

Anthem Statement M1 (£3500 ea)

Anthem's one-kilowatt M1 monoblock uses an elegant proprietary Class D design to deliver finesse and muscle from a compact slimline case. Time to hook up a pair...

Review: **Richard Stevenson** Lab: **Paul Miller**

If I conjure up a mental image of a 1000W analogue amplifier I see a massive metal behemoth with its own gravitational field and more fins than a shoal of tuna. I see amps with a garish predilection for the visually dramatic that suck power from the wall like a kettle and come complete with an appointment at the spinal chiropractor.

Pretty much everything the Anthem Statement M1 is not. This analogue Class D mono amplifier is the master of understated power, an ultra-efficient Stealth amp for the 21st century. This Canadian-born beast claims to deliver a staggering 1kW into a textbook 8ohm load and twice that into 4ohms with negligible frequency response variation [see Lab Report]. And all this muscle comes from a sleek satin-black case just 50mm tall, or one rack mount slot, plus feet. I am sure I saw my low impedance speakers trembling at the thought of 2kW per channel as I unboxed the pair of M1s for review.

At the heart of the Statement M1 is a proprietary Class D circuit [see box out] running in bridged mode. Anthem is very keen to address the audiophile bias against Class D designs which it argues is actually well founded, considering some of the rather poor Class D hi-fi amplifiers that have emerged over the last decade. Most importantly the company is at pains to point out that the M1 is not a digital amp and there are no ADCs or DACs in the signal path. In essence the M1 aims to combine the power, efficiency and size benefits of Class D technology with the dynamics, resolution and speaker driving ability of more traditional high-end analogue amplifiers.

A tall order? Well, from the mains input onwards the M1 is at the cutting edge of amplifier design. Its innovative switching power supply is much smaller than a traditional copper-wound transformer

with an iron core and allows the amp to run more efficiently, leading to further reduction in overall power consumption.

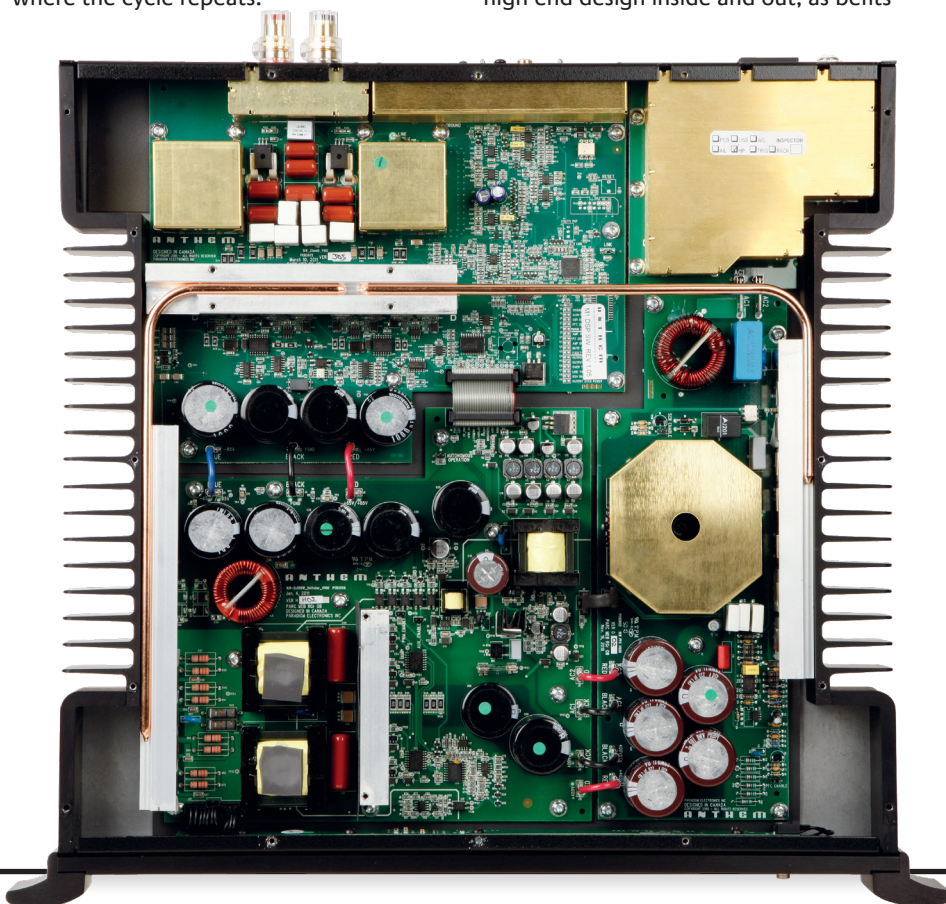
LIQUID COOLING

A Power Factor Correction circuit is implemented to maximise available AC, produce a continuous sinusoidal waveform and reduce noise on the power lines. Cooling is achieved through the small areas of finnage to either side of the chassis that sink heat directly away from the main MOSFET arrays. In addition the sinks are coupled across the chassis internally by a sealed copper pipe. The pipe is part filled with a cooling fluid that evaporates with the heat from the output stages. The vapour expands into the cooler end of the pipe, condenses into fluid and is wicked back to the hot end where the cycle repeats.

While this refrigerator circuit is never going to chill you a Molsen, it does mean that the M1s don't require cooling fans and can be stacked on top of each other.

There are eight 65A MOSFETs in the output stage (and remember this is a mono amp) each with a peak current rating of 260A. Running in bridged mode allows the M1 to implement lower voltage high-speed MOSFETs and the balanced load configuration again improves operational efficiency. There is also an argument that bridged mode is much safer for high power amps as the potential difference between either speaker terminal and the chassis is half that of the overall output voltage. Although with 1000W on tap the safety merits of halving the output voltage are all rather relative...

It is clear that the Statement M1 is a high-end design inside and out, as befits



RIGHT: The eight 65A-capable power MOSFETs that form the M1's final switched output stage are mounted onto an aluminium block with copper heatpipe. Note the switch mode PSU



the £7000 outlay for stereo configuration. Nice touches include hand-designed four-layer PCBs with heavy copper tracks to reduce circuit resistance, extensive use of power and ground planes keep the noise floor in the basement and the elimination of relays in the signal path that could fail or hamper ultimate sound reproduction. A sophisticated monitoring and DSP system runs outside of the signal path, sensing output current, line current, ground faults, temperature and DC voltage at the output.

The chassis itself feels solid and well engineered, with switched rear panel connections for both balanced XLR and RCA input. Power-on can be manual via front button, signal sensing or triggered, and as the amp performed equally well stone-cold or warmed up, current sensing would seem the logical choice. I was a little disappointed that the XLR input was not a locking-type socket and that there was only a single set of (beautifully engineered) speaker terminals but neither are real deal-breakers. Overall we have a well designed, well built and very sophisticated amplifier in a very small case.

But is size important? My missus certainly says so. She only agreed to marry me if we moved to house that had a separate room for my system with its seven monster power amps that she refers to as the 'amp carpet'. As a stereo pair, two M1s stacked up have about the same footprint

as most stereo power amps, so their compact dimensions are not as big a deal-clincher as their performance. However, for custom installers building seven-channel systems into tight racks, often in closets, I can see the low-heat design and rack size of the M1 being a real game changer.

🎵 QUIETLY DOES IT

The first thing you notice about the Anthem M1s is just how quiet they are. There are no relays to clatter into life, no fans to whirr up, no transformers to hum, and negligible background noise through the speakers. I looked carefully through the raft of CDs I had assembled for this test, from '70s rock to classical... before giving in to my overwhelming urge to slam in an Infected Mushroom CD and crank the volume around to 12 o'clock.

Great Uncle Bulgaria and all his little Wombles! The rhythmic dance tunes power out of the speakers with unbelievable grip and impact. The sheer dynamic scale of the presentation is truly breathtaking, putting a Cheshire Cat sized grin on my face almost immediately. The immaculately recorded 'Can't Stop' from the Israeli band's *Legend Of The Black Shawarma* CD [HOM-Mega Productions] is a fast-paced trance-dance

ABOVE: With over 1kW of potential packed into a slimline 1U case design (with optional rack-mounting ears), the M1 represents the new wave of 'high end' Class D amplifiers

track with a complex beat that tests the limits of an amplifier control over large speaker drivers. Not that you would realise that if you had only ever heard the track through the M1s. Their control is seemingly limitless, each bass note etched into the overall sound with class-leading tautness and astounding clarity.

Push the volume some more and nothing sags, gives or sounds strained in any way. The M1 has the high volume

dynamic of a well set-up live gig, maintaining an impressive balance even when your trousers are flapping like flags in a breeze. I suspect the M1s' volume reserves are limited only by someone, potentially

'It put a Cheshire Cat sized grin on my face almost immediately'

several streets away, complaining or one of the speakers throwing in the towel. With Infected Mushroom sounding like a top Ibiza dance gig I finally bottled out at close to 110dB at the sofa – mostly because I didn't want to start the year with a bill for a new pair of tweeters.

SPEED AND ATTACK

It is easy to describe a large power amplifier as effortless but that is not necessarily an accurate description of the M1s. The sound is strictly focused, tight and polished across the volume range without the sometimes lazy richness that big amps can demonstrate at lower levels. The M1's speed and transient attack brings an authentic edgy realism to instruments, particular acoustic ones.

The searing acoustic guitar on Robert Plants 'Liar's Dance' from the *Manic Nirvana* CD demonstrated this perfectly, the M1 delivering the instrument with a live urgency and tangible presence in the room. The top end of each plucked note was clean, hard and packed with drama ➡

CLASS D-EVOLUTION

New Class D implementations are arriving thick and fast these days and they are offering a real alternative to the topologies of the 'old guard', including B&O's ICEPower and the Far Eastern Flying Mole series of amplifiers. The new wave of load-tolerant *analogue* Class D designs really began with Bruno Putzeys' UcD (Universal class D) technology which was developed at Philips' Applied Technologies Lab. Philips holds the patent to UcD but its advantages are realised in practice by the Hypex modules [see www.hypex.nl and Acoustic Imagery *HFN* Jan '12]. Anthem's bespoke Class D technology, with its feedback placed after the output filters, delivers a performance that's closer to Primare's UFPD circuit employed in the I32 [*HFN* Jun '11]. Like the I32, the M1 maintains a consistently flat frequency response regardless of the speaker load. Moreover, thanks to its switch mode power supply (with power factor correction), the M1 is also able to drive these low and variable loads with complete confidence. PM

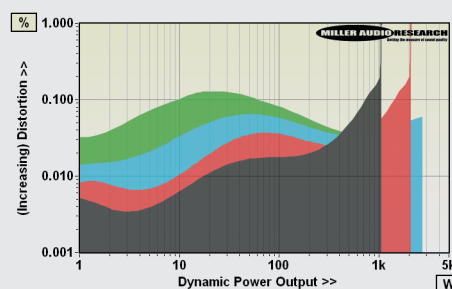
AMPLIFIER

LAB REPORT

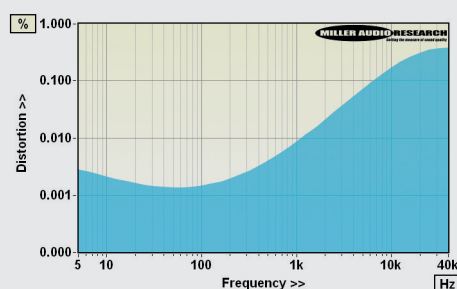
ANTHEM STATEMENT M1 (£3500)

This is by some margin the most powerful Class D amplifier we've featured in *Hi-Fi News*. B&O's ICEPower1000 modules are rated at 1000W/4ohm but Anthem's M1 succeeds in delivering 1.1kW/8ohm under dynamic and continuous conditions, a feat that swells to 2.08kW into 4ohm and 2.7kW/2ohm before its protection circuit activates [see Graph 1, below]. Anthem's global feedback regime encompasses the inductive LPF network to maintain a low output impedance of 0.01ohm from 20Hz-3kHz which then drops further to ~0.001ohm above 3kHz, with the inevitable rise (caused by the output inductors) displaced to a harmless 1.4ohm/76kHz. This ensures the M1 offers a consistently flat frequency response regardless of speaker load, its -3dB points of 1Hz-45kHz holding true into open-circuit through to 8, 4 and 2ohm loads. The response from 20Hz-20kHz is flat to ± 0.1 dB over this same load range.

Distortion is not quite as 'flat' however, rising gently but progressively with output level from 0.0022% at 1W/8ohm to 0.008% at 10W, 0.018% at 100W and 0.055% at 1000W just prior to clipping. Versus frequency, and despite the feedback, distortion hovers around a low ~0.001% through the bass, rising to 0.01% at 1kHz before climbing rapidly to 0.15%/10kHz and 0.35%/20kHz [see Graph 2, below]. The A-wtd S/N ratio is a little lower than anticipated at 76dB (re. 0dBW) but this is innocuous white noise rather than hum or spurious idle tones so any subjective influence will be quite benign. Finally, the M1's efficiency is tremendous at 85% (1.2kW drawn for 1kW/8ohm output). Readers can view an in-depth QC Suite report for Anthem's M1 Class D power amplifier by navigating to www.hifinews.co.uk and clicking on the red 'download' button. PM



ABOVE: Dynamic power versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (cyan) and 1ohm (green) speaker loads



ABOVE: Distortion versus extended frequency from 5Hz-40kHz (re. 10W/8ohm)

HI-FI NEWS SPECIFICATIONS

Power output (<1% THD, 8/4ohm)	1105W / 2080W
Dynamic power (<1% THD, 8/4/2/1ohm)	1.1kW / 2.08kW / 2.7kW / 1.3kW
Output impedance (20Hz-20kHz)	0.043-1.24ohm
Frequency response (20Hz-100kHz)	+0.05dB to -21.5dB
Input sensitivity (for 0dBW/1000W)	104mV / 3300mV (balanced)
A-wtd S/N ratio (re. 0dBW/1000W)	75.5dB / 105.5dB
Distortion (20Hz-20kHz, 10W)	0.001-0.01%
Power consumption (Idle/Rated o/p)	31W/1.2kW (2W standby)
Dimensions (WHD)	490x57x476mm



ABOVE: In keeping with its 'custom installation' brief, the M1 may be switched out of standby via trigger, via signal auto-sensing or manually. The single-ended (RCA) and balanced (XLR) inputs are also switched but the 4mm speaker outlets are fixed

while the sustain was deep and richly textured. Finger movements across the strings were described in intimate detail while Bob's voice sounded every bit the character of his Zeppelin heyday.

The M1's resolution of detail does nothing to gloss over this CD's slightly compressed sound though, and its tautness at the LF end of the spectrum makes the overall sound somewhat dryer than might be achieved with tube or class A/B power. Swapping to a pair of bi-amped Primare A32s, this similarly priced combo sounded immediately richer and warmer yet a little flabby compared to the ultra-clean and dynamic presentation of the M1s.

I would go so far to say that if you feed the M1s an immaculately mastered and well recorded tune, they will deliver power, precision and articulation like precious few power amps at the price. Within seconds of playing the Beth Hart and Joe Bonamassa CD *Don't Explain* they truly came into their own. Beth Hart's voice was supremely communicative, beautifully balanced in the mix and projected well into the room. Her natural top end sibilance was crafted with precision and control, even at high volume, and Bonamassa's slick blues guitar all but picked you up and carried you away on its smooth tone.

BASS CONTROL

The underpinning bass line was taut and expressive, never in danger of getting bloated or out of shape. The M1s commanded the speakers to eke out all the depth they could muster but never filled in speaker shortcomings with artificial bloom in the upper LF to compensate. Those with small speakers will not be fooled into thinking they have floorstanders by the M1s, but will note the incredible openness and detailing throughout the mid-bass.

Those with big speakers – even designs with really wallowing bass drivers – will realise a whole new level of LF grip and articulation down to the very lowest limits of the speaker response.

The M1's bass is undoubtedly dry but lacks nothing in impact and revealed textural LF details throughout the *Don't Explain* CD that I didn't even realise were there.

I played the entire album with growing anticipation of the stand-out track, 'I'll Take Care Of You' and was not disappointed. The keyboard notes at the beginning of the track set the scene for this slow blues number and at the first line I was head to toe in goose bumps, eyes closed, lost in the music.

Hart's voice has a deep Amy Winehouse-like quality with a forcibly strained top end which the M1s delivered with the sort of passion and zeal that would have Aretha Franklin nodding in approval. The vocal leads you by scruff of the ears into the guitar outro. The M1s crafted this two minutes of magic into an utterly sublime listening experience that reminded me exactly why I love music and hi-fi so much in the first place. ☺

HI-FI NEWS VERDICT

Anthem's M1 is an unreserved success at the cutting edge of amplifier design. It delivers stunning clarity, excellent dynamics and frankly frightening power in a form factor that is practical and energy efficient. Bass maybe a little dry for tube aficionados, poor recordings get merciless shrift, but the M1 has the ability to thrill with any genre of music. It punches way above its weight in every respect.

Sound Quality: 85%

