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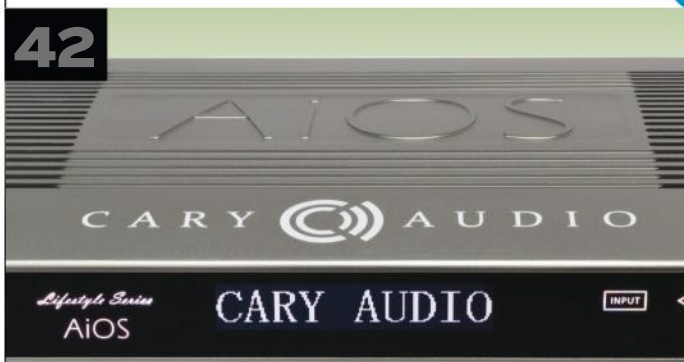
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## WHERE HAVE ALL THE AUDIOPHILES GONE?

What happened to the good ol' days...and will they ever come back?



I'd like to draw your attention to two entries in our Letters section this month that got me thinking about our current state of audiophile affairs. One, from Paul Thiel of Crescent Springs, Kentucky, headlined "The Great Equalizer," asks whether the disappearance of standalone graphic equalizers from the home audio market, along with the jacks to

connect them, was the result of automated room EQ coming to bear...or perhaps proof that manufacturers were mistaken in the notion that consumers were interested enough in audio to want to tailor the frequency response of their systems.

As you'll read in the response, our resident audio historian and audio technical editor Mark Peterson reminds us that the tape loop and pre-out/main-in connections required to hook up even a stereo (much less multichannel) equalizer or other processor disappeared with the advent of multichannel A/V receivers, well before built-in DSP and automated room correction came into vogue. It was, he suggests, a financial decision by manufacturers seeking to save cost and back-panel real estate. So this might have been something of a chicken-and-egg situation: Did the demand for equalizers (or home recording) disappear first, followed by the removal of the connectors? Or did the manufacturers' decision to provide the clearly desirable benefit of surround sound in competitively priced products simply require triage of more esoteric functions (like the hookup of an equalizer or tape deck), and thereby hasten the disappearance of these products?

On the idea that audio manufacturers don't arbitrarily bite the hand that feeds, we might rightfully assume that sales of these accessory products were waning enough by the time they canned the jacks to suggest that the general public would not miss the lack of connection points. So that got me wondering: When exactly did we, as a nation of music lovers, stop wanting to tweak and tailor our sound to make it just right? When did our collective passion for hi-fi, as we once knew it, begin to fade? When did teenage boys in high school stop wanting the tallest speakers with the biggest woofers, or stop aspiring to a giant receiver with a glowing FM dial and more buttons, knobs, and switches than an *Apollo* space capsule?

Was it in the mid-1980s when the CD (with its arguably inferior digital sound quality at the time) came on like a tidal wave and vinyl sales quickly withered? Was it in the early 2000s when Napster and the iTunes Store first popularized, and then legitimized, downloadable digital music files of

much less than even CD quality? Was it with the broad acceptance of the iPod and its surgical freeing of music listening from the home environment—the mass market's ringing endorsement that the gift of music should and would be had anywhere but between a pair of bulky towers or bookshelf speakers, and that cheap earbuds driven by the flea amp in a high-tech pocket player was all that the music deserved?

Which brings me to the letter titled "Don't 'Phone Me" from Barry Miller in San Jose, in which he more or less argues (fairly) that headphones provide a very different listening experience than sitting in a room between two speakers, and dismisses them (perhaps unfairly) as something less than an authentic audiophile experience. I responded by noting the recent surges in high-performance 'phones and passionate headphone enthusiasts, though I wasn't thinking at the time about what might be driving that growing interest. Or, for that matter, what might be behind the recent renaissance of the vinyl LP—the one source/music format you can't listen to on a bus or while walking down the street.

Do those trends mean that we are heading back to the good ol' days, the Golden Age of Hi-Fi? Well, not quite. Irrespective of the fact that virtually everyone (it seems) regularly listens to music in some fashion, the mass acceptance of downloadable and streamed digital proves how few of us really cared to be tethered to a good hi-fi system in the first place. Just as the mass-market acceptance of soundbars today over component home theater systems shows again how, for the majority, convenience and aesthetic considerations trump sound quality every time.

But I do believe that a sea change has been signaled by the younger generation playing and collecting LPs, and the interest in high-performance headphones among people who grew up never living with a component stereo and only knew the white earbuds as their access to the music. My interest in high-performance wireless speakers like those from Sonos and its competitors (see my review of the Riva WAND system this month) is driven in part by my desire for products that address those aesthetics and convenience points while, perhaps surreptitiously, reaching out and emotionally engaging the listener. If we can get everyday consumers to stereo-pair a couple of high-quality compact wireless speakers, there's a chance they just might stop whatever busywork they're doing around the house and sit down in the sweet spot. And from there... who knows?

**Are we heading back to the Golden Age of Hi-Fi?"**

A handwritten signature in black ink, appearing to be "JTB".

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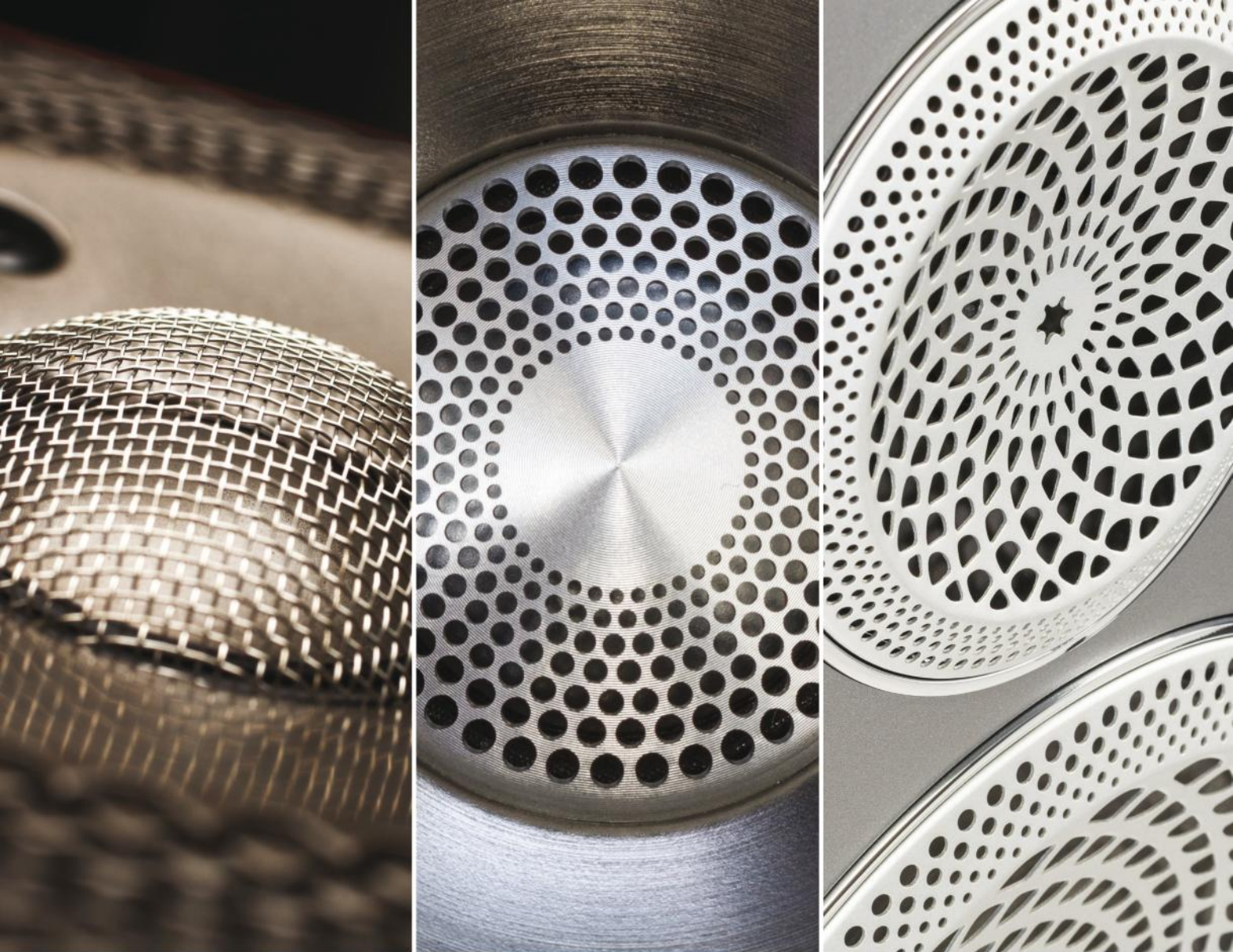


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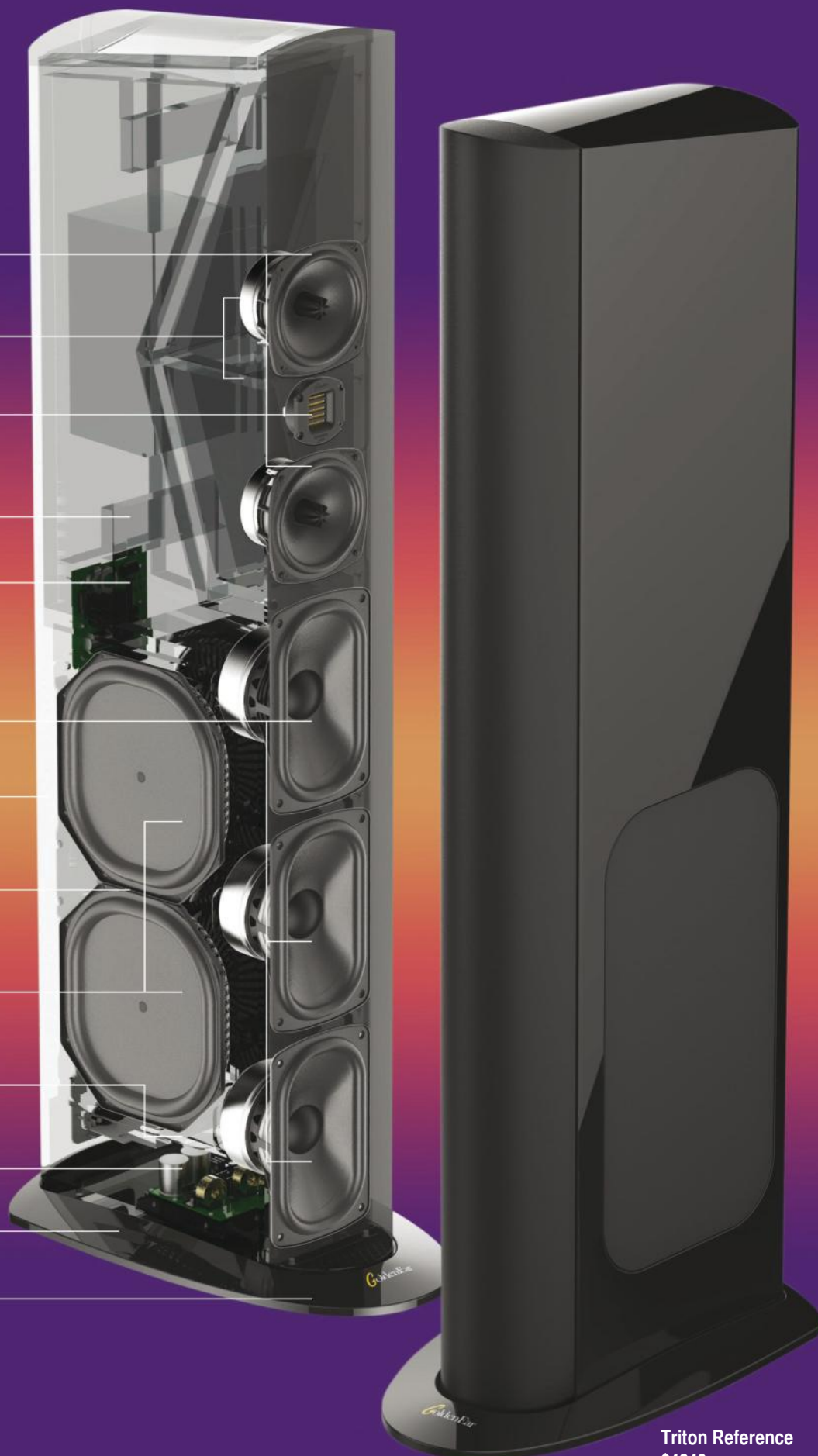
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*“Undeniably stellar ... Yes, it does deliver the sort of performance previously delivered only by cost-no-object speakers.”* – Dennis Burger, *Home Theater Review*

The Triton Reference is an evolution of everything that we have achieved with the Triton One, but taken to a stunning new level of sonic performance and sophisticated visual design. All the components in the T Ref: including larger, more powerful, active sub-bass drivers with huge “Focused Field” magnet structures, upper-bass/midrange drivers with “Focused Field” magnet structures, and High-Velocity Folded Ribbon tweeter with 50% more rare earth neodymium magnet material, are brand new, and have been specifically developed for use in the Reference. The powerful 1800 watt subwoofer amplifier, with level control to fine tune the bass to your room, and 56-bit DSP control unit are a significant evolution of those in the Triton One and our SuperSubs.

There are a myriad of other significant upgrades and refinements, including: new internal wiring with a specially developed twist, further development of our signature balanced crossover including

film capacitors bridged across the high-pass section on the upper-bass/midrange drivers, a unique proprietary mix of long-fiber lamb’s wool and Dacron for more effective internal damping, intensive work with a high-resolution accelerometer to determine the most effective implementation of complex internal bracing, a 3/32”-thick steel plate built into the mediate base to further stiffen it for increased stability, new stainless steel floor spikes and cups, all of which results in higher resolution of subtle details ... and the list goes on and on.

*“They are flat-out incredible, knock-your-damn-socks-off, jaw-droppingly realistic, enrapturing speakers.”*

– Caleb Dennison, *Digital Trends*

Visually, the Reference offers a strikingly beautiful upgrade to the classic Triton styling, with a gorgeous hand-rubbed piano gloss-black lacquer finished one-piece monocoque cabinet. Sleek, statuesque and refined, the Reference is simply an elegantly gorgeous statement piece that will excite listeners with its dynamic visual presence, as well as its extraordinary sonic performance.


Sonically, the Reference has been engineered to perform with a dramatic and authoritative voice, comparable to speakers that sell for ten and more times its surprisingly affordable price. T Refs completely disappear, with superb three-dimensional imaging that will open up your room, stretching from wall to wall and beyond, and depth that makes the wall behind them seem to vanish. The astonishing bass is rock-solid, with low-frequency performance that is tight, quick, highly impactful and musical with extension flat to 20Hz and below. Another GoldenEar signature is a silky smooth high end that extends to 35 kHz with a lifelike sheen but no trace of fatiguing hardness, sibilance or stridency so common with lesser tweeters. Tremendous time and energy has been put into the voicing of the speaker and the seamless blending of the drivers, for unmatched musicality with all types of music, and home theater perfection. Rarely do speakers excel at both, but with their world-class neutrality, the Reference absolutely does. A special bonus is the Reference’s extremely high 93.25 dB sensitivity, which gives them tremendous dynamic range and allows use with almost any high-quality amplifier. You must experience T Ref for yourself!

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# Letters

We welcome  
questions and  
comments

**E-mail them to HTLetters@sorc.com.** Please note: Questions about the features and functions of a particular product are best directed to the manufacturer. Questions about what product you should buy are best directed to a dealer who knows all the details of your system, your preferences, and your personal habits. All submissions are considered the exclusive property of Sound & Vision magazine and TEN: The Enthusiast Network. We reserve the right to edit letters for brevity. Due to the volume of mail that we receive, we regret that we cannot respond to every letter.

## It's a Wee One

First, thank you! My wonderful televisions always come from your reviews—plus it's always fun reading. I'm greatly enjoying watching OLED's development and hoping there will be a 46-inch model available at some time. The one space I have for it can take no bigger. Do you think there's a chance?

**Teddy Stott**  
via e-mail

*It's not unreasonable to think that LG, which is currently alone supplying OLED television panels to itself and the industry, would have a long-range plan to bring OLED to some of the higher-volume smaller sizes. Screens between 32 and 50 inches have traditionally sold well with urban apartment-dwellers short on space and as*

*bedroom sets. But it's unlikely we'll see a 46- or 32-inch OLED anytime soon. To begin, the benefits of 4K OLED, where LG is focusing its fabrication efforts—are lost at the smaller sizes. And with OLED still a relatively new technology, LG will likely continue to build volume and brand share for OLED in the popular 55-, 65-, and growing 75-inch arenas. The Consumer Technology Association says 2017 will be the first year in which OLED TV sales will exceed \$1 billion, with virtually all of that belonging to LG. Eventually, as volume drives costs down, they may see an opportunity in the smaller sizes, but I wouldn't be holding my breath waiting for that.—RS*

## Don't 'Phone Me

I wish to express my disappointment and

surprise with Steve Guttenberg's review and discussion of the MrSpeakers Aeon headphones (October 2017). I have never heard these headphones and so can't comment on their audio attributes. But I do wish to criticize Steve for bringing up the issue of headphones, for or against, without pointing out (what you know, but maybe others do not) that they are technically a very different way of reproducing music than speakers.

Headphones are not stereo in the sense that a home stereo system is. They are binaural: Each ear hears only one channel, and the brain tries its best to make sense of this. With speakers, each ear hears both channels, with a slight delay of the left ear hearing the right channel and vice versa. This is the way the music was miked and produced, with monitor-quality speakers in a special room.

The whole concept of natural sound imaging, soundstage, and subtle nuances with regard to instrument placement is lost in binaural (headphone) music re-creation. It is simply not comparable to stereo speakers.

Steve needs to understand it is not a question of "winning over resistors" to headphones: I have excellent Grado headphones on my PC to listen to tracks for the composition of musical lists or evaluating various quality parameters (background noise, frequency response, etc.). But when it comes to putting my feet up, spinning the vinyl, and "being there," only classic stereo can re-create the intent of the producer.

**Barry Miller**  
San Jose, CA

*For those who missed this review (now online at soundandvision.com), Steve started out by noting that he meets audiophiles who have (perhaps snobbily) written off headphones as a way to enjoy music and refuse to even give the new late-generation high-end 'phones a fair listen. The Aeon, he noted, might be the one to finally win them over. One thing he didn't say, and never has said in his many headphone reviews for us, is that headphones are indeed, as Barry says, a different kind of listening experience than what we experience in a room with loudspeakers. I'm not sure that's really a required caveat emptor.*

*But to address the larger point, I'd argue that those who love music and consider themselves audiophiles would be foolish to dismiss today's better headphones for the purpose of "putting your feet up" and "being there." Given good-quality program material, the best headphones provide a tremendously intimate listening experience, complete with their own sense of imaging and soundstage (sometimes well outside the earcups with the right headphones), often coupled with an ability to hear details that get lost on all but the very best speaker-based hi-fi systems. The premium headphone market has exploded in recent years, and there are legions of very serious audiophiles who frequent enthusiast websites such as our sister site innerfidelity.com to keep up to date on the latest developments. I might suggest*

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In-Wall Subwoofer Systems



Available as single or dual subwoofer systems, with outboard DSP and amplification.

### LETTERS

*that if the writer has only ever listened to his "excellent Grado headphones" from his PC, he might try them with a fine but affordable headphone amp/DAC in between—the Audioquest DragonFlys are one option—and see if that doesn't change his mind. And if it doesn't, maybe it's time to swap for some new headphones.—RS*

#### The Great Equalizer

Does the fact that I can't find a decent equalizer to add to my audio system (and the fact that I couldn't connect it to a current receiver if I could find it) mean that the attempt to allow consumers to tweak their own frequency responses was a mistake or a failure? Or does the inclusion of room correction in almost every receiver mean that frequency tweaking has just been automated and reserved for professionals?

**Paul Thiel**

Crescent Springs, KY

*Although the days of finding a graphic audio equalizer in an electronics chain store alongside the stereo receivers are long gone, they are available online from websites like parts-express.com and Monoprice; you can get a 31-band stereo model for less than \$150. Vintage units from Technics, AudioControl, SAE, Pioneer, et al., can also be found on eBay.*

*But being able to use them is another matter. Barring a few exceptions, such as the Outlaw Audio RR2160 stereo receiver reviewed in November, the tape loop connectors and pre-out/main-in jacks once found on receivers for hooking up an EQ are no longer around. As our audio tech editor Mark Peterson reminded me, "the tape loop connectors started disappearing when multi-channel AVRs came into common use, long before Audyssey [automated room correction]. The rear-panel real estate became too valuable and was needed for other connectors, plus the buffer stages and connectors for the loop-through get even more expensive as the channel count climbs. The vestigial analog tape circuitry morphed into Zone2/3 outputs with little modification. When DSP processing became common, the manual EQ settings [found in some AVRs today] started to show up."—RS*

#### Where's the Value?

I've resigned myself to you wasting the last page of *Sound & Vision* on some overpriced vanity product—I can understand a little curiosity in the stuff that is bought by those who do not need to inquire about prices. You do realize that those people do *not* read *S&V*, correct? At least the vast majority of your readers are not part of the 0.1 percent, I can guarantee that. Those people have minions that they hire to take care of the "mundane" stuff of selecting and installing electronics, amongst many other things.

When you waste valuable space on your (dwindling number of) pages in *Sound & Vision* on a ridiculously priced item, that's where I do start to take offense, since I do *pay* for your magazine. The kicker in your September 2017 issue was not only spending six pages on how great the Paradigm Persona 5.1 system looks

and sounds, but at a price of \$31,000 you gave it *five stars out of five for value*? To put that price in regular working stiff terms, that's about 30 months of average mortgage payments in the U.S., yes, two-and-a-half years of house payments. Or 2.4 times the price (\$2,500 each) of five GoldenEar Triton One speakers, which would actually include five 1,600-watt subwoofers, one in each speaker. Are you saying the Paradigm rig not only sounds almost four times better than five Triton Ones, but is also the same value for the dollar? Man, it must be nice to get to have all these expensive toys on loan for free! But when you say a 5.1 speaker system is a five-star value when it costs \$31,000, you are *not* giving expert advice.

I know I speak for most of your readers when I politely ask you to stop wasting your space and our time on fantasy and stick to reality and provide us *useful* information, which I admit you do the majority of the time. I'm beginning to think that there must be some under-the-table payments taking place for such a blatant misrepresentation of the value of a product. Maybe you should do some online polls to find out what your readers are actually spending or willing to spend on various components so you can serve us better.

**Greg Francis**

Colgate, WI

*We do step outside the box with expensive gear from time to time in the interest of covering the exotic Ferrari sports cars alongside the high-end Lexus sedans, the mid-priced Hondas, and the Kia economy models. I also believe these aspirational products have particular merit when they represent a stab at the high end by one of the mainstream enthusiast brands. The Persona system (including the \$10,000-per-pair 3F tower) fits that description, as did the GoldenEar Triton Reference (which, at \$8,500 for the stereo pair we reviewed, is hardly cheap). As for our Value rating, we do our best to have this reflect what you get with a product overall (performance mostly, but build quality and features as well) vis à vis the products it's intended to compete with. That Persona system includes a pair of serious high-end towers, a massive center channel as large as a small tower speaker, and a three-sided/six-driver subwoofer that rightfully stands up to the similarly priced state-of-the-art ass-kickers from JL Audio and the like. It's out there as an alternative to the much pricier mega speakers offered by the boutique audio companies. It deserves the five stars, as did the Triton Reference. And no, we never take payments for editorial coverage or allow any meddling in our editorial process.*

*Lastly, while we're on the subject of value, and putting aside the reviews or perhaps a recurring feature (like Premiere Design) that some readers might not find interesting or directly applicable, I'd ask how much "useful" information they really do get in each issue of the magazine. The current deal on our website offers 10 issues for \$12.97, or \$1.30 each. How many of you spend three times that every day on the coffee you sip while reading the magazine? Seems like a pretty good deal to me...—RS*





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– Darryl Wilkinson - [Sound&Vision](#), July/August 2017

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# Perfect focus

## NEW GEAR, TOP NEWS, HOW TO, AND MORE...

Edited by Claire Crowley

## Voice From Above



### 15 Minutes with Origin Acoustics CEO Jeremy Burkhardt

#### SPEND A FEW MINUTES ON

Jeremy Burkhardt's LinkedIn page, and you quickly gain an appreciation of his passion for custom installation and desire to create products that simplify installation and push the boundaries of performance—to “innovate,” as he would say. You also find an executive who is anything but your typical corporate CEO—a man who talks about breaking “all the corporate rules” in describing his work history as CEO for Speaker-Craft, the pioneering company he helped build before leaving in 2012. Today, Burkhardt is at the helm of Origin Acoustics, the custom installation company he founded in 2014, and his desire for innovation is as strong as ever. Origin was the talk of CEDIA 2017 with the launch of its Valet amplifier, which provides an ingenious way to integrate voice control into a wholehouse music system. We caught up with Burkhardt to learn more about the system and get his take on the future of voice control.—*Bob Ankosko*



users have become accustomed to combined with the Dot's technologies.

The concept is rather straightforward. The Dot connects with a standard Ethernet cable that powers the Dot and returns the audio signal to the amplifier. At that point, 50 watts of power is now available to drive speakers in the walls or ceiling of the remote room while controlling the zone through voice commands.

The system becomes even more appealing by mounting the Dot behind an in-ceiling speaker grille using our patented Tool-less mounting system. Now the Dot is essentially invisible, and the experience mimics that of a *Star Trek* crew member walking into the room and verbally addressing the computer. The experience is further enhanced by the sonic quality that's transformed from that of a decent smartphone speaker to that of a quality pair of 6-, 8-, or 10-inch stereo speakers designed for full frequency reproduction. Not only does this benefit the music quality, but Alexa's voice becomes so real, you can easily imagine her sitting in the room.

**S&V:** How did you arrive at the decision to use the Echo Dot to provide voice control for the system?

**JB:** Voice control of the Dot is an amazing technology and offers a great user experience. Amazon's commitment to the category is obvious, and the technology is sufficiently advanced to make the system viable. The Dot's inclusion of an audio output was

necessary to feed the amplifier, and its form factor also allowed for integration into our mounting system.

**S&V:** How effective, or responsive, is the voice

control when Dot is mounted in the ceiling? Are there limitations in terms of room size, etc.?

**JB:** A speaker grille is acoustically transparent by necessity, so installing the Dot behind the grille is a perfect location for hiding it and keeping it accessible for voice recognition. Our tests have shown it to function at the same level as if the Dot were sitting on a countertop. The ability to access the system from a distance is dependent on the room's acoustics and just how loud a person wants to bark commands.

**S&V:** Can you tell us a bit about the technologies covered in the Valet's pending patents—especially the mute feature? What makes them special?

**JB:** The muting circuit is a key element to making the Valet user friendly. When Alexa is addressed, the Echo Dot automatically mutes any audio program being generated by the Dot itself. However, we wanted the system to be able to access and amplify an external source as well. In this case, when Alexa receives a command, the amplifier automatically mutes the external source if it's in use and unmutes it when the command is complete. This extends the voice control feature even further.

**S&V:** Mechanically speaking, what does it take to install the Valet system? And on the technical/operation side, can you talk about how the system supports external sources in addition to the streaming options you get through the Echo Dot?

**JB:** As I mentioned, external sources can also be amplified and muted through voice control. An example would be an input from a cable box attached to a dedicated TV in the room. While watching a movie with the sound coming from the speakers in the ceiling, Alexa could be asked the age of a particular actor in the film. The TV sound is muted while Alexa listens and responds and unmuted when she is finished.

There's also a 12-volt trigger for each zone that can be used to further

enhance the system. For example, when connected to a control system, the trigger could activate a command to pause the TV in the room while Alexa responds and un-pause it when she's finished. The possibilities are substantial and easy to incorporate.

The physical installation requires running a Cat5 cable and speaker wire for each room, which is all that's needed to install the system. Installing the Dot behind a 5- or 6-inch grille is similar to installing one of our speakers, which is incredibly quick and easy. The balun that's attached to the end of the Cat5 cable, which is required to connect the Dot, is basically plug and play.

**S&V:** What role do you see voice control (and personal assistants such as Alexa and Siri) playing in A/V, home entertainment, and smart home automation moving forward? Is it a game changer?

**JB:** Voice control is more than just a gimmick. Due to the incredible advancements in voice-recognition algorithms, devices are becoming more effective and the command and control more reliable. This is only going to improve as more people become comfortable with talking to their electronics. Since Amazon opened their system to third-party developers, the number of “skills,” as they refer to them, has passed the 10,000 mark. Game changer? I would say the evidence is heavily indicating that's the case.

*The full version of this interview appears on [soundandvision.com](http://soundandvision.com).*





# This Just In...

By Mark Fleischmann

**LG Welcomes Sling TV** to 2017 OLED and Super UHD models. And its ad-supported Channel Plus app now offers more than 100 streaming channels...



## **Bluesound Mates Any Sub**

with its Pulse soundbar through the RT100 Wireless Speaker Link (\$99). It can also pair the Bluesound Sub to any Bluesound Player or other system...

## **Netflix and Dolby Atmos**

are now a thing. Initial titles will include *Okja*, *Blame*, *Death Note*, *Bright*, and *Wheelman*, while supported streaming devices include 2017 LG OLED TVs, Xbox One, and Xbox One S...

## **Netflix Bumped Fox**

from the number-four slot on the Must Keep TV list from Solutions Research Group. With ABC, CBS, and NBC still making the cut, this is the first time one of the Big Four didn't make the top four...

## **Vizio Added Amazon Video**

to SmartCast P-Series, M-Series, and E-Series



UHD TVs. You can buy or rent programs or access Prime Video...

## **Fox Will Stream**

on the Nexstar platform as part of an affiliate deal with the latter's 17 stations. This is the first time Fox has signed such a deal, though it already streams on Hulu without an affiliate connection...

## **Disney Will Launch**

streaming services for both its Disney and ESPN brands. In not unrelated news, it ended distribution through Netflix—and Netflix stock slipped on the news...

## **Amazon Prime**

now reaches 79 million U.S. households, up from 66 million last year. If it passes 90 million next year, it will surpass the number of pay-TV subscribers—as Netflix has already done...

## **Comcast Instant TV**

rolled out in the third quarter. It avoids conventional boxes in favor of mobile and other devices, includes a cloud DVR, and packages are expected to cost \$15 to \$40/month...

## **AMC Premiere and FX+**

are ad-free versions of those cable networks costing \$5



and \$6 per month, respectively. First availability will be on Comcast Xfinity boxes, website, and app, plus apps from the networks themselves...

## **DirectTV Now's Cloud DVR**

got beta-tested over the summer. It has some catching up to do with Sling TV, et al...

## **Dish Network and TiVo**

have migrated the latter's metadata to the former's TV, VOD, and DVR services. TiVo owner Rovi signed a 10-year patent renewal with Dish last year...

## **SimpleTV Shuttered**

its program guide, making its cloud DVR inoperable. Customers are offered a \$100 discount on the TiVo Roamio OTA...

## **Smart TVs Are Gaining Eyeballs**

at the expense of set-top boxes and dongles, says eMarketer, with their user base expected to rise 10 percent this year. Even so, Roku continues to grow with users up 19.3 percent from last year...

## **Charter Welcomed**

the new customers it acquired with Time Warner Cable and Bright House by hitting 30 percent of them with rate hikes. At

least you'll be able to get Netflix through your expensive rented box...

## **Creston and Sonos**

have inked a pact to enable the Sonos app to integrate into Creston home automation systems. Sonos speakers can be controlled by Creston touchscreens, keypads, and remotes—and Creston dealers now carry Sonos products...

## **Russound and Ihiji**

are bringing the latter's remote monitoring technology to the former's dealers. They'll be able to monitor device health, update configs, and perform firmware updates without a truck roll...

## **Onkyo and Pioneer**

added DTS Play-Fi wireless smarts to 2017 AVRs, systems, and other products via firmware update—and to their control apps too. Some 2016 models may also get the update...

## **Harman Acquired Arcam,**

maker of audiophile AVRs and other products. U.S. distribution via the Sound Organisation will continue...

## **Denon's HEOS Drive**

now supports hi-res and lossless audio. The

custom-installable HS2 (\$2,499) handles four HEOS zones and eight channels...

## **ATI Acquired Datasat,**

pooling their expertise in high-end amp and surround products for consumer and industrial use. The Datasat brand will continue, and manufacturing will remain in California...

## **Savant Acquired Artison**

from founder Cary Christie. That gives the smart-home specialist additional expertise in home theater and multi-zone audio, with new audio-over-IP solutions expected...

## **NAD Founder Marty Borish**

has died. The affordable audiophile brand, now owned by the Lenbrook Group, is sold in more than 80 countries...

## **Sinclair Broadcast Group**

says, quite chillingly, that local news would be better if just one or two mega-owners (like themselves) controlled news production in each market. Sinclair's acquisition of Tribune Media will probably go unopposed by a new FCC unconcerned with ideologically charged concentration of ownership...



# Handson

## Periodic Audio Mg, Ti, and Be In-Ear Headphones

By Steve Guttenberg

### Three of a Kind

**PRICE \$99, \$199, \$299**

**PERIODIC AUDIO** IS A BRAND-new company that launched with just three in-ear headphones, the Mg (Magnesium), the Ti (Titanium), and the Be (Beryllium), for \$99, \$199, and \$299, respectively. The three headphones look nearly the same, differing only in the color of the earpiece end caps. The Mg and Ti are similar shades of silver, while the Be is gold. The three models' 10mm drivers are all mechanically exactly the same but differ in their diaphragm materials—magnesium, titanium, and beryllium—so it made sense to look at all three models as a group.

Periodic Audio distinguishes itself from the pack of startup headphone makers because founder Dan Wiggins has a long history of designing microphones, headphones, and speakers. He's worked with Apple, Blue, Polk, Sonos, Infinity, and many more, but he was itching to strike out on his own with a line of in-ear headphones.

Warranty coverage for most in-ear headphones is one year, with a few extending to two years, but Periodic's runs five years! That's good, because build quality for the Mg, Ti, and Be is nothing special. In fact, they all look and feel like \$99 headphones.

Close inspection of the polycarbonate earpieces reveals they have two tiny bass ports, one on the top of the barrel and one just above the nozzle facing the ear. Together, the ports reduce the pressure load on the driver when

#### AT A GLANCE



Plus

- Clear sound, great bass
- Five-year warranty
- Now made in the U.S.



Minus

- Tangle-prone cable
- No phone controls

it's sealed in your ear canal. It's not so easy to tell the left-channel earpiece from the right, but the right one has a red-tinted grille on the earpiece nozzle, while the left's is black. You'll need to look closely, though, because when the grilles are partially blocked by the ear tips, they're nearly impossible to see in poor light.

I used my iPhone 6S for all of my listening tests. At first, the Ti was the clearest, with the Mg not far behind. Both were low in distortion, with spacious soundstages, so I felt like I could hear into densely mixed recordings with ease. There was a bit more texture, more growl on electric bass with the Ti, while the Mg softened and blurred the notes. Cymbals sparkled more with the Ti, and the Mg's treble was a tad darker.

I can't think of any other in-ear headphones with beryllium drivers, but if you crave that exotic metal on a full-size headphone, check out the spectacular \$4,000 Focal Utopia

(review in our July/August 2017 issue and at [soundandvision.com](http://soundandvision.com)).

Incredibly enough, the Periodic Be features beryllium drivers for just \$299, so by that measure the Be is a bargain. I found its sound more refined and transparent than the other two Periodics, and Roger Waters' bass on Pink Floyd's "Welcome to the Machine" was clearer. The Be is the sweetest sounding and least fatiguing of the three models; however, the Mg is the easiest to drive, so it played louder at the same volume setting on my iPhone than the other two models.

Depending on recording quality, the sound differences between the three models can be fairly subtle, so I'm most enthusiastic about the Mg—they're a nice set of \$99 'phones. The Ti and Be are better, but if you're not a hard-core audiophile, those two headphones may not be enough better to justify

the differences in price. The Be won on clarity when I listened in my apartment. Isolation from external noise was only average, though, so on the NYC subway the differences between the three headphones were drowned out by the din.

Periodic Audio is moving their headphone production from China to the U.S. More headphone models are coming, and a high-performance portable headphone amplifier, the Nickel, will be available by the time you read this.

● Periodic Audio Ti



#### THE VERDICT

Periodic Audio's three in-ear headphones—the Mg, Ti, and Be—may only differ in the driver material but sound more different than you might expect.

#### RATING

##### Periodic Audio Ti In-Ear Headphones

Performance ★★★★★  
Build Quality ★★★★★  
Comfort ★★★★★  
Value ★★★★★

#### RATING

##### Periodic Audio Be In-Ear Headphones

Performance ★★★★★  
Build Quality ★★★★★  
Comfort ★★★★★  
Value ★★★★★

#### RATING

##### Periodic Audio Mg In-Ear Headphone

Performance ★★★★★  
Build Quality ★★★★★  
Comfort ★★★★★  
Value ★★★★★



● Periodic Audio Mg



#### SPECS

**Mg:** Type: In-ear • Driver: 10mm dome • Impedance: 32 ohms • Sensitivity: 101 dB/1Mw

#### SPECS

**Ti:** Type: In-ear • Driver: 10mm dome • Impedance: 32 ohms • Sensitivity: 96 dB/1Mw

#### SPECS

**Be:** Type: In-ear • Driver: 10mm dome • Impedance: 32 ohms • Sensitivity: 100 dB/1Mw

● Periodic Audio Be





KEN C. POHLMANN

## What's in a Name?



"The Quality Goes in Before the Name Goes On." If you are of a

certain age, that trademarked slogan is imprinted in your brain. It was marketed relentlessly. And it was a darn good slogan. It assured you that any product with the company's name on it was of high quality. It also redirected your attention to the importance of the name of the company itself; you didn't need to know anything else about the product; the company's name ensured that it was good. My, how times have changed.

Once upon a time, when you bought an Acoustic Research AR-3 loudspeaker, you were confident that it was designed and built by AR. Likewise, a Nakamichi Dragon cassette deck came from Nakamichi. In most cases, products contained very specific company DNA, a technological



the world's largest manufacturer of mobile phones, televisions, and semiconductors, Samsung Electronics makes parts, subassemblies, and entire products for many other companies. This can really blur the lines. A Google phone has a different name than an Apple phone, but if you look inside, you might find lots of similar Samsung parts. Sony made its name famous by making TVs, but Sony's cash-cow business today is its cameras that go into Apple and other phones.

In some cases, the name really is just a name. Many proud names have been repeatedly bought and sold until, although the name still has value, it has no connection to the company that originally infused value into the name. Indeed, in many cases, the original company is long gone. With a name like Smucker's, it has to be good. But with a name like Polaroid, who knows what the heck it is?

Now, I completely understand that nothing lasts forever; that's especially true of companies, thanks to the Darwinism of capitalism. The Dow Jones Industrial Average is an index of 30 of the largest and most important publicly traded companies in America. Since its founding in 1896, many companies have come and gone from the Dow. The only company originally listed on the Dow that is listed today is General Electric, a company that was partly based on a company founded by Thomas Edison. General Electric itself has a long history of merging and acquiring and reinventing itself—that knack for metamorphosing is precisely what has kept it in business all these years.

And that trademarked "Quality" slogan? That was Zenith, of course, founded 99 years ago in 1918 as Chicago Radio Labs. Among its many breakthroughs, Zenith invented the modern wireless remote control. The Space Command ingeniously used ultrasonic frequencies generated by striking aluminum rods to control Zenith TVs; because of the audible sounds produced, the remotes became known as "clickers."

Today, Zenith is owned by LG Electronics. LG's slogan is "Life's Good."

double helix that you could trust. A Sony TV was made by Sony, and you knew it was a good TV because, well, Sony made good TVs. When a company put their name on a product, it really meant something.

Then, companies discovered outsourcing. They realized that because of economies of scale, and the increasing complexity of products, it could be more profitable to have someone else build part or all of a product. That sweet KLH cassette deck was actually made by Nakamichi. That's not necessarily a bad thing because Nakamichi excelled at making cassette decks, but isn't that KLH logo on there a bit of a fraud?

Today, it's hard to keep track of who's who. Harman International owns Harman Kardon, JBL, AKG, Infinity, Mark Levinson, Lexicon, dbx, Becker, Studer—over 20 companies in all. And now Harman is a subsidiary of Samsung Electronics, which is part of the Samsung Group. As

## Dolby Likes to Watch You Watch

Dolby Laboratories wants to know exactly how viewers respond to its HDR, surround sound, or color palette technologies. So Dolby's chief scientist and neurophysiologist Poppy Crum has been running 15 to 20 experiments per day in which volunteers sit on a couch attached to brain monitors, heart rate monitors, galvanic skin response sensors, thermal imaging cameras, and lie detectors. You can see the results on a video by online publication *The Verge*: <https://www.theverge.com/2017/7/18/15983954/dolby-labs-bio-sensor-emotion-tracking-movies-next-level-lauren-goode>. "Am I in *The Matrix* yet?" quips correspondent Lauren Goode. Netflix and Hulu are also known to be using eye trackers to monitor viewer response.—MF



## Netgear Bows Retail Cable Modem

The Netgear Nighthawk X4S AC3200 is the first cable modem and router using new DOCSIS 3.1 technology to be sold in stores and online. DOCSIS 3.1 supports gigabit internet download speeds and "blazing-fast Wi-Fi" but does so with conventional coaxial cable wiring—so you can enjoy the boost without waiting for your nabe to get a fancy fiber-optic network upgrade. The Nighthawk is the first cable modem router to be certified by Comcast for its Xfinity network. Owning one might save you about \$120/year in rental fees. However, be warned that if you buy the device, you're responsible if it goes on the fritz—you won't be able to call the cable company and demand an exchange.—MF



## Blame It on the Emoji

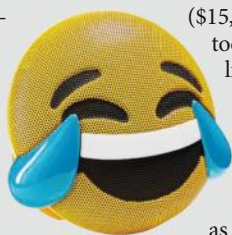


If brown and dirty is your idea of a stocking stuffer,

you won't have far to go this December. Bed Bath & Beyond offers the Bluetooth Poop Emoji Speaker (\$20, in brown), while Staples sells the Poop 4K Emoji Powerbank (\$15, you already know the color) for charging your phone. And Macy's has the EmojiNation Backpack for little girls and big girls (\$35) decorated with a variety of emojis including a poop wearing a crown.

It's good to be king. I have no doubt which emoji will be floating to the top of the Thanksgiving Day Parade this season.

Those planning to give headphones are in for a nice selection of sh\*t. After all, who wouldn't want to drape their heads in emblematic doody? Amazon certainly thinks so. The online retailer lets you stick it in your ears at least four different ways. There's the LGT Cartoon Ear-



design them into tangible objects tossable by UPS workers in brown. Sorry.

Cartoon characters have been made into wholesome toys for decades. But I wouldn't be writing this if it were just about the Face with Tears of Joy Emoji Pillow Case

(\$15, Amazon). Or Jam Jamoji's Bluetooth speaker separates that look like these emojis: the Kiss, the LOL, the Heart, the Just Kidding, the Love Struck, and the Trouble (\$20 each from B&H Photo).

Those fortunate enough to collect them all can swap speakers as often as their mood changes.

The universe of emoji-inspired gifts is large enough to encompass sofa cushions decorated by faces with extended tongues or cool sunglasses—symbols that don't necessarily promote a basic bodily function

made in private.

The most way-out exploitation of the emoji phenomenon may be the Wingsland Emoji Display Add-On for the S6 Drone. The \$20 accessory attaches to your drone so you can showboat the emoji of the moment from the sky. Unfortunately, any commercial blimp above a stadium does it better. The Wingsland LED lattice is low res, monochrome, and so minuscule that only a hovering hawk would get it.

But back to the down and dirty. Two things happened that helped glamorize Number Two. One was a general coarsening of public discourse courtesy of the White House. The other was the release of a major motion picture, *The Emoji Movie*. The animated film was slimed by critics. Nevertheless, by naming one of its major characters Poop, which incidentally followed in the don't-step-in-it path of Mr. Hankey's trailblazing turd character in *South Park*, America was further desensitized from the wonderful world of dung.

If you're wondering who plays Poop in *The Emoji Movie*, well it's Captain Picard/Charles Xavier himself, Patrick Stewart. Just think of the spinoffs in which Poop could star in 2018: *Star Trek: eXcrement Men*? Can you imagine the merchandising opportunities next go-round? I'd rather not.



## Sports-Free Bundle Tested

How would you like to save money on a TV package from a major cable operator and dump the set-top box at the same time? That's what Charter is offering with Spectrum TV Stream, which offers more than two-dozen channels for just \$19.95/month. The catch is that this skinny bundle does not include sports programming because it adds too much to the cost. You do get local channels plus CNN, AMC, and others. Pay \$15/month more to get premium channels like HBO and Showtime. The IPTV service supports Android, iOS, Amazon, Roku, Xbox One, and Samsung smart TVs. The downside? As overstuffed standard cable packages dwindle, so might marginal cable channels, as providers like Charter negotiate to get only the channels they really want. Viacom recently announced that it would focus on six core channels out of a stable of nearly two-dozen.—MF

Spectrum

## FCC Has Two New Members

Things were looking a little lonely at the Federal Communications Commission, what with the Senate stalling on confirmations, but the logjam has broken and the commission has two additional members. The newest one, Republican Brendan Carr, is a telecom expert who has previously served as the FCC's general counsel. Democrat Jessica Rosenworcel has returned; she has previously served on the FCC, getting bipartisan approval for her work, although her vote against the new digital cable ready standard was unfortunate. Along with chair Ajit Pai (R), commissioner Michael O'Rielly (R), and commissioner Mignon Clyburn (D), the FCC now has three Republicans and two Democrats, which is the norm—the party that controls the White House traditionally has a 3-2 majority. Look for the conservative tilt to make itself felt on net neutrality, concentration of TV-station ownership, and other issues.—MF




● Brendan Carr (R) and Jessica Rosenworcel (D)

## How did scatology rise to the top of the shopping cart?

phone 3D Cute Pooh Poop Earbuds (\$12); the Folding Fatheads Poop Emoji Headphones (\$22.88); the QearFun In-Ear Wired Cute Cartoon Poop Joke Earphone/Earbuds (\$10); and the PiHuang-99 Funny Dabbing Poop Emoji Bluetooth Headphones Over Ear, Stereo Wireless Headset (\$34). At least the latter substitutes tasteful rainbow colors.

By now you're probably wondering how scatology rose to the top of the shopping cart. Well, here's the thing. There are just so many smartphones you can give. Besides, almost everyone already has one. Social media apps are popular, and so are the pictograms that people use to express themselves with the least amount of work and thought. The problem is that emojis are just rectangles of pixels you download. You can't gift-wrap them. You can't shove them under a sawed-off tree. A company first needs to





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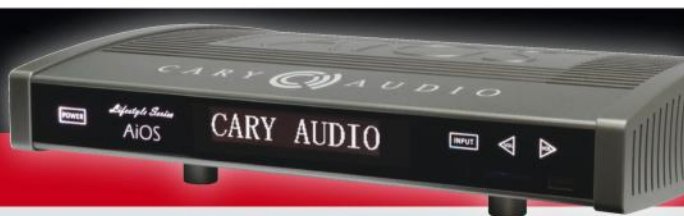
The new Q Series were made to bring the energy and emotion of a live performance into your home, and look great doing so. Q Series features a revamped Uni-Q driver array and an altered cabinet construction that allows the speakers to output clearer, more articulate sound than ever before.

You know how your favorite album and movies are meant to sound, so why settle for anything less than perfection in your speakers?

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## Audio Answers



**After a lull of many years, I'm now in the market for a new audio system and plan to buy high-quality tower speakers and a good amplifier. Here's my question: How do I deliver an audio signal to passive speakers using just an amp and no preamp or receiver? I've become accustomed to the convenience of music-streaming apps like Pandora and don't want my new system to be unnecessarily complicated.**

**Gary Barnett / via e-mail**

You chose a good time to get back into audio given your desire for simplicity and convenience. There's a new crop of network-capable integrated amplifiers that streamline the music-listening experience by providing built-in wired or wireless networking capability. In most cases, you just connect speakers, link the amplifier to your home's Wi-Fi network, and then use a custom iOS or Android app for control and setup. Many such amps provide integrated support for services like Tidal and Spotify. A number also support AirPlay and/or Chromecast built-in for direct audio streaming from compatible iOS or Android apps.

We review one such integrated amp, the Cary Audio AiOS, in this issue. It's a \$2,995 model with a 2 x 75-watt Class-A/B amplifier. Similar

still stands: no. Why? Because Dolby recommends using direct-radiating speakers at all positions, surround and ceiling height locations included, for Atmos setups. Object-based Atmos soundtracks require individually addressable point sources to deliver the immersive experience the format was designed for. That task is best handled by direct-radiating speakers, which have a focused, precise sound. Dipole surround speakers, in contrast, create a diffuse soundfield that's meant to mimic the multispeaker arrays used in older, pre-Atmos theaters. In other words, while they're arguably still useable in channel-based speaker configurations, dipole surrounds are a relic in the new object-based audio world.

**Can I link my Sony STR-DN1060 A/V receiver with a Sony soundbar using its Zone 2 output? What I want is for the receiver to drive speakers in my main listening room and for the soundbar to play the same audio in a second room.**

**Lewis Starman / via e-mail**

Yes, there should be no problem sending an identical audio signal from your receiver to a soundbar in a second room. The Sony model you mention provides Zone 2 output over stereo analog RCA and HDMI connections, and you could use either of these to route an audio signal playing in the main room to an input on a soundbar. If you ever choose to mix things up, your receiver also supports playback of separate inputs to multiple zones, which will let you listen to one audio source—a CD, for example—on your main speakers, and a different audio source on the soundbar.

**I'm interested in buying a new Ultra HD Blu-ray player but don't yet own a 4K TV due to budget constraints. Can an Ultra HD Blu-ray Disc be played on a regular HDTV? What quality issues would I run into?**

**Billy Keener / via e-mail**

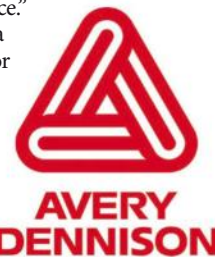
Yes, you can play Ultra HD Blu-ray Discs on a regular HDTV. What will happen is that the player will downconvert the 3840 x 2160-resolution video on the disc to a 1080p format your TV can display. It will also bypass any high dynamic range metadata since regular HDTVs aren't capable of processing that information.

As for quality issues, I personally haven't noticed any serious artifacts when viewing downconverted Ultra HD Blu-rays with a regular HDTV. I should add that many Ultra HD Blu-rays also come packaged with a standard Blu-ray version. So, even if you do buy movies on Ultra HD Blu-ray while saving up to buy a 4K TV, chances are you won't even have to mess around with video downconversion.

## Sticky Labels Bedevil Consumers

Don't you hate peeling sticky labels off your new phone and other CE purchases? You are not alone, according to an Ipsos poll of 819 consumers. Eighty-two percent confess to frustration, 81 percent to difficulty, and 53 percent to annoyance—because the labels leave a sticky residue. "As the survey demonstrates, the label might seem a small part of the product, but it can have a significant impact on consumer experience."

That quote is from a product manager for Avery Dennison Label and Packaging Materials, which paid for the survey, so it must be true.—MF



## Echo Security Glitch Found

British researchers have found a security vulnerability in Amazon Echo speakers that would allow hackers to install malicious software and listen in on your conversations. However, they would have to have physical access to the device, plugging an SD card into the speaker base. Then they can get into your Amazon account and make use of the system's necessary habit of awaiting a wake word, which would normally be "Alexa," the name of the voice-activated assistant. The problem is found in Echo speakers sold in 2016, not including the newer Dot. The researchers advise avoiding secondhand sales of those units, checking the seal on the box, and not placing the Echo in a hotel room or office. Amazon recommends buying the units from Amazon or a trusted retailer and keeping the security up to date.—MF



### How to I deliver an audio signal to passive speakers using just an amp?

models are available from a range of companies including NAD, Naim Audio, Auralic, Simaudio, Arcam, and Hegel. Many of these are priced in the \$2,000-to-\$4,000 range. However, by combining a streamer, high-performance DAC, and amplifier in a single package, they ultimately prove to be a good value.

**I currently use dipole speakers as the side surrounds in a 7.1-channel configuration. My plan is to upgrade to an Atmos setup and replace the side surround speakers with direct-radiating models. Here's my question: Could I use my existing dipole surrounds as Atmos height speakers?**

**Nick Ward / via e-mail**

This question pops up regularly as more home theaterphiles upgrade their systems for Dolby Atmos. The same answer I've offered in the past



# DMS-500 NETWORK AUDIO PLAYER



The DMS-500 is a reference quality network audio player and USB-A hard disc, SD Card file player with onboard TIDAL, Spotify, and vTuner music services (more services coming soon, FREE). It can play virtually any audio format up to PCM 768kHz and DSD up to an astounding rate of 512 while sounding absolutely sublime. You won't find another product this capable with such musicality anywhere approaching its retail price of \$4,995.

## AiOS ALL-IN-ONE MUSIC SYSTEM

While AiOS has all the same file, connectivity and playback capability as the DMS-500, it actually includes a class AB 150-watt amplifier. Just connect a set of speakers and you're done, with beauty, elegance, and compactness to boot! All that for just \$2,995.



Spring Green



Deep Plum



Cary Blue



Candy Red



Champagne Gold

At Cary Audio, we believe in supporting new technologies such as MQA and Roon Ready. This lets our customers know that when they decide it's time to explore these advanced features, the DMS-500 and AiOS are all ready to go! Our advanced digital technology within the DMS-500 and AiOS are capable of decoding MQA up to 768kHz. While 768kHz MQA is not currently available, MQA customized Cary Audio's decoder to take any native MQA signal, up to 384kHz, and further process it to 768kHz using our highly advanced and propriety digital topology. Combine that with our renown analog output stages for the most advanced analog like sounding network audio streamers/players anywhere near their prices. They simply can't be beat! We challenge you to find more capable, better sounding, more musical, MQA and Roon Ready Certified units than our reference DMS-500 source component or all-in-one AiOS network receiver.



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# The Connected Life

JOHN SCIACCA

## Mount a TV Like a Pro: Part 2



Last month's column detailed the first part of mounting a flat-panel TV onto a wall. To recap, it covered determining the size and location of where

the new TV will go, figuring out the needed wiring for the install, making a plan for powering the TV, making sure there's a clear path in the wall for routing the cabling to the TV, and then cutting wall boxes into the sheetrock and running the wiring.

So, starting part two, the electricity and all necessary cabling are in place, and we're ready to mount the TV!

### Step 1: Get the Correct Mount

There are three types of TV wall mounts: flat, tilt, and full motion (also called articulating). Flat mounts hold the TV tightest to the wall like a picture but offer no adjustment. Tilt mounts provide downward tilt of about 15 degrees, which is good when placing the TV high on the wall. Full motion mounts use single or dual arms to pull the TV off from the wall up to 30 inches and then turn the screen left or right, convenient if the viewing area isn't perpendicular to the screen or the set is recessed in cabinetry. MantelMount ([mantelmount.com](http://mantelmount.com)) offers a variation of the full motion mount that *lowers* the screen nearly 30 inches, a perfect solution when mounting the screen high on the wall such as over a fireplace.

Regardless of the mount style, making sure it supports your television's weight and VESA mounting pattern is crucial. The mounting pattern is the

### There are three types of wall mounts to choose from.

horizontal and vertical spacing in millimeters (mm) between the mounting screws on the television; it will be listed like 400 x 300. The TV's mounting pattern can be found in the owner's manual or by measuring the space between the holes, converting inches to millimeters (1 in = 25.4 mm).

### Step 2: Determine Mounting Height

To determine where the top of the TV will sit on the wall after mounting, you'll need to attach the mounting arms to the TV, fit them onto the bracket, and take a measurement. Place the TV face down on a soft, stable surface like a bed. Find the screws that fit your TV's threads using spacers if needed to ensure the screws don't go too deep. Place the wall bracket onto the arms and then measure from the top of the bracket to the top of the TV. Use this



measurement to locate the height of the wall bracket on the wall based on how high you want the TV to be when finished.

### Step 3: Position Mount on Wall

Most wall brackets have a center hole perfect for holding the mount in place while you level and secure it. Position the top of the mount at your desired height, and use a sheetrock screw through this center hole to hold the mount loosely in place. Place a level on top of the bracket so you can quickly check level.

### Step 4: Locate Studs

The majority of installations will be on sheetrock walls with 2x4 wood construction, and mounting requires lag-bolting the mount into two studs for a secure installation. You can locate studs using a stud finder, measuring 16 inches off the center of a known stud location (such as next to an outlet, which are typically nailed to a stud), or with a powerful magnet that locks onto sheetrock screws in the studs. (Google "Safety first magnetic key" for my installers' favorite.) Level the mount and mark the stud locations with a pencil through mounting holes on the bracket, two on top and two on bottom.

### Step 5: Bolt Bracket to Wall

Remove the bracket from the wall, and hammer a finish nail into your four marked locations to ensure you're definitely in a stud. If so, drill four pilot holes using a bit smaller than the lag bolts. Next, using your socket set, secure the wall bracket to the wall using lag bolts through washers, tightening just until the washers are secure. Make sure to keep checking the level while tightening, bumping the mount as needed to maintain level.

### Step 6: Hang TV on Bracket

We're in the home stretch! Depending on the TV size, this step likely takes two people, as you hold the TV in place and make all the wiring connections before you place the TV onto the bracket. Depending on the power plug installed, you might need a flat plug for the TV to sit flush; Google "extension cord with flat rotating plug" for a great solution. The last step is setting the locking/security bar on the mount to prevent it from accidentally being knocked off the wall, and you're done!

*Next month we'll tackle installing in-wall/ceiling speakers.*

## Streaming Subs Are Explorers

It's no surprise that Parks Associates finds 59 percent of U.S. broadband households subscribe to a streaming service like Netflix, Amazon, or Hulu—or that the trend is upward. But those streaming subscribers are also in an exploratory mood, with "an increase in households subscribing to two, three, or even four or more services," reports Brett Sappington, Parks's senior research director. He cites Crunchyroll as an example. The Japanese anime channel has more than a million subscribers worldwide. "They understand their target segment extremely well," Sappington told *TWICE*, "and they have crafted an experience that caters to that audience, including forums and events to foster a user community." —MF



## Pay the Musicians, Already

Republicans and Democrats may not agree on much, but at least one member of each party would like to see musicians get paid royalties on musical works produced before 1972. Reps. Darryl Issa (R-CA) and Jerrold Nadler (D-NY) are cosponsoring the Compensating Legacy Artists for their Songs, Service, and Important Contributions to Society Act, a.k.a. the CLASSICS Act. The issue has been bouncing around the courts, notably in a lawsuit by Flo & Eddie, composers of the Turtles hit "Happy Together," who sued SiriusXM for using that and other songs without paying the artists. A circuit court decision favored the broadcaster. The CLASSICS Act is "an important and overdue fix to the law that will help settle years of litigation and restore some equity to this inexplicable gap in our copyright system," said Rep. Issa. —MF







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**home theater review.com**

"I've heard almost all of the top subwoofers currently on the market. The SB16-Ultra sounds like none of them. It's a whole different category of low-frequency sound. **May well be the best subwoofer ever made.**"

**SoundStage!**

"**Incredibly dynamic and slamming.** Explosions thundered, then rolled through the room and I was able to feel each concussive shockwave. Energized my space with super-deep, articulate bass. **A true reference-quality subwoofer.**"

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Online A/V Magazine

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**HOME THEATER SHACK**

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# Reference Tracks

MIKE METTLER

## Ronnie Montrose Rocks the Nation with a Fabulous Final Studio Album, *10x10*



"His guitar speaks for itself." It's a phrase that could be applied to many a

dominant and influential guitar player of the rock era, but it's no accident it was also stickered on the front of albums bearing the name of Bay Area guitar legend Ronnie Montrose. Montrose initially made his mark laying down indelible riffs for the likes of Van Morrison ("Wild Night") and The Edgar Winter Group ("Free Ride," "Frankenstein"), but when he joined forces with a then-unknown Sammy Hagar to form Montrose in 1973, he shepherded a band immediately described as America's answer to Led Zeppelin, Black Sabbath, and Deep Purple, all rolled into one. ("Rock the Nation," indeed.)

"Musically, Ronnie really had a fiery thing about the way he played," Hagar observes. "He came out of the Jimmy Page/Jeff Beck era before the Eddie Van Halen and Joe Satrianis of the world arrived. He was one of those guys. He was *right there* with those guys."

Montrose eventually transitioned into a fine solo career, doing some of his best work onstage alongside bassist Ricky Phillips (Styx, The Babys, Bad English) and drummer Eric Singer (KISS, Alice Cooper) in the early 2000s. Montrose also had a singular vision for an album the trio started cutting together



Bill Towner - www.rednavaidigital.com

around that time, but sadly, he passed away in 2012 before it was completed. In his stead, Phillips gamely picked up the gauntlet and duly poured his own blood, sweat, tears, and golden ears into making sure the album ultimately dubbed *10x10*—so named to reflect the artist's wish to have its 10 tracks sung by 10 different vocalists—accurately honored the Montrose mantra.

To that end, *10x10* is a rousing sonic success, not only featuring great guest guitar solos from the likes of Steve Lukather, Rick Derringer, Def Leppard's Phil Collen, and Joe Bonamassa, but also stellar vocal contributions

from the aforementioned Hagar ("Color Blind"), Styx's Tommy Shaw ("Strong Enough"), Gamma's Davey Pattison ("Head on Straight"), and keyboard maestro Gregg Rolie ("I'm Not Lying"), to name but a few.

"It's a whole body of work," believes Singer. "The overall record has a vibe that's important to *not* go unnoticed. There was a certain chemistry going on

between Ricky, Ronnie, and myself, and it was captured the way they did those early Montrose records—live, and with no click tracks; none of that stuff. To me, that's the real underlying element people should pay attention to on *10x10*."

I recently got on the line with executive producer Phillips, 64, to discuss all things Ronnie. Have you heard the news? *10x10* ensures there will be some good rockin' tonight.

**MM:** Where did you guys cut *10x10*?

**RP:** We recorded in Doug Messenger's studio in North Hollywood, purportedly with the tape machine Pink Floyd used to make [1979's] *The Wall*. Ronnie was so wonderfully quirky in the studio. It took him three days to get the amplifiers set, all the wires straight enough, and the right carpet to go in front of everything. (laughs) Ronnie would explain a song and how he wanted it to go, and we would do it. We played it one time, and it was the only time it was ever performed.

**MM:** How did you arrive at the

idea of going with 10 different vocalists?

**RP:** Ronnie called me up one day and said, "I have a concept. We call the record *10x10*. It'll have the 10 tracks the three of us did, with 10 different singers." He started naming off all these singers—people he loved, and other people he'd worked with over the years—and then he said, "We go until we get the right ones."

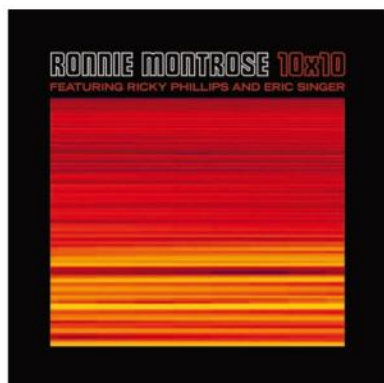
After he passed, I had to carry on with what Ronnie wanted, because he was such a purist. The songs were cut to 2-inch tape and then transferred to digital, but I really needed it to be a cohesive record. I've done enough records to know how easily the levels of 10 different singers can sound disjointed if you don't stay on top of the production.

Ronnie was definitely on my mind through the heart of the work. Sometimes I went with my gut, but there were decisions where I knew what Ronnie would do if he were there. I would feel Ronnie calling it in from Space Station #5, giving me the nudge for making decisions. At the end of it, I finally realized: All the right people *are* on the record.

*An extended version of the Mettler-Phillips Q&A, including a discussion of the deep impact the first two Montrose albums had on American musicians, appears in the S&V Interview blog on soundandvision.com.*



Bill Towner - www.rednavaidigital.com



### CD

**LABEL:** Rhino

**AUDIO FORMATS:** 44.1-kHz/16-bit PCM Stereo (CD), 48-kHz/24-bit PCM Stereo (download)

**NUMBER OF TRACKS:** 10

**LENGTH:** 46:03

**PRODUCERS:** Ronnie Montrose, Ricky Phillips

**ENGINEERS:** Doug Messenger, Bruce Gowdy, Ricky Phillips, 7 others

**PERFORMANCE** ★★★★★

**SOUND** ★★★★★





# LS50W Powered Music System



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Created without compromising any of the LS50's award-winning acoustic capabilities, LS50W features audiophile-grade amplification and sound processing, as well as extensive connectivity.

LS50W is driven by factory-optimised 230-watt x2 amplification and features four 192kHz/24-bit high resolution DACs. Combining KEF's Uni-Q driver technology with a time-correcting DSP crossover, LS50W brings a true high-fidelity listening experience to active streaming audio.

Plus, with a wide array of connection options available and a dedicated app offering three levels of customisable EQ control settings, the LS50W is now a complete state-of-the-art audio system.



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# New Gear

THIS MONTH'S  
HOT STUFF...



## ↑ Vutec Stiletto Projection Screen

Stiletto—an alluring name for an alluring projection screen that appears to float in midair thanks to its super-thin bezel. It's so skinny, you practically have to squint to see it. But the frame is made of extruded aluminum, so it's anything but flimsy. Lightweight, yes. Flimsy, no. **Wide or Really Wide:** A selection of ISF-certified screen materials, with gains ranging from 0.6 to 1.3, are available in standard 16:9 or ultra-wide 2.35:1. Screen sizes range from 92 to 159 inches (diagonal) in 16:9 and 115 to 189 inches (diagonal) in 2.35:1; custom sizes are also available. The frame can be ordered in flat black or matched to any RAL color. Prices range from about \$1,500 to \$4,200.

**Vutec • (800) 770-4700 • vutec.com**



## ◆ JVC DLA-X790R D-ILA Projector

One of three new projectors in the Precision series, the DLA-X790R is built around JVC's sixth-generation LCOS-based D-ILA imaging device—said to produce brighter, higher-contrast images—and the fifth generation of its proven e-shift technology. Though technically a 1080p projector, the X790R accepts a true 4K input and boosts apparent resolution to something close to 4K using a process called pixel shifting, which in this latest iteration samples each pixel individually prior to processing to “provide more optimization and better sharpening.” **Certifiable:** The projector is both ISF and THX 3D certified to ensure performance that has been independently verified and supports wide color gamut and two high dynamic range formats: HDR10 and HLG (Hybrid Log-Gamma). A motorized zoom lens eases setup, and the presence of two HDCP 2.2-compatible 18-Gbps HDMI inputs means you can connect two HDCP 2.2 copy-protected devices to the projector. Lamp life is rated at 4,500 hours in low mode. **Price:** \$6,000

**JVC • (800) 252-5722 • jvc.com**





## ➔ Onkyo TX-RZ920 A/V Receiver

If you're willing to settle for near top-of-the-line features and performance on your next AVR purchase, Onkyo's new TX-RZ920 deserves a look. Compared with the TX-RZ1100 (\$2,199, reviewed in our February/March issue), you get slightly less power, one less optical input, and you'll have to live with 24- (instead of 32-) bit DACs on all channels except the front left and right. **Bang for Your Buck:** You're still getting a THX-certified 9.2-channel receiver rated to deliver 9 x 135 watts into 8 ohms with eight HDMI inputs, Onkyo's AccuEQ room calibration system, support for all three high dynamic range formats—Dolby Vision, HDR10, and HLG—as well as DTS:X and Dolby Atmos surround processing, the latter for setups with up to 5.2.4 channels. **Price:** \$1,599

**Onkyo • (844) 525-6053 • onkyousa.com**



## ➔ Marshall Wireless Multiroom Speaker System

If you worship at the altar of rock, you can pay homage to the amp that gave rock guitar its big, bad voice. A follow-up to its Bluetooth speakers (the Kilburn made our 2015 Holiday Gift Guide), Marshall has launched a line of Wi-Fi-based multiroom speakers crafted in the image of the ultimate amp stack. You can connect up to five speakers and use the Marshall Multi-Room app to access music via Chromecast built-in, Spotify

Connect, or AirPlay and create up to seven presets for instant access to favorite music sources. You can also stream to individual speakers via Bluetooth. **Rock Trio:** Small, medium, and large models are available in black or cream, each featuring a classic Marshall control panel and dual tweeters plus a woofer or two: Acton (50 watts, \$349), Stanmore (80 watts, \$449), and Woburn (110 watts with two woofers, \$599).

**Marshall • marshallheadphones.com**



## ➔ Definitive Technology Demand Series Speakers

*Elegant* is the word that comes to mind when you lay eyes on Definitive Technology's Demand Series speakers. Each of the three models in the new line—the 10-inch-tall D7, 12-inch D9, and 13-inch D11—mates a 1-inch aluminum dome tweeter with an appropriate-size woofer and either a passive radiator or port (D7); respective woofer sizes are 4.5, 5.25, and 6.5 inches. The cabinets are finished in high-gloss black with a textured aluminum baffle. **Catch a Wave:** A patented waveguide in the center of each woofer is said to extend on- and off-axis response and improve dispersion. Each tweeter is offset 5 degrees to deliver a more precise image by eliminating symmetric diffraction off the corners of the front baffle and fitted with an alignment lens to improve dispersion. **Per-Pair Pricing:** D7 (\$499), D9 (\$749), D11 (\$999)

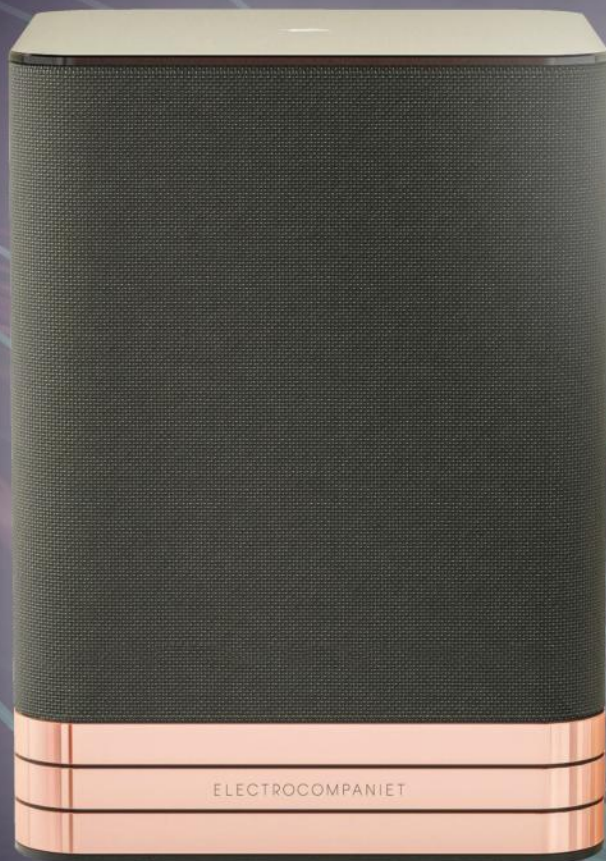
**Definitive Technology • (800) 228-7148 • definitivetechnology.com**





# NewGear

THIS MONTH'S HOT STUFF...



## ◀ **Electrocompaniet Tana SL-1 Wireless Speaker**

Recently introduced to North America, the Tana SL-1 from Norwegian high-end audio maker Electrocompaniet is built to deliver hi-res music over an existing Wi-Fi network. The two-way bass-reflex speaker is housed in a compact 10 x 7 x 7-inch aluminum cabinet along with a 150-watt Class A/B amplifier, 192-kHz/24-bit digital-to-analog converter (DAC), and 32-bit floating-point digital signal processor. **Ready, Set, Stream:** The Speaker supports AirPlay and is ready to stream from a network-based music library, integrated internet radio, or one of several streaming services, including Spotify Connect, Tidal, Qobuz, and WiMP, with MQA decoding coming soon. USB and Ethernet connections are provided along with optical and coaxial

digital inputs. Available with a copper, silver, or black aluminum base. **Price:** \$949  
**Electrocompaniet** • [electrocompaniet.com](http://electrocompaniet.com)



## ➔ **Sony VPL-VW285ES 4K LCOS Projector**

You don't normally think of five grand as "entry level," but the VPL-VW285ES is, indeed, the least expensive 4K projector in Sony's SXRD (LCOS) lineup. But that doesn't mean it skimps on features. To the contrary, the 285ES can put up an 8 x 14-foot image and supports HDR10 and HLG (Hybrid Log-Gamma) high dynamic range content at 60p with 10-bit color depth. **Quiet on the Set:** Sony promises "whisper-quiet" operation, deeper blacks due to recent updates in SXRD technology, true-to-life color by way of its Triluminos display technology, and jerk-free motion thanks to an interpolation process that inserts extra frames during fast-moving scenes. The projector supports 3D video and has nine picture calibration modes and motorized zoom to ease setup. The lamp is rated to last up to 6,000 hours in low mode. **Price:** \$5,000

**Sony** • (239) 245-6354 • [sony.com](http://sony.com)





### ➔ **Zvox SB380 Soundbar**

Soundbar pioneer Zvox has lowered the price of admission for its AccuVoice technology in the new SB380 soundbar by using a smaller but “highly efficient” digital amplifier and ditching Bluetooth, a feature most of its customers consider unnecessary for home theater. Otherwise, the SB380 is identical to the \$400 SB400, with three 2-inch full-range speakers and a powered 4-inch woofer in a 36-inch-wide aluminum enclosure ideally suited for TVs with screens up to 65 inches. **Hear Me Now:** Zvox’s proprietary AccuVoice system uses hearing-aid technology to clarify dialogue by lifting voices out of the soundtrack. Other handy features include PhaseCue virtual surround processing and output leveling to keep the volume of commercials in check. Zvox encourages you to try before you buy with its 60-day money-back guarantee. **Price:** \$300  
**Zvox • (866) 367-9869 • zvox.com**



### ✦ **Trinnov Altitude<sup>16</sup> A/V Processor**

A scaled-back, more affordable version of Trinnov’s Altitude<sup>32</sup> super processor (\$18,000 to \$33,000), the Altitude<sup>16</sup> is no less impressive. Instead of being configurable up to 32 channels, it’s built to render up to 16 channels and incorporates many of the same technologies used by its big brother, including Trinnov’s Speaker/Room Optimizer and patented Remapping technology, which takes measurements via a 3D microphone and reconfigures the speaker outputs to compensate for less-than-ideal speaker placements.

**Total Immersion:** To take advantage of all those channels, the Altitude<sup>16</sup> is equipped to decode all three immersive surround-sound formats: DTS:X (all configurations up to 11.1), Dolby Atmos (with up to 16 discretely rendered channels), and Auro-3D (up to 13.1). The processor is built to handle 96/24 hi-res audio and has seven HDMI 2.0 inputs and 16 balanced XLR outputs. **Price:** \$16,000

**Trinnov/Sound Developments USA •**  
**(310) 572-1070 • trinnov.com**



### ✦ **GoldenEar Technology Invisa Signature In-Wall Speaker**

It’s not every day you come across a SuperSpeaker, but that’s how GoldenEar characterizes the new Invisa Signature Point Source, an in-wall speaker that borrows technology from the acclaimed Triton series of tower speakers. The goal: Create a compact speaker capable of matching the dynamic performance of the larger Tritons. The result is a svelte structure 27.5 inches wide, 8 inches tall, and 3.25 inches deep with four 5.25-inch drivers flanking the company’s signature folded-ribbon tweeter. **Same Only Different:** The four large drivers might look the same, but they’re not. To achieve a point source radiation pattern, with the benefits of better dispersion and imaging, the upper range of the outermost drivers is limited to 500 hertz, while the two inner drivers reach up to 3 kilohertz to meet the tweeter—all accomplished with the help

of a sophisticated crossover network. **Price:** \$999 each  
**GoldenEar Technology •**  
**(410) 998-9134**  
**• goldenear.com**



# Tech the Halls

## 2017 Holiday Gift Guide By Bob Ankosko

**'Tis the season to start** driving yourself crazy trying to figure out what the heck to get friends and family members for Christmas, Hanukkah, Kwanzaa (*insert your holiday here*). The 2017 Holiday Rush is fast approaching, soon to be top of mind—unless you're Scrooge or just really good at procrastinating. Me? I fall into the latter camp, so the rush won't start until a week before December 25th. Same- and next-day delivery has spoiled us and made it exceedingly easy to perfect the art of...well, you know. (Thanks, Amazon.) Whether you tend to get an early or late start, you can rest easy—maybe even rejoice—knowing that an abundance of awesome tech gifts awaits you. For better or worse, most of us are obsessed with technology, whether it comes in the form of that shiny phone we can't stop staring at (please, no texting while driving) or a super-sexy voice-enabled wireless speaker. Here are 12 gifts worth a look.

### No Drilling Required

Everybody loves the idea of a wall-mounted TV, but many of us avoid the task for fear of making mistakes and turning a blemish-free wall into Swiss cheese—or worse. For that special someone who talks about hanging their TV on the wall but never quite gets around to it (or simply can't because of lease restrictions), we have the perfect gift: Erard's STANDiT, a stylish yet unobtrusive TV stand that hugs the wall. It's a breeze to set up, has a hidden channel for concealing cables, and can be painted to match the wall. Three models accommodate TVs with 30- to 55-inch screens weighing up to 66 pounds (\$299), 40 to 75 inches up to 99 pounds (\$399), and 40 to 90 inches up to 110 pounds or 140 pounds with a wall bracket (\$599). [us.erard.com](http://us.erard.com)





### Earful of Bliss

If you have a serious music lover on your list who deserves a set of real earbuds, let us save you some time and money. Cambridge Audio's first headphones—the in-ear SE1 (\$85)—features beryllium-diaphragm drivers and impressed us with their refined sound, comfortable fit, and excellent build quality. Editor Rob Sabin described them as “transparent and open, with clear and detailed highs, a smooth and unforced mid-range, and modest but satisfying bass with a proper fit using the supplied Comply tips.” A selection of three foam and four silicone eartips is included along with a storage pouch. All that for 85 bucks, plus Cambridge has pledged to donate 50 percent of proceeds from U.S. sales to Music Unites, a charity that supports music education around the world. A nice bonus.

cambridgeaudio.com



### Bargain Jam

The Jam Rhythm Wi-Fi speaker from Jam Audio isn't fancy, but for \$50 on Amazon (\$100 on jamaudio.com), it'll put your giftee into the wireless speaker game with a good-sounding speaker ideally suited for kids in high school and college. The speaker has an auxiliary input and buttons for power, volume up/down, and preset selection—that's it. There's no battery option and no display: Everything is controlled via a rudimentary app offering direct access to five streaming services—Spotify, TuneIn internet radio, Tidal, iHeart Radio, and Napster—four presets, bass and treble controls, a sleep timer, and two surprise features: Intercom (for use when additional Rhythm speakers are connected for multiroom playback) and Amazon's Alexa voice assistant. Press and hold the Alexa button in the app, and you can ask questions or issue basic control commands. Not bad for a 50-dollar speaker.

jamaudio.com • amazon.com



### Head Trip

No, this is not a virtual reality headset. Royole's Moon (\$799) is a 3D Mobile Theater that goes wherever you go. Tech enthusiasts and business travelers will appreciate being able to simulate the experience of watching movies on a ginormous IMAX-like 66-foot curved screen... anywhere. Put on the headset, adjust the viewer for a comfortable fit, and prepare to get lost in the moment. You can load content directly into the Moon—it has 32 gigabytes of storage—or connect to external sources via Wi-Fi or the supplied Micro HDMI and Micro-USB cables. A pair of advanced AMOLED displays with adjustable optics present 2D and 3D content in 1080p resolution, and the headphones employ active noise cancellation to keep you engaged. Battery life is about 5 hours, and the headset folds down to a nice, manageable size. Available in black, white, or gold.

royole.com





Thames &amp; Hudson

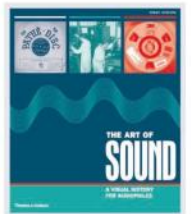


## The Art of Sound

Audio hobbyists, collectors of vintage gear, music lovers, and students of

history will love *The Art of Sound: A Visual History for Audiophiles* (\$50). The 352-page hardcover book documents the evolution of sound recording and playback through four distinct periods: acoustic (1857 to 1921), electrical (1925 to 1945), magnetic (1935 to 1979), and digital (1969 to the present). Each section opens with a time line and overview by author Terry Burrows that leads the reader to a wonderful selection of photos of the people and technologies that changed

the way we listen to music, long-forgotten marketing materials and music packaging, and other iconic artifacts, including patent blueprints. The book contains more than 700 pristine images, all scrupulously annotated. You might want to pick one of these up for yourself—or put it on your holiday wish list. [thamesandhudsonusa.com](http://thamesandhudsonusa.com)



## \$150 Soundbar Sensation

That's not a typo. Vizio's \$150 SB3621n-E8 is a super-economical soundbar that delivers shockingly good performance with music and movies. It will delight your audio-challenged loved ones or make a great gift for use with a bedroom TV or in a vacation home. The soundbar is 3 feet wide but only 2 inches tall, 3 inches deep, and comes with a compact subwoofer. It's extremely easy to set up and use, supports Bluetooth streaming, and offers optical and coaxial digital inputs as well as Dolby and DTS surround processing. S&V contributing technical editor Steve Guttenberg auditioned it and was particularly impressed by how well it played music...not to mention its tremendous value: "I kept thinking, 'This is a \$150 soundbar?'" Shipping is free if you order on Vizio's website.

[vizio.com](http://vizio.com)







## Low Fashion, High Tech

We're willing to bet there's at least one gadgeteer in your family. Or maybe s/he's a close friend? Either way, we've got you covered. The SCOTTeVEST Hoodie (\$95) has 21 pockets (17 hidden) for stowing a smartphone (in its own see-through pocket), a tablet, headphones, you name it—all in addition to your keys (tethered to a coiled wire), wallet, passport, travel documents, and whatever else you "need" to carry around. Sewn-in conduits make it easy to run charging cables from pocket to pocket and snake earbud wires up to the collar; wires are held in place with elastic loops, and "bud buckets" on the inside of the collar hold your earbuds when they're not in use. Bonus:

Hand warmers are integrated into the main pockets. Seven sizes are available in black, blue, gray, or red. [scottevest.com](http://scottevest.com)



## T2 to E.T.: I Told You I'd Be Back

*Terminator 2: Judgment Day* (1991) and *E.T. The Extra Terrestrial* (1982)—two of Hollywood's most celebrated films—are getting special 4K gift-box treatment in time for the holidays. One of the most endearing family movies of all time, *E.T. The Extra Terrestrial* debuts in 4K Ultra HD in the 35th Anniversary Limited Edition gift set (\$25 on [walmart.com](http://walmart.com)), a package offering more than three hours of bonus features—including deleted scenes, a cast reunion, and interviews with director Steven Spielberg and composer John Williams—plus standard Blu-ray and digital HD versions of the movie, the remastered soundtrack on CD, and a collector's booklet featuring rare photos and behind-the-scenes stories. Not to be outdone, *Ah-nold* is back in glorious 4K in the Endo Arm Special Edition version of *T2: Judgment Day* (\$135 on [bestbuy.com](http://bestbuy.com)), featuring 4K Ultra HD and Blu-ray Discs with a new documentary and other bonus content, a digital HD version of the film, and the coup d'état—a life-size replica of the endoskeleton arm from the original T-800 (Arnold Schwarzenegger in *Terminator*) mounted on a uniquely numbered stand with director James Cameron's signature. Only 6,000 box sets are being released, so it'll be *hasta la vista, baby* if you don't act quickly.

[blu-ray.com](http://blu-ray.com)

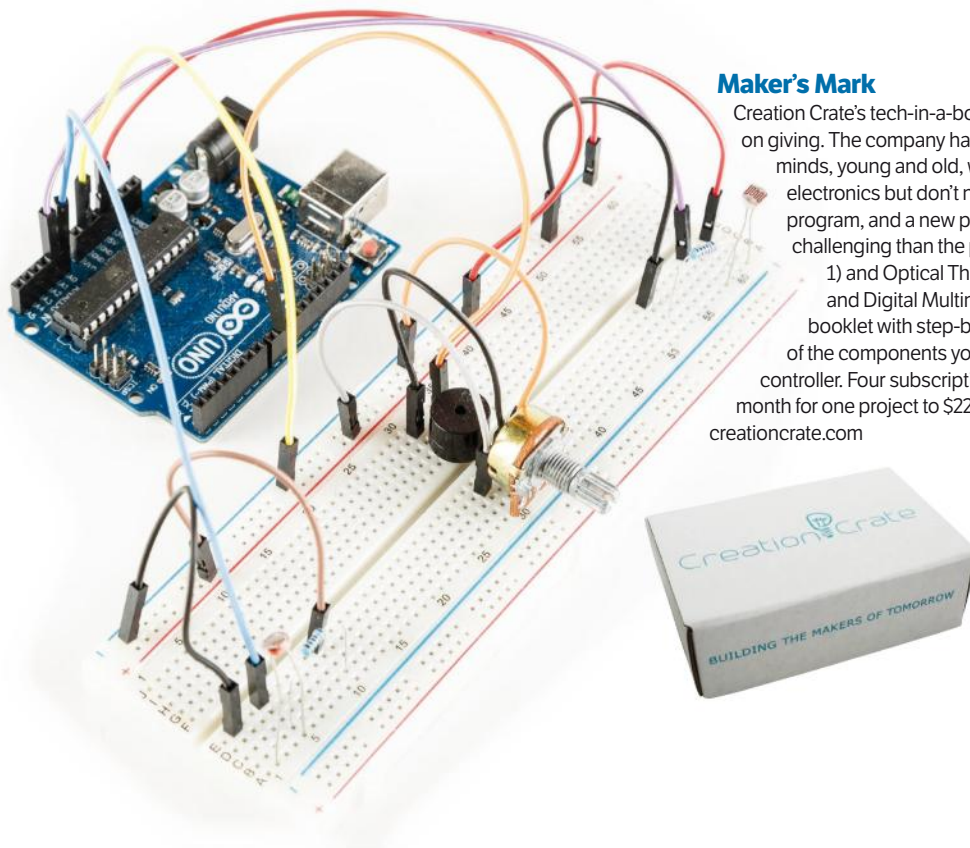


## Back to the '90s

Sure to be one of the season's most sought-after gifts, the Super Nintendo Entertainment System Classic Edition (\$80) is a throwback to the heyday of console gaming... but in miniature. SNES is the perfect gift for would-be gamers who have no interest in Xbox or PlayStation but have fond memories playing *Donkey Kong* back in the day. The remake is about a quarter the size of the original SNES console and preloaded with 20 classic games—running the gamut from *Super Mario Kart* (1992) to *Street Fighter II: Hyper Fighting* (1993)—plus *StarFox 2*, a new sequel to 1993's *StarFox*. The system has been updated with HDMI and USB connectors (cables included), rewind, and a My Game Play Demo feature, but it includes wired controllers to keep it real. [nintendo.com](http://nintendo.com)







### Maker's Mark

Creation Crate's tech-in-a-box approach to DIY electronics is the gift that keeps on giving. The company has developed a 12-month curriculum for curious minds, young and old, who want to learn how to build and program electronics but don't necessarily have any experience. Subscribe to the program, and a new project arrives in the mail every month, each more challenging than the previous. Projects range from a Mood Lamp (Month 1) and Optical Theremin (Month 5) to an Audio Visualizer (Month 8) and Digital Multimeter (Month 10). Each kit includes an instruction booklet with step-by-step instructions, educational information, and all of the components you need to complete the project, including a micro-controller. Four subscription packages are offered, ranging from \$29.99 a month for one project to \$22.49 a month for all 12 projects. [creationcrate.com](http://creationcrate.com)



### Radio Paradise

Know someone who could use a wireless speaker, internet radio, or a music system they can build on? Of course you do! Como Audio's Amico (\$399) is all that and more, housed in a striking teak-veneered cabinet. The newest member of Como's family of outstanding wireless speakers (see "Dynamic Duo," April 2017 and on [soundandvision.com](http://soundandvision.com), for our review of the Duetto and Solo), Amico is a Solo turned on its side but with a twist: It's moisture resistant and has a battery that's good for 8 hours. The versatility doesn't stop there: You can access hundreds of internet radio stations, enjoy Spotify Premium or music on your PC over Wi-Fi, stream via Bluetooth, listen to FM, and link to other Como Audio speakers (like the \$599 Musica shown below) to play music throughout the house with up to five speakers per zone. Oh, and did I mention it sounds great and doubles as an alarm clock? If you want to save 100 bucks, you can give up the portability and go with a Solo. [comoaudio.com](http://comoaudio.com)







## It's not what you'd expect from a speaker company.

The design brief was simple: build the most powerful, versatile, easy-to-use integrated amplifier imaginable; do it without compromising sound, reliability and a great user experience; and price it so fairly that it becomes a hands-down choice, even when compared against units at many times the price. Once you experience what it can do—especially with our Debut or Uni-Fi loudspeakers—your world of sound just might be altered forever. Learn more at [elac.com](http://elac.com)



### The Verdict

"ELAC's EA101EQ-G amp/DAC nails the sweet spot of price, performance, and worthwhile features with surprisingly audiophile sound and the added value of auto-EQ and app-enabled subwoofer crossover/blending." —*Sound & Vision*, April 2017



### ELAC EA101EQ-G INTEGRATED AMPLIFIER

- ABC Technology (Auto Blend & Calibrate) blends subwoofer with main speakers and calibrates optimum room correction
- 80 Watt-per-channel BASH™ amplification with DSP
- Full-featured smartphone control



# System Integrator

By Al Griffin

## Cary Audio AiOS Integrated Amplifier/DAC/Streamer

**PRICE \$2,995**

**CARY AUDIO** IS KNOWN IN THE high-end audio scene for making vacuum-tube and solid-state stereo components, and the brand has also established a foothold in the home theater world with its Cinema 12 preamp/processor and multichannel amplifiers. Cary's AiOS (All-in-One System) is the first offering in the company's Lifestyle series. With built-in aptX Bluetooth, wired Ethernet and Wi-Fi connectivity, AirPlay and PhoneShare support, and onboard Tidal, Spotify, and vTuner streaming, the AiOS really does have everything you need to immediately start playing music. Just download the company's iOS/Android app, connect speakers, and you're good to go.

The AiOS supports DLNA/UPnP and SMB connectivity and accepts a wide range of digital file formats through its network and USB inputs. It can play FLAC, ALAC, and AIFF (among several other formats) with sampling rates up to 384 kilohertz, WAV up to 768 kHz, as well as DSD in the 64, 128, 256, and 512 flavors. The AiOS also features Cary's TruBit upsampling and conversion, which taps a 128-bit DSP engine to play incoming signals at a sampling rate ranging from 44.1 to 384 kHz. It can convert PCM to DSD 64, 128, or 256, as well as upsample DSD signals. In addition, all digital inputs benefit from the company's OSO (Onboard Signal Origination)

re-clocking, which buffers and re-clocks incoming signals to help minimize jitter. As for analog inputs, you get the option to digitize, upsample, and process them as well, or to select a bypass mode so they can pass through untouched.

The AiOS is MQA certified, meaning its DAC can fully decode hi-res MQA files streamed from Tidal or downloaded to a computer or external hard drive (as well as USB thumb drives and SD cards). With the AiOS, MQA tracks additionally undergo MQA 16x rendering; they are decoded at full resolution and then played at either a 705.6-kHz or a 768-kHz sampling rate.

Although Bluetooth has become an obligatory feature of integrated amps and receivers, it gets special treatment here. The digital output of the Qualcomm aptX Bluetooth receiver is conveyed to the AiOS's digital processor, where it benefits from the same buffering/re-clocking and upsampling features as other digital inputs do. The AiOS can also be configured as a Bluetooth source, allowing you to send any incoming audio signals to Bluetooth headphones or speakers.

The AiOS is impressively compact for a component that houses a 75-watt x 2 Class A/B amplifier. A slightly curved aluminum case gives it a fresh, stylish look. If you want to add a splash of color, the unit's gunmetal gray side panels can be swapped

out for optional green, red, blue, champagne/gold, or plum versions (\$89 extra). Also, the color of the front-panel LCD is switchable to match the specific hue of the side panels.

### Shock of the New

Another innovation about the AiOS is that its front panel lacks any mechanical buttons to control input selection or volume adjustment. The illuminated controls for the same are touch-sensitive and auto-sensing, but I must say I missed being able to reach out and twist a knob for quick volume-adjustment tweaks. The panel's main screen has three different modes. The first displays the source, volume level, input sampling rate, and active upsampling rate (or bypass status). The second displays just the artist and track info, and the third augments that with source and volume level info.

Connections on the back panel include three RCA analog stereo, one 3.5mm analog stereo, and optical and coaxial digital inputs, along with analog stereo, full-range subwoofer, and optical and coaxial digital outputs. The AiOS has three USB ports (one is located on the

### AT A GLANCE



Plus

- Neutral sound from Class A/B amp
- Upsamples and converts PCM and DSD
- Compact form factor



Minus

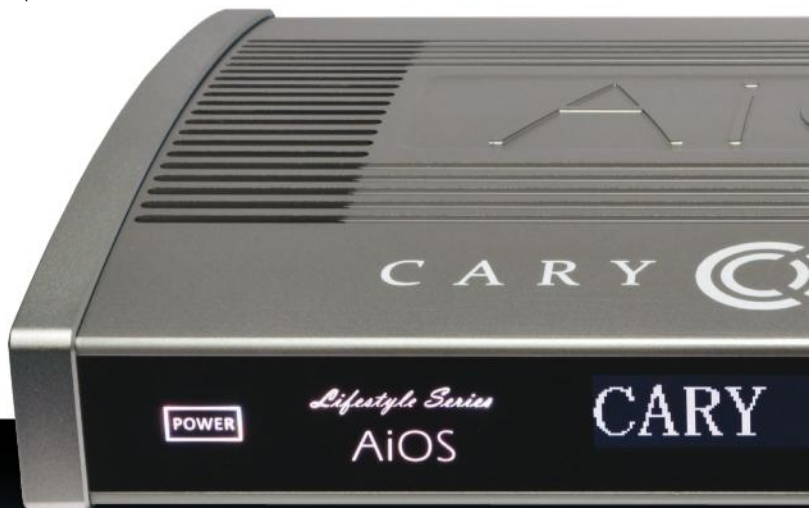
- Futuristic design means no mechanical controls
- No wired headphone output



front panel) for connecting USB drives, a LAN port for a wired network connection if you choose to go that route, and IR in and trigger out jacks. Its compact binding-post speaker outputs accept banana plugs and bare wire, but they're spaced tightly enough that I imagine you might have trouble fitting cables with spade lug connectors. Despite the AiOS's ability to push a Bluetooth signal to wireless headphones, one notable omission is



● Designer color side panels are an add-on option.





## RATING

Cary Audio AiOS Integrated Amplifier/DAC/Streamer

Performance ★★★★★

Features ★★★★★

Ergonomics ★★★★★

Value ★★★★★

## THE VERDICT

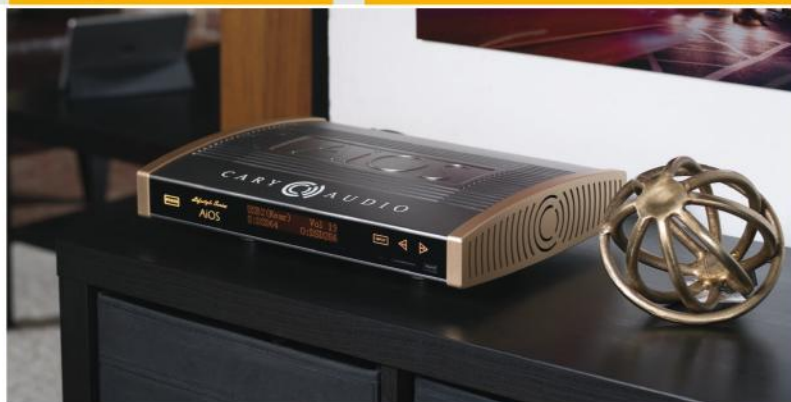
Cary Audio's all-in-one system looks great, sounds great, and is packed with cutting-edge features.

## AMP/DAC

**CARY AUDIO AIOS INTEGRATED AMPLIFIER/DAC/STREAMER**

**PRICE:** \$2,995

Cary Audio • caryaudio.com



an integrated headphone amp and jack; 'phone enthusiasts will have to use an analog or digital line output and dedicated headphone amp or amp/DAC for a high-performance wired connection.

While most people will use Cary's app to operate the AiOS, the company also gives you a full-featured remote control. Buttons you'll use most often, such as those to select inputs and adjust volume, are located near the bottom of the keypad. Also, there are dedicated buttons to adjust display color and brightness, toggle between SRC (Sample Rate Conversion) settings, and output signals via Bluetooth.

### Setup

I connected a Pioneer Elite BDP-88FD universal player to the AiOS's coaxial digital input and then ran an Ethernet cable from a powerline adapter to the LAN port on its back panel. I also connected the included Wi-Fi and Bluetooth antennas so I could check out those options. The

next step was to download the AiOS control app to my iPhone and enter sign-in credentials for my Tidal and Spotify accounts. Lastly, I fired up JRiver Media Center 21 on my MacBook Pro to stream locally stored content to the AiOS via DLNA. For speakers, I switched during my evaluation between GoldenEar Technology Triton Two and Triton Five towers. These speakers have similar voicing except that the Triton Twos include powered woofer sections while the Fives are passive models.

Cary's control app has a clean, well-organized layout that makes it easy to use. The app's main panel provides buttons to control most AiOS features, and it has a display window that mirrors the info being shown on the unit's front-panel LCD. When you're streaming music from an internet or network-connected source, swiping left on your phone's screen reveals a second panel that shows album art,

elapsed time, volume level, source format (e.g., FLAC, 44.1 kHz), and SRC mode (e.g., DSD 128) for the currently playing track, and it provides control buttons to pause, play, skip forward/back, and repeat albums and tracks. Controls are also available to select an EQ mode (including a 15-band Custom setting) and SRC settings.

Having used control apps for a number of products that are similar to the AiOS, I must say I really like this one, which is both feature-packed and simple to navigate. About the only thing I didn't like was that adjusting volume with the slider in the second (album art) panel usually resulted in dramatic level jumps. Fortunately, the app's main panel offers its own slider—one that adjusts volume in more granular, one-step increments.

### Performance

I started out my evaluation of the AiOS not by streaming but by playing a CD—something us old-timers used to do a lot in the old days. As I listened to, appropriately enough, "Old Man" from Neil Young's *Live at Massey Hall 1971*, the AiOS easily conveyed the body and texture of Young's acoustic guitar as he alternated between muted chords in the verses and open-stringed strumming in the chorus. Switching between an analog and a digital connection from the Pioneer player, I didn't hear much of a performance difference between the Pioneer's high-quality DAC and the one in the AiOS. An adjustment that did affect the sound came when I used SRC to convert the incoming 44.1-kHz/16-bit signal to DSD: Young's somewhat strident voice in the chorus lost a bit of its edge, and the resulting sound was smoother and more pleasing.

Calling up Tidal in the control app, I streamed "Eden" from Talk Talk's *Spirit of Eden*. The AiOS's

handling of dynamics on this track was impressive. Quiet passages conveyed ample negative space and were noise-free. And when the clangorous swells of guitars and keyboards eventually burst in, the sound retained a sense of ease, as opposed to becoming strained. Furthermore, the bass guitar sounded rock-solid and deep, and it retained its fullness over a range of volume levels. For kicks, I turned on SRC again to convert the Tidal FLAC stream to DSD. Same as with the Young track, the sound transformed in a good way: Details that had been layered deep in the mix, such as burbling synths and a forlorn, faraway trumpet, gained in clarity. To use a visual metaphor for what I was hearing, it was like tweaking the focus on a pair of binoculars.

Since MQA decoding is a key feature of the AiOS, I made a point of streaming numerous tracks from the Masters section of the Tidal app. When I listened to Crosby, Stills & Nash's "Guinnevere," a blue dot in the app's screen confirmed that the track was being decoded at original Master Quality resolution. The spread of acoustic guitars across the soundstage was vivid and detailed, and I could hear a clear separation between voices in the group's three-part harmonies. Although I would characterize the AiOS's overall sound as neutral, the warmth that came through on this track was notable.

Tapping the DLNA function to access JRiver Media Center 21 on my computer, I next streamed some jazz via a native DSD track: "You Go to My Head" from Bill Evans' *Some Other Time: The Lost Session from the Black Forest*. The crisp attack of the pianist's energetic playing was easily conveyed by the AiOS. Eddie Gomez's upright bass sounded fluid and full, and Jack DeJohnette's smooth brushstrokes on his snare came through clearly. The lively and balanced sound on this track delivered a vivid sense of acoustic instruments played in real space. It was like being whisked away in a time machine back to 1968.



● The clean front panel is completely free of mechanical buttons or knobs.

● The front-panel readout can be color-matched to the side panels (above and far left).

## TEST REPORT

● A variety of analog and digital connections are represented around back.

## SPECS

**Rated Power:** 75 watts x 2 (8 ohms) • **Inputs:** RCA stereo analog (3), 3.5mm stereo analog (1), optical digital (1), coaxial digital (1), Ethernet (1), USB-A (3), SD Card (1), IR (1) • **Outputs:** Stereo analog preamp (1), line subwoofer (2), optical digital (1), coaxial digital (1), loudspeaker • **Dimensions (WxHxD, inches):** 14.2 x 3.0 x 11.0 • **Weight (Pounds):** 15



and auto-sensing controls to be cool, I often found myself wishing for some form of physical interaction—specifically, a volume control knob—but that may be more my personal preference than yours.

At the end of the day,

### Conclusion

Cary Audio's AiOS provides a comprehensive solution for those who want—or need—to cut down on audio clutter. It combines a streamer, a DAC, and an integrated amp in a compact, eye-catching package, and it offers innovative features like MQA decoding, PCM and DSD upsampling, and PCM-to-DSD conversion. Shortly after my evaluation, Cary also issued a firmware update making the AiOS Roon ready, allowing users of that music library software to access the AiOS as a Roon endpoint; the update is available free to existing owners. The AiOS's sound is neutral in the best sense of the word, and

build quality is everything you'd expect from a company with a high-end pedigree. Let's not forget Cary's well-designed control app, which makes operating the AiOS a breeze.

Downsides? I found a few to quibble about. At \$2,995, the AiOS isn't cheap, though its cost is comparable to those of similar products from other high-end manufacturers that offer fewer features. Its lack of a wired headphone output may be an issue for some (though it wasn't for me). The AiOS froze up twice during my evaluation, requiring a full reset to bring it back to life—but that's not so unusual in the network-connected

audio world, where the components are basically sophisticated computers, and I gather future firmware updates will further improve stability. Finally, while I found the sleek exterior

though, the AiOS excelled in the most important criteria: It sounded great, looked great, and was easy to operate. You can't ask more of an all-in-one. ♦



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# Reality TV

By Al Griffin

## RATING

Sony XBR-65X900E LCD Ultra HDTV

Performance ★★★★★

Features ★★★★★

Ergonomics ★★★★★

Value ★★★★★

## Sony XBR-65X900E LCD Ultra HDTV

**PRICE \$2,000**

### HERE'S THE TOP SONY TV NEWS

for 2017: The company started selling its first big-screen OLED models. With an elegant "One Slate" design and an ability to emit sound from actuators positioned directly behind the glass screen, Sony's A1E line (November 2017 and soundandvision.com) is destined to give LG's OLEDs some competition. But when you consider that a 65-inch model costs about \$4,000 after discounts, the Sony OLEDs are pricey. Fortunately, there are plenty of other Sony Ultra HDTVs to choose from, including the midrange X900E series, which lists for \$2,000 for the 65-inch model and will run you about \$1,800 on the street.

Like other UHDTVs from the company, the XBR-65X900E that Sony shipped me to test is compatible with high dynamic range (HDR) sources in HDR10. It's also compatible with Hybrid Log-Gamma (HLG), a separate HDR format that's currently being used by broadcasters in Europe and Japan; HLG should eventually arrive Stateside with the rollout of ATSC 3.0. The TV has a direct LED

### AT A GLANCE

#### + Plus

- Extensive streaming options
- Strong contrast with full-array local dimming
- Accurate out-of-box color

#### - Minus

- Average LCD off-axis picture uniformity
- HDR highlights a notch below the top TVs
- Android TV interface can be confusing

backlight with full-array local dimming, plus a 10-bit panel that also incorporates Sony's Triluminos color enhancement tech. Video processing features include the company's 4K HDR Processor X1 engine, which taps an extensive image database to refine 4K upscaling and noise reduction, and X-tended Dynamic Range Pro, a contrast enhancement mode that endows standard dynamic range (SDR) images with HDR-like qualities.

Another feature of Sony's new TV line is the Android TV platform—in this case, with "Chromecast built-in" (Google's chosen name) for direct streaming from an Android or iOS device running compatible apps. The XBR-65X900E has plentiful streaming options, including Netflix, Amazon Instant

Video, Vudu, YouTube, and Sony's own Ultra 4K Movies and TV app. A few of these apps—specifically, Netflix, Ultra 4K, and YouTube—also offer 4K and HDR content. Other movie and TV streaming options include DirecTV (the X900E series is DirecTV ready, letting subscribers to that service stream programs to the set instead of using an external receiver), Sling TV, HBO Now, Showtime, and, of course, Google Play. There's also a host of music-streaming offerings, including Pandora, Spotify, and SiriusXM.

The TVs in the X900E series may lack the slab-like elegance of Sony's OLEDs, but they still project a sleek, high-tech aura. An almost nonexistent 0.25-inch black bezel surrounds the screen, and a thin aluminum plate is used to cover the sturdy metal legs that

support the TV. A cable management option is also provided in the support legs, which have channels for cable routing. Connections on the set's back include four HDMI 2.0b inputs, a combined component/composite-video jack, three USB ports, and an RF input for an antenna. Dual-band 802.11ac is on board for wireless connectivity, and there's a LAN port for a wired Ethernet hookup.

Sony's sizable remote control for the X900E series has a rubbery surface and a clean keypad layout. Buttons that you'll use most often are located near a navigation pad in the center, and there are transport keys at the bottom to control streaming playback or external components. Using these, I was able to operate a Sony UBP-X800 Ultra HD Blu-ray player without having to go through any pairing or learning setup steps.



**The real story behind the Sony XBR-65X900E is its performance.**

● A thin aluminum plate covers the stand's legs for a sleek look.



## THE VERDICT

The impressive performance delivered by Sony's midrange UHDTV makes it a compelling choice for budget buyers upgrading to HDR.



Although the remote isn't backlit, the buttons are clearly labeled, and there are keys that directly call up Netflix and Google Play. Last but not least, there's a microphone button that can be used for voice-controlled searches with compatible apps such as YouTube.

Unlike previous versions of Android TV I've used, I wasn't bothered by its implementation in the XBR-65X900E. Yes, much effort is made to steer your attention to the Google Play store, but I found the

screen interface to be reasonably uncluttered, and it was fairly easy to select hardware inputs and find the picture adjustment menu. I've also warmed up to Chromecast built-in, which on this TV allowed me to take content from compatible apps (including Netflix, HBO Now, YouTube, and TuneIn radio) and easily throw it from my iPhone to the TV's screen.

### Setup

I first selected the Cinema Pro preset and then calibrated the picture for SDR display and Rec. 709 (HDTV) color space using CalMAN 2.016 software running on my laptop. On a second calibration round, I adjusted the picture for HDR display and P3/DCI color space in the set's Custom preset using a special HDR calibration disc provided by Samsung.

Along with Color Space and HDR mode options, the XBR-65X900E provides 2-point Gain and Bias controls to adjust gray-scale, along with a more advanced 10-point fine-tune adjustment that I didn't find necessary. There are no color management system controls, as is typical with Sony TVs; fortunately, the color points were accurate out of the

## SONY XBR-65X900E LCD ULTRA HDTV

PRICE: \$2,000

Sony • [sony.com](http://sony.com)

box (see Test Bench). Local dimming of the TV's backlight can be set to Low, Medium, High, or Off, and the same options are supplied for X-tended Dynamic Range Pro. A total of seven Gamma presets are also provided.

The Clarity menu contains the TV's adjustments for Reality Creation, which can be used to enhance the apparent detail of everything from standard-definition to Ultra HD sources. I generally tread lightly when it comes to such adjustments, but in this case, I found that correctly setting the Sharpness control in its Clarity menu was crucial for getting crisp-looking images. Many TVs will let you set Sharpness to minimum with no picture-resolution penalty. On the Sony, however, adjusting Sharpness below the +20 threshold had a definite softening effect—something I verified with video resolution test patterns.

### Performance

During a period of casual movie-watching before I jumped in for serious critical evaluation, I found the TV's picture quality to be impressive: Blacks looked deep, colors looked accurate, and high-def sources brimmed with detail. That was also with the set's local-dimming feature turned off and before I did a full setup and calibration. My takeaway was that the LCD panel Sony uses for the X900E series has excellent native contrast, and that the TVs ship with well-tuned picture mode presets.

Watching movies post-calibration, I continued to be impressed. When I checked out the Criterion Collection's recent Blu-ray release of Francis Ford Coppola's *Rumble Fish*, the Sony conveyed the rich range of gray tones contained in the black-and-white image. Shadow detail was also very good: In a scene where the hung-over delinquent Rusty James enters his high school, late as

usual, details like rows of trophy cases lining the halls could be clearly seen in the dim building interior. Bright and medium-bright exterior shots showed the TV's picture uniformity to be very good, although its contrast faded to a degree when the picture was viewed from an off-center seat—a typical limitation with LCD TVs that use a vertical-alignment panel such as this one.

In another scene from *Rumble Fish* that takes place at an outdoor dance, the nighttime sky came across as a deep, uniform black, while strings of bright lights crossing the area lent the image a sense of dynamic pop. Switching on X-tended Dynamic Range Pro helped to increase contrast without adding any artifacts, although I was satisfied with the set's performance even with the feature turned off.

Another recent Criterion Blu-ray, *Blow-Up*, provided a good demonstration of the Sony's accurate color rendering. In a scene where Thomas the photographer zips through the London streets in his sports car, both a line of bright red buildings and the driver's forest-green corduroy jacket had a rich, saturated look. Details such as the texture of the jacket came through clearly. Film grain in the image was also handled well by the Sony's 4K video upconversion, which allowed fine detail to come through without adding any enhancement or noise.

To check out the Sony's handling of HDR, I first watched an Ultra HD Blu-ray of the movie *Passengers*. In a scene where Aurora and Gus discuss their precarious situation in front of a hologram of the ship, the hologram had a vivid appearance—something that definitely didn't come across when I watched the same scene with HDR turned off. In another scene, where both characters peer into the ship's vast engine room after yet another system breakdown, the lights illuminating a grid of servers extending back into the room looked



● The super-skinny black bezel gives the Sony an all-screen appeal.

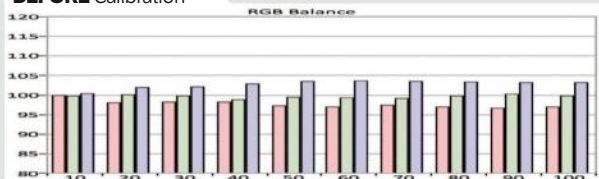
● Sony's small-footprint stand won't steal the spotlight from the screen.



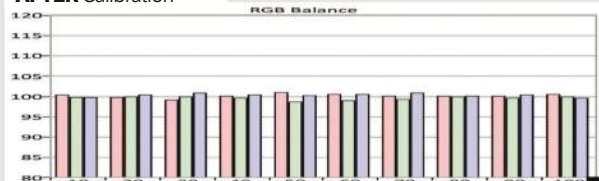
# Test Bench

Sony XBR-65X900E LCD Ultra HDTV

BEFORE Calibration



AFTER Calibration



**PRE-** and post-calibration measurements were made with the Sony's Cinema Pro preset active. Maximum standard dynamic range contrast measurements were made with the High Auto Local Dimming setting active. With this configuration, the Sony's black level measured 0.001 ft-L and peak white 36.58 ft-L, for a contrast ratio of 36,580:1. Native contrast of the panel (measured with Local Dimming turned off) was 5,928:1.

**DURING** HDR tests using a Samsung test disc and custom workflow designed for CalMAN 2016 calibration software, the XBR-65X900E managed 776.1 nits of light output on a 10% window pattern, 515.8 nits on a 25% pattern, and 461 nits with both 50% and 100% patterns. The TV's measured P3/DCI color gamut coverage (within the UHD Rec. 2020 envelope) when using the same workflow was 93.5%.

**BEFORE** calibration, the Sony's default Warm color temperature preset in Cinema Pro mode delivered a mostly accurate grayscale, with the Delta E averaging out to 2.1. Calibration in the Expert 1 mode improved that average to 0.8, with a high of 1.3 at 100% brightness. (Delta E is a figure of merit that indicates how closely a display adheres to the Rec. 709 HD color standard. Experts generally agree that levels below 3 are visibly indistinguishable from perfect color tracking.)

**WITH** the Cinema Pro mode's default settings active, the Sony's measured color points were mostly accurate, with the Delta E averaging out to 2.1. That's a good thing, too, because (like other

Sony flat-panel displays) the XBR-65X900E doesn't provide any color management system adjustments.

**WITH** the -1 Gamma preset selected, gamma in the Cinema Pro mode averaged 2.3 and displayed mostly linear tracking. Post-calibration, gamma tracking improved slightly, averaging 2.2, with a high of 2.3 at 80 IRE.

**PICTURE** uniformity was excellent, with gray full-field test patterns showing no uneven brightness when viewed on axis. Viewed off axis, the XBR-65X900E showed the same contrast fall-off typical of other VA (vertical-alignment) LCD TVs. The Sony performed perfectly on our suite of video processing tests. Clipping, luma resolution, and chroma resolution all checked out fine, as did 3:2 and 2:2 pulldown patterns with both HD and SD sources. The TV's sharpness control needed to be set to a minimum of +20 to pass the luma resolution test; settings below that threshold had the effect of softening images.

—AG

## SPECS

**Dimensions (WxHxD, Inches):** 57 x 35.25 x 10.25 (with stand); 57 x 32.75 x 2.25 (without stand) • **Weight (Pounds):** 51.2 (with stand); 48.5 (without stand) • **Video Inputs:** HDMI 2.0b (4, one with ARC), component video (1, hybrid with composite video), RF antenna (1) • **Audio Outputs:** Optical digital audio (1), minijack analog stereo (1) • **Other:** LAN (1), USB (3), RS-232 (1)

● A cool cable-management system is built into the Sony's stand.



both detailed and intense, and there was a wide range of detail visible in dark areas near the back of the cavernous space. The overall effect of HDR here was to create a convincingly deep, 3D-like rendering of the image.

Turning to Netflix for more HDR, I watched an episode of *Marco Polo*. While the HDR in this program had a more subtle impact than what I witnessed with *Passengers*, scenes that take place in rooms where Kublai Khan confers with his advisers showed a strong contrast between dark backgrounds and candlelit objects in the space. And in a later scene where Marco ventures into a village at night and witnesses paper lanterns being launched, the lanterns had a vivid look and showed plenty of highlight detail, which made for a nice contrast with the pitch-black sky in the background. I appreciated that I could apply the Custom HDR picture mode (which I had dialed in for watching Ultra HD Blu-rays) to the Sony's streaming input; a few other UHDTVs I've tested don't provide the same level of flexibility when applying picture presets to content that's streamed internally.

## Conclusion

New Sony TVs like the XBR-65X900E may have been overshadowed by the company's recent OLED introduction, but there's still much to be excited about when it comes to Sony's non-OLED sets. This



one's wide assortment of streaming apps makes it easy to access just about any content you're looking for, while its Chromecast built-in feature lets you use your smartphone or tablet for browsing, instead of the TV's remote control. And with its ultra-slim bezel and small-footprint stand, the set looks about as high-tech as any other high-end TV out there, yet its \$2,000 or less price is comparable to that of midrange models from other manufacturers.

The real story behind this TV, however, is its performance. Granted, Sony's new midrange XBR set doesn't hit the same HDR brightness peaks as the XBR-65Z9D that *Sound & Vision* tested in 2016—a model that costs twice as much and then some. But this set's light output is impressive for an Ultra HDTV in its price range, and its full-array local-dimming backlight delivers images with strong contrast and detailed shadows. The TV also provides accurate out-of-box color, clean video upconversion for both standard- and high-def sources, and very good overall picture uniformity. You could easily spend much more on a new TV, but I'm not sure you really need to. ♦



● The remote has good size and heft, along with a neat rubbery surface.





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# Waving the WAND

By Rob Sabin

## Riva WAND Wireless Music System

**PRICE** Festival, \$499;  
Arena, \$249

**I FIRST** MET RIVA AUDIO founder Rikki Farr and chief engineer (now also president) Don North in the fall of 2014 when they marched into *Sound & Vision's* New York City conference room to demo their first product, a Bluetooth speaker called the Turbo X. North was a youthful, glasses-wearing geek who had just enough of the right credentials and tech swagger to suggest he really knew what he was doing. And Farr was a bigger-than-life, avuncular Brit who claimed to have rubbed shoulders with or produced concerts for pretty much every one of my '70s-era rock heroes, including some of the biggest names in music: Led Zeppelin, Pink Floyd, the Who, John Lennon, yada yada yada. Farr was ridiculously likable, though I figured he might be full of it—a modern-day P.T. Barnum, more showman than substance. Boy, was I wrong. He was indeed heavily involved in those very heady times in British rock, and had even helped organize the famous 1970 Isle of Wight Festival, which, with 600,000 attendees, was bigger than Woodstock. On Riva's website, you can see a clip of the young Farr angrily chastising the festival's unruly crowd.

Riva's promotion of Farr's rock-biz background would just be slick marketing if there weren't a real love of music behind it and some truly good ears to go with the engineering. Back in 2014, it didn't take me long to see that Riva's commitment to genuinely good sound at

good prices for the broadest possible audience had some chops. Our meeting room is a horrendous place to listen to even a phone conference, much less music—a long, reverberant space with windows lining one side and a giant, slick wooden table to bounce the sound off. But the Turbo X sounded good enough in there that we eventually connected it to my phone and spent a long while listening to favorites from my personal library; I kept wanting to hear how this or that song would sound. That's the mark of a good audio product—one that captures enough of the essence to get you excited about the *music*.

### Room Tunes

The Turbo X scored high marks with reviewers, and it was followed by a more compact and similarly well-regarded Bluetooth speaker, the S. Riva's new WAND series, the subject of this review, is the company's first attempt at a Wi-Fi-based wireless multiroom system. (The acronym stands for

Wireless Audio Network Design.) I've been pretty vocal about my belief that it's only a matter of time before even serious audiophiles will be listening on one of the app-controlled systems first brought into vogue by Sonos and now being pursued by all manner of competitors. It just comes down to (1) the quality of the wireless signal and the (typically self-powered) speakers, and (2) the system's simplicity and ease of use.

For WAND, Riva looked at all of the possibilities and ultimately decided not to build a proprietary operating system from scratch (à la Sonos, Bluesound, Bose's Soundtouch, Yamaha's MusicCast, or Denon's HEOS), instead opting for Google's Chromecast for multiroom operation. Fair enough: Chromecast has been gaining popularity among manufacturers, and it's compatible with hi-res audio signals. Most of the primary music- and news-streaming apps (including Pandora, Spotify Premium, Tidal, and Tune-In) are now Chromecast compatible. This

### AT A GLANCE

#### + Plus

- Excellent build and sound quality
- Chromecast, AirPlay, Bluetooth built-in
- Away mode and optional battery for portability

#### - Minus

- Chromecast multiroom interface

means you just pick up your phone, punch up your Spotify or Tidal app the way you normally would if you were listening on headphones, and then simply hit the Cast button found right inside the app to select any Chromecast speaker on the network. The Google Home app is used to introduce the WAND or other Chromecast speakers to your network for the first time and set up your multiroom groups, but it's not required for daily use with your favorite Chromecast-enabled music services.

But wait—there's more! Riva's vision of technological agnosticism and ease of use gives you



**Full-frequency coverage on three sides is central to Riva's Trillium technology.**

● The WAND system consists of the Festival, the compact Arena, and an optional Arena battery pack.



## RATING

### Riva Arena Wireless Speaker

Performance ★★★★★

Features ★★★★★

Ergonomics ★★★★★

Value ★★★★★

## RATING

### Riva Festival Wireless Speaker

Performance ★★★★★

Features ★★★★★

Ergonomics ★★★★★

Value ★★★★★

## THE VERDICT

**Riva Audio continues a tradition of excellent sound quality with the WAND series, the company's first wireless multiroom speakers.**

## SPEAKER SYSTEM

### RIVA WAND WIRELESS MUSIC SYSTEM

**PRICE:** Festival, \$499; Arena, \$249

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other wireless options, including Wi-Fi-based AirPlay (for Mac and iOS users) and Bluetooth. Yet another special feature to help you make the connection is an Away mode, engaged via a switch on the back of each speaker, which allows you to assign your WAND speakers to their own ad hoc Wi-Fi network. So, for example, if you're not in a Wi-Fi hotspot, you can set several WAND speakers to the Away mode and stream music from your phone to one of the speakers (designated as the primary), and the stream will play on all of the other nearby WAND speakers. Add Riva's optional battery pack (see below), and you can set up a network in the great outdoors where no AC power is available.

### Sounding Out

The initial WAND offerings include the flagship Festival and the more compact (and optionally portable) Arena. The Festival (\$499) is a beast, weighing in at 14.2 pounds and measuring roughly 14.5 x 8 x 7 inches. Its heft comes from the combination of an actual wood cabinet hidden behind its wrap-around grille and plastic trim, as well as from an impressive mix of six active drivers and four passive radiators encircling the box. Facing forward are a 4-inch anodized aluminum cone woofer and a 0.79-inch (20 mm) ferrofluid-cooled silk dome tweeter, plus two 4-inch rubber-coated steel passive

radiators; matching passives also fire from the rear. Meanwhile, side-firing baffles on the left and right each house a similar woofer/tweeter array as the front. This arrangement, with effectively full-frequency coverage on three sides, is central to Riva's proprietary Trillium technology, first introduced in the Turbo X. It uses some unspecified formula of channel mixing to create three separate output channels and to project, in Riva's words, "virtual left and right speakers outside the enclosure," while also keeping vocals locked to the speaker via the center drivers.

I should note here that this isn't the heavily processed, phasey kind of effect that has often been used to spread an unnaturally wide stage in cheap soundbars. Rather, it's a more subtle and holistic treatment that better allows these narrow speakers to project two distinct channels and create some semblance of real

stereo despite the proximity of the drivers—all while maintaining honest timbre and (as described) avoiding dynamic compression. As you'll read, it's not entirely transparent. But when you consider that so many other wireless speakers are mono only, the ability of Riva's models to reproduce two channels separately with some polite spatial assistance turns out to be a good thing, as is your ability to designate the speaker for either right- or left-only duties to create a stereo pair (which I'll say more about later). Placing bass-augmenting passive radiators on symmetrical, opposing baffles wherever possible is also a Trillium hallmark: It cancels out some vibrational forces and is said to result in more and cleaner output. Six separate channels of Class D amplification in the Festival amount to a combined total of 200 watts (nominal RMS) divided among the active drivers.

The Arena (\$249) is a stocky column with rounded corners. From a distance, it could be mistaken for Sonos's entry-level speaker, the Play:1—though at 5 x 7 x 5 inches, it's marginally wider and taller. The left-, center-, and right-facing baffles each contain a single 2.36-inch (60mm) full-range anodized aluminum cone active driver and a 2.6-inch (66mm) rubber-coated steel passive radiator, with each active element driven by its own amp (totaling a combined 50 watts RMS for the whole speaker). A bonus for the Arena is the aforementioned 20-hour rechargeable battery pack (\$99), which snaps onto the bottom (the combined weight of speaker and battery is about 4 pounds). I used one sporadically on one of my Arena samples, and though I never timed its battery life, it seemed to work as promised and drove the speaker to substantial volume.

Industrial design and fit-and-finish on both models are impressive, featuring high-gloss plastic top and bottom panels with rounded corners sandwiching the sturdy metal grille (gray for white

models, matching black for black models). Connections on the rear include a USB port for attaching a drive or charging a mobile device; a 3.5mm analog Aux input; and—on the Festival only—a Toslink optical input suitable to feed a TV's optical out to the speaker. Both speakers accept a wide range of digital file types—including MP3, ALAC, FLAC, WMA, and PCM/WAV—and they handle hi-res up to 192 kilohertz/24 bits. Screw insets on the back (two for the Festival, one for the Arena) allow for wall or stand mounting. A central button on the top of each speaker, with a four-way click-ring around it, provides control of track movement, volume, input selection, and various pairing functions, though you'll be using a touch-screen app on your device to work the speaker most of the time. Google Assistant voice control is available if you have a Google Home speaker in your network to provide the microphone access (I do not). (Amazon Alexa compliance is not currently planned for the WAND series, though RIVA says it's developing a new line of Alexa-enabled speakers.)

### Setup and Use

Riva sent me one Festival and two Arenas to allow me to test a three-zone system, as well as to try the Arena in a stereo pair. I initially went for simple AirPlay connections,



● Both WAND speakers feature an "Away" switch to engage a built-in Wi-Fi network.



● The Arena's battery pack snaps onto the bottom like a pedestal.



which involved nothing more than a quick visit to the Wi-Fi settings on my iPhone. After that, any of the speakers was available to stream to via the phone, my iPad, or my MacBook, though it was strictly one speaker or another, as AirPlay offered no multiroom capabilities at the time of my evaluation. AirPlay 2, which should be out by the end of the year, does offer multiroom, though the full extent of that capability (with regard to supporting single or multiple, simultaneous streams to different devices) was not clear at the time of my audition. Riva anticipates that the WAND series will be upgradable via firmware for AirPlay 2. My experience with AirPlay generally, which held true for the WAND speakers, is that it's typically a zippy and reliable connection, though it's limited to CD-quality 44.1-kHz/16-bit signals.

Setting up Chromecast connections takes an extra step or two, but the Google Home app (for iOS or Android) walks you through the process of joining the speakers to the network and naming them. A word of warning here: Chromecast speakers, as well as those for the Play-Fi system I've tested previously in my home, like a good, strong Wi-Fi signal if they're to exhibit reliable behavior. The Google Home app tells you when it considers your network weak, as it initially did for mine. I live in a relatively small home, but it has plaster walls, and the router is at the opposite end and one floor up from my basement listening studio. I had no real issues with setup, but when I paired my two Arenas for stereo listening, one of them kept dropping out. I solved the issue by setting up an inexpensive Wi-Fi range extender midway between the router and speaker locations and connecting the speakers to the new network.

Once all your speakers are in network, you'll see them as individually assignable devices in the Google Home app, and you'll be able to create separate groups in any combinations. In my case, I ended up with seven different selections to accommodate all the possibilities in my three-speaker system—among them, the three individual speakers plus groups for all the various combinations, including a whole-house "All Speakers" group. It can look a little intimidating with all these options queued up in a long scroll in the speaker selection area of the Google Home app or listed in your Tidal or Spotify app when you hit the Cast button. In reality, though, you are most often selecting an individual speaker in the room you're in, and you likely won't feel the need to create groups for every speaker combination.

Still, I'd be remiss if I didn't point out that Chromecast's grouping mechanism for multiroom playback is more clumsy than that of some other systems I've used—among them industry-leading Sonos, which allows you to create or trim back speaker groups on the fly with a few simple button presses rather than setting up every possible combination you might want in advance. Another key difference is that Chromecast's reliance on different streaming apps as the music source has some inherent limitations, such as the inability with some apps, notably Spotify Premium, to play two different songs in different zones simultaneously from the same account. So, for example, with Spotify you can't play Tom Petty in the kitchen while your spouse plays workout music in the basement unless you use separate accounts. (Other apps I tried, including Pandora and Tidal, did allow me to set up simultaneous streams to different

● Besides wireless options, the Festival features an optical input along with USB and analog.

zones from the same account, though this required two devices, i.e., my iPhone and my iPad, to separately boot the app and set up each stream individually.) Furthermore, while you can adjust master volume for all the speakers in a group from within each music app, gaining access to the individual volume trims for each speaker in the group requires leaving the music app, booting up Google Home, and navigating to the volume sliders there. Not very convenient when you enter a room and just want to bring the volume down a touch. These aren't typically issues for wireless multiroom systems that have the music services integrated in their operating system. But there are trade-offs: With proprietary systems, you may not be getting the fully developed experience you get with booting up a music service's individual app, and you can't select from the variety of speaker manufacturers and models afforded by an open standard like Chromecast or Play-Fi.

Along with the Google Home app used for setup, Riva has their own downloadable iOS/Android WAND app. If you're not sourcing music from a streaming service, you can use this app to control playback of content from a USB drive, a network-attached music server, or your phone's resident music library, or to select among any of the available inputs. You can also select the output mode for each individual speaker on your network from among four different choices. Trillium is the default factory mode, which sends a stereo signal to the speaker and performs the aforementioned processing. Power mode is a spin-off of the Turbo button introduced in the Turbo X; it provides the Trillium upmix but kicks in a few extra decibels of gain if you need it. You can also select the Left- or Right-only mode to create a stereo pair. Once you have two speakers

designated as such, you create a group for those two with the Google Home app. However, Riva offers no detailed instructions in their user manual for this setup. And in practice, it was an inefficient process that involved manually balancing the left and right volume levels (in my case, using a pink noise track and SPL meter for the purpose of my review, though others might approach it less rigorously). Perhaps Riva can simplify this process with a future app update.

### A Festival of Sound

I mounted the Festival on a speaker stand 10 feet from my listening seat, at ear height. I then fed it (via Chromecast or AirPlay) a variety of well-recorded, mostly CD-quality (44.1-kHz/16-bit) test tracks from Tidal HiFi and my Plex media server. The Arena was auditioned similarly, first on its own and then in a stereo pair with the speakers about 8 feet apart. I also did direct A/B comparisons with some similar speakers I had on hand, including the Sonos Play:1 and Bluesound Pulse Flex (\$199 and \$299, respectively, each a fair match for the Arena) and the Bluesound Pulse 2 (\$699, considerably more expensive than the Festival after the latter's recent \$100 price drop, but somewhat comparable in size).

There was no question from the start that the big Festival is voiced to sound as rich and full at the bottom as its drivers, amps, and digital signal processing can muster. Swept test tones and casual pink-noise measurements revealed, in my room, a relatively flat response through the lower midrange, a subtle goosing



## The Festival had a surprisingly impactful low end that knew exactly when to stop pushing its luck.





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● A button and click-ring provide onboard control.

around 200 hertz to add some fullness, and then another little bump near the speaker's lower limit around 60 Hz before it finally dropped off below 50 Hz.

The end result was a surprisingly impactful low end that, with most songs, seemed to know exactly when to stop pushing its luck. The EDM track "Like," from Cuthead's *Return of the Sample Jesus*, starts with a repeating electronic bass drum beat and what sounds like tapped cow-bell as counterpoint, and it nicely demonstrated the Festival's combination of clear, detailed highs at one extreme and capable bass performance at the other. It filled up the room and made me take notice of the low end but without pushing into tubbiness or distortion. It couldn't get nearly deep enough to deliver the chest blows that this track really calls for (that would be asking too much of any like-sized speaker), but the Festival held its own. Even at loud volume—Riva claims 106 dB max, and I measured 95-dB peaks in my space—it never went into obvious strain or distortion, and it delivered the track with an excellent sense of dynamics. Still, on some tracks played in my room (Grover Washington's "Mr. Magic," for example), the Festival could indeed cross over into a slightly bass-heavy balance. Unfortunately, there were no bass/treble trims in the Riva app to take things down a click to accommodate different rooms or placements, or when the content seemed to demand it. This might be something else for Riva to consider adding in an update.

The Festival's ability to render fine detail and the crisp leading edge of musical notes was driven home with a cover of the Beatles' "I Will"—the twangy, banjo- and guitar-infused version by Alison Krauss and

Tony Furtado, included in her collection *Now That I've Found You*. Each pluck of the long intro stood out in relief, and when Krauss's sweet, wavering vocal came in, it floated with solidity and body. It was obvious on this and other tracks that the Festival threw a big, dimensional image, exceptionally wide for a single speaker (though not equivalent to a wide stereo pairing) and with a modest but noticeable degree of specificity within the image—concurrent with what you'd hear from a separated stereo pair, just more squished together. On the instrumental version of Chet Baker's "Street of Dreams," for example, I could make out the left-to-right spread of horn, upright bass, strings, and backup horns, with the drum kit slightly behind. Meanwhile, Robert Plant's vocal on "Going to California," from Led Zeppelin's 1971 Paris Theatre performance in London, clearly resonated with the acoustic air of the intimate 400-seat venue and worked in sync with the Festival's imaging for a convincing and engaging rendering.

Direct comparisons on these and other tracks with the Bluesound Pulse 2 began to hint at the cleverness of Riva's Trillium technology, while also exposing its modest compromise. The Pulse 2, designed by PSB's Paul Barton, is a very fine speaker—well balanced, highly detailed, and fairly revealing of source material. Like the Festival, it is capable of eyebrow-raising bass for a box of its size, and a reasonably wide and tall soundstage with its stereo driver array. In the side-by-side comparison, I quickly noticed that the Pulse 2 delivered Krauss's vocal with more immediacy and focus than did the Festival, which placed a subtle touch of reverb on her voice and set it back slightly in the soundstage compared with the Pulse

2. I eventually came to hear a similar effect (which I gather was the Trillium processing and multi-baffle driver array at work) on centered vocals in

**SPECS** **Festival:** 4 in anodized aluminum cone woofer (3), 0.79 in silk dome tweeter (3), 4 in rubber-coated steel passive radiator (4) • **Inputs:** Chromecast, AirPlay, Bluetooth wireless; USB (1, audio in/charge out), Toslink optical (1), analog aux 3.5mm (1) • **Amplifier Power:** 200 watts total • **Dimensions (WxHxD, Inches):** 14.4 x 7.9 x 7 • **Weight (Pounds):** 14.2 • **Arena:** 2.36 in anodized aluminum cone full-range driver (3), 2.6 in rubber-coated steel passive radiator (3) • **Inputs:** Chromecast, AirPlay, Bluetooth wireless; USB (1), analog aux 3.5mm (1) • **Amplifier Power:** 50 watts total • **Dimensions (WxHxD, Inches):** 5 x 7 x 4.9 • **Weight (Pounds):** 3 • **Optional Battery Pack:** 20 hours at 75-dB output, varies based on volume • **Dimensions (WxHxD, Inches):** 4.5 x 1.1 x 4.5 • **Weight (Pounds):** 1

other tracks I listened to on the Festival and later on the Arena, though it wasn't readily apparent on instruments or backup vocals that were further off center in the mix. I should stress that *subtle* is the operative word here; in the absence of intimate familiarity with a track or a direct comparison with a more conventional speaker design, it wasn't necessarily something I'd have noticed. Nor did the effect seem to change the musicality or timbre of voices or instruments in that central zone; rather, just the perception of the acoustics of the space they were in.

But, the more I listened, the more I understood the method to Riva's madness. The Festival delivered a far more palpable, three-dimensional image that upped the engagement factor considerably and made the music come alive. The additional spread and depth of the Festival's image on the Baker track, for example, allowed each of the instruments to stand distinctly apart, each with its own air around it, and made the upright bass, the drums, and the massed string accompaniment all more discernible and easier to follow. Critically, instruments and voices individually had more body, irrespective of the tight soundstage. Simply put, the Festival, with its Trillium technology, did a better job of putting the players and singers in the room with me. Reminding myself that this is a relatively inexpensive lifestyle speaker system not intended for a hard-core audiophile application (or critique, for that matter), I came to see this as a justifiable, judiciously applied, and even canny design—especially after auditioning that *other* WAND speaker.

### Enter the Arena

You could buy a stereo pair of the affordable Arenas for the price of a

Festival. And you might even want to do that, because as good as the Festival is, the Arena is pure friggin' magic. I can't say if it's the closer proximity of the Arena's three baffles that makes it behave more like a point source than the Festival and ends up benefitting the Trillium spatial effect, or if the Arena's single full-range driver (and lack of crossover) brings something special to the table. But putting aside the obvious size-imposed limitations on its bass output, and accounting for the same subtle reverb effect sometimes heard with the Festival, I can say that the Arena's ability to throw embodied instruments and voices into the room, and put space and air around each, was nothing short of remarkable. From the first notes of my first track, I sat back and said, "Whoa!" I don't want to diminish the accomplishment that is the Festival, but not only is this speaker more open and transparent than its big brother, it adds noticeable front-to-back depth and dimensionality to the soundstage and populates it well with engagingly solid images. In this regard, it totally trounced the Play:1 and Bluesound Pulse Flex. Those speakers—both very good in their class and well recommended by *Sound & Vision* and others—sounded great but were ultimately flat and lifeless by comparison. They delivered some additional high-end extension and detail, but they just couldn't pull me into the music the same way. Once I heard the Arena, it was hard to go back.

I ran through a series of tightly miked pop tracks that got my juices flowing. Buddy Holly's "True Love Ways" was a revelation; his magnificent, giant vocal and the



**The WAND speakers delivered a crazy-high level of engagement with the music.**



● Both models are available in either a white or black finish.

accompanying strings floated well above the little speaker, with every detail in his key-shifting, quavering voice revealed. Keeping with the oldies, I cued up Eddie Holman's 1969 classic "Hey There Lonely Girl." I listened as the Arena caressed the singer's famous falsetto at high volume, never becoming hard or edgy, and I marveled at how it instantly delineated and physically separated in space the combination of female and male vocalists who come in a cappella on the second verse to sing, "You think that only his two lips...." The Arena blew me away again on Natalie Cole's hit "This Will Be (An Everlasting Love)," with its big opening piano notes, prominent handclaps, Cole's deliciously smooth and scat-like vocalizations, and finally, the dynamic blare of the entering horn section that kicks off the song in earnest. I was literally off my chair, dancing around my listening room. Whatever the Arena's got, it's good stuff.

And it follows that the Arena's got even more of it when two are paired

for stereo. I moved on to this in short order and, not surprisingly, found that the soundstage got both wider and deeper, and that instruments and vocals suddenly got the breathing room around them that they needed for a truly convincing rendering. Those old pop tracks came even more fully alive, with background strings and voices taking on additional body and emanating from clearly distinct and better-separated positions. I tossed on one of my old go-to test tracks, "Song of Bernadette" from the audiophile classic *Famous Blue Raincoat*, and listened to a seemingly life-sized Jennifer Warnes sing from dead center, with the piano immediately right and the strings in back left—all delivered with the sweet, luscious textures and detail I've come to expect from this track on high-quality component rigs. Only the modestly compressed dynamics gave away that the entire system here was a pair of \$250 powered speakers, each not much larger than a Foster's Lager 25-ounce



oil can. The musicians in the Baker track, while not projecting from a full-size soundstage, took on more appropriate perspective now that the space they inhabited stretched to just beyond the outer edges of the speakers, and each benefitted from an obvious enhancement of depth and body.

### Conclusion

I came away from my WAND auditions very impressed by the Festival, and hugely so by the sound quality and value of the little Arena. It wasn't a perfect experience. I found Chromecast's multiroom interface a bit of a letdown after living day-to-day with Sonos (perhaps AirPlay 2 will end up being a more friendly option for iOS

users). And I would have loved to have more bass from the Arena, though it performed mightily well in that area for a compact speaker and better than its direct Sonos and Bluesound competition did.

But, these are small quibbles. In the final analysis, the Festival and Arena delivered a crazy-high level of engagement with the music that made my blood flow and kept me punching up track after track. There can be little doubt: If the intention with the WAND series is to emotionally connect more listeners with their music and make them sit up and take notice, then Riva will succeed in spades. ♦



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I'm too experienced  
for bad TV sound.

# New Chips for Old

By Thomas J. Norton

## Optoma UHD65 4K DLP Projector

**PRICE \$2,500**

**OPTOMA HAS** BEEN IN THE projector business for years. Go to the company's website, and you'll see a bewildering array of models. But the UHD65 is one of the first models to make use of a new 4K DMD (Digital Micromirror Device), the core of Texas Instruments' Digital Light Processing technology. And along with its sister model, the UHD60, it's one of the cheapest.

The latest TI chip is actually 2716 x 1528, which isn't native 4K (or the 3840 x 2160 UHD resolution that dominates the consumer world). But when it's combined with pixel shifting—first displaying half of the pixels in a 4K source, then shifting the pixels in a slightly diagonal direction and displaying the other half—all of the roughly 8 million pixels in a 4K image are flashed on the screen. The timing of the shift is so rapid that the eye blends the two "frames" together. (See "Is DLP's 4K Really 4K?" in our November 2017 issue.)

This differs from the similar shifting technique that JVC and Epson use in their LCOS and LCD "4K" projectors. Those designs use 1920 x 1080 chips. Do the math, rounding off to the nearest million, and you get 2 million pixels on the screen before the shift, then 4 million after. With TI's new 2176 x 1528 chip, the results are 4 million pixels before the shift and 8 million after.

It's important to understand that for a shift using 1920 x 1080 chips, the total number of pixels must be downconverted, before being displayed, from the native 8 million to 4 million. The video processing used for this downconversion might be done well (and in our experience, it is), but you don't get all of the original 8 million pixels on the screen. The TI chip, together with shifting, displays them all, though not at the same time.

### AT A GLANCE

#### + Plus

- Superb resolution in HD and UHD
- Effective HDR for a projector
- Affordable price

#### - Minus

- Poor contrast and black level
- HDR color banding

Optoma refers to a projector with this chip as providing 4K Ultra High Definition, a claim you might deem to be correct or dubious, depending on your point of view. But, its ability to hit that 8 million pixel threshold is what officially qualifies it as a 4K display by the Consumer Technology Association.

### Features

Both the UHD65 (\$2,500) and its less expensive stablemate, the UHD60 (\$2,000), include TI's new chip. But the UHD65 differs in four significant ways. It has a lower claimed light output (2,200

lumens, as opposed to 3,000 for the UHD60); it offers PureMotion, Optoma's motion-smoothing feature (the UHD60 doesn't); it has a black case (the UHD60's is white); and, perhaps most important, it has an RGBRGB color wheel (instead of the UHD60's RGBW). The clear segment (W) of the other projector's color wheel is likely the reason for that model's higher light output, but it might also result in more visible rainbows and less saturated colors at high brightness levels. (To be fair, we didn't have a UHD60 on hand to confirm either of those potential concerns.) Neither projector offers 3D.

For newbies unfamiliar with the concept of a color wheel: Most DLP projectors, and certainly all affordable ones, use a single DLP chip and a rapidly rotating color wheel. This provides the primary colors that are handled by three separate chips in LCD, LCOS, and multi-chip DLP designs.

I did see rainbows occasionally in my viewing (not everyone is sensitive to them), mainly on bright highlights against dark backgrounds. But I found them to be less frequent and annoying than what I've experienced

### RATING

**Optoma UHD65 4K DLP Projector**

Performance ★★★★★

Features ★★★★★

Ergonomics ★★★★★

Value ★★★★★

from single-chip DLP projectors in the past.

The UHD65's zoom, focus, and lens shift are all manual. The lens shift has the most serious limitation. It's vertical only, and when you combine that fact with the projector's high throw angle, you'll find you can't position the unit on a table unless the bottom of your screen is very high off the floor. Such an arrangement can work well for a ceiling mount with the projector inverted. But before you buy, take a good look at your desired screen height, screen size, projector-to-screen distance, and projector mounting height. Professional help is recommended to ensure that all of these elements fit together.

Stray light from the UHD65 was visible on my non-flat ceiling with the projector inverted. This wasn't a distraction for me; my ceiling is well over 8 feet high where the light hits it. But on a lower ceiling, this could be an issue.

Of the two HDMI inputs, only the second is HDCP 2.2 compliant, has MHL capability, and is said to be capable of 4K/60 hertz. The



● The Optoma uses a UHP projection lamp and has a quiet cooling fan.



## THE VERDICT

If pure picture quality with 1080p standard dynamic range will dominate your viewing, there are better options out there at this price and lower. But most of them can't accept a 4K input, won't provide a reasonable facsimile of high dynamic range, and don't offer picture detail challenged only by native 4K projectors costing many times the price of Optoma's UHD65.

## PROJECTOR

### OPTOMA UHD65 DLP PROJECTOR

PRICE: \$2,500

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projector's operating frequency is 60 Hz due to the inherent requirement of the DMD signal processing; to display 24-Hz material (which includes all standard Blu-rays and nearly every Ultra HD Blu-ray), it must first do 3:2 pulldown to convert 24 Hz to 60 Hz. And for the projector to display the only 60-Hz UHD Blu-ray currently available, *Billy Lynn's Long Halftime Walk*, I had to use a short, 6-foot HDMI cable to ensure a solid data connection for the higher-bandwidth signal. For everything else, I used a 15-foot cable for my sources—either a test pattern generator or an Oppo UDP-203 UHD Blu-ray player.

One of the odd additions to this projector's input/output offerings is an S/PDIF optical digital output. This can loop audio from the projector's HDMI input to an external sound system, similar to the optical outputs provided on flat-screen TVs. This might be useful in a temporary setup, though the optical out from a disc player being used as the source would do the same thing. The UHD65 also has its own rudimentary stereo audio system. For most home theater setups, this is best left silent.

The Optoma has controls on the case, but apart from the manual lens adjustments, you'll interface with the projector primarily through its remote control. I found it a bit too small for comfort (and for keeping it out of the seat cushions!), and it isn't backlit. Otherwise, it's perfectly serviceable.

The UHD65 employs a traditional UHP projection lamp. Its cooling fan is very quiet, even in Bright mode, and the cool-down time on shutoff is so brief (by my count, eight Mississippi) that I wondered if it was long enough to be effective.

Lamp life is spec'd at 4,000 hours in Bright mode, 10,000 hours in Eco, and 15,000 hours in Dynamic. In this case, Dynamic refers to the projector's Dynamic Black control. When you engage this feature, the Brightness Mode control—which allows you to select between the Bright and Eco modes—is inaccessible. These are shockingly high lamp-life claims, but there's no mention of whether they refer to half brightness (the usual standard) or total failure. Replacement lamps aren't cheap—\$300 to \$400 is common. As with most other projector makers, Optoma's sales are dominated by business applications, and these lamp-life numbers will appeal to CFOs. It's unlikely that videophiles will find the projector's performance acceptable at anywhere near these lamp-hours. We don't run lamp-life tests, but you should start thinking about buying a new lamp in as little as 1,000 hours with any lamp-based projector. The presence of HDR, which dictates that available brightness is king, makes this even more significant.

The Optoma offers nearly all the controls you'd expect in a modern projector, and a few you wouldn't.



They're well covered in the 60-page owner's manual, which is included on a CD-ROM and also downloadable from Optoma's website.

You can choose from among seven Display (Picture) modes. There are also two ISF modes (Day and Night) that a calibrator can bring up with a special code and then lock after the calibration is complete. RGB Gain/Bias (high/low) controls adjust white balance (there are no 10- or 20-step white balance controls), and a color management system (CMS) is provided as well to tweak the primary and secondary colors. But to use separate settings of these controls for different Display modes, you must choose different settings for Color Gamut—a separate control with five options.

BrilliantColor, a feature developed by TI for DLP displays, added a little pop and dimensionality to the picture. (It actually affects luminance more than color.) UltraDetail enhances sharpness without obvious side effects on normal program material when used at level 1 or 2. Measurement purists may not want to use it at all, however, as it shows clearly visible artifacts (if only on sharpness patterns). A Dynamic Range menu provides an HDR effect on SDR sources, but for me it produced dark images with unnaturally saturated color.

The projector has no iris of any kind, either static or dynamic. The Dynamic Black feature referenced earlier actively modulates the lamp brightness as suggested by the picture, in an effort to improve contrast. Sometimes, it did appear to make that improvement, but I found it

unstable on measurements. While it appeared to darken the black level on measurements, its effect on real program material was to alter the color and gamma without significantly affecting the visible contrast. I left it off for all of my calibrations and serious viewing.

A PureEngine menu includes PureContrast (which I did find useful), PureColor (five levels), and PureMotion (three levels). In its lowest setting, PureMotion produced a less melodramatic soap-opera effect than most such controls, though I still preferred to leave it off. There's also a PureMotion Demo feature that lets you see its effect on a split screen.

Perhaps the oddest control on the projector is Wall Color, which gives you seven colors that are supposed to compensate for different screen colors (obviously intended for projection onto an existing wall—and as such, another holdover from business projectors). The choices include Blackboard and Pink, but not Polka Dot.

The manual devotes seven pages to using the projector with a computer and a home network. While I can imagine some specialized uses for this capability, it wasn't tested here.

### In Use: HD/SDR

The Optoma didn't fare well on our standard video tests, failing 3:2 HD, 2:2 HD, 3:2 SD, and 2:2 SD. It passed the MA SD and MA HD tests, but with minor artifacts on the latter. The projector clipped both above white (at 233 in any Contrast setting below zero and at 231 with Contrast at zero)

● The 15.7-pound unit measures 19.6 inches wide by just over 6.1 high.

## TEST REPORT

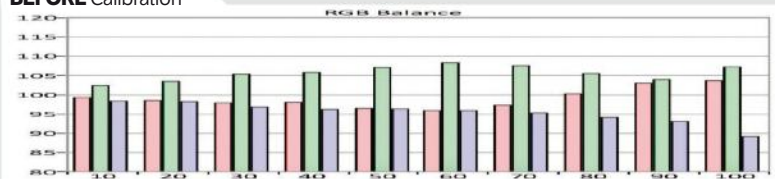
# Test Bench

## Optoma UHD65 DLP Projector

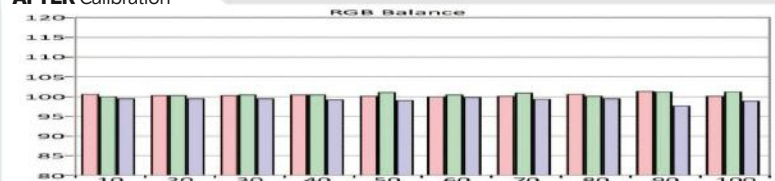
● This model incorporates an internal stereo audio system.



### BEFORE Calibration



### AFTER Calibration



**FULL-ON/FULL-OFF** Contrast Ratio in HD/SDR: 913:1

**FOR** the picture settings used in this review, go to [soundandvision.com](http://soundandvision.com).

**MEASUREMENTS** were made with SpectraCal CalMAN, Photo Research PR-650, and Klein K-10A color meters and a Murideo pattern generator.

**FOR** this SDR contrast, the Display mode was Reference, the Brightness control was set to -1, Contrast was at -15, Dynamic Black off, Bright mode (lamp) on Bright, Gamma on 2.4, and PureContrast turned on. The measured peak white level on my 96-inch-wide, 2.35:1, Stewart Filmscreen StudioTek 130 (gain 1.3) was 19.17 ft-L, and the black level (on a full black screen) was 0.021 ft-L. The projector's lens zoom in this situation was roughly at its mid position. At full zoom (the largest possible image), the full-on/full-off contrast ratio measured 749:1, and at minimum zoom, 1,076:1. My room is representative of many living spaces and far from a black hole, but when totally darkened, this should not affect the readings from a full white or totally black screen.

### HD/SDR

**AT** a setting of 2.4, the gamma closely followed the BT.1886 gamma curve. But with PureContrast turned on—which, as discussed in the text, was absolutely critical for obtaining any semblance of respectable contrast from the projector—the gamma ranged from a low of 1.65 at 90% to a high of 2.13 at 30%.

**THE** white balance Delta E values, from 20% to 100% pre-calibration, ranged from a low of 2.32 at 20% to a high of 7.3 at 100%. Post calibration, with PureContrast engaged, the low value was 0.775 at 100% and the high 6.9 at 50%. That may not appear to be much better, but Delta E includes not just the correct white point (D65) but also the luminance. PureContrast disrupts the gamma and the luminance, and thus it increases the Delta Es (as it must to accomplish its

purpose). But the white balance x/y coordinates, post-calibration, were very close to their optimum values across the brightness range for D65 ( $x = 0.313$ ,  $y = 0.329$ ). These results are shown in the graph.

**THE** HD/SDR color Delta Es were acceptable though unimpressive before calibration. Adjustments in the CMS improved this to values no higher than 1.7 in magenta and under 0.6 for all other colors.

**(DELTA E** is a figure of merit indicating how close the color comes to the standard at each point in the brightness range. Values below 3—some experts allow for 4—are generally considered visually indistinguishable from ideal.)

### UHD/HDR

**THE** default gamma setting of 1.8 produced the best gamma result—that is, the UHD65's best match to HDR's EOTF (Electro-Optical Transfer Function, which is the specified "gamma" for UHD). The transition "knee" in the EOTF curve was a bit softer here than usual, but the x/y coordinates of the white point, after calibration, tracked the D65 white point closely above 25%. Luminance errors at the knee are common in UHD displays, which increases the white balance Delta Es. This has been typical of other UHD sets we've tested.

**THE** CMS positioned the primary and secondary color points very near to their specified x/y coordinates, with the notable exception of green, which shifted slightly toward yellow. But luminance limitations did skew the color Delta Es (which, as above, include both the D65 white point and the luminance). The projector fell short of but came close to achieving the Rec. 2020 equivalents of the digital cinema P3 color points, which most home UHD sources are currently mastered to.

**THE** peak HDR brightness onscreen varied little from approximately 100 nits regardless of how big of a peak-white window filled the screen (10%, 25%, etc. with Dynamic Black off).—TJN

and below black. It passed the chroma and luminance resolution tests—but again, with some minor artifacts on the latter. However, I saw no signs of any of these issues with normal programming, including a variety of real-world 1080i material on several Blu-ray test discs.

I quickly made a few modifications to the Reference Display mode defaults. I turned the Contrast down to -15, set Gamma at 2.4, and turned Dynamic Black off with the Brightness mode in Bright (the high lamp setting). These were the settings that produced the Before Calibration results shown in the Test Bench. But after detecting a noticeable red push (visible in that Before chart as well), I changed the Color Temperature control from its D65 default to D75 for my viewing prior to doing a full color calibration.

Even before I adjusted the color calibration controls, the projector's strengths and weaknesses were clearly evident. On the downside, its black level won't win any prizes. It was uninspiring (if no worse than what you'd experience in your local multiplex). Full screen fades between scenes dropped to a medium gray, rather than the very dark gray the best projectors offer—not to mention the total black of an OLED TV. This troubled me less than it should have, because the UHD65's performance on medium dark scenes with bright highlights (we're still talking standard dynamic range

here) was reasonably satisfying. It also helped that I did my viewing on a 96-inch-wide, 2.35:1 Stewart Filmscreen StudioTek 130 (gain 1.3), which hid the gray-black bars that otherwise would have been very distracting on letterboxed films.

It was only when I turned to truly dark material—the caves in *Prometheus* or more than a few scenes in *Harry Potter and the Deathly Hallows: Part 2*—that I missed the black level and contrast on my regular 1080p JVC DLA-X35 projector (not new, 4K, or even faux-K). Calibration did nothing to improve the Optoma's blacks; once the basic controls are set with reasonable care and the room is darkened, black level is a function of factors beyond any user adjustments.

That said, in other respects, the Optoma produced HD/SDR images that were good—and sometimes, they were exceptional. At a peak brightness level of just under 20 foot-lamberts, colors were excellent. There was some occasional overripe saturation in fleshtones, but minor reductions in the Color control helped tame this. (Besides, it's often a source issue, particularly in the creative use of color in many films.) The mild sepia tint in *Their Finest* (a small gem of a British dramedy about the making of an inspirational Dunkirk movie just after the 1940 evacuation) came through perfectly. A few scenes from the movie within the movie were also interesting, as they

**This is the first HDR-capable model I've tested that lists for \$2,500.**



● One of the two HDMI inputs is HDCP 2.2 compliant.

## SPECS

**Dimensions (WxHxD, Inches):** 19.6 x 6.1 x 13.1 (with feet) • **Weight (Pounds):** 15.7 • **Video Inputs:** HDMI 1.4a (1), HDMI 2.0 (1) • **Other:** S/PDIF output, USB 2.0 (service only), RS-232, 12-volt trigger



undoubtedly were produced to simulate the early Technicolor of the period—and possibly two-strip Technicolor at that.

Overall, my viewing of HD/SDR material on the UHD65 was a pleasure (apart from those black levels). Even 1080p material, as upconverted to the higher resolution of the new TI chip, could look startlingly detailed. Every pore and bead of sweat on Tom Hanks' face in *Sully* was clearly visible. Not all of the material I watched was quite that crisp, but if the detail was in the source, the Optoma put it on the screen.

### In Use: UHD/HDR

High dynamic range for projection remains something of an oxymoron. Most home HDR sources are mastered to a peak brightness of 1,000 nits (though a few go as high as 4,000). Projectors typically can't go anywhere near this bright. Post-calibration, the UHD65 maxed out at 100 nits, a decent result for a projector, particularly one in its price range. Flat-screen TVs can approach 700 nits for OLEDs and go as high as a bit over 1,500 nits for the best LCD/LED designs. When the source exceeds the capability of the display, the latter must "tone map" the material to match. How well it does this can be unpredictable, though it should be straightforward, as consumer TV manufacturers are sometimes creative in how they tone map (rather than adhering to a standard).

The UHD65 has the same black-level limitations in HDR as in SDR. And it didn't measure as well in HDR in other respects, either, largely because of its limitation in peak brightness and in how it chooses to follow the HDR gamma curve or

EOTF, the latter trickier to achieve in practice than SDR's gamma curve.

In addition, there are as yet no consumer displays of any type that can do full Rec. 2020 color (the ultimate goal of advanced color for UHD). The color gamut used currently on any Ultra HD Blu-ray (at present, the best consumer UHD/HDR source) is Rec. 2020 derived from the P3 digital cinema standard; essentially a P3-sized package inside a big Rec. 2020 envelope. Some displays can fully reproduce all the color on a UHD disc, but the UHD65 (and many other displays as well) can't quite get there. (In any event, you should take with a grain of salt any claim or measurement showing that a display reaches, for example, 90 percent of P3 values. Does it mean that it achieves that percentage in all primary and secondary colors, and at all luminance levels? Probably not.)

With just 100 nits in the tank, the Optoma doesn't scream High Dynamic Range. Neither will most other projectors—particularly ones that are affordable. But while both the color and the HDR experiences are more subdued here than what you'll see from a premier flat-screen UHD/TV, you'll definitely see more pop in the contrast and more vivid colors here compared with the same material in HD/SDR on this projector. As for resolution, unless you sit close enough to a flat-screen set to see all the detail offered by 4K—about 6.5 feet is optimum for most common screen sizes—it won't match the resolution you'll see from a true 4K projector on a 110-inch-diagonal screen viewed from 11 feet. The pixel-shifted Optoma, which puts all of the 4K pixels on the screen (though not at the exact same time), should be comparable in this distance game.

After calibration, the best UHD/HDR material looked stunning. *The Great Wall* may not be a great film (an understatement), but it's pure eye- and ear-candy for the home theater enthusiast.

As reportedly mastered

from a 4K digital intermediate, the brilliantly colored uniforms—many of them with intricately detailed armor—were jaw dropping. Highlights were well rendered for a projector. And the film appears to have been carefully crafted to avoid dark scenes with very low contrast (there's even a brief shot here that was clearly done day-for-night). With this film, more so than any other I viewed, I wasn't bothered by the projector's inherently poor contrast.

*Guardians of the Galaxy: Vol. 2* was another UHD/HDR standout. (It, too, was reportedly transferred, at least in part, from a 4K digital intermediate. Do we see a trend here?) The whole film is an uninterrupted riot of rich, saturated color and crisp detail, even more so than *The Great Wall*. While I have no idea of what's going on in the final 20 minutes (something about Peter Quill trying to kill off his God-Father while a planet collapses around him), on the Optoma it was a feast of 4K resolution and sparkling color, together with limited but rewarding HDR.

Not every UHD/HDR Blu-ray worked as well (and all of the material used here was on disc; I don't trust the quality of streamed UHD video). *Independence Day* was often soft-looking, with one particularly egregious shift to red fleshtones at 10:29, as Lucas complains about his fields not being crop-dusted properly. On the other hand, *Independence Day: Resurgence* (which

makes *The Great Wall* look like *Citizen Kane*) was solid on the Optoma.

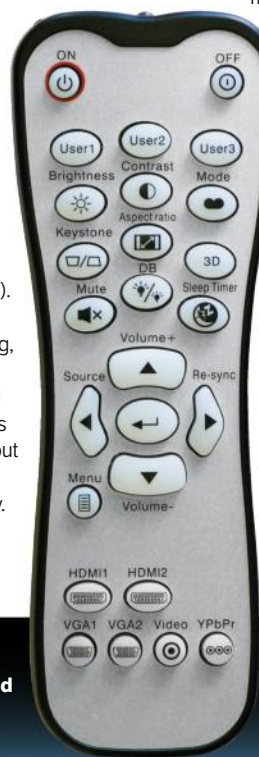
I did occasionally notice too-reddish fleshtones elsewhere as well. Whether this was a creative choice, a mastering problem, or an issue with the projector was hard to pin down, but I have also seen it from time to time on flat-screen HDR sets. Since the color calibration on the Optoma was a little skewed by ideal standards, that might have been a factor. The cure, which usually (but not always) worked, was a slight reduction in the Color control. Of course, if the red tone was a creative decision by the filmmakers, you're on your own with such alterations. The video police won't come knocking—at least, I don't think so.

One other issue raised its head: color banding. I saw this on more than one disc in large areas of color, such as the red sky in *The Martian*. But it wasn't everywhere. Often, I looked for it in areas where I expected to see it, but it didn't appear. It was infrequent enough not to draw me out of the film, but other viewers might not be so tolerant.

### Conclusions

It's hard to judge the Top Pick-worthiness of a product with a unique feature set. I've reviewed many projectors, but

this is the first HDR-capable model I've tested that lists for \$2,500. I can judge contrast, however, and the Optoma is a bit too business-model-ish in that regard to make me perfectly happy with it on all sorts of material, particularly a wide range of movies. Still, the UHD65 did impress me in other respects—enough for me to recommend a serious audition. Just be sure to bring *Harry Potter* (or your own black-level torture test) along with you. ♦



**The Optoma produced HD/SDR images that were good—and sometimes exceptional.**

● The UHD65's remote is small and non-backlit but gets the job done.

# Heavy Metal Marmalade

By Mark Fleischmann

## Astell & Kern KANN Music Player

**PRICE \$999**

**ASTELL & KERN'S KANN** (ALONG with the recently announced AK70 MK II) makes its debut at a time when the dedicated music player is looking more and more like the passenger pigeon. Apple has just killed the innovative, shape-shifting iPod nano and the puny iPod shuffle, leaving only the now unprecedentedly cheap iPod touch, basically an iPhone without the phone, at \$199. With Apple uncharacteristically catering to the middle of the market (let's not even contemplate the \$20 nano knockoffs on Amazon), that leaves the high-resolution music-player carriage trade to companies like Astell & Kern, FiiO, and HiFiMan, as well as newly hi-res-conscious big brands like Sony, Onkyo, and Pioneer.

Astell & Kern may sound like a company with a royal warrant to supply marmalade to Buckingham Palace. But it's actually the offspring of South Korea's IRIVER, which has made sweetly overbuilt, true hi-res music players since the debut of the excellent AK100 five years ago. At \$999, the KANN isn't Astell & Kern's most expensive music player. That

would be the A&ultima SP1000 (\$3,499).

Nor is it the least

expensive. That would be the AK Jr, which cost \$499 when we reviewed it (May 2016 issue and [soundandvision.com](http://soundandvision.com)) and is now down to \$250. We haven't yet tested the AK70 MK II (\$699), but the KANN just might be the real sweet spot in the A&K line.

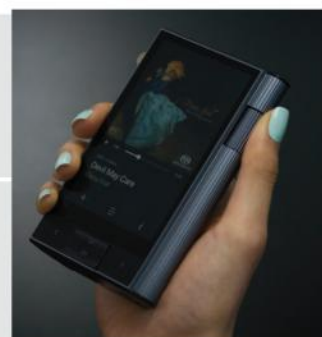
### Big Fella

Like a cigarette pack on steroids, the KANN weighs more than half a pound and is a full inch thick. It would weigh down a shirt pocket uncomfortably, though a blazer pocket might do. The unit's weight does make it easy to operate on a desk. Available in Astro Silver or Eos Blue, the machined aluminum casing isn't pretty, yet the ridged sides and back induce tactile pleasure in the hand that holds it. The 2 x 3.5-inch touchscreen isn't as big as the one on most people's phones, but it's big enough to easily navigate the interface. Other controls include a cylindrical volume wheel, which mimics the curve of the unit and falls easily under the right thumb. There are four navigation buttons below the screen and a too-tiny power button on top.

Four jacks that support both headphone and line output—and both unbalanced and balanced operation in each case—are also on top. On the bottom are a USB-C jack for charging and data and a micro-USB jack for digital audio, which enables the unit to be used either as

an external DAC or *with* an external DAC. No charger is supplied, but quick-charge is supported when connected to a compatible wall adapter. I plugged the supplied USB-C cable into the charger that came with an Android tablet, and the unit charged up within a few hours. Your phone charger would probably work, too. A full charge provides up to 15 hours of playing time.

Also on the bottom are two stars of the show: a microSD card slot *and* a full-size SD card slot. The microSD supports cards up to 256 gigabytes, and the full-size slot supports up to 512 GB. So the two together, plus 64 GB of internal memory, potentially add up to 832 GB—more than five vintage 160-GB iPod classics! Validated cards such as those from SanDisk and Samsung are recommended. You might load up a card and



### AT A GLANCE

**+** Plus

- Normal or high-gain output
- Full and microSD card slots
- Native 384/32 PCM and DSD support

**—** Minus

- Bulky
- Not as pretty as some other A&K players
- USB charger not included

use it in more than one device. Or you might just fill a bunch of cards with different content and swap them on a whim. ("Classical this weekend, sir?" "I think not, Jeeves. Jazz. Are we out of marmalade?")

The KANN switches between normal and high gain to accommodate headphones that present more hard-to-drive loads—or even, A&K says, low-impedance speakers. The company also claims that the KANN



● The Astell & Kern is finished in silver or blue machined aluminum.



## RATING

Astell & Kern KANN Music Player

Performance ★★★★★

Features ★★★★★

Ergonomics ★★★★★

Value ★★★★★

## THE VERDICT

Astell & Kern's KANN is not only a subtly gorgeous-sounding performer loaded with features. It's also a great value.

## MUSIC PLAYER

ASTELL & KERN KANN MUSIC PLAYER

PRICE: \$999

Astell & Kern / IRIVER • (949) 336-4540 • astellinkern.com



## SPECS

**Storage:** 64 GB internal + up to 256 GB microSD and 512 GB SD • **Compatible Playback Formats:** AAC, AIFF (up to 16-bit), ALAC, APE, DFF, DSF, FLAC, MP3, OGG, WAV, WMA • **Maximum PCM Resolution:** 384/32 • **DAC:** AKM AK4490 • **Output Level:** Phone out normal, 2 V RMS unbal, 2 V RMS bal; phone out high, 4 V RMS unbal, 7 V RMS bal; line out, 2 V RMS unbal, 2 V RMS bal • **Audio Inputs:** USB-C, micro-USB, SD card, microSD card, Wi-Fi • **Audio Outputs:** 3.5mm unbal headphone, 2.5mm bal headphone, 3.5mm unbal line, 2.4mm bal line, USB, Bluetooth V4.0 (aptX HD compatible) • **Dimensions (WxHxD, Inches):** 2.8 x 4.56 x 1.01 • **Weight (Ounces):** 9.83

has the lowest output impedance of any of its players. The line output range can be set for four values to suit the gain of a professional, home, car, or other system. Balanced and unbalanced headphones and systems are supported.

The player serves as a USB DAC when connected to a PC; its 384-kilohertz/32-bit DAC will probably be a vast improvement over the PC's internal soundcard. The unit supports Bluetooth and Wi-Fi, and it uses DLNA—via the AK Connect app—to interact with network-connected devices running the app, potentially including phones, tablets, computers, and network audio players. There isn't much the KANN can't do. One notable exception is nascent MQA technology; the company is looking into it.

I got the KANN to work some of its connectivity miracles. Linked to my Windows 10 desktop PC with a USB Type-A-to-micro cable, it pulled music off the hard drive and served as a superb-sounding USB DAC. Once I'd installed the AK Connect app on the same PC, it accessed the same device and material via Wi-Fi. With Bluetooth paired between the KANN and my Android smartphone, the phone accessed music from the player, but not the other way around. I wasn't able to get the KANN to function with an AudioQuest DragonFly Red DAC through an Android OTG adapter; the DragonFly's indicator would light up, suggesting that a signal was about to pass, but then the player would crash and reboot.



● The KANN measures a full inch thick and weighs half a pound.

This was forgivable. The KANN's excellent internal DAC didn't need any help.

Eventually, I got tired of parlor tricks. It was time to plug some headphones into the KANN and let it strut its stuff as a hi-res music player. As usual of late, I used the HiFiMan Edition X V2 and Sennheiser HD 600.

## Getting to Know You

Starting with the HiFiMan headphones, the best I currently have access to, I listened for an hour before I realized how subtle the KANN is. The realization came during Nick Drake's "Things Behind the Sun" (FLAC 96/24), a track I've heard countless times in countless systems on LP, CD, and hi-res digital. I suddenly became aware that the KANN's performance was a compendium of everything any gear has done right with this track. More than that, it was unprecedentedly fine-grained and fastidiously respectful of tone color in a way that made the material fresh, as if I'd never heard it before. Going over the notes I made before and after this point, I came to understand that the KANN was handling everything this way. Pleasure and trust grew with each passing track.

Led Zeppelin's "Dancing Days" (FLAC 96/24) emerged with the best balance of relentlessly jangling guitars, cymbal flows, and squealing organ I've ever heard. All of those elements are inherently bright and hard to control, but to hear them juggled so perfectly—

inducing no numbing or fatigue—was a surprise.

Then there was the verse in Nick Drake's "River Man" (FLAC 96/24) that begins, "For when she thought of summer rain..."

The strings always brighten and intensify, but this time they brightened and intensified into a rainbow.

The KANN was a low-level resolution champion. On tracks that I usually play at higher volumes, it was less necessary. I could hear Matthias Goerne's hushed crooning of Schubert's *Litanei* (ALAC 44.1/16) perfectly well. Likewise, the quiet, chiming percussive elements of David Chesky's "Ben's Farm in Vermont" (FLAC 192/24), which require both low-level resolution and extended high-frequency response, were audible without a boost. A system that performs well at low levels affords, in practical terms, a wider range of situations in which to enjoy its virtues.

There were little things: I've heard Fotheringay's "Banks of the Nile" a million times but have never heard Sandy Denny's voice hitting the walls of the studio—and this was with an MP3 ripped at 192. Then there were big things, like the quasi-orchestral flow of the Yes track "And You and I" (ALAC 44.1/16), another balancing act that the KANN handled effortlessly. I know it's a cliché, but the music just sounded *right*. You had to be there.

The Sennheiser headphones are higher in impedance than the HiFiMan. Setting the Amp Mode to High gave them more headroom, though it was unnecessary with most tracks. The KANN was a better mate for the highly resolving planar diaphragms of the HiFiMan than for the polite-ish, more conventional Sennheiser, which made John Bonham's cymbals decidedly a junior partner to Jimmy Page's guitars in "Dancing Days." The ability to

handle low volumes intelligibly in the Schubert and Chesky tracks was diminished though not destroyed. The KANN and Sennheiser made beautiful music together, but it took the HiFiMan's greater resolution and grasp of detail to bring out the KANN's full potential.

Although I've made the case for Astell & Kern music players before, I've rarely done it as a value proposition. But the KANN happens to provide truly impressive performance for the just-under-\$1,000 price—not much more than the cost of a loaded iPhone from a major carrier. I found it just as fulfilling to my ears as the far pricier AK240 (reduced to \$1,499, July/August 2014 issue and soundandvision.com) and the price-no-object AK380 (\$3,499, February/March 2016 and our website). If our reviews of those latter products whetted your appetite but their four-figure price tags held you back, the KANN might be the high-resolution audio player you've been waiting for. Here's a hefty slab of state-of-the-art performance for less than four big ones—with SD and microSD card slots for future growth. Deal? ♦

Audio Editor Mark Fleischmann is the author of *Practical Home Theater: A Guide to Video and Audio Systems, now available in both print and Kindle editions.*



● SD and microSD card slots are located on the bottom panel.

# More Than Meets the Eye

By David Vaughn

## RATING

Samsung UBD-M9500 Ultra HD Blu-ray Player

Performance ★★★★★

Features ★★★★★

Ergonomics ★★★★★

Value ★★★★★

## Samsung UBD-M9500 Ultra HD Blu-ray Player

**PRICE \$400**

**I'M IN** MY 13TH YEAR OF reviewing consumer electronics, and I'm continually amazed at the industry's pace of innovation. In the span of about 20 years, we've gone from bulky, backbreaking CRT displays to flat-panel TVs that hang on the wall, as well as projectors that are smaller than the base of a vacuum cleaner—all at prices that the middle class can easily afford.

Some might argue that progress is occurring too fast and that keeping on the cutting edge is nearly impossible, and I wouldn't disagree. After all, 3D has come and gone in a few short years, and one could make a pretty strong argument that the 1080p delivered from Blu-ray has all the resolution we need for the foreseeable future, given how far the average consumer sits from their display. But 1080p is so yesterday, and the electronics manufacturers need a new hook to get you to upgrade.

Their latest push is with 4K, which in its consumer Ultra HD version is actually 3840 x 2160—four times the resolution of 1080p. Granted, these displays have been on the market for a few years, with one caveat: It was a standard in motion. Thankfully, those days are largely behind us now, and most midline-and-up 2017 models will support the other key features that UHD has to offer—namely, WCG (wide color gamut) and HDR (high dynamic range). If you want to have all your bases

covered, though, be sure your new TV takes advantage of both leading versions of HDR: not just HDR10 but Dolby Vision as well.

So now that we have rock-solid displays that can show off the latest technology, there's still one ingredient missing: content. Without that, what's the point? As I stated earlier, Blu-ray's 1080p is pretty damn good—but along with the electronics manufacturers, the movie studios need to make a buck, too, so they've come up with Ultra HD Blu-ray as their ultra-premium disc format, in order to sell you their latest blockbuster as well as catalog titles you'll feel obligated to upgrade.

For the majority of releases, Ultra HD Blu-rays offer not only the image benefits associated with the format, but often an immersive, height-enhanced audio track in Dolby Atmos or DTS:X. Furthermore, the

discs come with an UltraViolet code to access the movie digitally from your provider of choice (mine is Vudu). What's even more impressive is that some, but not all, studios include a UHD stream. When you take all of that together, the new format is a pretty good value for the premium price.

Of course, in order to play these discs, you need an appropriate machine—and what's amazing is how competitively priced Ultra HD Blu-ray players were right out of the gate. Samsung was first on the block with the UBD-K8500 last year (*Sound & Vision*, June 2016), which Tom Norton rightly rated as a Top Pick. Granted, it wasn't perfect, but at a debut price of \$400, it was easy to forgive its horrendous remote and somewhat clunky user interface.

### That Didn't Take Long

Here we are a little over a year later, and Samsung's second-generation

## AT A GLANCE

#### + Plus

- Plethora of streaming options
- Outstanding picture quality
- Dual HDMI outputs

#### — Minus

- No 3D support
- Flimsy disc tray
- No Dolby Vision support

UBD-M9500 player is here, with the same MSRP of \$400 but a street price of \$299 from most online retailers. In addition to playing discs, it serves as an entertainment hub that can stream media from your home network, USB drive, or favorite online service, such as Netflix, Amazon, or Vudu, among many more options.

The form factor mostly matches last year's model, with one addition: There's a text display on the face that will flash a message letting you know what action is taking place, such as



● The Samsung's front panel includes a left-side disc tray, with power and eject controls on the right.



## THE VERDICT

This second-generation Ultra HD Blu-ray player delivers exceptional performance and value, especially for heavy Netflix or Amazon users.

## BLU-RAY PLAYER

### SAMSUNG UBD-M9500 ULTRA HD BLU-RAY PLAYER

PRICE: \$400

Samsung • (800) 726-7864 • samsung.com/us

"Play," "Stop," or "Loading." The disc tray is situated on the left and is somewhat flimsy, but at this budget-friendly price, you can't expect industrial-strength build quality. Manual controls for power and eject are on the right, along with an LED power indicator. And there's a USB port on the right-side panel (which could be problematic to access if the unit is placed inside a rack).

On the rear panel, you'll find a plug for the detachable power cord, an Ethernet port, and two HDMI outputs—a main that outputs both audio and video to a display and a secondary that outputs audio only. This allows users with older AVRs or surround processors that don't support HDCP 2.2 and HDMI 2.0a (which require throughput of 18 gigabits per second) to send the audio to their rig while sending the video to their display. Fortunately, my setup meets all the specs, so I only needed to use the single cable.

One of my biggest gripes with the UBD-K8500 was its unfriendly remote. Thankfully, Samsung has upgraded it for the UBD-M9500—and while the buttons are still small, they're spaced further apart, making it less likely to hit the wrong one. Along with standard keys (play, stop, etc.), there's a directional pad for menu navigation. Unfortunately, the remote still isn't backlit, but that's why

I have a universal remote for everyday use.

### Setup

The UBD-M9500 is quite easy to set up, thanks to the onscreen guide. Although the Samsung's primary purpose is to play Ultra HD Blu-rays, it will also play standard Blu-rays, as well as DVDs and CDs. Fans of 3D will be disappointed that there's no support for it here, and those with vast collections of SACDs and DVD-Audio discs should look for another option; those formats aren't supported either. One other feature absent here is Dolby Vision, which is now starting to appear on some discs and, as mentioned, displays.

If you own a Samsung mobile phone, the player can stream video from a disc to your phone over Wi-Fi, although I don't see the appeal of this. Sure, my Galaxy Note 5 has a sizable screen, but it pales in comparison to the 88-inch screen of my front-projection system! Going in the other direction, with the addition of the Samsung Smart View app on your Android phone, you can

share the phone's screen on the player's output, which is handy if you want to show off some of the pictures stored on your device.

Once the player is set up and connected to your network, you have a plethora of choices of what to do. The Home Screen has one of the best layouts I've seen and is easy to navigate, even for the less tech-savvy members of your household. There are quick-launch icons at the bottom of the screen that can thankfully be customized to your liking. My main choices beyond "Play a Disc" were Netflix, Amazon, and Vudu; I had to move Vudu there from a second page by holding down the select button on the remote until a menu popped up asking if I wanted it on the main screen.

There's a Quick Settings tab that allows you to customize various options, such as Picture Mode, Fit Screen Size, Sound Output, Audio Output Format, and Network. I chose the basics—Movie picture mode, bitstream audio, wired network—and all worked like a charm. In the Video Output section, there isn't a "native" setting, so if it's set to Auto or to 2160p, all video will be output in 4K (if you have a 4K display), regardless of the native resolution on the disc. Fortunately, the Samsung is a competent scaler, and unless you're a very picky videophile, you shouldn't be too bothered by its treatment of 1080p content. If hooked up to a 1080p display,

the player will automatically downscale to the proper resolution and give you the ability to adjust the gamma curve (low, medium, high).

### More Than Just a Shiny Disc Player

I used the UBD-M9500 for nearly a month and found the experience uneventful—which is a good thing. Disc playback was flawless, with one exception. When I watched the Ultra HD Blu-ray of *Life*, there was a band of video noise at the very bottom of the screen. I promptly ejected the disc and reloaded it—same effect. Thinking that the disc was possibly to blame, I loaded it into my reference Oppo UDP-203, and it looked perfect. As a last gasp, I rebooted the Samsung—and finally, the video noise was gone. Chalk it up to gremlins, because it was the only issue I had, and it never repeated itself on this disc nor any of the others I played.

Demoing a stack of UHD Blu-rays is somewhat boring, for a reason you may not expect: They all look and sound pretty damn good. Indeed, comparing them is akin to picking Miss Universe: They all are beautiful! The aforementioned *Life* is no exception, with its razor-sharp digital photography, inky blacks, and picture-perfect fleshtones. The Samsung took what was on the disc and displayed it in all its 4K glory; it didn't add anything or take anything away.

Although I hate to admit it, streaming is definitely the way we are going to be viewing the majority of our content in the future. It's come a long way in a short time, when you



**This second-generation offering nails the user experience out of the gate.**

## TEST REPORT

## SPECS

**Dimensions (WxHxD, Inches):** 16 x 1.8 x 8.9 • **Weight (Pounds):** 4.2 •  
**Video Outputs:** HDMI 2.0a (1), HDMI Audio Only (1) • **Audio Outputs:** Optical digital (1) •  
**Additional:** Ethernet (1), USB 2.0 (1), Wi-Fi

● **Samsung's updated remote now provides more space between keys.**



consider the amount of content available as well as the jump in quality. Depending on the bandwidth into your home, you can get close to Blu-ray quality from a "UHD" stream—but at this point in time, disc-based media will give you the best (if not the most convenient) experience.

I sampled my three go-to services—Netflix, Amazon, and Vudu—and each performed flawlessly. Via Netflix, I watched the UHD stream of season 5 of *House of Cards*, which offered 4K video without WCG and HDR. It came quite

close to Blu-ray quality in bright scenes, although nighttime scenes were prone to video noise and minor macroblocking. The same could be said of the UHD stream of *Spectre* from Amazon: It's convenient, but the UHD disc blows it away in terms of quality. As for Vudu, at the time of my testing, it hadn't been updated on the player to support Ultra HD.

That said, Vudu's HDX streams are a best-in-class streaming experience, and I can't wait to see what the service can do with UHD.

### Conclusion

When Samsung's UBD-K8500 was



● **The UBD-M9500's trim 1.8-inch height will help it fit neatly into a gear rack.**



launched last year, there were no other choices available to consumers. I'd be the first to admit that I wasn't pleased with that first-generation player until many of the bugs were worked out via firmware updates. This second-generation offering nails the user experience out of the gate. There are more choices in the marketplace now, and Samsung's UBD-M9500 is both an excellent Ultra HD Blu-ray player and arguably the best streaming device I've used when it comes to the three major services (four, if you count YouTube). Throw in its fast and intuitive user interface, and you've got yourself one heck of a bargain. ♦

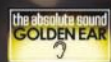
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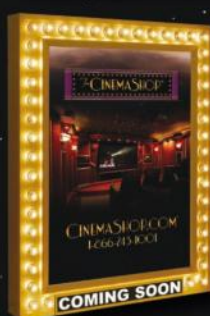


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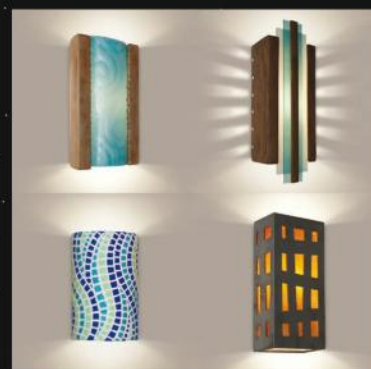
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# Entertainment Reviews in High Definition

## 4K UHD BLU-RAY Alien: Covenant



## In Space, No One Can Hear You Sigh



Remember how excited we were when we heard that George Lucas—the man who started it all—was going back to directing *Star Wars* movies? And a lot of us went to see *Episode I* and said, “Oh.”

And then, a few years older and wiser, we sat through *Episode II* and said, “Oh. Well.”

Ridley Scott is putting us through much the same ringer with the *Alien* franchise he began, famously returning for 2012's technically accomplished but overly complicated *Prometheus* (also newly available on 4K). And now he's back again with *Alien: Covenant*, which might just be the nadir for the series.

Ten years after the events of *Prometheus*, the colonization vessel *Covenant* is on a long journey to an inhabitable new world when a random celestial event interrupts the trip. Soon after, a mysterious transmission leads passengers and crew to a previously undiscovered planet that seems like an even more promising destination. A landing party



### BLU-RAY

**STUDIO:** Fox, 2017  
**ASPECT RATIO:** 2.40:1  
**AUDIO FORMAT:** Dolby Atmos / TrueHD 7.1 core  
**LENGTH:** 122 mins.  
**MPAA RATING:** R  
**DIRECTOR:** Ridley Scott  
**STARRING:** Michael Fassbender, Katherine Waterston, Billy Crudup



### RATINGS

	Poor	Fair	Good	Excellent	Reference
PICTURE	★	★	★	★	★
3D-NESS	★	★	★	★	★
SOUND	★	★	★	★	★
EXTRAS	★	★	★	★	★

come into view. Elsewhere, fine particles that might otherwise vanish are expertly reproduced in 4K. Little lights across the smoke-filled bridge are razor-sharp, and the faint geometric pattern across the surface of a crew helmet is plain to see. The color palette is oppressively bleak. The lighting too is frequently subdued, which gives the HDR10 a chance to shine, as when a flashlight pokes dramatically around a cargo bay, or shafts of sunlight peek through a thick canopy of trees, or a life-saving flare illuminates the night.

The Dolby TrueHD 7.1 presentation (the core of the supplied Dolby Atmos soundtrack) distinguishes itself with generous surround activity and plenty of bass, the latter serving to reinforce the scale and power of all the heavy metal as well as the lethal might of the non-human creatures. Discrete voices are placed effectively behind the listener, while the immense, wide explosions serve up ample nuance and full-bodied resonance. Even the trebly slice of blades is evident in this clean, impressive track. Interestingly, the audio on the accompanying Blu-ray is DTS-HD Master Audio 7.1.

The Ridley Scott commentary is the sole extra on the 4K disc, while the Blu-ray carries a strong if not surprising complement of bonus material. There are 17-and-a-half minutes of deleted and extended scenes, some in-universe featurettes and extensive production image galleries, but best of all is an in-depth “Master Class” that shows Scott at work. An HD Digital Copy of the movie is also bundled here.

*Covenant* does provide a bridge of sorts between *Prometheus* and the original *Alien*, but the many subtle callouts to the older films only serve to remind us that this franchise has become lost in space.

● Chris Chiarella

ventures forth and makes a series of unfortunate discoveries and poor decisions that thin this remarkably naïve herd in nasty ways. To be fair, the gross, scary, violent parts are often appropriately disturbing, but *Covenant* is also chock-full of tiresome clichés, re-created here with big, elaborate CGI... that often looks like big, elaborate CGI.

Granted, many of the sprawling scenes could only have been achieved with today's digital wizardry, and the giant spaceship and the city of an advanced civilization flaunt ultra-precise details. At the same time, we can appreciate the *Covenant* as a speck against the vast expanse when it first appears, slicing across the 2.4:1 frame while tiny stars slowly

“One wrong note eventually ruins the entire symphony.”





## THE BOSS BABY

### BABY ON BOARD

DreamWorks



When a new baby arrives at the Templeton house, seven-year-old Tim has his world turned upside down. He's even more flummoxed when he sees that the baby is wearing a suit, carrying a briefcase, and is here on a mission from BabyCorp, where babies come from. Puppy Co., the company that Tim's parents work for, is threatening BabyCorp's only market by producing cute, cuddly, "forever puppies" that threaten to eliminate the human passion for babies.

*The Boss Baby* is a hoot, including great voiceover work from everyone, particularly Alec Baldwin as the baby. The wildly fanciful premise makes it one of the funniest films of 2017. Kids will be enthralled and even adults might find it a welcome change from today's gross-out, live-action comedies. There's also a ton of homages to other films, including *Lord of the Rings*, *Raiders of the Lost Ark*, *Mission: Impossible*, *Mary Poppins*, *Glengarry Glen Ross*, and even *Galaxy Quest*.

While most of the computer animation here is standard issue, several fantasy sequences stand out. Produced in an animation style combining the old fashioned and modern, these scenes are the most richly colored in the film, adding eye-popping style to what might otherwise have been a look interchangeable with dozens of other fun-but-been-there-done-that animated features.

The standard Blu-ray's video is excellent, but those vivid colors shine most brilliantly on the Ultra HD disc. Combined with its top-shelf resolution, this package has much to offer even to adults still stuck in an animation-is-just-for-kids world. But like most animation, the film is almost uniformly bright throughout and doesn't give the UHD disc much opportunity to show off its high dynamic range on bright highlights.

The UHD disc's Dolby Atmos soundtrack (auditioned here in 5.1) is a solid effort but won't challenge most systems. Even a rocket launch is relatively low key in its use of dynamic range and deep bass. The otherwise very good music score is mixed low enough in level to keep the film's dialogue front and center. That's not necessarily a bad thing in a film with as many laugh-out-loud one-liners as this one.

The extras (on the Blu-ray Disc) include extensive shorts, making-of featurettes, deleted scenes, and music videos from other DreamWorks animated features. They're fun but mostly short; a commentary track would have been welcome, but they're increasingly rare these days.

● Thomas J. Norton



#### BLU-RAY

STUDIO: DreamWorks Animation, 2017

ASPECT RATIO: 2.35:1

AUDIO FORMAT: Dolby Atmos (Ultra HD); DTS-HD Master Audio 7.1 (Blu-ray)

LENGTH: 97 mins.

MPAA RATING: PG

DIRECTOR: Tom McGrath

STARRING: Alec Baldwin, Steve Buscemi, Jimmy Kimmel



## GUARDIANS OF THE GALAXY VOL. 2

### THEY'RE BACK, A-HOLES

Disney



In a world of seemingly infinite crappy sequels, *Guardians of the Galaxy Vol. 2* is worthy of special praise for getting so much right. While delivering another dose of the irreverent humor and hybrid-fantasy action that made the first film so popular, it also cultivates the themes and plot lines so that the two volumes fit seamlessly, telling an epic story.

Not long after Peter Quill/Star-Lord (Chris Pratt) revealed himself to be a meta-human thief turned savior of the galaxy, the mysterious Ego (Kurt Russell) appears to lend a helping hand to the freewheeling Guardians, who always seem to need it. He also drops some game-changing news on Peter, and a search for even more answers splits the team apart, even as self-righteous super-beings and vile pirates are closing in. It's an adventure on a stupendous scale, but one held together by genuinely likable characters and a remarkably touching lesson about family.

*Vol. 2* is Disney's first 4K disc, and it is an unqualified success. Director Peter Gunn's visuals are incredibly ambitious, demanding a quality of special effects that wasn't even possible a few years ago. This universe is so big, there's so much to see, and it's simply eye-popping in its clarity, with no issues such as noise or banding. The wide color gamut is in evidence, from stunning rainbow hues to a refined richness in the skintones. Lots of brilliant blue and white flashes of magical power exploit the high dynamic range, as does Yondu's fiery red death dart zipping through the shadowy decks of his ship, dispatching all who oppose him. (The streaming version of this title, not included, is presented in Dolby Vision.)

This is also Disney's first-ever title with Dolby Atmos audio, and while I was not able to audition the overhead surrounds, I can attest



#### BLU-RAY

STUDIO: Disney, 2017

ASPECT RATIO: 2.40:1

AUDIO FORMAT: 7.1 TrueHD with Atmos

LENGTH: 136 mins.

MPAA RATING: PG-13

DIRECTOR: James Gunn

STARRING: Chris Pratt, Zoe Saldana, Dave Bautista



that the Dolby TrueHD multichannel mix at its core is one of the best tracks in years. Sprawling space battles display zip and zap, guns-blazing firefights are a hoot, explosions of every size jolt the home theater, and when an entire planet begins to crumble, we are right in the middle of it. The movie's signature complement of pop songs is also cleverly woven into the sonic tapestry. (The included Blu-ray features DTS-HD Master Audio.)

There are no extras on the 4K platter, but the Blu-ray serves up extended scenes, a gag reel, an above-average making-of, a director commentary, and a trippily fun music video. The bundled Digital Copy code also unlocks accompanying bonus features. ● Chris Chiarella





## GHOST IN THE SHELL (2017)

### ANIMÉ CLASSIC COMES TO LIFE

Paramount



In a world where people are enhanced with technology, Major (Johansson) is rescued from near death, or so she believes. Her cybernetic implants make her the first of her kind as she fights criminals with an upper hand, but things are not always what they seem to be. She begins to have visions of her past and starts to believe that the corporation that “saved” her is actually trying to control her. She makes it her personal mission to unravel her mysterious past and find out what truly happened.

Having recently watched the Japanese animé version of the film, I knew what to expect. The plot is thin, but the visuals are amazing, which helped draw me into the film despite its lackluster script. The moral of the story is beware of technology, but shouldn't we already know that?

The film was originally shot in 4K, then down-rezzed to a 2K source for its theatrical run, then upconverted to 4K for this UHD Blu-ray release. All of this processing hasn't seemed to damage the picture, which looks quite good. Detail is outstanding, and the HDR treatment features some occasional bright highlights, but the true star of the show is the mesmerizing shadow detail that shows improvement over the 1080p Blu-ray. The movie is also available on Blu-ray 3D.

As one would expect from the genre, the Dolby Atmos track has some impressive demo-worthy scenes throughout its 106 minutes. Bullets whiz through the room from every direction, and gunshots ring true with some impact on the low end. The third act is where the soundtrack truly shines while our hero fights for survival against the boss villain with copious amounts of LFE shaking the room. Overhead effects are reserved mostly for the action scenes but do provide some occasional ambient effect, especially in the bustling city.

None of the bonus features are on the UHD disc; they're housed on the bundled Blu-ray. These include a making-of featurette with an interview with the director explaining the long development process converting the animé classic to a live-action vehicle. Up next is a look at the Section 9 intelligence team and how it fits into the story, followed by the interesting “Man & Machine: The *Ghost* Philosophy,” which explores the relevance to our current world and how technology is intruding on our everyday lives.

Technical details aside, this is a middling experience that offers some thought-provoking ideas within a mostly hollow shell. Save some money and add it to your rental queue. ● David Vaughn



**BLU-RAY**  
STUDIO: Paramount, 2017  
ASPECT RATIO: 1.78:1  
AUDIO FORMAT: Dolby Atmos / True HD 7.1 core  
LENGTH: 106 mins.  
MPAA RATING: PG-13  
DIRECTOR: Rupert Sanders  
STARRING: Scarlett Johansson, Pilou Asbaek, Takeshi Kitano



## RESIDENT EVIL: VENDETTA

### RETURN OF THE UNDEAD

Sony



*Resident Evil: Vendetta* picks up the mantle yet again for the Capcom strain of this popular video-game franchise. Sticking to the animé-oriented roots and offering some visceral action without the frenzied camera panning and ADD editing of the live-action *The Final Chapter*, the film brings together favorites from the franchise. Game characters Leon S. Kennedy (voiced by my Matthew Mercer), Chris Redfield (Kevin Dorman), and Rebecca Chambers (Erin Cahill) battle wanted bioterrorist Glenn Arias (John DeMita), who plans to release a deadly virus in New York City as revenge for the government killing his wife.

*Resident Evil: Vendetta* was created digitally, filmed with “3D” computer-generated animation that incorporates extensive use of live motion capture. It utilized a 2K DI in post-production and was mastered in Dolby Vision, arriving on 4K disc with an HEVC 2160p-encoded transfer framed at 1.78:1, also mastered in Dolby Vision, compatible with HDR10. I viewed the disc in Dolby Vision and have to say that it's one of the most fantastic-looking animated 4K discs yet released in the format. Inky shadows and bright, natural-looking LED flashlights on the ends of rifles in the same scene, a candelabra glowing bright amber on a table in a dark room: These are just a couple of examples where the Dolby Vision and wide color gamut really come into play. In comparison, the Blu-ray, while looking very solid and pristine, appears almost flat, with a raised gamma and less stark contrast between bright and shadow.

The Dolby Atmos track on the Ultra HD disc is a near-perfect reference track. We hear a grandfather clock gong from overhead, the growl of zombies off to the sides and from behind us, and the atmospheric score spread across the soundstage. This involvement continues through the entire film, with the rumble of a Ducati, helicopters overhead, bullets flying around, and explosions that rock the floorboards. Dialogue remains clear and full.

Sony has apparently included everything except a Digital Copy or DVD, which seems like a striking lack of awareness these days. That said, we get an exhaustive audio commentary from director Takashi Tsujimoto, executive producer Takashi Shimizu, and writer Makoto Fukami. The 24-minute featurette “CGI to Reality” (in Japanese with English subtitles) is one you won't want to miss. Sony also includes a bonus Blu-ray with three brief featurettes including “Designing the World of *Resident Evil: Vendetta*,” which should be rather self-explanatory. ● Brandon A. DuHamel



**BLU-RAY**  
STUDIO: Sony, 2017  
ASPECT RATIO: 1.78:1  
AUDIO FORMAT: Dolby Atmos (Dolby TrueHD 7.1/5.1-compatible)  
LENGTH: 97 mins.  
MPAA RATING: R  
DIRECTOR: Takashi Tsujimoto  
STARRING: Kevin Dorman, Matthew Mercer, Erin Cahill







## KING ARTHUR: LEGEND OF THE SWORD

### NOT YOUR FATHER'S KING ARTHUR

Warner



Robbed of his birthright when his father is murdered by his uncle and ascends to the throne, Arthur somehow escapes. He's found floating down the Thames by some prostitutes doing their laundry, and the young man ends up being raised in a brothel and learns how to survive on the streets of the big city until that fateful day he pulls Excalibur from the stone.

Five minutes into this film, I was ready to turn it off—yes, it was that bad of an opening. Thankfully, it overcomes the rocky start to a certain degree and goes from unwatchable to mildly entertaining if you can stomach the roll-your-eyes moments. Guy Ritchie films are usually slick and feature plenty of interesting dialogue and editing, which is what you get here in spurts, but even at its best, it can't overcome its shortcomings from the story and haphazardly directed action scenes.

Shot on 3.4K cameras and finished in 2K for its theatrical run, the UHD Blu-ray sports an upconverted 4K image that shows some minor improvement from the fabulous-looking Blu-ray. Detail in clothing and facial textures are slightly more revealing in 4K, and the shadows are better resolved. The application of HDR is well done with some streaks of bright light and bursting flames when Arthur finally battles his evil uncle.

The Dolby Atmos track isn't as aggressive as other films in the action genre, but it has some moments that make you sit up and take notice. One such scene is the horrific opening that features some giant elephants wreaking havoc on the kingdom. You can feel every thunderous footfall as they move toward the castle and crush anything in their way, with the building's stone structures collapsing throughout the room. Dialogue is concise and intelligible, so you can clearly hear all the cringe-worthy moments.

The supplements are housed on the bundled Blu-ray, which includes the usual assortment of production featurettes with the cast and crew patting each other on the back for a job well done. Ritchie waxes poetic about his 21st-century version of Camelot and Charlie Hunnam's portrayal of King Arthur. The production featurettes include one on the building of the mythical Londinium, and the other looks at the numerous stunts in the film. In addition to the discs, there's also an UltraViolet Digital Copy.

Despite its flaws, there were parts of the film that I enjoyed, but I'm not sure it's something I'll ever watch again. I prefer my classic stories to remain as intended.

● David Vaughn



#### BLU-RAY

**STUDIO:** Warner, 2017  
**ASPECT RATIO:** 2.39:1  
**AUDIO FORMAT:** Dolby Atmos / True HD 7.1 core  
**LENGTH:** 126 mins.  
**MPAA RATING:** PG-13  
**DIRECTOR:** Guy Ritchie  
**STARRING:** Charlie Hunnam, Jude Law, Eric Bana



## THE CIRCLE

Lionsgate

### THE ENTIRE WORLD IS WATCHING



If you do something in your life and there's no camera around to capture it, did it really happen? In essence, that's the core conceit of *The Circle*, director James Ponsoldt's of-the-moment adaptation of Dave Eggers' 2013 speculative fiction novel that imagines a fully interconnected world where the life unfilmed is not worth living (well, kinda).

Emma Watson ups her game as Mae Holland, a recent college grad who goes from being a relatively self-contained individualist to becoming "fully transparent"—i.e., living every moment of her life on camera in the social sphere while working at the Silicon Valley tech giant known as The Circle. Watson more than holds her own onscreen opposite Tom Hanks as Eamon Bailey, the benevolent leader/co-founder of The Circle who charms and cajoles his unyieldingly loyal employees into believing "knowing is good, but knowing *everything* is better."

As cutting edge as its subject matter is, *The Circle* unfolds at a traditional filmic pace that makes damn sure you're fully aware, at all times, "this is a movie"—or, to mirror current social media parlance, #thisisamovie. To reinforce that maxim, it's no surprise Mae's clunky car breaks down with T. Rex's old-school 1972 glam-rock classic "Metal Guru" playing on its stereo shortly before she's invited to join The Circle, at which point Danny Elfman's in-the-zeitgeist burbling lounge/EDM mashup music signals her official transformation from lone mouse to burgeoning worldwide web superstar.

Visually, *The Circle* conveys that brightly lit, open-air tech-office vibe to a T, along with the lush greenery that lines the confines of the company's sprawling outdoor campus. And there's a sweet nod to the tech that got us here when the camera pans past a vintage typewriter in the foreground of Eamon's inner office (a nod to one of Hanks' own personal collecting passions).

While the soundtrack presents the jargon-infused dialogue front and center, one scene involving a capsized kayak and a thunderous helicopter rescue will give your sub channel a decent workout.

Extras consist of three making-of mini-docs. In Part 1 of "No More Secrets: Completing *The Circle*," producer Anthony Bregman tellingly notes, "What works in a book doesn't necessarily work in a movie"—and you should be able to easily discern which scenes in *The Circle* fulfill that observation, and which ones transcend it. The final extra properly fetes the late Bill Paxton, a long-time Hanks compatriot who heroically portrayed Mae's MS-stricken father before passing away earlier this year. ● Mike Mettler



#### BLU-RAY

**STUDIO:** Lionsgate, 2017  
**ASPECT RATIO:** 2.40:1  
**AUDIO FORMAT:** DTS-HD Master Audio 5.1  
**LENGTH:** 110 mins.  
**MPAA RATING:** PG-13  
**DIRECTOR:** James Ponsoldt  
**STARRING:** Emma Watson, Tom Hanks, Karen Gillan





## SID & NANCY

### DISTRESSED & DESTROYED

Criterion

Writer/director Alex Cox wrote a script for a fictional rockumentary about highly original and articulate Johnny Rotten, writer/lead singer of The Sex Pistols. It might have been an extremely rewarding movie. Instead, he made *Sid & Nancy*, which focuses on two talentless, star-crossed, star-struck dope heads. Yet the film manages to capture the era's excitement, disrespectful mockery, and aggressive antisocial attacks on mainstream consumer beliefs.

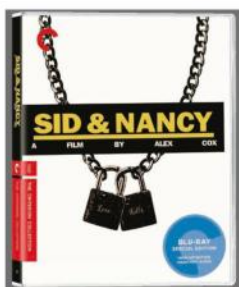
Cinematographer Roger Deakins' moody half-lighting captures all the gritty dirtiness, scum-covered filth, and squalor of 1970s London and New York with plentiful detail in shadows and differentiation in the bricks Sid bashes his head against. There are deep blacks in leathers, spiky hair, and sunglasses, and rich tones in Nancy's throw pillows, Rotten's orange hair and multi-colored mohair pullovers, and Union Jacks. Natural skintones reveal wan faces and track-marked arms.

A 5.1-channel remix throws atmospherics in the surrounds and immerses you in the score, which works for the incidental music but not for the wonderfully re-created "live" Pistol songs, even though they become fuller, cleaner, and more sonically balanced. I consistently preferred the down-and-dirty stereo originals, which seemed more authentic coming at you from off the stage, with appropriate hiss and tininess. 5.1 remixes work for The Beatles, but for punk rock, it's just too symphonic and not street enough. Nonetheless, in both options, every snarl and sneery, slurring lyric is spat out clear and well separated across the front.

Six hours of extras help set the whole story straight. One commentary includes co-screenwriter, critics, and other filmmakers of the era voicing frustration at how the punk generation's disillusionment and its characters are so inaccurately and shallowly depicted. A raw, raucous archival documentary mixes behind-the-scenes footage with off-hand throwaways by the irreverent director and cast. Three featurettes cover the disastrous 1978 American tour, one with an interview with Vicious passing out and footage of him assaulting fans. The Pistols' notorious foul-mouthed TV appearance and TV journalist Janet Street-Porter's brilliant 1976 exploration delivers accuracy, depth, and insight on the early punk phenomenon—as it's happening.

When Rotten (as John Lydon) was asked, "Did the movie get anything right?" his reply was "Maybe the name Sid."

● **Josef Krebs**



#### BLU-RAY

STUDIO: The Criterion Collection, 1986

ASPECT RATIO: 1.85:1

AUDIO: DTS-HD Master Audio 5.1, LPCM 2.0

LENGTH: 113 mins.

MPAA RATING: R

DIRECTOR: Alex Cox

STARRING: Gary Oldman, Chloe Webb, Andrew Schofield



## RONIN

### HONOR FOR SALE

Arrow

*Ronin* is director John Frankenheimer's 1998 crime thriller, with a script co-written by David Mamet (under a pen name) and featuring an all-star cast headlined by Robert De Niro and Jean Reno. This gritty film borrows heavily from classic genre predecessors such as *The French Connection*, *Le Cercle Rouge*, and *Bullitt*. It follows a former U.S. intelligence agent (De Niro) working with a group of mercenaries trying to track down a package being pursued by both Irish and Russian interests. The package is a MacGuffin that allows Frankenheimer to create a thicket of tension, action in the form of extended car chases, and the prerequisite meetings in parked cars or darkened rooms. While the title of the film is a strain (it refers to a master-less samurai), *Ronin* is certainly one of the better entries in the "grizzled-ex-intelligence/military-as-mercenary" category.

Arrow brings *Ronin* to Blu-ray via an exclusive new 4K restoration overseen by director of photography Robert Fraisse. The film arrives in an AVC 1080p encodement framed at 2.35:1. It has obviously been cleaned up well while retaining a lot of its original Super 35 film grain structure, which only occasionally tips ever so slightly into the realm of noise in the darker areas of the image. Colors and contrast are good, but shadow detail is the transfer's biggest weakness; there's a lot of black crush, which takes away from overall detail in a film where many scenes take place in the shadows. Lapels, zippers, and stitching on jackets tend to get lost.

*Ronin* comes to Blu-ray with the original English soundtrack in a 5.1 DTS-HD Master Audio mix. The original stereo mix is also included in LPCM 2.0. The 5.1 is surprisingly robust and well balanced given the vintage of the film. Sound effects spread nicely through the surrounds and across the front channels, and the low end has just enough oomph to underpin the car chases and gunplay.

The score has a lot of air and natural dynamic range, but dialogue sounds just a tad anemic and at times shows some hints of clipping.

This release comes stuffed, as is usual from Arrow. The first pressing includes a collector's booklet illustrated by Chris Malbon, featuring writing on the film by critic Travis Crawford. A detailed audio commentary by director Frankenheimer and a new half-hour-long interview with cinematographer Fraisse are on the disc. Other special features include archival featurettes, an alternate ending, a gallery, and reversible sleeve art featuring original and newly commissioned artwork by Jacob Phillips. ● **Brandon A. DuHamel**



#### BLU-RAY

STUDIO: Arrow Video, 1998

ASPECT RATIO: 2.35:1

AUDIO FORMAT: DTS-HD Master

Audio 5.1

LENGTH: 122 mins.

MPAA RATING: R

DIRECTOR: John Frankenheimer

STARRING: Robert De Niro, Jean Reno, Natascha McElhone







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# MISPLACED CHILDHOOD: DELUXE EDITION MARILLION

Courtesy of Steve Rothery



hi-res 5.1 maestro of his (or any) generation.

Naturally, “Kayleigh” is the 5.1 litmus test, and it passes with flying colors. Fish’s near-delicate vocals, sometimes overwhelmed by instrumental accompaniment in previous mixes, are now more at the forefront and just to the right of center in what I call “Goldilocks positioning”—as in, they’re literally “just right.” The seamless piano-and-bass instrumental transition into “Lavender” reflects the moment’s required gravitas, leading up to guitarist Steve Rothery’s sustained wide-panned solo sequence, a masterful combination of measured restraint and uncoiled fury.

I hate to admit it, but I didn’t “get” Marillion when I saw them open for Rush at the Rosemont Horizon just outside of Chicago on March 21, 1986, playing their 1985 breakthrough album *Misplaced Childhood* in its entirety. While I was properly enamored with the uplifting performance of their touchingly seductive FM hit “Kayleigh,” I just wasn’t able to connect with the rest of the set for some reason. Apparently, I wasn’t alone in that feeling, since I also heard a good bit of the crowd boo/catcall Marillion throughout their performance, the first time I had heard such a thing occur at a live show. Upon reflection, I think that polarized reaction was due to a) the over-the-top über-exaggerated stage antics of Marillion frontman Fish, coupled with b) a fierce collective hunger to see Rush and not be distracted by anything else that night, regardless of how much Marillion was probably the best-aligned opener for the Canadian trio during their more keyboard-centric mid-’80s phase.

Thankfully, I had the fortitude to not write off Marillion entirely at that point. Because of how I connected with “Kayleigh,” I gave *Misplaced Childhood* another chance via some extended listening sessions—and I’m so glad I did. (Perhaps that’s a philosophy to take to heart in this instant-grat, lone-track, shuffle-at-will era, but I digress.) Upon further LP review, I was able to unlock what I had missed during that live gig, ultimately finding *Misplaced Childhood* to be the essential link between the majestic sprawl of Peter Gabriel-era Genesis and the sound-design transition many a prog band experienced during the aural upheavals of the MTV Decade.

And now, the Marillion circle turns ’round yet again, as *Misplaced Childhood* finally gets the full-on deluxe treatment it oh-so-richly deserves with Parlophone’s five-disc box set. In addition to a proper remaster on Disc 1 and three other discs filled with tentpole-setting, of-era live performances, singles, and demos, there’s a stunning surround sound mix on Blu-ray that, once again, proves beyond a shadow of a doubt why Steven Wilson is the undisputed top-tier

Meanwhile, the all-channel intro to “Bitter Suite” could be a long-lost cousin of Rush’s “Xanadu”—with special kudos to drummer Ian Mosley’s all-channel, around-the-kit accents—while Wilson once again proves just how to support, rather than supplant, a song’s main thrust with the rear-channel placements of Mark Kelly’s tasteful keyboard fills on “Blind Curve” and “Childhoods End?”

In addition to Wilson’s 5.1 mix-masterworks and four promo videos, the Blu-ray also features *Childhood Memories*, a 73-minute documentary that should serve as a textbook inclusion for other multidisc box sets claiming to be “super deluxe” and/or “complete.” In this doc, the *Misplaced Childhood*-era group—including Fish, who left the band before the end of the decade and was replaced by the gauntlet-grabbing and lyrically expansive Steve Hogarth (a.k.a. “h”)—sits down with original producer Chris Kimsey in the band’s studio. There, they reminisce about the recording process as undertaken in Berlin during the height of the Cold War, the album’s virtually instant impact on the upwards trajectory of their career, and a dissection of their compositional choices. It’s nice to see the continuing camaraderie amongst all six of them (including Kimsey) during the playback and individual track isolations that reveal vocal and percussive elements suitably buried in the final mix in an essentially Easter-egglike fashion. At one point, Fish jokes, “We didn’t mention the ‘C’ word,” and you know you’re a tried-and-true prog-head when your first instinct is to fill in that blank with the phrase “concept album,” since that’s *exactly* what he meant there anyway.

A penny for my thoughts here, my dear? First, I’m pleased I had a full-circle live Reassessment 2.0 experience 30½ years in the making when I saw the “h”-led Marillion perform with an elegiac yet eerie tenor in New York on the very night of the presidential election on November 8, 2016. Second, the *Misplaced Childhood* deluxe edition serves as Reassessment 3.0, and I’m beyond thrilled to report the album continues to reveal its deep-seated charms upon each subsequent listen, especially in its 5.1 form. My initially misplaced misgivings about Marillion’s merits have since been displaced by these most meaningful sonic collisions. ● Mike Mettler

## CD & BLU-RAY

**LABEL:** Parlophone

**AUDIO FORMATS:** 44.1-kHz/16-bit PCM Stereo (CD), 96-kHz/24-bit LPCM Stereo (Blu-ray & download), 96-kHz/24-bit DTS-HD Master Audio 5.1 (Blu-ray)

**NUMBER OF TRACKS:** 74 on 5 discs (46 on 4 CDs, 28 on 1 Blu-ray)

**LENGTH:** 5:40:28 (3:26:03 on 4 CDs, 2:14:25 on 1 Blu-ray)

**PRODUCERS:** Chris Kimsey (original album), Steven Wilson (surround sound mix, original stereo remaster & stereo remixes), Michael Hunter (live material), Alex Wharton (singles, outtakes & demos)

**ENGINEERS:** Chris Kimsey, Mark Freegard (original studio album); Mark Freegard, Michiel Hoogenboezm, Henk Horden (live recordings); Ray Shulman (Blu-ray authoring)

**PERFORMANCE** ★★★★★  
**SOUND** ★★★★★



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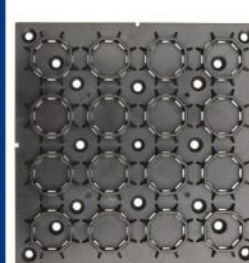
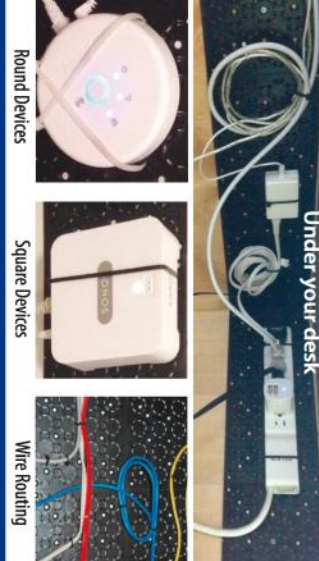
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# Ultimate Audio Puzzle

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You've gotta hand it to the design team at Denmark's Bang & Olufsen. Always super creative and always thinking outside the box—the speaker box, in this case. What could easily be mistaken for wall art or a serious acoustic diffuser is a unique modular speaker system. Indeed, the BeoSound Shape is the only wireless speaker system we know of that is modular and customizable in terms of performance and aesthetics. In other words, it's ridiculously flexible.

Let's break it down. The system comprises four hexagonal building blocks, or "tiles" as B&O calls them: A two-way speaker module with a 5.25-inch woofer and 0.75-inch tweeter, an acoustic damper for improving acoustics—especially in reverberant rooms—an 8 x 80-watt amplifier designed to drive up to four speakers, and the Core connectivity hub that facilitates wireless streaming from phones and tablets that support AirPlay, Bluetooth, or the (awkwardly named) Chromecast built-in.

The hub supports hi-res audio up to 192 kilohertz/24 bits and seven audio formats—including FLAC and WAV but not WMA Lossless—and the amp is equipped with USB and optical digital inputs, four speaker outputs, and connectors for daisy-chaining multiple amplifiers. To create a "concert-like perception of singer and instruments," B&O employs a proprietary algorithm it calls "band on the wall" that spreads sound across the tiles to ensure vocals are centered and instruments emanate from the sides.

In its most basic form, Shape is a six-tile system consisting of four speakers, an amplifier, and a hub

that can be scaled to epic proportions using up to 11 amplifier tiles and 44 speakers with any number of acoustic dampers. We're imagining a cavernous room with cathedral ceilings and a wall consumed by a sprawling work of audio art.

Once you decide on the size and shape of your sonic puzzle, it's time to assemble it on the wall. But how? B&O devised an ingenious skeletal structure made of hexagonal frames it calls the "star rail system." The sequence goes something like this: Snap the hexagons together in the desired pattern, affix the structure to the wall, and push the tiles into place. Of course, you'll also have to connect speaker and power cables to the amplifier(s). If you need a place to put wires, you can remove the damping material from one or more acoustic tiles and use the space to conceal them.

When everything is wired up and secured to the wall, it's time to finish your masterpiece by clicking fabric covers in place. B&O offers a mix-and-match set of covers in 10 designer colors—Parisian Night Blue, Brazilian Clay, Purple Heart, Wild Dove Grey, Black, Infantry Green, Dark Blue, Moss Green, Pink, and Brown (the last four are made of wool). An online design tool helps you select colors and fabrics, decide on a layout, and choose a location that will deliver the best sound.

You control the system using the Bang & Olufsen App or the supplied remote control (up to five can be connected to one system). Extending music throughout the house is a simple matter of connecting the system to any of B&O's wireless multiroom speakers. Prices start at \$4,000 for a basic setup.

—Bob Ankosko



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