

TEST

# 1-0 to the triangle!



*Product: Acoustic Reality Ear Two  
Information: Acoustic Reality, 96 10 90 08*

## Ear Two is the world's first commercially available separate hifi power amplifier based on the ICEpower technology

*By Kim Kruse Petersen  
and Michael Madsen (measurements)*

**B**ehind the development and production of the Ear Two power amplifier is Acoustic Reality, a quite new Danish company with its headquarters in Holstebro, Denmark. The name, Ear Two, indicates that we are talking about a stereo power amplifier. Under the name Ear One, the amplifier can also be delivered in a mono version.

All amplifiers, including a pre-amplifier, are produced in the triangular design, which is characteristic for the company. Also for the home cinema, the company produces multi-channel amplifiers from the same angular concept.

From the very beginning, the triangular shape has characterised Acoustic Reality as the company's tall elegant pyramid-shaped

loudspeakers also have a triangular basis ("a tetrahedron", ed.).

### **ICEpower all over**

Acoustic Reality's amplifiers are based on modules from B&O ICEpower. An interesting initiative both from a technical as well as a commercial point of view. With this new amplifier, Acoustic Reality is the first in the world to launch a commercially available separate power amplifier based on ICEpower modules.

The stereo version, Ear Two, is rated at performing 2 x 250 W in 8 ohm. We will not go into detail with the exiting technology behind the ICEpower switching amplifier, which is a further development of the class D principle – among others with a number of patents – as the subject has been described in detail in a number of articles in High Fidelity (for further information, please see Karsten Nielsen's articles in nos. 6 and 7, 2001).

The biggest trump of the ICEpower technology as to previous class D constructions is primarily the special modulation and regulation principles which give the amplifier good linearity (low distortion) and, at the same time, make it relatively insensitive to component variations and not least the loudspeaker loading. The solutions should ensure that the amplifier performs more or less identical at all loads. And our experiments with various loudspeakers show that, in reality, it holds water.

### **Compact amplifier**

Although the ICEpower modules are supplied as complete amplifier modules, there are still many ways of optimising and fine tuning the sound.

The power supplies for the operation of the modules have a quite significant influence on the final result. In addition, you can get a little extra by filtering with a

supplementary output filter. Acoustic Reality has put in a huge amount of time in developing and listening in order to establish the balances that produce the best all-round sound.

As you would expect from this new technology, the physical size of the modules is limited. The size of Ear Two is only 38x38x15 cm and it weighs less than 7 kg. The compact size is not least due to the fact that the amplifier principle is extremely efficient. The modules develop almost no heat, thus the actual heat sinks are completely superfluous. Thus, due to the efficiency the power supplies – other things being equal – can be made smaller. Hence, compactness is a keyword for Ear Two.

Nevertheless, it is a rather extreme and powerful amplifier. The 2 x 250 watt in 8 ohm are put out without any problems and even when operated over a very long period and heavy load, the amplifier does not even get lukewarm. That alone is epoch-making, when you are used to the heat from 2-300 watt which, among others, the American high-end amplifiers, without delay, throw out into the listening space.

### ***Speakon or WBT***

The connections on the test specimen of Ear Model Two are a little different from what we are used to and as far as hifi is concerned somewhat controversial. There are 2 x XLR balanced inputs, doubled with phono. This is definitely both good and sensible. But the loudspeaker connections are Speakon bushes from the Swiss company Neutrik. Unfortunately, these bushes are not very common within hifi and therefore it might let down many users with their preferred cable as cables are neither available nor mountable with Speakon. Thus, the amplifier is also available in a version with loudspeaker connections from WBT. Otherwise, Speakon is a sensible solution as the connector combines compactness with extreme low electrical shock and ensures against short-circuit in the amplifier. In connection with Ear Two, this is important as the amplifier is not short-circuit protected.

(Just before printing this article, Acoustic Reality has informed us that it will use WBT only in the future, ed.)

***All connections are made in a vault at the bottom of the amplifier.***

### ***Connections in (cable) vault***

All connections in the amplifier, including mains, go through a vault at the bottom of the amplifier. As the amplifier only weighs a few kilos, turning it upside down does not cause any problems. However, you have to be aware of that the polished shell of steel easily gets scratched and the bright steel too easily takes on fingerprints.

But it is not that easy to get to the connections. And unless you dismount the very sharp spikes, which the amplifier is, otherwise, elegantly resting on, you might cut yourself badly. However, the solution results in a box with visible and not pretty connections, giving the amplifier a clean design. And with only one LED (light-emitting diode), you can hardly say that the front of the amplifier is overloaded. The amplifier is quite simple to look at.

A lot of people might look for the mains switch to the amplifier, but it is placed at the bottom of the amplifier. In practice, it is both simple and functional as the switch can be reached easily when, somewhat unconventional, the amplifier is placed on 3 cm tall spikes and you know where the switch is! The fact that the amplifier stands on these spikes gives it an elegant as well as a simple look. Not least the bright steel helps give this impression.

### ***No noise***

With about 20 watt idling, the amplifier's power consumption is quite moderate, and thus we had no concerns leaving it on all the time. In practice, it has far less power consumption than what is known from the traditional class A/B amplifiers. For these class A/B amplifiers, power consumption of well over 100 w is quite normal (not to mention pure class A constructions, ed.).

During the entire test period, the amplifier had no noise from the mains transfor-

mer and we did not trace any electrical noise either. Even with the ear close to the loudspeaker, almost no noise was traceable. Not even "on/off" provokes any noise, etc. although there are no actual relays in the amplifier outputs. All together, a triangular box that you quickly – apart from the sound – forget all about.

### ***Unforgettable sound***

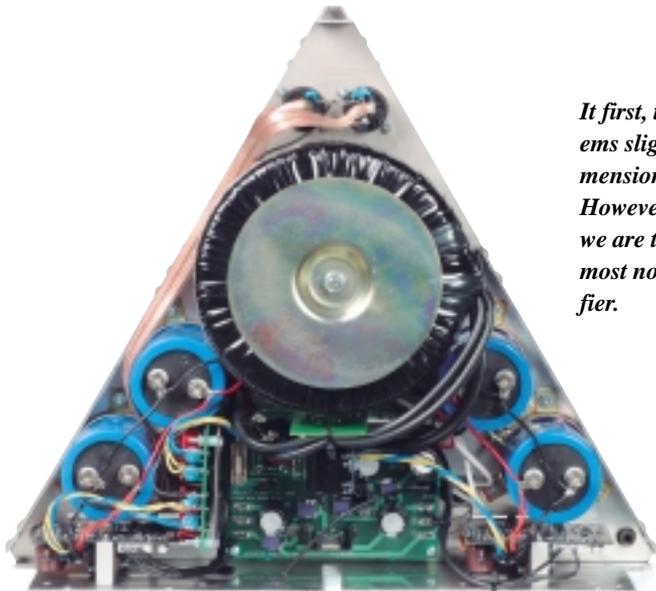
On the other hand, you will not forget the sound – especially not once you have heard it. It is so exquisite that it is impossible to forget! Primarily, it is so different compared to the normal sound that it is hard to return to most analogue amplifiers afterwards. And this is without regard to the price level.

This does not mean that Ear Two does not have any sound of its own – of course it has. But not in any prevalent way. Nevertheless, it seems as if it plays without traditional sound of its own, without any "makeup" and very, very true.

However, it is obvious that the amplifier colours the sound far less than traditional transistor amplifiers and, at the same time, much more precise in its way of playing. If compared directly, our, by now well tested, transistor amplifiers seem almost spongy in the bass, foggy in the midrange and with a heavily dimmed treble. As if you look through sunglasses. With Ear Two, it is like you take off your sunglasses. The light becomes sharper and the colours more true. In addition, the sound picture is recorded with far more persuasive depth, and the dynamic is increased extensively. It is much easier to find your way around the sound picture, errors, sense of volume, perspective etc. – everything is presented quite clearly.

It is not wrong to say that it plays without personality as it hardly contributes at all to the signal. That is how you feel when





*It first, the transformer seems slightly “lesser over-dimensioned” than normally. However, keep in mind that we are talking about an almost non-dissipative amplifier.*

listening. Thus, you cannot find neither the tubes’ euphoria of sound or the transistor amplifiers’ crossover distortion, the contribution of artificial tones nor anything else that can dim the sound trying to make it sound “musical”. With Ear Two, we welcome dynamics, clarity, purity and transparency. In short; it is overwhelmingly good!

Thus, Ear Two is a completely unveiled and “naked” music recorder. Of course, not everyone would like this way of playing, just as it is not everyone who would like to walk in the sunshine without sunglasses. However, we find that the total lack of aggressiveness, tones etc. become most music. And it is quite liberating to be able to hear what is actually hiding in the music. The different colours of the music appear pure and clear – in all its glamour.

### Pure as spring water

Furthermore, after the necessary running-in of approx. 100 hours, it becomes even more evident that this amplifier plays with a dynamic and “hole through” feeling, which – with quite a huge margin – exceeds what

we have experienced previously. Thus, of course, the amplifier does in no way hold back. If the source material has a little hardness, well, then it will sound hard through Ear Two. But if the source material is of the highest quality, the music from the amplifier sounds more analogue than all the amplifiers we have had in the listening room. The sound is simply pure and clear, thus, it is like drinking pure spring water on a hot summer’s day. With Ear Two you are totally convinced that you are listening to the truth and nothing but the truth of the source material. All in all, that is rather positive.

### Excellent midrange

A lot of our readers know of the class D or PWM amplifiers’ huge advantages in the bass and where the rest of the frequency span cannot quite follow in quality. Therefore, it may come as a surprise to many readers that Ear Two’s greatest improvement of the general sound actually is in the mid-range picture and not least in the treble. This is due to the fact that it is both extremely dynamic, which is especially heard in the mid-

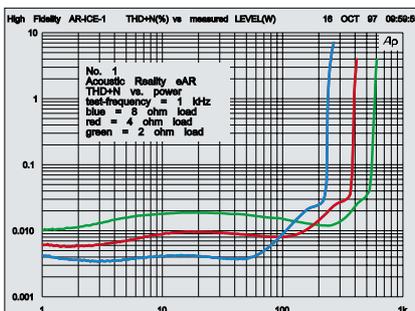
range, as well as it seems immensely pure in the top. The “sch”-sounds on Diana Krall’s “Let’s Face the Music” from the exquisite CD “When I Look in Your Eyes” causes problems for many power stages. Through Ear, the sounds are still overloaded, but they are placed in the middle of the sound picture without, in any way, sticking out of the panorama. Not even our high-end amplifier which is four times as expensive is able to handle this error situation from the music material. Truthfully impressive!

We have tested the amplifier with a number of loudspeakers, and the amplifier is not particularly influenced by the loudspeaker it is connected to. This is rather different from other switch-mode class D amplifiers where the amplifiers have always played differently with a number of different loudspeakers. Ear Two seems to be quite consistent in its way of playing.

### The sense of live music

In particular, the results have been obvious with high-end constructions like Martin Logan Prodigy and Dunlavy SC-IV.A, which both woke up as if they had an electroshock. The music simply got a whole new life. No matter whether the music was grand Mahler symphonies, heavy rock at realistic live sound level or smaller set-ups such as string quartets or solo instruments like guitar. Every time the result was convincing. Extremely detailed, almost explosively dynamic and very natural volume realisation.

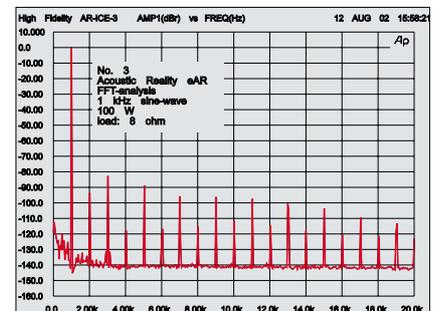
Actually, we have never before experienced hifi with so much “sense of live music” as with the Ear Two amplifiers. This makes, of course, some music sound much harder, for example rock music, however this often sounds hard life, too. But demanding string quartets have the softness that they must and



Acoustic Reality’s ICEpower (ICE500A) equipped amplifier supplies up to 230/380/550 watt with less than 0.1% THD+N in 8/4/2 ohm, respectively.



At 100 W in 8/4/2 ohm THD+N is very low at all frequencies. At rising frequency, THD+N increases evenly but stays below 0.1% in the audio range.



At 100 W in 8 ohm THD+N is read at 0.009%. The spectre is dominated by uneven harmonics (3rd, 5th, 7th, etc.), but the level decreases evenly at rising order.

should have. Not least because the amplifier has a superior treble recording which is both extremely easy flowing and yet super dynamic at the same time.

With Ear Two, the distortion is experienced so low that we can only warn you: Watch your ears, because with this amplifier you might easily play loud – too loud!

### High sound pressure

With Ear Two, we have generally played a lot louder than we use to. Maybe even extremely louder. For an entire evening, we played with the amplifier almost on almost full throttle. That is really very loud – even for us (was it the old editor grumbling about beginning hear damage) (grumble, grumble, ed.).

For a short period, we listened to our usual amplifiers. Everyone in the listening room agreed that it had become too loud. However, in reality, the level in this amplifier was exactly 10 dB below the level we played with Ear Two. This clearly proves that the amplifier simply distorts far less than we are used to. All in all, in reality, we are talking about quite transgressing improvements of the sound.

### The music

We have, of course, listened to a lot of music in order to be able to reach the above conclusions. Not least to establish if we are really talking about a completely new sound dimension or just about seductive elements that you get bored with in no time. But we can certainly state that the very positive first hand impression of a run-in amplifier lasts over time.

A number from Reference-CD No. 61, track 12 (the string quartet by Beethoven), CD No. 63, track 14 (Dvorak's violin sonata) and CD No. 65, track 7 (Guiliani's guitar se-

renade) very clearly shows that there is no hardness whatsoever to be found in the sound from Ear Two, neither from the guitar, the violin nor from other instruments for that matter. It is actually the smoothest and most airy recording we have experienced so far from these tracks, which can otherwise easily provoke tones and make it hard to listen to.

And try to listen to other tracks from Reference-CD No. 65, i.e. track 10 (Kuhlau flute sonata) and track 13 orchestral piece by Webern: Here we really experience that the expression "hole through" get a whole new meaning. Try these tracks and then switch to a pure analogue power amplifier! If you compare these, it might play satisfactorily, but there are now a couple of thick carpets between the music and you as a listener.

However, we have already mentioned that the midrange and treble are what surprises the most in this amplifier, but that does not mean that the bass is not good – on the contrary! The bass is something totally different than what we normally hear. Here you really have all the smack you could ask for without the bass being booming or too heavy. It is extremely precise. For example, listen to Manuela Lærke on Reference-CD No. 67, track 5, and feel how the bass almost is there "in person". Immensely deep and with an extreme power. It is, of course, also clear with regard to organ music, where the Rheinberger piece on Reference-CD No. 61, track 11, clearly shows that the amplifier almost keeps the bass diaphragm tight like in a vice-like grip. It is no wonder that more loudspeaker designers use the same amplifier modules in their subwoofer constructions.

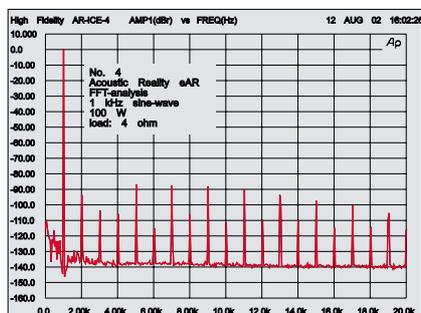
### Conclusion

After having listened to Ear Two, we are completely convinced that we have experi-

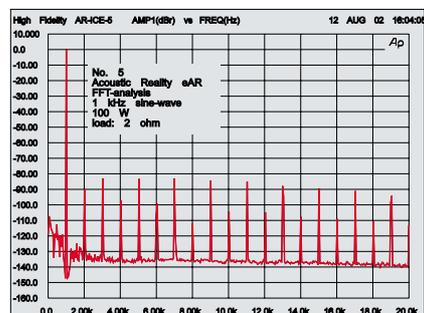
enced the amplifier topology of the future. Acoustic Reality has proven that with the ready-to-use amplifier modules based on the ICEpower switch-mode amplifiers, it is possible to obtain even extremely good results. At the same time, when compared with the exploitation of possibilities for a very compact design, which is in contrast to the high-power output, a low consumption of power and a price that cannot at all be compared with the amplifier's qualities, it has to have our best recommendations.

Of course, the honour for the good result is mainly due to the incredible ICEpower modules. But part of the honour should also go to Acoustic Reality, which has been able to implement the modules in a mass produced amplifier in the most exquisite way. Today, we are convinced that in future many hifi suppliers will be using ICEpower in their power amplifiers, because no one will be able to ignore the magnificent sound-related advantages of these modules compared to traditional amplifiers – plus all the other advantages. Whether they will be able to reach the same sound-related level as that of Ear Two only time can tell. Until then, Acoustic Reality has a comfortable start.

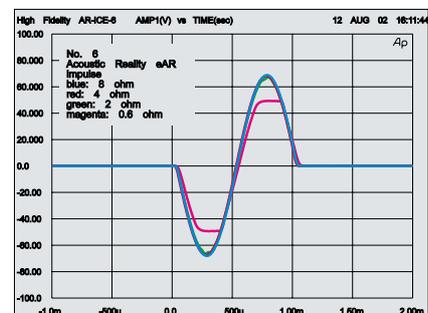
With this amplifier, we can only judge 1-0 in the match against the traditional technology. No other type of amplifier will be able to perform this kind of power, dynamic, sense of "hole through", and, at the same time producing a distortion free sound picture. Whether you like the totally "naked" and clear way of playing is, of course, a matter of opinion. But it is a fact that both the technical specifications and the listening results are no less than fabulous and a great contrast to the price of the amplifier. ■



At 100 W in 4 ohm THD+N is still read at 0.009%. The spectre is dominated by uneven harmonics. The distribution has changed slightly with dominance by the 7th harmonics.



At 100 W in 2 ohm THD+N is still read at 0.017%. The uneven harmonics' dominance is now much clearer, but the distribution is more or less unchanged.



In pulses more or less full range voltage (approx. 68 volt peak) is supplied in 8/4/2 ohm, equal to 8.5/17/34 A. In 0.6 ohm a total of 82 A is supplied – impressive!