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Equipment Report

Robert J. Reina

Paradigm Reference Studio/20 loudspeaker

The least expensive model in Paradigm's Reference Line, the Studio/20 loudspeaker is a rear-ported two-way dynamic bookshelf/satellite design, superficially identical to the powered Active/20 that JA reviewed last November. It features Paradigm's 25 mm PAL™ pure aluminum dome tweeter in a die-cast heatsink chassis, and a 170 mm MLP™ mica-polymer cone in an AVS™ die-cast heatsink chassis with a 38 mm voice coil. The crossover is third-order, quasi-Butterworth, said to be "phase-coherent." It features high-power ceramic resistors, film capacitors in all signal paths, and both air-core and steel-core inductors.

System and setup

The Studio/20 is bi-wirable and biampable; I tried it in both configurations. (Paradigm also makes their own proprietary stands for the '20.) I tested the speakers in various locations ranging from 2' to 4' from the rear wall of my listening room, using Celestion Si stands filled with sand and lead shot.

Paradigm suggests not removing the speaker grilles, and I agree: the most neutral performance was obtained with the grilles on.

Primary reference system used for this review included the California Icon Mk.II CD player with HDCD® Power Boss upgrade, Thorens TD 160 turntable with SME 3009 Mk.III tonearm and Grado Signature 8MZ phono cartridge, Creek 4240SE integrated amplifier, MIT 330SG interconnects, and Acarian systems Black Orpheus speaker wire.

I also tried the Paradigms in my new "vacation house outdoor remote system." Rather than carry around a portable boombox outdoors or install rock-shaped speakers in my garden, I picked up a 40' pair of MIT Terminator 3 interconnects and ran them from the preamp out/tape monitor of my Goldmund Studio/Syrinx PU-3/Koetsu Urushi/Vendetta Research SCP-2b/Audible Illusions Modulus L1 front-end, out the listening room, into the hallway, and into the amp, input/line input of an NAD 3225PE

Description: Two-way, reflex-loaded, dynamic loudspeaker. Drive-units: 1" (25mm) PAL™ pure-aluminum dome tweeter, 6.7" (170 mm) MLP™ mica/polymer-cone woofer. Crossover: thirdorder, quasi-Butterworth at 1.5kHz. Frequency range: 54Hz-22kHz on-axis. Sensitivity: 89dB. Nominal impedance: 8 ohms.

Dimensions: 14" H by 8 1/4" W by 11" D. Shipping weight: 40 lbs/pair.

Serial numbers of units reviewed: 11810/1.

Price: \$650/pair. Approximate number of dealers: 240.

Manufacturer: Paradigm Electronics Inc., 101 Hanlan Road Woodbridge, Ontario, Canada L4L 3P5. Tel: (905) 850-2889. US distributor: AudioStream, Div. of Bavan Corp., M.P.O. Box 2410, Niagara Falls, NY 14302. Tel: (905) 632-0180. Fax: (905) 632-0183.

Web site: www.paradigm.ca



Paradigm Reference Studio/20 loudspeaker

Paradigm Reference Studio

integrated amp in the guest bedroom. The NAD drove the Paradigms, tucked in the window facing the backyard via a pair of MIT Terminator speaker cables. This system enabled me to get true high-end sound outdoors, but it was a five-minute walk to change records.

Impressive right out of the box
Even in my very early listening sessions, the

Paradigm exhibited three obvious strengths I'd never before heard from a speaker this affordable:

- Midrange timbral accuracy: From the upper bass through the upper midrange, the harmonic structures of sounds, their timbres, were as natural as I'd heard from any speaker. The reproduction of vocals, woodwinds, and brass instruments on well-engineered acoustic recordings was spooky in its

realism; • *Superb detail resolution and transparency*: akin to what I'd expect from speakers costing \$2000 or more; and • *Lifelike low-level dynamic performance* at all volume levels.

The Studio/20 may be *the* budget speaker for fans of well-recorded jazz chamber works. The immediacy and definition of John Coltrane's ballad "Naima" (from *The Best of Coltrane*, Impulse! AS-9200-2), and

Measurements

The Paradigm was quite sensitive, at an estimated 86.5dB/2.83V/m (B-weight-

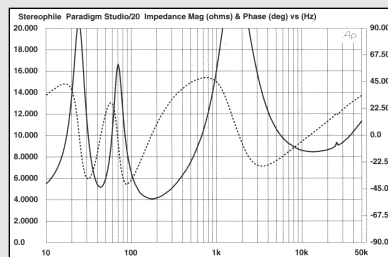


Fig.1 Paradigm Reference studio/20, electrical impedance (solid) and phase (dashed) (2 ohms/vertical div).

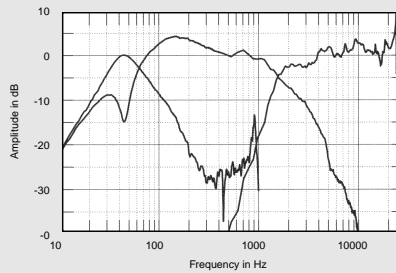


Fig.2 Paradigm Reference Studio/20 acoustic crossover on tweeter axis at 50°, corrected for microphone response, with the nearfield woofer and port responses plotted below 300Hz and 1 kHz, respectively.

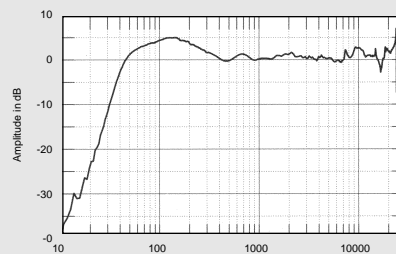


Fig.3 Paradigm Reference Studio/20, anechoic response on tweeter axis at 50°, averaged across 30° horizontal window and corrected for microphone response, with complex sum of the nearfield woofer and port responses plotted below 300Hz.

ed). Its impedance (fig.1) dropped to 4 ohms briefly in the lower midrange, but was otherwise benign. The timing of the rear-firing port is indicated by the "saddle" in the magnitude curve at 42Hz, the frequency of the lowest note of the 4-string double bass and bass guitar. Other than a small wrinkle in the traces at 25kHz, indicating the presence of an ultrasonic tweeter

resonance, there are no artifacts due to cabinet resonances apparent

Fig.2 shows the responses of the Studio/20's drive-units and port. The crossover between the tweeter and woofer can be seen to be set at 1.5kHz, meeting the specification. This is lower than usual for a two-way design, but typical of Paradigm designs, I have found.

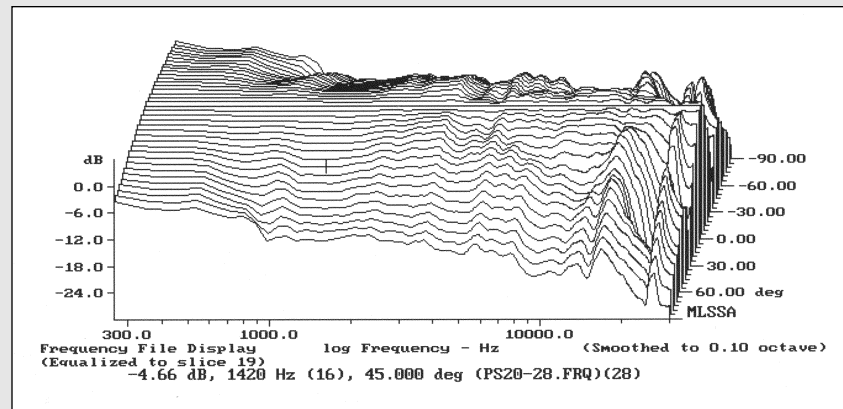


Fig.4 Paradigm Reference Studio/20, horizontal response family at 50° normalized to response on tweeter axis, from back to front: differences in response 90°-5° off-axis; reference response; differences in response 5°-90° off-axis

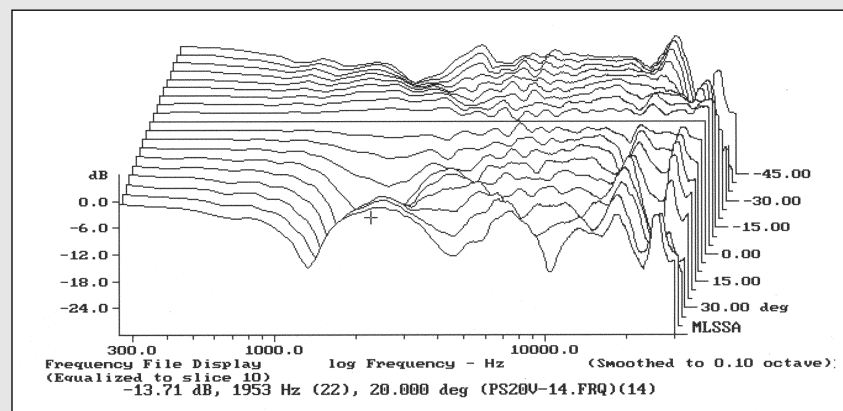


Fig.5 Paradigm Reference Studio/20, vertical response family at 50°, normalized to response on tweeter axis, from back to front: differences in response 45°-5° above-axis; reference response; differences in response 5°-45° below-axis.

the lifelike reproduction of the delicate piano/horn interplay on Barry Altschul's *You Can't Name Your Own Tune* (Muse MR5124) and *Miles in Berlin* (Japanese CBS Sony 25AP 763), made it difficult to take notes during the performance.

Electric instruments were not slighted by these speakers, however. The Studio/20's reproduction of the subtle inflections of the Fender Stratocaster and the Hammond

organ on Joe Harley's XRCD version of Mighty Sam McClain's *Give It Up to Love* (JVCXR0012-2) made it obvious how superior this remastering is to the original AudioQuest release. Sam's voice sounded gritty, growly, and full of passion — it sure made me itch to play a B3 again.

Female vocal reproduction was silky and sweet but uncolored on these speakers. The superb remastering of Janis Ian's *Breaking*

Silence (Analogue Productions CAPP027) brought out another of the Paradigm strengths: rhythmic coherence. Linnies should have no problem tapping their toes and following the tune with these speakers — the natural integration of bass, percussion, and guitar nuances in "His Hands" had me dancing around the room.

As expected from the impedance plot, the port peaks between 40Hz and 50Hz. Though there is some kind of resonance in its output at 900Hz, this is low in level and its audibility will be further reduced by the fact that the port faces away from the listener.

How these individual responses add up on the tweeter axis is shown in fig.3. (The grille was in place for all the measurements.) The Studio/20's upper-bass appears to be balanced a little on the generous side with this nearfield measurement. This is not something that any audiophile will complain about, and the benefit is, as Bob Reina found, that a relatively small speaker can have a more extended bass response than might be expected. In the midrange and treble, the Paradigm is impressively flat, with just a small amount of excess energy between 7kHz and 12kHz that might correlate with Bob's finding the speaker a little "metallic"-sounding. Interestingly, the measured response of the very similar Paradigm Active/20 (fig.2, November 1997, p.116.), which sounded flat through the treble, actually featured a slight depression in this region.

All things being equal, the lowish crossover frequency means that the speaker's lateral dispersion (fig.4) is wide and well controlled. This is always associated with excellent, stable, well-defined stereo imag-

ing, in my experience. Vertically (fig.5), the speaker offers pretty much the same balance as long as the listener's ear is between the top of the cabinet and the center of the woofer, meaning that tall stands are better than short stands.

The Paradigm's step response (fig.6) is typical of the genre, with both units connected with the same polarity. Like the Active/20, the Studio/20's waterfall plot

(fig.7) is astonishingly clean, implying excellent presentation of low-level detail.

Although the impedance plot was free from wrinkles, the cabinet did feature a single resonant mode, present on all surfaces but highest in amplitude on the side panel (fig.8). However, this is high enough in frequency that its subjective effect will probably be minimal.

-John Atkinson

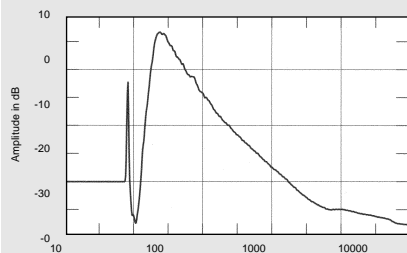


Fig.6 Paradigm Reference Studio/20, step response on tweeter axis at 50° (5ms time window, 30kHz bandwidth).

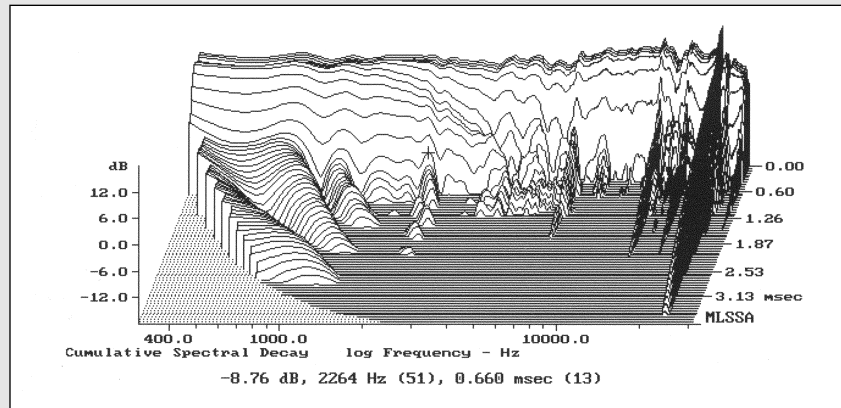


Fig.7 Paradigm Reference Studio/20, cumulative spectral-decay plot at So* (0.15ms risetime).

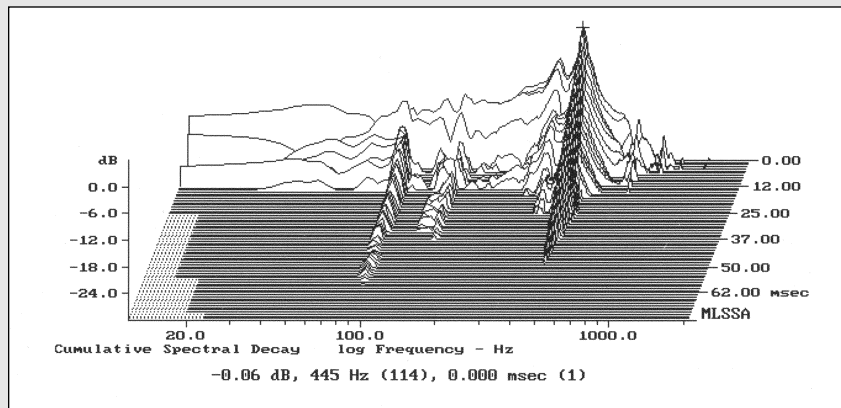


Fig.8 Paradigm Reference Studio/20, cumulative spectral-decay plot of accelerometer output fastened to cabinet side. (MLS driving voltage to speaker, 7.55V, measurement bandwidth, 2kHz)

Paradigm Reference Studio

A cult of personality

The Janis Ian recording also highlighted the Studio/20's strongest "personality" trait, and it may not be to everyone's taste. The reproduction of high frequencies was clean, natural, and extended, but the entire high-frequency range was slightly highlighted, giving the sound a rather crisp presentation. This was not brightness or brittleness, but a characteristic that called attention to instruments with significant high-frequency energy. Ian's voice sounded a bit sibilant, the guitar strings slightly more metallic than I'd heard on other speakers, and the cymbals somewhat more noticeable. Normally, I'm no fan of any component that has any prominence in the high-frequency region, but I got hooked on the Paradigm's interpretation of high frequency reality. The highs were so pure and extended that I was not bothered by their prominence.

The speakers were also soundstaging champs. On Rutter's *Requiem* (Reference Recordings RR-57, LP), the natural warmth of the layered vocals on the stage was the most lifelike I'd heard from a budget speaker. Of course, that famous audiophile acid test, *Stereophile's Festival* (CD STPH007-2), brought all of the 20s' characteristics together in one revealing package. The speakers immediately disappeared, image specificity and low-

level dynamics were as good as I'd heard with this recording, and the timpani were tuneful and very dynamic. Massed strings did sound a bit forward, however, and the mallet instruments were a touch metallic.

I haven't mentioned bass. With one minor

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quibble, the bass performance was the best I've heard from any satellite speaker, regardless of price. I was able to minimize, but not eliminate, a slight roundness or warmth in the 60-80Hz range by moving the speakers farther out into the room and away from the rear wall. This very minor coloration did not detract from the 20's other strengths, but I don't know how much of this was a function of the speakers' interaction with my room. The bass extension was extraordinary. These diminutive boxes exhibited solid extension

down to 50Hz and a very gradual rolloff after that, with reduced but audible output at 32Hz. I achieved this superb bottom end extension even when the speakers were pulled away from the rear wall.

But the *quality* of the bass? In Kujawsky's recording of Stravinsky's *Les Noces* (Clarity 1005-G), the four percussionists frequently visit the bottom three octaves, so I turned to this LP to assess the quality of the Paradigm's bass. Five adjectives culled from my listening notes describe the bass performance on this audio torture test: extended, natural, quick, dynamic, tuneful.

Summing up

All reviews of budget components must include caveats. I wouldn't recommend the Paradigm Reference Studio/20 loudspeaker to those who like a rolled-off or laid-back high-frequency presentation, or who plan to use electronics sporting a zippy top end. That warning aside, the Studio/20 is, by a wide margin, the finest speaker under \$1000/pair I've ever heard—and currently there's quite a bit of competition. I would happily own them as a reference. Congratulations to the Paradigm design team, who have established a new benchmark for speaker performance at this price point. ■