

Radio Active



Forget audio valves - Icon Audio's new MB845 monoblocks use radio transmitting tubes to supply their motive power. Noel Keywood finds them to be real live wires!

This is the amplifier of my dreams. In 1994 we built a massive 211 amplifier at *Hi-Fi World* and its sound blew me away. I've waited ever since for something like it, preferably equipped with the similar 845 valve - and here it is. Icon Audio's new MB845 monoblock amplifiers combine stunning dynamics with all the listenability of valves, at a price that in hi-fi terms is a snip, the pair costing £2,500 in standard form. For this you get two weighty monoblocks, each delivering a claimed 90 Watts. They also look good, but believe me that's a side issue. It's sound quality I've been hankering after for so long and they didn't disappoint.

If mention of 211s and 845s is a step - or perhaps many steps - too far into the obscure cult of the thermionic valve (tube) let me explain. Generally speaking, the larger the valve, the more power it can handle. The 211 is a monster as

valves go, and can deliver real power. The 845, with its high temperature graphite anode, can handle even more, 25% more according to original RCA data sheets. Both are large power triodes that can be used in audio amplifiers - or transmitters! Both are 'difficult' to use, mainly because they run at seriously high voltages, way beyond those of today's more conventional valve amplifiers. The 211 amplifier we built scared me with its 1,300 Volt HT line, compared to 500 Volts or so for a conventional valve amplifier. That's why 845 amps are rare birds at present. They aren't an easy technology at many levels, demanding crucial high voltage parts, especially the output transformer. I have a feeling though that this will change, as the world cottons on to what valves are about and gets to see and hear extraordinary devices like this.

Amplifiers using big triodes will always be expensive, usually more so than these Icon Audios, I suspect,

because they have been designed not to break the bank. Each monoblock uses a pair of Shuguang Electron Tube 845Bs in push-pull. Often, 845s are driven by an expensive 300B but in this amplifier designer David Shaw has used a choke loaded 6SN7, an inexpensive low impedance double triode, the choke giving it plenty of voltage swing. It helps keep down cost against the common 300B alternative, and weight and cost down against our use of driver transformers in our Hong Kong bound 211.

The 6SN7s are preceded by another double triode, a 6SL7 acting as preamplifier and phase splitter. A £3,000 Signature version will be available, fitted with special large bulb, heavy duty Shuguang 6SN7 driver and Philips 6188, a ruggedized 6SL7. It will also use Jensen paper-in-oil coupling capacitors, now a popular idea. We used them in our tuned amplifiers and my 300B benefits from their dark, damped sound. Our review

monoblocks were in fact hybrids fitted with the better valves, visible in our photos, especially the unusual looking round bulbed Shuguang 6SN7 driver, but Jensen capacitors were not fitted.

Large, old style valves like these are becoming ever more popular in valve audio, because they are rugged, can deliver higher currents, are inexpensive, in good supply and - most of all - sound good. The reason for this is that they are usually very linear. So Icon's MB845s are up with current thinking in valve amplifier design. Those big tubes with Octal bases might look antiquated but their use is deliberate. The large black boxes at the rear of each chassis house mains and output transformers. The mains transformers have 'universal' twin primaries that can be internally wired in series for 240V territories or parallel for 120V territories. The rear panel fuse is a 3A fast blow mains primary fuse. Internally there is an H.T. fuse that should only be changed by someone who knows what they are doing. Power supply bleed/balancing resistors are fitted so the capacitors will discharge when power is switched off, meaning dangerous voltages should not be present, providing the mains supply is disconnected.

Whilst the first triode has d.c. heaters, 845s are directly heated triodes lacking a cathode and Icon Audio use an a.c. heater supply for longer filament life. To minimise hum, hum buckler potentiometers are fitted internally. Our samples had very little hum as a result, but my own 300B amps with hum bucklers have audible hum with an ear against the loudspeaker, if inaudible hum at normal listening distances. With big, directly heated triodes you more or less have to accept this. We did dream up some solutions, like very low frequency a.c. supplies and d.c. supplies that change polarity at switch on, but this is all extra cost and complexity - and complexity in particular is not something that sits well with valve amplifiers. They are best designed remembering KISS - Keep It Simple Stupid! Elegant simplicity is the key. Icon Audio don't expect hum to exceed 1mV at the loudspeaker terminals, a criterion we used, and with this even 93dB sensitive Tannoys should not reveal hum. I used 90dB sensitive Monitor Audio PL300s and heard no hum, even when close.

Each monoblock measures 25cm wide, 50cm deep and 28cm high and weighs in at a substantial 23kgs. The



The Sensitivity switch sets feedback level. Icon Audio suggest Low Sensitivity (high feedback) is best.

finish is a functional black crackle that relates nicely to the period of the original technologies, but may not resonate too well with today's buyers, who are quite likely to want to put these amplifiers on display in a modern home. Valves have strong visual appeal and this is an influence behind their revival, I believe. Solid-state amplifiers are something of a dead end style wise, as well as in their sonics. In contrast the 845, like the 211, is an imposing device guaranteed to intrigue onlookers, even more so when it is switched on. We all know that valves glow, but the thoriated tungsten filaments of these tubes are so bright they look like miniature light houses. I think there is room for a less industrial finish than that used by Icon Audio, because valve amplifiers like this aren't bought as period pieces.

The amplifier can be used without the covers, which simply lift off. There are no exposed voltages and although the valves run hot, it is difficult to suffer a burn. All the same, they're best not positioned where pets or small children can reach them. Bias adjustment is provided, but this is an occasional task, once a year or so. Icon supply a meter, whose probe is inserted into a top mounted phono socket for this purpose. It measures just 0.4V, across the cathode resistor, not anything dangerous.

Icon fit a two position toggle switch to the rear panel, labelled Sensitivity. In fact it switches feedback level, which affects sensitivity. Low sensitivity is the Down position, which corresponds to high feedback. Conversely, the Up position selects low feedback and high sensitivity (also, higher distortion and lower bandwidth). Icon suggest the low

sensitivity setting is used as standard. Feedback in engineering terms changes everything. In the real world, however, you find it changes a lot less - and not what you expected in any case, as the Mad Hatter might have said to Alice. This isn't the place for a diatribe on feedback. We fitted our own World Audio Design amplifiers with feedback on/off switches and generally listeners preferred feedback On initially, likely because it gave a presentation they were most used to, but Off in the longer term, as they acclimatised to a new and subtly different presentation.

Having said this though, whilst I generally prefer no feedback in my own amplifier for the sense of easy spaciousness it provides, with Tannoy Yorkminsters feedback was best switched on to tighten bass by a small but useful degree. As Laurie Fincham, Chief Engineer of KEF, explained to me long ago, loudspeakers possess acoustic and magnetic damping to control cone behaviour, in addition the electrical damping applied by an amplifier, so quite what effect changing feedback and electrical damping (i.e. damping factor) has depends upon the loudspeaker you use...

With sensitivity set to Low on Icon's MB845 monoblocks it is still relatively high at 440mV, so if you set it to High it becomes very

TWIN-211 SINGLE-ENDED SPECIALS DELIVERED

We've just finished and delivered two massive twin-211 valve, single-ended, 40watt monoblock power amplifiers to a very - er - enthusiastic customer in Hong Kong. If you want to know who, just translate the following -

霍經麟董事

Designed entirely in-house, these unique amplifiers use driver transformers, the best - if most difficult - way of driving 211 triode output valves.

Are you going to produce a kit?, we hear you say. No! The H.T. line operates at a sizzling 1300volts and a peak voltage of over 2,200volts is generated in the output transformer, demanding special insulation to avoid 'speaker vapourisation'. Our transformer supplier assured us that their experience with industrial supply transformers working to 12kV and more gave them the right experience to tackle this. Transmitter rectifier valves rated at 8kV were used in the power supply.

The amplifiers were specials, designed because we wanted to produce (and hear!) a state-of-the-art, single-ended valve amplifier of this sort - a very rare beast indeed.

Reduced to tears when they left, a more compact version is being created. Noel's building a hot-dog stand to earn extra pennies; Dominic's taken a night job; they will retail at £9,264, custom built and finished to order.



high. To reiterate, bandwidth is widest, damping factor highest (4) and distortion lowest with these switches set in their down position, to high feedback/low sensitivity. You can switch them up if you wish however and see what you prefer. Volume will jump up when you do so, so it should be turned down an equivalent amount on the preamp. Using low feedback deepens the sound stage and adds a smidgeon of warmth, easing the sound a bit generally. However, Nigel Kennedy's violin remained as richly detailed and densely textured at either setting I found. Only with really heavy bass from Angélique Kidjo's *Fifa* album through the underdamped, bassy sounding Spondor S8e loudspeakers did low feedback obviously loosen the amplifiers grip. So as I have found in the past, which setting you prefer depends upon the partnering loudspeakers and your own preferences. Changing feedback isn't a night and day experience with valve amplifiers, but then the amounts used are limited in any case.

Exotic they may be, but these monoblocks are a straightforward user proposition. Good sensitivity of 440mV means they can be used with

Loudspeaker terminals are fitted for 8 Ohm and 4 Ohm loudspeakers; as you will see from our loudspeaker group test this month, modern loudspeakers are best judged as 4 Ohm devices, although there are exceptions.

Icon fit a rocker type power switch on the left side panel, near the rear - none too convenient but popular with valve amps to avoid forming an induction loop that generates difficult-to-cure hum. It was always a problem keeping this field off the first grid, a high impedance point, of World Audio Design amplifiers, when I was prototyping them.

I don't want to frighten you, but a lifetime of DIYing with valves has made me a scaredy cat when it comes to thermionic switch on. I sometimes wince when turning on my World Audio Design 300B, even though it has been serving me passively since 1993. Turning on an amplifier that is going to apply 1,300 Volts to internal components is an action that causes 'significant' flags to wave in my mind. My 300B is prone to thrum as it absorbs a current inrush, even though it has a slow start diode; this big 845 comes on with a hum in the loudspeakers for ten seconds or so, until it settles down, when it becomes silent. The bright filaments light quickly; there's no slow rise to a gentle glow.

As always with valves, thirty minutes are needed before the sound really starts to coalesce, and around one hour before the amps are really singing. It's not that they sound bad before warming up, but you don't get the full experience. When I first used them I noticed they seemed to step up a gear at intervals, moving into fourth at about one hour fifteen minutes, by which time I had moved from being mightily impressed to awe struck! That was with Monitor Audio PL300s reviewed last month, to which the MB845s were perfectly suited.

SOUND QUALITY

What so struck me about our 1994 211 amplifiers was their extraordinary dynamics. They were sort of like Naim on steroids, seeming to treat loudspeakers with contempt, forcing them to do things they had previously never done. But they were very much valve amps too, with plenty of atmosphere and stage depth, plus the lovely reproduction of voices and instruments that solid-state so gets wrong, and in so doing strangles the life and soul out of music. Our 211s were a musical resurrection and, just as I was phoning Pickfords to organise getting

them home, UPS turned up with a crane and spirited them off to Hong Kong. I haven't been the same since.

Life has become a lot better now I have had the opportunity to spend time in front of Icon Audio's MB845s. They confirm that I wasn't deluded in my assessment of our original 211 amplifier. The Icon Audio monoblocks also have massive dynamic resolution. So at the start of Eleanor McEvoy's 'Yola' SACD, a succession of faint strikes from a kick drum in 'I Got You To See Me Through', almost lost by the dynamic sloth of two solid-state amplifiers of good reputation, were delivered as a short, tight stab from a silent background by the MB845s. As bass guitar kicked in each note was fluently described and had real punch to it. The dynamic strength of these amplifiers is extraordinary.

As the Eagles' 'Somebody' kicked off, its bass line was similarly deep, powerful and expressive - a property of these amplifiers that hit me straight away, as it did with our 211s so long ago. With so much experience in listening to amplifiers my reaction was "good Lord, where does all that come from?". I used these amplifiers with our resident Spondor S8es, at length with Monitor Audio PL300s, to drive Robson Acoustic and Kingsound loudspeakers, and with all the loudspeakers in this month's group test and their extraordinary bass dynamics and extreme grip held. Generally, the MB845s went lower than other amplifiers and had more grip. If anything they were a tad drier and less bloated across the bass region than other amplifiers, all this with the Sensitivity switch set downward to maximum feedback, I should add.

Then we come to an equally extraordinary midband where singers and instruments were unusually well separated, seemingly lifted from a mix and analysed under a magnifying glass. This raised Gabrielle from the complex instrumentation in 'Forget About the World', forcing her husky voice into my attention. Backing singers were clearly separated and sharply defined.

Similarly, Patricia Barber sang 'Let it Rain' against a clear, silent background, every little vocal nuance being thrust out to make for an unusually close and expressive performance. Sudden stabs from a kick drum pierced the room and were gone, exactly the same attention grabbing effect I noticed with Eleanor McEvoy's 'Yola'.

With complex heavy rock performances the MB845s impose rigid separation between bass guitar,

STANDARD VERSION £2,500

Tungsol 6SL7 input triode, Tungsol 6SN7 driver, Shuguang 845Bs with new graphite composite anodes.

SIGNATURE VERSION £3,000

Philips 6188 input triode, Shuguang special 6SN7 with higher plate dissipation, harder vacuum from twin getters, gold plated grids, more rigid four pillar mounting (instead of two), Teflon composite base, and gold plated pins. Shuguang 845Bs with new graphite composite anodes. Jensen paper-in-oil coupling capacitors.

a passive preamplifier, like Creek's OBH-22 that I used. All silver disc players deliver 2V, more than enough, and older tuners and cassette decks commonly produce 300mV-500mV, so will just suit.

A preamplifier with a small x3 gain will suit. This should be a simple, elegant valve design, not solid-state which will only flatten dynamics and suck the life out of music.



drums, instruments and singers with an alacrity that is all but peerless. They also manage to imbue a sense of textural and dynamic breadth to images that I have rarely, if ever, quite heard before, making most solid-state amplifiers sound unfortunately constricted and monotonous in comparison.

Where these 845 amplifiers depart from my own somewhat heavily tuned 300B amplifier, fitted with Jensen paper-in-oil capacitors and Black Gates for cathode decoupling, is in a hard dynamic edge and very slight glare that is part of their peculiar ability to both lift, outline and magnify singers and instruments. The MB845s are also a little less capacious in their sound staging, but I can't say this worried me. 300B amplifiers are arguably a left field experience against the everyday, especially when feedback is switched off. They are currently a standard for what music sounds like when amplified by a device that works properly without feedback, but I have never felt this makes their sound definitive. It is what it is, and I happen to enjoy it like many others around the world, but 300B amps are gentle on the senses shall I say?

The Icon Audio MB845s offer a more visceral, vivid, forward and gripping presentation, one that is not as lush and romantic. I'm pretty certain that the eye popping dynamics and forensic sense of

revelation these amplifiers provide will convince most listeners that they offer one of the most exciting sounds available.

Only their upper musical registers invite question, but I am not quite sure what to conclude. Going back to the Eagles 'Somebody', I could perceive that the cymbals were in a studio even though the track is heavily mixed and gated; our Sugden A21a really couldn't resolve this, providing a simulacrum by way of contrast. So there was tremendous revelation of detail and atmosphere. Cymbals had body and they crashed fiercely, whilst rim shots fired out of the loudspeakers with frightening force.

However, sibilance was propelled by a similar degree of force and I found percussion being ejected with as much power as kick drum. This is not a sound for the faint hearted then. The Icon Audios aren't so much bright in balance - far from it in fact as they are - 1.5dB down at 20kHz - but intense in their treble and this is part of their character. Happily, it is superbly resolved, but these amplifiers take no

prisoners all the same.

Much of what the Icon Audio MB845s do is attributable to the awesome 845 valve with its graphite anode I suspect. This is not to belittle David Shaw's design skills, but valves have their own sonic signatures and, like the 211, the 845 is, sonically, something of a disguised brute I think!

Wrapped up in a package that Icon Audio have wrestled down to a reasonable price, considering what is on offer, these amplifiers are required hearing for anyone after an extraordinary sound. Much like our original 211s they took my breath away and are amongst the best

"required hearing for anyone after an extraordinary sound..."

amplifiers I have ever heard. Having used them with many different loudspeakers I can also say they are consistent in this too. So here are a pair of thermionic hooligans that I can thoroughly recommend as offering a great musical experience - and a unique one. They bring zest and superb insight to Rock and Classical alike.

MEASURED PERFORMANCE

A big, low feedback valve amplifier like this one is different in the way it delivers power. Distortion rises progressively and overload occurs gradually with a smooth rounding of the wavetops. Using a 1% distortion limit the big MB845 delivered 85 Watts, or 90 Watts with a 3% limit using the conventional 1kHz test. However, the transformers, which are large but not vast, moved into unhappiness at around 65 Watts from a 40Hz bass tone and managed around 70 Watts maximum (3% thd), so this is the true power output as far as bass heavy Rock is concerned. This result applies to both 8 Ohm and 4 Ohm taps I should add.

At a few Watts the MB845 produced around 0.2% distortion, mainly innocuous second harmonic at frequency extremes of 40Hz and 10kHz, this figure sinking to 0.05% at 1kHz, usefully below Harold Leak's 0.1% limit! What really matters is what is going on across the frequency band below 10V output (25 Watts into a 4 Ohm loudspeaker) and here the MB845 was producing just a little low order distortion, as our distortion analysis shows, so distortion isn't a problem.

Sensitivity was high at 440mV for full output, meaning it will work with many phono stages without an intervening preamp, including Icon Audio's which have a volume control fitted expressly for this purpose. Noise was low at -102dB and hum virtually negligible at 0.3mV, making the MB845 unusually quiet - useful when sensitive loudspeakers are used.

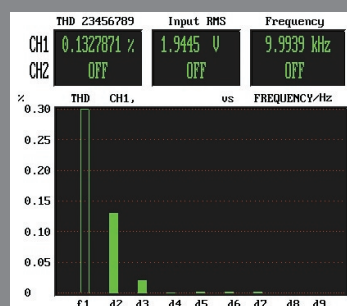
Frequency response rolls off gently above 15kHz, the -1dB point, measuring -1.5dB at 20kHz. Whilst this is large when compared

to conventional solid-state and valve designs which are mostly flat to 20kHz nowadays, it is more than countered by the intrinsic rising response of most modern loudspeakers that are commonly +2dB up at 20kHz. The MB845 will sound just detectably less bright in comparison to other amplifiers all the same.

The Icon Audio MB845 is typical of a well engineered large, low feedback valve amplifier, possessing a stable distortion pattern dominated by innocuous sounding second harmonic at normal listening levels. It should sound smooth, easy on the ear and powerful. NK

Power	80 Watts
Frequency response	10Hz-15kHz
Noise	-102dB
Distortion	0.2%
Sensitivity	440mV
Damping factor	4

DISTORTION



VERDICT £
Monoblock valve amplifiers with awesome dynamics and power. High drama, superb value, enough said!

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FOR
- deep, tight bass
- vast dynamic drive
- excitingly vivid
- drive any loudspeaker

AGAINST
- industrial style
- specialised technology
- large and bulky