INFINITY REFERENCE STANDARD 8 KAPPA SPEAKER

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THE Reference Standard Kappa series of speaker systems from Infinity features newly developed drivers that are said to provide exceptional performance in all portions of the audio frequency spectrum. The Kappa series currently consists of three models using similar drivers in different configurations. The middle speaker of the group is a four-way system designated the 8 Kappa, or 8k.

The Infinity 8k presents an unusual and very attractive appearance. The hand-rubbed and oiled oak cabinet measures 47½ inches high and 20½ inches wide, but only 6½ inches deep. Each speaker weighs almost 90 pounds (a pair is shipped in a single carton about the size and weight of a moderate-size refrigerator!). The cabinet has rounded and fluted sides, and the supplied pedestal—which is only partially visible from the front and does not raise the speaker significantly from the floor—tilts the cabinet backward a few degrees. Most of the front of the system is covered by a removable black cloth grille whose plastic spacers position it about 1¼ inches from the speakerboard.

Each of the Infinity 8k's four drivers has a design unique to the Kappa series, and they are unconventional in appearance as well as function. The cone of the 12-inch woofer, which operates in a sealed enclosure, is injection molded from polypropylene and graphite fiber for a high stiffness-to-mass ratio and improved bass performance, and it is mounted on a rugged cast frame. The first crossover, at 90 Hz, is to a 5-inch Polygraph k dome driver that is optimized for the principal region of musical fundamental tones (80 to 500 Hz). Its dome is formed of very thin polypropylene on a reinforcing frame of graphite fiber.

The sound from 700 to 5,000 Hz is radiated by a 3-inch Polydome k polypropylene dome driver. The dome formulation combines very low mass with effective damping, and its voice coil uses flat, edge-wound wire. The tweeter, operating above 5,000 Hz, is an improved version of Infinity's EMIT (electromagnetic induction tweeter) design. The EMIT k is a planar-magnetic driver whose film diaphragm weighs half as much as those of its predecessors and operates in a powerful magnetic field generated by rare-earth neodymium magnets. According to Infinity, the EMIT k offers improved transient response and a high-frequency response out to 44,000 Hz.

A second EMIT k tweeter is on the back panel of the cabinet, radiating rearward. Also on the rear of the cabinet are continuously adjustable level controls, with an indicated "flat" position, for each of the higher-frequency drivers. There are separate pairs of five-way binding-post connectors for the bass and high-frequency portions of the system. Nor-

mally joined by heavy wires, these give the user the options of biamplifying the system or of simply biwiring (running separate pairs of wires from a single amplifier to the speaker's low- and high-frequency drivers) as well as a conventional connection through a single pair of conductors.

The four drivers in front are vertically aligned on the center of the speakerboard, with the tweeter at the ear level of a seated listener. The entire surface of the board is covered with a felt-like flocking material to minimize diffraction effects that can alter the imaging qualities of the speaker.

The manufacturer's ratings for the 8k include a frequency response of 33 to 44,000 Hz ±3 dB, nominal impedance of 4 to 8 ohms, an efficiency (sensitivity) of 87 dB sound-pressure level (SPL) at 1 meter with 1 watt input, and a recommended amplifier power of 50 to 250 watts. Price: $899 each. Infinity, Dept. SR, 9409 Owensmouth Ave., Chatsworth, CA 91311.

Lab Tests

The room-response curve of the Infinity 8k showed a powerful and relatively uniform low bass (from 100 Hz down to about 25 Hz), a broad depression centered at 500 Hz, and a narrower one at 5,000 Hz. The output above 6,000 Hz was strong and uniform all the way to our 20,000-Hz measurement limit. Close-miked measurements of the woofer and upper-bass drivers showed a similar shape, although they were very smooth within the operating range of each driver. The composite curve we created by splicing these measurements to the room-response curve varied ±2 dB from 130 to 6,000 Hz. The output variation was ±1.5 dB at higher frequencies, from 6,000 to 20,000 Hz. The bass response, flat within 2 dB overall from 37 to 115 Hz, was approximately at the same average level as the 12,000- to 20,000-Hz range and about 6 dB above that level between 150 and 5,000 Hz.

All of these measurements were made with the level controls of the speaker set to their indicated flat positions. The huge number of possible response curves that could be produced with the three controls made a thorough evaluation of their effects impractical. Our listening tests, however, established that their adjustment ranges were moderate, suitable for a fine trimming of response without making a major change in the sound character of the speaker.

The Infinity 8k had an open, clear sound quality with a noticeably extended, well-dispersed, and powerful top end. And its low bass performance was truly exceptional for the size of the woofer and its enclosure.

Quasi-anechoic FFT response measurements indicated a very extended and uniform response, within ±2 dB at 1 meter on-axis from 1,000 to 27,000 Hz (the approximate upper limit of our IQS analysis system). The phase linearity was excellent, with a group-delay variation of considerably less than 0.1 millisecond in the tweeter range, 5,000 to 27,000 Hz, and about 0.5 millisecond down to 1,500 Hz.

The horizontal dispersion of the front EMIT k tweeter was very good. Its responses on-axis and 45 degrees off-axis were virtually identical up to about 14,000 Hz and differed by a mere 6 dB at 20,000 Hz. We also compared the response of the front tweeter with that of the rear one; there did not appear to be any systematic difference between them.

The speaker's measured sensitivity of 86 dB SPL was close to the rated value. Its impedance curve was unusual, with a range of variation that made it difficult to categorize. The minimum impedance was 1.3 ohms, at 40 Hz, one of the lowest we have measured, and it varied between that value and 4 ohms over the range from 20 to 250 Hz. The maximum, 9.5 ohms, was reached at 1,000 Hz, and the impedance was a nearly constant 2.4 to 2.8 ohms from 1,800 to 20,000 Hz.

Setting the level-adjustment controls to their limits had a small effect on the impedance above 200 Hz but made no essential changes in its range of variation. We would consider a rating of 8 or even 4 ohms for this speaker to be unrealistic; the impedance was typically 3 ohms or less over most of the audio range. We had no difficulty in driving it with several different amplifiers, but it is conceivable that some amplifiers would not take kindly to the load it presents.

We measured the bass distortion at a drive level of 3.2 volts, corresponding to a 90-dB SPL output from the system. The distortion was low and nearly constant over most of the low-bass range, measuring between 0.5 and 1.4 percent from 100 Hz to below 40 Hz and only 3.9 percent at 30 Hz.

The peak power-handling ability of the speaker, using single-cycle tone bursts, was very good. The woofer began to rattle slightly at a 100-Hz input of 562 watts. At 1,000 and 10,000 Hz, our amplifier clipped (at respective power inputs of 725 and 2,400 watts) before the speaker's output showed any signs of nonlinear distortion.

Comments

The Infinity 8k is a very good-looking speaker, and it sounded good, too. It had an open, clear sound quality with a noticeably more extended, better-dispersed, and more powerful top end (above 10,000 Hz) than our regular reference speakers, which are considerably more expensive. Its low bass performance was truly exceptional for any 12-inch woofer in an enclosure of this size.

The response of the 8k over most of the audio range can be divided into several segments, each of them very flat over an octave or more but differing from the level of its neighbors by 3 to 5 dB. This "shelved" response characteristic sometimes, depending on the program material, made one or another portion of the spectrum appear to be emphasized or diminished. But these occasional deviations from a flat response were by no means always objectionable.

If your amplifier can handle the low impedance of the Infinity 8k, it offers good value. It sounds a lot more expensive than it costs!

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