

D'Agostino Pendulum

The first 'entry-level' D'Agostino amp was never going to be a budget offering, but the Pendulum integrated still swings the dial in the direction of 'affordable'. Start the clock...

Review: **Ken Kessler** Lab: **Paul Miller**

Shall we first dispense with the debate about what constitutes 'expensive'? Just as 'luxury' means anything more than you need, 'expensive' means anything more than you're prepared or able to spend. I'm not about to gloss over the fact that £18,000 for a stereo amplifier isn't chicken feed to most of us, even in a world of amplifiers costing 30 times that amount.

However, in the context of the Dan D'Agostino Master Audio Systems range and the norms in today's high-end hi-fi market, its Pendulum Integrated Amplifier begs precisely that 'which must not be expressed' if we want to avoid a mailbag of protest. So I'll say it anyway – it's a bargain. If you have always coveted one of Dan D'Agostino's designs, possibly going back to the early days of Krell, but could not afford them, or if they were only slightly out of your reach, the Pendulum amplifier changes everything.

OPTIONAL EXTRAS

In line-level-only form at the aforementioned £18,000, or £22,000 'fully loaded' as seen here, you will acquire an integrated amplifier of serious, usable power matched to total sophistication when it comes to the modern expectations of a remote control system, integration with home automation

RIGHT: A 575VA 'Eaglerise Electric' toroid fronts a big PSU [far left] for the EPC-320 phono card [bottom right], ES9039Q2M-based DAC card [bottom left] and power amp [on heatsinks]. This has three pairs of 200W Onsemi transistors per side

and streaming sources, an app for overall control and access to other facilities, etc.

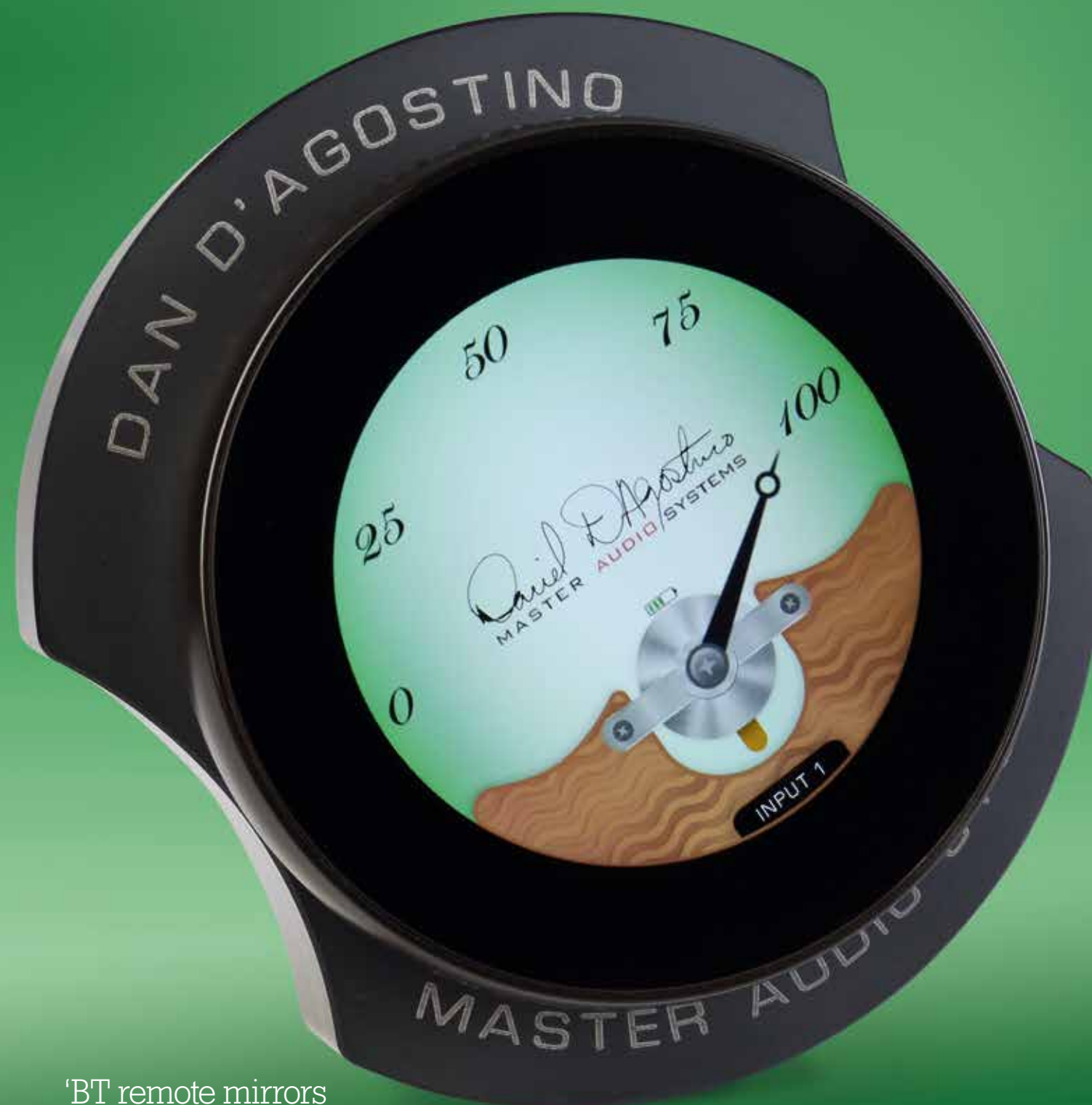
In basic form, minus the optional DAC (£2850) and fixed (60dB) gain MM/MC phono (£1150) modules, the Pendulum offers a minimalist front panel which works together with both a stylish BT remote and an app that operates via any Apple iOS device. Two rotaries and the central display – that's it. Source selection and menu are accessed through the left knob, the right deals with level and mute, while between is an LCD replica of the familiar Breguet-inspired meter found on other D'Agostino products [HFN Jan '24]. The 'needle' actually follows the actions of

'This is a monster truck masquerading as a golf cart'

the rotary volume control and the rotary ring on the remote, dropping to zero when mute is used, while also indicating which input has been selected. The fancy, bi-directional remote [pictured, right] has

its own on/off switch and is recharged via a USB-C port.

Under its substantial lacquered alloy hood, the Pendulum leverages the low-noise J-FET line stage premiered in the Momentum C2 and HD preamplifiers [HFN Apr '20] with the current evolution of designer Dan's high current complementary power amp, here with three big bipolar transistors (per side) bolted to heatsinking on the bottom of the case. The metalwork is



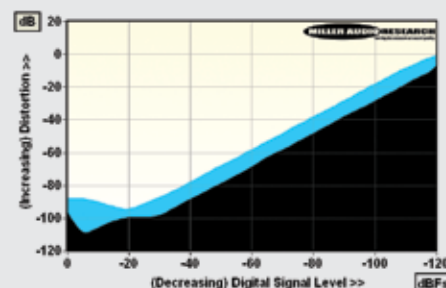
'BT' remote mirrors the main display, showing volume position, not level'

LAB REPORT

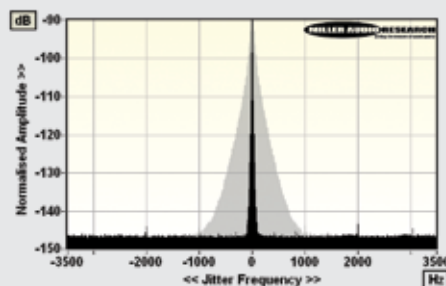
D'AGOSTINO PENDULUM (DAC)

While the maximum preamp output is 5.8V (re. 1kHz/0dBfs) it is not safe to run the Pendulum at this output because the power amp remains in-circuit and will be driven into clipping even without a (speaker) load attached. Muting the power amp also mutes the preamp, so this is not a solution! All subsequent tests were run via the network/optical inputs and balanced analogue outs at 2.23V – this is the maximum preamp output that can be tolerated without the amp dropping into protection at high frequencies. THD reaches 0.0014%/1kHz and 0.010%/20kHz with a peak (0dBfs) digital input and falls to a minimum of 0.0005% (with 3rd, 5th and 7th harmonics in the ascendant) over the top 30dB of its dynamic range [black trace, Graph 1]. The ES9039Q2M DAC can achieve lower distortion but these levels are low *enough* and also more likely to arise from the Momentum C2 preamp-inspired line stage. The 105dB A-wtd S/N ratio is also ample and sufficient to provide for a low-level resolution of ± 0.1 dB at -100 dBfs and ± 0.8 dB at -110 dBfs.

Response and stopband rejection are largely dictated by the (fixed) selection of ESS's slow roll-off minimum phase digital filter. In this instance it offers a worse-case image rejection of just 8.4dB traded against much reduced time-domain distortion and a treble roll-off amounting to -3.4 dB/20kHz with 44.1kHz (CD) digital inputs and -1.6 dB/20kHz with 48kHz files, up to -4.5 dB/45kHz and -9.5 dB/90kHz with 96kHz and 192kHz media, respectively. Output impedance is uniform across 20Hz-20kHz but still a little high at 316ohm (balanced). Correlated jitter, meanwhile, is almost fully rejected but at the expense of an obvious, uncorrelated phase noise [x10 zoom, grey spectrum, Graph 2] with a maximum ± 100 Hz bandwidth. PM



ABOVE: Distortion vs 48kHz/24-bit digital signal level over 120dB dynamic range (1kHz, black; 20kHz, blue)



ABOVE: High resolution jitter spectrum (48kHz/24-bit data) with x10 zoom (± 350 Hz) in grey

HI-FI NEWS SPECIFICATIONS

Maximum output level / Impedance	5.8Vrms / 316ohm (XLR out)
A-wtd S/N ratio	105.0dB
Distortion (1kHz, 0dBfs/-30dBfs)	0.0014% / 0.0005%
Distortion & Noise (20kHz, 0dBfs/-30dBfs)	0.010% / 0.0028%
Freq. resp. (20Hz-20kHz/45kHz/90kHz)	+0.0 to -1.6 dB/ -4.5 dB/ -9.5 dB
Digital jitter (48kHz / 96kHz)	<10psec / <10psec
Resolution (1kHz @ -100 dBfs/ -110 dBfs)	± 0.1 dB / ± 0.8 dB
Power consumption (Idle/Rated o/p)	23W / 350W (23W standby)
Dimensions (WHD) / Weight	432x118x356mm / 15.9kg



substantial but a fair proportion of the amplifier's 15.9kg bulk is taken up by the large toroidal mains transformer feeding the PSU [see inside picture, p44].

ALL DOWN THE LINE

Aside from one set of RCA phonos – more on which below – the rear panel contains three pairs of XLR inputs and a pair of XLR preamp outputs [but see PM's report, p49]. All are line-level unless the phono module is installed, in which case that particular input reverts to MM/MC only. The DIP switches for setting up MC cartridges at 1k, 500, 250, 100, 50ohm, and 47kohm for MMs, can be found under a small hatch on the Pendulum's lid.

As this was the case, I had no RCA line input for my legacy products that lack balanced XLR outputs. This is no real issue as I ran four different single-ended-only sources including a CD player, an open-reel tape deck and two phono amps by using phono-to-XLR adapters (female RCA sockets to male XLRs) found on amazon.co.uk for under a tenner a pair. No mismatches, no nasties – just blissful use of extant sources.

BELOW: Optional digital card has local PSU regulation [top left], clock [lower left] and ES9039Q2M DAC [centre]



ABOVE: Inspired by the Breguet watches of the late 18th century, this LCD display provides updates of status, functions and (digital) metadata

Which brings us to the digital module, based around the low power consumption version of ESS's latest ES9039 DAC. This adds one input each of Toslink optical, HDMI eARC, and wired (RJ45) and wireless Ethernet. It's worth mentioning here that the Pendulum (which I like to think was named after a Creedence Clearwater Revival album) comes with antenna for both Bluetooth (for the remote) and Wi-Fi connectivity. Employing these is essential to

enjoy all that the amplifier can offer, both digital input features and streaming subscriptions, but I will admit that I spent 90% of my time using it as a

'The opening percussion was something to behold'

line-level, old-school unit save for enjoying that outrageous BT remote.

A NEW WORLD

All this said, one must not forget that, however brilliant the Pendulum might turn out to be, it is an exercise in economy even if at an elevated price point. And, no, I don't mean compromises on parts quality or performance, because this amplifier feels expensive in every way.

Instead, it is all about presenting the consumer with a means of entry into the 'real high-end' via D'Agostino hardware.

I feel I must balance the various reasons for buying the internal modules versus using a legacy DAC and/or phono stage, or purchasing new outboard units. It's very likely that superior, more flexible outboard DACs and phono preamps can be had for the same money as these options, though this must be weighed against ☞

INTEGRATED AMPLIFIER



the convenience of a one-box solution. Having full control over the DAC, as well as volume, etc, thanks to the app, and dispensing with two extra mains leads and interconnects is hard to argue with if you're an audiophile looking for a simpler life...

THE KING OF SWING
Although the following focuses on the Pendulum as a balanced line-in integrated amp, I did have a go with

both modules, running MC and MM cartridges for the phono section. Playing 'Superstition' from Stevie Wonder's *The Definitive Collection* [Motown 006024751522729], I was impressed – having previously listened to it through the £68,000 Nagra HD Phono [HFN Jun 25] – with the naturalness of the vocals, contrasting with whatever synth or keyboard makes all that twanging. The opening percussion was something to behold: crisp, fat, open and – what else can I say? – hyper-funky. Make no mistake, sonically the phono module is worth £1150, but outboard rivals for the same price or less will offer more gain options.

Moving to the digital board and the app, there's always the obvious choice of iPhone, but an iPad Mini proved the ideal device between squinting at a phone screen or schlepping a full-sized iPad around the listening room. When you see the main control screen, with HDMI, polarity inversion, 'Dark Mode' to disable the light show, headphone select, and more, you'll appreciate a larger display.

It had the weight I was hoping to hear, with superb attack'

With clear graphics and almost self-explanatory operations, the app takes over control of major streaming suppliers including Spotify, Qobuz and Tidal as well as music stored elsewhere on your

network. The app handles sleeve art, track info and more. In my case, as I won't give one penny to streaming sources, I had long ago loaded the iPad with the complete Beatles catalogue from the 'metal' Apple USB containing the 2009 remasters (you can find it online for under £300 so avoid the scalpers asking a grand).

I was delighted to find that it was virtually indistinguishable from playing it through a USB-equipped outboard CD/DAC,

ABOVE: Seen here in its silver/natural anodised colourway, and the LCD display port in standby mode, the two rotaries cater for source and menu navigation [left] and volume [right]

not least Ringo's magnificent drumming at the end of *Abbey Road*. It had all the weight I was hoping to hear, with superb attack. Another welcome discovery was warmth in the vocals, achieving an almost valve-like nature (not something I would say to founder and designer Dan D'I). It proved a stand-out feature of 'Hey Jude' from *Past Masters*, and it also revealed one of the Pendulum's most endearing skill sets, that of recreating a 3D soundstage.

TO DAC OR NOT TO DAC?
If you're torn between the modules, as opposed to buying both, the DAC will give you more enjoyment from the Pendulum, and – remembering this is about value – it's the best way to get your money's worth.

BELOW: In addition to the standard three balanced line ins, pre and 6.35mm headphone outs, BT antenna for the remote and solid 4mm speaker cable posts, our 'fully loaded' Pendulum has the fixed-gain phono board and digital card with wired/wireless Ethernet, HDMI and optical



Indeed, so integral is the app to the full Pendulum experience, assuming the user enjoys digital sources and not just vinyl nor tape, that I suspect the majority of buyers will opt for it.

That said, I fed via XLR a £14,000 transport/DAC combination and that was the first thing to show me just how special is this integrated amplifier. It kept reminding me of the sheer scale of its titanic sibling, the Relentless 800 [HFN Jun '24]. The Pendulum, weighing in at a mere 15.9kg and demanding only 432x118x356mm (whd) of shelf space, is like a monster truck masquerading as a golf cart. The photos don't tell you just how *bijou* it is, hardly an adjective ever applied to a D'Agostino design.

RAW 'N' RAUCOUS
It's not often I find myself bingeing on music. By that I mean six or seven hours non-stop save for Mother Nature's call, because I usually work in two- or three-hour sessions. But the Pendulum inspired me to listen to the entire *Mike Nesmith Songs* 12CD box set [Edsel EDSL0030] without interruption. The liquidity of Red Rhodes' pedal steel and Nesmith's plaintive vocals on 'Lady Love' from *And The Hits Just Keep On Comin'* – the Pendulum handled these delicate textures with the same grasp and finesse it mustered at the other extreme, with the title track of Anthony Gomes' raw, raucous *Praise The Loud* [RatPak Records 0638647 817127].

Gomes is all scorching blues and rock in the vein of Stevie Ray Vaughan, abusing his Gibson Flying V to within an inch of its life. On top of that, he has raspy vocals which defy the use of the term 'midband clarity'. No, this is all about textures which have nothing to do with grace. It was thus I learned that the Pendulum has guts to spare, cranking it through my DeVore

ABOVE: Stylised rendering illustrates how the Pendulum's size allows it to be placed on shelves or racks that would never support D'Agostino's 'monsters'!

O/93s [HFN Mar '23] to levels I prefer to avoid. But Gomes would be proud – no break-up, no compression, just a guitar onslaught below a voice somewhere in between Steve Marriott and Rod Stewart.

I still can't get over another revelation to attribute to the Pendulum. It extracted detail from Shirley Bassey's 'Goldfinger' from *Dame Shirley Bassey – The Singles* [Strawberry QCR3JAM3 1] which had eluded me despite hearing it countless times in 60-plus years. The stereo spread was wall-to-wall, the lower register slam as impressive as Bassey's soaring vocals. 'Majestic' doesn't begin to cover it.

If, as I asked before, you've been dreaming about owning one of Dan D'Agostino's products since the days of Krell, but nowadays can stretch to £18,000, this is the entry-level integrated amp for which you have been waiting. It's like the Swiss Army Knife of amplifiers: unbelievably affordable and versatile. So don't resist. Instead, just relent. ☺

HI-FI NEWS VERDICT

After experiencing the Relentless 800 [HFN Jun '24], I wondered what other miracles D'Agostino had up its sleeve. Who knew it would switch to the other end of the price spectrum to deliver one of the most important high-end integrated amps of the decade? This baby re-opens the debate of integratseds vs. pre and power amps and it begs us to enforce the Law of Diminishing Returns. The Pendulum has swung.

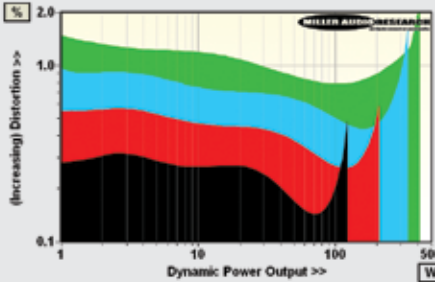
Sound Quality: 90%
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LAB REPORT

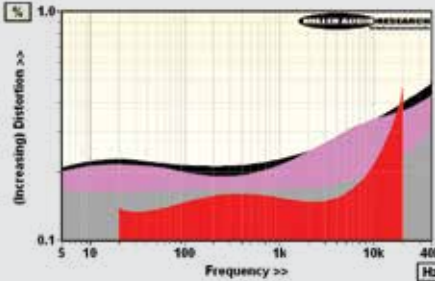
D'AGOSTINO PENDULUM

The Pendulum might well be the most cost-effective D'Agostino amp on the block but, in practice, its technical 'fingerprint' has much in common with its very big brother, the Relentless 800 [HFN Jun '24]. Overall gain, for example, is the same at +26.1dB and the response remains flat to near-DC, reaching out to –0.1dB/20kHz and –1.8dB/100kHz. That said, the output impedance is 10x higher than D'Agostino's spec. at ~1ohm (production error?) so there will inevitably be some modification of this response into undulating speaker loads. However, while the Pendulum's distortion generally increases with frequency – as expected – from 0.19% to 0.35% [re. 20Hz-20kHz at 10W/8ohm; see pink trace, Graph 2] it's the unusual shift in distortion vs. power that marks out the family's low-feedback DNA. As we saw in the '800, the Pendulum's minimum 0.12%/1kHz distortion occurs near full output [red trace] but is higher still at 0.16%/0.1W [grey trace] and 0.22-0.23% at 1-10W [black/pink traces]. Distortion also increases with decreasing load impedance, almost doubling with each halving of the load [see Graph 1] but, again, this might be expected from a low-feedback/high output impedance amplifier.

Whatever the parallels with the '800, the Pendulum makes no claim to be as powerful, although even the rated 120W/8ohm and 240W/4ohm specification is not met in practice at 110W and 170W, respectively. It's real mettle is seen under dynamic conditions where a very load-tolerant 126W, 215W, 349W and 434W is realised into 8, 4, 2 and 1ohm loads, respectively [see Graph 1]. This is equivalent to a maximum current of 21A (10msec at <1% THD) – very generous indeed for a ~100W amplifier and underpinning a beefy sound. PM



ABOVE: Dynamic power output versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (blue) and 1ohm (green) speaker loads. Max. current is 20.8A



ABOVE: Distortion vs. frequency versus power output (0.1W/8ohm, grey; 1W, black; 10W, pink; 50W, red)

HI-FI NEWS SPECIFICATIONS

Power output (<1% THD, 8/4ohm)	110W / 170W
Dynamic power (<1% THD, 8/4/2/1ohm)	126W / 215W / 349W / 434W
Output imp. (20Hz–20kHz/100kHz)	0.93-0.95ohm / 1.31ohm
Freq. resp. (20Hz–20kHz/100kHz)	+0.0dB to –0.14dB/–1.78dB
Input sensitivity (for 0dBW/110W)	140mV / 1470mV
A-wtd S/N ratio (re. 0dBW/110W)	83.1dB / 103.5dB
Distortion (20Hz-20kHz, 10W/8ohm)	0.19-0.35%
Power consumption (Idle/Rated o/p)	23W / 350W (23W standby)
Dimensions (WHD) / Weight	432x118x356mm / 15.9kg