



Fresh From the Bench

# Meet PureAudioProject

## Trio15 Heil AMT Speakers



A meeting with Ze'ev Schlik, founder of PureAudioProject, leads to an opportunity for our author to learn more about his company and to experiment with the Trio15 Heil AMT speakers, which feature the ESS Heil AMT 1.

By  
**Oliver A. Masciarotte**

(United States)

**Trio15 Heil AMT**  
PureAudioProject, Ltd.  
11 Hakabaim St.  
Ramat Gan  
Israel 5225511  
pureaudioproject.com  
Cost: US \$4,790

Ze'ev Schlik has worn several hats over the course of his career, all centered around audio. For a while, he was a senior executive at Comverse Technology—a company known for its AudioDisk recording products for telecoms and for pioneering technology, enabling music delivery over cellular networks. Later, Schlik ran an Israeli record label, Zuta Music. Some of its releases are still available. For six years, he also managed NMC Music, a major contemporary classical label in Israel and a licensee of SonyBMG and EMI. Nowadays, he heads up PureAudioProject, a direct sales company taking a modular, semi-DIY approach

to open-baffle loudspeakers. PureAudioProject is headquartered in Israel, with a US office in Iowa City, IA, manned by Thomas Sulentic.

I initially came across PureAudioProject at a hi-fi show, and a subsequent enjoyable 2016 presentation by Sulentic for my local Audio Society of Minnesota convinced me of their chops. I first bumped into Schlik at the 2018 AXPONA, who told me that, without *audioXpress*, his company probably wouldn't exist (see sidebar).

### The Product

So it was that one day three large black road cases appeared in my garage. One held six newly painted baffles, another four boxes of woofers and crossovers, and a third with ESS's 6" Air Motion Transformers (AMT) and assorted hardware. My example, as supplied, was decked out with black frames and white baffles (see **Photo 1**).

Available materials and finishes include black or white frames, four shades of laminated oak, two flavors of triple layer bamboo, eco-friendly Valchromat composite in a range of 10 factory colors, plus birch in gloss white and black. The oak option has the most strength, with a custom bidirectional laminate. A vertical end grain jacket surrounds a horizontal grain core. Valchromat—I had to look this one up—is a rigid amalgam of dyed wood fiber and low VOC resin, with higher mechanical strength than



Photo 1: The large version of ESS' Heil AMT, mounted on its baffle

an equivalent thickness of MDF, greater resistance to bending forces, and better moisture immunity. PureAudioProject manufactures in Europe and the US to supply local markets.

The way I received the product is as an “Audition at Home” customer would. The OB-A15Neo woofers are manufactured to PureAudioProject’s specifications by Eminence. Jerry McNutt, Product Design Manager at Eminence, said on the PureAudioProject site that they are a higher performance and lower distortion 15” model specifically optimized for use in open-baffle applications (see **Photo 2**). “They share the same cone and surround as the Alpha15, but are (otherwise) different. With the neodymium version, we went with (a) cast basket, stronger neodymium magnets, 2.5” voice coil motors to gain more motor strength, increase linearity, increase power handling, lower power compression, and to be able to add shorting rings to lower distortion and lower the Le (the voice coil inductance in milliHenries, usually at 1 kHz). To further lower distortion and cut down on basket ringing, (we used) our rigid cast aluminum frame, (and an) open basket for minimum turbulence...”

## The Build

One afternoon, I spread out all the components, looked up the tutorials on my iPad, and started the build (see **Photo 3**). A couple of hours later, I had a set of speakers! w00t! The trickiest part was attaching the woofers to their baffles. Thank goodness the baffles were predrilled, including eight pilot holes for each woofer’s screws.

After that, it was a matter of burning them in for about 200 hours. At first, I found the treble to be slightly aggressive and shelved it down a bit (-1.6 dB). Since I’ve run them in, the high-frequency response has tamed itself and I no longer need any high-frequency suppression. When I mentioned this to Schlik, he echoed my observations, mentioning that they advise customers to reserve sufficient time for proper break-in.

## Listening Tests

For my initial listening, I pressed my trusty (40 W in 8 Ω) Class A Lindell AMPX into service. Not long after, Linear Tube Audio sent me a ZOTL Ultralinear for review, and the folks at SPEC CORP sent me a pair of their RPA-W3EX (100 W into 4 Ω) Class-D amplifiers for evaluation. Although the ZOTL Ultralinear was an excellent match with the controlled impedance of Spatial Audio’s M3 Triode Master OB speakers that I also had in-house, the ZOTL did not enjoy the Trio15s, producing an unappetizingly frequency response. Kent Peterson’s measurements



Photo 2: An Eminence direct radiator in situ



Photo 3: Supplied attachment hardware makes baffle mounting a breeze. Note the wide elastoform grommets and black composite knurled nuts.

(see his companion article) revealed a range of impedance, from about 4 Ω to a bit over 5 Ω with sharp transitions, which may have accounted for the uneven sounding result. My Lindell AMPX, on the other hand, had no problem driving the Trio15s, and the RPA-W3EX brought their ample power and tight control of the low end to bear for excellent effect.

Speaking of impedance, the PureAudioProject OEM custom crossovers come from Mundorf, which uses

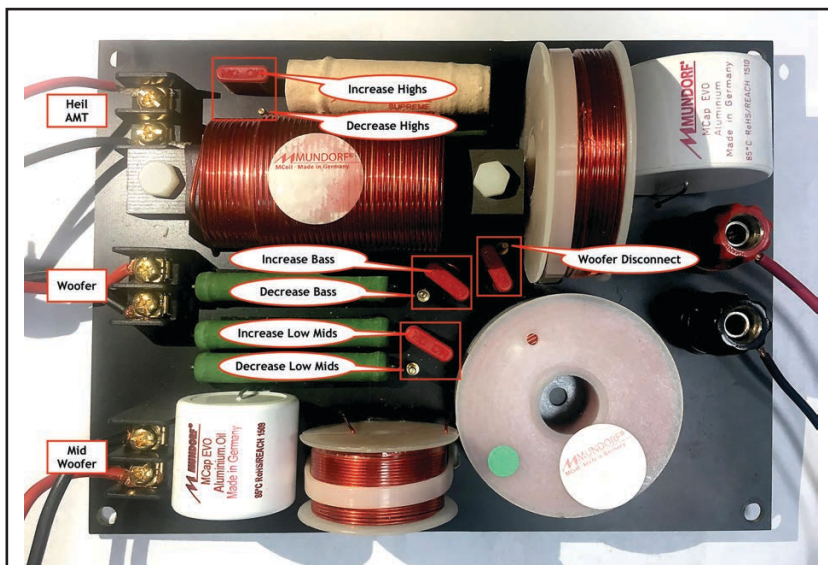


Photo 4: The Trio15 custom Mundorf crossover

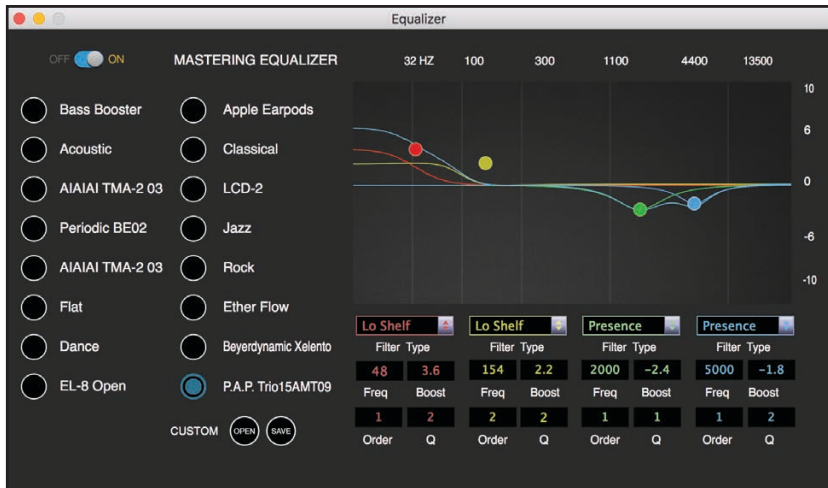


Figure 1: My optional EQ setting as seen in Amarra Luxe

its premium MCap EVO series capacitors, MResist SUPREME low-inductance bifilar resistors along with the laminated, oriented grain Feron core MCoil BS series, and big, BL series air core inductors. The Trio15 crossover (see **Photo 4**) comes with gold-plated jumpers that let the user tamp down, by 2 dB, the highs, mids, and low end. After experimenting with crossover settings, I ran the speaker flat, which resulted in a perfect overall energy balance.

Over time, I settled on a speaker position 3.5' from the back wall, 8' from the rear wall, and about 6' apart. Via e-mail, Schlik mentioned that the crossover

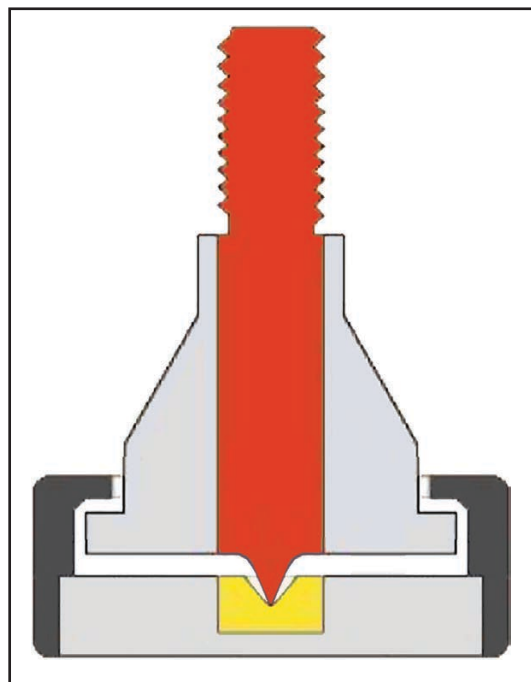


Figure 2: Cutaway of the standard model Soundcare SuperSpike

is minimalist, with an extremely short audio path. He enumerated; "...one coil for the low woofer (first order), one coil and one resistor for the mid woofer (also first order) with a light notch filter at higher frequencies to shave the rise the Eminence have, and a simple second-order high-pass filter for the Heil. That's it!" He added that he could have smoothed the response a bit but other issues would have cropped up. "One of the reasons you hear what you hear is exactly because of this transparency, and the goal is 'what you hear and how you hear and feel' and not to have the most beautiful spec on paper." His guiding principle is to have "reasonably good measured (response) and great sounding speakers!"

My esteemed and iconoclastic colleague, Siegfried Linkwitz, died during the course of this review, and I thought it best to revisit some of his voluminous technical essays during my review. Since he was an outstanding exponent of open-baffle speakers, I went digging through his musings and happened upon his recommendation for subtracting a small amount of energy in the 1-to-3-kHz region to improve spatialization.

Sure enough, on most symphonic recordings a 2.4 dB dip (first-order bell with a Q of 1 at 2 kHz) yielded a subtle but noticeable improvement in imaging and spaciousness. The phantom center seemed to cohere better and subtly sit comfortably where it belonged. With synthetic recordings, pop and close mic'd jazz, the midrange dip didn't seem to detract so I left it in for much of my listening. Since I wasn't using a subwoofer during this period, I did add some low-frequency shelving from Amarra Luxe's equalization to lend some weight to the bottom octave (see **Figure 1**).

Note that, though I utilize EQ, the Trio15 Heils do just fine on their own, factory flat. Some folks think that open-baffle speakers cannot possibly deliver low end due to diffraction and cancellation, but I found the Trio15s to deliver plenty of bass. I'm going to steal a line from fellow reviewer Hartmut Quaschik when I say the Trio15 Heils exhibit "...electrostatic resolution with real life dynamics." Granted, if you want bottom octave slam and startle factor, then open baffle speakers may not be your first choice. That said, I found their bass response to be natural, coupling as they do organically with a room. With no EQ, warble tones didn't diminish in strength until 44 Hz and were audible much lower than that.

The factory feet are spiffy Soundcare SuperSpike Standards. They're a nicely chromed M8 metal spike captured in a plastic composite cup, with a layer of felt on their underside (see **Figure 2**).

I couldn't help wondering if IsoAcoustic feet would offer the same improvements I perceive from their

Photo 5: The Trio15 Heil telegraphs both power and presence. Here, seen with the IsoAcoustic GAIA II isolators for floor-standing speakers, which provided a noticeable improvement.



ISO-L8R decouplers I use on my stand-mounters. Reaching out to Dave Morrison at IsoAcoustic resulted in two boxes of his GAIA II isolators for floor-standing speakers appearing on my stoop in short order. The GAIA II are weight-rated for the Trio15 Heils, and include an open-end wrench along with four sets of threaded adapters. One set are M8, so it was quick work to swap them in for the SuperSpikes. I started with one side only, and went back and forth in mono between the two choices of feet. It didn't take long to realize the GAIA II tightened up the attack of percussion and improved articulation of transients while reducing a slight tubbiness in the upper bass. In other words, way mo' better bottom! Though not essential, GAIA IIs are well worth the cost given the refinement they provide.

Once the Trio15 Heils had settled in, I too sat down with both my exaSound e22 Mk. II DAC and Mytek's MQA-capable Brooklyn DACs as conversion. On 1939 Ensembles' *New Cinema* album (TIDAL 44.1), the synth and vibes-driven instrumental has a traditional trap drum kit to move it along. With

the Trio15, the drum kit says it was distant mic'd, appropriately small so as not to overwhelm the other contributors. Contrast that to Our Girl's "In My Head" (Qobuz 44.1), a pop confection with a big reverb-soaked sound and a "giant" drum kit, the sprawling gargantuan kind that close mic'ing tends to create. The Trio15 had no trouble conveying the differences in character between these two very different production techniques.

The Trio15's AMT has an admirable way of revealing the limitations of a recording without tearing your head off with "detail" or "sizzle." Hozier's "Nina Cried Power" (TIDAL 44.1k) has what sounds like the papery signature distortion of a very multitracked Pro Tool session. Crunchy is good in a breakfast cereal but not in a neo-soul album, and the Trio15s telegraphed that unfortunate engineering choice without euphonious smoothing or concealment.

On the first part of Gustav Mahler's "Symphony No. 3" in D Minor; Kräftig. Entschieden off of Bernard Haitink: *Portrait* (BR Klassik/Naxos 44.1k ALAC), the tympani play a foundational subterranean role. The Trio15 Heils, despite many people's tendency to expect anemic low end, offered highly convincing and appropriate percussive force without the artificiality that many sealed or reflex boxes tend toward. As my friend and fellow audio geek Don Meger mentioned during a listening session, open baffles simply couple to a room better than boxes at low frequencies. His overall opinion, "Mightily impressed!"

BJ The Chicago Kid's "Turnin' Me Up" off his album, *In My Mind* (TIDAL 44.1), has a very jazzy feel for a funky pop tune. After the breakdown as the end of the song nears, some tinkly percussion is exposed as other instruments fall away. That metallic time keeping actually imaged just outside the left speaker. I heard the same outside-the-speaker effect with Gregory Porter's "Nature Boy" (Qobuz 48k) from his *One Night Only* album.

During one of my listening sessions, I became entranced with Liz Wright's gorgeous cover of Nick Drake's "River Man" (Qobuz 44.1). Delivered with refined vocal immediacy overlaid by a supple blanket of Hammond, trumpet and guitar, the track is in sharp contrast to Drake's original. On "Five Leaves Left," a string section intrudes on Drake's centered guitar and voice. Wright's smoky version is more in keeping with Kurt Elling's jazzy approach on Lee Ritenour's album *Rhythm Sessions*. The Trio15 Heils offered unbiased timbral insight into each production.

## The Verdict

One aspect to consider with speakers is Spousal Approval Factor (SAF). Though they are relatively imposing in my listening space, they have received

## About the Author


O. A. Masciarotte has spent more 30 years immersed in the tech space, working on facilitation, optimization, marketing, and product development for clients worldwide. As an author and speaker, he enjoys informing folks about technological best practices. More information is available at [seneschal.net](http://seneschal.net) and [othermunday.com](http://othermunday.com).

a high SAF rating from my wife Kari, both for their very shallow footprint and exceptional performance (see **Photo 5**). Kari finds them good looking, gratifying in their presentation, and instructive to listen to given her reoccurring utterances of, "I've never heard THAT before!" Having had to move these units several times over to Warkwyn for measurements, I also appreciate their modular nature, making for easy, single-handed break down and transport.

As Zora Neale Hurston once said, "Ships at a distance have every man's wish on board." At \$4,790 a pair including shipping, the Trio15 Heil isn't one of those "If you have to ask the price..." luxuries.

When one thinks of the rare and exotic in audiophile terms, myriad choices of unobtainium spring to mind. Yet, as a limited production, modular open baffle speaker, the Trio15 Heil is both rare and exotic. Their performance is extraordinary, especially when weighted against their cost, with an unrestricted presentation, wide and smooth response, and rugged, techy good looks. Their honest timbre, excellent speed at mid and high frequencies, and overall sense of envelopment is pure listening pleasure. In terms of fidelity—the truth in conveying what's in a recording, they smoke many loudspeakers costing several times

as much. Heck, I like their overall performance more than some costing 10 times more. Highly Recommended!

In the sidebar "Trio15 Heil Speaker Measurement and Listening Tests," Kent Peterson conducts a more rigorous set of tests on PureAudioProject's Trio15 Heil AMT speakers. 

## Ancillary Equipment

Amplification:  
SPEC CORP RPA-W3EX (\$11,500 MSRP) and H-VC5 controller (\$1100 MSRP)  
SPEC Corp. | [www.spec-corp.co.jp](http://www.spec-corp.co.jp)

Lindell AMPX (\$1,600)  
Lindell Audio | [www.lindellaudio.se](http://www.lindellaudio.se)

Cabling: VUE Digital VU-3 (USB), Soundstring GEN II Beta 2-22S (XLR), AntiCable Level 3 (speaker), Soundstring GEN II Digimax-18 (power)

Conversion: exaSound e22 Mk. II  
Mytek Digital Brooklyn | <https://mytekdigital.com/hifi/products/brooklyn>

Isolation: IsoAcoustics GAIA II (\$300)  
IsoAcoustics | [www.isoacoustics.com](http://www.isoacoustics.com)

Source: Amarra Luxe 4 (\$99)  
Sonic Studio, LLC | [www.sonicstudio.com/amarra](http://www.sonicstudio.com/amarra)

## Meet Ze'ev Schlik

*One day, Ze'ev Schlik and I talked on Skype about his background, and his initial push from audioXpress that slotted him into a consumer audio track. What follows is a lightly edited version of his discussion with me.*

I spent a few good years in the music business and high tech, and was exposed to home audio around 2013. When I first experimented with open baffles, it fascinated me. The results were extremely musical. The simplicity of it, the ability to control various aspects easily was there, (but) I was not sure at the beginning whether it would develop into a business or not. What I think triggered my look into making it a business was its popularity with DIYers. If you searched "open baffle" at the time, you got thousands of projects, while in home audio, it was not existing. There was one or two companies, but the vast majority were not aware of this option. This gap was the trigger to think about it professionally. There's a lot of experience and know-how, years of experience in DIY and Pro Audio as well. In pro audio, this concept is well known and well used. On the other hand, in home audio, there was almost nothing. There was Jamo, (along with Emerald Physics and late lamented Dahlquist—OM) but nothing that caught on. I was on the borderline, we had a prototype that was quite close to what we have today but not as mature, and me and my partner were debating whether to go professional, to try a show. We contacted the Munich (High End) Show, and the show management suggested we apply to the "newcomers" program. Every year, they invite a few companies as newcomers, they

give you the booth space, you present your stuff and they host you. There are no expenses other than travel.

So we took a prototype and went to Munich, and it was a bit premature... this is an understatement! (Laughs) You cannot play (your gear) there, but people can see and feel and touch. It was modular, you could touch the components, you could mount them, dismount them. When the show was over, we started getting comments in the press, which were very positive and, boom! In, I think, the August issue 2013, *audioXpress* covered the Munich Show and we were in the feature article. Now you mentioned (myself), who was still not sure there is a business case or enough interest to turn it into a business. Then (we) got the coverage in *audioXpress*, and another three or four very positive mentions by the press. Basically, I think *audioXpress* was the kickoff; "O.K., we are going into it professionally, we are going to take that path."

I asked Ze'ev about his first hi-fi experiences, and he mentioned a Fender Rhodes he received early on in life, which captivated him. It was only much later that he realized its amplified cabinet was an open-baffle design.



Ze'ev Schlik heads up PureAudioProject, a direct sales company that takes a modular, semi-DIY approach to open-baffle loudspeakers.

# Trio15 Heil Speakers Measurement and Listening Tests

By  
**Kent Peterson**

PureAudioProject's Trio15 Heil, featuring the ESS Heil AMT 1, was measured at Warkwyn's facility using the Klippel Near-Field Scanning system (NFS). The NFS delivers a 360° "balloon" of data, allowing for an examination of the radiation pattern, off-axis frequency response, and any frequency-important information that might help when determining where to place this impressive dipole in your listening environment (see **Photo 1**).

## The Measurements

For the measurements of the Trio15, we used 3.5 VRMS. A calibrated ACO Pacific free-field microphone with the 4048 pre-amp and the 7052E capsule was used and all on-axis data is referenced at 3 m and centered on the Heil AMT high-frequency transducer.

Measurement points around the speaker totaled 3034 and were processed with a resolution of 18 points per octave and from 20 Hz to 20 kHz. The length of the stimulus was 0.40 seconds with an average of 4.

Initial measurements of the Trio15 Heil had the crossover jumper switches in their default or flat mode, as delivered to Warkwyn. A second measurement was made with the jumpers for the mid and high frequency positioned in their "cut" position.

Our first analysis is an examination of the sensitivity through 15°, 30°, and 60°. Before examining the frequency response curves, we remind the reader that the device under test (DUT) is a dipole speaker configuration and with that come some pretty jagged response curves as a result of the cabinet-less design along with the acoustic shortcut around the cabinet that allows complex interference and summation across many frequencies. The frequency response curves measured here are anechoic and do not take into account any room influence, which make good dipoles a pleasure to listen to. With that in mind, **Figure 1** shows the on-axis, 15°, 30°, and 60° frequency curves.

Examining the frequency curves and on-axis, a pronounced boost is apparent between 200 Hz and 800 Hz, a narrow 10 dB notch at 1 kHz and after recovery, a nicely extended high frequency. The radiation pattern holds together nicely to approximately 1 kHz but falls off sharply at 1.2 kHz to 2 kHz indicating a "hole" in response at 30°. This recovers at 60° and then attenuates as one would expect at wider angles. An "unwrapped" 360° pressure/f contour map shown in **Figure 2** provides a complete view of the horizontal radiation of the speaker through its measured frequency response.

The horizontal contour mapping affirms the frequency-response curves on-and off-axis measurements but also reveals the beam width of the Heil AMT, which came with the system. Anechoically, the Trio15 Heil exhibits the classic figure of 8 pattern of a dipole, with plenty of bass fore and aft, and horizontal radiation at 1 kHz with plenty of bass fore and aft, and horizontal radiation at 1 kHz at about 100°, narrowing to 20° and then recovering at 10 kHz.



Photo 1: PureAudioProject's Trio15, featuring the ESS Heil AMT 1, was measured at Warkwyn's facility using the Klippel Near-Field Scanning system (NFS).

**Figure 3** shows the unwrapped vertical contour map. Upon examining the vertical contour mapping, the collapse of the high-frequency radiation pattern from 80° at 1 kHz to about 20° is apparent, while the low frequency is consistent with the horizontal contour mapping.

There are holes between 800 Hz and 1 kHz in the horizontal

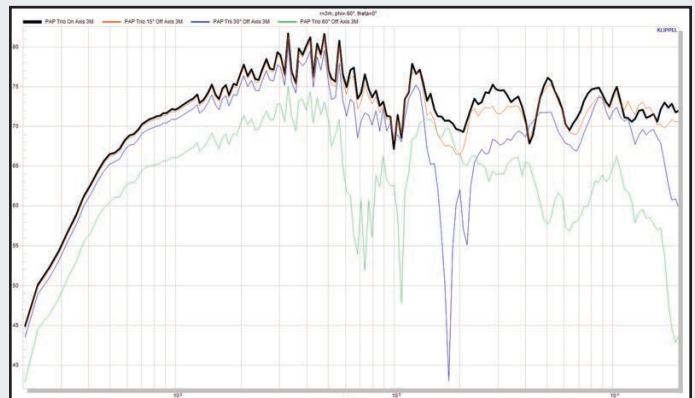


Figure 1: Horizontal sensitivity on-axis, 15°, 30° and 60° (no smoothing)

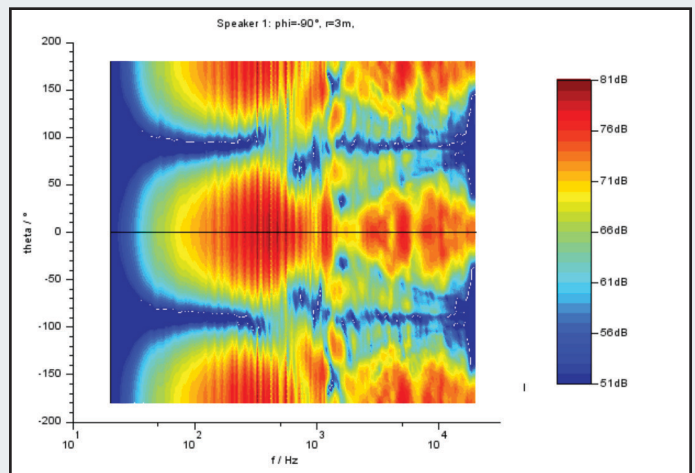


Figure 2: Unwrapped horizontal contour map



Modular

Open Baffle

Architecture

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[info@pureaudioproject.com](mailto:info@pureaudioproject.com)



## PERFORMANCE

We base all models on the sonic virtues of the finest audio components and drivers available today.

## SIMPLICITY

PureAudioProject speakers are assembled by you. All models are engineered for easy assembly requiring only a hex key and a screwdriver.



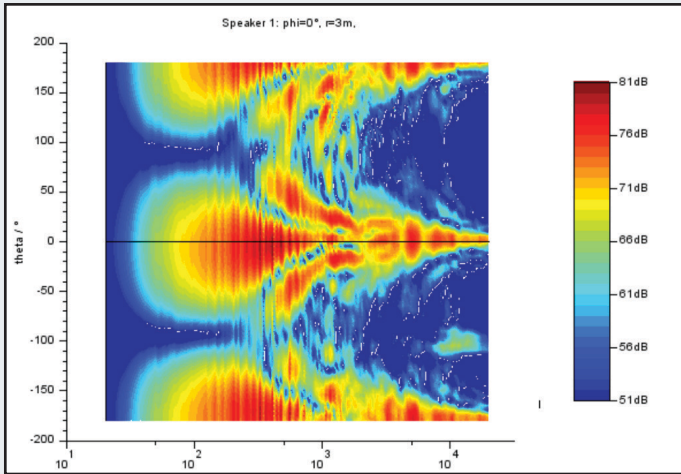


Figure 3: Unwrapped vertical contour balloon

mapping, that are recovered somewhat 20° to 80° off axis in the vertical mapping, owing to proximity of the upper and lower 15" transducers. Overall, the listening window is quite narrow in the vertical and much wider in the horizontal.

A second measurement was made with the low-frequency and mid-frequency jumpers moved into the "cut" position\*. **Figure 4** shows a comparative frequency response curve. No big surprises here as, with the jumpers positioned in the alternative position, there is an approximate 2 dB to 3dB cut in the mid and lower frequency ranges.

Finally, the impedance was measured with the jumpers in the default configuration shown in **Figure 5**.

The free-air resonance of the 15" transducers is at about 41 Hz, with nominal system impedance of 4 Ω. There looks to be a high-pass filter at about 45 Hz with a high-frequency crossover for the AMT at approximately 2.5 kHz. Overall the impedance and phase appear to be in good order with no anomalies to be concerned about.

## Listening

I'll admit up front that apart from working with dipole speakers in a laboratory setting my experience with dipoles is limited. Have I heard many of them? Of course—at trade shows and show rooms. But let's face it, those are not good places to listen objectively and actually formulate an opinion that you can have confidence in hours

later. However during those times I have found most dipoles lacking in definition, low-end punch, and with a very tiny listening window.

On a cold, dark night, I was invited to Oliver Masciarotte's home where we spent a considerable amount of time listening and orbiting the speakers in his listening environment while we sipped herbal-flavored concoctions from a reservoir stored within "The Cabinet."

Respecting each other's tastes, we cordially traded our favorite and trusted listening songs back and forth. Time and cobwebs do not allow a good collection of my cohort's songs and artists, but we have similar tastes. As a starter I wanted to hear some music I had been recording for an upcoming release by Blake Miller and the Old Fashioned Aces—down to earth, honest to goodness Cajun from a true Cajun. This is music that is not intended to be awash in reverb but is simple and straight forward with high articulation, presence, and with a relatively small stage. My first impression was no—this does not sound like the high intelligibility mid-band that I was used to from studio monitors. But it was not unpleasant and yes, I know, this is obvious. But I wanted to get a sense of how different these speakers are in place of clinical monitors and mix positions on music with which I knew well.

Next, I chose something I knew would have a greater sound stage, with greater depth—Diana Krall's "The Look of Love." With a more expansive sound stage and luxurious production, I started getting it. Properly positioned between the Trio15s and with some supportive reflections from the wall behind the Trios, the sound stage opened to a glorious extent. There was still a bit of sibilance and articulation missing but the enveloping sound field washed away those concerns. Diana was singing to me and it sounded lovely.

Opting for something less languid, I moved to music from the Brother's Landreth and from the album *Let it Lie*, a little bit more raucous but also very well produced and open. Again, I was nicely enveloped in the sound stage and I had the elevated feeling of being right in front of the band, very nice. During a saunter to "The Cabinet," I came back and walked the room and listened from various angles. It was at this point I realized that I had lost the articulation I was getting used to. As I pulled back from the speakers and while still standing, it recovered somewhat but it wasn't until I sat back in my original listening position that it all came back to life. The vertical radiation pattern of the Heil AMT is tight and I found it best to have my head right on plane with the Heils—that's the spot.

The rub on dipoles is the lack of low-end punch and definition. Putting the Trio15s to the test I dialed up my old favorite Thomas Dolby

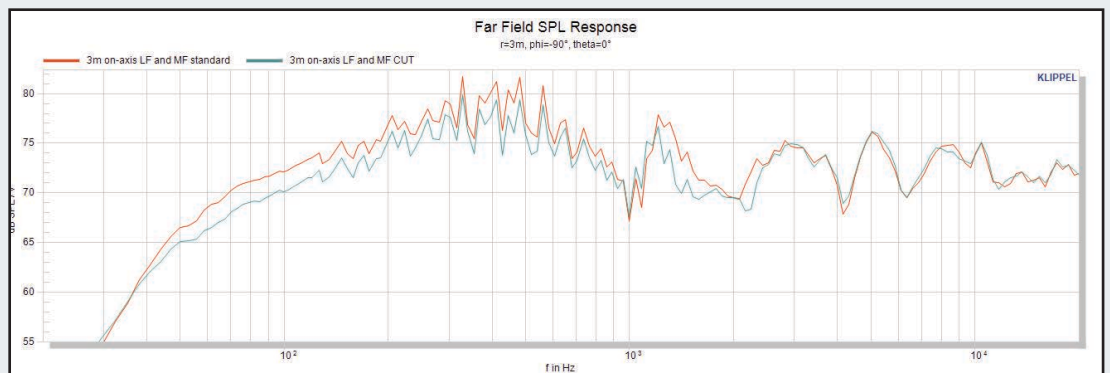


Figure 4: Frequency response with jumpers set to cut low/mid frequency



standards. No, not “She Blinded Me with Science”—that’s for Dolby amateurs. But rather “Pulp Culture” and “May the Cube Be with You,” recorded featuring Mothership Commander George Clinton (you didn’t know that did you?). No lack of bass here. With the 15s from the Trios providing good punch, and with my chest resonating, I was in my happy place. At this point and because it was timely, we switched the crossover jumpers to their cut position. This took a little bit of doing with some needle nose pliers which, unfortunately, took my acoustic memory right out of the picture. After repositioning and listening to punchy bass tracks, I couldn’t discern a huge difference so we opted to move back to the original jumper positions, and all was well.

Leaving that night, I realized I was quite enamored of these speakers. Some critical listening dispelled some of the reservations I had with dipoles, and I appreciate the austere and simple build quality, there is no need for satin oiled exotic woods in my world. I’d happily put these speakers in a larger room somewhere in my life along with my own “Cabinet.” 🇩🇪

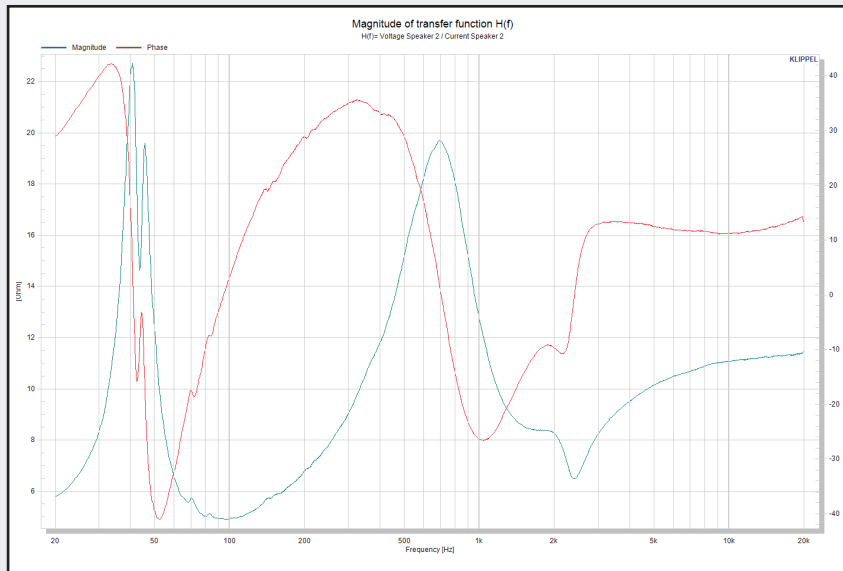


Figure 5: Impedance and phase for the Trio15 Heils

## Upgrade Version

- Vented cast aluminum chassis for optimum strength and low compression
- Proprietary cone material with natural fibers made in-house
- Soft low damping rubber surround for improved transient response
- Non-conducting fiber glass voice coil former for minimum damping
- Extended copper sleeve on pole piece for low inductance and low distortion
- CCAW voice coil for reduced moving mass
- Long life silver lead wires
- Vented pole piece for reduced compression

5in SB15NRX2C30-4/8

6in SB17NRX2C35-8/4

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 Manufactured in Indonesia

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