

“THE SUBWOOFER  
THE OTHER GUYS  
WILL HAVE TO BEAT ...”

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“... sheer unrelenting musicality ... a monster subwoofer when it came to producing deep, deep, deep bass ... performed as well as any subwoofer I have ever had in my system including models that cost four times as much.”

by Wes Phillips

**T**hey say you can never be too rich or too thin. I certainly wouldn't know about either, but in the world of subwoofers, it is undeniably true that you can never be too small.

Well, of course, you *can* be too small—in fact, most subwoofers are. Because of that, they lack sufficient bottom-end extension to justify the name *subwoofer*. What I meant to say was, in the realm of subwoofers, one that can actually output 20 Hz can never be too small.

In fact, I know diehard sub fanatics who scorn anything sensibly sized as not being “manly” enough. Don't tell them about the Paradigm Reference Seismic 12—they'd rather believe their lying eyes than their ears. Anyway, the Seismic 12 is too good to waste on the likes of them. But it's the subwoofer the rest of us have been waiting for.



#### INNER HARMONIES

The Reference Seismic 12 is a compact (14.75" H by 14.25" W by 14.25" D), downfiring subwoofer with a 12" driver and two 10" passive radiators. The cabinet is handsome and sturdy—an almost featureless black cube (*well, almost a cube*) resting on deco-influenced feet.

That 12" driver employs a high-excursion, low-mass, mineral-filled, co-polymer polypropylene cone with ribs—Paradigm calls them Resonance Control Ribs (RCR)—mated to an oversized, flexible surround. The voice-coil is a 3" bifilar (two windings), eight-layer jobbie on a high-temperature Apical former. It sports dual spiders, dual suspensions, and AVS diecast heatsink and chassis. The magnet is very high-tech—it weighs 29 pounds and is computer-optimized, with focused



field geometry to generate, in Paradigm's words, "an enormous magnetic force field while minimizing inductance distortion." The passive radiators, also high-excursion designs, serve to extend the bass response and diminish distortion by lowering cabinet resonances and flexion.

*"... I've never heard such bass extension ... got the scale of the big effects without letting them get out of hand ... getting that level of performance out of a single 14" cube is pretty amazing ..."*

The Seismic 12's class-D amplifier is an interesting design. Of course, class-D is known for its efficiency, and this tiny pulse-width-modulated design generates 1200 Watts RMS (4500 Watts peak). Paradigm claims its PWM power processor improves on conventional class-D designs by inherently rejecting variations in the power supply. The amp's output stage is "direct-connected" to the power line; this, Paradigm claims, provides maximum power.

The inputs are opto-coupled, which, Paradigm says, offers better isolation and lower noise.

The Seismic 12's amplifier uses ultrafast diodes (Paradigm defines *ultrafast* as "ten times faster than conventional slow built-in diodes of the output MOSFETS") in its output stage, which, the company claims, increases switching speed and efficiency—and because the whole point of class-D amplification is to maximize switching speed and efficiency, this is a very big deal.

Other notable features of the Seismic 12's amp section include: a voice-coil temperature sensor that temporarily pots down the amplifier's output if it senses the coil overheating; an amplifier temperature sensor, which does the same for the amp; and short-circuit protection, which can react within 10  $\mu$ s.

No wonder it took Paradigm four years to develop this baby—it's packed with new technology.

The Seismic 12 offers a raft of input facilities and accommodations on its rear panel. There are single-ended low-level input on RCA and balanced input on XLR, although there's no internal crossover bypass, which would have been a nice touch. As is the custom, there's auto-sensing turn-on with input (and auto off after not receiving a signal), as well as a remote trigger input.

Naturally, there's an output level-trim control, which allows you to balance the Seismic 12 with the other speakers in your system—and there's another trim for the sub's high-pass filter, which does the same. A phase-alignment control lets you sync the sub with the loudspeaker/room response—another fairly common feature.

However, the Seismic 12 has one very useful feature that is *not* all that common: the Bass Contour, which switches the bass response from flat (0 dB), which is perfect for music reproduction, or up to a 6 dB boost at 60 Hz for "more bass impact" for movie LFE response. Like many consumers, I use my system for both movies (which *do* seem to benefit from bass emphasis) and music (which doesn't, in my opinion), so I found that this simple acknowledgment of multi-use reality greatly simplified the switch from one listening mode to the other. Bravo, Paradigm.

#### MUSIC IS THE EYE OF THE EAR

I installed the Paradigm Reference Seismic 12 in my current way-past-cool reference system: the T+A M-series stack (DVD820M DVD player, PT820M preamp-tuner, DD820M 5.1 digital decoder-amplifier, PA820M power amp), which fed my display system of SIM2 HT200 DMF projector and Stewart Filmscreen GrayHawk screen.

Loud-speakers were the Magnepan MMG W/MMG Cs, which I chose to challenge the Paradigm's integration abilities (and because they were already set up).

*"... agile and fast ... could keep up with my primary speakers no matter how transparent and nimble they were ... It may be a beast, but it's an articulate beast."*

I said earlier that I wish the Seismic 12 had a filter bypass, but I can't say I had any problems integrating the sub into my reference system or my new HT room. Granted, I had to work a little to get it properly dialed in, but no more so than with any other sub capable of producing the sort of low bass the Paradigm puts out. In fact, the sub's small size made it even easier to employ the old trick of "set the woofer up in the listening position and prowl the room looking for good sound"—easier on my back, at least.

I ended up with the sub about 4' along the front wall from the right side wall, about 1' from the center-channel speaker's location. In that position, the Paradigm produced tuneful, nonlocalized bass for music, and wall-flexing effects bass for HT blockbusters.

#### THE WISE MUSICIANS ARE THOSE WHO PLAY WHAT THEY CAN MASTER

Despite the Seismic 12's small footprint, it was a monster subwoofer when it came to producing deep, deep, deep bass. I was far more impressed by its ability to "disappear" when augmenting musical programs, but I'm not above collapsing into pleased giggle fits when reproducing the subterranean rumbles of *The League of Extraordinary Gentlemen* or some of the effects from the "Battle of Minas Tirith" in *The Lord of the Rings: The Return of the King*.

There's a reason we love these big set-pieces and their larger-than-life soundtracks: They take us out of reality and immerse us in the fantasy of the movies. The Seismic 12 did this in a big way. Well, it did it big in a small footprint, but you get the (ahem) picture. I'd never heard such bass extension with so little slop. The Seismic 12 got the scale

of the big effects without letting them get out of hand. The last time I had a system that performed that particular balancing act so well, I had to use *two* M&K MX-150 THX woofers, each measuring 23" H by 15.25" W by 19.625" D—and it took two days of high-tech measurement to get 'em sounding their best. But that was nearly seven years ago, and time and subwoofer technology have marched on; even so, getting that level of performance out of a single 14" cube is pretty amazing, even at the price.

The bass from the Seismic 12 was good enough to make me revisit some of my favorite "big-sounding" movies. *Crimson Tide* was, if anything, even tighter and more percussive than I'd remembered (which is saying a lot). The low synth atmospherics that underline Hannibal Lecter's menace in *The Silence of the Lambs* seemed even more ominous than I'd remembered them—they were even harder to locate, seeming to just roll through my listening room with no *apparent* source. (I'm not sure my next-door neighbor would agree; next time, I'll try *that* particular experiment when he's at work.)

I even pulled out a few cheap cinematic thrills so *déclassé* that I won't even confess to *owning* them. Yup, they, too, sounded about as good as I've heard them. (And stop smirking—five'll getcha ten that *you* own 'em too—even if they aren't out on your DVD shelves.)

#### **YOU ARE THE MUSIC WHILE THE MUSIC LASTS**

However, as we used to say back in the 1960s, unreality is easy; it's the real thing that's hard to fake. This time, of course, I'm talking about music—and that's where the Seismic 12 *really* impressed me.

That sounds as though I'm being catty about home-theater special effects, but I'm not. All HT effects have to be is *convincing*—after all, I have no idea what a depth charge sounds like, or a medieval siege weapon, or even a bomb. If it *sounds* real, I'm pretty accepting. Heck, I'd probably dismiss the sound of a *real* bomb because it didn't sound like they do in the movies.

***"... where it really shone was in the ability to get the pace of the bass right ... never sounded heavy or deeper than it needed to ... simply sounded right."***

But music is something I have a reference for. I listen to a lot of it, and I'm picky about it—critical, even. And most subwoofers these days just don't sound natural when reproducing music. I'm not even sure how much I should fault them for it, because many subwoofer makers have stopped designing subs for music—it's the effects they want a sub to handle, because that's why people buy them.

Audiophiles like—well, like *me*—haven't helped this situation. We talk about the importance of the midrange, and we rave over extended high frequencies and over-tone production, all the while forgiving speaker systems for inadequate bass extension. But the fact is that music needs its foundation—nothing sounds less finished than, say, a fugue without a ground, or R&B without its fatback bottom. So why do we forgive speaker systems that can't deliver the bottommost octave? I suspect it's because they're so hard to get right. Sometimes it's easier to do without—and our brains seem to do an excellent job of filling in the missing bass information.

With the Seismic 12, I didn't have to fill in *anything*. It got down there *almost* to the lowest notes you'll ever need to reproduce. (The few it won't handle don't occur all that frequently, so you probably won't miss them.) But the best thing about the Seismic 12 was that it was agile and fast enough that it didn't drag—it could keep up with my primary speakers no matter how transparent and nimble they were. It may be a beast, but it's an articulate beast.

I use Jerome Harris' *Rendezvous* [CD, Stereophile STPH013-2] as a reference a lot—partially because I coproduced it, and became intimate with its sound in the recording sessions and the months of mastering that followed. There aren't many recordings I know more intimately. But a funny thing happened after we'd

mastered the recording—I became convinced that we'd mixed Jerome's Taylor acoustic bass guitar too far down in the mix. It was a recording of a band led by its composer-bassist; shouldn't it sound, well, deep?

Jerome could be more prominent in the mix—but, over the years, I've noticed that the better balanced my entire system is, the more Jerome's bass takes center stage. *Rendezvous* will never sound like a bass and four supporting musicians (at least not on a system that's playing what's actually on the CD), but with a system featuring the Paradigm Seismic 12—that Taylor bass is in no way a *background* instrument. No sir—the Seismic 12 let me hear the woody, living sound of the hollow-body Taylor, not to mention the *pop* of Jerome's fingers on the strings and the bloom of his amp in Blue Heaven Studios. Suddenly, the JH Quintet was a band led by a bass player—and I don't mean simply that he sounds louder and lower.

***"... as attractive as I found the Seismic 12's size and bass extension, it was the sub's sheer, unrelenting musicality that captivated me—with every recording I played on it ... ability to "disappear" when augmenting musical programs ..."***

I mean that Harris is out in front of the band rhythmically as well. A lot of other speakers and subs can handle the tones as well as the Seismic 12, but where it really shone was in its ability to get the pace of the bass right—and that's an area where *Rendezvous* is a veritable *bear* of a record. Jerome isn't a lay-back-and-play-the-changes bass player—he pushes the band along with his rhythm and syncopation, he darts into the beat, lags back to create tension, and locks into and supports the phenomenal drumming of Billy Drummond. In other words, he's a virtuoso who's capable of doing whatever it takes to give a song what it needs to live and breathe. The Seismic 12 made that virtuosity apparent as very few subwoofers I have heard can do.

Part of this musicality, if you will, is the way the sub never sounded heavy, or deeper than it needed to. It could go deep, of course, but it didn't sound deep on most music. It simply sounded right. You want deep? Play Leonard Bernstein's last recording of Mahler's Third [CD, Deutsche Grammophon 427 328] and marvel at the sound of the NYP in full forte. It'll roll over you like a Liebherr T 282B—but only as much as the score (and Lenny) call for, which is plenty. Play Ravel's *Pavane pour une infante défunte* [CD, DG 469 628], however, and you'll hear no more deep bass than the score and the hall support—which is quite a different texture.

This is, of course, how subwoofers are supposed to work — and rarely do.

*“... about as serious as a subwoofer can get ... Seismic 12 is the subwoofer to reckon with ... It's got the deep-bass extension of a much larger sub, but it's easier to place in a room and integrate into a loudspeaker system ... If you're looking for deep bass and great musical performance, it's the subwoofer the other guys will have to beat — and that's very bad news for them.”*

#### **THE EAR SHOULD REMAIN THE FIRST AND LAST COURT OF APPEAL**

The Paradigm Reference Seismic 12 subwoofer is small and handsome, but it's about as serious as a subwoofer can get. It's got the deep-bass extension of a much larger sub, but it's easier to place in a room and integrate into a loudspeaker system than most large subs. It's not for the light of budget, but big-speaker performance in a small package isn't an easy feat to pull off. Paradigm tackles it with cutting-edge technology, and that has never come cheap. But as attractive as I found the Seismic 12's size and bass extension, it was the sub's sheer, unrelenting musicality that captivated me with every recording I played on it.

Does it have shortcomings? I'm sure I could have made it sound ugly through sheer abuse or poor setup, but it performed as well as any subwoofer I have ever had in my system, including models that cost four times as much. Those subs, it's true, did actually measure a few Hz lower in the lab, but I'm not sure that translated into performance benefits worth the extra money.

No, for the real world—or what passes for it around my house—the Paradigm Reference Seismic 12 is *the* subwoofer to reckon with. If you're looking for deep bass and great musical performance, it's the subwoofer the other guys will have to beat—and that's very bad news for them.