Mackie HR824 active monitors

Paul White tests Mackie's long-awaited HR824 active monitors, and finds some versatile and useful features.

Ever since Mackie said they were going to build a monitor, expectations have been high – not least because of the promises held out by their advanced advertising. The company has spent a lot of money on test and design facilities, and the design has taken over two years to make it from the drawing board to the shops. Was it worth the wait?

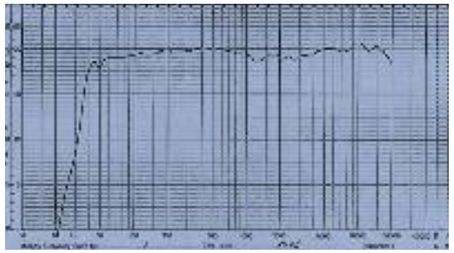
The HR824 is a relatively small two-way active monitor weighing just 15kg and measuring 15.7 x 10 x 12.2 inches. Some clever design tricks have been used to extend its low frequency response, allowing it to provide main monitor performance in a nearfield package. On paper, the response extends a full octave below that of many of its rivals. The box construction is fairly conventional except that a passive radiator is used instead of a regular bass port, and this, combined with servo motion feedback, is responsible for the impressive bass response.

Powering

A robust 8.75 inch die-cast magnesium framed woofer, with mineral-filled polypropylene cone, provides the low end and mid-range driving force. A Ferrofluid-cooled one inch aluminium dome tweeter (3dB down at 22kHz) is mounted in a cast zinc dish-like waveguide to control high frequency dispersion, with an active crossover (modified Linkwitz-Riley, 24dB/octave response) operating at 2kHz. Power for the HR824s comes from a pair of power amps based on Mackie's FR rack-mount series. The bass/mid power amp is rated at 150 Watts with a peak capability in excess of twice this, and the tweeter is driven from a 100 Watt amplifier with a similar amount of peak headroom. Maximum short term SPL is quoted as being 111dB @ 1m on-axis, though brief peaks of up to 120dB can be handled safely. Thankfully there are no cooling fans to add to the control room noise.

The cabinet is fabricated from 3/4 inch black ash finish MDF with a one inch thick front baffle. It's internally braced, and filled with an open cell foam material to absorb internal reflection. The amp pack is mounted on the rear of the cabinet, and hidden behind this is the 6 x 12 inch elliptical passive radiator. This is essentially a mass loaded piston with an aluminium honeycomb composite diaphragm suspended in a rubber surround, somewhat like a bass driver but with no coil and no magnet. Its mass reacts with the air inside the cabinet to determine the low frequency characteristics of the enclosure, and at very low frequencies, you'll notice that the actual bass driver doesn't move as much as you might expect. Almost unbelievably, this system produces a frequency response that's only 3dB down at 37Hz.

No two monitoring environments are identical, so active monitor designers tend to include some kind of tailoring in the form of frequency response controls. In this case, rear panel switches are provided to match the monitor's low end response to their room position (relative to walls, etc.). Additional switches allow the user to fine tune the low and high end performance to personal taste.



Frequency response: 90dB SPL @ 1m; vertical scale = 1dB/division; max scale = 100dB SPL, min scale = 50dB SPL.

Performance

Frequency response curves are supplied for each individual speaker, but the only way to really evaluate monitors is to listen to test recordings and do some mixes on them. As expected, the deep bass setting was too low for my room, so I combined the 47Hz roll-off with the half space setting, and the improvement was immediate. There was still far more depth to the bass than I normally associate with small monitors, but now it was under control. Having user adjustable bass and high end control is useful in fine tuning the speakers to different environments, and in most rooms, you can get a well balanced, dynamic sound out of the HR824s.

These are quite detailed speakers with good stereo imaging and a very wide sweet spot, but the metal tweeters lend them a slightly aggressive quality, which I'm sure most users will generously interpret as 'revealing of fine detail'. Even so, the forward character of the monitors isn't nearly so pronounced as on many others I've worked with and you can mix for quite long periods without feeling tired, which is a good sign. Vocal delivery is open and fairly smooth, but again with that heightened sense of detail that you know isn't really there. Being fair, I feel that in a monitor of this price, Mackie have produced an excellent balance between frequency extension, general accuracy and the expectations of the end user. Most other studio monitors have a slightly forward character, and I suspect that if you presented the majority of engineers with a perfectly flat monitor, they would think there was something wrong!

Summary

Mackie have successfully combined proven design ideas with effective manufacturing processes to provide a small monitor capable of running very loud without getting into trouble, even when handling a lot of deep bass. The HR824s offer a high level of performance at a most attractive price, though the voicing is on the bright side neutral. The amount of genuine bass extension is impressive, as is the speaker's ability to handle voice without any obvious crossover frequency anomalies, and because traditional nearfield monitors are generally on the bright side, most users will probably feel quite at home with the HR824s.

It's important not to get too carried away with the depth of bass extension, as too much bass in a small room can cause problems with accuracy. However, anyone mixing dance music in a medium to large size room will appreciate hearing that crucial bottom octave, and those working in smaller rooms can use the response tailoring switches to flatten things out. No speaker is perfect, but in its price range, the HR824s delivers the right balance between cost, accuracy, detail, bass extension and outright brute power.

Switches and connections

Balanced jack and XLR inputs give the user a choice of connections, and both these and the main sockets face down so the monitor can be pushed right up against a wall if necessary. Unusually, the power switch has on, off and auto positions, the idea behind auto being that the amplifiers come on automatically when an input is detected and switch themselves off after five minutes if the system isn't being used.

To set the input gain, a trim pot allows the input sensitivity to be turned down from the default +4dBu position

When a speaker is mounted in free space, low frequencies radiate omnidirectionally and the energy spreads out over 360 degrees. If the speaker is positioned against a solid wall, all the energy is reflected back into the room, effectively doubling the bass energy in front of the speaker. To compensate, the low end sensitivity should be dropped by 3dB, but to match up with real-life environments, Mackie have provided 2dB of low end cut at the 'Half Space' setting.

If a monitor is placed in a corner, it can only radiate into 90 degrees so the bass level doubles yet again. This is known as Quarter Space loading and more bass cut is needed to flatten things out, in this case via a 4dB low cut.

Low bass sounds have long wavelengths, and most project studios are too small to support these wavelengths, with the result that the bass sound gets muddy, boomy and unpredictable. The HR824s can go down to 38Hz, but that's too low for most private studio rooms, so another switch allows the bass end to be tamed by rolling it off at either 47Hz or 80Hz. The 47Hz setting still delivers plenty of punch, while the 80Hz setting is included to simulate very small monitors or radio performance.

High frequency adjustment is provided to tailor the sound to match the reflective nature of the room, and the personal taste of the engineer. This three-way switch provides 2dB of cut or boost as well as flat and should be set by ear.

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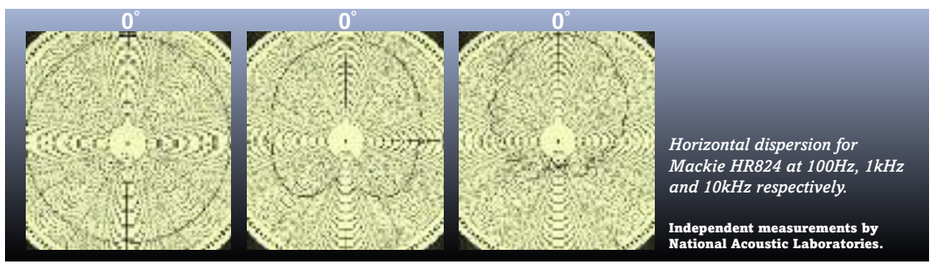
Price

- *RRP: $3,295*



Horizontal dispersion for Mackie HR824 at 100Hz, 1kHz and 10kHz respectively.

Independent measurements by National Acoustic Laboratories.