



# Rocky Mountain Audio Fest 2014

## High End at High Altitude



It being my seventh trip to Denver's mile-high Tech Center district, I thought I knew what to expect. An audio engineer friend and I decided to drive to Colorado from Minneapolis, and the road trip proved to be an excellent way to turn down our internal throttles, set the cruise control on my hybrid, and experience the immense Midwest plains dotted with towering wind turbines. The weather was unseasonably warm and the traffic sparse, enabling us to ignore the piloting and discuss the technology that would be unveiled during the Rocky Mountain Audio Fest's 11<sup>th</sup> iteration.

By

**Oliver A. Masciarotte**

(United States)

On one topic of discussion, we both agreed. Many engineers would debate the fact, but consumer electronics (CE) wags the tail of the pro audio dog. Whether it's the resurgence of vinyl, the triumph of downloadables, or the rise of portable and personal listening, pros should regard audiophiles as harbingers of things to come. One reliable gauge of music consumption trends is the three-day Rocky Mountain Audio Fest (RMAF), which is the largest of many audio shows in North America.

### CanJam

As with previous RMAFs, the headphone-obsessed organization known as CanJam held court in its own separate space. In-ear headphones have moved from pro-only obscurity to consumer acceptance relatively rapidly, and for good reason. CanJam at RMAF showcased several in-ear vendors including Alclair, Aurisonics, Clear Tune, Fostex, Jerry Harvey, NOBLE,

RBH, RHA, Sennheiser, Ultimate Ears, and Westone. Some of these companies target professionals, while others look to consumers for the bulk of their revenue. While the pro products typically have replaceable cables and response tailored to particular players and preferences, all of these products are worth investigating. An interesting intersection of taste and necessity means that the same "smile" response that quotidian consumers enjoy also works well for performers that need boosted bass and treble. The big bottom that Beats pioneered for street cans also works well for drummers who need a large low-end lift.

### In-Ear Monitors

Alclair (<http://alclair.com>) is a small Midwest manufacturer that works closely with its local transducer supplier. At RMAF, Alclair demonstrated its line of in-ear monitors (IEMs) designed for a

range of applications and price points. With products ranging from \$200 to \$750, there's a model for almost every professional. Alclair also manufactures two protection solutions, a \$60 solid-silicone flexible earplug fabricated for the user's personal ear shape, and custom-molded earplugs with three interchangeable acoustic filters offering broadband loss from 9 to 25 dB. Alclair's silicone product seems to be the only flexible, non-acrylic ear-mold-style hearing protection available.

Speaking of interchangeable acoustic filters, Reid Heath Acoustics (RHA, [www.rha-audio.com](http://www.rha-audio.com)) introduced its T10i (\$200) in the US. With stainless steel housing and filters for bass, treble, and mid-band attenuation, this good-sounding headset includes a microphone and a three-button remote.

Aurisonics (<http://aurisonics.com>) also took an acoustic approach to tuning with its mid-line and high-end products. Aurisonics offers a mechanically tunable bass port for adjusting low to mid frequencies and an optional "ambient port" to provide pressure equalization. The company's products, which rely on dynamic drivers rather than more traditional balanced armature transducers, range in price from \$300 to \$1,300.

Other in-ear vendors included venerable transducer provider Fostex ([www.fostex.com](http://www.fostex.com)), showing the TE-07 (\$300), a new IEM that has a single-balanced armature driver. It also debuted the PX-5HS, which is an active two-way speaker for desktop and location monitoring. With a 5.2" aramid-fiber woofer, driven by a 35-W digital amplifier, and a 1" soft dome tweeter mated to an 18-W amplifier, the PX-5HS has both balanced and unbalanced inputs.

While Jerry Harvey (JH Audio, [www.jhaudio.com](http://www.jhaudio.com)) didn't showcase any new products, its line of IEMs is top notch. Clear Tune Monitors (CTM, <http://cleartunemonitors.com>) showed a variety of IEMs ranging in price from \$250 to \$800. CTM also sells a \$100 custom acrylic earplug. Another new company on my IEM radar is Noble Audio (<http://nobleaudio.com>), with its range of premium priced acrylic and silicone body IEMs. Noble Audio also offers three universal-fit versions of its custom products.

Within the crowded IEM and in-ear consumer markets, the stiff competition will produce some winners and losers. Two vendors who have stayed the course are Sennheiser ([www.sennheiser.com](http://www.sennheiser.com)) and Ultimate Ears (<http://pro.ultimateears.com/en-us/home/reference-monitors>). If you prefer the Sennheiser aural signature, you will enjoy its IE 800 in-ear's voicing with its distinctive house sound. Unfortunately, the miniature and quite slippery ceramic housing can be difficult to remove once it's in. Rather than adding a new product to its



Alclair's RSM quad custom in-ear monitor is a three-way design, with four balanced armatures including two low-frequency, one midrange, and one high-frequency transducer.



Reid Heath Acoustics' stainless steel T10i features a handmade dynamic driver (model 770.1) engineered to reproduce all genres of music with high levels of accuracy and detail.



In 2014, Fostex released the TE-07 single-balanced armature driver in-ear monitor (IEM).





Astell&Kern's AK240 offers a completely updated design with flagship sound quality, a balanced output and native DSD playback. Along with improved sound, the AK120 II has a completely updated package with a slimmer form factor and larger touchscreen display.



The Ultimate Ears In-Ear Reference Monitors are designed for professional studio engineers and producers for use during recording, mixing, and mastering original music content.



Sony's brilliant Naotaka Tsunoda is shown with his MDR-Z7 circumaurals and the XBA-Z5 in-ears (insert).

lineup, Ultimate Ears spent the last year refining its user experience by reducing turnaround times from order through to delivery. Ultimate Ears leverages the resources of its parent company Logitek and incorporates additive or "3-D printing" into its manufacturing process. Audiologist molds are optically scanned to produce a point cloud representing a user's personal ear shape. Then, molds are generated from a 3-D printed positive. Digitizing the process has reduced errors and rework while speeding delivery times.

## High-Resolution Audio

In case you've been holed up in a windowless room, which is probably the case if your studio tan is well developed, you may not have heard that there's a high-resolution audio (HRA) trend in the making. Major labels (e.g., Warner, Sony, and Universal) along with established HRA resellers (e.g., Bandcamp, Blue Coast, Linn, and 2L) have been joined by a spate of small, mostly classical labels selling better-than-CD resolution files directly to consumers. Now a major new reseller, PonoMusic (<https://ponomusic.force.com>), is poised to provide a carefully curated alternative to the more laissez-faire HD Tracks reseller experience. RMAF provided a glimpse into the variety of home and mobile choices available to consumers who want to reproduce HRA files in their homes.

A plethora of Windows and Linux-based file servers, with user interfaces varying from poor to excellent and prices ranging from surprising to ridiculous, were joined at the show by an ever-growing collection of pocket-size portables. This high-resolution-everywhere trend has been led by iRiver's trailblazing Astell&Kern line ([www.](http://www.)

astellnkern.com). This year, Astell&Kern introduced second generation versions of previous models, including its new AK100 II (\$900) and AK120 II (\$1,700). Astell&Kern also introduced its all-new, hi-fi portable AK240 (\$2,500). These products may seem expensive but, when paired with the proper adapter, offer exceptionally accurate playback. Let's see if you think that's insufficient value, they also act as a USB DAC and are capable of playing lossless and linear pulse code modulation (PCM) up to 192 kHz. Plus, single- and double-speed DSD playback is supported via on-the-fly transcoding to PCM in the entry-level models and natively for the AK240.

Sony (www.sony.com), of Walkman fame, is not taking the newcomers sitting down. Its high-resolution NWZ-A17SLV Walkman (\$300) will also play lossless and linear PCM up to 192 kHz. An up-market version that handles DSD is also in the works. Though the NWZ-A17 is not yet shipping, Sony's PHA-2 portable DAC first arrived at the 2013 RMAF. In addition to FLAC, ALAC, and LPCM, the \$600 unit natively handles single- and double-speed DSD. Not to be outdone, iFi Audio (http://ifi-audio.com) offers a battery-powered micro iDSD USB DAC that supports up to eight-times DSD and double-speed DXD, even though there is no content available yet at those rates. The iDSD (\$500) also provides USB-to-SPDIF bridging to DACs that don't support USB. To sweeten the deal, the iDSD also includes a 4-W into 16-Ω headphone amplifier.

Resonance Labs (http://resonancelabs.com) upgraded an existing model to the Herus Plus USB DAC (\$400). The minuscule new version includes the choice of two anti-imaging filters, either a traditional IIR filter or an "apodizing" filter. Apodizing refers to a minimum phase filter with a corner frequency below the Nyquist frequency for the sample rate in use. The product supports linear pulse-code modulation (LPCM) up to DXD as well as single- and double-speed DSD.

Known for its Kickstarter successes, LH Labs (http://lhlab.com) demonstrated its Geek Out USB DAC. Another tiny DAC, the Geek Out is a bit bigger than a box of matches. It supports DXD and three-times DSD sample rates. The headphone amplifier is Class A, and three models with varying power are offered—from the Geek Out 450 (\$200) with 450 mW for low impedance cans to the Geek Out 1000 (\$300), delivering 1 W for low efficiency and higher impedance cans.

To round out the discussion of high-resolution portables, it should be noted that many headphone manufacturers were using the totable Hugo DAC and headphone amplifier (\$2,500) from Chord Electronics (http://chordelectronics.co.uk). Based on a Xilinx



Mytek's Manhattan DAC proves pro doesn't have to mean ugly (a). What's old is new again. The Manhattan Raven is shown with Raven Audio's Spirit Mk.2 300B monoblocks driving Burwell & Sons' vintage horns (b).



exaSound's e28 eight-channel DAC brings together DSD256 and the thrill of a multichannel sound stage perfected for music experience.



## About the Author

Oliver. A. Masciarotte is a graduate of the Lowell Institute of MIT. Oliver has been a principal of Seneschal, a consultancy to the professional audio and rich media industries, for more than 25 years. Oliver is also the author of more than 100 trade articles and he wrote *To Serve & Groove*, a book about file-based music playback for the home.

FPGA instead of off-the-shelf DAC chips, it supports the usual sample rates of DXD and two times DSD. After listening and manhandling several of them at RMAF, it seems that ease-of-use is not one of the product's strong points—there are no labels on any of the numerous controls and indicators. Despite the tendency toward beautiful industrial design over a straightforward user experience, the Hugo is Chord Electronics' best effort and a true reference design you can easily take on location.

## Tabletop DACs

By now, you should know that there are some excellent, low-cost tabletop DACs that fully support HRA. While there were many new and existing models at RMAF, two were of particular interest.

Mytek Digital (<http://mytekdigital.com>) is known for its value-priced stereo and multichannel DACs. The debut of its Manhattan reference DAC (\$5,000) adds new features with beautiful, functional casework. With separate isolated power supplies for analog and digital circuitry, excellent jitter performance, balanced analog in and out, and a high-current fast-slewing headphone amplifier, this combination preamp/DAC even retains the stepped analog attenuator of previous models. Critical for pro applications, a Word Clock output on BNC is included. This feature enables the Manhattan to clock your entire room. In keeping with the rest of the industry, the piece supports DXD and four-times DSD sample rates. An optical DSD I/O is in development.

The second desktop converter of interest was exaSound Audio Design's e28 DAC (\$3,650). The e28 from exaSound Audio Design ([www.exasound.com](http://www.exasound.com)) is the first multichannel DAC to natively support multichannel DSD over USB. To manage up to six times DSD multichannel transfers, exaSound's president George Klissarov went back to basics with the Audio Stream Input/Output (ASIO) standard. He found that the ancient and rather louche protocol was perfect for the job, if properly implemented. What resulted was an all new set of Mac and Windows drivers for the e28. The product includes a high-performance headphone amplifier and a choice of balanced or unbalanced outputs. Unfortunately, neither a Word Clock or sync output is provided.



Hilary Russ and John Young of Acousticimagery are shown with their ATSAH NC Monoblocs.



Benchmark Media System's SMS1 reference loudspeaker takes the attributes of the company's favorite speakers and pushes the engineering a step further.

## Amplification

Another trend worth tracking is the evolution of amplification. Just when you thought it had all been done, new state-of-the-art topologies and technologies have surfaced. Pass Labs (<http://passlabs.com>) demonstrated its Xs series of Class-A amplifiers based on exotic silicon carbide Static Induction Transistor (SIT) JFETs. That technology was first shown in low-power designs at the Bay Area audio geekfest known as Burning Amp. The Xs series shapes that technology into dual chassis, 150 W and 300 W into 8-Ω monoblocs, which both offering the best of triode hollow-state sound with the speed, grip, and reliability of solid state.

Bruno Putzeys and his second-generation Class-D designs offered a diametrically opposite approach. First seen at the 2013 RMAF, his Mola Mola division again showed its Kaluga 400-W monoblocs, derived from its highly regarded Hypex NC1200 NCore design. Ncore redefines Class-D performance, and the technology has started appearing in other brands.

Acousticimagery ([www.acousticimagery.com](http://www.acousticimagery.com)) also demonstrated its NC1200-based monoblocs.



# ACOUSTICS

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## NEW RELEASES



### 5" SATORI MW13P-8 preliminary

Nominal Impedance	: 8 $\Omega$	• Cast aluminum chassis for optimum strength
DC-resistance, $R_e$	: 6.0 $\Omega$	• Proprietary cone material with EGYPTIAN PAPYRUS™
Resonance frequency, $f_s$	: 40.5 Hz	• Soft low damping rubber surround for optimum transient response
Total Q-factor, $Q_{ts}$	: 0.29	• Advanced BIMAX spider for improved linearity
Equivalent volume, $V_{as}$	: 15.4 ltr	• Powerful optimized low distortion neodymium motor system
Piston area, $S_d$	: 70 cm <sup>2</sup>	• Extended copper sleeve on pole piece for reduced distortion
Sensitivity (2.83 V/1 m)	: 87 dB	• Non-conducting fibre glass voice coil former for low damping
V.C. diameter	: 30.5 mm	• CCAW voice coil for reduced moving mass
Linear Xmax	: $\pm 5$ mm	• Long life silver lead wires
Rated power handling	: 40 W	• Vented pole piece for reduced compression



### 4" SB12PAC25-4

Nominal Impedance	: 4 $\Omega$	• Vented reinforced plastic chassis
DC-resistance, $R_e$	: 3.1 $\Omega$	• Anodised aluminium cone
Resonance frequency, $f_s$	: 52.5 Hz	• Low damping rubber surround
Total Q-factor, $Q_{ts}$	: 0.31	• Large vented motor system
Equivalent volume, $V_{as}$	: 5.3 ltr	• Non-conducting fibreglass coil former
Piston area, $S_d$	: 50 cm <sup>2</sup>	
Sensitivity (2.83 V/1 m)	: 87 dB	
V.C. diameter	: 25.4 mm	
Linear Xmax	: $\pm 5$ mm	
Rated power handling	: 30 W	



### 2 1/2" SB65WBAC25-4

Nominal Impedance	: 4 $\Omega$	• Dented aluminum cone for extended usable frequency range
DC-resistance, $R_e$	: 3.6 $\Omega$	• Copper cap for increased high frequency output, reduced phase shift at higher frequencies and improved power handling capability.
Resonance frequency, $f_s$	: 115 Hz	• Low damping surround and non-conductive voice coil former to ensure dynamics and an open / transparent sound character with excellent detailing / resolution.
Total Q-factor, $Q_{ts}$	: 0.68	• Linear neodymium motor system for reduced distortion.
Equivalent volume, $V_{as}$	: 0.43 ltr	
Piston area, $S_d$	: 20 cm <sup>2</sup>	
Sensitivity (2.83 V/1 m)	: 83.5 dB	
V.C. diameter	: 25.4 mm	
Linear Xmax	: $\pm 2.7$ mm	
Rated power handling	: 20 W	



### 3/4" SB19ST-C000-4

Nominal Impedance	: 4 $\Omega$	• Optimized damping in pole cavity to eliminate internal reflection
DC-resistance, $R_e$	: 3.4 $\Omega$	• Fine weave soft fabric dome for smooth frequency response
Resonance frequency, $f_s$	: 980 Hz	• Saturation controlled motor system for reduced distortion
Piston area, $S_d$	: 3.8 cm <sup>2</sup>	• CCAW voice coil for low moving mass
Sensitivity (2.83 V/1 m)	: 88.5 dB	• Long life silver lead wires
V.C. diameter	: 19.1 mm	
Rated power handling	: 30 W	

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and Manufacturing expertise of Sinar Baja Electric, Indonesia

further information :

- [www.sbacoustics.co.id](http://www.sbacoustics.co.id)
- [www.sinarbajaelectric.com](http://www.sinarbajaelectric.com)
- OEM contact : [mkt@sinarbajaelectric.com](mailto:mkt@sinarbajaelectric.com)

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Scansonic's MB-1 is a stand-mounted two-way mini monitor.



Sprout is a new lifestyle-oriented integrated component aimed at Generation Xers and Millennials.

The ATSAH NC Monobloc (\$4,500) delivers 400 W into 8  $\Omega$  from a very compact package. The ATSAH-BE-YAZ NC stereo version (\$3,000) is slated for delivery in 2015. NAD, the first third-party manufacturer to license Ncore, was also at RMAF to showcase its 250-W M22 stereo amplifier (\$3,000).

The last item of interest in amplifier news was an early prototype privately shown in LH Labs's room. The Keep will be a moderate power (approximately 100 W into 8  $\Omega$ ), Class A/B amplifier, leaning toward Class A most of the time. The difference is its bandwidth, cost, and footprint. The Keep will be a decidedly affordable design, with a small form factor and wide bandwidth ( $-3$  dB at 2.5 Hz,  $-0.5$  dB at 80 kHz), making it perfect for many small, quality conscious studios.

## Small Speakers

Mastering engineers are the closest things to audiophiles in the pro industry. They're frequently attracted to home hi-fi speakers due to their lower distortion and less colored response relative to the powered boxes found at the guitar store. At RMAF, a handful of stand-mounted, small speakers stood out as perfect for B rooms and location monitors. Benchmark Media Systems ([www.benchmarkmedia.com](http://www.benchmarkmedia.com)) showed an all new, revised version of last year's system. The system was composed of its highly capable DAC2 DX (\$2,000) into its AHB2 100 W into 8- $\Omega$  power amplifier (\$3,000) feeding its SMS1 loudspeakers (\$2,450). The SMS1s are a reworked version of Studio Electric's acoustic suspension speaker, except with a much lower distortion and smoother response. The result is a signal chain of exceptional clarity and resolution at a very reasonable price.

Raidho ([www.raidho.dk](http://www.raidho.dk)) is a brand known for its extremely accurate, never clinical, and insanely expensive stand-mounted monitors. Raidho also displayed the reasonably priced Scansonic MB-1 speakers from Dantax Radio A/S ([www.dantax-radio.dk](http://www.dantax-radio.dk)). The MB-1 (\$2,300) is distinguished by its design and designer. Michael Børresen, Raidho's chief design guy and the one responsible for the MB-1, applied his lessons and stringent expectations to produce an affordable speaker with many of the same traits as its Raidho brethren. Small displacement, with a front facing port, a 5" woven carbon mid/woofer, and a separately chambered ribbon tweeter, the speaker would be ideally matched to a pair of quality subwoofers. Another new stand-mounted speaker at the show was from Axis Voice Box ([www.bradserhan.com.au/speakers/axis-voice-box](http://www.bradserhan.com.au/speakers/axis-voice-box)), the Axis Voice Box S (\$2,500). Sporting a ribbon tweeter and a Nomex and paper 5.25" woofer, the speaker shared the honest, extended high frequencies heard from the Scansonic.

## Hi-Fi Furniture

Mid-century modern is currently in vogue, and consumer tastes have moved in that direction as well. Zu Audio ([www.zuaudio.com](http://www.zuaudio.com)) showed a non-operational display of its Zu Modern Console No. 1. This piece of hi-fi furniture harkens back to the console stereos of old. A pair of 10" full-range drivers is coupled to a subwoofer in its own, mechanically isolated enclosure via magnetic levitation. Also from my




childhood are all-in-one electronics that only required speakers, though this product class was replaced by separates in the 1960s.

Simplicity and low cost are also back from PS Audio ([www.psaudio.com](http://www.psaudio.com)). Its Kickstarter campaign, which raised over \$400,000, spawned Sprout (\$800). In a small footprint, Sprout houses a 50-W integrated amplifier/DAC along with a phono input and a headphone output. Sprout is easy enough to use that a child can handle it, and it includes most everything a small household would need.

## Observations

This year, RMAF also offered a glimpse into the fickle audio mind as well as the less well-heeled average music consumer. From headphones to lifestyle and analog chic, current trends and future directions for the audio industry were all on display.

During the show, European service provider Aspiro AB announced the launch of its TIDAL streaming music service ([www.tidalhifi.com](http://www.tidalhifi.com)). At \$20 per month, TIDAL offers lossless streaming at CD quality to the US and the UK. Aspiro announced that "...partnership and integration agreements have already been made with 34 of the world's most respected audio brands."

This is just one more piece of evidence that "high res" is here to stay. Engineers, producers, and artists should start thinking about high-quality distribution first, and let lossy compressed audio slowly sink out of view. For more information about RMAF, visit [www.audiofest.net/2014](http://www.audiofest.net/2014). 



Pendulumic's Mike Johnson is shown with the STANCE S1+ Bluetooth wireless cans.

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