

# HOME THEATER

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HIGH END

## Test Bench

BY Mark Fleischmann

### KEF R300 Speaker System

**PRICE:** \$6,800 **AT A GLANCE:** Three-way with coaxial midrange/tweeter • Sub with dual side-firing drivers • Laser-like focus and well rounded

## Tangerine Dream



**K**ent, in the south of England, was best known for hop farming when Raymond Cooke left Wharfedale and founded KEF in 1961. The company was named after the industrial site on which it was founded: Kent Engineering & Foundry. KEF's numerous distinguished alumni include Laurie Fincham, who now develops next-generation audio technologies for THX, and Andrew Jones, who designs world-beating loudspeakers at a variety of price points for Pioneer and TAD. KEF has earned a reputation for making both great speaker systems and great speaker drivers, some of which were instrumental in the legendary BBC-designed LS3/5A, which KEF and other manufacturers have marketed in various forms. Roving through a New York cocktail party celebrating KEF's 50th anniversary last year, hobnobbing with the audio elite, I found that the drive units inspired as much nostalgia as the speakers in which they were used. (To read about KEF's history in more detail—and in a handsome coffee-table book, no less—see *KEF: 50 Years of Innovation in Sound* by Ken Kessler and Dr. Andrew Watson.)

KEF R300 Speaker System  
**PERFORMANCE** ★★★★★  
**BUILD QUALITY** ★★★★★  
**VALUE** ★★★★★

#### Muon, Blade, and Beyond

KEF's current product roster is worth a book in itself. If you're looking for a speaker about as tall as you are, KEF offers two towers that would dominate a large space: the curvaceously sexy yet monumental Muon, and the more slender Blade. The latter, billed as the world's first "single apparent source" speaker, has two sets of woofers set into the sides in opposing pairs plus a Uni-Q coaxial driver array in front. Uni-Q is the key to KEF's kingdom, so we'll return to that in a moment.

KEF's Home Theatre lines include the KHT Series, with its oval-shaped satellite/subwoofer sets; the T Series, a flat-panel solution; and the Fivetwo, which claims full 5.1 surround using two speakers and a sub. KEF covers the custom-installation field with the in-wall CI Series and the all-weather Outdoor Series. There's also a Universal Wireless System that offers quality sound transmission while operating in the 2.4-gigahertz band. But the heart of the KEF family is a

comprehensive selection of what the company calls Hi-fi speakers that can be configured for surround or stereo listening. These six lines, spanning a wide range of prices, break down into those with curved enclosures and those with simpler rectangular builds. The curvy ones are the Reference Series, XQ Series, and Classic Q Series. The boxier and more affordable speakers are the Q Series, C Series, and the subject of this review, the newly introduced R Series.

The newly introduced R Series (which will replace the XQ in KEF's lineup) is positioned as an affordable alternative to the pricier Reference Series, borrowing design features from both the Reference and the bleeding-edge Blade tower. Reviewed here are the R300 three-way monitor (\$1,800 per pair), R600c center (\$1,500), R800ds dipole surround (\$1,800 per pair), and R400b subwoofer (\$1,700 each), for a total system price of \$6,800. Also available is the smaller, two-way R100 monitor (\$1,200 per pair), whose 5.25-inch woofer would imply that it should mate well with the smaller R200c center (\$1,000). And there are three tower models: the R900 (\$2,500 each), R700

(\$1,800 each), and R500 (\$1,300 each), differentiated by their 8-, 6.5-, and 5.25-inch woofers.

While the R-Series enclosures may look like simple boxes, they are anything but simple on the inside. To minimize cabinet resonance, KEF uses what it calls "constrained layer damping," with damping panels of different materials and thicknesses positioned in strategic places. This may be part of what gives the speakers the clean sound I'll describe in more detail later. The designers also went out of their way to tame port turbulence using computational fluid dynamics. (KEF claims to be the first speaker maker to integrate computers into the design process back in the early 1970s.)

Like most of the R Series, the R300 monitor and R600c center have 1-inch tweeters and 5-inch midrange drivers built into KEF's classic Uni-Q array. That means the tweeter is mounted coaxially (or concentrically, if that makes it easier for you to visualize) into the center of the midrange driver. That in turn effectively allows the two drivers to act as a single point source for the frequencies they cover: 500 hertz to 2.8 kilohertz for the midrange, 2.8 kHz and up for the tweeter.

# KEF R300 SPEAKER SYSTEM

## SPECS

SPEAKER:	R300	R600C	R800DS
<b>TYPE:</b>	Three-way, monitor	Three-way, center	Three-way, dipole surround
<b>TWEETER (SIZE IN INCHES, TYPE):</b>	1, aluminum dome	1, aluminum dome	1, aluminum dome (2)
<b>MIDRANGE (SIZE IN INCHES, TYPE):</b>	5, aluminum cone	5, aluminum cone	
<b>WOOFER (SIZE IN INCHES, TYPE):</b>	6.5, aluminum cone	6.5, aluminum cone (2)	5.25, aluminum cone (2)
<b>NOMINAL IMPEDANCE (OHMS):</b>	8	8	8
<b>RECOMMENDED AMP POWER (WATTS):</b>	25-120	25-200	25-100
<b>AVAILABLE FINISHES:</b>	Rosewood, Walnut Veneer, Piano Black	Rosewood, Walnut Veneer, Piano Black	Rosewood, Walnut Veneer, Piano Black
<b>DIMENSIONS (W X H X D, INCHES):</b>	8.3 x 15.2 x 13.6	24.8 x 7.9 x 13.2	13.8 x 7.1 x 7.2
<b>WEIGHT (POUNDS):</b>	26.4	37.9	16.3
<b>PRICE:</b>	\$1,800/pair	\$1,500/each	\$1,800/pair

Coaxial arrays bring the risk of a cupped-hands coloration as the tweeter's output bounces off the midrange's cone. But KEF's long experience with Uni-Q, first introduced in 1988 and steadily refined ever since, has eliminated this potential side effect. "The key is getting the geometry of the tweeter dome and waveguide, formed by the cone, exactly correct," KEF research engineer Jack Oclée-Brown explains. "Then the performance of a tweeter positioned in a waveguide can actually be better than one mounted directly on a baffle. This was something we first discovered when working on the Uni-Q for the Muon."

Pull the magnetically attached grille off any R-Series baffle, and the speaker's quiet appearance takes on shiny metal accents in the aluminum trim rings surrounding the drivers and within the drivers themselves. The rear-vented tweeter—optimized to move like a piston over its entire working range—is adorned with a tangerine waveguide that visually resembles the blades of a jet turbine more than the segments of a piece of citrus. It's designed to control the tweeter's response and dispersion to more closely match the output of the

midrange driver, which is constructed with a die-cast aluminum basket. The aluminum-coned woofer is billed as "light, stiff, and strong." In practice, I found it to be nimble, allowing bass frequencies above the sub crossover to manifest as tightly controlled pitches, free of the obvious bloat that sometimes plagues speakers great and small.

In the R300, the 6.5-inch woofer sits below the coaxial midrange/tweeter array, while in the R600c, two 6.5-inch woofers flank the coaxial array. The midrange cone is an alloy of magnesium and aluminum, while the woofer cone is an aluminum/paper hybrid and the tweeter dome is pure aluminum. All are said to be similar to the drivers in the big, bad Blade.

The R800ds dipole surround has two Uni-Q arrays—each with a woofer and a tweeter—built onto either side of an enclosure that's trapezoid shaped when viewed from above. Note that the two woofers are 5.25 inches, not 5. This speaker is not a bipole/dipole: It's not switchable for bipole operation. It works only in

dipole mode, with the driver arrays moving out of phase with each other: When one set moves in, the other moves out. However, in an unusual twist, the two sets of drivers don't operate identically throughout the frequency spectrum. One woofer and tweeter array operates only above 300 Hz, while the other works down to the specified low-frequency limit of 90 Hz. The goal is to prevent the two out-of-phase woofers in close proximity from canceling bass frequencies, as might happen in a conventional dipole. Only one woofer produces bass up to the point where the dipole radiation pattern becomes effective. Then the two sets of drivers operate in classic dipole mode.

The R400b subwoofer, with its dramatic metal stripe running across the top and down the front, has two 9-inch drivers on either side of the enclosure—a design feature borrowed directly from the Blade tower. The opposing drivers both move outward or inward together, so that their vibrations cancel and don't transfer to the cabinet. KEF uses an acoustic suspension

enclosure—in other words, a sealed box—eliminating the port and any concomitant turbulence. While it's possible to design a great-sounding woofer that gets some of its output from a port, the sealed-box approach provides a more disciplined feel that, in my opinion, serves music better and makes the low-frequency effects of action movies a little less aggressive and vulgar. Each aluminum driver is propelled by a 250-watt, Class D amplifier, for a total output-power rating of 500 watts. KEF provides stereo RCA line-level inputs and plug-in speaker-level inputs. In addition to the usual volume knob, crossover knob, and phase switch, there's a three-setting bass boost (0, +6, +12 decibels) centered on 40 Hz. I was never less than satisfied with the zero setting.

KEF's distinctive approach to everything includes the trouble-shooting section of its manual, or in KEF-speak, the Fault Finding section. It takes the form of three columns labeled Problem, Action, and Cause. The columns contain graphics representing speakers, amplifiers, and cables—which are further decorated with icons that signify working, not working, switch cables, treble, midrange, bass, intermittent sound, and distorted sound. The master list of icons is captioned in 15 languages, but apart from that, the approach is primarily pictorial, and it saves many pages of multilingual duplication.

For this review, associated equipment included a Pioneer Elite VSX-53 A/V receiver, a Panasonic DMP-BD87 Blu-ray player, a Micro Seiki BL-51 turntable (a mint-condition vintage model making its *Home Theater* debut), an Onix OA 21s integrated amp operating as a



● The tweeter features a wave guide that's said to resemble the segments in a tangerine.

● The R Series speakers are available in Piano Black, Walnut, and the Rosewood finish shown here.

# HT Labs Measures

## KEF R300 SPEAKER SYSTEM

L/R Sensitivity:  
90 dB from 500 Hz to 2 kHz

Center Sensitivity:  
90 dB from 500 Hz to 2 kHz

Surround Sensitivity:  
85 dB from 500 Hz to 2 kHz

This graph shows the quasi-anechoic (employing close-miking of all woofers) frequency response of the R300 L/R (purple trace), R600c center channel (green trace), R800ds surround (red trace), and R400b subwoofer (blue trace). All passive loudspeakers were measured with grilles at a distance of 1 meter with a 2.83-volt input and scaled for display purposes. The R300's listening-window response (a five-point average of axial and +/-15-degree horizontal and vertical responses) measures +1.03/-3.07 decibels from 200 hertz to 10 kilohertz. The -3-dB point is at

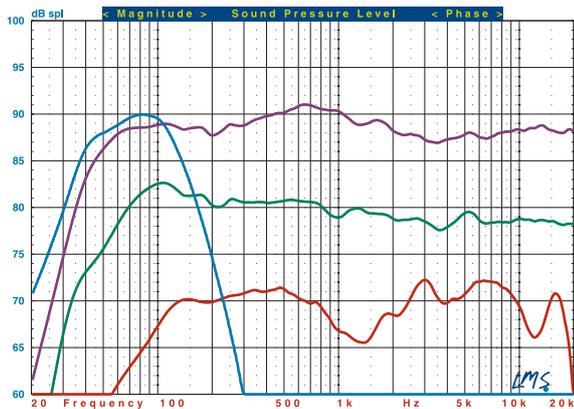
54 Hz, and the -6-dB point is at 42 Hz. Impedance reaches a minimum of 4.25 ohms at 158 Hz and a phase angle of -28.40 degrees at 4.7 kHz. The R600c's listening-window response measures +0.84/-2.49 dB from 200 Hz to 10 kHz. An average of axial and +/-15-degree horizontal responses measures +0.97/-2.12 dB from 200 Hz to 10 kHz. The -3-dB point is at 55 Hz, and the -6-dB point is at 44 Hz.

Visit our Website for a detailed explanation of our testing regimen, plus a list of our reference gear.



Impedance reaches a minimum of 4.04 ohms at 137 Hz and a phase angle of -31.95 degrees at 4.3 kHz. The R800ds's three-face averaged response measures +2.23/-4.49 dB from 200 Hz to 10 kHz. The -3-dB point is at 98 Hz, and the -6-dB point is at 77 Hz. Impedance reaches a minimum of 4.21 ohms at 347 Hz and a phase angle of -42.79 degrees at 96 Hz. The R400b's close-miked response, normalized to the level at 80 Hz, indicates that the lower -3-dB point is at 42 Hz and the -6-dB point is at 36 Hz. The upper -3-dB point is at 123 Hz with the Crossover control set to maximum and the EQ switch set to +6 dB.—MJP

## KEF R300 SPEAKER SYSTEM



phono preamp, and a Shure M97xE moving-magnet cartridge. All movie demos were Blu-ray Discs with DTS-HD Master Audio soundtracks. Music demos were primarily analog, with just enough digital to plant a foot in the present tense.

### Actorial Enunciation

I interrogated these speakers at unusual length, looking for

positive and negative traits that I might translate into words. The list of positives was long and the list of negatives almost blank. My only reservation was the diffuseness of surround effects, but that was more an inherent characteristic of dipole surrounds than a performance flaw. My preference for surround monopoles (that is, conventional speakers) is becoming more



## SPECS

**R400b SUBWOOFER**  
**ENCLOSURE TYPE:** Sealed **WOOFER (SIZE IN INCHES, TYPE):** 9, aluminum **RATED POWER (WATTS):** 500 peak, Class D **CONNECTIONS:** Line-level stereo input, RCA/speaker-level input, Terminal Block Plug **CROSSOVER BYPASS:** No **AVAILABLE FINISHES:** Piano Black **DIMENSIONS (W X H X D, INCHES):** 13 x 14.4 x 13.8 **WEIGHT (POUNDS):** 47.4 **PRICE:** \$1,700

pronounced with the passage of time. Aside from that, these speakers delivered everything I hope for when I sit down to listen to music or movies.

One of those things was a tonal balance I found free from gross flaws and subjectively pleasing. Whether it's objectively truthful, I'll leave that to the measurements. There were individual pleasures to be had in every band of the frequency spectrum, from palpably physical midbass to top-end air. And the R400b sub delivered the lower bass in just the kind of subtle, sealed-box fashion I prefer.

But the part that was most refreshing—like a pint of good bitter made with aromatic Kentish hops—was the clean and beautifully proportioned midrange, which made voices in particular communicate at a Shakespearean level of achievement. Both the actor (to continue the metaphor) and the soundstage on which he played were focused to a fare-thee-well, a strength of the coaxial midrange-tweeter array. Objects were physically solid and had

discernible—but not cartoonishly overdrawn—boundaries within a well-depicted space. This was as true in 2.0 and 2.1 channels as in 5.1, although the point-ones were of course better filled out at the bottom end. My comfort level was high, and my emotional pleasure receptors were comprehensively stimulated.

One thing that distinguishes a great speaker is that it changes the way you listen—for the better. When I hit the play button on *Dream House*, a haunted-homeowner tale starring Daniel Craig, avoiding discomfort never became a preoccupation. Instead, I concentrated on finding the right balance of dialogue, effects, music, and surround envelopment. Rather than start high and push the volume down, I started low, because the coaxial array made enunciation so unambiguous that I had no trouble catching dialogue at levels probably lower

KEF R400b Subwoofer  
**PERFORMANCE** ★★★★★  
**FEATURES** ★★★★★  
**BUILD QUALITY** ★★★★★  
**VALUE** ★★★★★





• The R800ds has a Uni-Q array built into each side of its trapezoid-shaped enclosure.

than the mixer intended. When it became apparent that left/right and front/back effects were elusive, and the soundfield was too front loaded, I pushed up the master volume to achieve more palpable dynamics, more detail, and more sense of space; basically, I wanted more of everything. Music was so vivid that I was tempted to pause the movie and enjoy a symphony or six (and when I eventually did, the system did not disappoint).

I continued to ride the Daniel Craig train with the American remake of *The Girl With the Dragon Tattoo*. The cover version of Led Zeppelin's "Immigrant Song" grabbed me by the throat. I continued dialing in surround effects until howling winds really howled in all five channels. Now I could hear a pin drop—or could have, if someone had dropped one. What I did hear was heightened detail in indoor scenes (the gentle creak and rustle of clothing) and heightened ambience in outdoor ones (nonviolent in-car hum and the gentle movement of air) as the R300, R600c, and R800ds combined to produce an involving soundfield. When the drama hit its peaks, I was on the edge of my seat and in a different world—ears comfortable but emotions tense. If this movie

had lasted another 10 minutes, tattoos and piercings might have spontaneously broken out on my body.

*Recoil*—with former wrestler Steve Austin as a vigilante ex-cop who takes on a gang of equally bulky leather-jacketed thugs—is the kind of high-energy action movie that flattens inner-ear hairs at a dozen paces. In other circumstances, I might have used a low-volume mode to take the edge off. (Indeed, the Pioneer's THX Loudness Plus mode did just that for a few minutes.) But because the speakers rendered dialogue so intelligibly, I could cruise at a low volume and catch everything. The sub's carefully measured bass made low-frequency effects not only bearable, but pleasurable. Again, I eagerly anticipated moving on to music.

### Dancing Diamond

I listened to a lot of analog and two-channel material while the R Series was in town—fittingly, because KEF's history starts in the vinyl era, and the company began its upward trajectory when the average listener plowed black grooves with a dancing diamond.

The Nick Drake compilation *Time of No Reply* includes a combination of studio tracks and home demos. Concentrating on

the former (impeccably engineered by John Wood), I marveled at how the R300 defined the dark-toned, mellifluous voice as a distinct object in discernible space. Drake's voice had a depth that was well served but not exaggerated by the woofers and sub drivers. The sub's contribution was so subtle that I had to feel the drivers with my fingers to make sure they were operating. The voice was also rich in overtones and breath, none of which was missed by the scrupulous midrange/tweeter array. The rhythm of Drake's acoustic guitar was snappy, as the woofers did an excellent job of delivering Drake's finger-picking pulse. The guitar's harmonic signature rang true.

I played through all six Vaughan Williams symphonies as conducted by Sir Adrian Boult with the London Philharmonic and the New Philharmonia on a series of Angel LPs. By the end of the cycle, I had no doubt that the speaker could produce a convincing string sound in a half-dozen distinctive ways. You may be able to spot the woofer-mid and mid-tweeter crossovers in laboratory measurements, but I couldn't spot them in the orchestra.

The defining demo was the set of *Piano Etudes by Bartók, Busoni, Messiaen, [and] Stravinsky* that Paul Jacobs recorded for Nonesuch. As reproduced by the R Series, the LP was timbrally, harmonically, and rhythmically ideal: as close to having a Baldwin grand in my listening room as I've ever heard. The sub and speakers dovetailed beautifully at the crossover, allowing slick transitions between the pianist's left and right hands as he roved up and down the keyboard. I'm not kidding when I say this is something I'll remember all my life.

This seemed to be the right time to play *50 Years of Innovations in Sound*, the CD compilation KEF produced for its 50th anniversary last year. It's a refreshingly non-audiophile selection of songs—but even the most finicky listener would love

Astrud Gilberto's honeyed vocal on the famous version of "The Girl from Ipanema" recorded with João Gilberto and Stan Getz. Secret Garden's contemporary gospel classic "You Raise Me Up" was remarkable for both the warmth of its solo violin and the holographic vividness of the choral vocals—further triumphs for the midrange/tweeter array. The speakers were capable of making astonishingly tiny distinctions: Tackling the piano part on Nina Simone's "Love Me or Leave Me," they depicted each hammered note as a group of steel strings. I noted the distinction between these discrete microtimbres and the more unified sound of the piano in the Paul Jacobs selection.

### Conclusion

It's not always safe to assume that a company with a grand reputation will deliver on it with each and every product. At the same time, it'll probably surprise no one that the R Series is worthy of its audiophile lineage. The series is beyond excellent, moving aggressively into I-could-live-this territory. I'm struck by how much this system excelled in the human dimension—that is, the reproduction of speaking and singing voices, although it also handled pretty much all instruments and effects with aplomb. And unlike a lot of audiophile speakers, these are no challenge for a decent-quality AVR to run at a variety of levels, from coherent whisper to rambunctiously rockin'. These are simply extraordinary loudspeakers.

(One final word: If you can't find KEF products, or a particular one, for sale close to home, you can order them directly from [kefdirect.com](http://kefdirect.com).)

\* Audio editor Mark Fleischmann is also the author of the annually updated book *Practical Home Theater* ([quietriverpress.com](http://quietriverpress.com)).

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