"These little honeys MAKE MUSIC."

"With the introduction of the Studio/100 in particular, Paradigm has surpassed itself. This speaker is so articulate and musical that I find myself simply enjoying the performance and forgetting that the band isn't really there in front of me."

by Frank Alles

I'd like to offer you my take on a product that has received favorable reviews by some of the big boys of the audio press, a product that I consider a diamond in the rough, the Paradigm Reference Studio/100 loudspeaker. Paradigm Reference is the elite division of Paradigm, Inc. and the result of Paradigm's comprehensive resources and more exacting design parameters. Design goals cited for Reference products include vanishing levels of coloration increased timbral accuracy, significant improvements in imaging (spaciousness as well as localization) and tangible gains in bass articulation, pace and the ability to resolve dynamic contrasts.

To achieve this higher level of performance, Paradigm designed and manufactured a new series of drivers with some unique and innovative touches. The driver array is said to offer uniform hemispherical response. This theoretically should result in excellent imaging not only in the sweet spot, but in a substantial portion of the listening room. The high-frequency driver is a rigid, convex, low-mass, pure aluminum dome with treated textile suspension. A high-pressure die-cast aluminum chassis discourages flexing and ringing, and dual magnets work to increase the energy in the magnetic gap. The high-temperature voice coil is ferrofluid cooled to ensure lower distortion, higher power handling, and improved reliability.

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The midrange drivers use mica-loaded polymer cones which are low in mass and offer high rigidity. A progressively damped, high-hysteresis, synthetic butyl suspension enables the cone to travel in a more linear fashion, further reducing distortion. Woofers use filled polypropylene cones on a diecast chassis with an integral heat sink.

The specific driver complement of the Studio/100 includes two 215 mm (8.5") woofers crossing over to a 170 mm (6.5") midrange unit at 250 Hz, which in turn crosses over to the 25 mm (1") tweeter at 2 kHz. The enclosure is vented through a flared low-turbulence port at the bottom of the front baffle. Nominal impedance is reported as 6 ohms, although the actual curve swings from a low of about 3 ohms at 90 Hz to a high of just over 17 ohms around 2.2 kHz. Sensitivity is 88.5 dB (anechoic) for an input of 2.83 volts (1W). Frequency response is claimed to be ± 2 dB from 39 Hz to 22 kHz. Recommended amplifier power range is from 15 W to 350W, though realistically I'd advocate a minimum of 30 W to 40 W.

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Paradigm crossover units are phase-coherent, quasi-Butterworth designs, using hand-picked close-tolerance components. These include film capacitors, high-power ceramic resistors and air-core inductors. Heavy-gauge, high-purity copper internal wiring is used throughout, and dual input terminals allow for biwiring or biamping.

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The enclosures for the Studio/100s are constructed of MDF, and the front and rear baffles use self-locking joints. The internal structure is then optimized using a cascaded array of full-perimeter horizontal and vertical braces. This construction results in a rigid, low-resonance cabinet, which is further damped with an ultra-fine high-loft polyfibre absorptive material.

The attractive, detachable, and unobtrusive black cloth grille is designed to fit flush with the drive units, minimizing edge diffraction and resulting in greater clarity and spaciousness. Indeed, I found these speakers did sound better with the grilles in place, and all of my observations were made with the drivers "clothed." To stabilize this package on one's floor, Paradigm supplies an adjustable four-point suspension with the option of using either spike points or gold-plated feet to suit the user's preference.

The base price will get you a synthetic black ash or dark-cherry laminate, but for extra you can order selected wood veneers. I opted for the stock dark cherry since the extra money for the real wood could buy quite a few CDs. Besides, the fake stuff looks pretty good too.

Aesthetically, the Studio/100 is a handsome product. Presenting its narrow face to the listener, it measures 45"H x 10"W x 17"D. Each speaker weighs 87 pounds, which is less than I had anticipated for a speaker of this size. Recently I was privy to a demonstration of a $35,000 speaker system that physically wasn't much larger than the Paradigms but weighed a whopping 400 pounds each. It was truss time for the four strong men unfortunate enough to hoist the significant masses into the listening room. Whew! I'm glad I wasn't among the pall bearers. What are these designers thinking anyway? Fortunately, the Studio/100s are fairly easy to manipulate and position in one's listening room — thank God. My wife Tina even remarked that she would allow me to stow these babies in the living room, as they appeared much smaller than my Acoustat 3s. Coming from Tina this was a very high compliment. Acoustat 3s aren't that big — are they?

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The general build quality of the Paradigms seems competent enough, but I do have one minor quibble. The two pairs of heavy-duty binding posts seem like good stuff, but in actual practice the gold-plated thumb screws had a lot of play in the threads and proved difficult to secure tightly. I don't think this has much bearing on the sound quality, but from a strictly mechanical and user standpoint, the posts leave much to be desired (Paradigm take heed). Also, the gold-plated bridging straps on my pair were a bit flimsy and didn't lock down quite right.

LET THE GAMES BEGIN

In my arena I poised the combatants (speakers) about 6' apart (center to center) 4' from the side walls, and 7' from the front wall. My listening seat was set back 10' from the front of the grilles, and about 7' in from the rear wall.

For digital, I used Parasound's C/BD-2000 belt-drive transport linked to the Parasound D/AC-2000 Ultra converter via Full Spectrum's Exotic AES/EBU digital cable. My analog source consisted of a Townshend Audio Rock Mk III, with modified Rega RB300 tonearm and Sumiko Transfiguration moving-coil cartridge. A Bylux Dedicated Powerline Conditioner supplied clean AC to the motor of the turntable. The phonostage was an American Hybrid Technology custom-made unit, which fed either AHT tube or R.E. Designs LNLSA-1 solid-state linestages, or a home-brew passive unit. Full Spectrum Signature interconnects were used throughout.

During my auditioning I used many different amplifiers, including the Sonogy Black Knight, Rogue Audio Eighty-Eight, Monarchy Audio SE-100 Delux monos and the Clayton Audio M-70 class-A monoblocks, plus a few more. The amps I mentioned provided the best results. I also went through several configurations of speaker wire, both single and biwired, and found that what worked best was a single run of Luminous Audio Prestige cable to the bass terminals, and then a couple of inches of Full Spectrum Audio Signature high-grade copper wire, strapping the bass posts to the mid/top section. Actually, this combination was magic.

After a few months of listening and optimizing equipment and cabling as I went, it became apparent to me that the Studio/100s require copious hours of break-in before they will bloom. So just hang in there and keep playing the little beasts, and they'll get better and better. After a couple of hundred hours or so they really start to loosen up and belt it out.

One of the things that struck me early on was the ability of the speakers to portray electric guitar in all its glory. Try some ear candy like "*Candy,*" from The Presidents of the United States of America (Columbia CK67291), or "*Rock 'N' Roll Lifestyle*" on Cake's *Motorcade Of Generosity* (Capricorn CXK-42035), where the instrument was presented with a wide range of dynamic contrasts and subtle nuances of tone that I hadn't quite picked up on in other systems. On the aforementioned "*Candy,*" the inter-channel interplay of two rhythm guitars was clearly focused and harmonically pleasing — neat stuff. Here, the remarkable clarity and ability of the speakers to localize instruments clearly paid dividends. It seemed like I was hearing every least-significant bit of information on those CDs. From all-out wailing in my face right on down to a twisted whimpering whisper of a note, the Paradigms could do it all.

Vocal music was equally well served by the Studio/100s. Lyrics that were blurred with other speakers became intelligible over the Paradigms. Here the speed and lucidity of the midrange driver is quite obvious. It just doesn't make its presence known in any tangible way — it's that darned transparent. You can hear the artists part their lips to take a breath and perceive the subtle changes in volume that enhance the meaning of the work. Moreover, you can hear the things being said and sung by backing vocalists that you never quite could discern — until now. Pitch definition appeared to be spot-on, and in fact very similar to what I hear out of my full-range electrostatics. Vocal sibilance was natural and not exaggerated, and the reproduction of consonants was first-rate.

The blend from the midrange to the treble is almost seamless, with only the tiniest hint that there is a crossover aboard. Once in a while, with some material, I felt there was a very mild dip in the upper midrange in the vicinity of 2.5 kHz, but this is not very pronounced and can actually help in some cases on recordings that are bright in that area. Horn sections for example, notably brass, occasionally sounded slightly darker than what I hear live, which with some recordings is a blessing. This speaker is very smooth throughout the mid and high frequencies. It is also very fast and agile, rendering a wealth of detail and articulation that is truly marvelous. Sometimes I could hear a mild edge in the lower treble, but each time I thought that it might be the speaker, it turned out to be either the particular recording, another piece of hardware, or the wiring in the chain that was to blame. Since the Paradigms are smooth and revealing at the same time, this makes them a deft tool, yet one that's enjoyable to listen to — and these characteristics aren't always synonymous.

As you might surmise, the imaging capability of this speaker is, in a word, captivating. Localization of individual instruments is as specific and exacting as that from many other top-ranked speakers that I've heard. Even with massed vocals and large-scale symphonic compositions such as Tchaikovsky's *1812 Overture* with The Mormon Tabernacle Choir and The Valley Forge Military Academy Band, featuring authentic cannon blasts and real church bells — bang a gong, get it on! — (Sony SBK 46334), these speakers never lost their composure. You could still pick out individual instruments and sound effects even with everything blaring full-tilt. On "*the gunner's dream,*" a dramatic tear-jerking cut from the Pink Floyd LP *The Final Cut* (Columbia QC 38243), the scope of the image was very impressive. Layer upon layer of both low- and high-dB sounds virtually stormed my room, rendering me oblivious to the concept of the physical boundaries of my venue. Depth retrieval was excellent and the uncommon immediacy of the close-miked vocal and its perspective on the stage left little to the imagination. While I do feel my Acoustats (with the AHT tube monoblocks) throw a slightly wider image with a little more breadth and bloom, I have yet to hear another loudspeaker near the Paradigm's asking price out-stage (upstage?) the Canadian speakers to any great extent.

Another thing that impressed me about the imaging was that the sweet-spot syndrome, which is all too apparent with some speakers (my Acoustats included),

was less critical with the Paradigms. One could sit (or stand) well off-axis and still enjoy a decent well-balanced presentation that maintained the soundstage perspective. I have heard the Von Schweikert VR-6 exhibit this type of ubiquitous imaging, and to an even greater degree, but folks, we're talking a serious price differential here.

I would consider the overall dynamic envelope of this speaker to be quite good. While I can't say that they're unsurpassed in this area by certain high-efficiency designs (mainly horn types), I can attest that I haven't heard many dynamic speakers in this price range that can outdo the Studio/100s. Certainly they are much better than any of Paradigm's previous offerings in this regard. With most material, whether it's large-scale orchestral music or just well-recorded jazz or pop, these speakers are lively, vivid, and possess a good sense of pace. On vocal works they capture the subtle gradations of the singers inflections, which adds to the expressiveness of the artists. Try a cut like Cassandra Wilson's "*Strange Fruit*," from *New Moon Daughter* (Blue Note D 112088), for a sultry vocal performance and some leapin' licks from Chris Whitley's resophonic guitar.

If there is a down side to this speaker at all, I'd say it's in the lower octaves. Don't get me wrong, the bass of these speakers is dynamic, controlled, and rhythmic. Pitch definition is very good, though ultimate weight and wallop are a little on the shy side, but still respectable. There are two reasons for my ambiguity regarding the bass. First, I'm spoiled by the excellent mid/top performance that these divas exhibit. Secondly, I'm comparing them to AHT-modified, servo-amped, direct-driven Acoustats, which I have yet to hear equaled in terms of tautness, speed, and control in the crucial midbass. Sure, other speakers have greater extension and a bit more impact, but none in my experience have the lightning speed and finesse which the Acoustat/AHT combo is capable of delivering all day long.

That said, I must admit that the quality of the midbass of the Studio/100 is not that far off the mark, and is in fact on par, or better, than most of its competitors' offerings at anywhere near the asking price. It can, with poor positioning and connected to an amplifier of inadequate damping factor and current capability, sound a bit boxy and ill-defined. Also, some vocalists tended to sound a bit chesty compared to their sound on my Acoustats. Accordingly, I recommend using a high-quality solid-state amplifier (at least on the bass inputs) with high-current capability. Electronics of the "warm and fuzzy" genre tend to bring out the worst in these already warm-sounding beasts.

Positioned as I have previously mentioned, far from the side walls and corners, the 100s start to roll off below 40 Hz, maintaining decent output level to about 35 Hz or so. By no coincidence, Paradigm offers a 15" servo-controlled subwoofer to fill in that bottom octave. The Servo-15 comes with its own crossover and built-in 400 W power amp. It's rated down to -2 dB at 17 Hz and will crank out 40 Hz at 115 dB with very low distortion. The woofer is well worth looking into if extreme bass is your bag. I'll be reviewing this subwoofer, so stay tuned.

CONCLUSION

Here we have a dynamic speaker system from a Canadian company that has made a name for itself by offering outstanding value for the dollar. With the introduction of the Reference Series, and the Studio/100 in particular, Paradigm has surpassed itself. This speaker is so articulate and musical that I find myself simply enjoying the performance and forgetting that the band isn't really right there in front of me. When I close my eyes to listen, the distinction between what is real and what is not is somehow rendered inconsequential.

As noted, the speaker is not perfect (show me one that is!), but it's quite accomplished in many key areas. The frequency range from the lower midrange up through the treble is excellent, and the tweeter is smooth, sweet, and finely detailed. I think it misses that last little bit of extension and ultimate sensation of air because some recordings seem to benefit from using my custom-built outboard tweeters, but nonetheless I give this tweeter high marks. It is not offensive, gritty, or nasty sounding, and this cannot be said of some competing designs. Regarding bass performance, the Paradigms displayed competent levels of articulation and extension for a speaker in this price category. However, when compared to the best state-of-the-art designs costing significantly more, the Studio/100s will fall a bit short in both of those parameters.

Still, for the loot, Paradigm has managed to set some very high standards, blending innovative driver technology with solid, aesthetically appealing cabinetry to create a speaker that is affable to both ear and eye alike. The Studio/100s present a relatively benign load to the amplifier and can be driven by a wide variety of units. High-current solid-state designs seemed to work well, yet splendid sound was also achieved using a Rogue Audio model Eighty-Eight tube amp (in triode mode at 35Wpc). Most importantly, with competent associated gear and attention paid to proper setup, these little honeys make music.