

“... one of the best home theater speaker systems

WE’VE TESTED.”

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by David Ranada

LCR-450

Paradigm, based in Canada, has with its LCR HT produced a home-theater speaker system of uncommon quality and even more uncommon value. The system consists of three identical front speakers, a pair of matched surrounds, and a subwoofer module, all of which are available separately.

The driver complement and layout of the magnetically shielded LCR-450 front speaker enable it to be operated either horizontally or vertically, making it suitable for both center and left/right main speaker duties. Each LCR-450 contains a 1-inch aluminum-dome tweeter flanked by two “bass/midrange drive units” with 6-1/2-inch mica-loaded polymer cones. Crossover takes place at 1.5 kHz via a fourth-order electroacoustic network. Nominal impedance is 8 ohms, and anechoic sensitivity is given as 87 dB sound-pressure level (SPL) with a 1-watt input, or 90 dB in a typical listening room.

The 21 x 8 x 11-1/2-inch, 25-pound enclosure is available finished in either black oak-grain or black gloss vinyl. Connections are via gold-plated multi-way binding posts, and facilities are provided for bi-wiring or passive bi-amplification (in which the internal crossover remains connected).

As might be expected from a Canadian speaker company whose products may be exposed to very low temperatures, Paradigm recommends that if the LCR-450's have been transported at or below 50°F (10°C), they should be allowed to warm up to room temperature before use. The material used in the surrounds of the bass/midrange drivers is made of a compound that may stiffen at low temperatures, Paradigm says, and the



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ferro-fluid used to cool the tweeter itself thickens in cool temperatures.

Three vinyl finishes are available for the ADP-150 surround speaker: graphite (black), oak, and white. Each surround measures 10-1/2-inches high, 8-3/4-inches wide, and 6-1/2-inches deep and weighs about 12 pounds. The drivers are two 3/4-inch polyamide-dome tweeters and two 5-1/2-inch polypropylene cone bass/midrange drive units operating in what Paradigm calls an “adapted dipole” configuration. That arrangement is used, the company says, “to retain a balanced level of bass when [the ADP-150’s are] mounted on (or near) the side walls of your room.”

The manual recommends placing the ADP-150’s to the sides of the listening position, 3 to 9 feet above the floor, with at least 18 inches of free space on either side of each speaker. Wall-mounting hardware and a mounting template are supplied, with instructions in English and French (I like the way “installing wall hardware into drywall” turns into “installation de la quinçaille au mur dans le gypse”). Hookup is via push connectors. Anechoic sensitivity is given as 86 dB SPL (89 dB SPL in-room) and nominal impedance as 6 ohms, 4 ohms minimum.

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ADP-150

Paradigm doesn’t ever call any of the larger drivers in the LCR-450 or ADP-150 a “woofer.” That’s because the low bass in the LCR HT system is supposed to be handled by the PS-1000 powered subwoofer. Like most models of its type, the PS-1000 has a variety of connections available. There are speaker-level inputs with direct-wired speaker-level outputs (all push connectors) as well as line-level inputs (preferable) with their corresponding high-pass-filtered line-level outputs (all phono jacks). The filtering of the line-level outputs, when fed back into the amplification chain driving the LCR-450’s, allows them “to handle more power with lower distortion for a dramatic improvement in dynamic range and overall clarity,” as the PS-1000 data sheet puts it. The high-pass filters roll off at 18 dB per octave below 80 Hz.

The power amplifier in the PS-1000 is rated at a hefty 130 watts and has such features as auto on/off, soft clipping, and thermal-overload protection. It powers a single 10-inch driver operating in a band-pass enclosure, which means that you can’t see the cone but only three 3-inch vents on the sub’s rear panel. The enclosure, finished in black oak-grain vinyl, measures 16 3/4 x 17 x 19 inches and weighs 58 pounds.

The Paradigm powered subwoofer system is only the second subwoofer system I have encountered that incorporates a phase control in addition to the standard polarity-flip switch, level control, and crossover-frequency control (variable here between 50 and 150 Hz). Paradigm describes the phase control accurately and succinctly: It “controls the phase (or time) relationship of the subwoofer relative to [the] main/satellite speakers through their frequency overlap region.”

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A phase control is most useful when a considerable distance – more than a yard, say – separates the subwoofer from one or both of the main speakers. That is usually the case when the subwoofer is hidden away or, as in our listening room, placed in a corner while the main speakers remain centrally located. To some degree, a subwoofer phase control is even more useful than the usual polarity-flip switch since the latter makes very little difference in the response outside the crossover region, especially if high-pass filtering is used for the main speakers.

Unfortunately, it’s difficult to adjust any subwoofer control, including a phase control, correctly using only music: You can never be sure that the disc(s) you use for testing will fully exercise the frequencies in the crossover region so that all other discs will also sound their best. Nonetheless, Paradigm’s instructions on how to adjust the PS-1000 to match the sound of the LCR-450’s are among the best I have seen, even though the procedure requires two people and musical judgement calls.

As usual, to save time and to achieve the best overall results, I set up the LCR HT system using instruments (a spectrum analyser fed by a lab microphone picking up pink noise), a procedure I heartily recommend if your dealer offers to do it for you. We put the single subwoofer in a room corner and placed the LCR-450’s away from the side and front walls on 25-inch stands, with the left and right speakers vertically oriented and the center speaker horizontal. After about half an hour of fiddling with the subwoofer controls, which interact with each other a great deal, I obtained what for our listening room was an excellent response. Ignoring a slight dip at 100 Hz that further adjustment and experimentation with subwoofer placement might have eliminated, the LCR-450/PS-1000 system yielded a one-third-octave response ranging from 40 Hz to 20 kHz with only a ± 3 dB deviation. Above 500 Hz, where the subwoofer has no effect, the response was even flatter, ± 1.75 dB from 500 Hz to 20 kHz. The curve has a shallow “saucer”

profile above 500 Hz, however, with the deepest part of the dip being -2.6 dB at 3.15 kHz relative to endpoints at 500 Hz and 16 kHz. Measured alone, the subwoofer produced its maximum output at 50 Hz, and had usable output down to 30 Hz, all with low distortion at reasonable listening levels.

In listening tests, which were conducted mainly with music, the overall frequency balance of the system proved to be excellent, which in this case means unusually neutral. While the LCR-450 front speakers did not sound absolutely neutral on everything (no speakers we have tested have), the remaining colorations were so well controlled that with an extremely wide variety of music I was only occasionally able to hear them. Depending on the program material, I could sometimes hear the mild swayback of the response above 500 Hz as a slight hint of excessive brightness on classical strings or sibilance on voices. At other times I heard the slight overall downward tilt of the response above 500 Hz (relative to lower frequencies) as a tinge of lower-midrange heaviness. That these colorations were rare in appearance and program-dependent only emphasizes the appealing neutrality of the LCR-450. Any other sonic deficiencies we heard could be traced to the known problems of the recordings.



PS-1000

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With the left and right front speakers placed vertically, imaging was very good in both conventional stereo and surround sound, though not as tightly pinpointed as it can be with speakers having more deliberately restricted vertical dispersion. The imaging qualities of the LCR-450's strike a good compromise between the sometimes divergent reproduction demands of movie soundtracks and music. I recommend vertical placement of the left and right LCR-450's so that their tweeters are at or close to ear level, both at home and, especially, during an in-store audition. Their response becomes more colored once you are about 30 degrees off-axis vertically. The center speaker should ideally also be at ear level, but placement considerations usually rule that out.

Several hours of continuous listening at fairly high (close to live) levels produced no sense of listening fatigue with good musical program material, nor did the speakers ever give any signs of being in distress even with explosive Dolby AC-3 movie soundtracks. Note, however, that all our reactions derive from an amplifier/subwoofer-loopback hookup intentionally configured to prevent the high levels of deep bass that can be obtained from AC-3 soundtracks from reaching either the front or surround speakers. The PS-1000 subwoofer adeptly carried the full burden of deep bass in our best-case hookup (covered in the subwoofer manual as connection options Nos. 1 and 3). Different results may be obtained from a less than optimum subwoofer connection, such as one that doesn't utilize the subwoofer's high-pass loopback outputs.

If you were thinking of going whole hog and investing in a full Home THX speaker system, consider giving the much more economical Paradigm LCR HT a serious audition. The basic neutrality of its

sound rivals that of all the Home THX models we have tested. It will come up short primarily in its ability to put out theatrical levels of deep bass (a specialty of THX speaker systems), but such levels are probably too loud for most domestic listening anyway. Adding a second PS-1000 subwoofer will increase the system's maximum bass output while keeping the total speaker cost below that of all the Home THX systems we know of. Conversely, if you are on a tight budget, try as hard as you can to save enough for the Paradigm LCR HT, a system that sets an enviable performance standard in its price class. You might even start out with a pair of LCR-450's and a single PS-1000, an excellent three-piece stereo speaker system, and add the rest of the speakers later to get into surround sound. Your frugality will be amply rewarded by the sonic riches of one of the best Home-Theater speaker systems we've tested.