"... OUTSTANDING ... UNBEATABLE ... a first-rate performance ...

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Journey to Sound

"... power ... clarity ... purity ... superb space-creating abilities ... wonderfully clean and transparent ... the outstanding performance of the Studio/60's sets a new standard for the speaker industry."

Shi Zai and Samuel Lo

Studio/60

COMBINING ART AND SCIENCE

Speaker manufacturers spend a great deal of time and money improving the quality of their loudspeakers to meet the needs of their consumers. Speaker manufacturers in Canada are fortunate to have access to the findings of the National Research Council's (NRC) listener preference tests. Manufacturers like Paradigm are able to use these findings to constantly improve the sound quality of their speakers. Paradigm is one of the few companies that designs and manufactures its own drivers, enclosures, crossovers and component parts. For this review we were testing the Studio/60 a monitor-style speaker for music listening and more than up to the demands of home theater.

THE BEGINNINGS OF DESIGN

All speaker designers base their designs on theory. The theory behind Paradigm's Reference Series (and all other Paradigm speakers) is that flat midrange response, smooth off-axis response and minimum distortion will result in accurate high-end sound. That's easier said than done! To achieve such lofty aspirations while maintaining design integrity Paradigm must have spent a great deal of time (and money) developing state-of-the-art measuring and sound testing systems.

The quality of a speaker can be determined from its frequency response measurement. Basically, the flatter the frequency response curve, the lower the coloration and the fewer unwanted resonances. Flat midrange response is the most important aspect of all. In Paradigm's catalog it states that the flatter the midrange, the more precise the reproduction of the original sound. Instruments, vocals, rhythm and overall tonal quality of the original recording are then preserved. Accurately measuring frequency response is therefore crucial.

The most accurate sound measurements by far are achieved with a large, well-designed anechoic chamber in which sound output can be completely isolated and captured without external interference. Rather than relying on less accurate simulated anechoic measurements, Paradigm invested in a 33,000-cubic-foot (924,000 liters), fully-isolated anechoic chamber and proprietary measurement system housed in the company's state-of-the-art R&D facility. As a result, Paradigm engineers have access to the most accurate sound measurements possible.

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The company does not rely solely on the results from the anechoic chamber, however. Paradigm also has a controlled double-blind listening room where further testing and critical adjusting can be carried out.

DESIGN OF THE STUDIO/60

There is a Chinese proverb that states: If a worker wants to do a better job, he must first sharpen his own tools. It's a proverb that aptly fits Paradigm's business philosophy. To ensure the highest quality and performance of their products the company designs and manufactures almost everything in-house rather than relying on the services of others.

The Studio/60's 3-driver, 2-1/2-way (2-1/2-way will be discussed later) design is 96 cm high, 21 cm wide and 39 cm deep, weighing 80 kg per pair. Sensitivity rating (listening room and anechoic chamber) is 90 dB/87 dB; on-axis frequency is ±2 dB from 42 Hz to 22 kHz; and 30º off-axis is ±2 dB from 42 Hz to 20 kHz. Inputs allow for bi-wiring or bi-amplifying.

The high-frequency driver is a 25-mm PAL™ pure-aluminum dome with a treated cloth suspension to ensure uniform and instantaneous power response. Ferro-fluid is used to disperse heat and minimize impedance. The high-pressure, die-cast aluminum chassis eliminates mechanical flexing and ringing and provides a heat sink for dramatically improved power-handling. Dual magnets increase the energy in the magnetic gap and overall thermal capacity. Paradigm claims that the "astonishing timbral clarity and transparency" of these drivers rivals the best electrostatic or ribbon designs.

"The cheering and clapping of the audience on this recording was so realistic that sound became a spacious concert—a reflection of the Studio/60's superb space-creating abilities."

The 165-mm bass/midrange driver is an MLP™ (mica-polymer) cone; lightweight but very stiff. The excellent damping facility of the cone material provides coloration-free response, extraordinary midrange clarity and superb extended bass performance. The chassis application is the same as that used in the high-frequency driver to control mechanical flexing, ringing and eliminate magnetic loss (since by nature aluminum is non-magnetic). There is also an AVS™ (airflow ventilation system similar to the air conditioning system used in motor vehicles) and 38-mm, high-temperature, multi-layer voice coils to prevent variance in impedance. Oversized magnetic assemblies with symmetrically-focused-field geometry ensure low distortion and unparalleled linearity, even when the speaker is operating at higher output levels.

The bass and bass/midrange driver are very similar in design, each 165 mm high, although dome material in the bass driver is filled polypropylene. There is one thing I should mention. According to the manufacturer's specifications, the low-frequency extension of the Studio/60 is 30 Hz which is different from the minimum frequency width. The 42 Hz is measured in the anechoic chamber while the 30 Hz is measured to simulate an actual listening environment.

An excellent speaker cabinet is always worth the work put into its construction. Paradigm's sophisticated Cascade™ technology is designed to provide an enclosure that is sonically inert—containing and absorbing unwanted rear wave energy for unsurpassed levels of clarity, imaging and retrieval of fine musical detail. MDF, a currently popular manufacturing material, is used throughout. Front and rear baffles have self-locking joints and each driver is housed in its own enclosure. The internal structure of the enclosure ensures its rigidity with freedom from unwanted vibrations. UHP™ (ultra-fine high-loft polyfiber) damping material provides excellent absorption of wave energy, while remaining acoustically transparent at lower frequencies for optimal bass performance.

The crossover's 3rd-order electro-acoustic is at 1.5 kHz and its 2nd-order is at 400 Hz. The crossover in any speaker is something that can be quite annoying or very lovable. Through extensive R & D Paradigm has achieved very smooth roll-off performance from its drivers. As a result, the company is able to take a minimal or "simple" (although not casual) approach to crossover design. The high- and low-frequency drivers are physically separated to prevent any interaction between components, and the phase-coherent design results in a virtually seamless transition, preserving all of the sound in the original performance.

Earlier, we mentioned that we would address the 2-1/2-way design. The work of the bass/midrange and bass driver is combined in this type of design with both woofers operating in the lower frequencies to provide optimal bass output. The bass driver is in charge of all work done below 400 Hz, rolling off at this point while the bass/midrange driver continues on to the main crossover at 1.5 kHz, at which point the tweeter takes over.

CONCLUSION

When I first saw this pair of speakers they looked strange to me with the front of their drivers protruding slightly. However, after learning more about Paradigm and the theory behind their design, I have to say that the Studio/60's design is outstanding. My satisfaction with these speakers became more intense after listening—these are high-speed speakers that shine like sunlight. But, now it's Samuel's turn to give you information about the Studio/60's performance.

SAMUEL'S REPORT

I don't know how many audio equipment manufacturers there are in the world, I only know that I can find thousands of them using only one Internet search engine.

As a stereo tester I encounter hundreds of brands in a year and these account for only a small part of the market. There are many excellent products that we have yet to report on or introduce to our readers. So, when readers wrote to us and asked for an evaluation on equipment we had never tested before, we replied simply, "we can't evaluate it because we have never tested it." This was true, until now.

Upon visiting Paradigm's website (www.paradigm.com) I learned that the Paradigm® Reference series, of which the Studio/60's are a part, is the company's higher-end speaker line. As Shi Zai mentioned earlier, the drivers in Paradigm speakers differ from those used by other manufacturers. Now I will focus on the "listening" aspect.

The Studio/60's boast very high extension and an overall excellent performance. Listening to string instruments such as the violin and guitar, although not quite as smooth as I expected, still presented a hint of the violin bow's rosin and sound was nicely textured. High frequencies were wonderfully clean and transparent. It was here that we were able to appreciate the quality of Paradigm's PAL™ high-frequency driver, designed and manufactured in-house by the company. Listening to *Hotel California*, I enjoyed the performance of the solo guitar. The sound of each string was well defined, never changing to resemble the sound of a steel string guitar. The cheering and clapping of the audience on this recording was so realistic that sound became a spacious concert—a reflection of the Studio/60's superb space-creating abilities.

"The Studio/60's gave a first-rate performance right across the musical spectrum. When it comes to dynamics, these speakers shine!"

The Studio/60's electronic drum was capable of reaching 40 Hz, an unusual feat when you consider its relatively small size (48 liters) with more than enough output to shake up a room of 400 square feet. Bass had power, clarity and purity … an overall outstanding performance.

The tonal quality of the Studio/60's was close to neutral, completely free of overly strong characteristics with a minimum of coloration and just the right amount of warmth and sweetness (assisted by the amplifier). In truth, the Studio/60's look more like professional studio monitors than speakers for your living room.

Studio/60 was adept at handling bass. Every corner of the soundfield was visited with precision and speed, changing quickly as musical composition demanded. These are characteristics of a speaker that is ideally suited to handle today's new DVD-audio releases.

A fundamental requirement for speakers today is wide dynamic range in a sturdy, compact unit. A speaker that plays music well and is up to the challenges of home theater is definitely the trend. The Studio/60's demonstrate this combination of capabilities. I used a mega movie soundtrack to test their dynamic performance. Several pieces on the soundtrack used special effects. The Studios responded well at both ends of the spectrum—clean and neat at the higher frequencies and tight and controlled, without sounding compressed, at lower frequencies.

The Studio/60's gave a first-rate performance right across the musical spectrum. When it comes to dynamics, these speakers shine! For those who like Jazz and Pop, the Studio/60's are the very best choice. In fact, the outstanding performance of the Studio/60's sets a new standard for the speaker industry. These speakers are unbeatable for the price and even more expensive offerings will find it hard to compete. I don't want to use words like "best price and value" or "a superb competitor" to describe the Studio/60's but I can find no other words.