surprises higher up the band. With Diana Krall's Narrow Daylight (DSD64) plucked guitar strings shimmered in front of me more powerfully than I am used to. Think alive and vivid. Also not harsh, just alluring in tonality. Here Mundorf's AMT tweeter showed just why it is so expensive and why a tweeter so good can be paraded without fear.

Ribbon tweeters are known for pin sharp stereo imaging and here again the KIMs were superb, the Minnesota Orchestra's Dance of the Tumblers, from Korsakov's Snow Maiden (24/96) placing horns and strings with precision on the sound stage. They were lively too, orchestral sections jumping out with vigour when it was their turn to lead. Add in rumbling lows from timpani and there was nothing not to like.

Where the bass damping control was subtle in effect, the treble level control made no difference I could hear. I double checked with white noise that will reveal minute differences – nothing. Fink Team say the impact is slight and may typically be used to balance cables. So this control does not raise or lower treble level by perceptible amount, unlike Quadral's treble level control allied to their ribbon tweeters for example.

With LP not a lot changed. The KIMs looked right into Something from Abbey Road (2019 re-master), with deep insight and a good sense of atmospheric depth captured by the microphone in front of George Harrison. Great sense of stereo too, the AMT making clear a sound stage the Fabs could be proud of. With plenty of low end power our new Abbey Road re-master when played balanced was quieter, more natural and certainly more grippingly dynamic than digital – something the KIMs with their insight made clear. However, the fundamental sound balance did not

change, remaining big-bodied.

There was enormous grunt behind drums in Sing, Sing, Sing from the Syd Lawrence Orchestra on Big Band Spectacular, whilst the low end drone of synth in Alison Goldfrapp's Lovely to CU moved the room in suitable fashion.

As the tracks rolled by I was very aware KIM is a highly tuned, sonically optimised design. Reminded me of hauling standard electrolytic capacitors out of a valve amplifier and installing Black Gates. Oh! When you use highly tuned audio parts the improvements are gently beautiful and this is the quality I heard with KIM – and that's what you pay for. Definitely a lovely listen.

### CONCLUSION

With a big bodied sound underpinned by powerful subsonics the KIMs were nothing other than impressive. Add in enormous



The AMT folded ribbon tweeter is manufactured by Mundorf to Fink Team's specification.

insight from the AMT tweeter and the final result is well worth hearing. This is a fine loudspeaker, that's for sure, a class act, if an expensive one.

"I heard subsonic rumblings and eerie low events that surprised me"

### MEASURED PERFORMANCE

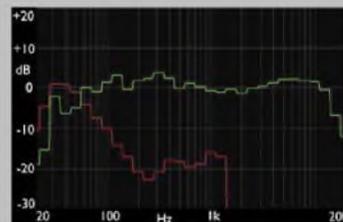
A near-field frequency response analysis of the Fink Team KIM shows the bass/midrange unit works from 60Hz up to 2kHz where it crosses over to the large AMT ribbon tweeter. The latter reaches up to 12kHz before output starts to fall, covering more of the upper midrange than most AMTs. It's size gives it lower reach but smaller ribbons reach higher.

Output of the 'speaker at low frequencies is slightly raised relative to the midband, giving a sense of

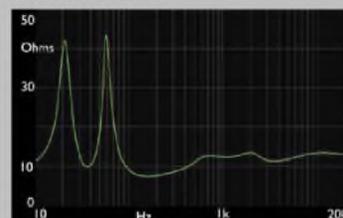
#### FREQUENCY RESPONSE

Green - driver output

Red - port output



#### IMPEDANCE



warmth and heft to the sound. Similarly the tweeter lifts by around +2dB above 3kHz to make its output obvious. The treble lift/cut control on our review sample made no difference at all. The relative strength of output from the tweeter was also height dependent, which is why the cabinet tilts back on its stand I suspect.

The bass damping control had little affect, position 1 giving fractionally less (-0.5dB) bass output than position 3 (with short burst sequences). The d.c. resistance measured 6 Ohms at 1 and 5.5 Ohms at 3, again small changes.

The rear port is tuned to 38Hz our impedance analysis shows (by its dip) and the height of the trace (above 10 Ohms) shows relatively high impedance at low frequencies, overall impedance measuring 10 Ohms with pink noise. This is much higher than the 6 Ohms common nowadays, resulting in a low-ish sensitivity figure of 86dB from one nominal Watt (2.8V) of input. Amplifiers of 60 Watts or more are needed.

The Fink Team KIM measures well, showing distinctive traits that relate to use of a large AMT folded ribbon tweeter with a bass unit tuned for obvious presence. The controls have minimal affect. **NK**

### FINK TEAM KIM £8900



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- clear detailed treble

#### AGAINST

- a tad tubby
- controls have minimal affect
- no bi-wire

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# Beam me up!



**Martin Pipe remembers the American BIC Beam Box – the first (and possibly only!) FM aerial to resemble hi-fi equipment.**

**T**o make the most of any VHF/UHF broadcast receiver – be it TV, FM radio or DAB – we are told that an external aerial is essential. And quite rightly so; far more signal is available in elevated outdoor locations. Furthermore, there will be fewer of the ‘multipath’ reflection effects that cause audible distortion on FM radio, and used to plague analogue TV reception with distracting ghost images. Unfortunately, not everyone is in a position to erect an aerial on the roof or a convenient wall. In a conservation area such eyesores are forbidden; a tower-block apartment may lack a suitable communal aerial outlet.

The problem was worse in

1970s New York City, famous for its (metal-framed) skyscrapers. On the other side of the Atlantic, British FM radio listeners once envied the enormous choice of outlets available to New Yorkers across that 20MHz of spectrum. Community ‘narrowcasting’, multiple classical genres, jazz, pop, disco and rock in progressive and underground flavours were available through the FCC-licensed outlets alone (note, in passing, that some of the era’s NYC radio is recalled on [www.nyradioarchive.com](http://www.nyradioarchive.com)). Stations were broadcasting in stereo before the BBC, but then again the Zenith-GE multiplex technology – like FM itself – was a US development.

Quality-conscious New York

listeners without proper aerials struggled to get the best from FM radio. Harshness and random high-frequency distortion, weak reception of desirable distant stations and hissy stereo spoilt their enjoyment, no matter how much they played around with the orientation of those ‘rabbit-ears’ or manufacturer-supplied wire dipoles. Remember that FM was burgeoning Stateside during the 1960s and 1970s, prompting the development of American tuners that remain classics to this day – Marantz, McIntosh, SAE, Scott, Sequerra and Sherwood models amongst others – as well as healthy sales of the top Japanese imports. In many parts of the US at that time, serious listeners fortunate



*Through the decorative smoked-plastic top cover – which, from afar, gave me the impression the Beam Box was some kind of ‘hot plate’ – the BIC Beam Box’s aluminium aerial elements are visible. Pairs of these “capacitively loaded, foreshortened dipoles” are switched into position, using a four-position rotary switch on the fascia of the unit, to attain a degree of directionality.*

enough to own such tuners would be amply-rewarded if they fed them with a high-gain aerial that could be turned towards the wanted transmitter using a remote-controlled motorised ‘rotator’ system.

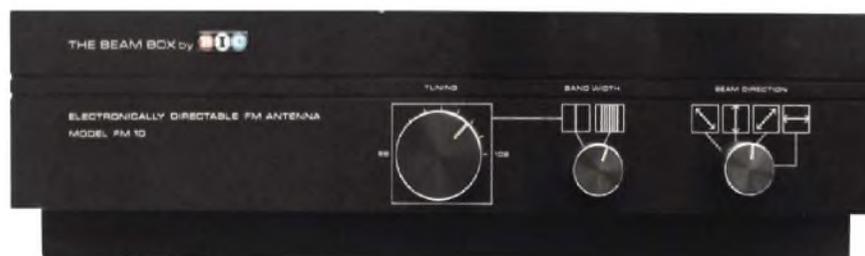
Cue the British Industries Company, the name of which betrays its origins as an importer of UK-made gear. BIC – which, as the company was fond of telling us, was pronounced ‘bee-eye-see’ – went on to become a maverick hi-fi manufacturer. Among its products were ranges of innovative belt-driven turntables, efficient Venturi “coupled-path” ported speakers and cassette decks that could be run at twice the usual speed for improved fidelity at the expense of running time. Its products sold well in the US, despite the onslaught of Japanese imports, but perhaps ironically they weren’t quite so successful in the UK. Which makes the BIC FM-10 ‘Beam Box’, as featured here, quite a rare find. Indeed, when I chanced on this curious lump at an Essex car boot sale a few years back I initially thought it was some kind of cooking apparatus.

But it isn’t. It’s actually a highly-unusual form of indoor VHF aerial, designed to help the urban FM listener to get the best from whatever signals are available. And BIC,

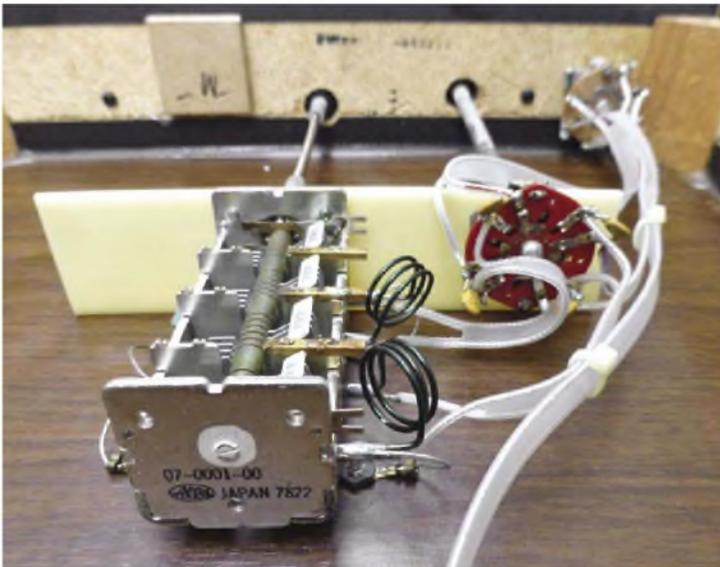
being based in Westbury – on Long Island, not too far from NYC – would have known plenty of them. The BIC Beam Box basically consists of a number of ‘arrow-shaped’ aluminium aerial elements, which can be seen through the transparent smoked-tinted top panel. Pairs of these “capacitively loaded, foreshortened dipoles” are switched into position, using a four-position rotary switch on the fascia of the unit, to attain a degree of directionality. In other words, you can ‘aim’ the aerial at the desired transmitter without having to physically move it! Those horizontally-polarised elements are short, being a fraction of the wavelength of the very high frequencies used for ‘Band II’ FM broadcasting; the mid-band frequency (98MHz) corresponds to a ‘full’ wavelength of three metres or thereabouts. The Beam Box, on the other hand, measures approxi-

mately 37cm x 38cm x 12cm.

Electronic tuning – remove the base cover, and you’ll see a four-gang variable capacitor and coils amongst other things – is instead used to match those aerials to the frequency you’re listening to. Indeed, its knob is ‘calibrated’ between 88 and 108MHz; turn it to the frequency of the station you’re tuned into. Another control, marked ‘bandwidth’, is a selectivity aid. Intended to help with reception when the wanted station is close to another (possibly stronger) one, it switches in capacitors that change the ‘Q’ of the aerial tuned circuit. The effect is to sharpen its response over a narrower range of frequencies, centred on the one corresponding to the desired station. The only other feature is the aerial output, which is available in 300 Ohm and 75 Ohm forms. Instead of the familiar Belling-Lee coaxial connector, the latter takes



*The tuning knob is adjusted to match the frequency (between 88 and 108MHz) of the station being listened to. Next to this is a bandwidth switch, intended to improve reception when the wanted station is close to another. The final ‘beam direction’ control switches different dipole pairs into circuit, aiming the aerial toward a wanted transmitter, whilst attenuating unwanted ones.*



**The tuning knob is coupled to this large four-gang variable capacitor, made by Japanese ALPS – the date code suggesting in 1978.**

**The bandwidth switch, together with its Q-modifying disc ceramic capacitors, is a simple rotary type.**

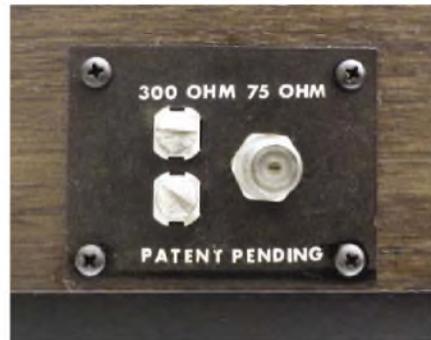
**At the base of the tuning capacitor can be seen – under a nut – one of the four connections made to the aerial elements on the other side.**

the form of an 'F' socket – as used widely in the USA. These are now common in the UK for cable and satellite TV, but were extremely-

rare in 1970s/early-1980s Britain.

I tried the Beam Box with a Kenwood /Trio KT-7300 'scale-and-pointer' FM/AM tuner, which

is representative of the era's hi-fi kit. It has to be said that the airwaves in UK are now perhaps closer to what New Yorkers had in the seventies, if only in terms of their crowding. Quality-wise, though, it's a different story in both sound and programming terms – Radios 3 and 4 being the obvious exceptions. And I found that the Beam Box – positioned as close to a window as possible – could make a difference with some broadcasts. It's quite satisfying to maximise the signal strength through judicious use of the three front-panel controls, monitoring both sound



**Both 300 Ohm and, via a simple internal matching-transformer, 75 Ohm output connections are available. Instead of the familiar Belling-Lee coaxial connector widely used in the UK at that time, the 75 Ohm output takes the form of an 'F' socket – as used widely in the USA, for UHF TV aerials and so on.**

quality (distortion, stereo 'hiss') and the needle of Kenwood's analogue signal-strength meter.

With others – notably the stronger BBC networks – the Beam Box wasn't appreciatively better than a wire dipole cut to a quarter-wavelength of the station's frequency. Neither are of course as effective as a roof aerial, which is thankfully an option for me. In 1978, though, many apartment-dwelling NYC audiophiles would have been only too happy to shell out \$89.95 (nearly \$400 today) for one of these unusual objects. It's the only aerial I've come across that looks like a hi-fi component. Even today, BIC FM-10s – or their cost-reduced relatives – crop up on eBay, for anything from a pound to more than \$75. If you listen to analogue radio regularly and come across one of these "electronically directable indoor FM antennae" going cheap, grab it. They're a lot of fun!



**The Beam Box was made of wood, not metal, to avoid screening effects upon its short aerials. The variable capacitor and coils are spaced away from the front panel controls to avoid effects of the human body upon tuning. There is a rotary 'bandwidth' control switch, carrying the capacitors that it switches into position to modify the 'Q' of the aerial tuned circuit. Doing so sharpens its response to a narrower range of frequencies, to better reject others.**



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“like many things in hi-fi, when it comes to sound quality there are hidden horrors”



Noel Keywood

Long ago I excitedly bought a Cambridge P50, my first ever transistor amplifier. In a magazine review it had virtually no distortion, we were informed, appearing to be a wonder of its time. The styling and finish were superb – it had to be the best thing going in 1972, this being an early model with white casework and toroidal mains transformer. The latter was pancake slim, an innovation at that time – used by designer Stan Curtis to achieve the amplifier's low profile.

When I got this beauty home it immediately replaced my DIY Mullard 5/20 valve amplifier which by that time was considered archaic. The Cambridge sounded fantastic – for a short time. Very fast and clear, suitably punchy in the bass through Goodmans Magnum K loudspeakers I recall, known for their bass.

I had used transistor amps before this one but none were very convincing: they amplified music alright, but in lacklustre fashion. My Mullard was less muddy than them, the Cambridge more alive and gripping. It didn't take long however before I started to latch onto something. Distortion!

Eh? The review had said specifically it was distortion free. But I was sure I heard an edginess in the treble that I'd never heard before. Time to measure it, using a Rogers test set recently acquired. Sure enough in the mid-band, at 1kHz, there was no distortion, but at high frequencies (10kHz) there was around 0.3% crossover distortion; it appeared as a nasty, spiky waveform when viewed on an oscilloscope.

Oh! My new wonder amplifier was not a wonder at all. The speedy sound was as much down to this phenomenon as any other magical property it's sleek design suggested might lie inside.

I'd never heard distortion before – at least not like this. Valve amps produce distortion but it is a different type and subjectively less obvious. If I turned up volume the bass of my Mullard would start to wallow a bit, as the transformers were pushed into overload, a common and known about problem of the time. It could also get a little thick and muddled when over driven, but it didn't rasp or bite.

I'd borrowed a Quad 22/II pre/power amplifier and it suffered similarly, having relatively small output transformers that, designer Peter Walker later told me, helped ensure their ESL57 electrostatic loudspeaker would not be over-driven (hmmm...).

With the Cambridge P50 I realised that how you measure an amplifier and what those measurements mean in terms of sound quality are two very different things. More confusingly, it was becoming obvious that various known about and measurable distortions sounded entirely different to each other: I could put up with a bit of bass wallow from John Mayall's Blues Breakers – music only authentic through a valve amplifier in any case (!) – but the background buzz of crossover distortion was altogether a different matter; once I'd latched onto this problem it started to annoy me. My wonder amplifier had crashed and burned before my ears, something that was very disappointing.

The story came to an end when I moved it one day, switched on and it went phut. Looking inside, a loose piece of wire left over after assembly had rolled under the terminals of an output transistor bolted to the base plate that acted as a heat sink, shorting it out.

A Quad 33/303 came in as replacement and quite obviously

it did not sound so clear – but at least it was smooth and listenable, offering more volume than my trusty little Mullard 5/20. Great for a bit of Led Zeppelin who, at that time, had become an all-dominating world super group. The transformers of the Mullard, bought mail order from Home Radio of Mitcham back in the 1960s, were just not up to that sort of thing!

For many decades crossover distortion haunted amplifier design. It was hard to eradicate. The problem lay in mis-match between transistors and their intrinsic bandwidth, or “speed”. If open-loop (no feedback applied) bandwidth was low, insufficient feedback at high frequencies would allow distortion to rise. It all came down to the transistors available and their matching.

That pushed responsibility back to device manufacturers: better transistors were needed. Nowadays dedicated audio output transistors such as those from Sanken (Japan) are commonly used.

As a result, crossover distortion has now become rare in audio amplifiers, something that has happened over the last decade as power transistors have steadily improved. That means sound quality has improved because of better materials and manufacturing techniques for transistors, rather than improved circuit designs per se.

Quite what distortion sounds like and even whether it is very important is a difficult question to answer. Depends on what sort of distortion really – and what annoys you. Much like many things in hi-fi, especially when it comes to sound quality, there are hidden horrors.

We've come a long way since Stan designed the P50 and I rushed out to buy it. But my ears tell me we still have a way to go. ●

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# "Producers wanted louder music. That meant more sales. More money"



Paul Rigby

Let's get this thing finished otherwise I'll be talking about it longer than the last Lockdown.

Part three, you might say, of my thoughts on the significance of vinyl. We're, from memory, up to point No.9.

No.9. Certain bands are known by the style of their sleeve. They are given a brand, an identity by the sleeve art – and because that sleeve art is large, the identity is more significant and noticeable. They become ingrained in musical culture.

Artist Roger Dean's fantasy-based landscapes have been used on so many Yes albums that their LPs can be spotted at 30 paces, while any Yes-related artist, anyone who even has a tenuous Yes-connection, now uses the same art style.

Punk. Anyone sporting a Jamie Reid-style sleeve graphic style is given instant cache.

The Grateful Dead? The skull is all over their works. Iron Maiden has tweaked that into an official brand via their Eddie character.

And do I have to mention Dark Side of the Moon?

No.10. Sleeve art again and mood. Unless a band is being purposely satirical (i.e. Throbbing Gristle's '20 Jazz Funk Greats'), a vinyl LP will broadcast the tone of the music before you even see the band and its title.

There's no way you will confuse a Carpenters LP with death metal – or Cradle of Filth with a newly compiled Eurovision collection, for example.

Finishing on a tangent, founder of Elektra Record, Jac Holzman once said that he couldn't believe that the record industry threw away its fundamental marketing tool – the sleeve of the 12" album.

No.11. Love marks. I kid you not, this is – or at least was – a

term used by advertising companies. Vinyl has marks of ownership. Experience. Your CD, your download/stream sound exactly like mine but our vinyl copies do not. I know that there's a click midway through track two on mine. There isn't on yours. Our records have travelled with us through our lives. Our records bear the scars.

Oh – and despite lots of damage, vinyl often still works. Add a single scratch to a CD or remove a single bit from a download/stream and they're dead in the water.

No.12. Respect. A turntable is shrine. Like any spiritual entity, you have to invest in it before it will give back. That changes your psychological position. Ritual focuses your attention.

Religions know all about this. You want a great harvest, chum? How's about a quick sacrifice, then? You want a great life? I want your time and your prayers. You want to feel uplifted? Sing a few of my hymns. You want to play an original Joni Mitchell pressing from the sixties? Then go to the shelf, search and pull it out, pull out an inner sleeve, then the record. Place the record on the turntable, remove bread crumbs and cat hair from the surface, switch on your hi-fi, lift the arm then carefully place it on the outer groove. Then come back in twenty minutes and do that last bit again if you want more pleasure in your life.

You've just invested in a moment. So you're going to jolly well sit there and hear the fruits of your endeavours, aren't you? What investment is there in button pressing on a phone? And then why should you stop to hear the resultant music? It doesn't care. Why should you?

No.13. The vinyl single. It's arguable that the charts would

never have evolved and achieved a recognition and a level of importance if the vinyl single had never existed.

No.14. Gravitas. Albums are not respected on a streaming platform because they hold no gravitas. Vinyl gives music gravitas. You feel guilty if you skip a vinyl track (well, you can't in any case). Streaming albums end up being nibbled at. You play track four, then track nine. Then you dump it for another album, like flicking a TV remote.

You might as well carve out chunks of dried oil paint from the Mona Lisa with a knife to get a taste of that picture. I don't see a great deal of difference.

To finish? A word about the well worn subject of the Loudness Wars. A brutal conflict associated with the CD format (also downloads and even streaming). One that (mostly... ish) by-passed vinyl.

A war started, not by mastering engineers (they were paid servants and audiophile scapegoats) but by record producers.

Why did it happen? I got this from singer/producer Nick Lowe. Because, from the eighties, producers could see the music output on a computer screen. Producers, for the first time, could see their music in picture form, as a digital output. And they saw lots of empty space. They didn't understand that the space represented dynamic range, subtlety and sonic contrast.

They thought that filling the space on the computer monitor meant more music. That it produced punch. They didn't understand that 'punch' came from the performance. Producers wanted louder music. Because that meant it was noticed. That meant more sales. More money.

Digital started that. Not the LP. Again – the significance of vinyl. ●

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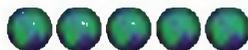
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**HI-FI WORLD**

ISSUE MARCH 2016



5 OF 5 GLOBES

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# "Nowadays you can give the great singers of a bygone era a 're-recorded' background"



Martin Pipe

I've a friend of 30 years standing, an electronics engineer: name "Kickin' Joe". Joe has used Naim Nait amps at the heart of a hi-fi system that, although modest when compared to some of the kit featured in this magazine, worked well and enabled him to get the best from funk, soul, rap, garage, house and the other club music. Elsewhere in Joe's system were a Rega Planar 2, Mission speakers and a 2-head Nakamichi cassette deck; a Technics FM/DAB tuner was subsequently added.

As well as music and hi-fi, Joe loved his gadgets – newfangled games consoles that were quickly eclipsed by others, the battery-eating Creative Labs personal hard-drive jukebox and the primitive dash-top sat-nav that told you to turn into a junction after it had been passed! As you might have guessed, we're talking mid-1990s here.

A few years later he got married, and children followed. Then a job move took Joe's family to another part of the country, and I didn't see much of him after that.

Merely playing music wasn't enough for Joe – he liked making it too. His pre-marriage passion for gadgets helped here; I'd go to his place and notice that another new synth had been added to the stack – a Roland JV-1080 here, a Korg Prophecy there. My first decent soundcard, a 16-bit Turtle Beach with slots for RAM that enabled it to be used as a s.s.s.s.sampler was one of his cast-offs. These devices, and his other keyboards, were the stuff of dance music. They were controlled by a MIDI sequencer that, when I met him, had just migrated from Commodore Amiga to IBM-compatible.

Joe's speciality was to produce

sophisticated cover versions of what DJs were playing in the clubs. He would toil for hours on these (re)creations, expending painstaking effort on them until they sounded 'right'. Sometimes, they worked extraordinarily well – at other times, they weren't quite as successful.

As the responsibilities of fatherhood took hold, the gadgets and synths slowly disappeared. I noted that the domes of his precious Mission tweeters were pushed inwards; other bits of his hi-fi were sold.

Lockdown has affected everyone, and Joe is no exception. During time that no longer had to be wasted on pointless work-related journeys, his love of music-making was rediscovered. However, he didn't even attempt to reacquire his battery of synthesisers and drum machines. These days they live as 'plugins' in a PC, he told me, in his Cubase Artist 10 digital audio workstation software.

Also in there are convincing string sections, drums, basses and guitars; this stuff allows him to do classic disco properly.

Joe recently sent me some of his tracks. One took "three weeks of intermittent evenings to do...so far", while another was completed in "just three evenings". He has learned how to manipulate samples – some of which he had to identify and source – using techniques like filtering and time-stretching.

Other tools in his software allow him to isolate the original vocal, so he can add it to his own music backing version.

Traditionally, you could do a passable job of extracting a central vocal by isolating the stereo channels, inverting one and adding it to the other. This (sort of!) works because the lead vocal

usually occupies the centre of the stereo image. It's far from perfect, though, even after filtering. But the days of such simple analogue trickery are over: Joe's software instead uses DSP magic to achieve far better results.

In the days of 12in. singles, you'd often find an 'A cappella' version on the B-side; just the vocals, or just an alternative instrumental version, termed a re-mix. This was often exploited by dance re-mixers and producers.

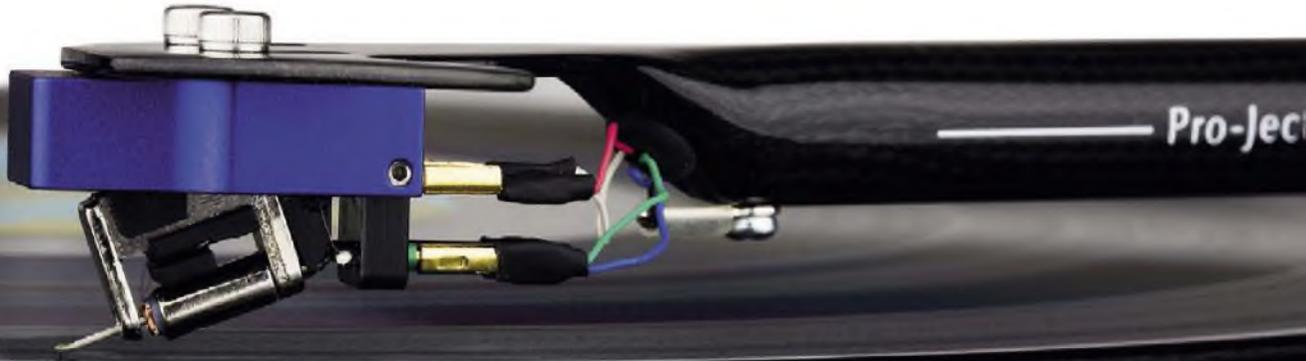
Nowadays you can, copyright issues notwithstanding, use practically any record to provide a vocal performance for your music backing track – regardless of how different the genres may be – or possibly even give the great singers of a bygone era a 're-recorded' background he told me. His latest software armoury also provides studio-grade compressors and limiters, giving his mix the 'punch' I often felt was missing from earlier efforts.

Indeed, the tracks he recently shared with me were quite incredible, being in a different league to what I recall him doing all those years ago 'in hardware'. Sometimes, a misjudged sample or a snare that's too forward in the mix gives the game away; with other tracks, you'd have to make real-time comparisons to tell them apart.

All this shows just how far music production technology has progressed in two decades. Much of what we hear now may sound real but it isn't at all. Digital processing has become so powerful old analogue performances can be cleaned up and re-presented with astonishing quality improvements. As my friend Kickin' Joe has demonstrated to me. ●

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"this was a life extension exercise, not a tone changing one"



Dave Tutt

**O**f all the equipment I have worked on over the past six months or so much is normal, average and unexceptional gear. Most equipment lies at a price point where the music fan can afford it, but it's somewhat better than a stacking monster from PC World, or significantly better than a so called music system attached to the back of a computer claiming over 1000 Watts of power.

However, once in a while comes something that is a little different from the rest. It doesn't have to be hugely more expensive or radically complex in its internal design or in external construction. Sometimes you just know it's right from the moment you plug it in.

In this instance I am talking about a Musical Fidelity A2 amplifier. Turn it on and leave it for 10 minutes to warm through and with my much modified Celestion F1 speakers it sounded great. Even better when I tried my even more modified AR18 speakers – so there was obviously something good in the package.

There's no need for tone controls with this amplifier. Its tone was correct – unlike others I could mention that need a twiddle no matter what you play into it or out of them.

Now I will admit that there are manufacturing compromises in the A2, such preamp circuitry run at 15 Volts with only 16 Volt smoothing capacitors – not something I would do. It is too close to the component limits to be good.

Likewise, since the amp is Class A – though only slightly and somewhat less than other MF amplifiers from what I can tell from the heat it generates

– I would expect the warmth internally to be something I would want to think about. Fitting 105 degree capacitors rather than the 85 degree ones here would be another sensible approach.

Fortunately, most of the capacitors were kept away from the heat sinks, which is all to the good. In the A1 for example they were far too close to the heatsink and were almost surrounded by it. Times and designs move on.

In discussion with the owner we came to the agreement that I would change several of the capacitors and that I would avoid changing any of them in the preamp signal path, but that the power supply ones and those associated with the power amp would all be swapped out, including the power amp input cap and those within the power amp itself.

At this point I would see what it sounded like and confirm if it had radically changed. The idea being that this was a life extension exercise not a tone changing one. So Vishay main smoothing capacitors, the biggest ones that would fit the box went in, as did a selection of Panasonic high temperature, low ESR, caps.

The 0.22 $\mu$ F electrolytics used as power amp audio input coupling capacitors were changed to PET polyester types that physically fitted the circuit board. I would never consider using electrolytics in this position and with such a low value, only fitting electrolytics here if the values are higher and the board space limited.

The main smoothers were as usual the only capacitors that you cannot buy easily with a higher temperature value. I used Vishays because they are 40 Volt rather

than 35 Volt types and were low ESR and long life types – and in my experience they do a very good job. They obviously had to fit the circuit board and still fit under the lid – which they did, fortunately!

I had a look at the zener diode 15 Volt supplies and once the capacitors had been swapped for 25 Volt rather than 16 Volt ones I also fitted a polyester cap across the zener itself and also across the supply feed resistor to create a great extra level of noise filtering. These fit on the track side of the board. Simple orange capacitors work a treat to do this, either 0.1-0.22 $\mu$ F types are usually fine. It's a tuning thing that depends on the source supply lines, their voltage, and the path they take to get to the next stage. Sometimes 0.47 $\mu$ F is required.

Once powered up it was time to go around all inputs and outputs to ensure it all worked properly, then on to soak test for a couple of days with Radio 2 going in and out. This blew my street cred, completely!

Hooked up to both pairs of 'speakers in turn there were some minor sonic changes that I would put down to the PET capacitor replacement of electrolytics at the power amp input – a slight cleaning up of the upper mids, but very marginal.

There was also a little more bass, but again unless you had much bigger speakers you might not notice it and my guess would be due to the stiffer power supply with those lovely new Vishay parts.

I hope my customer continues to enjoy the niceness of his Musical Fidelity A2. It was a notch up from average gear I commonly see. ●

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EVANESCENCE

The Bitter Truth  
Columbia

This album began before the pandemic kicked in but four songs into the project, everything changed. The title reflects the latter but also family losses experienced by the band itself. The sense of pushing through rather than standing still and allowing yourself to be defeated. Lead singer, Amy Lee, stated, "I want people to come away from this album feeling hope and empowerment and strength. Something that inspires me a lot in life is people who have overcome great obstacles".

Back for a fifth time, the new album from the band is a twelve-tracker, double-album gatefold. Oft describe as alt. metal (with grungy power pop thrown into the mix) and that hard-hitting punch is much in evidence here. I wanted to include the background and quotes because that's how you need to listen to this album. It's a record with a hard-hitting,

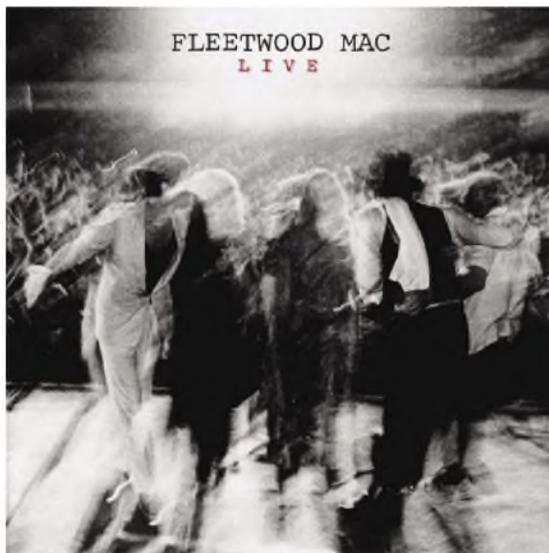
emotional point to prove and a statement to make, about themselves and others.

So the vocal performance has a fiery core around a strong rocking momentum. It's a rock album 'in spite of'. In spite of what's going on. In spite of heart-ache and loss.

The tone can be a little dated in its presentation. That is, this album is less about breaking creative boundaries than making an emotional statement to the fans. This is where the band find their sweet spot, this is where their hearts are in musical terms and they are obviously comfortable there.

For the mastering? Mastering is interesting. Bass-heavy, low in noise but with rolled-off upper mids at the extremities of the dynamic range giving a warming effect to the overall presentation. The overall effect is slightly claustrophobic which, of course, might have been the intention.

AUDIOPHILE VINYL



FLEETWOOD MAC

Live  
Rhino

The Fleetwood Mac campaign continues with some gusto via this very presentable set offered in a 12" square slipcase. Released originally in December 1980, it was the band's first live album. Recorded mostly during the world tour for the album 'Tusk', between 1979 and 1980, the original release was a double album featuring songs like 'Dreams', 'Go Your Own Way', 'Rhiannon' and 'Don't Stop'.

Before we go any further, there are exceptions here. 'Don't Let Me Down Again' was recorded in 1975 during the tour for the album, Fleetwood Mac. 'Dreams' and 'Don't Stop' are from the band's sound check in Paris. 'Fireflies', 'One More Night' and a cover of the Beach Boys' 'Farmer's Daughter' were taped in California, for the band's crew, family and friends.

This newly released reissue

packs in the double album on vinyl but also three CDs. The original album also appears on CD but there's over an hour of unreleased live music recorded between 1977 and 1982 on the third CD disc.

More than that, vinyl fans will be happy to see a bonus 7" single featuring previously unreleased demos for 'Fireflies' and 'One More Night'.

And let's not forget the included booklet that includes rare photos plus a history of the live album by writer David Wild.

As for the mastering? Live albums are notorious for their poor sound reproduction. They serve as a postcard of an event, warts and all. Nevertheless, some live works sound better than others and, while not perfect, this is one of the better forays. The audience doesn't swamp the music, the soundstage is open and spacious. Thumbs up.

The smiling face of snarling Britpop. That was Travis. To me, they sounded like a heavily diluted Radiohead. A heartfelt outfit connected to the same substrata of Britpop that also connected bands like Ocean Colour Scene, Embrace and Cast.

This was the band's debut album, released in 1997.

The group were created in Scotland, Glasgow actually, in 1990 but art school got in the way. So the guys had been 'at it' – off and on – for a while before this debut hit the streets. And those boys? They were Francis Healy on vocals with guitar supplied by Andy Dunlop, drummer Neil Primrose and bassist Dougie Payne.

The first notion of career dedication appeared via a 1996 EP 'All I Wanna Do is Rock'. Later, it was given serious attention, shown by the appearance of a named producer, Steve Lillywhite.

From it appeared singles such as 'Happy' and 'Tied to the '90s'.

The album showed their Britpop connections with backwards glances at classic bands like The Beatles and The Kinks but it never wholly dwelt there. You never felt that they were mired like other Britpop chart bands of the time. Maybe this is what opened their general appeal and gave them a sense of individuality.

More than that, while there was grit when required, there were also plenty of hooks to keep the attention.

As for the mastering? I like it. There's a satisfying tonal balance, the dynamic range is broad, the upper mids offer all the detail you need from a high-energy presentation while instrumental separation is admirable. It was easy to hear the strumming of an acoustic guitar amongst the percussive racket and vocal screams on 'All I Wanna Do is Rock', for example.



## TRAVIS

Good Feeling  
Craft

# AUDIOPHILE VINYL

This album appeared in the Noughties so you couldn't really call the album grunge could you? Yet, there are flavours of the genre here even though it was first released in 2000. Even so, there's also hard rock or alt. rock or whatever you fancy calling it that gave the band a freshness, making this album a roaring success at that time.

The group came from Escatawpa, Mississippi and grunge was all over them in their early days as a regional band. They started out as a trio with Brad Arnold on vocals and drums, alongside guitar-toting Matt Roberts and bassist Todd Harrell. Then a studio drummer attached himself to the band so Arnold could concentrate more on singing. Chris Henderson also joined on guitar.

The reason they were brought into the Republic fold

was exposure. Specifically a period playing in New York, at the rather famous CBGBs club.

I said this album was a roaring success? I meant that. There were a host of singles and, in that first year of release, the album hit four times platinum. Not bad, eh?

Not a perfect record, the song-writing is good but inconsistent yet it announced the band to the public, exhibited heaps of potential and added enough metal vibes to attract the rock crowd of the moment.

This edition arrives in a pizza-style box with a third 'Escatawpa Sessions' green vinyl disc recorded in Mississippi during 1996, featuring seven demo versions from The Better Life, three previously unreleased tracks, a lithograph and booklet. Mastering is refreshingly balanced for an alt.rock outing. Delicate highs, organically weighty bass. Lots of fine detail in the middle. Sorted.



## 3 DOORS DOWN

The Better Life  
Republic

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# Touch of Magic

Top performance at a low price. It's got to be magic thinks Noel Keywood.

Cambridge Audio introduced their first DacMagic in the mid-1990s, using Wolfson digital converters if I recall rightly. It was a simple, unpretentious little unit that worked well, purposed for a better sound from a CD player. But much has changed since then. Cambridge Audio recently released their latest version, the £449 DacMagic 200M, bringing this ever affordable design right up to latest standards.

All sounds simple enough doesn't it? I was quite taken aback at what they have done however. Especially at the price. To dive straight into it, Cambridge Audio have grabbed the very latest DAC chip from now-famed ESS of California, the ES9028Q2M, configured it for best performance

and built the new DacMagic 200M around it, to give an extraordinary result, one that undermines much else – especially at the price. You don't quite get all the bells and whistles, but you get most of them, including Bluetooth wireless reception from mobile phone, tablet, portable player or such like, explaining the stubby aerial at rear.

The unit inevitably comes with a wall-wart power supply, 12V d.c. at 2A being sent down a slim 1 metre long cable, so just enough to stretch from table height to floor with a mains outlet nearby. Plug in, switch on and three pale blue LEDs light to show the unit is active. A source button at left selects between USB input from a computer, or optical / electrical S/PDIF connections marked as D1 / D2 that might typically be hooked

up to a CD player's digital output or any of the many other devices that deliver standard digital of the PCM variety.

Since the ES9028Q2M is a comparatively recent low power Mobile version of the Sabre series DACs it accepts up to 768kHz sample rate PCM, which is a bit academic for most of us where 96kHz is fine and 192kHz about the useful limit. Measurement confirmed the TOSLINK optical inputs work up to 192kHz, so you won't get silence when running from a portable player like an Astell&Kern that delivers 192kHz files via optical. All ten possible sampling rates, from 44.1kHz up to 768kHz, are identified on the front panel by two rows of pale blue LED indicators.

ESS chips come with integrated





**At left a Filter button sequences through Fast, Slow and Short Delay. Then MQA and DSD indicators, an array of sample-rate indicators and at right a 6.3mm headphone socket.**

volume control that offers 0.5dB steps, which Cambridge Audio use to provide variable output from a rotary volume control on the front panel; there's no remote control.

Maximum output is a standard 2V from the phono socket outputs – the same as a CD player. There are balanced XLR outputs too, offering 4V, again a standard value. Always best to use these since all DAC chips, including those from ESS, deliver a balanced output as standard; the unbalanced phono socket output goes through an extra conversion stage that slightly degrades quality.

DacMagic 200M has three digital filter options: Fast, Slow and Short Delay, selected by sequencing through via a single push button. Differences between the filters were not great under measurement, unlike those programmed in by Audiolab in M-DAC+ for example, but whilst Fast gives widest bandwidth Slow

usually sounds best by giving the cleanest impulse response. Most people will try these filters with CD and notice only small sonic differences.

DacMagic was always small and unassuming and the latest version is no different. The case measures 215mm wide, 52mm high and 191mm deep so will slot in just about anywhere. It's flyweight at 1.2kg too. Nicely built with a solid aluminium front panel and sheet steel case – built in China but designed in the UK (London).

Small and unassuming it may be, but today's DacMagic has some fineries. For a start it will process Master Quality Authenticated (MQA) files, used by Tidal for example for high quality streaming from their Master Quality Audio service.

Then there's Direct Stream Digital (DSD) decoding too, for that rather lovely analogue-type sound that DSD delivers. DSD is

accepted via USB using the DoP delivery format, meaning a DSD capable player like Audirvana+ is needed. The front panel shows up to quad-rate files can be handled but you'd need massive disc storage capacity for these, should they appear. There's confirmation of DSD reception, as there is of MQA. I would like the DSD light to have been red, or something different from PCM to make the differentiation obvious at a distance and I got caught by an auto-off power saving function that leaves the power button light on but confusing silence when the play button is pressed after making a cup of tea.

All that's missing is remote control for armchair volume adjustment if used to drive a power amplifier direct, eliminating the need for a preamp.

### SOUND QUALITY

I connected the little DacMagic to our Creek Voyage i20 amplifier's balanced XLR inputs through Chord Company Epic cables, the Creek driving our Martin Logan ESL-X hybrid electrostatic loudspeakers through Chord Company Signature Reference cables. Sources were an Oppo UDP-205D to spin CD, connected optically by QED Quartz glass-fibre cable, and a MacBook Pro to deliver hi-res and DSD from the Audirvana+ player.

And what I heard was very much in line with what I know well from ESS, Cambridge Audio getting a fine sound from the ES9028Q2M. There was a slightly drier air to it than from our Audiolab M-DAC+ or the Oppo, both with ESS chips



**The rear carries unbalanced and balanced (XLR) analogue outputs (left). There are two sets of optical and electrical S/PDIF inputs, plus USB for computer connection and DSD. The stub aerial is for Bluetooth wireless reception from a mobile phone, tablet or portable player.**

but with chunky linear power supplies. There was the same sense of sorted smoothness though, a lack of hash or confusion that made even complex tracks such as Skunk Anansies Hedonism come across as listenable, the jangling guitars being a clean strand in the music rather than one that grates by sounding raucous – as sometimes is the case.

Another test track that often raises problems, if mostly in loudspeakers, is Willy DeVille's Spanish Harlem – but not here. His close-miked sibilant vocals were easily transmitted to my ears: I didn't wriggle or squirm as sometimes happens, due to laceration in the sound.

The bass end of things was strong and solid, plucked bass behind Holly Cole singing The Train Song coming across with good strength. A slightly drier, less fulsome sound than that of the non-mobile ESS chips that draw current and thrive on a linear power supply, but powerful bass all the same – no criticism here. But then ESS DACs do generally offer an easy balance with strong bass so DacMagic did a good job in conveying this strength.

At times I felt I heard just a tad more insight from the DacMagic 200M than I have heard previously from any other DAC, especially with the Short Delay filter that offered a more insightful view than Fast, if by small margin. It specialises on mid-band insight, putting a spotlight onto vocals; there was a bit more air around the strings of Antonio Forcione's guitar in Tears of Joy. Many will prefer the Slow filter for its damped and darker sound; Fast puts slightly more sheen into highs, making the sound a tad livelier up top. These are small, subtle differences though.

I could hear no filter differences with DSD, even though the chip carries DSD filter options: methinks you get only PCM filters in DacMagic. All the same, the famed ESS sound is not a zingy bright one; if anything they rose to prominence by eradicating forceful, harsh treble.

With DSD the DacMagic was no less able, if arguably not quite as sturdy in its low end dynamics with Cyndee Peters House of the Rising Sun (DSD128) as I've heard it, but with gloriously sweet treble

from solitary triangle strikes and slowly hit cymbals. This is where DSD always scores I find and Cambridge Audio's little convertor did a great job.

Diana Krall's Narrow Daylight (DSD64) similarly was superbly well resolved, with great insight into her vocals and very concise sound stage imaging too, instruments bolted solidly into position it seemed. Not quite the fruity bass line I have heard from M-DAC+, but still solid and strong.

**CONCLUSION**

What a fabulous little convertor! Cambridge Audio have wrung top performance from a recently

introduced ESS DAC chip by strapping all eight channels into optimal arrangement – no skimping here in spite of the low price tag. And you can hear it too. This is a deeply insightful convertor that delivers digital with an easy going clarity that defies much on the market. With just the right balance between capability, ease of use and top sound quality – ignoring that it necessarily has a wall-wart power supply – the new DacMagic 200M is an instant corker I think. You won't get this amount of dynamic range nor this amount of sheer resolution and clarity elsewhere at any price, let alone at such a low price.

"more insight came from DacMagic 200M than I have heard from any other DAC"

**MEASURED PERFORMANCE**

The measured EIAJ Dynamic Range value of DacMagic 200M came in at an almost record breaking 126dB. That's higher than most other DACs available irrespective of cost. It requires the use of very quiet buffer amplifiers on the output of the chip and these may come from ESS too.

The buffer amps deliver 4V output via the balanced XLR sockets and 2V out via the unbalanced phono sockets, at full volume.

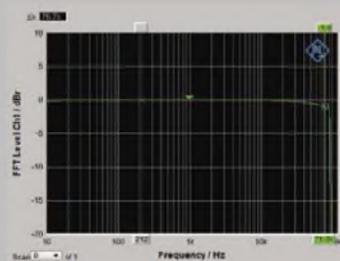
To get high dynamic range demands very low distortion as well as noise, and distortion from the Cambridge – our analysis shows – is non-existent: there are no visible distortion products in the noise floor. This gave a figure of 0.01% at -60dB with 24bit, again lower than all other DACs. With CD the figure was as always 0.2% due to 16bit quantisation noise/distortion.

Frequency response measured flat to 76kHz (-1dB) with Fast and Short Delay filters before rolling down slowly to the 96kHz upper limit for a 192kHz sample rate PCM signal. The Slow filter reduced this figure to 64kHz, so only a small change. With CD the situation was similar, Fast running flat to 21kHz, Slow rolling off above 16kHz. Subjective differences will be minor.

USB gave identical results to S/PDIF and up to 768kHz PCM sample rate is accepted. Dynamic range and distortion levels were identical to S/PDIF, so no degradation here.

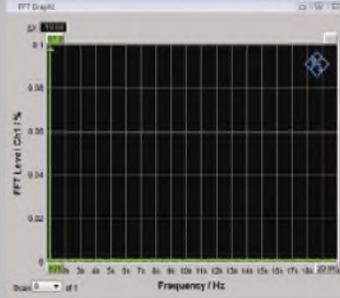
Cambridge Audio's DacMagic 200M gives a set of measured performance figures all but unmatched in the current market place. Exceptional results. **NK**

**FREQUENCY RESPONSE**



**DISTORTION**

|           |           |           |
|-----------|-----------|-----------|
| THD @ 0.1 | Level RMS | Frequency |
| 0.0106 %  | 4.0052 mV | 997.00 Hz |
| OFF       | OFF       | OFF       |



**Frequency response (-1dB)**

|                               |                |
|-------------------------------|----------------|
| <b>Distortion (10kHz, 1W)</b> | <b>0.01%</b>   |
| <b>Separation (1kHz)</b>      | <b>108dB</b>   |
| <b>Noise (IEC A)</b>          | <b>-124dB</b>  |
| <b>Dynamic Range (EIAJ)</b>   | <b>126dB</b>   |
| <b>Max output (phono/XLR)</b> | <b>2V / 4V</b> |

**CAMBRIDGE AUDIO DACMAGIC 200M £449**



**OUTSTANDING - amongst the best**

**VALUE - keenly priced**

**VERDICT**  
A top quality digital convertor with great sound, at unbelievably low price. Awesome.

**FOR**  
- high resolution sound  
- broad capability  
- small size

**AGAINST**  
- poor front panel display  
- wall-wart supply, unidentified

Cambridge Audio  
+44 (0)207 551 5422  
www.cambridgeaudio.com

# On Stream

**Leema's Stream IV CD/streamer gives Noel Keywood a workout with streaming.**

**A** streamer with a CD player – what an unusual proposition. But I guess if you are digitally inclined, perhaps after throwing the LPs away back in the eighties when we were told CD was the future, the presence of a silver disc player in Leema's Stream IV (£2295) I'm reviewing here is a great way to slide over from spinning discs to streaming.

Or perhaps not. The CD is now a relic of the past, a curio where belts and wheels were needed to play music, just like LP. Streamers are

strictly different idiom, as I know from reviewing them – and as the Stream IV reminded me. I sent the first review sample back for replacement because it didn't work, but no joy with the replacement either – until I changed the app! So there are things to talk about here related to computers, not belts and wheels from a simpler time – but more of this later!

Unlike Leema's Elements streamer I reviewed in our June 2019 issue the Stream IV has front panel control knobs, but they are associated solely with the CD player. At left is a rotary/

push encoder that finds a track and selects it at a push, also controlling Play, Pause and Stop. A push of the right knob will open or close the disc draw, whilst turning it selects Slow or Fast Forward or Reverse. The unit reverts to streaming by default even with a disc in the drawer, but winds up the belts and wheels to spin it when the left Play knob is pressed. It's a tad unusual as a CD control system but worked well I felt; disc track selection was especially fast. Both knobs control CD only, not the streamer.

Also controlling CD – as you might hope – is a small remote control. It will Start, Stop, Pause



and track skip, also turn power off/on and open the tray. Slow and Fast forward and reverse are also selectable by holding buttons down. There is no numerical keypad, but the Track and Time readouts of the player are large and legible at a distance and I found playing CD easy enough. A group of six buttons on the lower half of the remote are for control of a Leema amplifier only, the Volume up/down buttons do not control Stream IV output, even though the ESS ES9018 DAC chip onboard has an integrated volume control, so some disappointment here. Output is fixed, even with the app.

Output from the DAC feeds two pairs of phono-socket unbalanced outputs. There are no balanced XLR outputs, unlike Leema's Elements streamer. This is a pity because the DAC chip delivers balanced output as standard and it is always best provided as an option; bit of a missed opportunity here I feel.

There are optical and electrical S/PDIF digital outputs to feed

an external DAC with balanced outputs and volume control. I hooked up an external DAC to assess the performance potential of following this route – it was large, as I'll explain in more detail later.

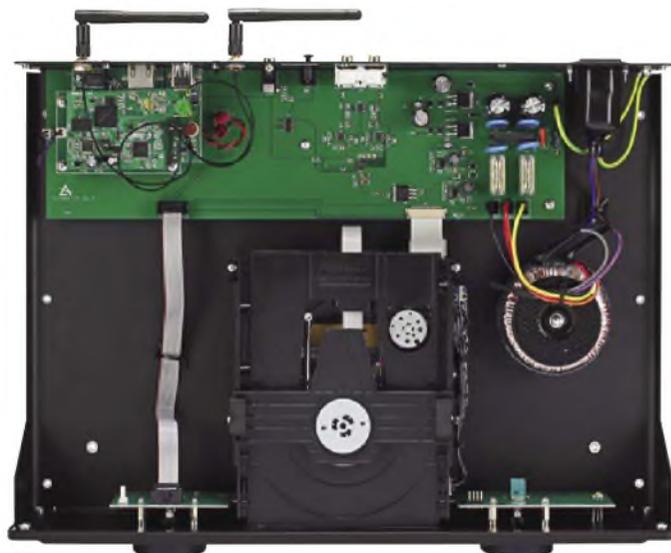
I guess the Stream IV should be seen as a streamer with CD as a useful extra, as its name suggests. As such it morphs into an entirely different beast. Control then moves to a (free) mcontrol app. for 'phone or tablet, unable to influence CD play. And here, as so often with streamers, life got "interesting". The Stream IV can be connected into what will probably be (in the UK) a BT router either by wi-fi or by wired ethernet connection. I connected it into a BT Smart Hub 2 via ethernet and I'll note straight away that the hub saw it was electrically connected but was unable to identify it. Whatever the Leema was sending to identify itself was not being read by the router, labelling it as 'Unknown', unlike other connected devices. But my PC did recognise it as 'Leema' and also saw the contents of an

inserted Flash drive containing music and test files – confirming the Stream IV was on the network and could be read.

My iPhone 10X running the recommended mconnect (free) 'Control' app. saw the Stream IV for a few hours then went dead. Since the PC continued to see the Stream IV my suspicions turned toward the app and sure enough switching to 8player (£3.99) cleared this issue. Since 8player on my 'phone sees all potential servers, PC, Mac and iPhone that run simultaneously, plus attached Flash drives, it appears more powerful than the mconnect Control app Leema recommend, but acts as a server player only, not a controller – so efficient but insufficient! Downloading the mconnect-Player app (3.3.42), replacing the mconnectControl app., solved all issues.

The point of relating all this is to explain difficulties and solutions to computer problems that don't arise with belts and wheels. Differences between apps and their





**A compact rear board carries linear power supply at right, fed by a toroidal transformer. At left is a wi-fi module, plus digital processing of incoming ethernet and USB mass storage digital files. At centre lies the analogue output section.**

"the sense of space picked up by the mic was generously laid out"

behaviour can be mystifying – for example 8player telling me I had no right to play my own test files until DRM was switched off (so why bother to have it?).

Once up and running Stream IV saw Tidal, Qobuz and Bugs on-line music services, plus Dropbox, OneDrive and iCloud drive as storage systems. The app can push through local files from the 'phone, from a Flash Drive inserted in a rear USB (mass storage) port

on the Leema or from a PC with UPnP enabled. To do this wrestle with Windows media server, where UPnP must be turned on. Macs do not have UPnP as standard so the Stream IV will not read music files on a Mac unless you use a software renderer such as EyeConnect, which I've found works well (but is paid for).

Now onto the issue of an external DAC. With an ESS ES9018 DAC fitted internally I was hoping

for great things, since this famed piece of silicon delivers a very high measured performance, as well as great sound. And with CDs I played and CD sources on the 'net such as Tidal, it gave a good result right up to CD standard, meaning an EIAJ measured dynamic range of around 100dB. But with hi-res from the rear USB Flash drive I got a disappointing 108dB. Connecting up digitally Cambridge Audio's new DacMagic 200M (also with ESS DAC) gave a massive 126dB, showing the Stream's internal DAC is not optimised for hi-res. You get ESS sound from CD and internet music servers I found but as a hi-res player reading music from a rear USB 'mass storage' drive it's not ideal: better to use an external DAC for this purpose.

The Stream IV is solidly built, weighing 5.5kg and measuring 435mm wide, 95mm high and 330mm deep. It's a little sombre in appearance but the controls feel solid and the big, blue fluorescent display is easily visible from a distance in a dimly lit room. The remote is unlit, but of course the app residing on a 'phone or tablet is lit.

**SOUND QUALITY**

The Stream IV was connected to our Creek iA20 amplifier with Chord Company Epic phono-plug terminated cables. The amplifier fed Martin Logan ESL-X hybrid electrostatic loudspeakers through Chord Company Signature Reference loudspeaker cables. For the most part I played CD and hi-res files from a Flash drive inserted at rear, to avoid noise and jitter issues



**The Stream IV has an on-board linear power supply, 230V here. There are phono socket analogue outputs but no balanced XLRs. Digital S/PDIF outputs are fitted to connect to an optional external DAC, and at right lie a USB mass storage (Flash drive) socket and an RJ45 ethernet socket. There are wi-fi stub aerials too, with WPS connect button.**

from on-line servers.

And what I heard was very obviously the ESS sound, meaning easy going with no trace of CD harshness, plus a lovely sense of stage depth that makes for a convincingly natural presentation. This made the Steinway of Arcadi Volodos (DSD) playing Valee D'Obermann fill the space in front of me, looming large between the XStat panels, a good sense of low end warmth and power contributing much to the overall grandeur of his piano.

The easiness continued with attack tracks such as Nils Lofgren's Keith Don't Go, where his frantic playing of close-miked acoustic guitar can easily come across as challenging through bright players/DACs, but not here. Instead his strings cut out strongly but didn't lacerate: the sense of space picked up by the mic was generously laid out and there was power behind Lofgren's vocals.

Even old material like Eric Clapton's After Midnight (24/96) was smoothly rendered, whilst Fleetwood Mac's Dreams (24/96) had little sign of the edgy treble that sometimes makes itself known. But that's

the ESS sound, which this streamer made obvious.

A wide range of files were handled, including 24/192 PCM and DSD64 (only); silence only descended when I tried to get DSD128 or 384kHz PCM test files through, but I don't think we'll be seeing the latter anytime soon. Best to go for 24bit at any sample rate (96kHz is fine) or DSD64 which the Leema happily handles.

I connected up Cambridge Audio's DacMagic 200M via a QED Quartz glass fibre optical S/PDIF cable, with balanced analogue cables to the Creek amplifier. This gave a slightly more composed sound with greater stage width and improved insight. It was less easy going and arguably less romantic, rather making the point that the Stream IV may not measure so well but its ESS ES9018 DAC



**It's a CD player! Complete with sliding draw to accept a silver disc. At rear however a USB mass storage port offers broader file compatibility, including DSD, plus greater capacity.**

gives a sonically pleasant result all the same. Surprisingly, DSD files were played in this arrangement, suggesting down-conversion to PCM to get them through an S/PDIF optical cable.

**CONCLUSION**

Leema's Stream IV is an interesting blend of old and new digital, combining CD with streaming, as well as UPnP music play from computer (PC) or from a rear

loaded mass storage Flash drive. Combine this with the smooth sound of an ESS ES9018 DAC and you have a CD player, hi-res player and streamer of superb sonic quality I found. The User Manual is sparse though, there are no balanced outputs and as a hi-res player it is easily bettered nowadays, at least in technical terms. All the same, I still enjoyed listening to the Stream IV and can see it may well suit many.



**MEASURED PERFORMANCE**

With a 192kHz sample rate PCM digital input, frequency response measured flat to 51kHz our analysis shows, before rolling down to the 96kHz upper

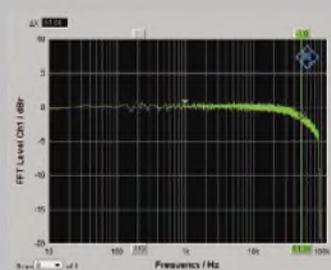
theoretical limit. There are no filters to alter this.

Output was normal at 2.2V from the unbalanced phono socket outputs, the same as a CD player. Reading test files from a USB Flash drive to avoid network noise, distortion from 24bit hi-res digital at -60dB measured a high 0.1% our analysis shows, due to both noise and distortion harmonics; around 0.04% is hoped for and 0.02% possible from the ES9018 DAC so the Stream IV is unimpressive in this area.

The important EIAJ Dynamic Range value was in consequence low at 108dB – far below the 120dB or so expected from the ESS ES9018 DAC chip used.

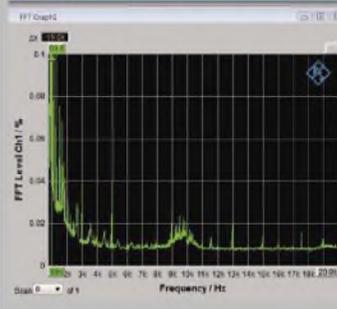
Leema's Stream IV turned in a lacklustre set of performance figures by current standards, satisfactory for CD but below what an ESS ES9018 DAC is capable of with hi-res. **NK**

**FREQUENCY RESPONSE**



**IMPEDANCE**

|          |           |            |
|----------|-----------|------------|
| THD @ 8  | Gain @ 8  | Frequency  |
| 0.1134 % | 2.1838 mV | 0.9970 kHz |
| OFF      | OFF       | OFF        |



|                                  |              |
|----------------------------------|--------------|
| <b>Frequency response (-1dB)</b> |              |
| <b>4Hz-51kHz</b>                 |              |
| <b>Distortion (-60dB, 24bit)</b> | <b>0.1%</b>  |
| <b>Dynamic range (EIAJ)</b>      | <b>108dB</b> |
| <b>Output</b>                    | <b>2.2V</b>  |
| <b>Noise</b>                     | <b>106dB</b> |

**LEEMA STREAM IV £2295**



**EXCELLENT - extremely capable.**

**VERDICT**

Deep, easy sound but has limitations.

**FOR**

- reads most sources
- easy to use when sorted
- sound quality

**AGAINST**

- difficult to set up
- low dynamic range with hi-res
- no XLR outputs

Leema Acoustics  
www.leema-acoustics.com

# Screen test

Martin Pipe tests Chord Company's 'X' upgrade to its budget C-Screen speaker cable.

**T**he latest speaker cable to get Chord Company's 'X' factor is the entry-level C-Screen. This is aimed not only at audiophiles on a budget, but also home-cinema enthusiasts with plenty of audio channels to worry about. Said 'X' refers to Chord's use of XLPE (Cross Linked PolyEthylene) insulation, which replaces the FEP (Fluorinated Ethylene Propylene) material used in the previous C-Screen version - at £5 retail per metre, a popular line for Chord Company. According to the Wiltshire firm, the choice of insulation has a "profound effect" on a speaker cable - get it wrong, and enjoyment of your music can be impaired by traces of colouration.

Of course, the signal-carrying conductors insulated by Chord Company's new wonder material are also important. Specified for the C-screenX are 16 AWG's worth of multi-stranded oxygen-free copper conductors, two bunches of which are arranged in a twisted-pair configuration. Over this XLPE-covered wiring is wrapped a twin-foil shield. Another of Chord's speaker-cable specialities, this design feature helps to keep external interference at bay. Doing so, it's claimed, helps to convey subtlety while aiding coherence and timing. Try finding that attention to detail in the cheap stuff masquerading as 'speaker wire' at DIY stores!

The cable is then enclosed in a

overall PVC jacket, which reduces 'mechanical noise' as well as spacing those all-important conductors correctly. Such construction is remarkably-complex for what is after all a budget cable, and it also has the practical advantage of flexibility. Unlike the conspicuous esoteric stuff that could be used to tow ships, C-screenX - which has an overall diameter of only 9mm - can be routed around corners without impairing performance. Note that its white jacket helps the 'installer-friendly' C-screenX to blend in with contemporary decor (white skirting boards, for example). Furthermore, Chord Company say that there's little audible deterioration over longer runs.

I reviewed the 'step-up' version



of this cable - the ClearwayX - a few issues ago. It's a truly excellent cable, but 'X' upgrades made it 50% more expensive than its immediate predecessor. So too is the C-screenX, which sells for £7.50 a metre. Our review pair was fitted with the same factory/

"the C-screenX represents a massive improvement over the DIY-store stuff"

dealer-terminated ChordOhmic 4mm banana plugs that graced our ClearwayX review samples. These alone sell for £120 - nearly three times as much as the actual cable used to make our 3m review pair! Dealers will sell you the desired lengths of C-screenX 'off the reel', and there's no obligation on your part to have them terminated. Audiophiles on a budget can thus instead feed bare wire into the binding posts of their amp and speakers - or opt for gold-plated 4mm Banana Plugs that Chord also makes available for £24 a set.

In performance terms, the review samples exhibited similar basic characteristics to the ClearwayXs I tested earlier with the same equipment (Cambridge CXN/AXR100D receiver/Q Acoustics 1030 speakers, Cambridge Edge NQ and W/

Quadral Aurum Wotan Vllls). Yes, that Chord pedigree is present and correct. With the lower-priced kit, there's little to tell the two apart, the C-screenX being betrayed by nothing more than a very slight smearing of complex treble detail - and that was when listening to well-recorded 24-bit material. It is a credit to the worthiness of the C-screenX that I had to turn to the vastly-more expensive system to better-discern the differences.

Although the same low-frequency tautness is evident, a tiny but nevertheless perceptible

amount of impact is lost on pounding bass drums and synths (not really an issue with the cable's touted home cinema application, as the more visceral end of the spectrum would be handled by an active subwoofer). By any standards, though, the C-screenX represents a massive improvement over the DIY-store stuff. In terms of the all-important midrange, the C-screenX never fails in its ability to communicate expressively; into the bargain, dynamics and imaging are a cut above what you'd expect from a cable at its price point.

## CONCLUSION

Yes, as with other 'X' rated Chord updates the C-screenX is 50% more expensive than what came before - however, it's still only £7.50 per metre. I'm hoping that the low price (especially if you connect it directly, in 'bare wire' form, to binding-post terminals) will convince the cynical punter to give the C-screenX a try. It proves that speaker cables, carefully-designed with audio specifically in mind, do make a difference...and needn't break the bank.



**CHORD COMPANY  
C-SCREENX £165  
FOR CHORDOHMIC -  
TERMINATED 3M PAIR,  
AS TESTED  
(£7.50 PER METRE)**



**OUTSTANDING - amongst  
the best.**

**VALUE - keenly priced.**

### VERDICT

An excellent choice for budget-conscious users - and those who believe cabling is of no benefit!

### FOR

- bargain-hunters can order without terminations
- demonstrably superior to 'bell-wire' type cables
- make the most of even budget systems

### AGAINST

- Chord Ohmic plugs add significantly to the price
- 50% more expensive than its predecessor...but hey, it's only £7.50/m

The Chord Company  
+44 (0)1980 625700  
www.chord.co.uk

# vinyl section

## contents

JUNE 2021

[www.hi-fiworld.co.uk](http://www.hi-fiworld.co.uk)**VINYL NEWS 68**

Two pages of the latest vinyl releases to land on the desk of our music maestro Paul Rigby.

**MUSICAL FIDELITY M3X PHONO STAGE 70**

An audiophile MM/MC phono stage with linear power supply gets Noel Keywood's attention.

**AUDIOPHILE BOOK: ALL OR NOTHING 77**

When vinyl was king Steve Marriott was there. Paul Rigby reviews a book about this renowned singer from the sixties.

## news

### THE MILK & HONEY BAND

Mid-tone pastorals, you might say. That's the new album 'Songs from Truleigh Hill' (*Onomatopoeia*; [www.onophonic.com](http://www.onophonic.com)), sitting in a gatefold sleeve with booklet and lyric-adorned inner.

The hill is a real place in which the band provide the height, a grid reference, X/Y co-ordinates and latitude and longitude specs, in case you're wondering.

Some people compare this British band to REM but I'm thinking a one-dimensional version of Coldplay on this release, sipping hot chocolate just before bed.



### STEVE HARLEY

From Steve Harley and Cockney Rebel, the 45th Anniversary Expanded Edition of the 1975 glam-tinged rocker release 'The Best Years of Our Lives' (Chrysalis) is out and about on orange and blue vinyl.

This is the one with 'Make Me Smile (Come Up and See Me)' of course, alongside 'Mr Raffles' with a solid song backing to that pairing – but there's more here. The second disc offers added alternative track variants plus two live tracks from the Hammersmith Odeon on 14 April 1975 'Mad, Mad Moonlight' and 'Sebastian'.

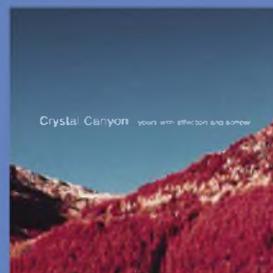
### BANDCAMP BABES

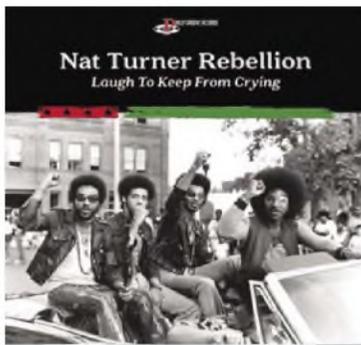
From Portland, Oregon, five-piece band Crystal Canyon's newly released 'Yours With Affection and Sorrow' (*Repeating Cloud*; [crystalcanyon.bandcamp.com/album/yours-with-affection-and-sorrow](http://crystalcanyon.bandcamp.com/album/yours-with-affection-and-sorrow)) offers a slice of shoegaze in a gatefold sleeve.

There's angularity here. This is shoegaze with jagged edges and splinters that stick in your thumb but with a vocal balm to soothe any notion of portent. Fans of Elliott Smith might also want to listen.

On Minihi's Bandcamp page, referring to the new release of 'Recaptures' ([unperceivedrecords.bandcamp.com/album/recaptures](http://unperceivedrecords.bandcamp.com/album/recaptures)) it says this "Pianos, synths, mallets, celeste, harp, dulcimer, vocals, percussion and drum kit performed by Zands and Louise Anna Duggan". There's synths in there too but you can imagine the tonal variation on this release. There's a rather lovely melange of melodicism and instrumental invention here.

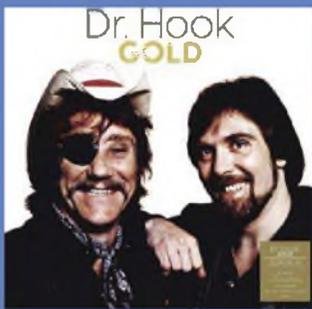
Little North's 'Finding Seagulls' ([littlenorth.bandcamp.com/album/finding-seagulls](http://littlenorth.bandcamp.com/album/finding-seagulls)) new release focuses on Danish-sourced contemporary jazz via Benjamin Jacobsen (piano), Martin Rasmussen (bass) and Lasse Jacobsen (drums). Spare and relatively stripped, this outing focuses on tones and space, the often beautiful melodies linking those together by lace knots that float across the soundstage.





## NAT TURNER REBELLION

Named after a slave rebellion in Virginia, in 1831, 'Laugh to Keep From Crying' (Philly Groove/Chrysalis) this seventies Philly soul studio project released a few singles, then disappeared. This 2019 compilation from their newly archived works includes fourteen tracks of energetic, groove-infused, tracks. This is lean soul, straight to the point, no added calories and good for your heart.

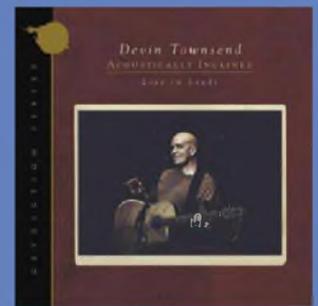


## GOING FOR GOLD

Three greatest hits collections for you, from UK audiophile outfit Demon ([www.demonmusicgroup.co.uk](http://www.demonmusicgroup.co.uk)), all called 'Gold', include eighteen tracks from Dr Hook including 'Sylvia's Mother', 'When You're in Love With a Beautiful Woman' and 'Better Live Next Time'.

Ralph McTell is next with twelve tracks featuring 'Streets of London', 'Hesitation Blues' and 'Clown'.

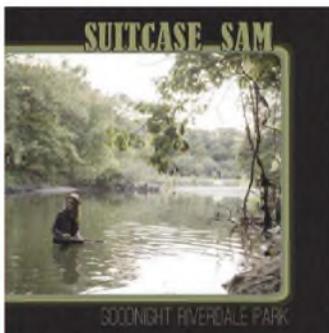
Finally, check out Lonnie Donegan & His Skiffle Group and sixteen tracks including 'Rock Island Line', 'Cumberland Gap' and 'Don't You Rock Me Daddy-O'.



## DEVIN TOWNSHEND

From the prog-metal vocalist and multi-instrumentalist, packed in a very presentable gatefold 'Acoustically Inclined: Live in Leeds' (*Inside Out*; [www.insideoutmusic.com](http://www.insideoutmusic.com)) is an unusual release because Mr Townsend is normally such a noisy individual, in musical terms...as opposed to visits to Starbucks, for example.

It's a nice change to see the man's other creative talents come to the fore here with his acoustic guitar. He still belts out a lyric or two but his instrumental restraint is admirable. Includes a CD album in the package.



## SUITECASE SAM

On his new album 'Goodnight Riverdale Park' (*Curve*; [curvemusic.com](http://curvemusic.com)) Canadian rocker, roots, Americana, country boy strolls through this one like a traveller, strumming his guitar, with his legs dangling over the backboard of a cart as his horse pulls in any direction he fancies at the time. With an old-fashioned, Grand Ole Opry, catch in his voice. If you like your 70s outings, this one's for you.

## THE SELECTER

A classic of Two Tone (and now Chrysalis), this ska outfit was fronted by Pauline Black and was - critically - occupied by black and white musicians who used ska as an influence not a stylistic crutch. There were not that many mixed-race bands out there, back in 1980, when this LP was released.

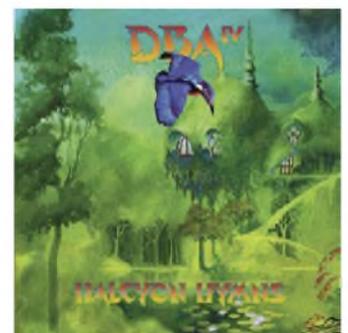
A group that successfully tackled race and sexism, this was their magnum opus. Now released as a half-speed remaster, you won't find an ounce of filler in this one.



## DOWNES BRAIDE ASSOCIATION

Sitting in a gatefold, on white vinyl and resplendent in Roger Dean artwork, with the talents of Geoffrey Downes (Buggles, Asia, Yes et al) and Chris Braide (producer, sound track composer), DBA offer 'Halcyon Hymns' (*Radical Thinking*; [downesbraide.co.uk](http://downesbraide.co.uk)). Marc Almond completists should note that he makes a brief appearance here too.

Egads this is a wordy album. It almost reaches Jim Steinman proportions - the pretentious spoken word interjections just get in the way. That apart, there's plenty of overblown power pop to keep you busy here.



# Being discrete

**Musical Fidelity use discrete components in their M3x Vinyl phono stage for better sound. Noel Keywood is impressed.**

**M**usical Fidelity approach the design of their new M3x Vinyl phono stage (£1999) by recent method that others still shun, even though for me it is – electronically – a no-brainer, as I'll come to explain. This physically large unit will match moving magnet (MM) or moving coil (MC) cartridges at the push of a button,

having standard gain values. In case they are not enough there's a small light-action press button marked 6dB that doubles gain, to ensure the unit will match those with low output, including notoriously difficult low output MCs.

And that's about it, in outline at least. There are no balanced outputs (or inputs) which may or may not be a deal breaker. I am a bit surprised by lack of balanced

output but perhaps they are less popular than I know about. Just plug in an ordinary unbalanced cable (terminated by phono plugs) from the record deck and similarly connect up to the Aux (Line) input of any amplifier and you're in business. Simple.

You'll also need a mains power cable and here the M3x Vinyl departs from what is becoming current practice: there is no wall-



wart external switch-mode supply. Instead, it has onboard a conventional linear supply, meaning there's a circular toroidal transformer inside, a bit more weight than usual at 6.4kg, and a mains 115V/230V voltage switch – something switch-modes don't need. There is no ground-lift switch and tests showed mains earth is connected direct to chassis (as it is meant to be for safety purposes if there's no double isolation) as well as phono socket ground, meaning there's potential for a hum loop if the turntable is earthed also.

As a result of this basic earthing system the M3x Vinyl is best used with an electrically fully-floating turntable, meaning those with an external wall-wart switch mode supply that offers ground isolation, or an electrically isolated arm. Not connecting an earth line from the turntable may work, but there is often residual hum as a

result. Quite what may happen I cannot say with certainty because it depends on the grounding arrangements in the turntable – and our Letters this month explain the confusion and uncertainties here. In our set up there was no hum, because the SME arm is electrically isolated from the turntable.

Musical Fidelity use only discrete components within the M3x they say, for best sound quality – there are no silicon chips. What I found equally impressive though was their use of small-signal relays to alter settings, tied in with control logic. This makes switching from MM to MC and alteration of input conditions quick and reliable using light-action push buttons on the front panel. The popular alternative is to use manual DIP switches on the circuit board, cheap but inconvenient and of questionable life span.

Press the button to select MM

and six capacitive loading options become available, from 50pF up to 400pF, indicated by a blue LED lighting up above them. To choose a value simply cycle through with Select button. Increasing capacitance would slightly brighten the sound of old MMs by raising electrical output in the mid-band (but not upper treble) according to generator electrical characteristics. Modern MMs measure flat and typically do not need such correction. Input load is a standard 47k Ohms.

Press the button again and MC is selected. Capacitive loading options become unavailable, instead resistive loading options for MC cartridges become available, indicated by a small blue LED. The standard value for an MC is 100 Ohms – and Musical Fidelity provide it. There are 400, 800 and 1.2k Ohm options as well to suit high output MCs that need a higher load than 100 Ohms,



# THE VINYL REVOLUTION



**The EVO and the new EVOke** Now you have a choice of *any* SL-1200! The new EVOke has world beating performance figures that are comparable with the world's most expensive turntables. The ability to fit any arm or cartridge to any SL-1200 new or old, means you can now have the EVO that you want at the price you want.

The EVO was used by Hi-Fi World to evaluate the Beatles In Mono records and is now used as their everyday reference. The EVO comes fitted with a tonearm of your choice and a cartridge of your choice.

We have worked with direct drive turntables and moving coil cartridges for nearly 40 years. We can supply completely new units with 8 year guarantees, used ones with 5 year guarantees, or we can convert your own.

**Technics SP-10R & SL-1000R** Many combinations available  
**Hi Fi World said:**

This is a spinner of vinyl for the serious, where you just want to punch a button and get on with it. It offers a degree of unarguable perfection for professional studios and anyone working with vinyl. If you want such unerring focus on the basics of playing LP it's time to check the piggy bank.  
**Hi Fi News said:**

Any great turntable gives you a certain frisson when you hear it. It's that old 'shivers down the spine' feeling, a sense of being let into a world to which you had previously not been privy. This is a remarkable turntable, and arguably the apex of vinyl playback. It's difficult to see how the SP-10R motor unit can be improved upon. It is a definitive statement of engineering prowess, and marks the return of direct drive to the top tier of turntables.

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**Where did all the parts go? The phono stage parts are on a vertically mounted board at top right, surrounded by a steel screen (black) to prevent hum pickup from the power supply board at left.**

Clearaudio having models that need 300 Ohms for example. Again, the values are selected in sequence by pressing a single Select button, rather than having to look up DIP switch settings in a manual – very convenient.

Fundamental characteristics of a phono stage are very simple: MM needs  $\times 100$  gain and MC  $\times 1000$  gain (at 1kHz). And that's just what you get here, text book values right down the line. A neat addition is, however, a push-button selected  $\times 2$  gain option, something that is reasonably easy to organise at electronic level. This doubles MM gain to  $\times 200$  and MC gain the  $\times 2000$  – perfect values for low output MMs or MCs. It's all done through the use of relays with control logic; investment here makes for a very easy user experience. It also improves long term reliability by eliminating mechanical switches whose contacts oxidise and wear out. This is why I said earlier that such a design approach is a “no brainer” in that it gives better performance and reliability.

Although Musical Fidelity's website obscurely mentions 'DECA' equalisation (yes, spelt like that) I think they mean IEC equalisation.

The last button I have not talked about is marked 'IEC' and in more common parlance is called a warp filter, or sometimes a rumble filter. It cuts out deep

bass to prevent loudspeaker cone flap. In this case the filter has been designed to be sharp and fast, to not lessen audible bass whilst at the same time completely eliminating sub-bass below 30Hz. A neatly designed filter then, not a quick-an-dirty after-thought comprising one capacitor for slow roll-down. Ironically, the original IEC characteristic allowed for just this and gained a reputation for audibly lightening bass; it wasn't much used

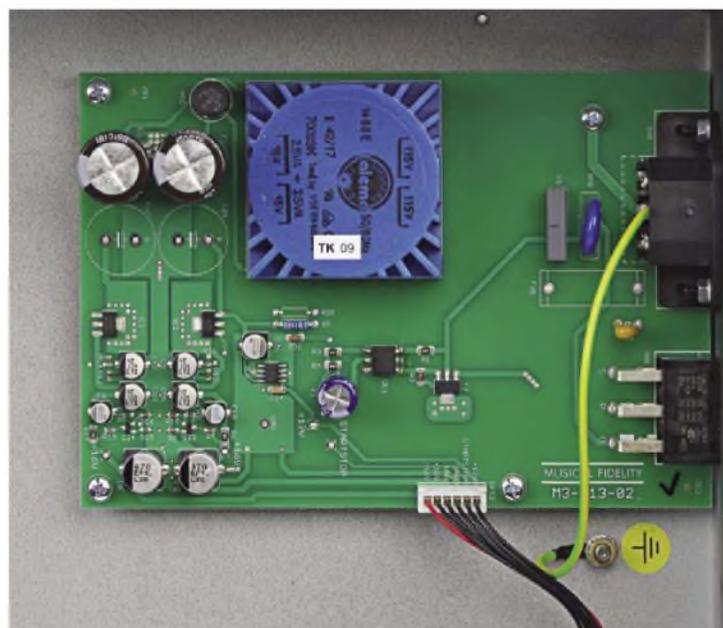
as a result. Musical Fidelity's IEC filter isn't really IEC – avoiding this drawback.

Why the case is so large with so little inside likely has more to do with the M3x visually matching other large Musical Fidelity products I suspect, rather than the need to keep a high gain phono stage away from the hum inducing transformer of a linear power supply. Measuring 440mm wide, 97mm high and 385mm deep this is no small phono stage – unlike most. It will fit a standard 19in (483mm) rack but not a 12in (305mm) deep shelf. The pressed steel chassis has a folded steel top cover and 10mm thick machined alloy front panel – a conventional design arrangement. The case feels solid and the standard of finish is good.

### SOUND QUALITY

The Musical Fidelity M3x was connected to our Creek Voyage i20 amplifier through Chord Company Epic cables, loudspeakers being Martin Logan ESL-X hybrid electrostatics connected by Chord Company Signature Reference cables. Feeding the M3X was our Timestep Evo modified Technics SL-1210 Mk2 Direct Drive turntable with SME309 arm and Audio Technica OC9X SH MC cartridge, as well as Audio Technica VM750 SH MM cartridge.

Spinning Mark Knopfler's True Love Will Never Fade, from Kill To



**The linear power supply has a screened toroidal mains transformer (blue) and miniature surface mount components, plus bigger hand mounted parts. At right a green/yellow lead connects mains earth to chassis directly.**



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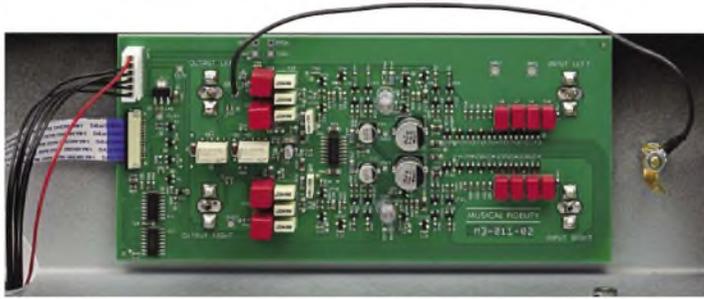


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**The main board is home to numerous small surface-mount parts. There are chips that house the control logic, plus sealed relays in the two large white blocks (left).**

Get Crimson, I was greeted by a quietly smooth and slick delivery that seduced, rather than reduced by sharp means. There was a sense of fundamental simplicity in the sound that was beguiling – also very relaxing. Definitely romantic too, that’s why I felt seduced. It was very easy to play LP through the M3x since even the harsh ones from yesteryear came over as acceptably unmuddled, musical strands staying believably well apart. It attempted to approach our Icon Audio PS3 Mk2 valve phono stage I felt, offering an easy yet spacious sound.

The charm went on with our Abbey Road 2019 re-master where the complex arrangements were gorgeously laid out, Sun King for example stretching on a generously large sound stage between our electrostatic panels, smooth as silk, deeply insightful as the harmonies and instruments rang out. Abbey Road confirmed to me that the M3x is a seductive listen.

And for those who do listen to classical music on LP I heard a similarly large sound stage with the Wiener Philharmoniker playing Mozart Symphony 39 from a relatively new Decca re-master by Pro-Ject.

Spinning bass heavy 12in singles like Carol Kenyon’s Dance With Me showed the unit has plenty of big hearted bass grunt, enough to grace a 1980s disco!

With Hugh Masekela’s Hope LP, the hand drums in Uptownship had solid presence, the overall impression being one of warmth and strength in the sound.

Compared to a typical chip-based phono stage with DIP switches and external switch-mode supply – a common design approach – the M3x Vinyl has a fuller bodied sound, better stage depth and relaxed composure. I can’t help but feel a lot of this is down to the linear power supply,

from their coils than a modern phono stage, making phono stage noise irrelevant here.

**CONCLUSION**

Built for sound quality, reliability and ease of use the Musical Fidelity M3x phono stage is an electronically sophisticated design under the hood. The use of discrete components and a generous linear power supply help swing its sound into a league one notch above the



**A simple rear panel with gold plated phono socket inputs and outputs only. At right there is a mains voltage slide switch (red), a sure sign of a linear power supply.**

Another factor with MC was low noise: there was no hum in our set-up and only slight hiss at full volume. In case you’re wondering, MMs produce more thermal noise

norm for those uninterested in balanced working. It’s physically big, that’s for sure – but with an equally big sound. This is a fine phono stage for vinylistas.

**MEASURED PERFORMANCE**

Frequency response measured flat from 10Hz to 20kHz without the IEC warp filter, for both MM and MC. The IEC warp filter introduces massive attenuation below 30Hz to eliminate subsonic warp signals from LP; it appears to be a third-order rolling off at 18dB/octave – steeper than most.

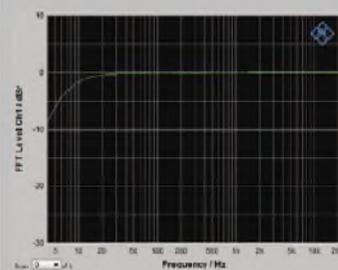
Gain values were standard at x100 (40dB) for MM and x1000 (60dB) for MC. The 6dB gain button doubled these values to usefully cope with low output MMs / high output MCs, or very low output MCs.

As always with phono stages overload was set by output swing, the M3x Vinyl managing a relatively high 10.5V out. That translates to 105mV input for MM and 10.5mV for MC, both well above what either can produce.

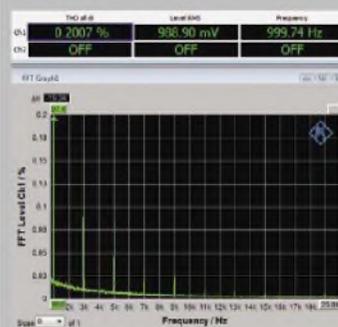
Equivalent input noise – a true measure of perceived noise – was very low at 0.12µV for both MM and MC. At this level hiss will not be audible with MC. With MM more hiss (thermal noise) is generated by the coil’s d.c. resistance, audible hiss coming from the cartridge not this phono stage.

The Musical Fidelity M3x Vinyl phono stage measured well in all areas, with high gain, low noise and accurate RIAA equalisation. **NK**

**FREQUENCY RESPONSE**



**DISTORTION**



- PHONO (MM/MC)**
- Frequency response (-1dB) 10Hz-20kHz
- Distortion (1kHz, 5mV in) 0.02 / 0.2%
- Separation (1kHz) 68 / 88dB
- Noise (IEC A) -78 / -98dB
- Gain x100 / x1000
- Overload 10.5V out

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# Not nothing

The life of Steve Marriott, lead singer of The Small Faces. Paul Rigby reviews a deeply researched book about a Mod legend.

**ALL OR NOTHING**  
**Author: Simon Spence**  
**Omnibus**  
**Price: £20**

**A** fascinating book about a fascinating man. A man of talent but, you know what? He was complex. I still admire his talent but, given the choice, if I was there, back then, when Marriott was alive? I'd only do that from afar. I'm not too sure I'd like to hang around the guy. Not after reading this account, at any rate.

What's more, Spence has taken information from 125 interviews – many of which are seen for the first time – to fill this book, including accounts from David Bowie, composer Lionel Bart, Marianne Faithful, Peter Frampton, Zoot Money, Ian McLagan, Ronnie Lane, singer Kenny Lynch, Kenney Jones, Elkie Brooks, Gered Mankowitz, Andrew Loog Oldham, Jimmy Page, Pete Townshend plus even more important voices from: wives, children, lovers, family, friends, producers, managers, journalists and many more, including Marriott himself. It's packed with information across 462 pages.

Despite the open and frank nature of the tone of the book, it has been given a blessing by the Marriott family. They deserve much praise for allowing such honesty to be printed on the page.

Right from the off, we learn that Marriott was "...a show off, a loudmouth, a child star, a pop star and a rock star, a drunk and a drug addict. He was loveable, kind, funny and charismatic but could also be vicious, belligerent, reckless, violent, sadistic, quite evil (especially when

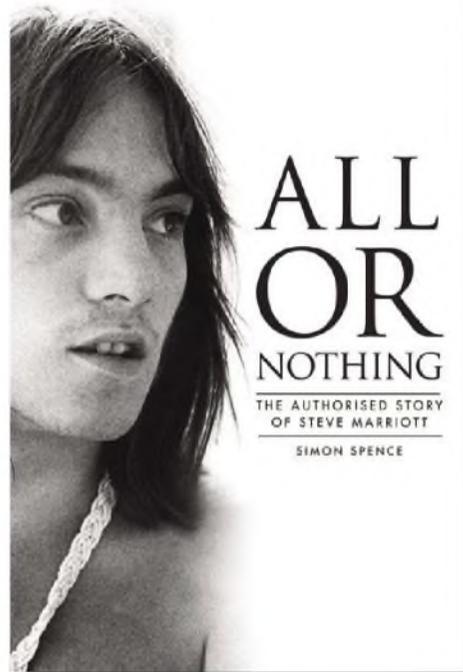
alcohol was involved). Above all he was a performer".

The book follows Marriott through his childhood, the early days as a child actor, his time with The Small Faces, Humble Pie and his later musical career ending – as many will already be aware – with his tragic death. There have been many rumours and unanswered questions relating to Marriott's passing and Spence does his best to address those. But there's also the aftermath to examine and the resentments that have flowered, for want of a better word, after Marriott passed away.

The result is a completely and wholly fascinating story. And I love the layout of this book. The basis of the layout is not new or innovative but Spence has tweaked it to add spice and insight. That part is rare. In fact, I haven't seen it before. If I have, it was a while back.

What am I babbling on about? Well, there's no long-form narrative here. The entire book is packed by quotes and only quotes. Each headed, in bold, by the name of the speaker.

So, for example, we get to the mid-sixties and a chapter entitled 'Itchycoo Park' which begins with a long quote from then future manager, Don Arden about The Small Faces looking for a new manager. Then Marriott follows with his own quote on the same subject. The two continue playing quote tennis for a bit, padding out the scene and the subject until Victor Gersten, the band's solicitor, enters the story. Gersten then



talks about his role in the matter, Arden's son David then talks in a separate quote and then we're back to Don again. It's like having these people in the same room...or on the stand in a court room.

Which is great but the genius is that Spence is not afraid to pitch in if an error is noticed or if the author feels the need to flesh out the quote as background context.

Take fellow musician Tim Hinkley's tale of Marriott being locked in the coal cellar by his parents if he was naughty and the horrible conditions in said cellar. Well, Hinkley got this from Marriott and the tale (a piece of "truth bending" from Marriott) has been found to be an exaggeration so Spence pitches in to tell you all about it under the Hinkley quote.

It's that element of the book that elevates the story to new heights.

Oh – and a nugget to finish with? Steve Marriott was turned onto the blues by...his granny. True story.

A superb book, featuring excellent glossy page photographs, this is a must buy.

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**FAIR GURU QM10s** with stands mint condition original boxes. Cost £1750 will sell for £500 ono. Cash buyer collects please contact Tim on 07933242456 or Email: [hedron1949@gmail.com](mailto:hedron1949@gmail.com) (Kings Heath, Birmingham)

**PROJECT CLASSIC** turntable plus Ortofon Silver cartridge. Owned from new. Light use. £550. Tel: 07709 551 056 (Gatwick area)

**LEAK TROUGHLINE II** Mono. Complete, was working when last used in 1985, so consider as for repair or spares £10. Tel: 01204 847404 Email: [john@jjshaw.co.uk](mailto:john@jjshaw.co.uk)

**SENNHEISER HD700** headphones. Excellent condition, complete with Atlas Zeno upgrade cable (£420 rrp). Original boxes. Asking £599. Tel: 07599 259 250 or Email: [rustinaway@gmail.com](mailto:rustinaway@gmail.com) (West, Yorks)

# NEXT MONTH JULY 2021 ISSUE

## SYNTHESIS ROMA 79DC PHONO STAGE

All the way from Italy and into Hi-Fi World comes the Synthesis Roma 79DC “tube phono stage” as the company call it. Fitted with ECC83 and ECC82 double triodes, plus JFET transistor input devices for low noise, this hybrid preamp is compact yet can work with MM and MC cartridges. Sounds tempting. Don't miss our in-depth review in the next great issue.

Also, we hope to bring you –

NAIM UNITI STAR CD / STREAMER

HIFI ROSE RS201 HI-FI MEDIA PLAYER

TRIANGLE ANTAL 40TH ANNIVERSARY SPEAKERS

MISSION LX-4 MKII SPEAKERS

TOPPING L30 HEADPHONE AMP

SYNTHESIS ROMA 79DC VALVE PHONO STAGE

...and much more.



This is a selection of what we hope to bring you, not a complete list. We regret that due to a wide range of issues, we cannot guarantee that all products listed above will appear.

**PICK UP THE JULY 2021 ISSUE OF HI-FI WORLD ON SALE MAY 31ST 2021,  
OR SUBSCRIBE AND GET IT DELIVERED TO YOUR DOOR: SEE PAGE 24**

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# CROSBY STILLS, NASH & YOUNG

DÉJÀ VU

ATLANTIC



"By Déjà Vu Joni and I had split up, Christine had just been killed. It was all dark"

**T**his album is partly famous because it's a second album. And second albums very rarely do well. "That difficult second album..." is one of rock journalism's great clichés. Mostly, because it's true. Fans tend to make sheepish excuses for them.

Thing is, most groups have years and years to create, edit, refine and hone their first album. And most groups have ten to fifteen songs in the vault – and that's basically it.

And then, if stardom descends upon them, they have about five minutes in a hotel room, in between photo shoots, the next gig and label deadlines, to create the second album. And unlike the debut, this time the pressure is on. Which is why most groups fall at that early hurdle.

The thing was, though. CSNY's 1969 debut was so successful, so well received and so instantly iconic that their second album was awaited at fever pitch levels. The pressure was already through the roof. The irony was this: the album didn't fall at the second hurdle. The band did.

"During the first album, we were all in love. David was in love with Christine [Hinton], Stephen was in love with Judy Collins, I was in love with Joni [Mitchell]" said Nash to Musicradar. "Everything was rosy and fantastic. By Déjà Vu Joni and I had split up, Stephen and Judy had split up and Christine had just been killed. It was all dark".

Crosby added to Rolling Stone magazine in 1970 "I was not at my best as a functioning person. I would sometimes come in to the studio and wind up crying, being completely unable to deal with it all".

Then Young and Stills were at each other's throat. A tension brought over from their time in the band Buffalo Springfield. Speaking about the track Woodstock, Young said how wonderful the initial recording was "Then, later on, they were in the studio for a long time and started nitpicking. Sure enough, Stephen erased the vocal and put another one on that wasn't nearly as incredible".

The creative arguments were also very real. As were the drugs. Stills said to Hit Parader in 1971 "Getting that second album out of us was like pulling teeth".

So yes, the band were falling apart during Déjà Vu's creation. In fact, you couldn't even really call them "a band" by the time of this album's release.

Even so, this 1970 album actually delivered. The album succeeded where the band failed and it remains a stone cold classic. Combining rock, country, blues, folk and psychedelia, the vocal harmonies were now extended by the addition of Neil Young. Adding sparkle to the magic.

His guitar alongside Stephen Stills and the lively combination of those two sounds, the individual and combined song-writing talents of all four men.

All this despite the fact that they operated largely as individuals. Agreements were few. Collaborations were fewer still.

This album plugged into hippie dreams and paranoia. It plugged into hippie ideas and anger. It hit a zeitgeist. It plugged directly into many young people's emotions, fears and hopes.

It was a comet that blazed and burned out, leaving cinders floating in a vacuum.

Which makes the newly released box set all the more intriguing. The remastered original album is featured on both CD and vinyl. There's a second CD featuring eighteen demos, eleven of which are previously unissued. The track 'Our House' is here – from Nash and from Nash with Joni Mitchell.

The third CD has eleven out-takes (nine of those have previously been unissued). There's also a fourth CD that produces an alternative version of the original album in sequence as nine tracks, instead of the original's ten. This means no 'Country Girl' and no 'Everybody I Love You' but 'Know You Got to Run' is in. Only the 'Helpless (Harmonica Version)' has been released before on this disc.

I don't normally talk prices in this column because they change so quickly and shopping around can produce wide variations but I need to talk money here because this single vinyl/four CD box set is your basic edition. You're looking at £75 or so for that.

There is another version coming soon, though. If you order direct from Rhino or [www.csny50.com](http://www.csny50.com) you can pick up a five vinyl disc version that includes a hardback book and downloadable hi-res files for around £180, give or take a pound. **PR**

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