

Sonus Faber Concerto loudspeaker

Francò Serblin, founder of Sonus Faber, seems to have a knack for making his speakers sound bigger and richer than you might expect. Unless you're seriously in need of deep, powerful bass, his middle-sized "compacts" are often surprisingly well balanced in the low-frequency range, providing a weight and power sufficient for many an audio system. However, they are definitely not cheap. When I first saw the Sonus Faber Concerto at *Hi-Fi News & Record Review's* 1996 London Heathrow Show, I noted that here was a stand-mounted speaker from this established Italian manufacturer that was not only of moderate size, but of moderate price.

Assuming good compatibility between speaker and purchaser, a compact speaker can weave its special magic; if well made, it can achieve low levels of enclosure coloration. (In a larger cabinet, masses of timber may be needed for an equivalent performance.) As a relatively small object, a compact enclosure can have less diffraction than a larger speaker. Diffraction is a potentially damaging interaction between the edges and shape of the enclosure and the primary sound radiation from the drivers. In the mid and treble ranges the audio wavelength in air is comparable

with typical enclosure dimensions, and here is where most diffraction occurs.

Significant diffraction can give the effect of secondary sound-radiating sources. These cause irregularities in the phase and frequency responses, leading to impaired stereo focus. Some critics also believe that the most natural midrange, especially for the human voice, is created by head-sized speakers. Larger enclosures often have head-sized mid-treble boxes perched on bigger, low-frequency bases.

While its ingredients differ, the Concerto's size and performance parallel those

Description: Two-way, reflex-loaded, stand-mounted loudspeaker. Drive-units: 7" pulp-cone woofer, 3/4" soft-fabric dome tweeter. Measured frequency response: 58Hz-23kHz ± 2.5 dB, -6dB at 40Hz. Sensitivity: 86dB/W/m. Impedance: 8 ohms nominal, 4 ohms minimum. Power handling: 100W.

Dimensions: 15" H by 9" W by 14" D. Enclosure volume: 14.5 liters. Weight: 20 lbs.

Serial numbers of units reviewed: Not noted.

Price: \$1850/pair (a piano-grade black finish for the side panels costs an extra \$150). Approximate number of dealers: 55.

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of the more costly Electa Amator, which has seen many years of successful sales.¹ Its price may be moderate, but the Concerto's build quality is up to Sonus Faber's usual high standard, with 1"-thick sculpted slabs of hand-rubbed walnut for the side panels. Echoing the bluff styling of the top-of-the-line Extrema (reviewed in June 1992), the rest of the Concerto is covered in black, in this case a fine-grained leatherette.

On the back are two sets of bi-wire gold-

¹ The Electa Amator was favorably reviewed in the October 1992 *Stereophile* by Jack English (Vol.15 No.10). —JA

Stand-Mounted or Floorstanding?

Audiophiles who appreciate stand-mounted speakers are aware of a limitation in low-frequency power and reach compared with bigger floorstanders, but they're also conscious of a particular airy, open, and free quality to the midrange that's rarely found with a floorstanding design. It's as if the sound from the latter is nearer to and more intimately associated with the floor, while a stand-mounted system sounds decoupled from the floor, as if the vocalists were standing up.

That difference can be associated with greater expression and sharper stereo focus in the low midrange. The bass produced by the compact speaker, if well-placed relative to local boundaries, may be unusually articulate, crisp, and tuneful, and help to redress the balance.

Note that I'm not arguing for the superiority of stand-mounted over floorstanding loudspeakers, simply that each has its merits. Technical arguments can be made, for example, that a stand-mounted speaker must suffer an interference dip due to interference between the direct wave and the floor reflection when both arrive at the listener position. It's possible to design a floorstanding speaker so as to avoid such interference by the manipulation of drivers, their placement, and the crossover points, but a characteristic, floor-coupled, "earth-bound" sound often remains.

In theory, the floor dip certainly looks bad, even terrifyingly so in the context of the perfect measured responses possible in pure free space, undisturbed by any boundary reflections. In practice, for a stand-mounted speaker fitted with forward-facing drivers, the floor-interference dip isn't so bad, espe-

cially from a subjective viewpoint. Like the Extrema's, the Concerto's front panel has a distinctive rearward slope; at the listening position, on a representative 18" spiked stand, the treble unit will be a little above head height, angled

slightly away and a little delayed; this is intended to bring it into closer time alignment with the mid driver.

plated binding posts that can be linked for single-wire connection. Spades, wire ends, or 4mm plugs can be used. The narrow, well-packed baffle carries a 7"-frame bass/mid driver, a ¾" soft-fabric dome tweeter, and a 2"-diameter bass reflex port. The speakers are supplied in mirror-image pairs, the tweeter mounted above the woofer and to the side of the port.

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Design

The Concerto's 14.5-liter volume is reflex-tuned to a fairly low 40Hz by a duct 2" wide by 6.75" long, this slightly radiused at both ends to reduce "chuffing" at high powers. A loop of 1"-thick foam provides some midrange cavity damping, while the low-frequency alignment is fine-tuned by a medium batt of well-bonded, self-supporting synthetic fiber.

The good-quality components in the crossover have been vibration-stabilized with a hard-resin overlay not far short of full-immersion potting. Film capacitors and low-loss, low-distortion, ferrite-cored inductors are used in an electrical network that is essentially second-order, 12dB/octave, augmented by some resistors for damping and level matching. The wiring is secured by strong push-on connectors, then soldered.

The walnut sides are about 0.75" thick, while the heavy MDF carcass is actually 1" thick. The baffle's radiused edges flow smoothly into the side panels for minimal frontal diffraction. Both drive-units are fitted perfectly flush with the panel.

The treble unit is a custom, sealed-back driver made by SEAS, ferrofluid-cooled and coated on the inside of its dome to improve the appearance and to reduce dust buildup. This tweeter has a three-point fixing on a loaded, high-tensile molded plate. The 7" bass/midrange unit, custom-tooled for SF, has a truncated die-cast frame with six-point fixing. The 5.25"-diameter cone is composed of thick, high-loss bonded pulp, surface-damped and with a flared contour. It has a long-throw suspension and a low-loss rubber half-roll surround—ingredients that help produce a fast, lively bass. Built by VIFA, this driver incorporates that company's patented cone-edge geometry, which suppresses unwanted vibration modes. Fitted with a powerful vented magnet, this driver is fully shielded. The tweeter isn't shielded, but, thanks to its compact magnet, I wouldn't expect much stray magnetic flux.

On the underside are a pair of threaded inserts to allow the Concerto to be bolted securely to a matching stand to make for a relatively child- and accident-proof assembly.

The grille fabric is particularly finely textured, and the outer section is nicely profiled, fitted with the distinctive lac-

quered brass SF logo present on both the grille frame and the fully finished driver panel. However, as the grille frame (cut from 0.5" MDF) has minimal anti-diffraction measures, it's best removed for critical listening.

Sound

It was no sweat running-in the Concertos. They already sounded pretty good out of the box, and settled down nicely after a week or so. While I had to climb down a bit after recently getting nicely acquainted with the Wilson WITT Series II (see "Follow-Up" in this issue), about 10 times the Concerto's size and price, revisiting my long-term references helped give some perspective on the matter. These include original BBC LS3/5as, now over 20 years

old and still sounding fresh, and the Spendor SP2-2 compacts, the Quad ESL-63 electrostatics, and the Epos ES12s.

I quickly moved from single- to bi-wire connection, noting that from the outset, the Concerto's potential justified extended experimentation with setup as well as with both speaker and listener placement. Sonus Faber's own stands worked well, as did some British heavy-duty steel frames partly filled with lead shot. Placing the speakers too close to a side wall (less than 3') added unwanted bloom to the lower midrange. Too near the floor (less than 20") and the upper bass wasn't so articulate. As for the wall behind the speaker, a distance of some 2.5' was a fine starting point for adjusting the low-frequency balance according to taste and listener position.

I settled on a 24" floor-spiked stand, which placed the treble units a little above head height. Fortunately, the Concerto remained tonally consistent for listening angles on and moderately below axis. I angled the speaker Wilson style, the faces of the inner sides just visible from my listening position. I also preferred the cabinets placed tweeter-in.

From the variety of amplifiers on hand, the Krell KAV-300i turned out to be a near perfect match. Like the Concerto itself, this amplifier reaches beyond the ordinary for just the right combination of power, grip, and transparency to help the Concertos sing.

However, first impressions were not wholly helpful. There was some identifiable character, best described as a moderate

Measurements

Near sea level here in London, the Concerto gave an on-the-nose 86dB sensitivity rating for a 2.83dB/V nominal 1W input—a straight average for the genre. (Trying to achieve a higher sensitivity in this size of speaker would result in a loss of bass extension.) Input powers of up to 150W peak program were accepted for well-balanced material. This will raise short-term maximum levels of 108dB at one meter, and a stereo pair will produce satisfying peak levels of 103dB for listeners in a room of average size. Less than 40Wpc would restrict the Concerto's use to chamber and folk music.

Checking distortion at a normal 86dB sound pressure level, I obtained good results in the midband at -57dB (0.14%) of second harmonic and -54dB (0.2%) of third harmonic. By 100Hz, the 0.5% of second and 0.22% of third still rated well. At 50Hz it was also fine, measuring 1% of second and 0.31% of third, both below the audible threshold.

When the Concerto was driven to 96dB, distortion at low frequencies in-

creased as expected, but not unduly so. At 50Hz, second harmonic held at 2% while third increased to 1.3%. At 36Hz, the absolute limit, the figures were still better than 3% by conventional measurement. At this higher sound level, 1kHz came in with 0.33% of second and 0.1% of third, all commendable. This good set of results for distortion confirmed the view that the Concerto has good power handling and is respectably linear.

The impedance loading (fig.1) was typically 8 ohms over much of the 20Hz-2.5kHz power range. Above this point the impedance was reduced, dipping to a minimum value of 4 ohms at 4.8kHz and leveling out at 5 ohms. It peaked at 15 ohms, 1kHz, so some variation in tonal quality will occur with higher-output-impedance tube amplifiers, though this may well be acceptable in practice. Impedance phase reached 45° at 2.5kHz but shouldn't result in any matching problems. I'd be happy to rate this model as a 6 ohm design. The curve shows the coupled in-box driver

resonance at 70Hz, and the box reflex resonance at 40Hz.

Fig.2 shows the on-axis response (including nearfield correction and the acoustic crossover responses). This is essentially flat, ± 2.5 dB, from 58Hz to 23kHz—quite an achievement. This fine tolerance contains some mild characteristics, namely a slightly elevated midband rising by 3dB from 300Hz to 3kHz; this might give a crisp, lean effect in full free space. On-axis there was a moderate 2.5dB trough at the nominal 3kHz crossover point. The drive-unit rollouts were quite smooth, with effective 24dB/octave slopes for both low- and high-pass sections. Axial integration was clean, showing good phase control.

The Concerto was maximally flat in the bass down to 55Hz, slightly (and in my view correctly) overdamped to a -6dB point at 40Hz. (Maximally flat Butterworth would be -3dB at 40Hz—the box resonance—and could well boom.) This is a good response for this size box, and

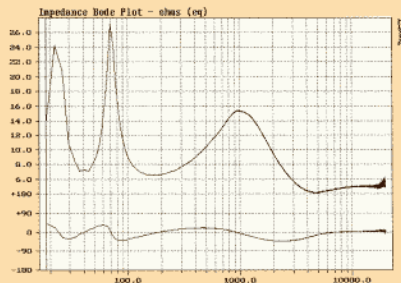


Fig.1 Sonus Faber Concerto, electrical impedance (upper trace) and phase (lower) (2 ohms/vertical div.).

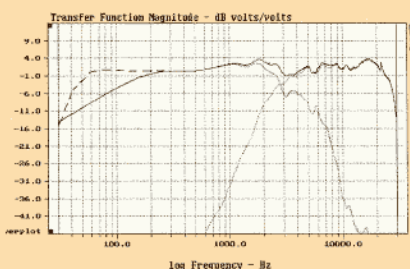


Fig.2 Sonus Faber Concerto, anechoic response on tweeter axis, with the individual woofer and tweeter responses, and the nearfield low-frequency response plotted below 300Hz.

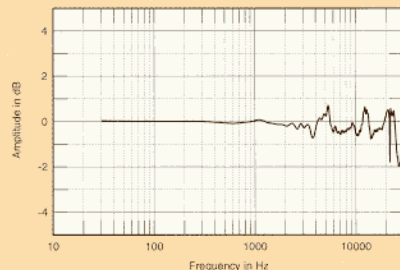


Fig.3 Sonus Faber Concerto, pair match, difference between left and right speakers (1dB/vertical div.).

“darkness,” a shaded effect in the upper midrange, that ultimately didn’t figure very strongly in the final analysis. The Concerto sounded perceptibly less crisp, not quite as open and snappy, as Sonus Faber’s best. Click-clack sounds were just a little deadened, leaving the mid and upper trebles sounding more airy and more delicate than was truly accurate.

In any event, it proved quite easy to adjust to this mid-region balance, one that left this range sounding richer and fuller than the speaker’s size might suggest. Then came an unexpected bonus. With smaller speakers, hard driving tends to produce increased hardness of tone, an increasingly threadbare sound. The Concerto, on the other hand, proved surprisingly gracious and well balanced when driven to high lev-

els. Indeed, it survived 250W peak program short-term, and positively thrived on +100W of clean power. The more I listened, the more I realized how fatigue-free

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this design was, and how the midrange tonality countered digital glare to some degree to give better-than-expected stereo perspectives.

For me, the Concerto’s most appealing quality was rhythm. I quickly forgot the transducer mechanisms, which were subservient to the musical message. The music this speaker reproduced sounded as interesting and involving as it should — a rare find in this price class. It had rhythm on solo piano, something that was still there on a jazz combo, picking up the bass line and bouncing along, providing a well-tuned foundation for the rest of the ensemble. Some speakers achieve this and more, but often at the expense of a natural timbre, with a forced upper midrange exaggerating and accelerating percussion transients. The Concerto’s strength was its ability to convey natural rhythm and timing without exaggeration — trumpet and sax remained

Measurements

promised an in-room bandwidth to 35Hz, verified by listening and room measurement. There were some secondary resonances (pipe modes) present in the ducted port, a nearfield measurement showed a 700Hz mode was only -15dB, with further harmonic modes present at 1.4kHz (-23dB) and 3.2kHz (-27dB). While these might contribute a little to perceived coloration, their actual effect must be mild; there was no trace of them in the waterfall analysis of energy decay.

I took a look at pair matching and the effects of adding the grille (figs.3 & 4). Both are referenced to an equalized flat reference line for one speaker, grille detached. In fig.3 the pair match was excellent at ± 0.5 dB, even for this mirror-imaged pair. The effect of the grille, however, was pretty dramatic (fig.4) — okay up to 2kHz but a disaster above that frequency, deepening the crossover trough by a further 4dB and imparting ± 3 dB irregularities for the frequency range beyond. In addition, the fine-knit fabric gives an attenuation of around 1.2dB overall, in addition to

causing minor reflections between it and the treble unit. It’s just as well this speaker looks nicely finished without the grille.

There were no sudden changes in frequency balance or local energy off-axis, suggesting stable focus and relatively low coloration from the local boundary reflections — another advantage of small speakers over large ones! Thanks to the narrow, low-diffraction design, surprisingly little difference was seen for the left and right directions. There is moderate loss (but no notch) in the crossover range for those who might be sitting on the floor; otherwise, all was well for all other vertical angles.

Rounding out the frequency responses is the room-averaged curve (fig.5). This shows very little evidence of the infamous floor dip; in fact, the bass plotted ± 2.5 dB from 35Hz to 300Hz, no mean feat. There was a mild energy dip at 400Hz, above which there was an equally mild excess at 1kHz. The resulting upper-midrange lift gives this speaker a slightly “forward” quality, which can be ameliorated by the optimal placement relative to the

wall behind the speaker. The Concerto remained in tune over the rest of the frequency range, with the anticipated “house response” decline in level in the upper treble, here devoid of sudden changes or peaks. This top end measured smoothly, and that’s how it sounded.

Though the Concerto is not a phase-corrected speaker, the time delays were small. The step response (fig.6) looked pretty clean. The phase-subtracted energy response vs time curve, or ETC (fig.7), was particularly good, decaying nearly 40dB weighted or Blackman-Harris-weighted in the first millisecond. The unweighted curve, however, which has more contribution from lower frequencies (fig.8), features an unexplained blip 1.6ms after the initial energy arrival.

The first “waterfall” presentation of the Concerto’s energy decay (fig.9) has a short filter risetime (0.1ms) to maximize the early decay analysis. Even with an expanded, 5dB/division vertical resolution, the Concerto’s result was quite excellent. That tiny “glitch” at high frequencies is actually

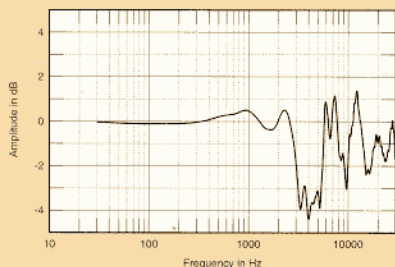


Fig.4 Sonus Faber Concerto, difference in axial response made by adding grille (1 dB/vertical div.).

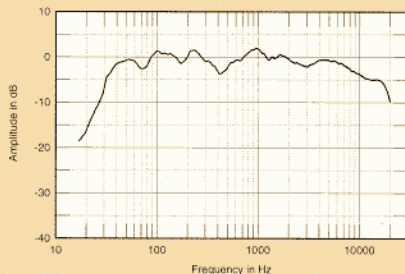


Fig.5 Sonus Faber Concerto, spatially averaged $\frac{1}{3}$ -octave-smoothed response in MC listening room.

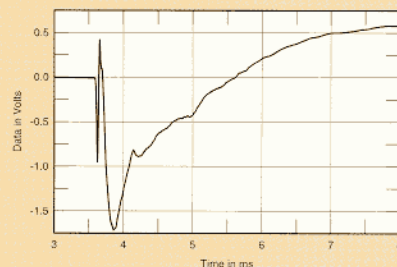


Fig.6 Sonus Faber Concerto, step response on tweeter axis without grille (5ms time window, 30kHz bandwidth).

in the mix instead of jumping out and biting me.

After a while I stopped trying to make allowances for the Concerto—I could let it get on with the job as I sat back and enjoyed the result.

This two-way design provided an authentic sound on a substantial scale—it wasn't at all obvious that the acoustic output was emanating from such compact enclosures. A key aspect was the well-proportioned overall balance, reminiscent of a large speaker; another was the positive, punchy, dynamic upper bass, worthy of much larger systems. The midbass was also pretty good, extending in-room to a satisfying 40Hz at good power, if obviously not equal to a dedicated subwoofer.

Considering the Concerto's modestly

sized enclosure, you really don't have to make allowances in the bass except with regard to absolute extension—and, in truth, very few speakers will escape this qualification. Within its dynamic range, the bass

This speaker will play louder and cleaner than its size and price would suggest.

was effective and didn't draw attention to itself, taking high powers remarkably well and showing a softening of fundamental bass only at the limit, with some "thuddy" coloration. At this point I could feel a breeze sailing past my ears from the port tubes 10' away.

The overall tonal balance was just fine through the bass, mid, and treble ranges, which were nicely balanced and weighted—although I admit that these are rather arbitrary divisions of the audible bandwidth.

Stereo soundstages were wide and exhibited good depth. Focus was very good—very stable and characteristically layered, and held tightly into the nicely layered recording perspectives. Reverberance and ambience were reproduced in good measure, the Concerto conveying atmosphere without exaggerating any part of the frequency range.

Transparency was good—not to Wilson standards, but clearly differentiated from the majority of speakers at this and lower prices. You need expensive

Measurements

above the audible range. The rapid decay rate (white space at the back) was impressive, and suggests a fast transient and percussive quality.

For the second waterfall plot (fig.10) I chose a wider dynamic range of 10dB/div., with a more frequency-resolved 0.2ms filter "corridor." Assessed over a longer time, more delicate, longer-term frequency-related delays or colorations stand exposed. The result is still good, though the analysis reveals some complex clutter after 0.8ms that may be residual upper-band signals from the mid-unit encroaching on the treble range. While the

correlation with listening tests was not that strong, such a result suggests that mild roughness may be heard in the treble, associated with some finite limit on perceived transparency. The results were

good over the midrange itself.

This is a fine set of results for a high-quality, compact speaker system in which all significant parameters are held in good balance.

— Martin Colloms

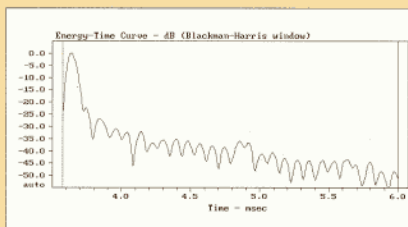


Fig.7 Sonus Faber Concerto, Energy-Time Curve on tweeter axis, Blackman-Harris-windowed.

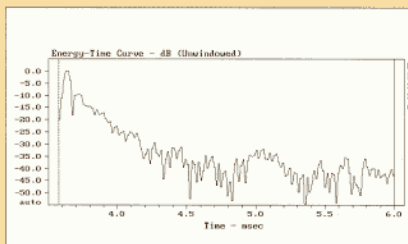


Fig.8 Sonus Faber Concerto, Energy-Time Curve on tweeter axis, unwindowed.

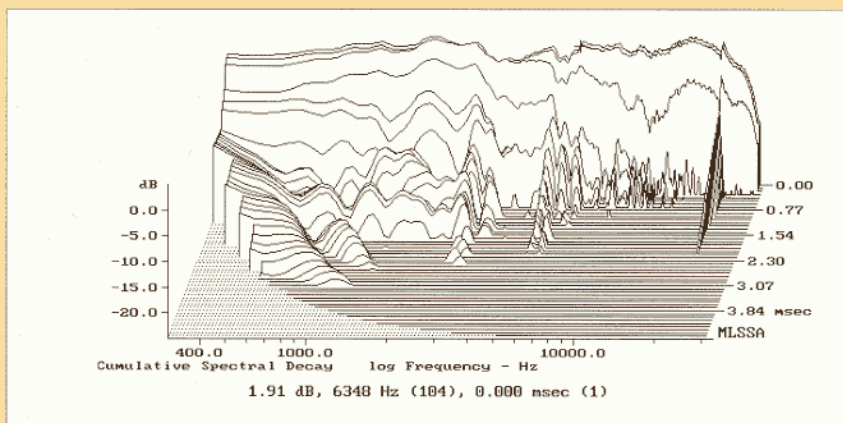


Fig.9 Sonus Faber Concerto, cumulative spectral-decay plot (0.1ms risetime).

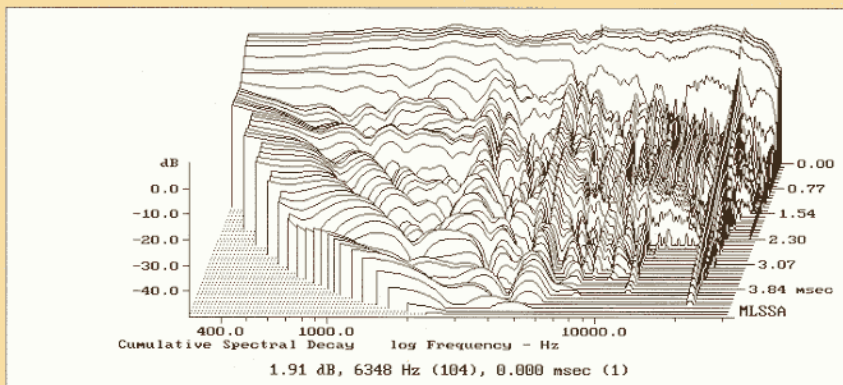


Fig.10 Sonus Faber Concerto, cumulative spectral-decay plot (0.2ms risetime).

electronics to reach the Concerto's transparency limit. Bi-wiring with good cable undoubtedly helped lift transparency to a satisfying level.

Coloration was very moderate. There were some box sounds, but these were associated with the Concerto's small volume, not with any significant structural panel resonance. That special cone patent certainly seemed to be effective, and though the speaker could be considered a touch dulled in the upper midrange, it remained particularly well-voiced, with stable piano timbre and no false nasality added to vocals.

The treble was good, matching the mid, if considered to be not quite as seductive as that of the more costly drivers fitted to larger Sonus Fabers. It could sound light and wispy, a bit reticent on the "ring ding" of big cymbals, and slightly exaggerated for upper-range sounds (for example, triangle and cymbals with rivets). Vocals had softer *t* and lighter *s* sounds.

The Concerto needed significant power to perform well—I'd say a minimum of 70W if you want to hear what the speaker can do. Nevertheless, the single-ended Cary 805C did the job (at a price), while the +400W peak program power of the KAV-300*i* showed this speaker's ultimate potential. Quite high sound pressure levels were possible, just enough for nonhead-bangers in my 35' room, and ample for the 18' room adjacent. This speaker will play louder and cleaner than its size and price would suggest. I also found that you could run it quietly and not lose the essential balance of the music—a good sign.

I gave the Concerto a run with my own reference electronics, the Conrad-Johnson ART preamplifier and Krell FPB 600 amplifier. This proved just how capable the speakers were when operated within their compass. It's true that the Sonus Faber

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doesn't do justice to \$28,000 worth of amplification, but some of the qualities valued in more costly loudspeakers were present here in fair measure.

Conclusion

I confess that when I first saw the Sonus Faber Concerto I thought it might be too cheaply made, too compromised to sound really good. I didn't like the way it looked. (I still don't; the mix of walnut and matte-black leatherette doesn't work for me.) But I was won over by the performance. As for the appearance, I've since discovered that for an extra \$150 or so you can get a piano-grade black finish for the side panel.

There's great musical potential here.

Taking that extra step is, of course, up to you, but I feel that this design deserves serious attention to the matching system—cables, stands, placement, and drive electronics. If this is done, then you can construct an unobtrusive and stylish audio system that is thoroughly enjoyable and entertaining without unseemly ostentation or flashy showmanship.

The bare facts are as follows: an average sensitivity, moderate amplifier load factor, fine sound quality, moderate distortion, and very good power handling. The frequency response was wide and uniform, and not overcritical of listener axis. The bass was substantially more powerful and extended than the price and size suggest, and more than good enough in context. However, the grille damages the sound; leave it off. Build quality and finish are very good.

In character, the presence range was slightly dull on first hearing, but I quickly came to accept this, enjoying the fatigue-free peak sound levels as well as a quality of musical flow and rhythm generally the province of much more costly designs.

Provisionally, I would nominate the Sonus Faber Concerto for a central Class B rating in *Stereophile's* "Recommended Components." The Concerto would be interesting at twice the price. As it is, it represents genuinely good value and allows the creation of a moderately priced system that offers genuine musical value. ☒

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