

12" AND HORN POWERED SPEAKER BOXES -THE COMPARISON-

The hottest selling speaker product in the past year is the self powered PA box, especially in 12" and horn 2 way format. Connections lines up nine boxes in a dead space, and has seven experts often in disagreement. Read on....

The first speaker box with an amplifier inside it appeared in the early 1970's. Then no-one really bothered until Meyer introduced the MSL-4 in 1995. The rest is history, because the self powered speaker cabinet is the hottest selling item of the past year.

Connections readers have been calling for reviews, so we conducted a poll of some People Who Know to figure out the best method. We wanted to compare side by side every commonly available 12" and horn powered box.

There were two lines of thought about where to do it. One was to test the boxes in a 'typical' environment, but no-one could nominate a specific venue which had the best acoustic balance. The other was to do it outdoors where there were little or no reflections. This left us open to the weather and wind, and besides - we couldn't readily find a venue.

So to do the test we ended up in the large anechoic chamber at the National Acoustics Laboratory in Chatswood. This room is about 15m x 9m in size, and is virtually dead. Shut the (huge) door, sit still for a while, and you can hear your heart beating. It proved an ideal test venue!

CHOOSING THE BOXES

A general call was put out to manufacturers and importers, and thus a cast of nine boxes was assembled. The only obviously missing candidate was the EV SX 300a, which is about to be replaced with a new model.

In no particular order, we had models by Zeck (Germany), Fender (USA), Peavey (USA), dB Technologies (Italy), Meyer Sound (USA), ARX (Australia), JBL (USA), Mackie (Italy/USA), and RCF (Italy). The competition was open to any box with an amplifier inside which also contained a 12" woofer and a high

frequency horn of some kind. The JBL Eon wasn't eligible because it has a 10" woofer, but it was included anyway. Eon comes in 10" and 15" varieties, no 12".

There are other boxes on the market too, if it wasn't included here then that should not be taken to mean anything other than that either Connections, or the manufacturer, missed each other.

Meyer's UPA-1P candidate probably shouldn't have been there either, because it isn't full range, and is optimised to be used with a subwoofer. It also came 'off the road', having been in use for the past year or so. But we thought it would be a good 'benchmark'.

HOW WE DID THE TEST

Each manufacturer or importer was asked to suggest someone independent who had good ears. They managed to collectively nominate no-one, so we hit the phone book and selected a cross section of people. They were chosen because they all had a different perspective, and they were noted as having some skill dealing with speaker systems.

Coda Audio came to the party to assist with the logistics, and sent an excellent audio engineer in the form of Adam Iuston, who is also sound designer for the Sydney Dance Company. He came with the gear we needed - a Yamaha stage monitor desk (because we needed nine outputs, preferably switched), heaps of cables, a Klark Teknik DN 6000 analyser, and odds and ends.

Coda are best known for their theatre audio pursuits, and excelled this summer in Sydney by doing a lot of large concert work at the Domain and the Sydney Opera House - simultaneously on New Years Eve. But it isn't so widely known that they install and sell audio too.

Acoustics consultant Glenn Leembruggen of Arup's advised that we needed to set up each box on a speaker stand, as its designer



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intended. Because the anechoic chamber has a mesh suspended floor (all surfaces, including the 'floor' are covered with acoustic deflection baffles) we needed to place boards under the speaker stands. This wouldn't interfere to any great degree, advised Glen. The spacing of the stands needed to be at about one metre centres, and they needed to be in a slightly curved array. "Spacing between the speakers needs to give them a more consistent radiation load and minimise response problems due to diffraction" he said.

The final detail was that we wanted a blind test, and putting a blindfold on each listener was ruled out! We obtained some black medium weight jersey fabric, again sanctioned by Glenn as being of least acoustic resistance. As our people entered the chamber, they were confronted by a black draped line of boxes, simply numbered one to nine.

Why a blind test? The best answer is that perception is a powerful influence.

THE TEST

Our team assembled and we had a brief talk about the best process. Consensus had us start with a reasonably low level CD track, from the Burt Bacharach and Elvis Costello CD, *Painting With Numbers*. We ran track one for about 20 seconds through each box.

Adam re-started the CD as he switched it through each box. They each sounded different.

Our next track was a concerto for violin by the Russian National Orchestra. (Track 6, Gil Shaham and Mikhail Pletnev). Then we moved onto *Puppy Belly Dance*, track 18 from a Sound Advance test CD. Eclectic taste this panel had, eh?

Then it was on to Dave and Don Grusin and track 4, *The River Song*. By now we had reversed the order, starting with box 9 and working back to box 1. Jeff Buckley's track *Everybody Here Wants You* followed, then Dave Foster's *The Symphony Sessions* (tracks 4 and 9).

One of our panel then used a Shure Beta 58 to talk through each box, and various test tracks at various levels were played from the

Alan Parsons Sound Check CD, including test tones and noises.

All up, we did three hours of listening in two sessions, between which Adam ran some ultra loud tracks with the door closed.

What the test did NOT achieve was how the boxes would perform in a typical venue with -say- live music running through them. But our panel were sufficiently across this, and I think their comments prove that our test was as thorough as time and resources allow. It is certainly the most complete test that any magazine anywhere in the world has done in recent time.

DOWN TO IT

We sat down and had some Latté and such things in the excellent Magic Mushroom Cafe at the Lab, and I had the team tell me what their copious notes revealed about each box.

Here is a caveat: some of the comments on each box may appear harsh. They were made not knowing the brand or type of each box - Adam lusted was the only person who knew, so his comments are possibly coloured as a result. You need to read them all together, and look at our conclusions to form a *general picture* of the merits of these products.

We decided NOT to publish the manufacturers specs for these boxes. They are all roughly the same size, and weight, give or

take a bit. The specifications for frequency response, wattage, sensitivity and suchlike are increasingly meaningless because in a competitive market, the manufacturers fib. We debated the merits of comparing the printed spec with a tested one, but decided that our listening test was a more valuable exercise for you.

What counts is what you plan to do with them, there are models here that are inexpensive, through to boxes that you need to really think about.

Our advice is to test the boxes you have short listed in the acoustic environment that you most often encounter, with the program source that you will most commonly use.

WHY POWERED SPEAKER BOXES ARE A GOOD IDEA

Before now, this market sector was made up of passive 2 way speaker boxes, which means a box with a passive crossover network of coils and capacitors and resistors inside it. You hooked up your own choice of amplifier - be it under, or over powered. Maybe you added on a processor of some kind. The thing was, the designer of the speaker box had no control over how it sounded. Putting an amp in the box means you can put some electronic trickery in there too, and a limiter. It's all optimised, and of course you needn't worry about long speaker lead runs either.

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MEYER

The Meyer UPA-1P is a timber trapezoidal cabinet with a steel grille, it has two ring-type top flying points and no stand mount because it wasn't designed to work in this market. We hung it off a lighting stand using two hook clamps and shackles. Like all amplified Meyers, it has a removable amp module, a very quiet internal fan, a professional Neutrik mains connector and output, 2 XLR's (one male, one female), and a green LED. There is a 24v power outlet for an external fan, but we don't know any user who has required this.

What they said:

David: Strident on strings and vocals, bit distorted as it got going.

Tim: Ability to resolve detail in reverb is good, wasn't generating mush. Sounded EQ'd.

Al: Like number 4 (dB Technologies) good for vocal push. Felt like a pretty flat box, a good reference.

John: I thought it was more balanced on orchestra, clean top, really light bass, good off axis, (had a) consistent 45° either side.

Adam T: Very tight, great definition, good off axis, use a subwoofer for music.

Glenn: 1kHz forward, orchestra is unnatural, edgy h/f, instruments lose definition due to colouration.

Adam I: High frequency definition superior, dispersion quite even, needs a sub.



Conclusion:

As we said earlier the Meyer shouldn't really be included because it is optimised for a subwoofer. It costs \$8,995, making it the dearest box here by a long shot.

ARX

ARX have designed the SPL-12 as a timber trapezoidal box with flying points plus a stand mount. It also has a rear tie off. Like Meyer they use the professional Neutrik mains connector with an output alongside, and to our eyes are up there with Mackie for superior back panel graphics. For example, there is a switch for normal operation, or for operation with a subwoofer. It is plainly and properly labelled. There is a system protect LED, circuit breaker, and XLR in and out. Like the Meyer, there is no volume control. Both ARX and Meyer boxes are designed for line level PA input, not for microphone input.

What they said:

Adam: Nice, nice, nice. Relaxed and precise, very rare.

John: More like a box than 7 (JBL EON) or 5 (Meyer). No deep bass, OK top.

Al: Liked the colouration, whatever its response! I know its not flat, everything's there. Nice controlled pattern (dispersion), lots of headroom.

Tim: Open and warm, balanced and relaxed. If you push hard, it'd open up. Very good all rounder.

David: Reasonably well balanced, sounded touch compressed. performed quite well, not quite (there) on vocal and piano, some non-musical resonances.

Glenn: Violin is OK, tutti sections OK, orchestral good, vocals good, forwardness in some upper mid sections that damage full orchestral sections.

Adam I: Ultra high frequencies missing, frequency response OK.

Conclusion:

Second most expensive box, at \$4,295 - but you get what you pay for. Most like the Meyer in design, and does more bottom end. Probably will get chosen where a Meyer may be considered?



WHAT IS A GOOD LISTENING TRACK?
"If orchestral sounds good, then rock and roll will sound good too - not counting low frequencies" .

-Glenn Leembruggen

OUR PANEL



Glenn Leembruggen is an acoustics consultant at Arup Acoustics



John Maizels runs Entropy Entertainment, (sound for theatre) and is on the board of SMPTE



Adam Townsend is an acoustics consultant at PKA Acoustics



Al Craig is audio manager at the Sydnel Olympic Broadcasting Organisation



David Connor is an electroacoustic and sound systems design consultant



Adam Iusted is an audio engineer at Coda Audio, and a sound designer for the Sydney Dance Company



Tim Vandenberg is an audio production manager for Events, in Wollongong

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