"I was floored ... absolutely floored ... left me breathless ... WHAT CLARITY. WHAT DEPTH. WHAT SUBLIMITY!"

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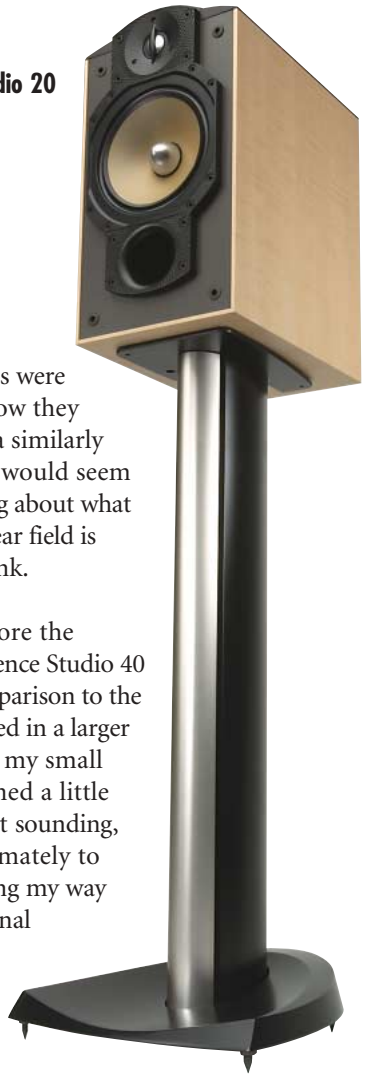
"... an instant classic! ... a speaker we'll still be talking about 10 years from now."



Studio 20

by Brian Florian

Near Field Monitor is one of those terms which gets slapped around a lot these days. Often it is someone trying to make their knowledge of all things audio seem more impressive than it really is, or it's a manufacturer sticking the phrase in a brochure because, hey, it sounds cool.

Born of the recording and post production industries where there has been and continues to be a genuine need for Near Field Monitors, and what the term really refers to is speakers which by design (or sometimes by fluke) just "work" when positioned relatively close to the listener, and which may or may not include special features to achieve that goal.

After posting the article on my two-seat theater, the theme of which was clearly "going small", I was surprised at how many people wrote in or posted about how their rooms were also small, or how they were planning a similarly small room. It would seem then that talking about what works well in near field is worth the pen ink.

While I still adore the Paradigm Reference Studio 40 speaker, by comparison to the way they sounded in a larger living room, in my small space they seemed a little smeared and fat sounding, leading me ultimately to trading/swapping my way into a professional THX monitor set which worked better.

When it came up in conversation with Paradigm's Bill Vandermarel that I was not using Studio 40s anymore, he theorized that it was the distance and small room size which was the problem. I teased him about it perhaps being time Paradigm made some THX Select speakers. As expected, Bill expelled that notion in favor of challenging me to try the speakers which are the subject of this review.

What we got however was not just a set of decent near field speakers, but an instant classic!

THE 20'S DESIGN

From the moment the courier dropped the boxes off, we felt we had something much more substantial than the price would suggest. These speakers are HEAVY for their size! The cabinets are the same remarkably solid, tight construction which has wowed us on all Paradigm speakers at all price points. So dense is the wood, so damped is the cavity, that despite a hefty rap on the side, all you get is a sore knuckle.

Like all the latest Reference speakers, the Studio 20 has inherited the Shock-Mount system Paradigm introduced on their no-holds-barred Signature line. In a nutshell, the speaker driver is NOT in rigid contact with the enclosure. Rather, a rubber gasket serves as the interface. Even the screws do not contact the speaker chassis: there is a rubber "grommet" at each one. What good does it all do? It's pretty intuitive to think that transference of energy from the driver to the cabinet produces coloration (where the cabinet itself vibrates). For years the standard practice to minimize the interaction has been to simply make as sturdy a cabinet as you can, with extensive bracing. Paradigm already achieved the pinnacle of that with the first Reference models, and they tell use that through their R&D, they found the Shock Mount system takes it one step further.

While at first glance, the mid/bass driver appears similar to the previous version of this speaker, it has been redesigned. New is the solid aluminum phase plug. If you've never seen one in the flesh you might think it is simply a cone-shaped dust cap, but it's not. Unlike a dust cover, a phase plug is not part of the moving mass, but rather is fixed to the stationary motor structure. So, the speaker cone moves back and forth, but the phase plug does not move at all.

" … a level of believability that left me breathless … wholly transparent … 'Revealing' does not seem strong enough a word."

The voice coil drives the center of the cone in a piston-like manner. The design of the cone then takes into account the required stiffness, mass and loss characteristics in order to maximize its performance. With a phase plug, you reduce the path length differences about the cone surface, smoothing and reinforcing the frequency response, particularly in terms of the highest frequencies the driver is capable of (in fact, Paradigm tells us the differences made by the phase plug vs. a dust cap can be seen/measured right through the crossover region).

Other potential benefits gained from incorporating a phase plug include eliminating compression under the dust cap (reducing distortion in extreme cases), reducing air flow through the VC gap (which can get quite turbulent in extreme cases and is certainly unpredictable). There is some thermal dissipation one gives up by doing this, but the phase plug itself can serve as a heat sink for the voice coil and magnet pole.

All in all, while it should never be taken at face value as automatically translating into a superior product, a properly designed driver encompassing a phase plug makes a heck of a lot of sense over the established tradition. So, why don't all speakers have phase plugs? It is more expensive to build them this way.

Still, I asked Paradigm about dust getting in through the (admittedly small) gap around the phase cone. They assured us that dust is not really an issue, unless the dust is ferrous, and ferrous particles are really only a concern in a driver assembly facility (making the old dust cap more an aid to manufacturing than an end-user benefit). We are told that special procedures at Paradigm insure that the phase plug construction has been a clean one, free from foreign particles entering the voice coil gap.

Looking to the other end of the driver, there is a heat-sink-like structure to the massive, robust cast-aluminum chassis, and the enormous magnets are capped off with an even larger cast aluminum cup, the internal voids of which are filled with damping material.

The tweeter … good grief, the tweeter. So massive is its motor structure that looking at the back of it you might mistake it for a small mid/bass driver. The magnets are again enormous and the center space is occupied by an aluminum chamber filled with damping material. The cast-aluminum chassis constitutes a remarkable mass with a corresponding capacity to dissipate heat.

This is driver construction of the absolute HIGHEST order.

As evidenced by the photos and specs, the Studio 20 is a ported speaker, but like many of Paradigm's offerings, it exhibits characteristics of an aperiodic design. These models in particular probably should not be thought of categorically as aperiodic in that, while there is much in the way of stuffing filling the voids of the enclosure, they don't go so far as to fill the port itself with damping material. Still, the roll-off of the low end has a smoothness reminiscent of a sealed enclosure which we'll talk about in a moment.

CC-470

Noteworthy are some of the design trimmings. All the speakers under review here have metal threaded T-bolts on the bottom such that they may literally be screwed to the corresponding speaker stand from Paradigm's Premier AV Furniture division. The binding posts are very robust, but being positioned at an angle and placed within a recess, I found it difficult to get a decent grip on them for the sake of tightening them down. The set of four posts with bus bars allows for bi-wiring or bi-amping.

THE 20'S SOUND

I was floored, absolutely floored from the very first note. What clarity. What depth. What sublimity! What a wanton freedom from anything which could be construed as objectionable.

In my acoustically treated room there was none of the "spice" which so many (including myself) have over the years reported on Paradigm speakers, further lending credibility to my theory that Paradigm speakers are properly neutral and that, by and large, it is our listening rooms that cause much of our system's tonality.

The critical midrange was remarkably unbiased, allowing such elements as female vocals a level of believability that left me breathless. Albums I remembered as being less than stellar in their sound now struck me as wholly transparent. Harmonies previously buried in the mix were now discernable without as much effort. "Revealing" does not seem strong enough a word.

For the majority of the review, we ran the 20s full range. On several occasions I had to verify, and re-verify, that the configuration was correct, i.e., that the subwoofer was off. Flabbergasted, I dug out the sine wave sweeps and nearly wept openly as this relatively small speaker reached down with credibility to the 30s, defying the preconceived notions of what can be squeezed from a 7″ driver. Yes, the bass is that deep, that latent. In fact, this is the best bass, both in terms of quality and quantity, that I have ever heard from a "bookshelf" speaker, including a few models costing more than twice as much. By and large, in the near field roll, I could be perfectly satisfied without a subwoofer. In larger rooms of course (or for irresponsible playback levels) some bottom end support is warranted.

This one would ideally pass the output of a THX controller through a secondary 12dB/Oct filter, resulting in a 24/24 combination, a crossover scheme which would play beautifully into the Paradigm's amazing response below normal crossover frequencies. Realizing few would bother to seek out such a perfect splice, we found the 60 Hz setting in the THX controller provided the most "correct" results, at a slight cost of upper end LFE track information. In this configuration there seemed to be no limit to the Studio 20s headroom. Ridiculous output levels could not alter their neutral character.

Truly this is "*a speaker for all seasons*".

THE CC-470'S DESIGN

If the Studio 20s were heavy, the CC-470 is downright imposing in its size and stature . . . and they call this the "small one" (in that there is a larger center channel model in the series: the CC-570). Be ye warned: This thing will not comfortably sit atop a TV, even a large one, without some creativeness and caution.

Assuming you have or can fashion a solid surface on which to place it, there are a few ways for it to take a stance. You can go the old school road of four rubber half-spheres on the bottom. A little more progressive option is to attach the included "outrigger" feet, into each of which threads a brass shaft with a rubber point, giving you the opportunity to angle the speaker up or down just a little.

It goes without saying that the construction, feature set, and driver complement is identical to that of the Studio 20, save for there being two mid/bass drivers in lieu of one. The tweeter's chassis "fits" flush with the chassis of the mid/bass drivers, placing the two cones rather close together, as compared to most horizontal mid/tweet/mid (MTM) layouts.

This is of particular interest here for a couple reasons. It's no secret I've come down HARD on the use of a mid/tweet/mid layout for center channel speakers. It is inherently a bad, flawed choice because as you move off center from the speaker, the two mid/bass drivers begin to differ in distance to you, and comb filtering – a nasty frequency response aberration – takes place.

Paradigm "makes" it work though, if by a bit of a sledge hammer technique. As we mentioned, the two mid/bass drivers are brought quite close together. This helps. More interestingly though, the crossover from tweeter to mid/bass is remarkably low. The lower it is, the farther off axis you have to be for combing to be an issue because the wavelengths of lower notes are longer. In this case, crossover is at 1.8 kHz, which is a VERY low crossover frequency for a tweeter (2.5 kHz – 3.5 kHz is more typical). Only the most robust tweeters can survive this low frequency, let alone perform. In a nut-shell: Paradigm's Reference tweeter can and does. End of that story.

"… I dug out the sine waves and nearly wept openly as this relatively small speaker reached down with credibility to the 30s … I had to verify and re-verify, that the subwoofer was off … bass is that deep, that latent … the best bass — in terms of quality and quantity — I have ever heard from a 'bookshelf' speaker …"

Back to talking about near field use, the inherent deficiencies of a horizontal mid/tweet/mid arrangement are only further aggravated the closer you sit to the speaker. At a distance of 15 feet, changing seats may change your angle to the speaker by single digit degrees. At 6 feet, it will change by double digit degrees.

I gave the 470 a fair shake, and could find no blatant aberration, even when leaning way over the arm of our couch.

The one and only complaint I will make of this speaker is the esthetic design of the grille: Rather than conforming to the cabinet, it extends beyond the sides, making it look like it is the wrong grille for that speaker.

In terms of listening, one thing really stood out for me, and that is the spectral match with the Studio 20s. We reviewers always wax poetic about "seamless pans", but the truth is, even an absolutely identical speaker will sound slightly different at center due to the position in relation to the side walls being different than the front left/right speakers. However, using pink noise, I found the pans were excellent here, between the 20s and CC-470.

It is in fact somewhat surprising to get such remarkable dialogue clarity from this speaker at such close range for a few reasons, including the aforementioned driver configuration. I recall the previous iteration coming off as slightly compromised in the extreme near field, but with this speaker, like the 20s, the midrange is so natural that nary a complaint could I put on the table. Paradigm said the phase plug benefits extended into the crossover region, where in my experience most dialogue intelligibility problems may be traced. Could it be that simple on the surface? Who cares? It works!

For what it's worth, I will note that initially we observed a slight muffled character on movie dialogue. So slight was it, that on anything other than dialogue, it would have gone unnoticed. Experimentation revealed that it was NOT the speaker's fault, but rather it was due to the TV. With the speaker placed on it, flush with the front, the big flat surface acted like one big baffle, messing up Paradigm's work. When placed on a stand, like a conventional speaker, the artifact disappeared. A suggestion from Paradigm's Mark Aling, that of putting a 1″ thick piece of foam under the speaker, virtually eliminated the mud! Alternatively, should you be using an Anthem SSP, their Center EQ feature, expressly designed for these situations, is a veritable panacea.

"… driver construction of the HIGHEST order … amazing response below normal crossover frequencies … there seemed to be no limit to the Studio 20's headroom … ridiculous output levels could not alter their neutral character."

I would be remiss if I did not point out that both the 20s and the 470 are on the lower side of the efficiency/sensitivity scale, coming in at 87 dB. Indeed, when recalibrating for them I had to raise the processor volume setting by 2 dB to get the same output as my regular speakers. What does this mean in a practical sense? Not much, assuming you have at least 100 watts per channel output capability in your power amplifier. The 8 ohm nominal impedance makes for an easy drive anyway. High-passing them only further reduces the total power required. Just don't try to have a house party with a 7-watt triode amplifier and these speakers.

CONCLUSIONS

After more than a decade of listening to their stuff, I know that Paradigm consistently delivers quality and value meshed as one.

Pick a price, any price, and by and large Paradigm seems to give you more for your money. With little exception, such as a predilection for the THX logo, Paradigm remains one of the smartest choices in loudspeakers. Maybe someday they'll come out with a THX Select set and make their market share even bigger.

Truly, it is my contention that everyone could stand to have a pair of these new Studio 20s somewhere in their life. If not the cornerstone of a multi-channel outfit, at least as a dedicated stereo pair somewhere else in the house. They will best bookshelf speakers costing appreciably more, and when suitably high passed, will do so even in the largest of rooms. Yet their size is small enough that, particularly if you get the optional magnetic shielding, they could comfortably go anywhere, do anything. If I may, I'll coin the term "Versatile Fidelity".

This is a speaker we'll still be talking about 10 years from now.

As for the Studio CC-470, it offers a margin of performance headroom which will never hinder and may one day go amiss were it not there. If esthetically and functionally you can use a third Studio 20 as a center (behind a perforated screen for example), I could give such a configuration preference but if, as is so often the case, a center speaker with a low profile is required, you simply cannot go wrong with a 470.

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