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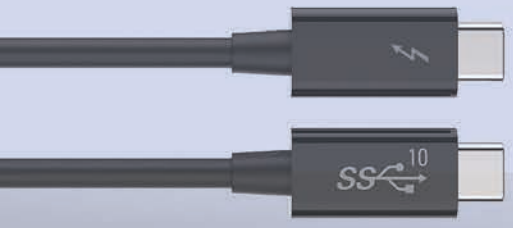
Kii Audio Three

The Next Step in Loudspeaker Evolution

By Jan Didden & Paul Wilke



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Kii Three

The Next Step in Loudspeaker Evolution

Photo 1: Compact, modern, and classic, the Kii Three will find a place in any interior.

In this review we are going to find out if Kii Audio's Kii Three is really the most advanced loudspeaker on the market today, as is claimed by the designer. So, our focus will be on the technical aspects of the loudspeaker first and foremost.

By
Jan Didden and Paul Wilke
(The Netherlands)

Editor's Note: No loudspeaker review can be complete without listening impressions and, therefore, there will be those as well. Jan Didden has lived with the Kii Three for a week, and will give his listening impressions at the end of this review. Paul Wilke has done the technical write up. The measurement session in the anechoic chamber of the Technical University in Delft was a joint mission.

Manufacturer Specifications

- Compact DSP controlled monitor speaker 4 × 6.5″ woofer, 1× 5″ midrange, 1″ waveguided tweeter, all individually driven
- Amplification: 6× 250 W full-custom Ncore (power consumption in standby < 0.5 W)
- Active Wave Focusing crossover filter frequency response: 20 Hz to 25 kHz ±0.5 dB
- Phase response: Minimum (best possible time coherence)
- Long term SPL: 105 dB
- Short-term SPL: 110 dB
- Peak SPL: 115 dB;
- Controlled Directivity: 4.8 dB (80 Hz to 1 kHz, slowly rising thereafter)
- Size: 20 cm × 40cm × 40 cm (8″W × 16″H × 16″D) Weight: 15 kg (33 lbs);
- Inputs: Analogue, AES/EBU
- Selectable correction for free-standing, near wall, or in corner
- Latency: normal mode = approx. 90 ms; low latency mode = 1030 µs (1.03 ms)
- Suggested retail price: €10,000/pair (approximately $10,765). Matching stands €1,500/pair (approximately $1,615).

The Kii Three (see **Photo 1**) is the latest design by Bruno Putzeys, CTO, Kii Audio GmbH and perhaps the leading audio designer of this age. To make the Kii Three design even more unique, he teamed up with a group of experts that included DSP specialist Bart van der Laan (see **Photo 2**).

By means of introduction to those who are not yet familiar with this name: Putzeys is known as the designer of the nCore series of Class-D amplifiers, which are leading in their field and rival the sound quality of even the best Class-A amplifiers, at a fraction of their power consumption and weight. Another of his revolutionary designs is a digital-to-analog converter (DAC), the distortion of which is unmeasurable with present day technology. So, what happens if this audio genius wraps his brain around loudspeaker design in an all-out way?

Putzeys has designed other loudspeakers (e.g., the Grimm LS1, which is excellent, but still follows a topology known from other loudspeaker manufacturers). Speakers such as the LS1 with DSP corrected frequency curves are well accepted, certainly

Photo 2: The Kii Audio team: Bruno Putzeys, CTO, Bart van der Laan, COO, Wim Weijers, Production & QC Manager, Chris Reichardt, CEO, and Thomas Jansen, Product Manager.

in the professional market for studio equipment. The Kii Three, however, is a completely different kind of loudspeaker. It is so different that it may be the beginning of an entirely new class of loudspeakers: Those that actively control directivity at the low end.

The Kii Three and Its Technology

The Kii Three is not a large speaker, measuring 20 cm × 40 cm × 40 cm (8″ × 16″ × 16″). At 15 kg (approximately 33 lbs), it is not exactly a featherweight but still relatively easy to handle. With the small side facing the room, it hardly looks larger than a book shelf monitor (see **Photo 3**). The Kii Three is also available in a variety of colors.

It is little short of amazing what has been packed into this small rectangular case. To begin with the amplifiers: There are six of them, each a solid 250 W strong nCore Class-D amplifier, customized from the series Putzeys designed for Hypex. Each amplifier feeds its own loudspeaker, two woofers, two mid woofers, one midrange, and a tweeter with a diffraction wave guide. All this is driven by four channels coming from a complicated DSP processing unit, which is at the heart of some of this loudspeaker's novel characteristics. As befits a revolutionary loudspeaker, almost none of these components are run of the mill. Everything is at least somewhat different in more respects than can be mentioned in this article, so we have only provided a brief sketch of some of the main features. However, the Kii Three's entire manual has been included in the Supplementary Material found on the audioXpress website (www.audioXpress.com)

Enclosure

The case consists of two identical halves of molded high-density polyurethane, joined together in the middle through an impressive labyrinth of grooves and notches. On both sides, heatsinks are mounted to which the amplifiers are connected. The power supply is housed below the top plate, which also functions as a heatsink. The connectors are housed in a recessed space on the rear, so that plugs do not stick out. The bass and mid bass drivers are not protected by a grill, but the tweeter is, and the mid driver is covered by a flexible cloth front. Finished in a glossy paint job, the enclosure is modern and classy. The polyurethane case appears to be well damped.

Connections and Controls

The Kii Three has an analog XLR input so it can be connected to any balanced analog source (see **Photo 4**). It also has a digital AES input, using the same XLR connector. In this case, only one digital stereo connection is made between one speaker and the source, and the two speakers are connected with standard UTP CAT5 cable. Kii Audio is working on a control unit so that both speakers can be driven through CAT5 cable.

In a way, despite all its groundbreaking modernity, the Kii Three follows a well-established tradition by Putzeys's first employer, Philips. This company produced active speakers between 1970 and 1989 with motional feedback (MFB) technology, but this was not the only revolutionary feature at the time. What Philips realized then, and it is good to see this same idea return in the Kii Three, is that a speaker can be perfect in an anechoic room, but can still sound lousy in a real environment. The reason is that all rooms are different, and "one size fits all" is just impossible.

Real listening rooms have varying degrees of absorption, different amounts of room gain at lower

Photo 3: The Kii Three is a six-way design, with the front, the side, and the rear working together to throw the sound in one direction only without relying on a baffle. A tweeter with integrated diffraction waveguide and a 4″ mid-driver hidden by a black cloth grill in the front, with four woofers with a convex aluminum surface set in an inverted surround.

Photo 4: Kii Three's rear connection and adjustment panel.

frequencies, and on top of it all, the speaker placement can strongly impact the frequency response as measured in the room. Therefore, to match a speaker to a room and get the optimum result, some form of tone control ought to be applied.

The Kii Three, the Philips of old, and an increasing number of active speaker brands follow the philosophy that these controls ought to be part of the loudspeaker proper. The authors of this article agree with this point of view. The simple reason for this is that even the two speakers in a stereo setup may, through their different placements in the room, require different amounts of correction. Since preamplifiers, which allow split tone controls for both channels, are rare, the speaker itself is the right place to make such corrections.

The Kii Three has two kinds of control to match the loudspeakers to the room. The first one, the so called "boundary" dial, is specifically geared toward getting the right amount of bass in the room. It ranges from "free space," where the frequency response would measure flat in an anechoic room, to "corner," for situations where the room provides maximum bass reinforcement. The second control is a "contour" dial that provides a different setting on the low end, but also enables the user to increase or decrease the higher frequencies. For readers familiar with high-end Tannoy loudspeakers (e.g., the K3838), it will be no surprise that such controls on a loudspeaker can be very useful. Thus, the Kii Three can be adjusted to rooms with different amounts of absorption.

Next to the XLR input connector is a diminutive small button with large impact. With it, the latency can be switched from high (90 ms) to low (1.03 ms). Now, this requires a bit of explanation. All DSP processing takes time. So, a loudspeaker with a DSP onboard always plays its input with some delay, and the more processing required, the more the delay. For most uses, a 90 ms delay is inconsequential (e.g., while listening to some recorded music). However, for some uses (e.g., live monitoring or using loudspeakers in an AV-setting), latency is unwanted and can even ruin the intended use. The small push button leaves the choice up to the user.

In the low-latency mode, the Kii Three is a perfectly fine speaker, with all the bells and whistles such as actively controlled directivity on the low end. But, it does display the 360° phase shift per driver that is innate to LR4 filtering. To roll back this phase shift, a so-called FIR-filter is required. And this is what that little push button does. You can go from minimal phase and a 1.2 ms latency to linear phase with 90 ms with a push of this button. It switches the FIR filtering functionality, which provides for the phase correction, in or out of the chain.

Amplifiers

The nCores have gained enormous popularity with audio enthusiasts and professionals, so what could possibly be made better? According to Putzeys, distortion of loudspeaker drivers can be optimized by varying the amplifier's output resistance for different frequency ranges. This requires an amplifier that is specifically tuned to the parameters of the loudspeaker driver. An amplifier like this can never be a commercial good-for-all piece of equipment. They have to be tailor made, and this is what was done for the Kii Three.

With 6× 250 W of amplifying power, headroom is never a problem. But they do generate a bit of heat. With Class-D amplifiers dissipating about 2% of their maximum output on standby, the Kii Three's transform about 30 W into heat on standby. This is enough for the enclosure sides to become warm to the touch.

Loudspeaker Drivers

The loudspeaker drivers in the Kii Three use conventional ferrite magnets, which is not a bad thing given that loudspeakers need a certain weight to reduce the effect of the reaction forces caused by

About the Authors

Jan Didden has written for *audioXpress* since the 1970s. He is retired following a career with the Netherlands Air Force and NATO. He worked in logistics, air defense, and information technology. Retirement has provided him with the time to finish all the audio projects that have piled up for decades. He writes about them on his website linearaudio.nl. Jan is also the publisher and managing editor of the twice-yearly bookzine *Linear Audio*.

Paul Wilke has been involved with electronics and loudspeaker development for more than four decades and has been active mainly behind the screens, which are now slowly opening.

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Photo 5: The Kii Three packs 1,500 W per speaker divided across the six drivers into a compact enclosure.

the accelerating and decelerating moving parts of the drivers.

For the highs, Kii Three appears to have the same tweeter as the one used in the original Grimm LS1. What is special about this design is the diffraction waveguide in which it is mounted. Normally, waveguides are used in loudspeakers to match the directivity of the tweeter to that of the mid-range in the crossover region. In other words, the waveguide's main effect is on the lower end of the tweeter spectrum.

With the Kii Three tweeter, this effect is there as well, but the waveguide's special shape also has an effect on the high end of the tweeter spectrum, from 7 kHz to 20 kHz. Normally, tweeters start to "beam" at these higher frequencies. The Kii Three's diffraction waveguide has two sharp discontinuities, which should cause the higher frequencies to spread out more. We will see in the measurement section if they really do.

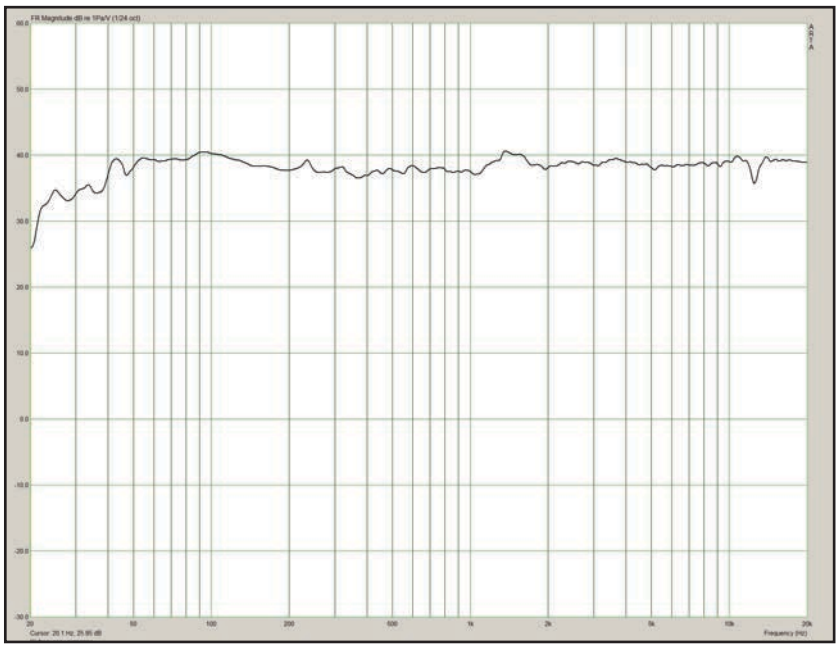

Figure 1: The Kii Three frequency response is flat between 30 Hz and 20 kHz.

The mid-driver is hidden from view by a black cloth grill, so little can be said about it here, except that it is a 10-cm (4") driver with a conventional cone-dust cap construction. The four woofers are a unique design, but which make a lot of sense in a compact, high-power design such as this. From the outside, all you can see is a black convex aluminum surface set in an inverted surround.

Putzeys explained that the voice coil is connected through an aluminum spreader to the cone. This is good for thermal management. Heat from the voice coil can travel to the cone for dissipation. Heat produced inside the case by the power supply and amplifiers can escape through the thin aluminum barriers created by the cones between the inside and outside air—a very clever solution.

Protection: How to Prevent Melt Down

Putzeys mentioned that the Kii Three's switched power supply is capable of delivering 1,250 W, (1.5 hp for those more accustomed to ancient measurements). Since small drivers such as those used in the Kii Three have efficiencies of only a fraction of 1%, almost all of the electrical energy entering the Kii Three will be turned into heat. It is obvious that the small heatsinks, even with the clever thermal solution incorporated in the bass drivers, would never be able to transfer this much energy to the outside world on a continuous basis.

The 1,250 W is definitively the peak performance, which should be fine with normal use (see **Photo 5**). In music, the peaks are often more than 10 times higher than the average power level. This so-called "crest factor" is not always that high. Certainly modern music may be very compressed and have such low crest factors that the Kii Three needs protection from melt down. Protection against overheating and over current is nothing new, and different methods have been applied. In their roughest form, these circuits just shut off the loudspeaker until, for example, the temperature has sufficiently decreased. More sophisticated systems do not completely switch off, instead they limit the maximum signal level allowed, compressing or clipping the music signal. This tends to be rather audible, in general.

Welcome to Putzeys's mind. The protection scheme of the Kii Three works more in the background than the systems mentioned earlier. We will spare you the

technical details, but what it amounts to is a small, dedicated sub-system outside the audio-loop that is constantly looking at the signal coming in. When it concludes that an "illegal" value is presented at the input, it uses the delay of the DSP-filter to rapidly adjust the filter slopes in the crossover so that no damage will be done. The system obviously works. We have heard it playing very loud, in large rooms, without ever hearing protection coming in or the loudspeaker playing itself to pieces.

Measurements

As may be expected from a DSP-enabled loudspeaker, the Kii Three's frequency response curve is relatively flat, running from about 30 Hz to slightly above 20 kHz with minor deviations (see **Figure 1**). Most visible are a slight bump around 1,500 Hz and a depression at 12.5 kHz. According to Putzeys, these are due to component variations, which are not taken care of by the DSP correction. This might be the case to some extent, but there also seems to be some energy storage issues at play, since the same irregularities show up in the cumulative decay plots (see **Figure 2**).

In spite of this, it is fair to say, based on these measurements, that the Kii Three is a neutral speaker, which does not add coloration to program material. As a matter of fact, the world needs more speakers like these, especially in places where they would matter (e.g., control rooms in recording or broadcasting studios). These are not our words, but those of Floyd Toole, the well-known scientist in residence who helped transform Harman International into a leading loudspeaker company.

The problem is that we need standards in recording and broadcasting, and those standards are lacking at the moment. The result is that the sound quality of recordings and broadcasts are highly unpredictable when they reach the listening rooms of the consumers. For example, mixes from a bass heavy studio might sound "thin" when reproduced on monitors with a flat frequency response. There is a small but increasing number of loudspeakers that would qualify to be used as such a "standard" in production control rooms. The Kii Three is a welcome addition, with a novelty: actively controlled directivity on the low end.

From the phase plots of the measurements without the FIR-filter switched on, the Kii Three works with fourth-order Linkwitz-Riley (LR4) filter slopes on all drivers, which was later confirmed by Putzeys. When asked why he did not opt for steeper filter slopes, which are easy to implement with DSP-technology, he answered that LR4 in his view is optimum.

At lower filter orders, each driver has to span a frequency range that is simply too large. Either the drivers cannot cope, or the wide region where they overlap causes problems, or both. Higher filter orders just do not sound as well because they lead to sharp transitions between different listening locations. The measurement shown in **Figure 3** demonstrates that the actively controlled directivity does work as advertised.

In **Figure 3**, the loudspeaker's frequency responses taken at different angles are combined and the color codes indicate intensity for easy reference. The microphone was moved from the front of the speaker all the way to the rear, providing a 360° view.

It can clearly be seen that the Kii Three has an extremely well-controlled directivity that extends from about 80 Hz all the way to 20 kHz. In order to achieve this, the bottom and top ends are the most challenging, but in completely opposite ways. On the low end, the long wavelength causes the sound wave coming from the bass driver to wrap around the loudspeaker. The result is that as much sound energy is radiated from behind as from the front of the loudspeaker. On the high end, as mentioned, the

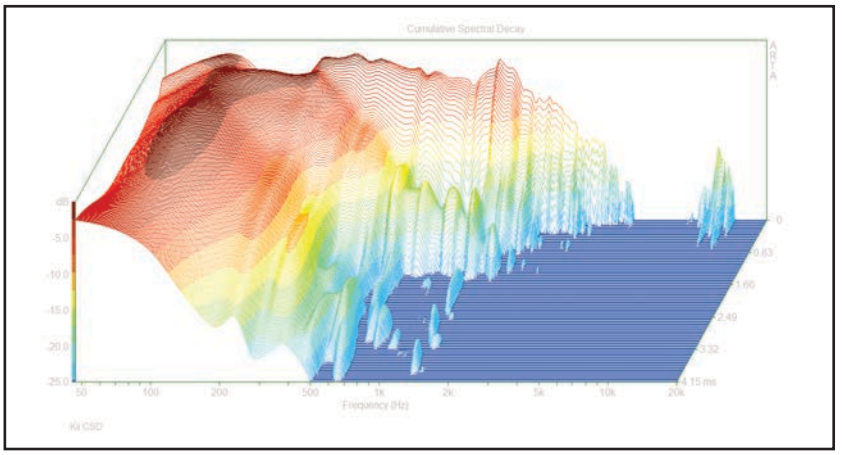

Figure 2: Kii Three's cumulative spectral decay (CSD) plot shows a well-controlled behavior.

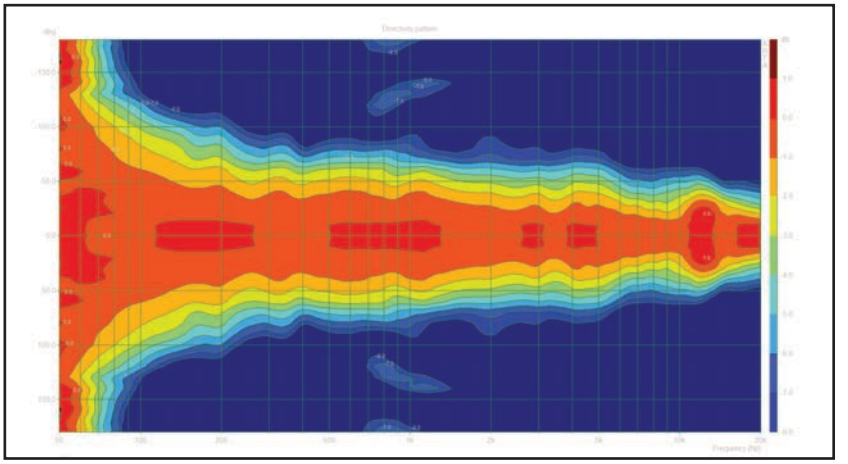

Figure 3: Kii Three's directivity vs. frequency shows well-maintained directivity control down to below 100 Hz.

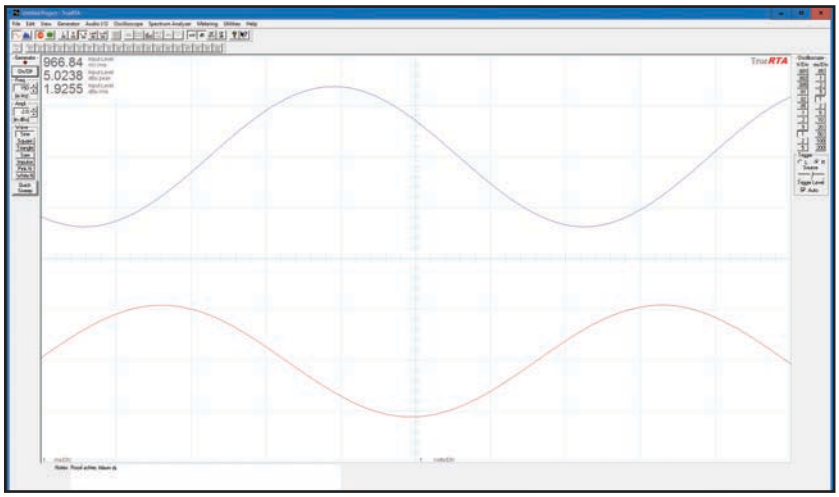

Figure 4: DSP-controlled variable phase shift between rear- and side-firing woofers controls directivity to below 100 Hz.

challenge is the opposite. The higher the frequency, the more the sound radiated by a driver begins to beam into an ever-decreasing angle.

Now, why is it so important to control directivity to this extent? The answer falls into two parts. Let us begin with the lower frequencies. Normal loudspeakers start to lose all directivity control around 200 Hz or higher. That means below that frequency, they radiate as much energy to the front as to the back of the speaker. Since the speaker is normally in a room, there are walls, and these walls reflect the sound coming from the rear of the speaker. This reflected sound mixes with the original sound wave, leading to reinforcement of some, and diminution of other frequencies. The technical term for this is comb filtering, since this pattern of reinforcement and diminution looks a bit like the teeth of a comb. Since this pattern differs from location to location in the same room, it is impossible to equalize it away by electronic means.

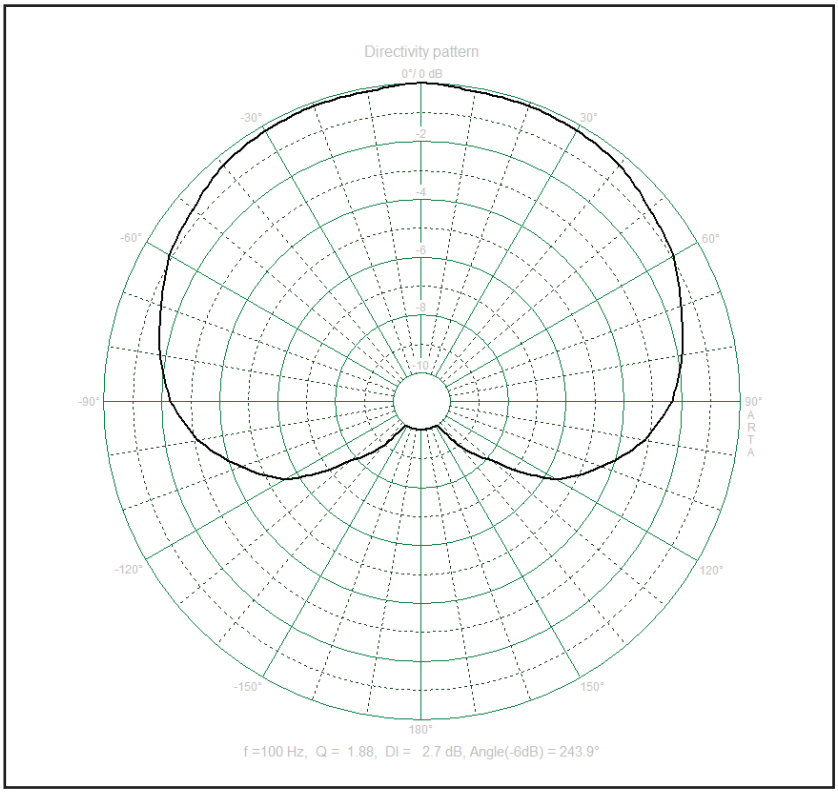

Figure 5: Kii Three's directivity pattern at 100 Hz is an almost perfectly cardioid.

A good way to get rid of comb filtering would be to make the walls behind the speakers less reflective. However, this is impossible to achieve for the lower frequencies in any practical way. The layer of sound damping required would simply be too large; think in terms of meters here. Therefore, the only way to really improve this comb filtering is to ensure that these lower frequencies do not radiate from the rear of the enclosure, and this is what the Kii Three does.

The advantage of controlled directivity at the high end is, simply put, that it increases the listening angle, creating a larger "sweet spot" in the room. The Kii Three has innovative solutions for the directivity issues on both extremes of the frequency scale. The directivity plot shows how effective the diffraction waveguide on the tweeter works. The Kii Three tweeter maintains a much wider dispersion than normal tweeters would. This is controlled directivity at its best.

As you can see in **Figure 3**, there is a bulge in the directivity plot around 12.5 kHz. Before that bulge, the tweeter starts to radiate in an ever-tighter beam, and a normal tweeter would continue to become narrower with climbing frequency. However, the tweeter of the Kii Three does no such thing; it maintains a relatively wide beam right up to 20 kHz. It clearly works, and the energy storage issue mentioned before may be the price to pay for it. In loudspeaker development, usually all things come at a price.

The control of the directivity between 80 Hz and 250 Hz is absolutely astounding from such a small loudspeaker. Many of our technically inclined readers, which most obviously are, will now wonder how the Kii Three achieves this directivity at low frequencies. It does so by sending different, but carefully aligned signals to the side and the rear woofers. The oscilloscope capture shown in **Figure 4** displays the phase relationship between the rear (red) and side (blue) woofers.

Two microphones where used simultaneously. One microphone was placed at a close distance from the rear speaker (red channel) and the other at an identical distance from the side speaker (blue channel). As can be seen, at 150 Hz, the rear woofer leads the side woofers with about one-quarter of the sine wave reproduced.

Now, the distance between the rear and side woofers comes into play. By the time the sound

wave of the rear woofer reaches the side woofer, the traveling time assures that they are in phase and will reinforce each other. On the rear side, the opposite phenomenon occurs. By the time the sound of the side woofer reaches the rear woofer, the phase has become opposite and both waves will interfere destructively. So, at the rear, one has null or little output, and at the front, reinforcement and, thus, a maximum. The polar diagram shown in **Figure 5** details how well this works, the radiation pattern is indeed a cardioid. The line shows at which points in a circle around the loudspeaker the power response is down by 10 dB, around 10 times.

As can be seen, at 100 Hz, directivity is well contained and the result is a textbook cardioid radiation pattern. Somewhat below that frequency, around 80 Hz, the Kii Three starts to let go. At those low frequencies, the wavelength reaches such a dimension that room modes become the dominant spoilers anyways. A room mode requires reflections by at least two walls, so limiting acoustic output in the direction of just one wall is not that effective anymore (see **Photo 6**).

In conclusion, the Kii Three functions as stated by its manufacturer. Its claim to be the most advanced loudspeaker on the market appears to be right on the mark. Will the market be ready for it? We very much hope so for Putzeys (see **Photo 7**) and his development team, because the bold move they made with this loudspeaker deserves proper recognition.

Photo 6: The Kii Three uses what Bruno Putzeys calls Active Wave Focusing technology to control the sound dispersion and direct the sound pressure where it needs to be.

Listening—The Kii Three Experience

I first heard the Kii Three in an invitation-only session at an audio show in the fall of 2015. That experience really got to me. I am normally somewhat reserved at "auditioning" events, knowing that all the stops would have been pulled out to make me believe this was the best audio thing ever. I am also very much aware of the difficulty of listening to a speaker ears-only, with no biases or prejudices involved—an almost impossible order.

Yet, despite my reservations and alarm bells, the Kii Three made quite an impression. Clean, clear, extremely detailed, and tonally very well balanced. The demo was quite loud, which I normally don't like, but here is a speaker system that plays as loud as you want with seemingly unconstrained power reserve. I actually liked it playing loud because it was still sounding very clear and clean. A bit unsettling.

Initially, I thought it missed something in the bass region, until designer Putzeys played some music with real bass. This was the first time I heard low bass notes that were as controlled as what we would expect from low mid- and mid frequency notes. We have all heard speakers where the bass and the rest of the

Photo 7: Bruno Putzeys was the mind behind the invention of UcD and Ncore class-D amplification systems. With Kii Audio he turned his full attention to active loudspeakers.

system seemed to be two different systems, with the low end somewhat arbitrarily throwing low-frequency energy into the room while the mid/high had control and distinctive instruments and notes. Here was a system where the bass was just as controlled and distinctive as the rest of the spectrum. I used the term "arbitrary bass" earlier—this was "decisive bass." Sorry, I just don't have a better vocabulary.

We were granted access to the anechoic chamber at Delft University to test the Kii Three for ourselves (see **Photo 8**). The Kii Three has controlled directivity down to 80 Hz or so, where most other speakers have long become omnidirectional. That omnidirectionality means that a lot of the low-frequency energy ends up anywhere in the room, exciting what is known as room modes and destroying any sense of control in those lower registers. Wilke has already explained this better than I can, detailing how the Kii people pulled this off.

Photo 8: The authors, Jan Didden (a) and Paul Wilke (b) are shown during the measurement sessions in the anechoic chamber at Delft University.

When you listen to a pair of Kii Threes, there's just the music. All the details that are in the recording are there, in full glory, and unforgiving. If the recording engineer moves a slider on his console, you hear it. If the singer steps a bit back from the microphone for added effect, you hear it. This speaker is not so much a reproducer as an acoustic window into the recording studio!

I have heard the Kii Three speakers play in four different listening rooms, and they sounded pretty much the same in all of them, which is a great compliment. Any room will add its own coloration but with the controlled directivity and the adjustments offered by the contour and the boundary dials, the room never becomes dominant.

Anyway. Do I have gripes? Yes, two actually. The first one is that now I have to get used to the fact that if there is no bass line in the music playing, I will not hear any.

Second, although the Kii Three has a very good sound stage rendition, on a few occasions I had the feeling that some of the instruments were pulled toward the speaker position for just an instant. I have not been able to pinpoint it or make it reliably happen again so I can't say much more about it, but it seemed real when it happened. This may be an artifact or a lining up of specific frequencies and pan positions coupled with the Kii Three's internal processing, I don't know. It wasn't disturbing or anything but it happened a few times during my listening sessions and Wilke also noticed it once. Maybe Putzeys can shed some light on it.

The Sign of Things to Come?

Pundits have been lamenting that the younger generation, however defined, is not really interested in high-end audio. They just listen to their iPhones and think that's high-end audio. But let's say you are one of those people who are used to instant selection and reproduction of music, wherever you are, whenever you want. Are you really interested in genetically engineered speaker cables, high-end interlinks, a separate $5,000 organic DAC (a DAC? What's that? And why is that in a separate box?). It's not that "that generation" is not interested in high quality audio—it's that we keep pushing things on them they don't want!

The Kii Three, I believe, is just the right product for this new way of consuming audio and Kii Audio is, in its own way, exploring new spaces, with a compact, high-end speaker that not only contains a crossover and amplifiers (that has been done before), but also

a full-fledged ADC and DAC. In fact, calling the Kii Three "speakers" doesn't do them justice. But, what else do we call them? We don't yet have a term for such systems.

So, you hang a streamer on them (and Putzeys, there really should be a built-in streaming receiver/DLNA server in the next model!) and you, as a listener, seamlessly go from listening on your earbuds to listening to the Kii Threes when you come back home. Just select another renderer from Roon or BubbleUPNP or whatever your favorite player is and continue to listen to your music. No cable plugging, no source switching, you don't even need to switch on the Kii Three, it has an auto-on and auto-off.

So whenever you are in the market for a compact and extremely high-performance music reproduction system that fits classic as well as design living spaces, check out the Kii Three. The price certainly should be only a minor factor in this performance space. For more information and technical white-papers, visit www.kii-audio.com.

Authors' Note: Many thanks to Henry den Bok of Delft University for arranging our use of the University's anechoic chamber.

Authors' Postscript: After writing the article, we were reminded of the BeoLab 90, which appears to incorporate even more advanced directivity control technology than the Kii. A sure sign of things to come.

Manufacturer's Comment: Paul Wilke and Jan Didden, thank you for a comprehensive review. I have only one additional comment. The slight response hump at 1.5 kHz is indeed, as you suspected, resulting from unit-to-unit driver variations. We have expanded our unit-to-unit calibration process, which we already had in place for the tweeter, to the midrange. When you read this, such small differences will be a thing of the past —Bruno Putzeys, CTO, Kii Audio GmbH.

Project Files

To download additional material and files, visit
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