

SUBWOOFER

Whise Profunder 624

Thomas J. Norton

The variety of subwoofers available today is bewildering, but most have one thing in common: They are cleverly engineered to go as deep and loud as possible within enclosures often not much larger than the drivers themselves. Subwoofer manufacturers are able to work wonders using long-excursion drivers, bass boost,

high-power amplifiers, and deliberate output compression to reduce distortion and prevent overloading. But you can stretch those limits only so far—ultimately, compromises must be made.

Enter TMH Corporation and Whise. TMH was founded in 1995 by Tomlinson Holman (formerly of Lucasfilm and THX) and Fritz

Koenig. Initially, they worked only in the professional end of the audio market, but they have now established a "TMH Qualified" program to define a set of performance standards for both professional and home-oriented sound systems. The first "TMH Qualified" products are a pair of subwoofers from Whise, an Australian speaker manufacturer new to the US market.

The larger of the two Whise subwoofers is the Profunder 624. Compared with most consumer-grade subwoofers, the 624 is very large and very expensive, which means that most 624s will likely end up in professional installations, as some already have. But the product is ideal for high-end home-theater systems as well.

Description

Ever since Thiele and Small's groundbreaking research in the early '70s, speakers have been designed by modeling the driver/box combination as an equivalent circuit of discrete resistive, capacitive, and inductive elements. However, this model is really a simplification.

The design concepts used in the Whise subwoofers more accurately reflect the true driver/box relationship. According to TMH, this approach (which treats the equivalent R, L, and C of the loudspeaker as *distributed*

SPECIFICATIONS

Profunder 624 dual-enclosure, vented-box, externally powered subwoofer system

Drivers: two 15"

Frequency response: 24–150Hz, ± 2 dB

Sensitivity: 94dB/W/m

Group delay: <5ms, 35–150Hz

Nominal impedance: 8 Ω nominal, 6 Ω minimum (each enclosure)

Maximum SPL: 121dB at 1m, 24Hz, anechoic

Power rating: 300W average continuous (each driver)

Distortion (typical): <1.5% THD @ 110dB SPL, 31.5Hz, one unit driven in 5500 cu. ft. room

Input: speaker-level

Recommended amplifier power: 250W per unit

Finishes: utility black; gloss piano black, oak, stainless steel available at extra cost

Dimensions: 22.1" \times 19.3" \times 29.2" (W \times H \times D) each

Weight: 120 lbs. each

Price: \$8600

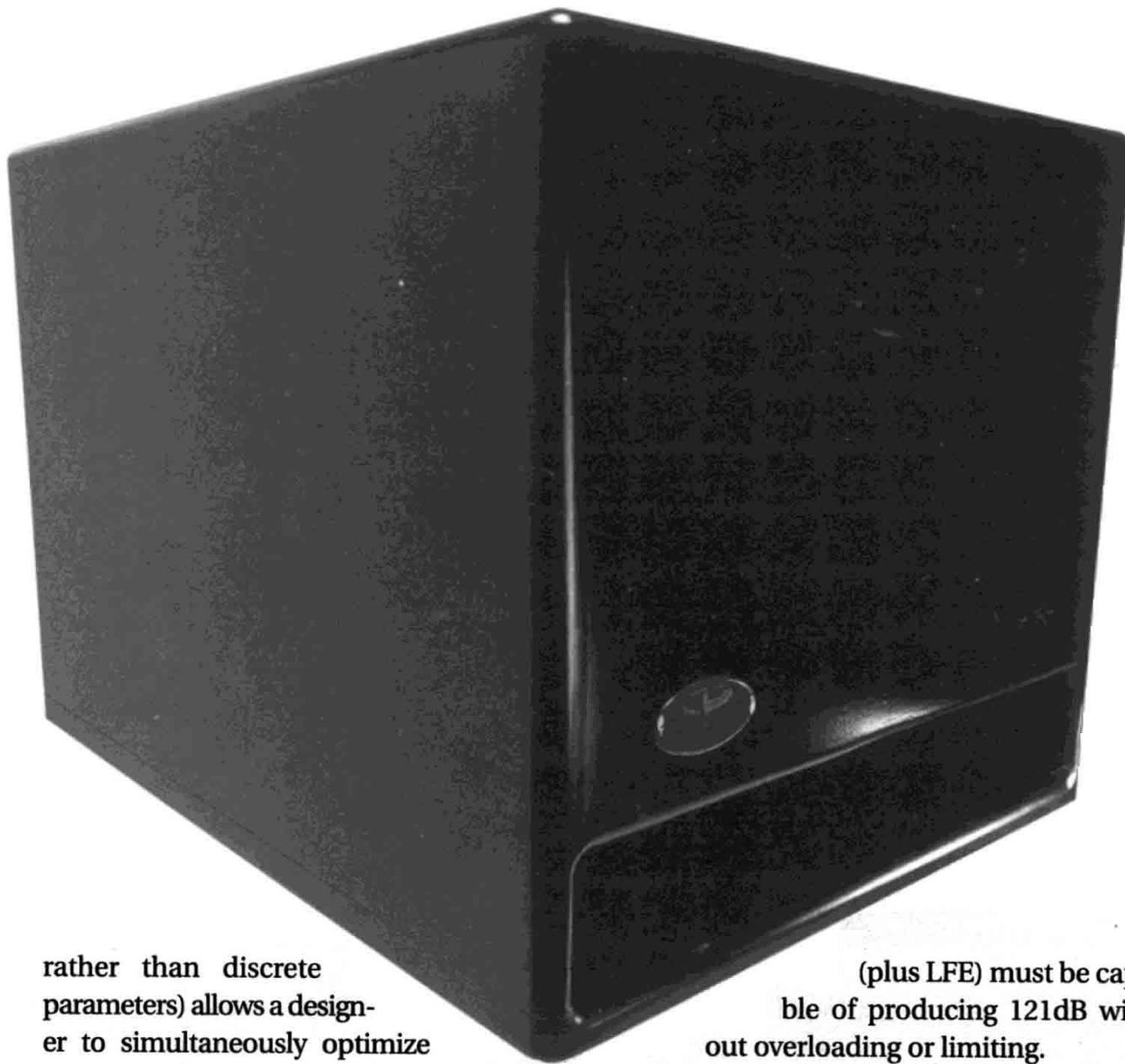
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rather than discrete parameters) allows a designer to simultaneously optimize frequency and phase response, group delay, distortion, headroom, sensitivity, the acoustic load on the driver, and the electrical load on the amplifier.

This new design concept, developed by Graeme Huon and Greg Cambrell, is called Parametric Acoustic Modeling, or PAM. TMH believes that Huon and Cambrell's work could prove as revolutionary as the work of their fellow Australians, Thiele and Small.

The PAM approach can be applied to any desired level of performance, but the Profunder 624 has been designed as a showcase for the best that PAM can offer in a package of reasonable size. To meet its design goals, the 624 uses two 15-inch drivers mounted in separate enclosures that can be positioned together or separately. (In case you're wondering, you cannot buy half a system.) Each driver is internally mounted and faces the outside world through a large slot.

The most awe-inspiring specification of the Profunder 624 is its maximum output rating—a foundation-rattling 121dB SPL at 24Hz! If such a spec sounds like overkill, Holman explains that if all the channels in a 5.1 system are driven to Dolby reference level, a single subwoofer designed to handle the bass from all five main channels

(plus LFE) must be capable of producing 121dB without overloading or limiting.

Of course, this is *very* loud, but thanks to the characteristics of human sound perception, 121dB in the deep bass is subjectively equivalent to about 100dB at 400Hz—still loud, but far less intimidating. In the real world, most listeners make do with considerably less headroom for several reasons: they use playback levels 5–10dB below reference; all 5.1 channels are required to

reproduce maximum bass levels only rarely; and their subwoofers incorporate dynamic limiting to keep them from overloading when driven beyond their maximum capability.

The 624 uses no limiting of any kind. In fact, it doesn't even have its own amplifier; the user must provide one. The amplifier should be capable of supplying 250W to each of the 624's drivers (each 8Ω nominal), but you can safely apply more power. I used a Parasound HCA-3500 stereo amplifier rated at 350Wpc into 8Ω for my listening (see sidebar), each channel driving one of the 624's two modules.

Another significant claim made for the Profunder is its very low distortion: just over 1% at 99dB SPL and 24Hz. Putting these numbers in more useful terms, the distortion components produced by the 624 are said to be completely masked by the fundamentals in virtually all applications.

Setup

When Holman and Koenig arrived in Santa Fe to set up the 624, they brought along a trunkload of analysis equipment. Setting up the 624 without specialized tools is possible, but I recommend you work with a qualified dealer to get the best possible results. If you set up the 624 poorly—and particularly if you crank it up too high—you won't get the quality of bass performance described here.

In my room, we ended up stacking the two modules in the left front corner, the cabinet ducts facing toward the corner and about 6 inches out from it. The amplifier was placed very near the subwoofer and connected with a very short (less than 1m) length of Monster speaker cable.

Even in this optimum location, measurements revealed that the response was down by several dB below 40Hz, but the sub still produced significant output into the mid-20s. This shelving was clearly a room characteristic; nearfield measurements indicated that the 624 itself is absolutely flat to approximately 25Hz.

A prominent room mode at 60Hz slightly compromised the system's ultimate performance, so a week after setup, TMH sent me a Rane PE 17 parametric equalizer to smooth the midbass as heard from the main listening chair. Below 40Hz, the sub was left to follow its natural room response; attempts

REVIEW SYSTEM

Video Sources

Pioneer DV-05 and DV-09 DVD players

Preamps/Processors

Meridian 861 surround-sound controller

Proceed AVP surround-sound controller

Power Amps

Parasound HCA-3500 stereo amplifier

Proceed AMP 5 5-channel amplifier

Speakers

Snell XA 90ps, XA 55cr, XA 30mp,

crossed over at 80Hz

Cables

XLO VDO and Monster speaker cables

Misc.

Sound Anchors adjustable center-channel speaker stand

Rane PE 17 parametric equalizer

to boost the very low bass risk overdriving even the powerful Parasound amplifier. All of my listening observations include the use of the Rane equalizer.

Listening

The performance of the Whise Profunder 624 is simply mind-blowing. I know of no other word that properly describes it. Its 24Hz lower limit (-2dB) does not make it the most extended subwoofer I've ever heard, but the impact and *quality* of the bass it provides are unsurpassed in my experience by any other bass system small enough to move.

The detail from the 624 is outstanding. Even at low levels, you can hear subtleties (e.g., the initial mallet stroke on the head of a softly played bass drum) that other subwoofers often miss. It's clear from what I hear that Whise's claims of low audible distortion are not overstated.

But most of all, the 624 brings immense dynamic range to the home-theater experience. The bass on the soundtrack of *Independence Day* presents an ultimate challenge for any subwoofer, and the Whise delivers that bass to a whole new standard. First of all, there is a fist-in-the-gut quality that even such admirable subs as the Revel and the Velodynes cannot equal. Furthermore, with lesser subs, the bottom end on *ID4* often sounds like a series of loud, deep grumbles—impressive, but relatively formless. With the Whise, you can hear a genuine structure to the bottom end, a structure that I suspect even those who performed the original mix might not have heard.

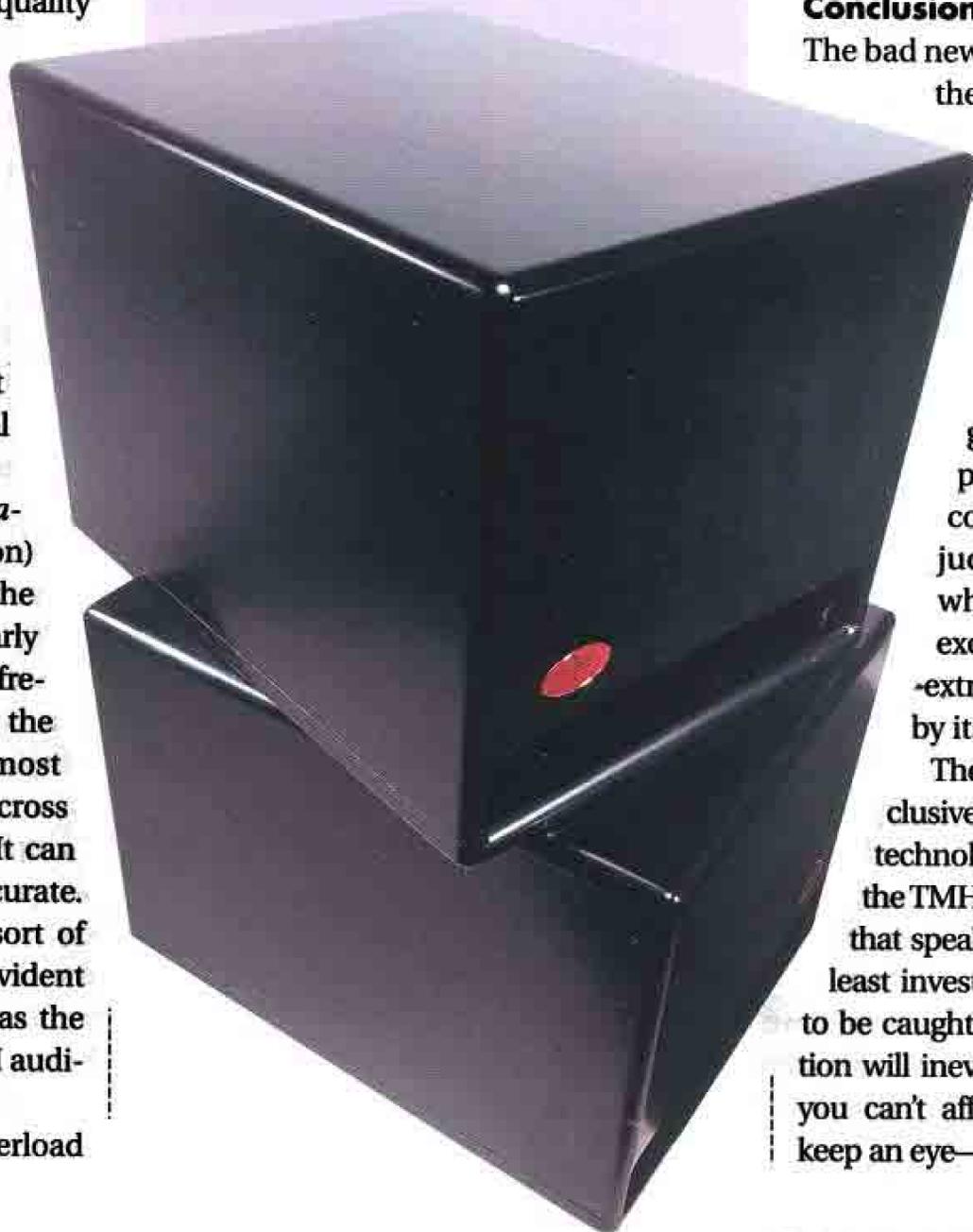
For example, those opening *ka-whooshes* (pardon the technical jargon) that separate various sequences in the first act actually begin with a clearly defined bass *whack*, followed by low-frequency reverberation overlaid with the higher-frequency *whoosh*. With most subs, the opening *whack* smears across the whole sound, obscuring detail. It can still be very impressive, but it isn't accurate. With the Whise, it's accurate. This sort of inner resolution and "rightness" is evident throughout this soundtrack as well as the literally dozens of other soundtracks I auditioned, both explosive *and* subtle.

As hard as I tried, I could not overload

this subwoofer. My room and ears started to give up long before the Whise did. (The room revealed rattles I never knew it had.) But even at my personal and room limits, we're talking about very high playback levels. At my listening position of about 12 feet from the subwoofer, and with the level set at 5dB below Dolby reference, I measured peaks of up to 113dB on *Independence Day*—most of this in the deep bass—with no hint of strain.

THE AMPLIFIER

The Parasound HCA-3500 amplifier I used to drive the Whise subwoofer for this review deserves a considerable amount of credit for the final result. The bass qualities I hear from this amp/sub combination—a sense of almost unlimited power combined with unparalleled low-end weight and "crunch"—remind me of the bass I've heard from a number of different Parasound amplifiers. I can't speak for the HCA-3500's full-range performance only because I haven't yet listened to it that way, but it is a great bass amp. And at \$2195, it keeps the price of this expensive bass system from running completely out of control.—TJN



Properly set up and balanced, the Whise Profunder 624 performs just as impressively with music as it does with soundtracks. But on some music, primarily organ and synthesizer, I do miss those last few hertz of bass extension—to 20Hz or slightly below—that a few other subs offer. Combine this with the fact that the ultimate in available output is less important on music, and the case for choosing the Whise over a far less expensive but still top-rated subwoofer (e.g., the biggest Velodynes) is much less compelling if music is your first priority.

I did most of my listening to the 624 with the Snell speaker system reviewed elsewhere in this issue, with the Snells rolled off below 80Hz and the Whise assuming all bass chores. Nothing I heard alters my opinion that the Snells perform exceptionally well in the bass with their own subwoofer section. Subjectively, they sound just as powerful and deep as the Whise on first listen, and they are certain to delight most listeners. But there's no mistaking the step upward that the 624 provides in increased detail, lower distortion, and dramatically greater dynamic range.

Conclusion

The bad news: The improvement offered by the Whise Profunder 624 doesn't come cheap. In that sense, a comparison with the Snells is not exactly fair—the Whise subwoofer and Parasound amplifier cost more than the entire Snell system. And my educated guesstimate puts the 624's probable ratio of price to parts cost quite high. But how do you judge the value of something whose performance—with the exception of a few hertz at the -extreme bottom end—is in a class by itself?

The good news: PAM will not be exclusive to Whise. TMH will license the technology to anyone who signs up for the TMH qualification program. I suspect that speaker manufacturers who don't at least investigate this technology are going to be caught flat-footed. And with competition will inevitably come lower cost. Even if you can't afford the Whise Profunder 624, keep an eye—and both ears—open.