

# Let's Go Dipole!

## An Experimental Magnepan Home Theater



Is it possible to achieve state-of-the-art home theater sound using a speaker system designed expressly for music reproduction? Magnepan thinks so.

Magnepan is a name well known to audiophiles for over three decades. Its “magneplanar” speaker technology (see sidebar), which dates back to the early Seventies, has been greatly admired by serious music lovers. Lately, Magnepan has been deluged with orders for their two bread-and-butter models that serve the two-chan-

nel market, the 3.6/R and 1.6/QR. Two factors are at play here: price and performance. The 3.6/R retails for \$4,200 per pair and the 1.6/QR (for “quasi-ribbon”) costs a modest \$1,800 per pair. And yet, in sonics, the Maggies (as they are affectionately known and trademarked) are competitive with the best and most expensive speakers in the world.

So naturally I couldn't resist Magnepan's proposal: How would I like to review a home-theater system of its hottest models? There was just one problem: Magnepan does not yet have a center-channel model to match the 3.6/R. Here the company suggested a radical solution, for this review only. Why not turn a 3.6/R on its *side* and use it as a center channel? Since

I have a front-projection system and a large room, this was a feasible way to cobble together a five-channel Maggie system with three 3.6/R speakers across the front and a pair of 1.6/QRs for the surround channels.

I was willing to proceed under these unusual circumstances only because the Maggies offered the opportunity to experience a full-range dipolar speaker system for home theater. Despite the plethora of “dipolar” models on the market, a true full-range dipole is actually quite rare.

Although Magnepan took a stab at revoicing the 3.6/R for horizontal placement, this speaker really is not suitable for center-channel purposes and the company does not recommend it. The point here was to find a solution for this experiment—if consumers interested in this “system” can't wait for the dedicated center channel (which heads Magnepan's “to-do” list), there are several solutions to hold them over. The most obvious: Use the “phantom center” function on the controller and skip the center channel altogether while waiting.

Although the Maggie 3.6/R's bass extension is rated to 34 Hz, the home-theater enthusiast with a moderate to large room will need a subwoofer to achieve satisfactory bass output and to reproduce the bottom octave. To that end, I started with four Revel Sub-15 subwoofers before moving on to a pair of Talon Roc subwoofers (see review, Issue 32). At Magnepan's urging, the crossover point was initially set at 50 Hz to take advantage of the Maggies' quick and clean mid-bass. But the limitations of the Maggies in an 8,000 cubic foot space ultimately compelled me to move the crossover point up to 60 Hz (and did that 10 Hz ever make a difference!).

### Up Front

It takes only a moment to recognize that the Maggie 3.6/R is something rare and wonderful. Few speakers on the market at any price can match its seamless bass-to-treble presentation. While it is open sounding, as is the nature of dipoles, its rendition of timbre is meaty, a delightful combination that instantly seduces music lovers.

The 3.6/R's ribbon tweeter is the finest treble reproducer I have heard. Gloriously extended and pure, it

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excels at capturing the delicate overtones of percussion instruments and strings. More striking than this tweeter's stand-alone performance is the perfect blend designer Jim Winey has achieved with the planar-magnetic line-source midrange driver. I can't hear the seam. Nor can I hear a discontinuity when the midrange passes over to the bass panel (see sidebar). Consequently, you will hear brass reproduced with more natural bite and brilliance than ever before. On orchestral works, the violin section has the cohesiveness of a large group, with that flowing silken (not steely) texture that can only be produced by violins *en masse*. Descending into the lower regions, we find a robust presentation that is also subtly shaped, as only live bass colors can be. This sort of resolution allows you to hear the artistry of the musician without effort.

Lest you be tempted to run the Maggies full range *sans* subwoofer, recognize their limitations: Although I

was pleasantly surprised by how loudly the 3.6/R played, the 3.6/R on its own can't deliver the sheer impact of a robust dynamic-coil loudspeaker such as the Revel Ultima Salon. The 3.6/R is accomplished at resolving different levels of loudness, making it strikingly effective at reproducing an orchestral crescendo, for example. But on the slam-bam of movie soundtracks, it just doesn't crackle with power in the initial transient attack. I noticed this form of compression even when using the Revel subwoofers with the crossover point set at 50 Hz. The Talon Roc subwoofer seemed, however, to make a remarkably serendipitous companion for the Maggies and, with the crossover set at 60 Hz, I was startled by the dynamic punch the system could then generate. Indeed, the system sailed through the first 30 minutes of *Saving Private Ryan* at levels that I can only describe as "assaulting," even on the initial explosive attacks.

### At Play in Fields of Sound

The dispersion pattern of the Maggie 3.6/R produces a presentation strikingly different from that of the Revel Salon. Because the Maggie is a full-range dipole, I expected it to produce a more expansive soundfield than the monopolar Revel. In practice, however, the results were the opposite. The 3.6/R's soundfield was smaller (though still quite large) and more constrained to the forward area of the room. In contrast, the Revel expanded out in all directions—actually projecting toward and around the listener.

There was, however, a vivid openness with the 3.6/R; it is superior at reproducing the spaces between the aural images. And there is no question that it is capable of astonishing low-level resolution. It was better able to articulate subtle sounds often lost within a soundtrack, e.g., the slurping as Rameses drinks his wine in Chapter 22 of *The Prince of Egypt*.

These differences made for an interesting contrast. The Revel's soundfield was more enveloping, reaching out to more readily take the viewer

into the movie's space. The Maggies, with their forward focus and superior interior resolution, tended to concentrate the viewer's attention on the screen, strengthening the connection between soundtrack and picture.

The experiment with the horizontal center 3.6/R was worthwhile in that it provided a seamless bridge between the left and right channels in terms of resolution. The timbre changed less than I expected, but the imaging dipped below the height established by the left and right channels. Obviously, the sound from the center channel dropped off dramatically as you moved, even slightly, out the speaker's direct path. All this means is that Magnepan has to bust a gut getting a 3.6/R-caliber center channel to market because, frankly, a home-theater system this good for this price must not be hobbled by a missing product.

### Dipoles All Around

Confession time—I really wanted to do this Maggie system because I wanted to hear full-range floor-standing dipoles reproducing the surround channels. And I wasn't disappointed.

The Maggie 1.6/QR is a two-way design, featuring a line-source "quasi-ribbon" tweeter that crosses over to a bass panel at 600 Hz. With a rated bandwidth of 40 Hz to 22 kHz, the 1.6/QR is a full-range speaker, making it a reasonable match for the 3.6/R in a home theater. It won't play quite as loudly as the 3.6/R, nor is its sound as highly resolved, but its character blends effortlessly with its big brother.

As a surround speaker, the 1.6/QR is a logical and practical choice for a Maggie home theater. When properly set up, the 1.6/QR was as good as invisible. Compared to the Revel Gem, my reference surround speaker, the 1.6/QR was actually more difficult to localize. Turning your head or moving from side to side did nothing to give the 1.6/QR's position away. Further, the 1.6/QR creates an ambient field that somehow seems taller than that produced by the Revel Gem.

What, however, is "properly set up?" It is most emphatically *not* at the

## Planar Magnetic Transducers

**M**agnepan speakers use a driver technology different from the familiar moving-coil cone speaker. This technology, called “planar magnetic,” can be divided into two types—the quasi-ribbon and the true ribbon. The 3.6/R is a three-way design featuring a true ribbon driver for treble frequencies, a line-source quasi-ribbon for the midrange, and a 537 square-inch bass panel (also a quasi-ribbon) for frequencies below 150 Hz. In contrast, the 1.6/QR is a two-way design that uses the line-source quasi-ribbon to cover the middle and treble frequencies and a quasi-ribbon bass panel for the lower frequencies. Ribbon and quasi-ribbon drivers are called line-source transducers because they produce sound over a line, rather than from a point (conventional cone speaker).

The ribbon driver in the 3.6/R is composed of a long, super-thin (2.5 microns) aluminum strip that operates as both the diaphragm (sound producing element) and voice coil of the driver. This “ribbon” is suspended between the north-south poles of two magnets. The audio signal travels through the electrically conductive ribbon, creating a magnetic field around it that interacts with the permanent field of the two surrounding magnets, causing the ribbon to move back and forth, creating the sound. Because of its low mass, the ribbon can start and stop quickly. Compare in your mind the moving mass of a 2.5-micron thick strip of aluminum with the mass of a conventional speaker cone and its voice coil.

The quasi-ribbon operates similarly to the true ribbon. The quasi-ribbon is made of a Mylar diaphragm to which a thin conductor is bonded. This conductor runs the diaphragm's length in a zig-zag pattern. The signal passing through the conductor creates a magnetic field that interacts with a series of permanent bar magnets on either side of the diaphragm, causing it to move and create sound. Although the quasi-ribbon has more moving mass than a true ribbon, it nonetheless has vastly better transient characteristics than a conventional cone driver.

The principle difference between a true ribbon and a quasi-ribbon is that the electrical signal does not pass through the diaphragm of the quasi-ribbon as it does with the true ribbon. In a true ribbon, the “voice coil” is the diaphragm itself; in a quasi-ribbon, the “voice coil” is attached to the diaphragm. Both types of ribbons are sub-categories of the planar magnetic transducer.

**TOM**

Source: *The Complete Guide to High-End Audio*. Second Edition, Robert Harley, Acapella Publishing (1998). See [www.hifibooks.com](http://www.hifibooks.com).

90-degree location immediately to the listener's sides. In this position, with the listener sitting in the speaker's null spot, the 1.6/QR was “invisible,” but the surround field was not coherent. It seemed as if there were two surround fields, one clustered on each side of the room, not quite meeting each other behind the listener. Further, image focus and movement in the surround field was vague, at best. The sound of the Holy Ghost in Chapter 23 of *The Prince of Egypt* seemed random and did little to reinforce the menace of the apparition on the screen. In contrast, when the Maggie 1.6/QRs were set up at roughly the 140-degree location behind the listener, very slightly toed in, the sound of the Holy Ghost was viscerally present in the room. There was nothing vague about the image. The movement of sound was in sync

with the movement of the on-screen image, creating a seemingly lethal presence.


Even in an optimal location, the Maggie 1.6/QR could not overcome the limitations of a 5.1 configuration. It did a better job of casting sonic images along the side walls of the room than did the Revel Gem, but it still could not firmly create an image directly to the sides of the listener unless it was set up at the 90-degree location. At the 140-degree location, the surround field was much fuller, but it did not fill in the dead rear center as effectively as the Revel Gems.

Although it was just possible to locate the Gems as the source of sound under the right conditions, the Gems also created a slightly more enveloping surround field wrapping around and behind the listener. I've no

doubt this relates again to the difference in the dispersion characteristics between the bipolar Maggie and the monopolar Revel.

The Maggie's resolution was its most distinctive attribute as a surround-system speaker. With its seemingly limitless resolution, the Maggie system was adept at resolving the finest subtleties in sound. Consequently, it engendered subconscious credibility by reproducing ambient sounds with more realism. The reflections of the temple walls in Chapter 22 of *The Prince of Egypt* were so realistic, it was difficult to tear my mind's ear away from the setting. This resolution made a huge difference on multi-channel music discs. *James Taylor Live at the Beacon Theatre* sounded more natural and lifelike, as did John Eargle's 5.0 symphonic recordings on the Delos label. Overall, I preferred the Maggie 1.6/QR for a surround speaker if the system was limited to 5.1 channels.

### Look at the Price— Then Look Again

Perhaps the most startling aspect of this experimental Magnepan home theater was the price. Using the horizontal 3.6/R as a stopgap center channel, this five-speaker system would retail for \$7,900. Now, I admit this isn't cheap. But when you consider the Maggies' extraordinarily high performance, \$7,900 suddenly starts to look like a steal, especially if you come at home theater from a music-lover's perspective. In fact, you might just think that this Magnepan home theater (with a proper center channel and subwoofer) is as good as it gets. 

#### MANUFACTURER INFORMATION

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Source: Manufacturer loan  
Prices: 3.6/R—\$4,200; 1.6/QR—\$1,800

