Krix

Epicentrix Centre-Channel Speaker

When purchasing a home theatre speaker system, few consumers realise that the centre-channel speaker is the most critical and most important speaker in the entire set-up. The centre-channel is much, much more important, in fact, than the (usually much larger!) front-left and front-right speakers.

Why? Because when you're watching a movie, or listening to any type of video with a multi-channel soundtrack, it is actually the centre-channel that's doing the lioness' share of the work, not the front-channel speakers or the surround channels. Most of the time the centre-channel speaker will be reproducing ALL the dialogue, together with many of the sound effects—at least those effects whose frequency is high enough to be within the centre-channel's range. The problem with this is that almost all centre-channel speakers are too small to deliver realistic sound levels, particularly in the lower midrange regions, and mostly too small to be a proper acoustic match for the front left and right channels.

By 'too small' I mean physically too small, and here I'm referring to both the physical size of the cabinet, and that of the drivers the cabinet contains. The physical size of the cabinet constrains not only the bass response (due to the inadequate internal volume) but also the dispersion of the drivers, because the front baffle does not have sufficient area to position the drivers for best off-axis performance, which means that with most centre-channel speakers, the only person who'll benefit from their already limited performance is whoever's sitting smack-bang in front of the screen.

At this point, you're probably asking why, if all of the above is true, the great majority of centre-channel speakers are so small? The single-word answer is breath-takingly simple, but at the same time insufferably tragic. Marketing. That's right. Speaker manufacturers build small centre-channel speakers because their market researchers tell them that the great majority of consumers won't buy large centre-channel speakers. The closest most get to a workable solution is to down-size their front-channel speakers to be the same size as the centre-channel. Properly-handled—and always provided the centre-channel isn't *too* small—this can be a practical solution, but the smaller front left and front-right speakers then introduce practical difficulties of their own, particularly if you also use your system to listen to stereo CDs.

As you have probably already gathered, there are still a few loudspeaker manufacturers in the world that are not prepared to sacrifice sound quality simply in order to increase sales. That Krix is one of those select few is evidenced by its Epicentrix centre speaker, which is 900mm wide, 360mm deep and 218mm high and tips the scales at a back-breaking 24kg.

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Krix Epicentrix Speaker

Brand: Krix
Model: Epicentrix
Category: Centre-Channel Speaker
RRP: $1,900
Warranty: Five Years
Distributor: Krix Loudspeakers Pty Ltd
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The Equipment

Rather than being a three-driver/two-way design, the Epicentrix is a full six-driver, three-way design. And instead of the usual sealed enclosure, which restricts bass response, the enclosure is a bass reflex design, with front-firing ports.

Four of the six drivers are identical and operate in tandem to ensure that the Epicentrix can deliver high levels of bass, particularly at very low frequencies. Although the driver sitting immediately below the tweeter looks externally identical to the four bass drivers, it's actually a dedicated midrange driver with a different magnetic circuit. Because Krix is using only a single midrange driver, there are no interference effects for off-axis listeners, ensuring greatly enhanced sound quality for those listeners. Note also that Krix has squeezed the acoustic centre of the midrange driver as close as possible to that of the tweeter by actually physically overlapping the two drivers. This ensures correct spatial imaging. Krix has also provided the midrange driver with its own sealed sub-enclosure. This ensures firstly that it cannot be affected by the rear energy from the bass drivers, but secondly, and perhaps more importantly, it allows Krix to use the volume of the cavity to optimise the low-frequency performance of the midrange driver, which has significant implications at the lower crossover frequency.

The 26mm tweeter is a very high-spec unit usually reserved for use only on high-end two-channel speakers. Regular readers with keen eyesight might already have recognised it from the product photo, due to its unique dual concentric diaphragm and central waveguide, as a Vifa XT25, made in Denmark. There are several lower-spec versions of this design available, but Krix is using the best, which is rated out to 40kHz. It assumes its duties at around 2.5kHz, which is high enough that it is able to handle plenty of power.

The bass drivers (and mid), which are made specially for Krix by Peerless in Denmark, all have coated paper cones, rubber roll suspension surrounds and pressed steel chassis. The paper cone means minimum mass, for a nice, fast action. The drivers have a diameter (overall) of 152mm, but the important Thiele/Small diameter is 106mm, for a piston area (SD) of 88cm². However, because there are four bass drivers, the SD of the speaker is 352cm² which means that if Krix had used just a single bass driver, its diameter would be about 210mm. (So you can see why you need four bass drivers!). The bass drivers cross to the midrange at 340Hz.

It's very important to note that none of the drivers in the Epicentrix are shielded, so you cannot use the speaker close to an ordinary television set (one with a cathode ray tube, or CRT), because the powerful magnetic fields would result in severe picture distortion due to them bending the electron beam. However, the speakers' magnetic fields do not affect plasma or LCD screens (or, of course, an image from a projector!). When we queried Krix on the lack of magnetic shielding, the company replied that it thought it unlikely that anyone likely to consider purchasing a centre-channel speaker as 'serious' as an Epicentrix would own a CRT TV. I'd have to agree.

Speaking of plasma and LCD, I found when it came time to install the Epicentrix that in some ways, its size is a blessing, because in fact it's large enough—and more than strong enough!—to easily support even the largest LCD or plasma screen. And if your projector screen is acoustically transparent, you won't even see the Epicentrix.

Although this review was of the Epicentrix, Krix kindly supplied a pair of its Neophonix speakers as well, because this is the model with which the Epicentrix is the closest timbral match. The Neophonix are large speakers as well, so at least the 'scale' of all the front-channel speakers is the same. First-up I fired up some concert footage, and despite the soundtrack being only fairly ordinary DTS 5.1, I was completely floored by the front-channel sound: and not just by its out-and-out quality, but also by the seamless way sounds shifted across the front sound-stage. So seamless that I never had a sense of there being a transition at all: images were just precisely placed, and that was that.

But I was also floored by the sound of the Epicentrix itself, which was so rich and powerful that on occasion I wondered if I really needed to have the Neuphonix there at all: a question that answered itself whenever on-screen sounds moved to the left or right! That said, it's not as silly as it sounds, because if you mainly watch conventional movies, it's the Epicentrix you'll be hearing most of the time, and not your left and right-channel speakers. However, this certainly won't be true if you watch concert footage on DVD, or musicals, and of course if you use your home theatre system as your main music system, the left and right channel speakers are indispensable.

Yet the Epicentrix had other delights in store. Unlike almost every other centre-channel I've ever auditioned, the Epicentrix' sound remained excitingly dynamic and wide-range no matter how the movie sound engineers panned it across the front sound-stage. Then there was the superb off-axis performance. When I shifted to an extreme off-axis viewing (listening) position, I found that not only was the location of sound images still correct, so you could hear that one actor was to the left (or right) of another actor, as well as see it, but that the tonal balance was almost exactly the same off-axis as it was when sitting directly in front. Yes, there was a very slight diminution of the very highest frequencies, but I couldn't hear any change in the reproduction of voices, even of soprano voices (which I checked

by playing the only opera DVD I own). Across the midrange, the sound was smooth and balanced.

Conclusion

If you're a believer in the old—and very true!—adage that 'the proof is in the pudding' you're going to love Krix' Epicentrix, because its performance is so far ahead of almost any other centre-channel I can bring to mind that when it comes to doing an A–B comparison, you really will hear that the difference is 'chalk and cheese.' Just ask your nearest stockist to play one of his demo movies first with any other centre-channel and then again with the Epicentrix. With the Epicentrix wired in, you'll hear the Dolby Digital soundtrack leap out, loud and dynamic, and you'll realise that you're in for the finest movie sound experience of your life. The quality of the sound should be more than sufficient to outweigh any fears you may have about the size of the Epicentrix, but if you're still wavering, I'd suggest checking out what the Krix looks like when it's doubling as a stand for a large flat-screen, and also remind you that because both reflex ports are on the front baffle, it would be easy to build the Epicentrix into a cabinet or wall unit, should you wish. Personally, I have to take my hat off to Krix for doing what's right, and I can only hope that other manufacturers follow by example.

LAB REPORT

Readers interested in a full technical appraisal of the performance of the Krix Epicentrix should continue on and read the LABORATORY REPORT published on the following pages. All readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

Test Results

Newport Test Labs measured the frequency response of the Krix Epicentrix first with pink noise (*Graph 1*) and then with a variety of other stimuli. As you can see, the response with pink noise was excellent, falling largely within a 2.5dB envelope between 100Hz and 10kHz. You can see that the 'largely' qualification derives from very minor excursions outside the envelope, comprising a dip in response centred at 600Hz and two 'bumps' at 150Hz and 3.5kHz, plus the slight roll-off in the high-frequency response that sees the trace drop just below the envelope at 10kHz. If we take these excursions into account, the response is still startlingly good at 100Hz to 10kHz ±1.5dB. And by 'startlingly good' I don't mean for a centre-channel speaker, but for any loudspeaker. You can see that broadly-speaking, there is a slight bass prominence around 150Hz and then another 'prominence' in the treble above 1kHz. I'd expect these to very slightly tinge the tonal balance, but just barely. The bass rolls off fairly rapidly below 100Hz to be 5dB down at 55Hz. This is more than sufficient, since a centre-channel will rarely be called upon to reproduce low bass, since this would in a normal home theatre system be allocated to the subwoofer. The high-frequency roll-off is slight—4dB down at 20kHz—but also slightly exaggerated due to the pink noise signal's heating effect on the tweeter. Note that the curious appearance of the trace is because *Newport Test Labs* has overlaid two different traces on the same graph. The 'jagged' trace is the raw response acquired from the microphone. The smoother trace is exactly the same response, but after being passed through a third-octave filter.

The second graph in the series shows an expanded view of the high-frequency response of the Krix Epicentrix, measured this time using a gated sine signal. This test signal does not heat up the tweeter, so you get a better depiction of the true high-frequency response you'd expect when listening to music (or a movie). This test signal also shows how the speaker would perform in an anechoic environment, because it effectively removes the test environment's effect on the trace. Regrettably, it's possible to use this type of test only at higher frequencies, hence the fact that the graph starts at 700Hz. As you can see, the response is exceedingly flat, extending from 700Hz to 20kHz ±2.5dB except for one tiny exception at 3.8kHz. Re-positioning the microphone might well have reduced the level of this blip, but it's of no real consequence, because simply expanding the reporting range to the industry-standard ±3dB would include it. Note that with the gated sine test signal, the response above 10kHz dips only 2.5dB to 15kHz, then rises again to reference at 20kHz. Note also that the peaks and dips visible in the response are because *Newport Test Labs* is one of the few test authorities that measures and prints 'raw' unfiltered traces using hundreds of individual measurements per trace. Most published graphs are 'smooth' only because they've been post-filtered or prepared using only a few data points and a 'fill-the-dots' program to interpolate the response between the points (or both).

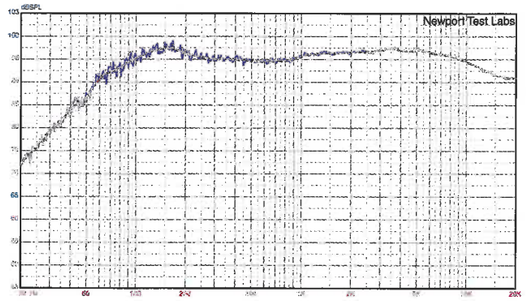
Graph 3 shows the low-frequency performance of the Krix Epicentrix system between 20Hz and 400Hz. These traces were acquired using the 'near-field' technique that provides accurate data only at low frequencies, and becomes increasing inaccurate with increasing frequency. As you can see the bass drivers' response is very, very flat between 100Hz and 200Hz, and within ±3dB between 70Hz and 320Hz. The slope of the upper roll-off is dictated by the crossover, to allow best integration with the midrange driver. The low-frequency roll-off is typical for a bass reflex enclosure, with the minima at 54Hz. You can see that the port's maximum output is almost an exact match, with a fairly broad peak between 45–65Hz, so that it takes over the bass duties when the woofer is unable to. Note that higher up on the port's trace there is no evidence of higher frequencies 'sneaking' though the port's opening. This shows the bass drivers' response is properly filtered, and that the port is isolated from the other drivers in the cabinet. Excellent design.

The fourth graph is visually something of a 'hodge-podge' but if you concentrate your attention on the 95dBSPL line second from the top and ignore everything underneath, it should be clear. What *Newport Test Labs* has done with this graph is overlay the nearfield traces of the port, bass driver and midrange driver with the gated response of the tweeter. Note that all the traces have simply been 'pasted' onto this graph by software: there has been no 'processing' as such. This graph shows the bass driver rolling off to be just on 3dB down at 300Hz, which perfectly matches the midrange driver, which is also 3dB down at 300Hz. So, when the outputs of the two drivers sum acoustically (as they do in real life), the 'dip' would disappear, and the response between 200Hz and 400Hz would be perfectly flat (see *Graph 5*). (For those who are wondering, the reason some of the trace stop 'mid-graph' as it were, is because the original measurement was stopped at this frequency. The jagged lines in the tweeter trace that cut in below 650Hz are due to 'gating failure' in the test set-up, as explained earlier.)

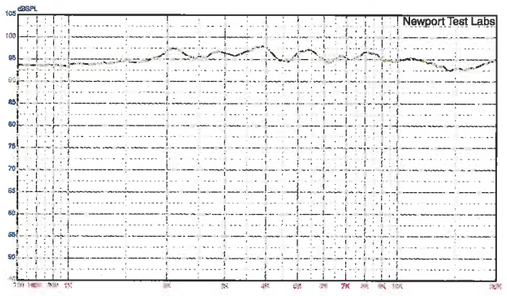
In *Graph 5*, *Newport Test Labs* has taken the raw data presented in *Graph 4* and post-processed it by summing the woofer and midrange nearfield responses (replicating acoustic summing) and then splicing in the tweeter's far-field response (splice at 2kHz) to show the 'calculated' overall frequency response. The response is shown with and without the calculated contribution from the bass reflex ports. You can see the higher of the traces (the response including the port) essentially extends the low-frequency response down to 62Hz (from 75Hz) and adds around 5dB of extra bass energy between 20Hz and 100Hz.

The final graph (*Graph 6*) shows the impedance and phase angle of the Krix Epicentrix system, which shows that Krix's crossover is doing quite a bit of work. Although the impedance drops to 4 ohms at 6kHz and stays there, and drops momentarily to 4.5 ohms at 50Hz and 100Hz, I'd essentially class the Epicentrix as 'nominally' 6 ohms. Neither the impedance nor the phase angles will present any difficulties whatsoever for any well-designed amplifier, but it suggests best performance will be obtained if the Epicentrix is used with an AV receiver that has a good power rating into 4 ohm loads.

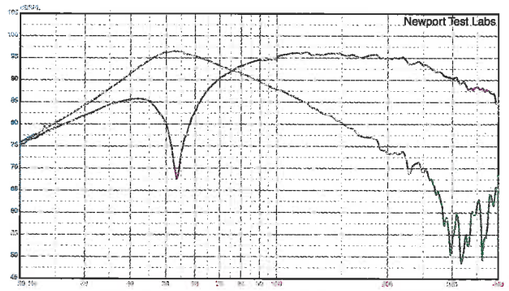
Steve Holding



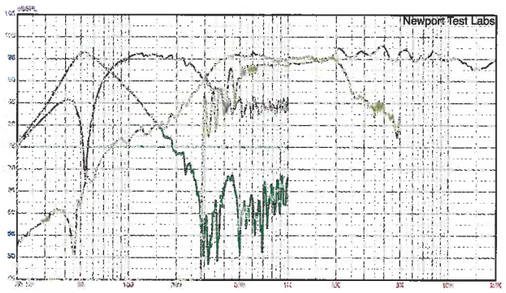
Graph 1: Pink noise frequency responses (smoothed third-octave trace overlaid over raw unsmoothed trace) at 2.83v at 3.0 metres. Krix Epicentrix Centre-Channel.



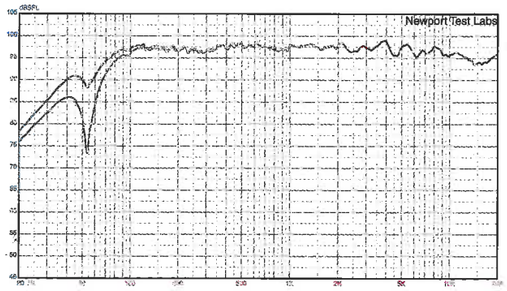
Graph 2: Expanded view of high frequency response (above 700Hz) using gated sine test signal measured at watt at 1.5 metres, trace unsmoothed. Krix Epicentrix Centre-channel.



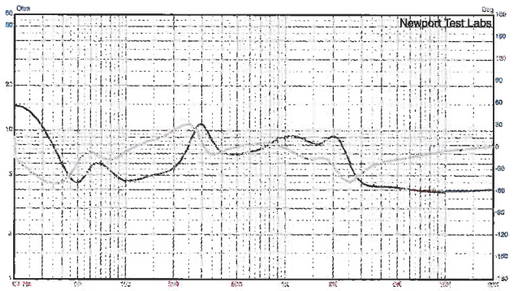
Graph 3: Nearfield frequency response of bass drivers and reflex ports. (Note data for ports has not been re-scaled to compensate for differences in radiating area.) Krix Epicentrix Centre.



Graph 4: Composite response showing nearfield responses for ports, woofers, and midrange, plus gated response of tweeter (ignore data below 700Hz). Krix Epicentrix Centre-channel.



Graph 5: Computed frequency response after summing nearfield woofer and midrange traces then adjusting for level and splicing to farfield tweeter response, with and without calculated contribution from bass reflex ports. Krix Epicentric Centre-channel.



Graph 6: Impedance vs frequency (black trace) plus phase (pink trace). Krix Epicentrix