Product Reviews

2006-2017

Unprecedented.

2008-2017 “Editors’ Choice”

– The Absolute Sound, 2008 - 2016 (Fathom f112 & f113 • Gotham g213)

“Class A – Recommended Component”

– Stereophile, 2007-2010, (Fathom f113) • 2010 (Fathom f212) • 2016 (Fathom f113v2)

Best of 2011 Award

– HomeTheaterReview.com (Fathom f110)

“Subwoofer of the Year”

– The Perfect Vision, January 2007 (Fathom f113)

“There is apparently information in the subsonic region that fills out the sound of a concert hall. Once you’ve heard it, you can’t go back.”

– Jacob Heilbrunn, TONEAudio (Gotham g213)

“Product of the Year”

– Home Theater & Sound, 2006 & 2007 (Fathom f113)

“Subwoofers of the Gods”

– Chris Martens, The Perfect Vision, February 2007

“Golden Ear Award”

– Absolute Sound, August 2007 (Fathom f113) and September 2014 (E-Sub e110)

“To sum up, the f212 is a reference-grade subwoofer with velvet-covered hammers in its face.”

– Adam Rayner, Home Cinema Choice (UK) December, 2012

“...masterfully awe-inspiring.”

– Darryl Wilkinson, Home Theater, March 2012

“The JL Audio Fathom is of reference quality and a benchmark by which all other subwoofers can be judged.”

– Robert Harley, The Absolute Sound, March 2007 (Fathom f113)

“If it weren’t just a subwoofer, this would be a national treasure – or a secret weapon.”

– Darryl Wilkinson, Home Theater, Feb/March 2013
2012 Top Picks of the Year: Subwoofers

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off / 12dB / 24dB
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0
-12
+1
+3
+2
e.L.f. trim (dB)

Product Overview

JL AUDIO

Ahead of the Curve®

DOMINION™

d108

BUILT IN USA • WITH GLOBAL COMPONENTS •

"The d110s surprised me with their exploding-bomb bass. The room filled with energy, and I could feel the explosions through the subfloor due to the kinetic energy from the dual subwoofers. Solid performance, indeed."

– David Vaughn - Sound&Vision, February 2017

Mighty.

The Dominion™ powered subwoofers benefit from JL Audio's expertise in driver and amplifier design to arrive at a unique solution for applications requiring a compact, more affordable subwoofer.

A purpose-engineered, long excursion driver, built on JL Audio's exclusive DMA motor optimization technology, lies at the heart of the Dominion™ design. The DMA design leads to reduced distortion at higher output levels, as well as improved dynamic tracking and resolution.

The Dominion™ amplifier is also purpose-engineered, featuring an advanced Class D design, with a tightly-regulated switching power supply (a rarity in this price class). These technologies ensure that the Dominion™ powered subwoofer remains in its comfort zone, well past the point where most small subwoofers run out of power or driver capability.

Dominion™ powered subwoofers can be used in full home theater systems, media room systems, dedicated two-channel music systems, desktop audio workstations and small recording studios, just to name a few potential applications. High-level inputs even make it possible to add a subwoofer to systems lacking line outputs.

Every Dominion™ powered subwoofer is precision-built, with global components, and fully tested in JL Audio's U.S. factory, to deliver years of listening enjoyment in your home audio or home theater system.

JL AUDIO®

Ahead of the Curve®

E-SUB

E 110

Product of the Year - e112

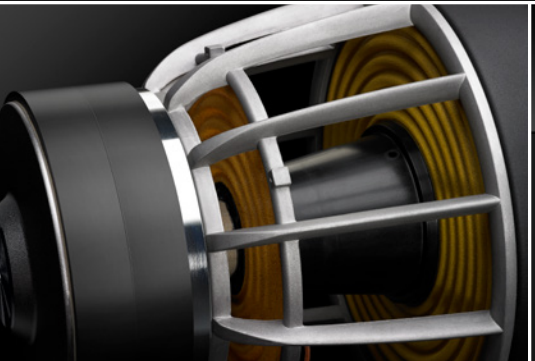
Exceptional Value: Subwoofers

– Soundstage! Network, May 2014

"the no-brainer buy of the year."

– Jeff Fritz, Soundstage! Network, May 2014

BUILT IN USA WITH GLOBAL COMPONENTS



Game-changer.

E-Sub powered subwoofers apply a series of our key technologies to deliver exceptional sound quality, power and value in a wide range of demanding applications. Inside each E-Sub, a state-of-the-art, long excursion JL Audio driver combines with a highly efficient, proprietary switching amplifier to deliver astonishing performance from a very compact subwoofer cabinet.

The e110's subwoofer driver features a radical, deep architecture, designed to create a highly linear, mechanical action. The DMA-Optimized motor design offers enough linear excursion to handle the most intense program material, while demonstrating complete poise when reproducing delicate music material.

The e110's can be used in a wide range of applications, from full home theater systems to dedicated two-channel music systems, to desktop audio workstations. A true, two-way onboard crossover with high-pass line outputs allows for seamless integration with two-channel systems, while high-level inputs even make it possible to add an e110 to systems lacking line outputs.

Every E-Sub powered subwoofer is precision-built, with global components, and fully tested in JL Audio's U.S. factory, to deliver years of listening enjoyment in your home audio or home theater system.

JL AUDIO®

Ahead of the Curve®

FATHOM® IWS

IN-WALL SUBWOOFER SYSTEMS

8-inch Fathom® IWS: True, stand-alone, JL Audio subwoofer performance that disappears into walls.

Unseen.

Born from the same groundbreaking technologies used to develop our free-standing powered subwoofers, the Fathom® IWS in-wall subwoofer systems deliver remarkable bass performance, while remaining largely concealed within most home audio/theater environments.

The 8-inch Fathom® IWS systems are smaller and easier to integrate than our larger in-wall Fathoms, fitting in all standard, 16-inch, on-center stud openings, and operating through very small grilles. The grille's effortless design accommodates all common drywall thicknesses, and can be easily painted to match the wall.

The subwoofer enclosures utilize extensive architectural features aimed at improving rigidity while keeping a very low profile and minimal wall thickness.

A unique port design vents through a slot located at the perimeter of the driver mount to enhance efficiency and low-bass output. Inside the enclosure is a long-excursion, 8-inch thin-line woofer, built to exacting standards by JL Audio for the Fathom® IWS products.

Each 8-inch Fathom® IWS system is driven by a rack-mountable amplifier with up to 600 watts of clean power, programmed specifically for each system. A complete set of Fathom® signal processing features is also onboard, including our powerful, 18-band Digital Automatic Room Optimization (D.A.R.O.) system, and high-pass crossover outputs, all accessible via an easy-to-use, menu-driven interface and LCD display.

If the quest for true, high-performance, in-wall sub-bass has led you here, you have found the solution.

JL AUDIO®

Ahead of the Curve®

FATHOM® IWS

IN-WALL SUBWOOFER SYSTEMS

"It's a sub that makes no acoustic compromises, nor does it force you to make the lifestyle compromises that a typical in-room sub would. in some ways, it's a shame that all the cool technology here is hidden from view-but, when you think about it, not seeing anything of this system is the coolest part of all. If you've got the money, and you've got a wall, this sub's for you."

– Darryl Wilkinson - Sound&Vision, July/August 2017

Disappears.

The same minds that engineered JL Audio's reference-grade Fathom® v2 and Gotham® v2 powered subwoofers have created an amazing in-wall subwoofer solution, centered on a purpose-engineered, thin-line driver with patented technology. This amazing loudspeaker is built, with global components, in our Miramar, Florida factory.

We also build the critically engineered, subwoofer enclosure in our Florida factory. It features an innovative floating mount design to minimize wall excitation, and extensive architectural features aimed at improving rigidity, while keeping a very low profile and maximizing air space.

To finish things off beautifully, a paintable fine steel-mesh grille, also designed to control vibration, is included for each enclosure in a system.

Each IWS system is driven by a powerhouse of a 2 RU, rack-mountable, purpose-tuned amplifier, capable of delivering up to 2 kW of clean power. These amplifiers are armed with serious digital signal processing features, including our powerful, 18-band Digital Automatic Room Optimization (D.A.R.O.) system, variable low-pass filters, phase controls and our E.L.F. trim control to control excessive bottom-octave energy.

If you are concerned about giving up performance to keep your subwoofers hidden, you need not lower your expectations when selecting this remarkable in-wall solution... it is 100% Fathom® v2, through-and-through, and it is spectacular.

JL AUDIO®

Ahead of the Curve®

FATHOM®

BUILT IN USA • WITH GLOBAL COMPONENTS •

"It was masterfully awe-inspiring"

– Darryl Wilkinson, Home Theater, March 2012

"If it weren't just a subwoofer, this would be a national treasure – or a secret weapon."

Home Theater magazine, Feb/March 2013

f113v2

f112v2

The Benchmark.

The challenges associated with designing high-output, compact subwoofer systems can be daunting. In most cases, designers sacrifice low-frequency extension or output capability in order to keep a design acceptably small.

The Fathom® subwoofers sacrifice nothing, thanks to the dynamic advantages of their proprietary JL Audio drivers. These exceptional woofers allow for a true subwoofer passband and very high output, while keeping distortion well below audible thresholds. To extract full benefit from the excursion envelope of its woofer design, each Fathom® employs an uncommonly powerful switching amplifier with a large toroidal transformer and a patented circuit, designed to enhance control and fidelity.

Front-mounted controls make them comfortable to set up and adjust, while JL Audio's powerful DSP engine and exclusive Digital Automatic Room Optimization makes sure that response is smooth, even in challenging rooms.

While very compact, the f112v2 is powerful enough to anchor serious home theater setups and is equally at home in the most critical music listening applications. The f113v2 combines prodigious output capabilities with outstanding finesse and low distortion. A pair of f113v2's will satisfy the most demanding home theater or pro studio applications. The f212v2's dual driver configuration and ultra-powerful amplifier deliver the highest performance of the Fathom® lineup.

The original Fathom® lineup created a new reference for compact subwoofer performance. The v2's build on that, with more sophisticated processing and 20% more amplifier power.

JL AUDIO®

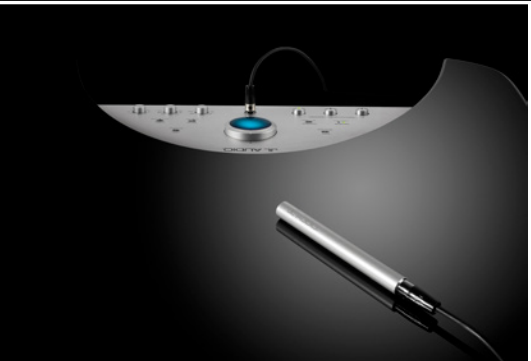
Ahead of the Curve®

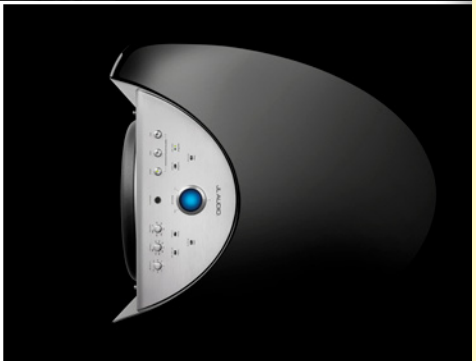
GOTHAM®

g213v2

"The Gotham g213 produces state-of-the-art bass that will improve the highest of high-end systems. I've heard no other subwoofer that can match it."

– Jeff Fritz, Ultra Audio





King of bass.

The Gotham g213v2 is the unfettered expression of JL Audio's commitments to beautiful design, exceptional build quality and truly great audio. Its devastating combination of extension, accuracy and power unleashes your main speakers to do what they do best, transforming your listening experience in profound ways.

The Gotham® v2's massive fiberglass-composite enclosure is built in our Florida factory from its skeletal bracing outward, in a construction process which takes place over several days. Multiple, closely guarded steps are followed to create an acoustically inert structure. Each Gotham® v2 is then hand-finished in luxurious gloss-black, complemented by machined accents and a cleverly engineered grille system designed for cosmetic flexibility.

Inside each Gotham® v2 are two of JL Audio's highest-technology subwoofer drivers, driven by a mind-numbing 4,500 watts of clean, controlled power from a proprietary, patented Class D amplifier. This combination yields over four inches of peak-to-peak driver excursion capability, with extremely low distortion at all listening levels. Also on-board is our most advanced digital signal processing system, with multi-band, Digital Automatic Room Optimization technology, to flawlessly integrate the Gotham® v2 into your room's acoustics.

Listening to a Gotham® v2 reveals an entirely new dimension of subwoofer performance... a dimension so satisfying that listening to lesser subwoofers will forever become an act of compromise.

CR-1: Active Subwoofer Crossover

The perfect blend.

The CR-1 Active Subwoofer Crossover has been designed by audiophiles, for audiophiles. We believe it has no equal, offering a powerful combination of subwoofer/satellite tuning features, and a complete commitment to analog signal purity.

When properly set up, CR-1 creates a listening experience in which the subwoofers and main speakers become one, delivering a cohesive and compelling sonic presentation that not only delivers supernaturally good sub-bass, but also vastly improved performance from your main speakers. They will simply open up, delivering improved dynamics, superior imaging and more low-level detail. Many describe it as the greatest speaker upgrade they have ever made.

CR-1 is no garden-variety active crossover. It is built around two banks of precision Linkwitz-Riley low-pass and high-pass filters with 12 or 24 dB (selectable) slopes. Multiplying DACs with monolithic ratio matching are employed to adjust the analog circuit's filter frequencies. This offers superior tracking behavior and far more precise left/right channel balance, compared to conventional approaches.

Another of CR-1's unique and powerful features is a pair of rotary controls that control the damping of each filter bank. These damping controls dramatically improve the acoustic summing through the crossover region, by compensating for each speaker system's frequency response. At the center of the front panel, a single intuitive, rotary control permits quick adjustment of the relative level between the subwoofer(s) and main speakers.

To minimize distortion and noise, CR-1 employs top-grade component parts in its all-analog audio circuitry: 1% precision resistors, JFET-input audio-grade op-amps, polypropylene film-and-foil capacitors and metallized-polypropylene film capacitors, to name just a few.

CR-1's input-output design makes it equally adaptable to studio, mastering suite or audiophile two-channel playback environments. To accommodate dual-mode systems, we also include a bypass feature that engages a pass-through from a dedicated "Managed Bass Input" on the rear panel, to the CR-1's subwoofer outputs. This makes it convenient to switch from two-channel to multi-channel mode.

CR-1 is the ultimate tool for subwoofer integration.

JL AUDIO

Ahead of the Curve®

JLINK™ TRX / RX

Wireless cables?

The JLINK™ wireless audio system is designed for all those situations where running audio signal cables is impractical, but audio quality cannot be compromised.

The JLINK™ TRX kit connects any two line-level audio devices together via a bit-perfect, wireless protocol that retains the full fidelity of your audio signals, without the compression of lossy wireless systems.

If you wish to expand your JLINK™ setup, up to four JLINK™ RX receivers can be connected to a single JLINK™ transmitter, delivering audio signals to multiple points in your home. Up to three JLINK™ transmitters can operate in a home, each on its own wireless channel, and each connected to up to four JLINK™ RX receivers.

- Bit-Perfect Digital PCM Stereo Wireless Technology (16 bit / 48 kHz)
- Indoor range up to 100 feet (30 meters)
- Outstanding fidelity in subwoofer or full-range applications
- RCA-type input/output connectors are compatible with most audio equipment
- Receivers include JLINK™ direct connection port for use with compatible JL Audio products

Ideal for wireless connection of subwoofers or full-range systems!

“Subwoofers of the Gods”

– Chris Martens, The Perfect Vision, February 2007

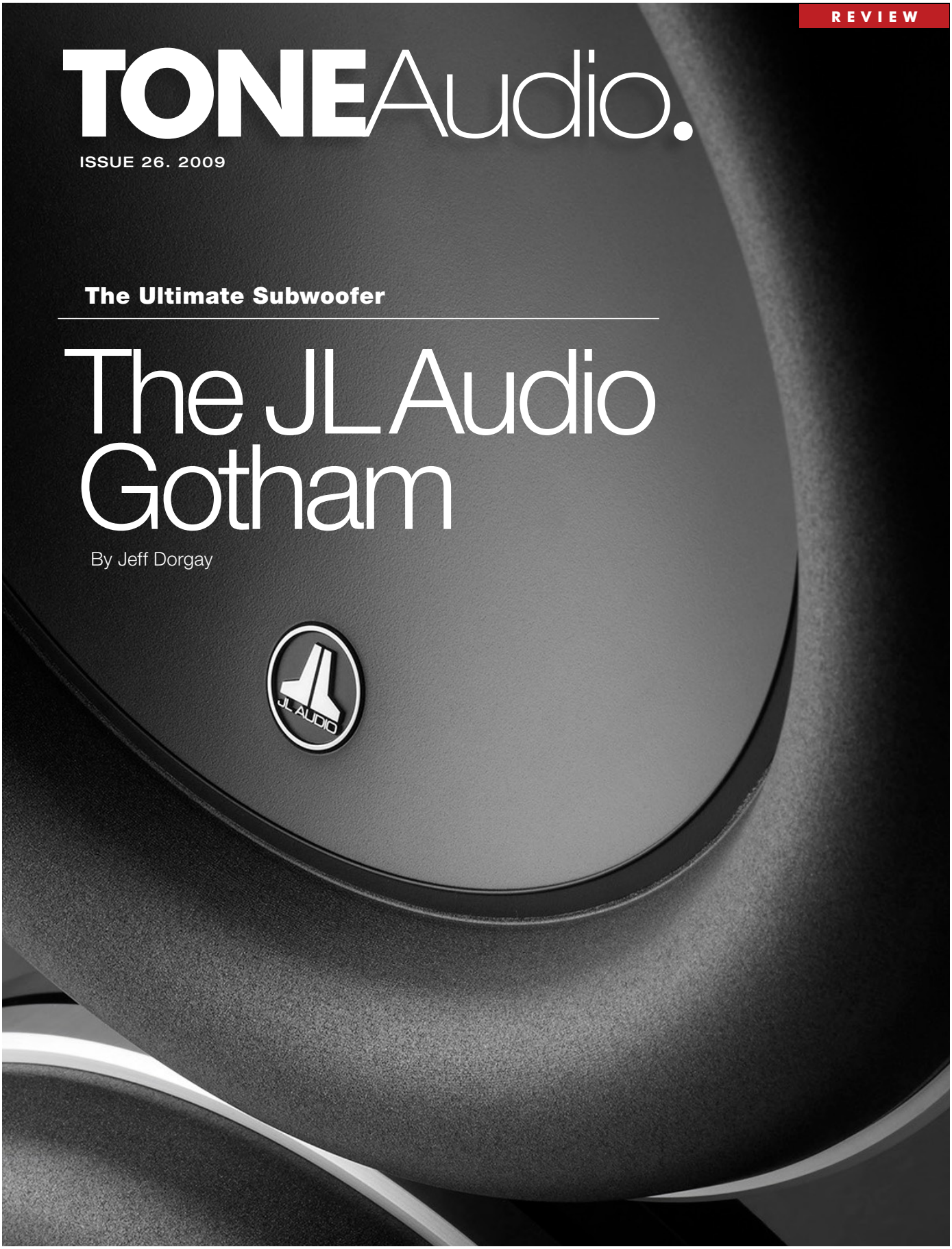
Reviews


GOTHAM v2

REVIEW

TONEAudio.

ISSUE 26. 2009



The Ultimate Subwoofer

The JL Audio Gotham

By Jeff Dorgay

First of all, there will be no corny Batman puns in this review. Now that we have *that* settled, let's get on to exploring a fantastic subwoofer, shall we? The JL Audio Gotham hit the scene a few years ago featuring a pair of custom-designed 13-inch drivers and an amplifier that could deliver 3,800 watts of power. Needless to say, it redefined the standard for a premium subwoofer, and the competition is still scrambling to catch up.

With a pricetag of $12,000 and a weight of 360 pounds, this is no casual purchase. After living with the Gotham for some time, my advice is not to take it for a test drive unless you are ready to write the check; when it's gone, there will be a big hole in your system where the bass used to be. And honestly, you need a pair of them, so budget accordingly.

Once uncrated, the Gotham is a thing of beauty. A high-gloss black finish with a satin-finished aluminum control panel and a large medium-blue power indicator inside the gain control makes it look like a futuristic bass-bot. Though it is gently curved, it still makes a statement in your room (especially if you have two of them) and has a substantial footprint. It is 34 inches tall 21.5 inches wide and 24 inches deep. You will definitely need a few friends and a piano dolly to move the Gotham to its ultimate resting place in your listening room.

Where to put the darn thing?

Once you've determined that your floor can handle the weight of the Gotham, the next step is to make sure you have adequate power. I'd suggest a dedicated 20-amp circuit for the Gotham considering it's maximum output, just to make sure you're getting every bit of the power you paid for. *(continued)*

The ARO (Automatic Room Optimization) feature ... uses a microphone calibrated to the response characteristics of the subwoofer, which is placed at your approximate listening position.

My only complaint with the Gotham is that I wish they would come up with a set of casters that is similar to what Wilson supplies with their Maxx and X-2 speakers so that initial placement would be easier. But hey, no pain, no gain in the world of high-performance audio. I had exhausted numerous placement options and all of the Energizer bunnies that were enlisted to move the Gotham, but by the end of the first day, I still didn't have the bass *quite right*.

As I mentioned in my review earlier this year of the JL Audio F110 Fathom subwoofers, JL Audio has the most comprehensive instruction manual I've experienced, which thoroughly outlines all the facets of subwoofer setup. They also mention that two subwoofers is really the ideal way to go, and while I normally love to suggest ways to spend your hard earned money, $24,000 and more than 700 additional pounds of gear in your listening room may require some negotiation with those who share your living space. There will be no sneaking a pair of Gothams into the house unnoticed.

We'll have some input at the end of the review from TONEAudio columnist Jacob Heilbrunn who actually has a pair of Gothams in his listening room. I will be paying Jacob a visit in 2010 to experience this first hand, but for now we will be discussing the merit of the single Gotham in my system.

After trying quite a few different placement options (much to the dismay of the bunnies), the optimum spot was discovered just behind my listening-room couch, facing rearward. I had tried the middle of the listening room, in between the speakers, everywhere from directly in the middle to various asymmetrical placements. But I still heard bass coming from a big box in the middle of the room. Behind the couch turned out to be the magic location that allowed the Gotham to blend perfectly with my GamuT S-7s. The last time I ran a test-tone sweep in my room to investigate the low bass performance of the GamuT's, I found they played solidly down to 30hz, with some output at 25hz, then dropping off steeply after that point. With the Gotham in place, the output was solid at 25hz, 20hz and even 18hz, although when playing the 18hz tone, it was more *feel* than *hear*.

To replicate a pair of Gothams, I returned the two F110's to the system, just to the inside of the main speakers. This ended up evening out the low frequencies even better, but I'm sure a pair of Gotham's would be the best. If you can't be with the one you love, love the one you're with.

The Secret to Easy Setup

Adding a subwoofer can often create as many problems as it solves and getting perfect integration with the main speakers can be tough. While the home-theater crowd may be looking for the maximum level of bass output to reproduce those explosions and car crashes, a high-performance audio system has different goals. *(continued)*

Pumping out a lot of bass at a high SPL is one thing, but achieving low bass response with authority and definition is much more difficult. With the Gotham(s) installed, you might even find a few things in your room that rattle at subterranean frequencies that will require attention.

Depending on the room, I've always spent a lot of time with subwoofer setup, but the ARO (Automatic Room Optimization) feature built into the JL Audio subwoofers is a *big* help. You can read about ARO further on the JL website, but to simplify, it uses a microphone calibrated to the response characteristics of the subwoofer, which is placed at your approximate listening position.

A few minutes worth of frequency sweeps are made from the subterranean to about 200hz as the ARO circuit measures and analyzes the bass modes in your room. Then, an EQ curve is generated for your room so the Gotham sounds great from your listening position. This takes about three minutes and really comes in handy when you have more than one subwoofer to work with.

Once the initial calibration is done, you can tweek the setup further by using three controls on the top panel. The phase control lets you set the Gotham between zero and 280 degrees out of phase with your main speakers. This should be adjusted to get the tightest bass and the best integration with the mains. The frequency control sets the effective crossover frequency of the Gotham, and as one who sees a subwoofer as a device to truly extend the low frequencies, I'd say it should be set as low as possible. Again, the goal is always seamless integration with the mains. Last, the ELF trim control is a fine level adjustment.

Working with all three of these controls after you've run ARO is like sorting out VTA on your turntable. As you adjust one, you may have to play with the other two to get things just right. But once you do, it is awesome.

Even if you use the stock calibration, you will be surprised at how close you can optimize the performance. Where the ARO circuitry really shines is in a situation with less than optimum placement. Whenever I just tucked the Gotham in the room somewhere with no attention paid to placement, the ARO was able to compensate for most of the self-induced error. Make no mistake, there will be one or two perfect spots in your room, and that's what to shoot for if it works with your environment.

A Perfect Addition to Any Setup

While I'm a fan of using a set of full-range speakers as mains and a great subwoofer to anchor the low end, that's not for everyone. What amazed me about the Gotham was how *high* it would go up without mid-bass bloat. When it was still in the center of the room, I tried it with a number of speakers, all with excellent results. *(continued)*

The Gotham is more than fast enough to keep up with Magnepans or MartinLogan speakers, and it is incredibly good with a pair of mini monitors. I even used the Gotham with a pair of Spica TC-50's that we have in for review. The Focal Diablos and the Gotham made a particularly great combination, and had seamless integration. A few friends that have heard the $170k Grande Utopia EM's commented on how a Gotham and a pair of Diablos could easily become the "poor man's Grande Utopias."

Unlimited Power

Properly set up, the Gotham will add bass extension, weight and definition to your system, but the most unexpected benefit is the amount of spatial information it adds to the presentation. I guarantee that for the first week or two, you will be playing all of your favorites that have a lot of LF information.

And you may be surprised at some of the records you thought were bass heavy actually have faux-bass instead. But that extra oomph in the presentation is truly exciting.

Having a Gotham (or two) is a lot like the experience I had with the 540-horsepower Aston Martin DBS earlier this year. You get behind the wheel and floor it a few times with grins all around, but once you adjust to the power and redefine your senses, it's quite intoxicating knowing you can go 200 mph on a whim. Yet in everyday driving, that extra power and responsiveness takes away what would have been limitations.

With the Gotham in place, you no longer have limitations on the low-frequency content that your system can reproduce, whether you like full-scale orchestral music or Run DMC, and adding the "feel" dimension to the music is something I never tire of.

But the Gotham's added impact of reaching so low will add to the three dimensionality of your system. As Jacob Heilbrunn mentions below, even with musical selections that do not have a lot of obvious LF information, the room seems much bigger, and the minute you turn the Gotham off, that extra spatial information is gone.

Top of the Mountain

The Gotham is a fantastic product that can transform whatever system in which it is placed, no matter how good. If you have the room and the extra power to support it, it is one of the rare pieces of high-end audio gear that will take you somewhere you have never been. Highly recommended.

Additional Listening: Jacob Heilbrunn

Audiophiles are often prone to wrinkle their noses at subwoofers. "Silly, silly, silly," you can almost hearing them saying. And indeed, the complaints are as familiar as they are ubiquitous: too slow, too lumpy, too loud and too boomy. Too everything, it seems.

Except when it comes to the JL Audio Gotham. No subwoofer has elicited more raves in my listening room from subwoofer skeptics than the mighty Gotham. But allow me to amend that sentence. I should have said, the mighty Gothams. For I have not one but two of these mastodons lurking in my basement. Big, powerful and smooth, these subwoofers call attention to themselves except when they don't, which is most of the time.

Confused? Let me explain. Put the Gotham in and you immediately hear an expansion of the soundstage, new details and an ambience that simply wasn't there before. Put two Gothams in and you get even more of the above qualities. *(continued)*

Install four or even six Gothams, and I'm quite sure that the sound would improve even further. The more subwoofers you have in your listening area, the smoother the response can become. One subwoofer may load your room properly. May. But with two, the task becomes far, far easier. Most audiophiles, unless they're listening exclusively to mono records, bless their little hearts, would never dream of employing a single loudspeaker. But when it comes to subwoofers, they're more prone to skimp. Bass, so the argument goes, is hard to localize. It doesn't really matter if you have only one sub.

I'm here to say it ain't necessarily so. Maybe it is harder to discern where the bass is emanating from. But there does seem to be something quite satisfying about splitting the signal into left and right channels, which is what the Gotham allows you to do. It has special inputs marked for left and right channels, a feature that I haven't seen on a whole lot of other subwoofers.

The way I run the Gothams is to place each one next to a loudspeaker rather than behind it. I had them in the corners of my listening room briefly, but I found that they sounded most transparent, most potent and most articulate when placed immediately adjacent to each loudspeaker. Two subwoofers does not mean that I'm shaking the rafters with the Gothams. Quite the contrary. It allows me to run them at lower levels and to produce a more refulgent, satisfying sound. But that sound can be hard to pin down because, as I tried to suggest above, the Gothams are often out of the picture when no real deep bass frequencies are present. But they are producing ambience all the time. Turn the two subs off and it sounds as though the mains shrank in size and volume – even on a Bach solo guitar piece. Weird? Definitely. But impossible to refute. There is apparently information in the subsonic region that fills out the sound of a concert hall. Once you've heard it, you can't go back.

It would be interesting to hear the effect that another pair of subwoofers located in the rear of the room would have on the soundstage. You could go nuts and place a third pair at the halfway point of the room firing across it and at each other. This would almost surely allow me to lower the levels of the subs further and produce an even richer and weightier sound. But at some point, cost considerations do intrude as, incidentally, do the sheer size of the Gothams. But if you're considering buying JL Audio subs, I would suggest getting two of them, if affordable, as opposed to buying just one more-expensive version. Instead of wrinkling his or her respective nose, your most jaded audiophile chum will probably be left slack-jawed by their combined performance. ●

The JL Audio Gotham Subwoofer

MANUFACTURER

JL Audio
www.jlaudio.com

PERIPHERALS

Analog Source Spiral Groove SG-2 turntable w/Triplanar arm and Lyra Skala cartridge TW Acustic Raven TWO with SME iV.VI arm and Dynavector XV-1s cartridge, Furutech AG-12 tonearm cables

Digital Source Naim CD555/PS555, Wadia 781I, SimAudio 750

Phono Preamplifier Nagra VPS w/VFS isolation base and Red Wine Audio Black Lightening power supply.

Preamplifier Burmester 011, Conrad Johnson ACT 2/Series two, Nagra PL-L

Power Amplifier Burmester 911 MK3, Conrad Johnson Premier 350, McIntosh MC1.2KW's, Simaudio Moon W-7M's

Speakers Gamut S-7, Harbeth Monitor 40.1, Martin Logan CLX, Verity Audio Sarastro II, YG Acoustics Anat II studio

Cable Shunyata Aurora Interconnects, Audioquest Sub 3 subwoofer interconnects, Shunyata Stratos SP Speaker cable

Power Running Springs Dmitri and Maxim Line Conditioners, RSA HZ power cords, Shunyata Python CX power cords

Accessories Furutech DeMag, Furutech record clamp, Shunyata Dark Field Cable elevators

JACOB'S SYSTEM:

Turntable Continuum Caliburn

Preamplifier Messenger linestage and phono stage, Nagra phono stage

Amplification Classe Omega mono blocks and VTL Wotan

Loudspeakers Magnepan 20.1

Subwoofers JL Audio Gotham

Cabling Jena Labs

Power Cables Shunyata and Isoclean Supreme Focus


JL AUDIO

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EQUIPMENT REPORT

LARRY GREENHILL

JL Audio Fathom f212v2 & CR-1

POWERED SUBWOOFER & CROSSOVER

It was all so familiar. In "Music in the Round" in the January 2016 issue, Kal Rubinson praised JL Audio's latest subwoofer, the Fathom f113v2.[1] He raved about its amplifier's higher power over the original f113, its beefier 13" woofer, its improved, 18-band Digital Automatic Room Optimization (DARO), and its significantly improved deep-bass response in-room.

It was familiar because the same thing had happened when Kal reviewed the original Fathom f113 in his May 2007 column.[2] As he would again nine years later, he'd extolled the sub's high power, small size, built-in single-band Automatic Room Optimization (ARO) software, and "remarkably powerful and clean" deep bass. Those were also my reactions to the Fathom f113.

One thing led to another: I reviewed the Fathom f113 in the September 2007 issue,[3] and the larger Fathom f212 in the April 2010 issue,[4] both in pairs. The two Fathoms impressed me with their bass extension, powerful impact, dynamic range, and ability to significantly increase the depth and width of the soundstage.

Which was why, after reading Kal's January 2016 column, I called Carl Kennedy, JL's VP of sales. I had to hear a Fathom f113v2 in my own system. Kennedy must have been expecting my call. "No," he said, "Kal has already done the Fathom f113v2s; I'd rather you reviewed a pair of Fathom f212v2s."

The f212v2s increased the Revels' bass power, dynamics, and pitch definition.

Be careful what you wish for: heavier Fathoms

Within a month, JL Audio had shipped me two Fathom f212v2s and their new CR-1 outboard crossover—total weight over 512 lbs—secured with thick metal straps to a large wooden pallet. No tool in my house could dent those straps, so I picked up a set of 18-gauge Wise W2 aviation snips at Home Depot. Their steel blades cut the thick metal straps as if they were butter. I carefully nudged the shipping cartons off the pallet and onto the garage floor.

That was the easy part. Try as I might, I couldn't move either 256-lb speaker carton anywhere: the f212v2s stayed put as if welded to the floor. Several phone calls later, two young, muscular handymen arrived, schlepped the huge cartons upstairs, and unpacked them in my listening room. I slipped the four supplied Waxman Super Sliders under each sub to protect my wood floors, then slid them into the room's front corners—the sweet spots where the two review samples of the first version of the Fathom f212 had sat.

What's new

Looking at the Fathom f212s, I was hard-pressed to see any differences between v1 and v2 that might justify the

1 See www.stereophile.com/content/music-round-76-page-2.
2 See www.stereophile.com/musicintheround/507mitr/index.html.
3 See www.stereophile.com/subwoofers/907jl/index.html.
4 See www.stereophile.com/subwoofers/jl_audio_fathom_f212_powered_subwoofer/index.html.

$1000 increase in price, to $7000. The changes are within. The v1's single-band ARO equalizer has been replaced with JLA's 18-band DARO, which covers the range from 20 to 150Hz. Kal Rubinson described DARO performing "cut-only correction, with automatic output level realignment post-EQ. Each band is adjusted independently by the DSP. In addition, microphone gain and output levels are adjusted automatically, without user effort, which results in greater ease of use and, more important, more accurate and consistent results."

Audio line-level signals are now directed to circuit boards inside a cast-aluminum housing attached to the inside of the f212's rear panel—they're never routed to the control panel directly. The f212v2's class-D internal amplifier is 20% more powerful (3600W short-term) than the v1's, which required JLA engineers to thicken the roll surrounds of the woofers to maintain their linearity and low distortion.

The Fathom f212v2's build quality doesn't disappoint. It's a massive, super-solid sub with a lustrous, High Gloss Black finish, equipped with high-quality Neutrik balanced connectors. All mechanical controls are of the set-and-forget type, and feel smooth and solid to the touch. The fit'n'finish are outstanding—this sub should last a lifetime.

CR-1 outboard crossover

Most aftermarket subwoofers depend on the high-pass 80Hz crossover filter built into A/V processors. But audiophile-quality two-channel preamplifiers don't include crossover filters for the same reason they don't have tone controls. Thus, for those with music-only systems, an outboard crossover becomes a necessity for the optimal integration of a subwoofer—it's not an optional accessory.

The $3000 CR-1 meets this need. Its continuously variable high- and low-pass filters (30–150Hz) use 1% precision

JFET-input op-amps, and polypropylene film and foil capacitors to "optimize the audio system's spatial and spectral performance." The low- and high-pass circuits are built around two banks of precision Linkwitz-Riley filters that can be set for 12 or 24dB/octave via a front-panel switch. Differential input technology is used to reject common-mode hum and noise on the unbalanced inputs, and independent buffering of the balanced and unbalanced outputs reduces the likelihood of noise. The rear panel offers both balanced (XLR) and unbalanced (RCA) connectors.

SPECIFICATIONS

FATHOM F212V2 POWERED, SEALED-BOX SUBWOOFER. Drive-units: two 12-W7 12" cone woofers with 3.0"-diameter voice-coil and 3" peak-peak excursion. Effective piston area: 168 in^3. Magnet weight: not specified. Low-pass filter: variable, 30–130Hz, 12 or 24dB/octave. High-pass filter: not supplied. Inputs: stereo or mono balanced (single XLR connector), stereo or mono unbalanced (single RCA connector). Input modes: Master, Slave. Outputs: single balanced (XLR) to additional subwoofer. Input impedance: 50k ohms (RCA), 10k ohms (XLR). Input sensitivity: 166V for 105dB SPL. Front-panel controls: Power (On/Off/Automatic Signal Sensing); Digital Automatic Room Optimization (Demo/Defeat/Calibrate, with supplied calibration microphone); Level (Reference, Variable); Master Level (variable, full mute to +15dB over reference); lights (on/off/dim); Low-Pass filter (–12dB/–24dB/Off); Extreme Low Frequency (ELF) Trim (variable, –12dB to +3dB at 25Hz); Polarity (0°/180°); Phase (variable, 0–280°, at 80Hz). Amplifier: switching, class-D, 3600W RMS short-term. Frequency response (anechoic): 20–97Hz, ±1.5dB; 19–110Hz, ±3dB; 15–157Hz, ±10dB. Distortion: <6.5% THD at 50Hz, 124dB output at 1m, 0.15V RMS input, Level control set to maximum.
Accessories included: detachable AC power cable; well-written, well-illustrated 70-page user's manual in English and Spanish on thick, glossy paper; pair of white gloves; sliders to place under speaker.
Dimensions 31.96" (812mm) H by 14.92" (379mm) W by 20.39" (518mm) D. Effective cabinet volume: 574 in3 (9.4 liters). Weight: 224 lbs (102kg).
Finishes High Gloss Black.
Serial numbers of units reviewed 000125HB, 000115HB.

CR-1 CROSSOVER STAND-ALONE ELECTRONIC CROSSOVER. Frequency range: 30–150Hz, variable; independent high- and low-pass filter frequency controls on front panel. Crossover slopes: 12 or 24dB/octave, Linkwitz-Riley, selectable via front-panel switch. Subwoofer/satellite balance control: ±12dB, fully variable via front-panel knob. Filter Damping controls: Q:0.3–1.4 at 12dB/octave, Q:0.16–4.0 at 24dB/octave; for either slope, Q=0.5 at top dead center "0" mark. Maximum input voltage: 8V RMS (+18dBV). Input impedance: 50k ohms (RCA), 300 ohms (XLR). Maximum output voltage: 8V RMS. Output impedance: 150k ohms unbalanced, 300 ohms balanced. THD+noise: <0.002% at 8V RMS/10k ohms, 20Hz–20kHz, 90kHz bandwidth. Signal/noise: >115dB, ref. rated output voltage. Low-pass frequency response: +0/–1dB, 5Hz to ¼ of filter frequency. High-pass frequency response: +0/–1dB from 4x filter frequency to 80kHz. Power consumption: 30W typical, with or without signal.
Dimensions 17.4" (441mm) W by 3.8" (97mm) H by 15.67" (398mm) D. Weight: 22 lbs (10kg).
Finish Brushed aluminum.
Serial number of unit reviewed 960011000156.

BOTH
Approximate number of dealers: 200. Warranty: 2 years, parts & labor, nontransferable.
Manufacturer JL Audio, 10369 N. Commerce Parkway, Miramar, FL 33025-3921. Tel: (954) 443-1100. Fax: (954) 443-1111. Web: www.jlaudio.com.

The CR-1's front-panel controls are a pleasure to use. Bypass switches are prominently featured. According to Brett Hanes, JLA's lead engineer for home products, "you can listen to the satellites in full-range (no filters applied and no subs) by hitting the CR-1's Bypass button (its LED goes from green to red). Dealers use this one-button 'bypass demo' on the CR-1 as a teaching tool to easily show potential customers what a difference a subwoofer can make in their stereo system." Indeed, being able to switch quickly, without having to detach and reinsert interconnects, helped me by speeding setup time between comparisons—important because auditory memory is so short. Four Output Muting pushbuttons on the right of the CR-1's front panel can individually shut off each of two main speakers and each of two subs (if a button's LED glows red, that speaker is not playing).

Setup

I set up each Fathom f212v2 without its protective grille, and with its front baffle 2.5' behind the front baffle of the corresponding Revel Ultima Salon2—a full-range, dynamic, floorstanding speaker.[5] The inner edges of the Salon2s' baffles were 8' apart, their outer edges 3' from the sidewalls, and the centers of their baffles 7' from my ears when I was seated. Both subs' woofers were 9.5' from my listening chair.

With the exception of the CR-1 crossover, I used the same system connections I had for my review of the original Fathom f212 in 2010. I ran balanced interconnects from my Bryston BP-26 preamplifier's outputs to the CR-1's inputs. Another pair of balanced interconnects linked the CR-1's low-pass outputs to each f212v2's left-channel input jack, with each subwoofer's rear-panel switch set to Master. More balanced interconnects linked the CR-1's high-pass outputs to the inputs of my Mark Levinson No.334 power amp, which was connected to each Ultima Salon2 with Pure Silver R50 biwire double-ribbon speaker cables.

Measurements

For this review, I used Studio Six's iTestMic—a cost-effective, professional-grade test and measurement microphone that plugs into my iPhone 6[6]—plus Studio Six's Audio Tools app to run fast Fourier transform (FFT) frequency-response measurements from 8Hz to 2kHz. I placed the iTestMic–iPhone 6 combo on the back of my listening chair at ear level: 37" above the floor. For a test signal, I used a digital file of uncorrelated pink noise, played through my Bryston BDP-2 media player.

I first put the CR-1 on full Bypass, to run FFT measurements on the Salon2s full-range, without crossover filters or subwoofers. This generated a flat room-response curve: ±3dB, 8Hz–2kHz (fig.1). To run the Fathom f212v2s solo and full-range without crossover, I plugged the Bryston preamp's balanced interconnects into the CR-1's Bass Management inputs, and depressed the Defeat button on each sub's control panel to bypass its internal settings. The resulting FFT showed an irregular room response: ±6dB, 18–125Hz, with a peak at 45Hz and a bigger null at 60Hz (fig.2).

I then returned the preamp's balanced interconnects to the CR-1's main stereo inputs, to once again access low- and high-pass filtering. I set the filters' 6dB corner frequencies to 80Hz, 24dB/octave. Playing the same digital file of uncorrelated pink noise, I set each sub's Master Level control to match its acoustic output to the Salon2's output by ear, and confirmed this setting using Audio Tool's RTA display. I ran separate FFT measurements of the room response of the high-pass-filtered Salon2s with subs muted (fig.3), to confirm the 24dB/octave rolloff of the CR-1's high-pass filter. Reversing the sub's signal polarity or turning on its Extreme Low Frequency (ELF) filter worsened the sound, so I left those in their default settings.

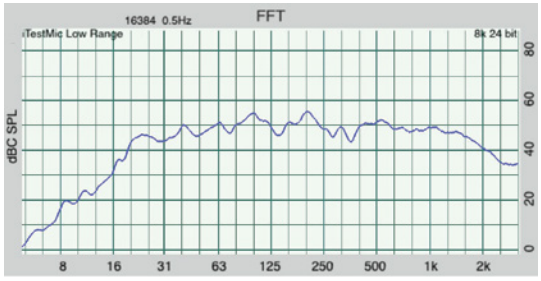

Fig.1 Revel Ultima Salon2s, uncorrelated pink noise before DARO, FFT display, 8Hz–2kHz, no filters, subs off, full-range in-room response (80dB vertical range).

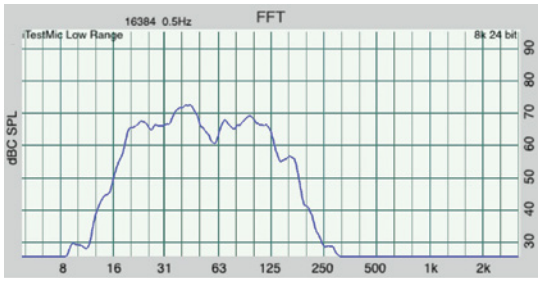

Fig.2 JL Audio Fathom f212v2s, uncorrelated pink noise before DARO, FFT display, 8Hz–2kHz, no low-pass filter, Salon2s off, full-range in-room response (80dB vertical range). Note 45Hz peak and 60Hz dip.

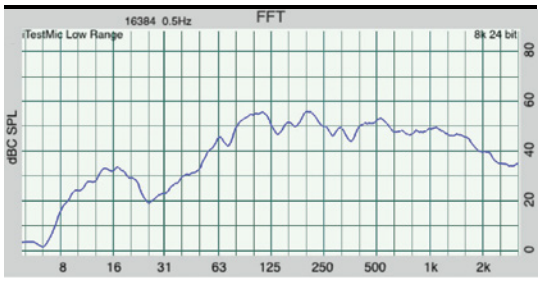

Fig.3 Revel Ultima Salon2s, uncorrelated pink noise before DARO, FFT display, 8Hz–2kHz, high-pass filter on, subs off, in-room response (80dB vertical range).

Last, I time-aligned the subs with the main speakers using the phase control on each Fathom's control panel. Barry Ober, JLA's home products senior tech support engineer, recommended that I use the 80Hz tone on Soundoctor's *Test/Setup CD Version 2.7.2* (www.soundoctor.com) to run a null test to precisely set each sub's phase control. I did this by reversing one of the speaker cables to the Salon2 in the same channel as the sub being matched. Playing the Soundoctor tone, I placed my head between the Salon2 and its partnering Fathom f212v2. Turning the sub's Phase knob slowly, I listened for a sudden drop in volume where the out-of-phase outputs of sub and speaker canceled out each other. I found the null point at the 20° setting. I then reversed the speaker cables on both Salon2s, to put each sub and its Salon2 back in phase.

DARO

Each sub's DARO program was run separately. After checking that the sub was in Master mode, I connected

5 See my review of the Revel Ultima Salon2 in the June 2008 issue: www.stereophile.com/floorloudspeakers/608revel/index.html.

6 See http://studiosixdigital.com/audio-hardware/itestmic/itestmic-information.html.

the microphone and cable supplied with the f212v2—JL Audio's instructions stress that this is the only mike suitable for use during DARO calibration—to the sub's front-panel jack, placed the JLA calibration mike on the back of my listening chair at ear level, and pressed the Calibrate button. The Calibrate LED began to slowly flash red, and within seconds the sub had begun to emit pink noise at high levels. After 90 seconds, the output droned for an additional 90 seconds. The pink noise was loud enough to rattle anything in the room that wasn't tied down, including a radiator cover at the base of the left wall. Then the Fathom f212v2 fell silent, its Calibrate LED glowing steady green. FFT measurements of the f212v2 alone after DARO tuning showed that the previous irregularities in room response had been minimized (fig.4).

Finally, I switched on the full system. Its room response, 8Hz–2kHz, was more linear than I'd seen with the Salon2s run full-range alone (fig.5). I checked the lowest frequency bands of the half-step-spaced chromatic scale on *Editor's Choice* (CD, Stereophile STPH016-2). These were sharply defined and clearly heard, as were the 40, 31, and 25Hz ⅓-octave warble tones on that CD. The 20Hz band was not only audible, it produced a strong pressure wave in the room. Playing "True Blues," from Keith Jarrett's *The Carnegie Hall Concert* (CD, ECM 1989/90) with crossover filters on revealed no discontinuities between subs and main speakers. Whether the Salon2s were run full-range or the subs and main speakers were played with the CR-1 crossover inserted, the midrange and highs remained transparent, the soundstaging wide and deep, and there was no brightening or hardening of the sound.

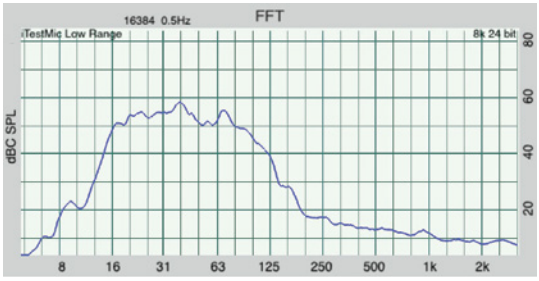

Fig.4 JL Audio Fathom f212v2s, uncorrelated pink noise after DARO, FFT display, low-pass crossover filter on, Salon2s off, in-room response (80dB vertical range). Note that 45Hz peak is diminished.

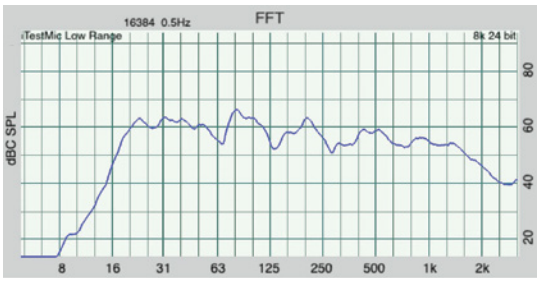

Fig.5 Revel Ultima Salon2s plus JL Audio Fathom f212v2s, uncorrelated pink noise after DARO, FFT display, both filters on, both Salon2s and subs on, in-room response (80dB vertical range).

Music

The CR-1 played a crucial role in this review, letting me hear the benefits of the Fathom f212v2s and bass management in my system. When switched in, the f212v2s increased the Revel Salon2s' bass power, dynamics, extension, and pitch definition. This was remarkable—I regard the Salon2s' bass response as being exceptionally good, yet I heard their bass improve when the stereo subs were playing. This was evident as I listened to John Atkinson's digital recording of the *Toccata* of Widor's Organ Symphony 5, performed by Jonas Nordwall at Portland's First United Methodist Church (24-bit/88.2kHz AIFF file). The full system better depicted the deepest (32.7Hz) notes' depth, power, solidity, and mass, but didn't distort or mask the upper registers' transparency. The lowest bass notes weren't so much heard as felt in my feet through the hardwood floor. I also heard this improvement when I played John Busby's recording of *Master Tallis's Testament*, by Herbert Howells, from *Pipes Rhode Island* (CD, Riago 101). With the f212v2s playing, the sustained 32Hz pedal note at the piece's end pressurized the air and rattled loose objects.

Second, the use of two subwoofers enlarged the soundstage, increasing the three-dimensionality of images and giving a better sense of the performing space. I heard this when I played a DSD64 file of a live recording of Michael Tilson Thomas and the San Francisco Symphony performing Beethoven's Symphony 7 (http://sanfranciscosymphony.downloadsnow.net/beethoven-7). Switching in the full system—two speakers and two subs—broadened and deepened the soundstage. And the f212v2's ability to throw a huge, broad, deep soundstage revealed a three-dimensional image of the chorus hovering behind tenor José Carreras in the *Kyrie* of Ariel Ramirez's *Misa Criolla*, conducted by José Luis Acejo (CD, Philips 420 955-2).

The Fathom f212v2's bass resolution was revelatory. When I played Don Dorsey's "Ascent," performed by Erich Kunzel and the Cincinnati Pops on their Time Warp collection (CD, Telarc CD-80106), the JLAs' imaging let me better distinguish the positions of the synth beats that move from side to side. Dynamics ranged from soft murmurs to a thunderous rumble as the synths blended into the sustained 31.7Hz organ note that begins Strauss's *Also sprach Zarathustra* on that same disc. The deep pedal notes in *Gnomus*, from organist Jean Guillou's performance of his own transcription of Mussorgsky's *Pictures at an Exhibition* (CD, Dorian DOR-90117), were more focused and deep—with the Fathom f212v2s switched in, I felt them mostly through my feet as the floor shook. It surprised me that the full speakers-plus-subs system reduced in level and focused the massive, almost infrasonic organ notes in *Pie Jesu*, from John Rutter's *Requiem*, performed by Timothy Seelig and the Turtle Creek Chorale (CD, Reference RR-57CD), to better balance the pipe organ with the soprano, chorus, and other instruments. Similarly, it was easier to follow organist Olivier Latry's pedal notes in the first movement of Saint-Saëns's Symphony 3, with Christoph Eschenbach conducting the Philadelphia Orchestra (SACD/CD, Ondine ODE 1094-5). These changes exemplified the quality of "better bass rather than more bass" that Kal described in his f113v2 review.

The JLA combo of Fathom f212v2 and CR-1 strongly benefited the quality, scale, detailing, and full power of orchestral music by enhancing the depth and width of the soundstage while revealing ambience cues. I felt and heard the jaw-tightening mass of the bass-drum strokes in the second section of Stravinsky's *The Rite of Spring*, performed by Eiji Oue and the Minnesota Orchestra (DVD with 24/96 WAV file, Reference RR-70 HDCD). They burst into my listening room as dense, concussive *thuds* with clean, defined leading edges.

The Revel-JL Audio combo delivered the deepest, most powerful synthesizer chords on my soundtrack recordings, particularly the growling, explosive, mind-jarring mix of synth and percussion that drives "Assault on Ryan's House," from James Horner's score for *Patriot Games* (CD, RCA 66051-2). The massive synth note that opens "Deeper

Well," from Emmylou Harris's *Spyboy* (CD, Eminent EM-25001-2), was more focused and less blurred with the f212v2s in circuit—I could more clearly hear the words in Harris's song, as well as the drums and guitar.

Comparison

For comparisons with the Fathom f212v2 I selected Revel's Ultima Rhythm2 powered subwoofer[7] for its superior build quality, inclusion of low- and high-pass filters, and similar price. At $10,000, a Rhythm2 subwoofer costs the same as one Fathom f212v2 ($7000) with CR-1 ($3000). Adding a second f212v2 brings the total to $17,000. Both subs offer high power, great bass extension, powerful internal amplifiers, clean high- and low-pass filters, and delay adjustments to time-align the outputs of subs and satellites. And both are extremely heavy, requiring two people to unpack and move them into a listening room.

The Fathom f212v2's DARO is fully automatic; the Rhythm2's room-optimization system requires separate FFT measurements and hand-tailoring of individual equalizer frequency and Q settings. The f212v2 has 18 bands of equalization to the Rhythm2's 10. Unlike the Rhythm2, the f212v2 comes with four Waxman Super Sliders, a hard copy of its glossy, two-language comprehensive manual, and the calibration microphone and mike cable. The Rhythm2's manual, test tones, and most of its control functions are available as downloads from Revel's website.

On the other hand, the Rhythm2's single 18" woofer offers 12% more area (254 in^2) than do the f212v2's two 12" drivers (226 in^2). The Rhythm2's two internal amplifiers are 11% more powerful, with peak power ratings of 4kW *vs* the Fathom's 3.6kW. The f212v2 is taller and weighs 28 lbs more, making it harder to move around than the Rhythm2. The Rhythm2's Q-tuning of its equalizer bands offers a more fine-gained adjustment capability. Only the Rhythm2 can modify the sub and satellites' output to smooth the room response.

Both subs pressurized the air and vibrated the floor of my listening room while delivering similar deep-bass extension, pitch definition, dynamic range, and slam. With some recordings, the JL Audio combo of Fathom f212v2 and CR-1 created a deeper, wider, more three-dimensional soundstage than did a single Rhythm2. Because I didn't have a second Rhythm2, I couldn't determine if two of them could produce the same improvements in soundstaging.

Conclusions

With the release of the Fathom f212v2, JL Audio has made important changes to the f212's internal design, most notably the new DARO 18-band equalizer. This increased the precision and reliability of the sub's setup, and produced easily heard and measurable improvements in deep-bass clarity. The Fathom f212v2's sound was quicker, more solid, and had better bottom-end authority than did the v1. Two f212v2s significantly widened and deepened the soundstage, and better retrieved ambience cues. The CR-1 crossover was a godsend for blending of the outputs of speakers and subs, and it let me hear the improvements in real time when I switched in the f212v2s: increases in bass extension, pitch definition, deep-bass power, and soundstage imaging.

ASSOCIATED EQUIPMENT

Analog Sources Linn Sondek LP12 turntable with Lingo power supply, Linn Ittok tonearm, Spectral moving-coil cartridge; Day-Sequerra 25th Anniversary FM Reference tuner.
Digital Sources Bryston BCD-1 CD player & BDP-2 media player with IAD sound board & BDA-3 DAC; Lenovo W510 laptop computer running Windows 7 (64 bit), Mark Levinson USB driver, JRiver Media Center 20.
Preamplifier Bryston BP-26.
Power Amplifier Mark Levinson No.334.
Integrated Amplifier Mark Levinson No.585.
Loudspeakers Revel Ultima Salon2 & Ultima Rhythm2 subwoofer.
Cables Digital: Wireworld Starlight coaxial. Interconnect: Bryston balanced, Mark Levinson Silver, Pure Silver, Red Rose Silver One, Totem Acoustic Sinew single-ended. Speaker: Coincident Speaker Technology CST 1, Pure Silver R50 biwire double ribbon, QED X-Tube 400, Ultralink Excelsior 6N OFHC.
Accessories Studio Six iTestMic; Apple iPhone6 & iPad; Torus Power Isolation Unit Tot Max (120V, 10A max, 2400VA, 6 outlets); Studio Six ProMic1 Audio Analyzer.
Listening Room 26' L by 13' W by 12' H with semi-cathedral ceiling, moderately furnished with sound-absorbing furniture. Left wall has large bay window covered by Hunter Douglas Duette Honeycomb fabric shades. Rear of room opens into 25' by 15' kitchen through 8' by 4' doorway.—**Larry Greenhill**

Those interested in buying the Fathom f212v2 should keep a few things in mind: First, this is an expensive subwoofer that will do best in large rooms. Second, it's the heaviest and densest audio component I have encountered—don't underestimate the challenge of moving it around. For this nosebleed price, demand that the dealer transport, unpack, and employ at least two people to move it into position. Third, realize that getting the best sound from the Fathom f212v2 requires time and patience, as well as learning how to use its controls. Set up poorly, one or two f212v2s can mess with your sound. To give you a leg up, ask the dealer to include an iTestMic, and to pay the iTunes bill for Audio Tools.

Reviewing the Fathom f212v2s let me experience once again the thrill of discovering an exceptionally powerful new subwoofer. And JLA's CR-1 electronics crossover was a total surprise—I wondered where it had been all my life. It's beautifully made, sonically transparent, performs a critical role in the optimal setup of subwoofers, and has ergonomic bypass and mute functions that let you immediately hear the sonic improvements of good bass management. JL Audio's Fathom f212v2 subwoofer and CR-1 crossover are strongly recommended. ■

7 See my review of the Revel Ultima Rhythm2 in the February 2015 issue: www.stereophile.com/content/revel-ultima-rhythm2-powered-subwoofer.

HIFICRITIC

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Graham Audio VOTU
B&W 802 D3
NVA Intro System
JL Audio CR-1
JL Audio Fathom F112 V2
Magico S5 II
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Dynaudio Emit M10
SLIC Eclipse C MkII
Vertex AQ Pico
Audience OHNO III
EnKlein David Digital

JL Audio CR-1/Fathom f112 v2

THIS ISSUE WE'VE GIVEN KEVIN FISKE A SOLID-STATE SUB/SAT SYSTEM, TO TRY AND EXPAND HIS WORLD VIEW

HIFICRITIC RECOMMENDED

JL Audio may well be a new name to many *HIFICRITIC* readers* – indeed it was to this reviewer – as the brand is better known for car audio subwoofer systems than for high-end music replay in the home. However, publisher Martin Colloms of knew JL Audio, and at the February Bristol show he asked the distributor to provide a system for a subjective review.

Assisted by ATC, the system comprised the following collection of components: a pair of JL Audio's *Fathom f112 v2* subwoofers, each actively driven by 1.8kW of power amplification and its new *CR-1* active subwoofer crossover; plus ATC's *SCM19* two-way stand-mounts, which are just 85dB efficient, and were driven by ATC's own *CA2* pre-amplifier and 150W/ch *P1* power amplifier.

Such a system would have a total solid-state power of around 4kW. Obviously, such a combination is unlikely to be best appreciated by a reviewer who not only prefers flea-power single-ended triodes and high efficiency speakers, but who also has an openly declared aversion to inefficient speakers and Classes B to D solid-state amplification. However, in his commissioning e-mail, Colloms said: "Once you hear a pair of actively driven 12in subwoofers you might have your world view altered, at least at this modest price level…or discover another way of enjoying music..."

The Set-Up

When Manny Jarnail of AV Tech Solutions arrived to deliver and set up the system in my listening room, a procedure that I'd naively assumed would be done inside an hour and half. It actually took the thick end of three hours. Each *Fathom* subwoofer weighs 45kg, so lifting them in from Jarnail's car was a two-person careful-how-you-go job. After unboxing the subs, the crossover, the ATC *SCM19s*, and the stands, the speakers were temporarily placed simply where it felt right. Then Jarnail's work began.

From the safety of the sofa I saw that the secret to the sound that had so intrigued Colloms at Bristol is a methodical and painstaking process of tweak-listen-tweak-listen...and then tweak some more. The *CR-1* crossover is the key to how good the end results of all this to-and-fro can actually be. However, the seamless integration it enables can only be achieved if the user is discerning, and preferably experienced too. Neophytes who simply fiddle without any understanding of what they are doing will likely be driven rapidly towards hair-tugging insanity.

JL Audio designed the *CR-1* after realising that many subwoofer buyers were using them with crossovers not designed for high-end two-channel applications. The company's motivation was to develop a crossover that would deliver results truly complementary to its high-end subs. The *CR-1* therefore contains two banks of Linkwitz-Riley networks with selectable 12 or 24dB slopes, enabling the setting of 167 cutoff frequencies of 0.7Hz steps between 30Hz and 150Hz. It also allows the shape of the selected crossover points to be modified or damped from the standard 12 or 24dB alignment by boosting or cutting the Q of the subs or the stand-mounts, (or both). The balance between the subs and the stand-mounts is also controllable from the *CR-1*'s front panel. The signal path through the crossover is entirely analogue (and not digital as in many alternatives) and the circuitry uses audio-grade components. Jarnail says that JL Audio has no antipathy towards digital circuitry, but felt that a purely analogue device would have greater appeal and be more relevant to a conservative two-channel marketplace.

The *Fathom* subs are usefully configurable in their own right, with selectable cutoff frequency, volume, polarity and phase adjustment, and a built-in 18-band automated EQ/room optimisation program. So they can be used at a pinch without the cherry-on-the-cake assistance of a crossover like the *CR-1*. The *Fathoms* have an effective air volume displacement of 4.7litres, have a peak power output of 1.8kW and a bandwidth that's effectively flat from 21 Hz to 119 Hz. Finish is flawless piano black, and the subwoofers use a slew of patented technologies of which JL Audio is justifiably proud, and which would take too long to describe. (JL Audio's website has plenty more information for those sufficiently interested.)

KEVIN FISKE

Set-Up

Around an hour on from the unboxing and physical setup, Jarnail had painstakingly homed in on a combination of *CR-1* and *Fathom* settings that he felt was working well in my listening room. The crossover point had been dialed in at 110Hz, and the ATC satellite speakers had been slightly moved from their initial positions; they were now around two metres from the wall in front, half a metre from the sides, and toed in slightly to the listening position. The subwoofers were placed in between, each one adjacent to and with its front just forward of the stand-mount.

Jarnail acknowledged that a crossover point at around 80Hz might have been the more conventional choice, but after undertaking many demonstrations and installations he has found that the sonic quality of the *Fathoms* enables them to be pushed a little higher, thereby relieving the partnering stand-mounts of some load and enabling them to work closer to the real comfort zone of their drivers.

I asked whether he particularly recommends the *SCM19*s. "We like them a lot but we've done successful installations with a good number of other speakers. What's more important is that the speakers are infinite baffle designs. Ported speakers just add a variable that makes things more difficult. If we have to integrate with ported speakers, we always stuff the ports in order to take their contribution out of the equation and convert the speakers to infinite baffle operation."

Jarnail played some more music and asked me what I was hearing. I told him that while I felt the subwoofers and stand-mount speakers were integrating well, in the sense that I could neither hear unseemly gaps nor a tussle over sonic territory, the setup sounded a bit slow overall. For example, on a live jazz club recording of a drum solo, the leading edges of the drum strikes were slurred. Jarnail adjusted the damping settings, applying negative to the subwoofers and a touch of positive to the *SCM19*s, which brought the sticks and skins into sharper sonic focus. At this point we decided to call it a day: Jarnail was happy that he had achieved a sound he was pleased with, and I was eager to do some uninterrupted listening.

The System

Before I move on to my subjective impressions, some terms and conditions must be accepted. To deploy the system as described, the potential buyer is going to need a pre- and power-amplifier combination capable of driving a pair of *SCM19*s. The little speakers are indeed as power hungry as ATC's efficiency figure suggests, and when asked to

drive my listening room to 87dB peaks the *P1* power amplifier got surprisingly hot. At those sorts of SPLs the gain control on the *CA2* preamplifier was at 4 o'clock, which is not far off of its 5 o'clock maximum (3 o'clock is apparently the unity setting). Despite this there were no signs of clipping.

Then there's the cost. The combination of *Fathom* subs, ATC *SCM19*s, their associated stands, the *CR-1* crossover, and the extra interconnects that are required, have an all-up ticket somewhere slightly north of £13,500. That places the JL Audio/ATC combination in competition with a number of very worthy floorstanding speakers, some of which actually cost less. I will return to that point later. Obviously the cost can be trimmed to about £10,000 by using just one rather than two subwoofers, but Jarnail cautions that bass is more location critical than is often supposed and that two separated subwoofers simply sound much better. [Two subwoofers also drive a room much more evenly – *Ed.*]

Then there's the matter of listening room real-estate. Each *Fathom* sub has a footprint of 384mm x 451mm, and when perched on a suitably wide-stance stand, an *SCM19* occupies a broadly similar amount of floor area. In other words, the subwoofers and stand-mounts together will take up roughly twice the floor area of a typical pair of floorstanding speakers, although their visual impact

"the quality of integration meant that I was mostly never actually aware that I had 2x12ins of massively-powered pistonic subwoofer in my listening room"

may well be rather less. Depending on the size of the listening room and whether or not it doubles up for other household duties, that'll be either a trivial point or a major consideration.

Personal Prejudices

When spending our own money on audio, most of us will eventually gravitate towards a system that primarily gives us pleasure. Mistakes may be made along the way, cul-de-sacs encountered and U-turns executed, but eventually we'll decide to worry less about the boxes and spend any spare cash on buying recorded music instead.

My own path, after a twenty year and rather costly dalliance with high wattage solid state amplification and inefficient monitor speakers, involved a screeching U-turn in the early 2000s. The choices we make can be as binary as valves *vs* solid state, and we may well find that one particular technology offers more musical enjoyment than another, and vote with our wallet accordingly. Since 2004 or thereabouts I've spent my own money on Class A valve amplification and high efficiency speakers, so you can now treat my subjective observations with either head-nodding approval or a pinch of salt.

Colloms is well aware of my audio peccadillos, and no doubt invited me to write for *HIFICRITIC* partly because of them, relishing the opportunity to help me experience the solid state dark side. He may therefore allow himself a smile of satisfaction at my reaction to the JL Audio system. Compared to the zero feedback 211 tube amplification and efficient two-way speakers that I choose to own, the review setup was certainly 'different'… but not pejoratively so.

Sound Quality

The most distinctive features were its pin-point imaging, relentlessly excellent clarity, and a notable absence of coloration, all coupled seamlessly to relentless bottom-end extension and weight. No, it did not sound like home theatre, all exaggerated boom and thud. It just sounded like good quality full-range solid state audio. In that sense, and considering its configuration, the system was remarkable for being unremarkable – until one remembers that it goes flat to 21 Hz. That is an impressive technical achievement, no matter what musical value one places upon it.

Feeding the system with a truly catholic range of recordings on vinyl, CD, and FLAC files from a Mac via USB to an S/PDIF converter (loaned from emergent UK brand SW1X of Coggeshall in Essex), the quality of integration meant that I was mostly never actually aware that I had 2x12ins of massively-powered pistonic subwoofer in my listening room. This is how it should be, in my view: like children, subwoofers – particularly grown up ones like the JL Audio *Fathom* series – should be seen but not heard.

Sometimes however, one simply has to experiment. My music library contains very little material with sub-27 Hz musical detail. Nevertheless, the depths did need to be plumbed, so one night I played Yello's *Touch* at 'enthusiastic' volume levels. This CD features a generous amount of infra-bass, and halfway through the third track my wife appeared at the listening room door. I paused the CD. She, rather testily and with an arched eyebrow: "You do know, don't you, that just about *everything* in the house is vibrating?"

This is the nature of a pair of very capable subwoofers like the *Fathom*s. If asked to, they can not only massage the listener's internal organs, but their output can penetrate walls spectacularly well too.

Specialist Installation

In a similar spirit of adventure I spent an afternoon playing with the settings on the *CR-1* crossover (having first recorded the original positions of the switches and knobs on my camera-phone as insurance). All I managed to do was prove was that ignorant fiddling can quickly turn a very acceptable sound into a pretty poor one.

In truth, the setup procedure can easily be taught, but left to their own devices I think that only a minority of buyers would have the patience and commitment required to achieve optimum sound quality, and quite a few would not have the necessary ear either. In my view the *CR-1* and *Fathom*s are therefore probably not the kind of audio components that can be successfully sold for DIY installation. Acknowledging this, Jarnail has recruited eight dealers in England and one in Northern Ireland, who are not being allowed to sell JL Audio products until trained to install systems to AV Technology Solutions' very high standards.

Subwoofer Sounds

The *CR-1* has front-panel buttons that allow the speakers and subs to be independently muted, thus enabling the subwoofers to be played on their own without the stand-mounted speakers, or *vice-versa*. This interesting experiment reveals that subwoofers on their own on some recorded material contribute not much more than a seemingly disjointed stream of muffled sound effects, snuffles, grunts and bumps that make absolutely zero musical sense. (Those who try this might become anxious about just what the £6,800 purchase price of the subwoofers has actually bought, at least temporarily.)

However, repeat the same track with the *SCM19s* on their own, then switch the subs back in, and the musical value of those strange sound effects becomes gloriously evident, as they flesh out the sound and deliver a 'full fat' soundscape that is satisfying in the way that only truly full-range music reproduction can be.

Disconnecting the CR-1

As a further experiment I disconnected the *CR-1* entirely and used the volume and frequency cut off controls on the *Fathom*s to integrate them directly with the *SCM19*s. It was not terribly successful, as the best I could achieve was a blurred handover between the subwoofers and the stand-mount speakers, plus notably reduced transparency and overall dynamics. Had I not been spoiled by first hearing the system with the *CR-1* in place I might have formed a less harsh view, but all I could focus on was just what a major beneficial contribution is made by the *CR-1*, and how, despite its flexibility, it sounded remarkably and commendably transparent.

Nevertheless, the *Fathom*s are by far and away the most capable and musical subs that I have heard to date; a technical *tour de force* able to deliver immense bass power without breaking a sweat. But there is a price to be paid for all that shock and awe. While with the *CR-1* in place the handover between the subwoofers and the *SCM19*s is seamless, the subwoofers are a little shy of pitch definition and harmonic detail right across their bandwidth relative to what the *SCM19*s and some floorstanding speakers can provide. However, how many floorstanders can we name at the price that are flat to 21 Hz? I can't help wondering if that tension will ever be resolved, given the different technologies and design goals involved.

Conclusions

The JL Audio/ATC combination is indeed arresting. During the weeks I had in in my listening room I played a lot of favourite tracks, but also recordings that I haven't touched for some time, curious to see what new light might be thrown upon them by the system. In the end though, and for my tastes, it was all just too literal, too clinical and too forensic and… I'll have to say it…too solid state.

That undoubtedly says much more about me than it does about the review system. I want my audio to read me a story rather than show me the printed words on the pages under a bright light. However, it doesn't mean I can't recognise and appreciate quality when I hear it. For the record then, and for the majority of buyers, the JL Audio/ATC combination has a tremendous amount going for it. Properly set

up by AV Technology Solutions or one of its trained resellers, it is two channel on steroids, two channel with attitude – a genuine high-end alternative to what might be thought of as more conventional speaker solutions.

Even so, pragmatism and curiosity means we need to ask what else we could buy for a similar all-up cost of some £13k. Well, for a fiver less we could have a pair of the PMC *fact.12s* to which Martin Colloms gave an Audio Excellence Award in 2014. Similar money also buys a pair of ProAc's *K6s*. Indeed, there are several floorstanding speakers that offer sub-30Hz extension at that price level.

However, whereas those alternatives are really rolling off steeply towards the mid-20s, the JL Audio/ATC system doesn't just hang on to the last bit of the final octave but delivers it with an iron fist and a good degree of musical sophistication. It is amply good enough to stand on its own as a high-end two-channel setup, but would make even more sense if also fed two-channel sound from a home cinema system. Given that the *CR-1* is usefully designed to cope with this dual role, the buyer would have a system truly able to deliver full range musical satisfaction along with cinematic 'bangs for the bucks'.

In conclusion then, while they didn't change my world view, the JL Audio *CR-1* and *Fathom* subs left me appreciative, thoughtful and impressed. I greatly enjoyed the journey and am pleased to award them a firm *HIFICRITIC* Recommended label. By inference we must also endorse the ATC *SCM19* loudspeaker as a valiant supporting act.

NOTE

*Around the turn of the millennium, the Editor spent some years reviewing car audio components, and became very familiar with JL Audio's excellent subwoofers, which had an irritating habit of sounding much better than appearances might have suggested. JL Audio invariably established what was very much the gold standard for in-car subwoofers, so it's hardly surprising that it achieves something similar in the domestic arena.

AV Technology Solutions (UK) Ltd.
Tel: 0797 473 5998
www.av-techsolutions.co.uk

JL Audio
www.jlaudio.co.uk/home-audio

ATC Loudspeaker Technology Ltd
Tel: 01285 760561
www.atcloudspeakers.co.uk


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70
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130
LP freq. (Hz)
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A ROUND MAN CANNOT BE EXPECTED TO FIT INTO A SQUARE HOLE

MUSIC IN THE ROUND

BY KALMAN RUBINSON

THIS ISSUE: A subwoofer and two USB accessories are thoroughly auditioned.

Advanced Add-Ons

In my last column, in the November 2015 issue, I talked about Marantz's AV8802A preamplifier-processor and two accessories: UpTone Audio's USB Regen, and a DIY battery supply for my DAC. This month's column is *all* about accessories, and for me that's unusual. Some items, like interconnects and speaker cables, are usually considered accessories because they're not fundamental components (*eg*, source, amplifier, speaker), even though they're essential to getting any sound at all.

As far as I'm concerned, an *accessory* is something without which your system would still work just fine. By definition, accessories are preferential, not essential: You buy them in the hope that they'll improve the sound of your system, or make it easier or more convenient to use.

Back in analog days, I could decide whether a different tonearm counterweight was a good idea because my undergraduate study of physics had covered the mechanics of mass, compliance, and frequency. I could also wrestle with the electromagnetics of transformers and motors. At the time, digital signal processes were still mostly theoretical.

Today, I'm losing ground. While I grasp more than a bit of how music is digitally encoded and decoded, I find it difficult to understand how different data-transmission methods (USB, HDMI, Ethernet, FireWire, etc.) affect the quality of the analog output signal and, ultimately, listening enjoyment.

Consider such products as the AudioQuest JitterBug and UpTone's USB Regen. Many people, whether skilled or naïve, biased or impartial, have attempted to test such gadgets, but I'm not aware of anyone who has demonstrated a link between variables in data transmission—beyond basic hardware specs—and what we can actually hear. Of the correlations we *do* see between hardware/software variables and the condition of a product's output signal—measurements that can reveal either improvements or deteriorations in signal quality—most changes are so slight as to be considered below the level of audibility, amounting no change at all. (Of course, in all such cases, one can question whether relevant parameters were being tested.)

On the other hand, some manufacturers offer products accompanied by a technical description and a statement of goals for that product—but without test-bench specs. "Try it!" they say, and offer return privileges. Hope and expectation play big roles in deciding whether to add an audio accessory, choosing the particular one(s), and determining whether they're worth the cost and bother. Expectation bias is a friend to such vendors, regardless of whether the product makes an essential difference or is a placebo.

Is there hope? I think so. First, several websites are hosting ongoing, apparently candid, and often contentious public discussions of the testing and measuring of data-transmission accessories. When the smoke clears, this give-and-take can have led only to better understanding of these technologies. Limited by my technical competence, I am a fly on the wall, but it's fun to watch the sparks fly.

As for the "Try it!" approach, that works, too. Most of us have a closet stuffed with old accessories that didn't stand

Hope and expectation play big roles in deciding whether to add an audio accessory.

the test of time. I've bought many gadgets, hoping they would improve the sound of my system by at least one audible increment, but most I've tossed aside. Some made no difference from the get-go. Others offered an initial flush of excitement, but the effect faded over the ensuing months. Few accessories have lasted long in my system: As audio technology advances, the worthwhile improvements effected by today's accessories are sometimes incorporated into tomorrow's new primary components.

These days, I might try an accessory because of word-of-mouth, so long as it doesn't cost the sky. Despite my general skepticism of tweaks and accessories, I'm as much subject to expectation bias as the next guy. I'll just tell you what I hear; as for the rest, I'll wait for the dust to settle.

JL AUDIO FATHOM f113v2 POWERED SUBWOOFER

Are subwoofers accessories? I think so. They're important to home-theater fans, but many audiophiles loyal to two-channel stereo refuse to consider them, even when their preferred speakers are quite limited in bass power and extension. Perhaps bass isn't all that important to them, or perhaps they're daunted by the complexity of properly setting up a sub. I lived for years without a sub in my main system, in Manhattan. My Connecticut system included

subs because I sometimes use it to watch movies—but with my NYC rig including three Bowers & Wilkins 802 Diamonds and a pair of 804 Diamonds, I did not lack for bass.

Or so I thought until late 2006, when I reviewed the predecessor of JL Audio's Fathom f113v2, the Fathom f113[1] (which I'll now call the v1). The v1 didn't so much give me more bass as *better* bass. I was sort of pleased with Automatic Room Optimization (ARO), its one-band auto-equalization

Are subwoofers accessories? I think so.

software, which handily dealt with a 50Hz room mode. But, over time, I came to rely on outboard EQ in the form of DSPeaker's Anti-Mode 2.0 digital room equalizer or Dirac Live. Apparently, my room needed more help than any single-band filter can supply.

Enter the Fathom f113v2 ($4500), with *Digital* Automatic Room Optimization (DARO)! Aside from its new EQ software, the f113v2 is almost identical to the v1, with some subtle changes in the I/O panel on the back and the controls across the top front. Under its hood, the v2 boasts 3000W RMS short term, compared to the v1's puny 2500W, and its single, front-firing, 13.5" driver has a modified suspension for greater linearity and lower distortion. In addition, the v1's circuitry has been reconfigured so that no audio signal is routed through the v2's control panel, and all small-signal circuits are contained in a cast-aluminum housing attached to the rigid rear-panel heatsink. Finally, because EQ is now accomplished by DARO, digital-signal processing (DSP) has supplanted many analog components, presumably leading to improved unit-to-unit matching and product reliability.

DARO differs from ARO in several ways. Instead of a single filter, it has 18 bands of cut-only correction, with automatic output-level realignment post-EQ. Each band is adjusted independently by the DSP. In addition, microphone gain and output levels are adjusted automatically, without user effort, which results in greater ease of use and, more important, more accurate and consistent results.

I placed the v2 in the same spot just vacated by the v1, measured its response, then ran DARO. Because ARO and DARO address only peaks, that position for the sub was chosen to minimize, as much as possible, troughs in the frequency response. (True nulls are bottomless pits, and are thus uncorrectable.) DARO was easier to operate

The JLAudio f113v2 front bears the controls and is normally covered by a sturdy grille. The rear panel (bottom) sports the connections.

than ARO, especially for anyone who's used the latter. You simply set the provided calibration microphone at the listening position, push a button, and get out of the way. Band-limited pink-noise pulses are pumped through sub and room for a couple of minutes. That's it!

The measured and audible results were much better than I could get with my v1, and all previously observed peaks were corrected. As before, the payoff was not more bass (although that was available on demand): The v2's improvement over the v1 was the complete disappearance, from my conscious awareness, of the subwoofer's existence. Switching from five full-range channels to five channels crossing over at 40Hz to the f113v2 produced greater clarity below 100Hz, as the main speakers were relieved of powering the bottom end (perhaps resulting in reduced Doppler distortion?), and the low bass was cleaner, due to the f113v2's more advantageous position in the room and more efficient EQ. A win-win.

There was more. JLA's Fathom subs can be daisy-chained, allowing DARO to handle as many as you can afford. If you have two f113v2s, the recommended arrangement is to run DARO on the first and set up the second sub as a slave. The first v2 will EQ the two subs' combined output. In my situation, the second sub was a v1; I was advised by JL that "the gain structure for the slave paths is different between the

It's hard to imagine listening without at least one Fathom f113v2.

V1 and V2. As such, run your V1 in Master mode with all signal processing defeated and adjust the Level control (in Variable gain mode) as needed to match the V2 master." This worked flawlessly, but with most recordings, switching from one to two JLA subs made no audible difference to me.

I do understand that those who play different music (*eg*, techno), and/or who play it much louder than I do, might appreciate the additional power. When I *could* detect differences, they were most apparent with recordings made in highly reverberant spaces in which the venue's modes are in the ultralow, nearly subsonic range. In stereo, it was the Cowboy Junkies' familiar *The Trinity Session* (CD, RCA 8568-2-R). In multichannel, try the Berlin Brass's disc of music by Gabrieli: *Berliner Dom: Music for Brass & Organ* (SACD/CD, Pentatone PTC 5186509), and that spectacular recording of Biber's *Missa Salisburgensis*. With these, I was embraced by the sense of place even before the music began, and remained engaged more deeply because of it.

The verdict is easy. JL Audio's Fathom f113v2 is everything good from the Fathom f113 and more. DARO is a huge and needed improvement, and the backward-compatibility with the v1 is appreciated. In 2006, I hadn't thought I needed a subwoofer—and certainly not two. Now, it's hard to imagine listening without at least one Fathom f113v2. This is one *accessory* that does realize its potential to improve my system.■

1 See my column in the November 2006 issue: www.stereophile.com/musicintheround/1106mitr/index.html.

CONTACTS

JL Audio
10369 N. Commerce Parkway
Miramar, FL 33025-3962
Tel: (954) 443-1100
Fax: (954) 443-1111 (general),
443-1108 (tech support)
Web: www.jlaudio.com

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SUBWOOFER REVIEWS

JL Audio Fathom f212 Subwoofer

DARRYL WILKINSON

Price: $6,300 **At A Glance:** Automatic Room Optimization (A.R.O.) with microphone • XLR output to connect one or more slave f212 subwoofers • Dual 12-inch active drivers

Unless you live in South Florida or are heavily into car audio, there's a good chance you don't recognize the name JL Audio. That's because while these guys make dozens of products for automobiles and boats, they only make a few for home theaters. And the cheapest ones—the just announced 10-inch E110 and 12-inch E112, cost $1,300 and $1,600, respectively.

From there, the bass goes lower and louder while the price goes up. Wanna know how low and loud? About six years ago, CEDIA held its annual convention in the old RCA Dome in Indianapolis. I remember walking into the covered stadium and being absolutely assaulted by wave after wave of blasting bass notes. As it turned out, the amazing boom was coming from the other side—literally a football field away! This was the year JL Audio introduced its fearsome, Gotham g213 subwoofer, a truly scary, $12,000, bowel-busting behemoth that, amazingly, uses only two 13.5-inch active drivers, a 3,800-watt amplifier, and a kickass attitude that frightened the voice coils right out of lesser (i.e., all other) subwoofers.

As much as I would have loved to review the 360-pound Gotham, the largest subwoofer that's legal to possess in my state is the $6,200, 220-pound Fathom f212. (OK, it was just the largest that I could practically move around.) Actually, JL Audio sent me the Fathom f212-GLOSS, which retails for $6,300—not including tax, title, and license). The beast is still so massive, JL Audio includes a pack of furniture sliders in the box, so that after you've manhandled this thing into place, you can more easily make whatever minor positioning adjustments you feel are necessary. Probably with a helper or two.

The gorgeous, black monolith that is the f212 is built in the United States and measures approximately 15 inches wide x 32 inches tall x 20 inches deep. Behind the black grille on the front of the sealed cabinet are two active, 12-inch, forward-firing drivers. Also behind the grille, running along the top of the cabinet, is a narrow panel with adjustment knobs and switches for low-pass filter, phase, polarity, and ELF (Extreme Low Frequency) trim, as well as controls for a built-in Automatic Room Optimization (A.R.O.) circuit, plus the input jack for the A.R.O. microphone. (The microphone is included, by the way, which is not always the case with high-end cor-

rection processors.) Along the back are two long, vertical heat sinks and the left- and right-channel low-level inputs (both balanced and unbalanced), an AC power cord, and an output jack for connecting a second f212 (!) to the first. (And, yes, the Fathom f212's instruction manual even talks about using up to four of these behemoths in your theater!)

You Call That 12 Inches?

Given its price, I was actually surprised to find only a pair of 12-inch drivers in the f212. I thought that there would surely be some elaborate combination of actives and passives, multichambered ported enclosures, or a bevy of drivers covering every darn inch of the cabinet, along with some special voodoo explanation of how it all works together. The real story is much more pedestrian: It's all about good, basic design and intelligent execution. The cones of those two 12-inch W7 drivers, for example, aren't made from crazy, exotic materials such as Kevlar, titanium, sheets of sake-soaked birch, or dried-and-compressed Siberian yak dung. They're actually made from boring, old, mineral-filled polypropylene skins that are bonded together at the perimeter and center of the assembly. Cut the cone in half from the outside to the center, and you'll see that the back skin is shaped like a "W" due to the way it's attached to the smoother front skin. Structurally, the underlayer provides support for the top layer in much the same way trusses are used to hold up bridges. This allows JL Audio's engineers to get away with using a much lighter material and still achieve the rigidity they need in the driver. In fact, the company claims that the cone assembly of the 12-inch W7 driver is a whopping 32 percent lighter than a typical 12-inch, aluminum-alloy cone. (I couldn't get an estimate on the yak-dung cone weight.)

Other vital-but-lacking-in-pizzazz technologies help keep the voice coil cool and ensure that the lead wires don't flap themselves into oblivion as the coil forces the cone in and out. Something JL Audio calls its OverRoll Surround actually extends the cone surround material out and over the mounting flange. JL says this gives the cone itself more surface area within the same-size driver basket assembly. More surface area plus more cone excursion contributes to more air getting compressed and rarefied. Oh, yeah, having a built-in amplifier rated at 3,000 watts doesn't hurt, either.

While it may be relatively easy to do with a typical, garden variety subwoofer, you don't plop a 30-inch-tall, 220-pound box just anywhere in the room simply because "that's where it sounds best." In order to compensate for the fact that the f212's placement may not be optimal, JL Audio built in Automatic Room Optimization circuitry that analyzes the shape and magnitude of the "primary response error" at the listening position and calculates an appropriate filter to correct for it and smooth out the bass performance in the room. It's one of the fastest room correction routines I've used, and I found it does do a good job compensating for less-than-optimum placement.

Fabulous, Absurd, Insane

Some people, when given the chance to listen to a $6,300 subwoofer, would immediately play their favorite piece of music. I chose to start with "20 Hz Heartbeat." I'm not sure exactly what I expected, but what I got was a throbbing, pulsing beat that immediately found anything loose in the room and began moving it. It even caused my son to walk across the hall and ask, "What the hell was that?" after the f212 had been very audibly shaking the bookshelves in his room. I've had subwoofers before that could create a very intense amount of deep bass in my theater room, but I've never experienced one that was capable of shaking things off of shelves in other rooms of the house. Neither of the other two subwoofers even came close to the amount of sheer energy and lung-emptying pressure being deftly plied by the f212. Let me put it this way: Had I been unfortunate enough to go into cardiac arrest at the time, I have no doubt that my family would have been able to restart me by laying me down in front of the f212 and playing back the track.

Speaking of heartbeats, although I've heard "Speak to Me," the first track on Pink Floyd's *Dark Side of the Moon,* too many times to count, listening to it with the Fathom f212 was an entirely new experience. Even before you can hear the heartbeats that gradually rise in volume at the beginning of the piece, you can physically feel them as they begin to permeate the room and resonate anything not made of stone. I'm not sure which was more impressive: the raw, brute power of the subwoofer, or the complete and effortless control of that power. Both came into play with S.M.V.'s "Lil' Victa"

in which the long, sustained, low-bass notes are rich and full of texture and aural flavor as the strings are plucked. And, amazingly, as extended in low bass as the f212 is, it was still adroit and light of touch while playing back the sharp bass attacks on The Cranberries' "Dreams." (I guess boring, old, mineral-filled, polypropylene cone material isn't ready to retire yet.)

It wasn't that long ago that I'd seen *Harry Potter and the Deathly Hallows: Part 2* in the theater, but I certainly don't remember it being anywhere near as impressive as it sounded in my theater with the JL Audio sub. While I could point to dozens of scenes, one of the most outstanding was when the movie comes alive with shudders, shocks, and thundering vibrations as Voldemort's attack on Hogwarts begins. Perhaps the most notable part of this segment is when the stone statues are brought to action and they march to meet the giants across the bridge. The entire room—no, the entire three-dimensional space of it—shook with the mighty force of each footfall. Near the end of the movie when Voldemort attempts to, once and for all, destroy Harry, the shock wave created by his wand is almost unbelievably palpable in the way it rushes its way through the room.

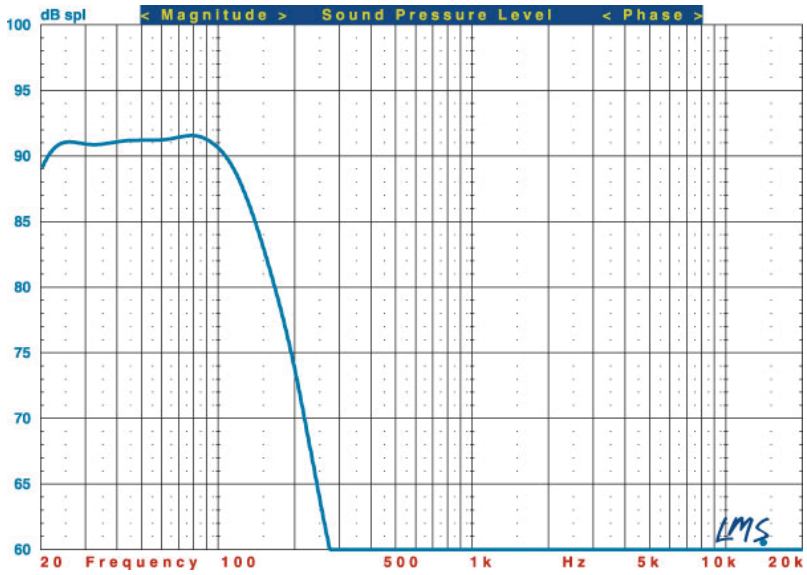
Home on the Range

Not long after the Compact Disc first came out, someone explained to me that it wasn't the fact that you could play them loud that made them so fantastic, it was that they had such amazing dynamic range. I kept thinking about that conversation whenever I was listening to the f212. What's so spectacular about the sub isn't that it can play a 20 Hz test tone loud enough to threaten liquefaction of your bowels. (OK, that is pretty spectacular!) What's really incredibly phenomenal about the f212 is the range, and the total control over that range that it has. It was masterfully awe-inspiring. And now I have to say that I sincerely hate the folks at JL Audio because they have forever ruined any pleasure I might have enjoyed with any other subwoofer. I'll never be able to listen to another without comparing it to the f212. I dare say that there are a scant few other subs out there that are capable of rising to that challenge. JL Audio's Fathom f212 is more than just one hell of a subwoofer—it's one hell of an experience.

HT Labs Measures

This graph shows the quasi-anechoic (employing close-miking of all woofers) frequency response of the F212 subwoofer (blue trace).

The F212's close-miked response, normalized to the level at 80 Hz, indicates that the lower –3dB point is at 20 Hz and the –6dB point is at 18 Hz. The upper –3dB point is at 132 Hz with the LP Filter control set to Off.—MJP



Specs

Enclosure Type: sealed
Woofer (size in inches, type): 12, active (2)
Rated Power (watts): 3000, RMS short-term
Connections: line-level (RCA, XLR)
Crossover Bypass: LFE
Available Finishes: Black Gloss, Black Satin
Dimensions (W x H x D, inches): 14.9 x 32 x 20.4
Weight (pounds): 220

Company Info

JL Audio
(954) 443-1100
jlaudio.com


JL AUDIO
FATHOM
f212v2

Plumbing the depths

AV Info

PRODUCT: No-compromise high-end home cinema subwoofer

POSITION: JL Audio has a more potent woofer – the Gotham G213 – which costs £12,000

PEERS: REL G1; Velodyne DD18+; Paradigm SUB2

Adam Rayner has waited years for JL Audio's home cinema subwoofers to surface in the UK. It was certainly worth it

THE AMERICAN BRAND JL Audio came to fame in the abstruse world of car audio sound quality competitions, where I've spent a large slice of my career. Contrary to what you may think, these tournaments aren't about 'whose is the loudest?' but more 'whose sounds most like real hi-fi? JL Audio is therefore not really about achieving ultimate SPL – but that didn't stop it developing arguably the single best low-frequency transducer in human history. Called the W7, it makes the Peerless XXLS look like Marks & Spencer's food versus Heston Blumenthal's egg-and-bacon ice cream.

Tight, fast bass is how you win SQ contests and JL Audio is king. At one point you could not triumph without its products. And we've waited five years, since I first heard my colleague Steve May come back from the CES show in Las Vegas almost incoherent with how good these JL Audio home subs are, to get its domestic product in Europe.

The JL Audio home cinema range is now being distributed in the UK by AV Tech Solutions. We had planned to badger them for a review sample of the flagship Gotham G213. But, as that 2 x 13.5in, 3,800W beast weighs 160kg, we opted to look at the step-down Fathom F212 – a somewhat more manageable 100kg(!) woofer with a pair of 12in drivers. Call us wimps.

Despite its considerable size (it stands 81cm high), the F212 isn't just an ugly bass box. It's gorgeously finished in gloss black with smooth rounded edges. Very desirable.

Bass behemoth

There's no point beating around the bush. The performance of this sub is just incredible. Firstly, it is brain-numbingly loud if you want it to be. But secondly, it has the most controlled, tight, fast and accurate response, tied to a happy ability to move stupid amounts of air. The monstrous surrounds allow fully four inches of peak-to-peak excursion, yet the cones are gripped by a magnetic fist that wouldn't be out of place on a Marvel superhero. This driver is the result of literally millions of dollars in R&D and you can hear every dime spent. It is breath-taking. The main reason we've had to wait to get these subs in Blighty is because JL Audio couldn't make enough to sell outside the US. They're so special that demand has been huge.

The sub has phono and XLR connections to the rear and audio controls mounted at the top of its front panel. To get to these you'll need to remove the grille (which I actually blew off the box during testing, with the cones...). As well as master level, crossover frequency (30Hz to 130Hz) and a sweepable phase knob, there is a control marked E.L.F. This is an acronym for Extreme Low Frequency, and is a -12dB to +3dB low-end equaliser set at 25Hz.

The F212 comes with a pro-grade setup microphone but no stand, which seems penny-pinching considering the £5,900 price tag. You use the mic in conjunction with the woofer's in-built Automatic Room Optimisation (ARO) tech to calibrate the system to your room, via a series of test tones. A button on the front turns the resulting room-adjusted EQ on and off so you can hear the difference it's made.

Limitless performance

Once setup, I played the DTS-HD Master Audio soundtrack of *Limitless* (Blu-ray), specifically the scene where Bradley Cooper's character is on the balcony while a Russian gangster smashes his way through his flat's front door. This is a sequence of bangs and crashes that easily beats *Master & Commander* in the massive bass stakes. I played it through a few times, testing the F212's mettle, and ended up at +5dB – enough to induce genuine but brief terror (just so you know, -20dB is loud in my room). As the last 'bang' hit, a flying toy fell off the shelves and my son's A-level results 'Congratulations!' balloon jumped in the air like it had been slapped.

Yet the JL Audio offers far more than merely a huge boom, or awesome control but no ultra-low presence – rather the F212 can do both, making it a sumptuous partner for your surround speakers. And it impresses at very low levels, too. Where other woofers won't wake up, the JL Audio will underpin in an almost magical way, so you can even have bass richness during late-night sessions (as long as anyone sleeping upstairs can't feel the floor tickle their toes).

With music material it proved its worth, too, but it comes alive most with Hollywood's LFE obsession.

I know a lot of the above is about power, but the F212's 3,000W amp is about sufficiency rather than lunacy. If you want real lunacy, the manual goes into great technical detail about how to set up the woofer in pairs, trios or even quartets in one room.

To sum up, the F212 is a reference-grade subwoofer with velvet-covered hammers in its face. I struggle to think of a better-sounding product. JL Audio is finally here. Be afraid, be very afraid ■

Specifications

DRIVE UNITS: 2 x 12in JL Audio proprietary W7 drivers, with 4in peak-to-peak excursion
ENCLOSURE: Sealed
FREQUENCY RESPONSE: 20Hz-97Hz +/-1.5dB; -3dB @19Hz; -10dB @15Hz
ON-BOARD POWER: 3,000W RMS Class D power amplifier
REMOTE CONTROL: No
DIMENSIONS: 379(w) x 812(h) x 518(d)mm
WEIGHT: 100kg
FEATURES: Phono mono or stereo input; balanced stereo XLR inputs; balanced XLR output for feeding to slave units; master/slave switch; Automatic Room Optimisation; setup microphone; microphone case; microphone cable; white gloves

HCC Verdict

JL Audio Fathom F212
→ www.av-techsolutions.co.uk
→ Tel: 07974 735 998

HIGHS: Vast, crushing, bass with astonishing clarity, control and melody; premium design and build; auto EQ system
LOWS: Seriously expensive; seriously heavy; no mic stand supplied

Performance ★★★★★
Design ★★★★★
Features ★★★★★
Overall ★★★★★

stereophile
ONLINE AUTHORITY:
WWW.STEREOPHILE.COM
APRIL 2010

EQUIPMENT REPORT

JL Audio
Fathom f212
POWERED SUBWOOFER

LARRY GREENHILL

DESCRIPTION Powered, sealed-box subwoofer. Drive-units: two 12" cone woofers with 3.5"-diameter voice-coils and 3" peak–peak excursion. Magnet weight: not specified. Low-pass filter: variable, 30–130Hz, 12dB or 24dB/octave. High-pass filter: not supplied. Inputs: stereo or mono balanced (single XLR connector); stereo or mono unbalanced (single RCA connector). Input modes: Master, Slave. Outputs: single balanced (XLR) to additional subwoofer. Input impedance: 10k ohms. Input sensitivity: 166mV for 105dB SLP. Controls: Power (On, Off, Automatic Signal Sensing); Automatic Room Optimization (Demo, Defeat, Calibrate) using supplied calibration microphone; Level (Reference, Variable); Master Level (variable, full mute to +15dB over reference); lights (On, Off, Dim); Low Pass filter (–12dB, –24dB, Off); Low Pass Frequency; Extreme Low Frequency (ELF) Trim (variable, –12dB to +3dB at 25Hz); Polarity (0°/180°); Phase (variable, 0–280°, at 80Hz). Amplifier: switching, class-D, 3000W RMS short-term. Frequency response: 20–97Hz, ±1.5dB; 19–110Hz, ±3dB; 15–157Hz, ±10dB. Distortion: <6.5% THD at 50Hz, 124dB output at 1m, 0.15V RMS input, level control set to maximum.
DIMENSIONS 31.96" (812mm) H by 14.92" (379mm) W by 20.39" (518mm) D. Effective cabinet volume: 574 in³ (9.4 liters). Weight: 220 lbs (100kg).
FINISHES Satin Black; add $100 for High Gloss Black.
SERIAL NUMBERS OF UNITS REVIEWED 000115HB, 000125HB.
Approximate number of dealers: 200. Warranty: 2 years parts & labor, nontransferable.
MANUFACTURER JL Audio, Inc., 10369 N. Commerce Parkway, Miramar, FL 33025-3921. Tel: (954) 443-1100. Fax: (954) 443-1111. Web: www.jlaudio.com.

It's been over two years since I reviewed a pair of JL Audio's Fathom f113 subwoofers (see www.stereophile.com/subwoofers/907jl). Kalman Rubinson and I both gave the f113 top marks for delivering clean, powerful bass in a wide variety of full-range systems. At the end of the review period, JL Audio's Carl Kennedy told me that they wouldn't send me another subwoofer for review until they had developed one that outperformed the Fathom f113.[1] To this day, the Fathom f113 tops the subwoofer category in *Stereophile*'s "Recommended Components."

The Fathom f212

Finally, they offered me a pair of their newer twin-driver model, the Fathom f212. The Fathom f212 resembles the Fathom f113: both are self-powered, sealed-system subwoofers whose drive-units have prominent rolled surrounds, and both feature an automatic internal room optimizer for single-band adjustments. Both models also feature the same reference sensitivity of 166mV in to produce 105dB SPL at 50Hz

1 I suspect that JL Audio did know of a better subwoofer, and that it might have been their Gotham g213, with its twin 13.5" drive-units, huge size (34.13" H by 21.5" W by 24" D) and weight (305 lbs), and 3800W RMS peak output. But though I tried to convince them otherwise, JLA refused to lend me a pair of Gothams for review, stating that the logistics of shipping, delivering, and setting up two such behemoths were too daunting.

output at 1m. All inputs are separately buffered and can be used simultaneously (to connect, for instance, a single sub to separate two-channel and surround systems). The rear panels of both models boast the same sets of inputs, outputs, and controls.

However, the Fathom f212 uses two smaller 12" drivers wired in parallel rather than the f113's single 13.5" unit, and has a more powerful (3kW peak) amplifier, with "massaged" electronics to manage the twin drivers. The f212's larger total diaphragm area is said to allow it to produce more output for less relative excursion, with greater ultimate dynamic-range capability than a single-driver sub. As a result, the f212's cabinet is about 12" taller, 2" narrower, and 1" deeper than the f113's, and weighs 90 lbs more.

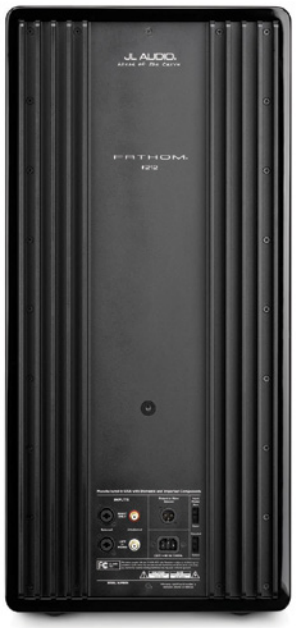
In an e-mail to me, JLA senior research engineer Brett Hanes said: "Comparing diaphragm configurations, the f212's 168 square inches of cone area (effective displacement of 574 cubic inches) means it has 57% more cone area than the f113's 107.35 square inches of cone area (effective displacement of 286 cubic inches). The combination of larger cone area, greater displacement, and higher amplifier power output gives the f212 a distinct edge in the lowest octave. This encompasses not only higher ultimate output, but also more linear operation for a given output."

Rugged build

The subwoofers JL Audio makes for trucks and boats take beatings and shakings never experienced by home audio gear. As a result, JLA's loudspeaker drivers must be mechanically rugged. The Fathom f212's 12" drivers are built to the same massive scale found in the Fathom f113's driver; *ie*, they offer a maximum 3" peak–peak excursion, with a large-radius roll surround that covers the mounting flange to maintain control of the cone, along with what JL calls a Floating-Cone Attach Method to maintain optimal voice-coil alignment at all sound levels. To handle the internal stress of high-powered subwoofing, JLA uses an enclosure reinforced with two donut braces parallel to the front baffle and built of CNC-cut, 1"-thick MDF. The f212's class-D amplifier is attached to the inside of the rear panel.

Controls in front, plugs in back

Like the Genelec HTS4B subwoofer, which I reviewed in November 2005 www.stereophile.com/subwoofers/1105genelec), the Fathom f212 lacks a high-pass filter to shape the bass response of the main speakers. This is because all surround-sound preamplifier-processors perform the high-pass filtration and bass management before the audio signal reaches the sub.



The Fathom f212's back panel is dominated by the amplifier heatsinks.

The Fathom f212's controls are under its removable grille, on a narrow panel of brushed aluminum at the top of the front baffle—very handy. The controls are identical to the Fathom f113's: toggle switches for Power (On, Off, Auto Sensing); JLA's Automatic Room Optimization, or ARO software (Demo, Defeat, Calibrate); and Polarity (0°/180°); and rotary controls for Phase (0–180°, continuous), Low-Pass Filter (30–130Hz), and Extended Low Frequency (ELF), the last for adjusting the slope of a 25Hz filter within a range of –12dB to +3dB, to damp subsonic room modes. There is also a ground-lift switch to reduce hum with unbalanced inputs.

Also supplied are a well-written manual, a calibration microphone attached to a 20' cable, a pair of gloves, and four 50mm sliders to allow the subwoofer to be moved across wooden floors without scratching its finish or the floor.

To initiate the ARO procedure, the owner must plug the Fathom f212's calibration mike into a front-panel jack next to the three ARO controls. The Demo button verifies that the ARO functions are ready by running a 20-second sequence of test tones; Defeat turns off the ARO system to compare the ARO and non-ARO settings; and Calibrate initiates ARO self-calibration with test tones that measure the listening room's response, then runs the f212's automatic equalization procedure.

All set-and-forget inputs and controls are on the rear panel, which is also identical to the f113's. These include: three XLR connectors: two for signal input—summing circuitry in the Fathom's input circuitry converts stereo signals to mono—and a third output to link to a slave subwoofer; a pair of line-level RCA input jacks, the left for receiving a mono bass signal; the Power On/Off switch; the mains AC voltage selector; and the IEC power socket. A Master/Slave switch allows the ARO system to automatically optimize the response of a system with multiple subwoofers. The Slave position defeats all user-definable signal processing and the Master level control.

THE FATHOM F212 USES TWO SMALLER 12" DRIVERS WIRED IN PARALLEL RATHER THAN THE F113'S SINGLE 13.5" UNIT, AND HAS A MORE POWERFUL (3KW PEAK) AMPLIFIER.

The Fathom f212's fit'n'finish are identical to the f113's, including a superb sprayed-on finish of glossy black lacquer. The hardware and connections are easily accessible and rugged—they look as if they'll last for years.

Setting up two Fathom f212s

A single huge shipping pallet with two 300-lb crates strapped to it was delivered to my garage door. Attached to each create was a bright orange warning: "Due to the weight of the Fathom subwoofer, please exercise caution while unpacking and positioning it to prevent injury. If possible, enlist the help of a second person to facilitate the

process. To minimize the risk of injury, bend your knees and lift with your legs, not your back."

I've gotten less proud since I've begun to collect Social Security–I asked for help. JL Audio responded by sending along a strapping young sales representative, who hoisted each crate up the short flight of carpeted stairs into my listening room, then carefully unpacked both. Putting old towels under the subs to protect my wooden floors, I slid an f212 into each of the room's front corners–the same places from which I'd auditioned the f113s. My Quad ESL-989 speakers, which would handle all musical information above 100Hz, were positioned 8' apart, 5' in front of the wall behind them, 3' from the sidewalls, and toed-in slightly toward my listening chair 8' away. A Mark Levinson No.334 stereo amplifier drove the Quads to high volumes in my lightly damped, 4056-ft³ listening room. Because the JLA subs lack a high-pass filter, I provided bass management with an outboard electronic crossover, the Bryston 10B SUB (see www.stereophile.com/miscellaneous/594bryston).

I decided to set up the subwoofers in stereo–which the f212's manual calls the "Master/Master configuration"–because it had been what worked best with the f113s.

I reviewed the notes I'd taken while setting up the Fathom f113s in Master/Master mode, and the same procedure worked just fine with the Fathom f212s. The full-range audio signal was run from my Bryston BP26 preamplifier to the Bryston 10B SUB crossover via a pair of balanced interconnects. After setting the 10B SUB's right and left high-pass-filter switches for the Quads to 100Hz and its low-pass filters to 70Hz (all filters set to 18dB/octave), I set it to provide the f212s a stereo low-pass subwoofer output. Balanced interconnects were run from the 10B SUB's high-pass outputs to the Mark Levinson No.334, which then drove the Quads. The crossover's low-pass outputs were connected via balanced interconnects to each f212's XLR input jacks, their rear-panel switches set to Master.

Full Fathom Quad

As before, I used the internal signal generator and virtual spectrum analyzer of my Velodyne DD-18 subwoofer to match the f212's output with those of the Quad ESL-989s, which made this phase of the JLAs' optimization go smoothly and quickly: While producing no sound from its own woofer, the Velodyne generates a line-level test signal that sweeps from 20 to 200Hz. (See my review of the Velodyne in the June 2004 *Stereophile*, www.stereophile.com/subwoofers/604velodyne.) I fed this signal to the Aux input of my Bryston preamp to be played through my stereo system, then captured the f212's in-room output with the Velodyne's measuring mike–placed on the back of my listening chair at my seated ear height of 37"–and displayed it on a small TV monitor.

I first tested the Quads full-range by muting the Bryston 10B SUB's low-pass outputs, which silenced both subwoofers. The result was a clean response that rolled off by 10dB from 85 to 35Hz (fig.1). I then measured the unequalized output of the f212s, which was flat from 20 to 60Hz, with a small peak evident at 50Hz before it started to roll off (fig.2).

BECAUSE THE JLA SUBS LACK A HIGH-PASS FILTER, I PROVIDED BASS MANAGEMENT WITH AN OUTBOARD ELECTRONIC CROSSOVER, THE BRYSTON 10B SUB.

To match levels between the Quads and f212s, I switched the Quads back in circuit, then turned down the right f212's Master output level to visually match the sub's output (about 9 o'clock on the f212's rotary control) to that of the Quads, as eyeballed on the TV screen. Later, I further fine-tuned the balance to produce clean bass-drum strokes without overhang on "Cosmo . . . Old Friend," from James Horner's soundtrack for *Sneakers* (CD, Columbia CK 53146). I found that the tightest bass-drum sound was produced at the 0° Polarity setting. I wrote down the switch positions, then carried out the f212's ARO room-EQ procedure.

JL Audio's ARO first tests the room, then applies single-band equalization to tune out its most prominent deviation from a linear frequency response. With the rest of the stereo system shut off, ARO automatically generates its own test signals. But before I began, I made certain to turn off my dishwasher and air-conditioner, which can generate subsonic artifacts of their own that can mislead the ARO algorithm. I plugged the ARO calibration mike's cable into the right Fathom f212's front control panel, cranked up the sub's Master level control to its maximal (4 o'clock) position, set all front-panel filters to Off or Default, punched the f212's Calibrate button, carried the mike to my listening chair, sat down, and held the mike at ear level.

Even at that maximal output setting, the f212's ARO sequence shut off, and its Calibrate LED flashed once per second, which means "f212 output too low." Standing right next to the subwoofer and holding the mike set off ARO's "over-signal" warning (three flashes per second). I finally got it right when I started up ARO while standing with the mike in my hand about 5' from the subwoofer. When the five test tones were followed by very low, sustained beeps and no flashing LEDs, I hurried to my listening chair, sat down, and again held the mike at ear level. The full battery of ARO tests–slowly stepped subterranean test tones followed by loud ascending sweeps–ran for two minutes, rattling everything in the room that wasn't tied down. Then the f212 fell silent, and its Calibrate LED stayed on continuously to indicate that it was done. Running the Velodyne DD-18 sweep through the right f212 alone then revealed a smoother room response, with the 50Hz peak reduced.

The Quads still muted, I muted the right f212 and unmuted the left. This sub's uncorrected room sweep had re-

Fig.1 Quad ESL-989s, no subwoofer, in-room response, 20Hz–200kHz (25dB vertical range).

Fig.2 JL Audio Fathom f212s, uncorrected in-room response (25dB vertical range). Notice 50Hz peak.

vealed a prominent suckout at 60Hz, followed by a big peak at 80Hz. When I then ran ARO, its single-band equalizer reduced the 80Hz peak significantly. I then further corrected the remaining anomaly by setting the sub's front-panel low-pass control to 40Hz.

I then unmuted all of the Bryston crossover's outputs. The resulting frequency-response curve, as measured by the Velodyne DD-18, was impressively flat from 20 to 200Hz (fig.3). Set up in this manner, the Quad-JLA system played the sustained passage for low organ pedals at the end of James Busby's performance of Herbert Howells' *Master Tallis's Testament*, from *Pipes Rhode Island* (CD, Riago 101), as a pure, clean, sustained note, without any activation of room modes. Voilà! The system had a more natural deep-bass response, with minimal excitation of room modes, while the soundstage image was significantly deeper and wider.

Music

Once level-matched to the Quad ESL-989s and automatically optimized to my room, the two Fathom f212s produced rock-solid deep bass, but no chestiness or honk with male voices. Even playing percussion and orchestral music at high levels, the low bass sounded well-defined and clean.

The f212s did best at making the deep bass of pipe-organ music sound more powerful and tuneful; as KR put it in his September 2009 column (Vol.32 No.9), these recordings now "sounded real, not merely big." Time after time, the f212s enabled my otherwise bass-shy Quads to deliver the full intensity and emotional impact of pipe organs. My system produced musically tight, tuneful, pleasing deep bass from a number of my favorite recordings: a clear reproduction of the sustained 25Hz organ note in the *Introduction* of Richard Strauss's *Also sprach Zarathustra*, performed by Erich Kunzel and the Cincinnati Pops, on *Time Warp* (CD, Telarc CD-80106); the organ's tight, thunderous low C (32Hz) at the end of Howells' *Master Tallis's Testament*,

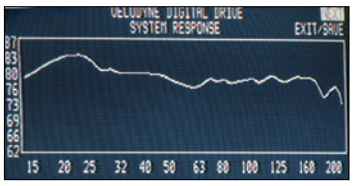


Fig.3 Quad ESL-989 in-room response with two JL Audio Fathom f212s after running ARO, and setting low-pass filter of left Fathom f212 to 40Hz (25dB vertical range).

All the set-up controls are under the grille on the front panel.

which shuddered the air in my room and rattled loose objects; the fullness and air of the 32' pedal notes in *Gnomus*, from Jean Guillou's performance of his own transcription for organ of Mussorgsky's *Pictures at an Exhibition* (CD, Dorian DOR-90117); and the massive, almost infrasonic pipe organ note that ends Timothy Seelig and the Turtle Creek Chorale's recording of John Rutter's *Lord, Make Me an Instrument of Thy Peace*, from *Requiem* (CD, Reference RR-57CD). Besides their power, the Fathom f212s played with superb pitch definition, making it possible for me to easily follow the scale passages in the first movement of Saint-Saëns' Symphony 3, "Organ," with organist Oliver Latry, Christoph Eschenbach, and the Philadelphia Orchestra (CD, Ondine ODE 1094-5).

Like the pedal notes of a pipe organ, synthesized bass notes are used in film scores to add energy, suspense, and emotional weight to intensify the ambience and atmosphere. The Fathom f212s delivered the deepest, most powerful synthesizer chords, shaking my listening room as I listened to a variety of soundtrack recordings: the otherworldly mantras of the Gyuto monks in "Sand Mandala," from Philip Glass's score for *Kundun* (CD, Nonesuch 79460-2); the thudding, ponderous footsteps of the ghosts in "First Haunting/The Swordfight," from Horner's score for *Casper* (CD, MCA MCAD-11240); the seismic tremors of deep, massive bass chords in "The Carnotaur Attack," from James Newton Howard's music for *Dinosaur* (CD, Walt Disney 50086 06727); and the growling, explosive, brain-jarring mixture of synth and percussion that drives "Assault on Ryan's House," from Horner's music for *Patriot Games* (CD, RCA 66051-2).

The Fathom f212s strongly benefited the quality, scale, detailing, and full power of orchestral music, enhancing the sound of my Quad ESL-989s in new ways. I heard, as never before, the powerful bass-drum strokes in the second movement of Stravinsky's *Le Sacre du Printemps*, as performed by Esa-Pekka Salonen and the Los Angeles Philharmonic (SACD/CD, Deutsche Grammophon 00289 477 6198-2)—each one burst into my listening room as a well-defined *thud* with a clean, defined leading edge and sudden, explosive power. On the same recording, wind instruments are mixed with the thunderous stomping of low strings used as percussion. The pulsing tempo and surging energy of this work builds through *Adoration of the Earth*, near the end of *Part 1*, then erupts into the explosive *Dance of the Earth*. The quality of sound of the Quads plus Fathoms playing these passages approached that of the more expensive Revel Ultima Salon2 full-range speakers ($22,000/pair; see my review in the June 2008 *Stereophile*, www.stereophile.com/floorloudspeakers/608revel).

THE FATHOM F212 HAS RAISED THE PERFORMANCE QUALITY OF MY AUDIO SYSTEM, AND MY ENJOYMENT OF IT, TO MUCH HIGHER LEVELS.

Jazz, rap, and world music also benefited from the Quad-JLA combo. For the first time, my ESL-989s were able to clearly depict each note of Tal Wilkenfeld's intricate and tuneful electric bass line in "Truth Be Told," from *Transformation* (CD, Goldelux Productions TAL001-2); to deliver the Insane Clown Posse's fully gut-tightening, claustrophobic bass line in "Ain't Yo Bidness," from *The Wraith* (CD, Psychopathic RIV 9912-2); and to produce the deep, room-vibrating, seismic didgeridoo notes that open "Rainforest Wonder," from David Hudson's *Didgeridoo Spirit* (CD, Indigenous Australia IA2003D).

Just as I heard with a pair of Fathom f113s, two Fathom f212s used in stereo deepened and broadened the soundstage. The f212s blended so seamlessly with my ESL-989s that the subs seemed to disappear, providing no obvious directional cues to the sources of the bass

I was hearing. The f212s increased the three-dimensionality of the soundstage, from side to side as well as from front to back. This improvement in imaging was most evident when I streamed high-resolution digital music to my combination of Bel Canto USB Link 24/96 USB-to-S/PDIF converter and Bryston BDA-1 DAC, including two files downloaded from www.HDtracks.com: a 24-bit/88.2kHz file of Beethoven's Symphony 3, "Eroica" (originally SACD/CD, Harmonia Mundi HMU 807470); and the eleven 24/96 tracks of Chesky's *Ultimate Demonstration Disc, Volume* 2 (SACD, Chesky SACD343). The first movement of the "Eroica," performed by Andrew Manze and Helsingborg Symphony, was spellbinding—I heard subtle ambience cues I usually hear only at concerts. The female vocalist on the cover of Jimi Hendrix's "Little Wing," from the Chesky sampler, had the most realistic, palpable, three-dimensional image I'd ever heard in my listening room, enveloped in a 360° space that extended well behind her.

When I played standard 16/44.1 "Red Book" CDs, both bass and imaging were excellent, though not as breathtaking as with higher-rez sources. The Quad-JLA system was able to create a sonic image of the choir that hovers, suspended and deep offstage, behind tenor José Carreras in the *Kyrie* of Ariel Ramirez's *Misa Criolla*, as conducted by José Luis Acejo (CD, Philips 420 955-2). The Fathom f212s let my Quad ESLs blossom, producing superb images and portrayals of space and revealing musical details I'd missed before. The acoustic guitar that Emmylou Harris plays softly on Daniel Lanois's "The Maker," from her *Spyboy* album (CD, Eminent 25001-2), was no longer drowned out by the drums. In "Deeper Wells" from the same album, the massive synth note that floods the entire soundstage through other audio systems was now localized at the stage's front center, the drums and vocals clearly behind it.

The Fathom f212s also greatly enhanced the Quads' dynamic range. The system played passages louder, didn't "clamp off" during passages of wide dynamic range, and delivered considerable slam. Explosive piano scales jumped out of dead-black silence in "Hand-off," from the *Sneakers* soundtrack, while Mark Flynn's kick drum exploded into my listening room at the opening of "Blizzard Limbs," from Attention Screen's *Live at Merkin Hall* (CD, Stereophile STPH018-2).

ASSOCIATED EQUIPMENT

ANALOG SOURCES Linn Sondek turntable with Lingo power supply, Linn Ittok tonearm, Spectral moving-coil cartridge; Day-Sequerra FM Reference Signature Tuner.
DIGITAL SOURCES Sony SCD-C555ES SACD/CD player, Bryston BCD-1 CD player & BDA-1 D/A converter, Bel Canto USB Link 24/96 USB-to-S/PDIF converter, ThinkPad X-61 laptop playing digital music files.
PREAMPLIFICATION Bryston BP26 preamplifier & 10B SUB electronic crossover.
POWER AMPLIFIERS Mark Levinson ML-2 (monoblocks) & No.334.
LOUDSPEAKERS Quad ESL-989, JBL 1400 Array; Velodyne DD-18 subwoofer.
CABLES Digital: Wireworld Starlight Coaxial. Interconnect: Mark Levinson Silver, Red Rose Silver One, Totem Acoustic Single-ended, Pure Silver Cable, Bryston balanced. Speaker: QED X-Tube 400, Pure Silver Cable R50 biwire double ribbon, Ultralink Excelsior 6N OFHC, Coincident Speaker Technology CST 1.
ACCESSORIES Torus RM-20 Power Isolation Unit, ATI SLM-100 Analog sound-level meter. Listening room: 26' L by 13' W by 12' H, with semi-cathedral ceiling, furnished with sound-absorbing rugs and furniture. Left wall has large bay window covered by Hunter Douglas Duette Honeycomb fabric shades. Rear of room opens through 8' by 4' doorway into 25' by 15' kitchen. —Larry Greenhill

Conclusion

Two Fathom f212 subwoofers improved the bass response of my Quad ESL-989s as no other pair of subwoofers has done before. Not only was their bass the strongest and best defined, but the f212's controls allowed me to attain the flattest frequency response between 15 and 200Hz that I've achieved in my listening room. Pipe-organ music was excellent in its power and impact, shaking the room and producing ample room lock.

TIME AFTER TIME, **THE F212S ENABLED MY OTHERWISE BASS-SHY QUADS TO DELIVER THE FULL INTENSITY** AND EMOTIONAL IMPACT OF PIPE ORGANS.

While a single Fathom f212 easily produced enough of the bass extension, pitch definition, dynamics, and power needed for pipe-organ music, two f212s let me enjoy music with the more realistic soundstage depth and three-dimensionality I hear at concerts. The larger, heavier, more expensive f212 betters the f113 with its easier acoustical setup and factory default settings, a pair of f212s delivering almost as flat a frequency-response curve as the f113 *before* ARO was run. The bass extension and tightness from two f212s were the best I've heard in my room. I'm left with a sense that the Fathom f212s' performance potential is even greater—that they're only awaiting further fine-tuning from me.

I would have preferred that JL Audio included internal high-pass filters for managing the bass, so that an external electronic crossover would not be needed when using the f212 in a two-channel audio system. Additionally, the f212's asking price should include a remote control to allow the user to adjust phase and level settings from the listening chair. If you buy a Fathom f212, I suggest that you request the dealer do the installation and setup, including moving the heavy sub into your room, then using a spectrum analyzer to match it to the rest of your system.

The Fathom f212 belongs in the top rank—Class A—of "Recommended Components." I strongly recommend JL Audio's Fathom f212 to serious music and home-theater aficionados who already have Class A–recommended full-range speakers with limited low-frequency response, such as my Quad ESLs. (Perhaps the Fathom f212 is the "better subwoofer" that, two years ago, Carl Kennedy hinted to me was on JL Audio's product horizon.) The Fathom f212 has raised the performance quality of my audio system, and my enjoyment of it, to much higher levels.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SUBWOOFER REVIEWS

JL Audio Fathom f113 powered subwoofer

LARRY GREENHILL

Carl Kennedy, director of JL Audio's Home and Professional Sales division, leaned forward and quietly asked, "Would you like to review our Fathom f113 subwoofer?"

We were standing in JL Audio's exhibit area at the 2007 Consumer Electronics Show, near a mob surrounding a display of an "exploded" f113. The sub's 13.5" cone had been pulled apart, and its huge magnet assembly, voice-coil, spider, internal amplifier, and control panel were suspended in air.

I nodded enthusiastic agreement.

"What would you think if I asked you to review a pair of f113s?"

"Let's do it!" But suddenly I was nervous about the prospect of lifting two slippery, 130-lb subwoofers. Why two?

I was visiting JL Audio's exhibit because of the praise Kal Rubinson had heaped on the Fathom f113 ($3400) in his "Music in the Round" columns of November 2006 (Vol.29 No.11) and May 2007 (Vol.30 No.5), particularly its built-in Automatic Room Optimization (ARO) function. For optimal response, a subwoofer's output should be placed in the spot that cancels out the most troublesome room modes. If that's not possible, then a subwoofer that can automatically and reliably achieve the same result by retuning itself would greatly simplify installation. Other subwoofers I have reviewed–including the Velodyne DD-18 (June 2004, Vol.27 No.6), REL Studio III (October 2004, Vol.27 No.10), and Revel Ultima Sub-30 (November 2004, Vol.27 No.11)–provide test tones and equalizer controls, but require the owner to interpret the findings and then manually make the appropriate adjustments. At the 2003 CES, Intelligent Audio presented a "concept" subwoofer system, the 1A-643 ($11,700), that could, for any room, automatically adjust the sub's directivity, crossover filter characteristics, and boundary equalization (May 2003, Vol.26 No.5, p.52). However, IA has yet to manufacture the 1A-643.

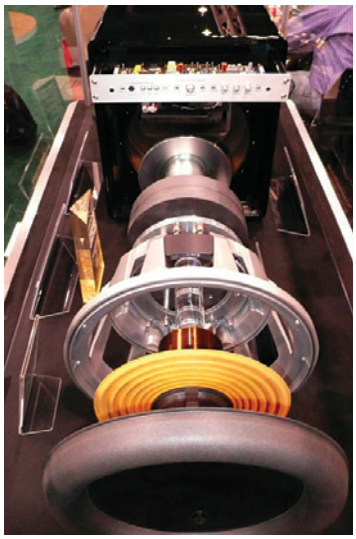
Sensing my hesitation, Kennedy explained that "Floyd Toole's work suggests that running multiple subs in one room can have beneficial effects on the room's modal response and create a larger useful listening area."

"Really? Why would two subs smooth the room response?"

"Their combined output can suppress room-mode interactions at your listening seat that would normally show up if each sub were tested independently."

Description

JL Audio started by making subwoofers exclusively for cars and boats. This may explain why their new models intended for domestic use, like the Fathom f113, are so rugged. Though nominally smaller, the f113 outweighs my Velodyne DD-18 subwoofer, with its 18" cone, by 7 lbs. More remarkable are the 4" peak–peak excursions of the f113's 13.5" woofer cone, driven by a 2.5kW class-D ampli-



fier. To handle the internal forces, the f113's sealed enclosure is constructed of 1"-thick MDF and reinforced with two donut braces parallel to the front baffle.

The f113 brochure explains how the 13.5" cone maintains control during its huge excursions through a series of proprietary JL Audio technologies: The motor system has been designed to maintain a stable magnetic field over a wide power range; an expanded Over-Roll rubber surround spans the driver's mounting flange; the Floating-Cone Attach Method of assembly ensures the proper surround geometry, to maintain voice-coil alignment at all sound levels; the W-Cone construction is said to provide torsional rigidity with minimal mass to maintain voice-coil alignment at the excursion limits; the Plateau-Reinforced Spider Attachment technique relieves stress on the spider material during peak excursions; the Elevated Frame Cooling Technology delivers cool air to the voice-coil to minimize power compression from overheating; and the Radially Cross-Drilled Pole Piece venting design increases thermal dissipation by directing a flow of air to the voice-coil former.

Other features include a front-facing control panel, a ground-lift switch to eliminate system hum pickup, and an optical interface between the unbalanced input jacks and the amplifier, also to prevent hum.

Like the Genelec HTS4B subwoofer, which I reviewed in November 2005 (Vol.28 No.11), the Fathom f113 doesn't have a high-pass filter to roll-off the bass response of the satellite speakers. This is because all surround-sound processors and receivers provide the high-pass filtration and bass management before the signal reaches the sub.

Controls in front, plugs in back

The Fathom f113's controls are arrayed on its brushed-aluminum front panel, just under the removable grille. Adjustments can thus be made without having to turn the 130-lb subwoofer around, or bend over it and figure out switch locations and settings from above. Some switches are standard: a Power switch with On, Off, and Auto Sensing positions; a Level control; and a Polarity toggle (0°/180°). The Phase control continuously adjusts phase from 0° to 280°. The Low Pass Filter Frequency control adjusts the low-pass filter point between 30 and 130Hz, and the Extremely Low Frequency Trim knob adjusts the slope of a 25Hz filter to damp any troublesome interactions the room might have with the f113 at extreme low frequencies.

The ARO calibration mike plugs into a front-panel jack, next to which are three buttons: Demo verifies the ARO functions with a 20-second sequence of demonstration tones; Defeat turns off the ARO calibration system to compare the ARO and non-ARO settings; and Calibrate initiates the ARO test tones to measure the room response and activate the automatic equalization routine.

All set-and-forget inputs are on the f113's rear panel, including two XLR connectors—one for signal input, the other to link out to a slave f113—and a pair of line-level RCA input jacks. At the bottom of the rear panel are the Master/Slave Mode selector switch, an input grounding mode switch, and an IEC socket for the detachable power cord. The class-D amplifier is attached to the inside of this panel, its rows of heatsinks lining the back.

The Fathom f113's fit'n'finish are professional and neat, and its veneer of glossy black lacquer is the equal of the most expensive audiophile subs I've reviewed for *Stereophile*. The hardware and connections are rugged, easily accessible, and look as if they'll last for years.

Setting up two Fathom f113s

Setup began when 345 lbs of Fathom f113s in their crates arrived at my door, the two cartons strapped to a huge shipping pallet. A bright orange unpacking sheet warned: "Due to the weight of the Fathom subwoofer, please exercise caution while unpacking and positioning it to prevent injury. If possible, enlist the help of a second person to facilitate the process. To minimize the risk of injury, bend your knees and lift with your legs, not your back."

Heeding this warning, I unpacked the f113s and "walked" them, one at a time, up the short flight of carpeted stairs to my listening room. I used my leg muscles to gently roll each one end over end, cloth covers securely fastened to protect its finish. Fifteen minutes later, both units sat undamaged in my listening room. After laying old towels under the f113s to protect my wood floors, I slid each sub behind one of my Quad ESL-989 speakers until there was one near each front corner of the room. The Quads were 5' from the front wall, 8' apart, 3' from the sidewalls, and slightly toed-in toward my listening chair. They were driven by Bryston 28B-SST monoblocks, whose 1kW output seemed enough to drive any speaker to good volumes in my 4056-cubic-foot, lightly damped listening room. (The room is 26' long by 13' wide by 12' high and opens onto a 25' by 15' by 8' kitchen.)

Following the directions in the JL manual, I connected the subs in Master/Slave configuration by setting the right f113 to Master, the left to Slave. Both will then reproduce the same bass signal. The full-range audio signal from my Krell KCT preamplifier was fed to a Bryston 10B-SUB electronic crossover via a pair of balanced interconnects (see reviews of the 10B-SUB in *Stereophile*, May 1994, Vol.17 No.5; and November 2005, Vol.28 No.11). I set the 10B-SUB to provide a summed R+L mono signal at its bass outputs, its right and left high-pass filter switches to 100Hz (18dB/octave), and its left channel's low-pass filter to 70Hz (18dB/octave). A short pair of balanced interconnects was run from the 10B-SUB's high outputs to the Bryston 28B-SSTs, which then drove the Quad ESL-989s. The crossover's left low-pass output was connected via a single balanced interconnect to the Master f113's input, this in turn connected to the Slave f113 by another long balanced interconnect. This passed a mono bass signal that incorporated all the Master's settings.

Matching levels: the Quads and the Fathom f113s

Installing two Fathom f113s in my system took a lot more time and careful listening than I'd anticipated. I had to adjust 10 controls on the Master f113, and 10 on the Bryston 10B-SUB electronic crossover. Once I'd listened to the two f113s in the dual-mono Master/Slave configuration, I repeated all setup steps with the two subs configured for stereo operation. For this I used two sets of tools: the signal generator, virtual spectrum analyzer, and microphone built into the Velodyne DD-18 sub; and JL Audio's own ARO system and mike. The Velodyne setup tools allowed me to match the f113s' output to those of the Quad ESL-989s. Though of course not part of JL Audio's installation package, the Velodyne system sure was helpful in completing the f113s' setup. (See my review of the Velodyne DD-18 in the June 2004 *Stereophile*, Vol.27 No.6, p.133.)

The Velodyne display system generates a sweep signal from 20 to 200Hz. Its own calibration mike captures the speakers' output and displays it on a video monitor. I placed the mike on the back of my listening chair at my seated ear height of 37" above the floor, and set the DD-18's volume control to "0" so that it would output no sound. I then keyed the Velodyne's remote to display its System Response screen on my TV

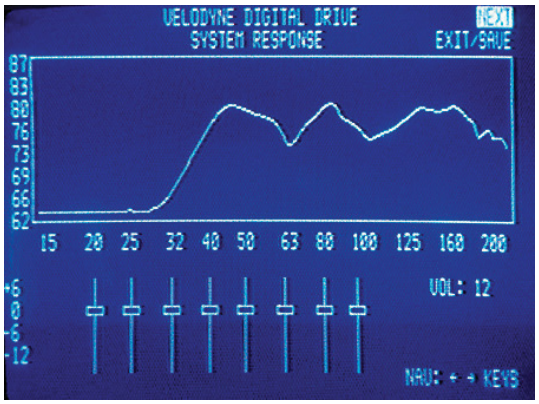


Fig.1 Quad ESL-989 frequency output, 20–200Hz, no subwoofer, in-room response (25dB vertical range).

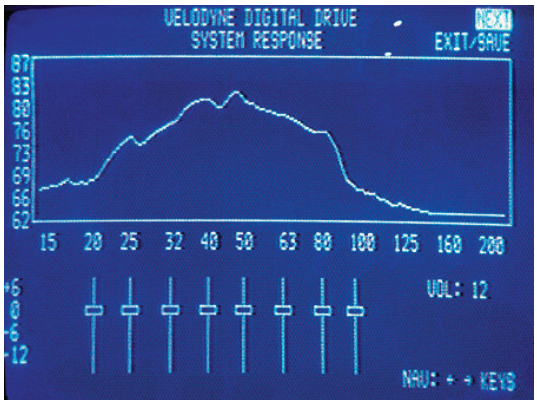


Fig.2 JL Audio Fathom f113, uncorrected output, in-room response (25dB vertical range). Note 50Hz peak.

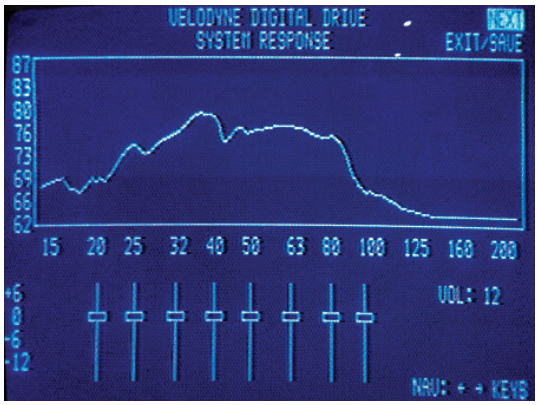


Fig.3 JL Audio Fathom f113 with ARO, in-room response (25dB vertical range). Note that 50Hz peak is flattened.

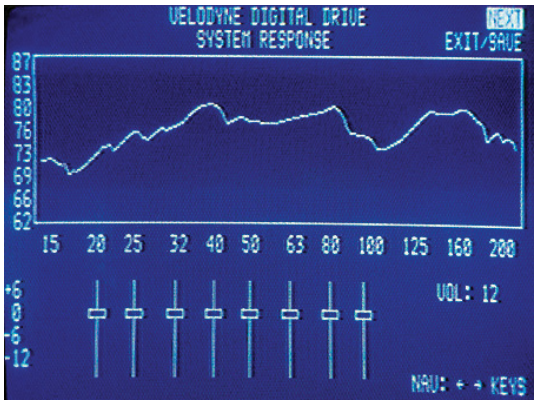


Fig.4 Quad ESL-989 output with two JL Audio Fathom f113s after running ARO, in-room response (25dB vertical range).

monitor. This automatically triggered a repeated sweep tone from the DD-18's signal generator, which was fed by a long, single-ended interconnect to my Krell preamplifier.

The Quads, driven without the f113s, showed a dip at 60Hz and peaks at 70 and 40Hz, the response falling off 10dB by 35Hz (fig.1). I then ran the same sweep sequence on the pair of f113s alone, which revealed a peak at 50Hz (fig.2).

To match levels among the speakers, I first set the right, Master f113's level at 12 o'clock, and the left, Slave unit to Reference. This produced excessive levels of bass output. To correct this, I adjusted the Master sub's level control to 9 o'clock, which produced clean bass-drum strokes without overhang on "Cosmos . . . Old Friend," from the *Sneakers* soundtrack (CD, Columbia CK 53146). I found that the 0° setting of the Polarity control produced the tightest bass-drum note. I wrote down the switch positions, then turned to the ARO room-EQ procedure.

JL Audio's Automatic Room Optimization

JL Audio's ARO tests the room, then applies single-band equalization to tune out its most prominent deviation from a linear frequency response. JL's manual recommends that the user return all of the f113's controls to their factory default settings before starting ARO. I also shut off my dishwasher and air-conditioner, which produce very-low-frequency artifacts that can hoodwink ARO. I plugged the ARO calibration mike's cable into the Master f113's control panel, punched the Calibrate button, carried the mike to my listening chair, and held it up at ear level.

Within five seconds, the f113 had begun to play rapidly stepped test tones at high volumes. Just as quickly, it stopped and flashed a warning LED to signal that the sub's output was too low to perform the ARO routine. I made several adjustments of the level control, and the 4 o'clock setting proved successful. The stepped test tones were followed by slowly stepped low-frequency test tones and loud ascending sweeps that ran for another two minutes and made every loose object in the room vibrate. The f113's Calibrate light then stayed on continuously, indicating that ARO had been completed. A sweep with the Velodyne DD-18 revealed a smoother room response, with the 50Hz peak reduced (fig.3).

I unmuted the high-pass section of the Bryston 10B-SUB crossover, returned the Master f113's level control to its 9 o'clock position, and made final adjustments to the electronic crossover settings as I watched the Velodyne sweep signal on my TV. The flattest response for the Master/Slave configuration was achieved when the Bryston 10B-SUB's filter settings were 40Hz low-pass and 100Hz high-pass, the Fathom f113's Extended Low Frequency filter was set to –3dB, and its polarity set to 0° (fig. 4).

However, the sound was still not to my liking. In Master/Slave configura-

tion, the f113s activated a powerful room mode when I played the sustained deep organ-pedal tones at the end of a recording of Herbert Howells' *Master Tallis's Testament* (CD, John Marks Records, advance sample). After consulting with JL Audio, I switched both subwoofers to Master, then set the Bryston crossover's bass output to Stereo and ran each f113 through its own separate ARO procedure. I then set their Extended Low Frequency filter controls to –6dB, to make their frequency-response curve, as displayed by the Velodyne DD-18, fall below 25Hz. Then I reset the Bryston crossover's filters to 40Hz low-pass and 70Hz high-pass.

Voilà! My system now had a more natural deep-bass response with no excitation of room modes, while the soundstage deepened and widened.

Music

Once level-matched and optimized to my room, the two Fathom f113s generated tight, deep, rock-solid bass. Nor did switching in the subs change the pitch, timbre, or quality of my Quad ESL-989s' midrange response. The resulting sound, even at high levels, was free of midbass honk, producing fast, clean, deep bass from recordings of percussion and orchestral music.

Besides the f113s' deep-bass response, what made the biggest impression on me was how two f113s deepened and widened the soundstage, greatly enhancing the Quads' imaging and portrayal of space. The Fathoms enabled the Quads to reveal instruments I hadn't heard before, such as the acoustic guitar that Emmylou Harris softly plays on the last track of *Spyboy* (CD, Eminent EM 25001-2): a show-stopping, over-the-top rendition of Daniel Lanois's "The Maker." The f113s increased the three-dimensionality of the soundstage, from back to front as well as from side to side. The massive, distorted bass notes on "Deeper Wells," also from *Spyboy,* had permeated the entire soundstage with other system setups. With the f113s those notes were still as powerful, but now were localized to the front and center of the stage, the drums and vocals behind them.

Other recordings benefited. The f113s added noticeable three-dimensionality to the Quads' reproduction of Barber's voice on *Café Blue* (CD, Premonition/Blue Note 21810 2), for example.

Another significant change was my system's increased dynamic range. The Quad electrostatics played passages louder, and didn't "clamp off" during passages of wide dynamic range. Supported by the Fathom f113s, the Quads could now handle bass peaks without overloading in my large listening room, most obviously when playing the massive deep synthesizer opening of "Deeper Wells," from *Spyboy.* Even more impressive was the f113s' ability to resolve the different tonal qualities of percussion instruments–for instance, the synthesizer and pulsatile bass drum in "Silk Road," from I Ching's *Of the Marsh and the Moon* (CD, Chesky WO144).

The f113s' slam and definition enabled my audio system to produce jaw-dropping dynamic contrasts, enhancing dynamic differences, whether the speakers were driven to lease-breaking levels or playing softly. When I listened to "The Hand-Off," from the *Sneakers* soundtrack, explosive piano scales jumped out of dead-black silence, sending chills up my spine. John Atkinson's stunning recording of Mark Flynn's kick drum in "Blizzard Limbs," from Attention Screen's *Live at Merkin Hall* (CD, Stereophile STPH018-2), exploded into the room with a punch I never heard from the Quads on their own.

The f113s enabled the Quads, which otherwise are shy of deep bass, to deliver the intensity and emotional impact of pipe-organ music, as shown best by John Marks' TL-44 Pearl Microphone recording of Howells' *Master Tallis's Testament* (see "The Fifth Element" in the June 2007 issue). The blend of Quads and Fathom f113s was seamless–all the speakers "disappeared," providing no obvious directional cues to the sources of the crushing, thunderous, tight, deep pedal tones that shuddered the air in my room and rattled any loose objects.

I also heard tight, tuneful bass from older pipe-organ recordings: the deep, rumbling pedal note that ends the selection from Elgar's *The Dream of Gerontius on Stereophile's Test CD 2* (CD, STPH004-2); the massive, almost infrasonic note that ends "Lord, Make Me an Instrument," from John Rutter's *Requiem* (CD, Reference RR-38CD); the rich tapestry of male vocals, delicate harp, and deep, weighty, sustained organ-pedal notes in *A Gaelic Blessing,* on the same disc; the solid pedal bass mixed with higher, trembling notes in Virgil Fox's performance of Bach's Toccata and Fugue in D Minor (LP, Crystal Clear CCS-7001); and the fullness and air of the 32-foot pedal pipes in *Gnomus,* from Jean Guillou's transcription for organ of Mussorgsky's *Pictures at an Exhibition* (CD, Dorian DOR-90117).

The two Fathom f113s had superb pitch definition, making it possible for me to track scales in the pedal notes played by Olivier Latry in the *poco adagio* section of the first movement of Saint-Saëns' Symphony 3, "Organ" (CD, Ondine ODE 1094-5). KR praised this recording in the May issue (p.40), noting how *his* Fathom f113 captured the power, richness, and distinctive colorations of the organ's pipes and deep pedal chords.

The Fathom f113s reproduced bass synthesizer notes with great power. In doing so, they added tremendous emotional weight, suspense, and energy to film soundtracks by magnifying ambience and atmosphere. The f113s generated tremendous suspense by mixing the deepest synthesizer growls and surges–they shook the room–with the percussion, chimes, gongs, and snare drums in "Attempt on the Royals," from the *Patriot Games* soundtrack (CD, RCA 66051-2); the sinister, shuddering, deep-bass chords in "The Carnotaur Attack," from *Dinosaur* (CD, Walt Disney 50086 06727); the disturbingly deep bass rumblings from the *Casper* soundtrack (CD, MCA MCAD 11240); the claustrophobic, gut-tightening bass line of "Ain't Yo Bidness," from Insane Clown Posse's *The Wraith* (CD, RIV 9912-2); and the rumbling synthesizer and deep, otherworldly chants of the Gyuto Monks in "Sand Mandala," from the *Kundun* soundtrack (CD, Nonesuch 79460-2).

The f113s delivered both the quality and quantity of the deepest bass notes with startling authority. I heard, better than ever before, the massive, surging bass drum and timpani in Stravinsky's *The Rite of Spring,* performed by the Minnesota Orchestra under Eiji Oue (CD, Reference RR-70CD): they were well-defined, tight, and musical. When I played David Hudson's *Didgeridoo Spirit* (CD, Indigenous Australia IA2003D), the f113s conveyed his didgeridoo's deep, room-vibrating notes without distorting the instrument's complex rattle of upper harmonics and deep resonances. And in the *Introduction* of Strauss's Also sprach *Zarathustra,* from Erich Kunzel and the Cincinnati Pops' *Time Warp* (CD, Telarc CD-80106), the f113s produced the room-shuddering, sustained, 25Hz organ note while showing no sign of distress.

The Fathoms' reproduction of double bass had ear-boggling dynamics and pace. Michael Arnopol's solo at the start of Patricia Barber's cover of "Use Me," on Companion (CD, Premonition/Blue Note 5 22963 2), mercilessly hammers away, building tension. A close-miked recording of Charlie Haden and harpist Alice Coltrane playing the duet "For Turiya," on Haden's *Closeness* (LP, A&M SP-710), also

brought out a dark sonority in the percussive snap of the bass's plucked strings against the instrument's soundboard.

Conclusion

Two JL Audio Fathom f113 subwoofers produced dramatic changes in my audio system. Never before had new audio gear reshaped the depth and width of the soundstage, doubled the dynamic range, and increased the transparency, all at the same time.

Other than the time and care needed to extract the optimal sound, did the Fathom f113 have any limitations for use in a two-channel audiophile music system? I would love to have had a remote control, to have been able to adjust the f113s' phase and level settings from my listening chair. Some may prefer a more pulsatile, concussive bass than the f113's more extended and airy variety. And the f113's lack of a built-in high-pass filter means that a high-quality, external electronic crossover, such as the Bryston 10B-SUB, will be necessary for those running two-channel, music-only systems.

The pair of Fathom f113s reminded me most of the REL Studio III subwoofer, which proved so listenable for its ability to deliver sub-bass extension and room-shaking effects. However, two 130-lb f113s are less expensive, and easier to unpack and move around, than a single 205-lb Studio III. With the Bryston 10B-SUB's high-pass filter greatly reducing the Quad ESL-989s' need to pump out bass in the 60–100Hz range, the Quads played with considerable more accuracy, without reinforcing the 50Hz room mode that is usually all too audible at my listening seat.

After listening to orchestras, soloists—even music that contained little bass—I finally understand why JL's Carl Kennedy shipped me two f113s. Sure, a single f113 could growl, rumble, and pump up my room with huge chords played on the pedals of pipe organs. But two f113s working in stereo worked perfectly with my Quads to deliver room-ambience cues that put me in the scene with the musicians.

I recommend the JL Audio Fathom f113 for Class A of *Stereophile's* "Recommended Components," and urge you to listen to a pair of them. I'm sure you'll be convinced, as I was, that the benefits to your system's soundstaging will be as impressive as they will be in the reproduction of deep bass. My entire system achieved its best performance to date, producing clean, tight, solid bass signals with excellent pitch definition. Great work, JL Audio!

Specifications

Description: Powered, sealed-box subwoofer. Drive-unit: 13.5" W7 cone with 3.5"-diameter voice-coil and 4" peak–peak excursion. Magnet weight: not specified. Low-pass filter: variable, 30–130Hz; 12dB or 24dB/octave. High-pass filter: not supplied. Inputs: stereo or mono balanced Neutrix (single XLR connector), stereo or mono unbalanced (single RCA connector). Input modes: Master, Slave. Outputs: single balanced Neutrix (XLR) to additional subwoofer. Input sensitivity: not specified. Input impedance: not specified. Controls: Power (On, Off, Automatic Signal Sensing), Automatic Room Optimization (Demo, Defeat, Calibrate), Level (Reference, Variable), Master Level (variable, full mute to +15dB over reference), Lights (On, Off, Dim); Low Pass filter (–12dB, –24dB, Off), Low Pass Frequency, Extreme Low Frequency (ELF) Trim (variable, –12dB to +3dB at 25Hz), Polarity (0°/180°), Phase (variable, 0–280°, at 80Hz). Amplifier: class-D, 2500W RMS short-term. Frequency response: –3dB at 20Hz, –6dB at 130Hz. Distortion: not specified. Automatic Room Optimization (ARO), defeatable; calibration microphone included. Maximum peak SPL output at 50Hz: 120dB at <10% THD at 1m, input 0.25V input, level control set to maximum.

Dimensions: 19.75" (502mm) H by 16.5" (419mm) W by 19.25" (489mm) D. Weight: 130 lbs (59kg).

Finishes: High-gloss black; Satin black, add $100.

Serial Numbers Of Units Reviewed: 00351SFD, 00353SFD.

Approximate number of dealers: 200. Warranty: 2 years parts & labor, nontransferable.

Manufacturer: JL Audio, Inc., 10369 North Commerce Parkway, Miramar, FL 33025-3962. Tel: (954) 443-1100. Fax: (954) 443-1111. Web: www.jlaudio.com.

Associated Equipment

Analog Sources: Linn Sondek LP12 turntable with Lingo power supply, Linn Ittok tonearm, Spectral moving-coil cartridge; Day-Sequerra Classic FM tuner.

Digital Sources: Krell KRC-28 CD player, Sony SCD-C555ES SACD/CD player, Slim Devices SqueezeBox network music player, Bryston B-100DA D/A converter.

Preamplification: VTL TL-6.5, Krell KCT preamplifiers; Bryston 10B-SUB electronic crossover.

Power Amplifiers: Mark Levinson No.334, Krell FPB-600c, VTL S-400; Bryston 28B-SST monoblocks.

Loudspeakers: Quad ESL-989; Velodyne DD-18, REL Studio III subwoofers.

Cables: Digital: Wireworld Starlight coaxial. Interconnect: Red Rose Silver One, Krell CAST, Mark Levinson Silver single-ended, Bryston balanced. Speaker: Mark Levinson HFC-10, Pure Silver Cable (PSC) R50 biwire double ribbon, Ultralink Excelsior 6N OFHC, Coincident Speaker Technology CST 1.

Accessories: Torus Power Isolation Unit A024-ACB-A1AB (120V, 20A max, 2400VA, 10 outlet); ATI SLM-100 analog sound-level meter.—Larry Greenhill


JL AUDIO
FATHOM v2
Digital Automatic Room Optimization
Power
off | on | auto
calibration mic.
defeat
calibrate
Input Mode
master | slave
Level Mode
ref. | variable
0
-∞
Master Level
Lights
off | dim | on

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SUBWOOFER REVIEWS

JL Audio Fathom f113 Subwoofer

By Thomas J. Norton

***JL AUDIO** IS BEST KNOWN FOR ITS CAR AUDIO PRODUCTS.* But when it first showed its line of home subwoofers at a CEDIA Expo a couple of years back everyone was blown away—in more ways than one.

The JL f113 is the middleman in the company's three-model range of home subwoofers. The flagship Gotham g213 sports two 13.5" drivers and 3800-Watts of short-term amplification. The fact that it sits nearly 3 feet high and weighs 320 lbs. probably explains why it hasn't appeared in many in-home product reviews!

The two JL Fathom subwoofers are a bit more manageable. The largest of them, the $3,300 f113, is the subject for today.

Inside and Outside

Small subwoofers are in. If you can fit 20Hz into a cabinet the size of a Costco- sized box of Cheerios, the world will beat a path to your door.

But the laws of physics are pretty inflexible when it comes to subwoofers. You want response to 20Hz or lower, low distortion, and high output? Choose two.

The JL f113 doesn't follow the Cheerios route, though as subwoofers go it isn't overly large. But at 126 lbs., it's surprisingly heavy. The heart of the system is a single 13.5", long excursion, high displacement woofer. Its sealed box enclosure is available in either black (gloss) or black (satin).

JL specifies the onboard amp as "2500 watts RMS short-term." I'm not sure what "RMS short-term" means exactly. An EE will tell you that there's no such thing as RMS *power*. What RMS power usually means, in ad copy-speak, is continuous power. But if it's continuous it can't be "short-term." But enough ranting. 2600 watts are a lotta juice any way you rate them.

The overall package is rated down to 19Hz (-3dB). And while the maximum output level of the sub is not specified, in my 3200 cubic foot home theater room it will play far louder than I would ever have any reason or desire to listen. And I don't play movies at polite levels.

The f113 offers the usual set of controls, with a few additional twists. They are all located in front, and easily accessible. The expected controls include Power (off, on, auto—the latter turns the sub on or off in the presence or absence of an active signal), Level (with a bypass switch), Lights (off, dim, and on), LP filter (selects a 12dB or 24dB/octave slope for the sub's onboard low pass crossover or turns it off if you want to control the response from your AV receiver or pre-pro), and LP freq (chooses crossover points from 30-130Hz if the low pass filter is turned on).

There are also separate phase (0-280 degrees) and polarity (0 and 180 degree) controls, which is an unusual combination in that we generally see one or the other, not both. The phase control is said to affect the timing of the subwoofer relative to the rest of the speakers in the system, but that would appear to be similar in function to the "distance" setup control offered by all AV receivers and pre-pros.

One unusual feature is a single band parametric equalizer, though similar subwoofer adjustments are becoming more common in other subs as well. Here it's called the Automatic Room Optimization system, or A.R.O. You plug in the included microphone, position it at the prime listening position, and push a button. From that point on it automatically generates test tones, performs the calibration to determine the room's most prominent peak, and dials-in appropriate equalization to tune it out.

There is no manual EQ option. The only manual response adjustment (apart from tweaks to the crossover frequency, phase, polarity and level settings) is an E.L.F. Trim control. It provides a cut of up to 12dB, or a boost of up to 3dB, at 25Hz.

Around back are both single-ended and balanced inputs, plus a "slave" output for daisy chaining an additional sub. There are also two input mode switches: a Slave/Master switch to designate whether the sub is the slave or master in such a daisy chain, and a "Grounded/Isolation" switch that provides two options to eliminate hum (it operates only on the single-ended inputs).

The AC input is an IEC-style connector for a detachable power cord. JL Audio recommends a separate AC circuit for the f113, but I experienced no problems using it into the single 120V circuit that services my home theater system. But much of my system is plugged (though not the f113) into an APC S15 battery backup system that can compensate for the sort of current sags that a power hungry product can draw, at least during peak demands.

Pump It Up

Great subwoofers can put you at a loss for words—but I think I can find a few. The Fathom f113 did everything I asked of it. Yes, you can spend more. But it's unlikely to buy you better performance unless you need immense output in a much larger room than mine. Yes, you can buy two cheaper subs for the same price and perhaps get the more uniform overall room response than the right placement of multiple subs can give you. But those cheaper subs are unlikely to perform as well, overall, as the JL. And yes, some subs now offer even more sophisticated room optimization features and multiple bands of equalization. But you can still find more expensive subs that offer none.

Subwoofers are indispensable for many movies, but you could argue that you don't really need one for music if you have front speakers with adequate bottom end extension. With the f113 you'll hear the difference on anything but the widest range main speakers. Add it to most systems and the differences will not be subtle. Bass drums have greater percussive impact. Live instruments with any pretension of a low end (piano, bass guitar, double bass, etc.) have real weight and strength. Synthesizer can alarm you enough to make you question the structural integrity of your house. And you'll be stalking room rattles you didn't know you had.

You might even start collecting organ recordings. Take for example that famous audiophile potboiler, organist Jean Guile playing an organ version of Mussorgsky's "Pictures at an Exhibition." Not every track here is a bottom growler, but the JL brings gut-wrenching power to the deepest of them.

It will also do so at very high levels. I really never pushed the JL to its limits—I know my own—but it would keep up with anything at any level I could stand. Head bangers with estate-sized listening spaces might not be fully satisfied, but they could always buy several f113s and sprinkle them inconspicuously around the manse.

The JL wasn't undone by any music I could throw at it. But it did take some work to arrive at that happy place. The A.R.O system helped some, but didn't make as much of a difference as I expected. The E.L.F. Trim, however, was effective in cutting back a bit on the extreme bottom end (around 25Hz, as mentioned above). Without seriously impacting the low frequency power of the subwoofer, the E.L.F. largely eliminated a somewhat bloated quality that had been distracting on some program material. But getting it right wasn't a quick procedure; sometimes an adjustment of less than one-eighth of a turn made a noticeable difference.

Once everything was dialed in there was no sense that the subwoofer was even working unless appropriately deep program material came along. Then it was hard not to notice. But if I hadn't known that a sub was in the system I would simply have assumed that the main speakers had *really* great bass.

That was true of movies even more than music. I pulled out some of my favorite movie bass moments, and was never disappointed. The sandstorm in the remake of *Flight of the Phoenix* rumbled powerfully. The opening scenes in *Hellboy* went down to, well, you know where.

Comparisons

One problem with subjective subwoofer reviews is that no matter how good the results appear, you're always left wondering if subwoofer A or B might actually do better. To find out, I set up a direct AB test with my long-term reference sub: a comparably priced Revel B15.

The astute reader may now ask, "How can you AB subwoofers?" Good question. The response from a subwoofer is very position dependent, and two of them can't occupy the same space at the same time. If the results show a dramatic difference between the two subs, you might be able to make some tentative conclusions. But even then, it's mandatory that you run the test twice, as I did, swapping the locations of the two subs from the first run to the second.

Both subs were located side-by-side and close to the front right corner of the room, with the JL first occupying the position closest to the wall and the Revel moved to that location in the second round. The levels were matched as closely as possible and readjusted after the swap. The JL's A.R.O. was recalibrated in the repeat. The Revel's three-band parametric EQ was left untouched on both runs from its original setting, which had long since been calibrated for that approximate location. While the fixed EQ setting I chose for the Revel might appear to give a small advantage to the JL, in practice it did not appear to do so. The subwoofer feed was run through a simple passive switcher, which allowed the signal to be switched from one sub to the other from the listening position

The result was *very* close. In fact, which sub I preferred at a given moment appeared to depend more on the conditions of the setup and the program material than on the overall characteristics of either subwoofer. In one setup, for example, the JL clearly had more measured in-room output than the Revel on the third-octave band centered at 20Hz, but at 25Hz the situation was reversed. The same reversal also occurred at 40Hz and 50Hz. So while the JL often sounded more impressive with this setup on the deepest organ notes, the Revel crept ahead on higher organ notes and kick drum.

None of these differences were audibly startling, and many required very close listening to hear. They would have been impossible to pin down in any sort of a listening test short of a direct AB.

The one constant was that the JL appeared to extend a few cycles lower into the deepest bass than the Revel. But on music that never dug this low into the bottom end, the Revel would sometimes win out.

It was the same story on soundtracks. With the cannon fire in *Master and Commander: The Far Side of the World* the score was even for the most part. But in one scene (early on in the film as the H.M.S. Surprise escapes into the fog and the French privateer Acheron angles away to continue a blind, broadside barrage) the JL produced more of the deep bass rumble that accompanied each explosive shot.

In chapter 12 of *Happy Feet* there's a huge avalanche, culminating in huge chunks of ice, and a giant crane, plunging into the sea. At first both subs were impressive, but the JL, while dredging deeper, lacked the clarity of the Revel. In my preferred movie seating position, which differs slightly from the position I use for two-channel audio, the bass is stronger and measurably elevated with both subs. This did not bother the Revel, but a bit of bloat crept back into the JL's sound from this seat.

The solution was to return the JL's E.L.F. control to its default zero position and instead back off a few dB on the overall subwoofer level. Now the JL shook the room more aggressively than the Revel without any negative side effects. The same was true in chapters 21 (the fight with the killer whales) and 22 (the rumble of the ship's screw).

Ultimately, however, which sub I preferred continued to depend on the program material, where I sat, the overall setup, and the playback level. Both the JL and the Revel are superb products, with the Revel nudging ahead in bass clarity and definition, and the JL capable of a more powerful and gut-wrenching bottom end. The Revel's three-band EQ is definitely an advantage over the JL for setup in difficult rooms, but the JL nevertheless offers more adjustability than most of its competition.

Conclusions

The JL Audio f113 is an impressive performer, capable of filling the average room—and clearly a larger than average room, as well—with deep, powerful, high level bass. It also blended superbly with the rest of my system. And when there was little or no bass in the program material, it stayed out of the way and didn't intrude on the sound. JL Audio has brought in a winner for its first line of home subwoofers.

Highs

- Strong, deep bass for medium to large rooms
- Good adjustability
- Vault-like build quality

Lows

- Not large, but heavy and difficult to move around
- Single band parametric EQ may not be sufficient for optimum results in all rooms
- Priced competitvely, but still expensive

JL Audio Fathom f113 Subwoofer Review System

Sources
Samsung BD-P1200 Blu-ray player
Pioneer DV-79AVi DVD player
AV Receiver/Pre Pro
Denon AVR-4306
Amplifier
Anthem P5
Speakers
Revel Concerta F12 (L/R front), C12 (center), S12 (L/R surrounds)
Cables
Monster M2.2 speaker cables
Monster THX speaker cables (surrounds)
Cardas Audio Hexlink Five Series (L/C/R) and XLO VDO (surrounds and sub) interconnects
Kimber AGDL digital coaxial
Miscellaneous
APC S15 UPS and power conditioner

Subwoofer Specifications

Encloser type: sealed
Driver: Single 13.5-inch (nominal diameter)
Frequency response: 1-=200Hz (+1dB / -3dB)
Effective piston area: 107.35 sq. in
Effective displacement: 386 cu. in
Amplifier power: 2500-Watts RMS short-term
Dimensions: 19.75" x 16.5" x 19.25" (HxWxD)
Weight: 130 lbs
Cabinet finishes: High Gloss Black or Satin Black

Manufacturer
JL Audio
www.jlaudio.com
(954) 443-1100


FATHOM® v2
tal Automatic Room Optimization
demo
defeat
calibrate
Input Mode
master | slave
Level Mode
ref. | variable
0
−∞
max
Master Level
Lights
off | dim | on
LP Filter
off | 12dB | 24dB
50
70
90
40
100
30
115
130
LP freq. (Hz)
-3
0
+1
-8
+2
-12
+3
e.l.f. trim (dB)
90
45

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SUBWOOFER REVIEWS

Subwoofers

By Mark Fleischmann

JL Audio Fathom f113 Subwoofer

BRAINS, BRAWN, *AND BOMBAST.*

"Eventually," one of my musical idols once told me in an interview, "everything you said you'd never do, you do. If you're lucky, you get to shake hands with Arnold Schwarzenegger." Those words of Robyn Hitchcock came back to me as I wrestled the JL Audio Fathom f113 subwoofer out of its carton. (The Governator himself couldn't weigh much more.) I've told other manufacturers that I just couldn't see myself working up a thousand-plus-word lather about a sub. What was it about this one that made me change my mind?

This was a romance that began on the road—another rule broken, but just this once, I swear. JL Audio's demonstration at CEDIA 2006 was a major highlight of the custom-install trade show. There were many demos, but so few of them were this good. Powerful, controlled bass poured into the darkened cube of the demo room, and I was instantly addicted. Part of the effect may have stemmed from the Fathom's room-equalization circuit. The Fathom is among the few subs smart enough to identify, then notch out the largest peak in response at the listening position, the culprit that leads to bloated bass in many real-life rooms. But how would that EQ-controlled monster behave in my room? I had to find out.

Heavyweight Champion

Weighing 130 pounds, the Fathom f113 is unusually heavy for a sub just 19 inches tall. Its hefty weight reflects the thorough bracing of the 0.75-inch-thick sealed enclosure and the mass of the active components. It's also the first sub I've ever reviewed with a front-firing 13.5-inch driver—designed and built in Florida. The driver is constructed with a tough cast-aluminum-alloy basket (as opposed to stamped steel) and dual-stacked magnets to propel it into action. A gloss-black finish, with nine coats of polyester, gleamed on the rounded edges of my review sample.

As a subwoofer specialist, JL Audio has patented seven different aspects of their woofer design (and one aspect of their amp design). The former include a W-shaped cone assembly, novel methods of attaching the cone, a new way of attaching the surround to the driver, and various ways of cooling the voice coil. I've deliberately soft-focused these descriptions, but you can find more detailed information, including QuickTime videos, at www.jlaudio.com.

In the simplest terms, you can visualize a subwoofer driver (or any conventional speaker driver) as a movable cone sitting inside a metal basket where a coil of wire energized by your amplifier is bathed in a magnetic field, which remorselessly pushes and pulls the cone back and forth, producing sound. To visualize the Fathom driver, picture an unusually elongated basket with the cone making excursions of up to 4 inches peak to peak. Living, as I do, in a 96-year-old building full of crumbling plaster, I decided to file this under "interesting." ("When the building crumbles on you, that means it likes you," I tell guests.) But I did have fun crawling up to the sub and feeling the driver beat against my fingertips.

On the back are some monstrous heat fins for the massive 2,500-watt-rated Class D amplifier. They are pleasantly rounded, in contrast to the sharp heatsinks on conventional subs, which slash your hands if you make one false move. There are jacks for balanced XLR or unbalanced RCA connections. A master/slave switch lets you chain additional subs. There's also an isolated/grounded switch. The isolated position generated a loud hum in my system; in the grounded position, the hum went away.

Pop off the grille, and a strip of controls appears along the top edge. JL was merciful to place them on the

front panel; it spared me lots of undignified, red-faced squatting. The power, volume, and polarity controls would surprise no one—except for the name of the polarity control, which most subs would call "phase." JL saves that name for a continuously variable phase control. This gives you the choice of completely inverting the driver's in/out movements, using the polarity switch, or making more subtle incremental adjustments, using the phase knob. Getting the phase right lets the sub's output reach your ears at the same time as other higher sounds, helping to make as seamless a transition as possible from sub to satellites.

The low-pass filter has a wide range of adjustment from 30 to 130 hertz. It's switchable, and I switched it off. I used my receiver's 80-Hz sub crossover. The slope is adjustable from 12 to 24 decibels. An "e.l.f." (extreme low frequency) trim knob acts as a single-band equalizer at 25 Hz, allowing for adjustments of +3/–12 dB.

A jack at the far left accepts the microphone for JL's Automatic Room Optimization (A.R.O.) system. Plug in the mike, set it up at the listening position, and get ready to calibrate. I used a tripod in the listening position, although the JL manual says it's fine to sit and hold the mike.

The A.R.O. spits out bass test tones, performs an initial measurement, and prompts you to raise or lower the master volume (if needed). Then it spends a minute emitting more tones. There's nothing above 100 Hz and therefore nothing irritating to listen to—unless the sub's fearsome ultra-low-frequency response rattles nearby objects. It found a couple of loud, buzzy, previously undiscovered sympathetic resonances in my room.

And then you're done. JL provides an A.R.O. defeat switch for easy before-and-after comparisons. In my room, the difference was subtle, except with very-high-volume peaks during action movies. Much of the time, I let the sub play flat to level the playing field with other products I've used in the past. There's also a demo button that plays the test tones without affecting the A.R.O. adjustments, which should provide endless amusement for friends and consternation for household pets.

Low-Frequency Commentary

Pulse is a computer-beasty horror movie with a third-rate script cowritten by Wes Craven. The soundtrack is more interesting for its sound effects than for its humdrum dialogue. The low-frequency-effects channel commented on the action in several interesting ways, from the muffled drumbeat of doom in the opening frames, to the specific, sharp thuds that punctuate a hanging, to the low rumble that accompanies an unhappy character's mask of misery, to the low-frequency oscillating heartbeat that fills the finale's haunted server room. By making subtle (and sometimes not-so-subtle) distinctions between these disparate effects, the JL sub served the story well. If you snipped out all the dialogue, the remainder would be an impressively caliginous piece of music—my favorite kind.

Thunder! Earthquake! Stormy seas! Superman Returns got off to a roaring start. But the plot eventually replaced these found-in-nature sounds with more amorphous representations of major geological activity and superhuman feats. Here, the JL sub was finicky, rendering the natural sounds naturalistically (whether they were recorded from nature or not) while defocusing the dull, generic action-movie roar that came later.

Satisfied that the e110 was plenty of sub for my room, system, and somewhat restrained level preferences, I went looking for its limits. I found them a good bit beyond what I'd ordinarily ask. Playing a bass-heavy track like Sade's "Cherish the Day" a good 6 dB louder than I'd usually require, I sensed (rather than heard) a coarsening of the kick-drum thud. I had to power down my power amp and audition the subwoofer naked to hear it hitting its limits with a 50-Hz thwack, and even then the JL's combination of large, clean output and well-engineered "smart-limiting" kept it from producing any of the ruder noises I've heard from plenty of subs (including some quite expensive ones) under similar duress.

Bernstein, Richter, and Biggs

The third movement of Beethoven's Fifth Symphony has some of the most muscular bass-violin passages in classical music, as the Fathom quickly reminded me. The scherzo segues without pause into the finale, the most manic of Beethoven symphony movements. Leonard Bernstein made things even more interesting by downplaying some of the violin and woodwind parts to give the sawing basses more elbow room in the soundstage. His complete cycle with the New York Philharmonic is a great bargain in Sony Classical's budget-priced wallet box (if you avoid the overpriced import). The 20-bit remastering of the 1963 recording maintains the forward string sound familiar from vinyl recordings of the NYP but stops short of excessive sizzle.

My exploration of Sviatoslav Richter continued with the Russian's live 1987 recording of the Brahms Piano Sonatas Nos. 1 and 2. Normally, I disdain all-digital DDD discs, especially ones from the 1980s, the medieval era of digital recording. But, while the timbre was dark and the soundfield airless—especially for a live recording—Richter's mind-blowing dynamic power and microdynamic subtlety came through. His lofty overview of the piece and his perfect technical mastery of the instrument worked in tandem with the subwoofer's ability to produce sharp attacks and precise pitches with minimal overhang. His phrasing was the pianistic equivalent of great Shakespearean acting, and his rhythmic control was so absolute, it was like returning to infancy and being scooped up by a huge adult. Perhaps Governor Schwarzenegger.

Pipe-organ recordings are a staple of subwoofer reviews. My favorite test material is E. Power Biggs' performance of Bach's Passacaglia and Fugue in C Minor, a piece built around a powerful bass part. With the Fathom blasting away, I could just about visualize the organist's feet moving around the pedals. It didn't begin to defocus until it reached the top of its range. At normal volumes, your ears would give up long before the sub.◆

The Family Man and the Knight

You can cue up pretty much anything in the Bob Marley discography and get great bass-guitar playing from Aston "Family Man" Barrett, paired with his brother Carlton's mighty kick drum. "Positive Vibration," from the Wailers' Rastaman Vibration, did not disappoint. It's a new feeling, indeed; a great sub is enough to turn anyone into a fan of Family Man's full, rounded tone and loping beat. This is the beat that has moved millions, and, with a great sub, it gets even better.

If you don't particularly think of Paul McCartney as a bass virtuoso, try imagining Abbey Road's "Come Together" without the bass. It leaped out of the Fathom like a dancing ape. Ringo's brilliant drum part—almost all bass drum and tom-toms, with just a little fat snare on the chorus—was equally brilliant and well served by the JL's low-frequency oomph.

Some unusual bass lines came out of Trey Gunn's bass when he played with King Crimson. Originally a bassist who switched to guitar, he went back to bass for the band's 2000-to-'03 lineup—but without using a bass guitar. Instead, he used the Warr touch guitar to tap out the band's bottom-end architecture. The Level Five live EP showed off the Fathom's ability to navigate a wide range of bass pitches without unduly favoring any one. Instead, I heard only Gunn's scrupulous touch, and I continued to hear it even when he played at a low volume.

Danny Thompson plays string bass in Richard Thompson's backing band and more than kept up with the jangling electric guitar on the live Semi-Detached Mock Tudor CD. Thompson started "Sibella" at a lower level than the original studio track, giving Danny plenty of space. The bassist added woody sonorities to "Uninhabited Man" and soloed all over "Razor Dance." Here, the JL sub delivered his swinging attacks and steel-fingered modulations with a tight focus that was faithful to both his playing and the instrument's essential character. At no point did it sound like an electric bass, even when he played conventional rock bass lines.

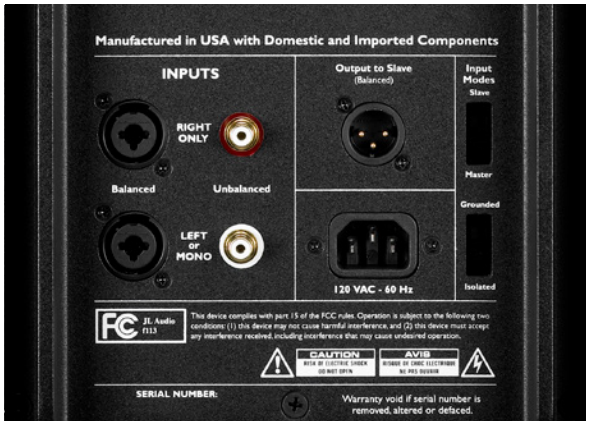
Living with the Fathom was like chatting with the smartest and most agreeable guest at a party full of blowhards. Action movies lost that one-note quality that so often leads to irritation and boredom. The bottom end of pretty much any kind of music took on more definition and shape, even with the lowest string of the lowest instrument. Suddenly relieved of bad-sub stress, I became less stressed. I felt a renewed appreciation for artists and engineers because I could hear more of what they'd intended me to hear. Over time, my expectations changed. I now have a broader frame of reference for what a sub can accomplish. This will not make subsequent reviewing any easier. Couldn't I just stay here forever?

** Audio editor Mark Fleischmann is also the author of the annually updated book Practical Home Theater* (www.quietriverpress.com).

Highlights

- Years of research and numerous patents produce deep, clean bass
- Automatic Room Optimization compensates for bass-bloating room flaws
- Larger radiating area than that of a typical 12-inch sub

JL Audio Fathom f113 Subwoofer At A Glance & Ratings



Subwoofer: Fathom f113
Connections: Line-level, RCA, XLR, or 0.25-inch TRS
Enclosure Type: Sealed
Woofer (size in inches, type):13.5, mineral-filled polypropylene cone
Power Rating (watts): 2,500 RMS
Crossover Bypass: Yes
Dimensions (H x W x D, inches): 19.5 x 16.5 x 19.75
Weight (pounds): 130

These listings are based on the manufacturer's stated specs; the HT Labs box below indicates the gear's performance on our test bench.

Ratings: JL Audio Fathom f113 Subwoofer

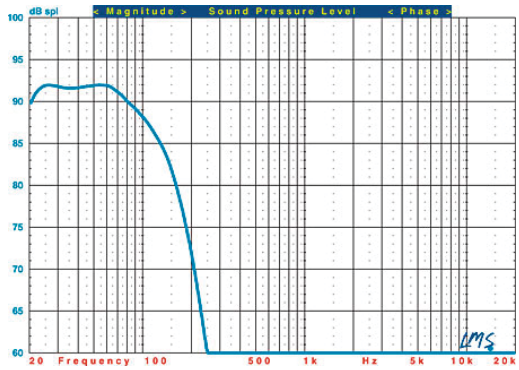
Build Quality: 98
• Has a thick, heavy, well-braced, sealed enclosure
• Driver sits in tough cast-aluminum-alloy basket
Value: 95
• Design includes numerous patented technologies
• Room equalization is worth paying more for when it works like this

Features: 99
• Monstrous 2,500-watt amp; unique 13.5-inch driver
• Room EQ tames room-induced bass bloat
Performance: 97
• Deep low-frequency extension
• Clean attack with virtually no overhang
• Dynamically powerful in all situations
Ergonomics: 90
• Controls on the front make for easy tweaks
• Room EQ is a nearly idiot-proof, one-button process
Overall Rating: 96
Like a master chocolatier perfecting his fondue fountain, JL Audio brings the zeal of a specialist to the problems of sub design. Unique manufacturing techniques and the always useful advantage of room EQ help this sub earn its four-figure price tag (and then some).

General Information
Fathom f113 Subwoofer

JL Audio
(954) 443-1100
www.jlaudio.com

HT Labs Measures:
JL Audio Fathom f113 Subwoofer



This graph shows the quasi-anechoic (employing close-miking of the woofer) frequency response of the Fathom f113 subwoofer (blue trace).

The Fathom f113's close-miked response, normalized to the level at 80 hertz, indicates that the lower –3-decibel point is at 18 Hz and the –6-dB point is at 17 Hz. The upper –3-dB point is at 111 Hz with the LP Filter switch set to off. Please note that the response begins to fall off above 60 Hz and therefore is not flat at our reference frequency of 80 Hz. When normalized to the level at 60 Hz, the lower –3-dB point is at 20 Hz, the –6-dB point is at 18 Hz, and the upper –3-dB point is at 93 Hz. —*MJP*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Cover Story

JL Audio Fathom f113 Subwoofer

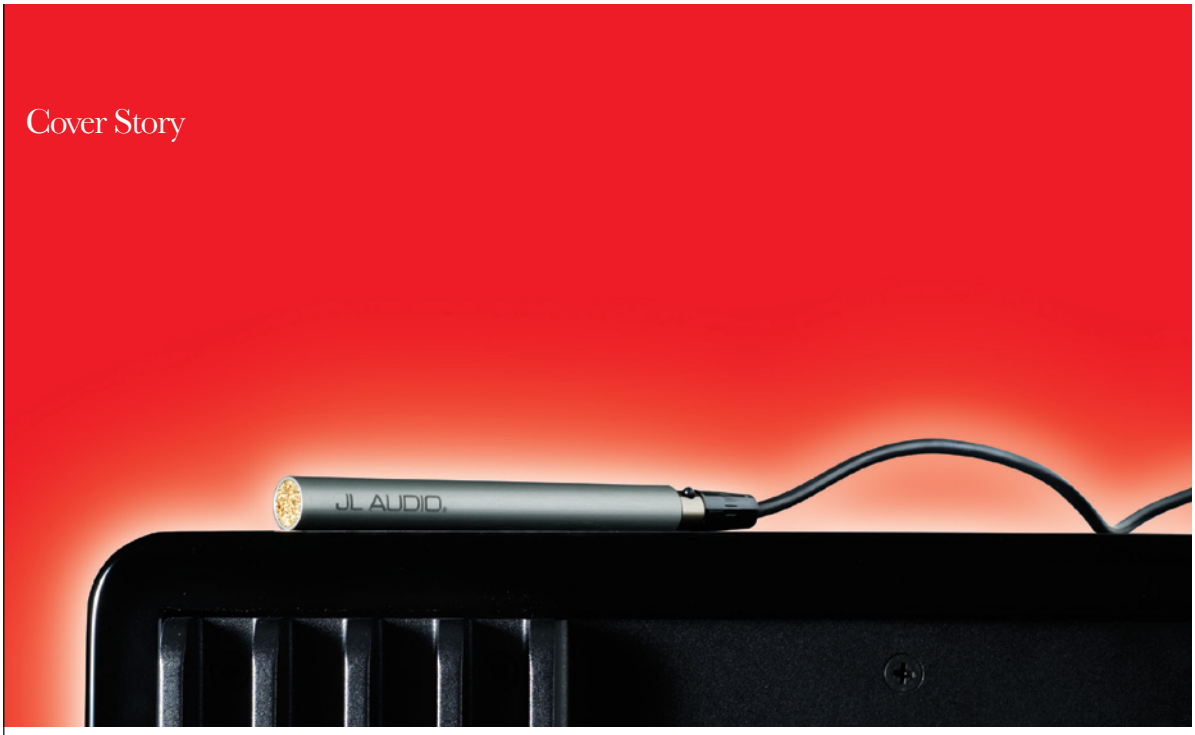
Robert Harley

Can a car-audio company raise the bar in high-end subwoofer performance?

I first encountered JL Audio at the 2005 CEDIA Expo—the event this respected manufacturer of car-audio speakers and electronics used to launch its entry into the high-end-audio and home-theater markets. To say I walked into JL Audio's press conference and demo with trepidation would be an understatement. I had visions of one-note-bass "boom" trucks playing rap music at knee-weakening sound-pressure levels. However, once the press was seated, and after a short introduction, the demo began . . . with a piano trio track!

Although JL did subsequently demonstrate its subwoofer's brute-force ability to move large amounts of air at very low frequencies, its surprising choice of gentle piano-trio music to start the demo spoke volumes about the company's aesthetic.

Can a company whose entire experience is limited to mobile audio bring something new to the high-end audio arena? The surprising answer is that the mobile environment presents a rigorous set of engineering challenges and requires build-quality standards that make it the ideal proving ground for developing high-performance audio products. With 15 years of experience building *ne plus ultra* car-audio gear, JL has accumulated some serious engineering chops, particularly in designing low-frequency drivers. Take the 13.5" woofer used in the Fathom f113 reviewed here. In development for seven years, the unit is the subject of 7 granted patents. (It's



surprising that a basic technology that's been around for decades—the moving-coil driver—could be the subject of 7 new patents.) This driver is a serious piece of engineering, with great attention paid to every element of its design and construction (see sidebar). The abuses routinely inflicted on woofers in the car-audio world led JL to develop design techniques that would make its drivers virtually indestructible. Moreover, I've recently discovered that at the upper end of car audio, enthusiasts share an aesthetic similar to that of the audiophile (forget about boom cars—I'm talking about a completely different mindset).

JL Audio's single-minded pursuit of creating high-performance woofers has given the company a different perspective on creating a home subwoofer for high-end music reproduction.

Overview

The Fathom f113 looks at first glance like an ordinary subwoofer—a 13.5" cone driver in a sealed rectangular black box with front-panel controls and rear-panel heatsinks and input jacks. The unit accepts unbalanced input signals on RCA jacks or balanced signals on Neutrik XLR/.25" TRS jacks. Multiple Fathoms can be connected together, with one acting as "master" and the others as "slaves." The front-panel controls provide a wide range of useful adjustments. In addition to the usual level, phase, and crossover-frequency controls, the Fathom's low-pass filter slope is adjustable (off, 12dB/octave, 24dB/octave) to help achieve a better blend between the subwoofer and the main speakers. The ELF Trim (Extreme Low Frequency) control boosts or cuts the signal at 25Hz (up to 12dB of cut, up to 3dB of boost), to prevent room overload at the lowest frequencies.

The driver was in development for seven years and is the subject of 7 granted patents

Note that the Fathom doesn't incorporate a high-pass filter for rolling off bass to your main speakers. You can high-pass-filter your main speakers with the bass-management settings in a home-theater controller, buy an external line-level crossover, or simply run the main speakers full-range and match the Fathom's crossover frequency and low-pass filter slope to your main speaker's natural roll-off. This latter method, however, doesn't provide the dynamic-range advantage conferred by keeping low bass out of your main speakers. Keep in mind that a subwoofer crossover must be designed and built to the same standards as a high-end preamplifier—any less and the sound from the main speakers will be compromised.

The Fathom incorporates the JL-developed ARO (Automatic Room Optimization) program that smoothes the worst room-induced frequency-response peak. You simply connect the supplied calibration microphone and push the ARO Calibrate button. The Fathom outputs a series of tones that are picked up by the microphone and analyzed. An algorithm creates a filter to attenuate the room's most severe peak. Although ARO doesn't address frequency-response dips (the correction of which could be a prescription for driver or amplifier overload), it does have adjustable bandwidth to more precisely tame the peak. Note that ARO calculates the filter parameters digitally, but then engages an analog filter in the signal path.

The rear panel and dual heatsinks (which are, thankfully, rounded rather than sharp-edged) are made from a single piece of metal. Even when driven very hard for long periods, the heatsinks were never warm to the touch.

The overall level of design and execution is first-rate. I got the feeling that the Fathom's designers did everything they could to build in quality rather than look for corners to cut. In addition, the owner's manual is a model of clarity, and even the shipping carton is well thought out.

Listening

I evaluated the Fathom f113 in three widely varying system configurations, each designed to reveal different aspects of the unit's performance. I first mated the f113 with a pair of Totem Arro speakers, using the crossover in an Arcam AV9 controller to high-pass-filter the Arro and low-pass-filter the Fathom. Mating a 13.5" woofer with the Arro, a 4.5" two-way, is perhaps not a real-world scenario, but one that nonetheless reveals much about a subwoofer's upper-bass performance.

I'm accustomed to setting a subwoofer's crossover frequency as low as possible under the assumption that subwoofers are simply not as good reproducers of midbass and upper bass as are main speakers. The higher the frequency a subwoofer is asked to reproduce, the greater the potential for hearing the sub's weaknesses, as well as its inability to blend smoothly with the main speakers. A low crossover frequency minimizes the sub's potential to do more harm than good. To my surprise, the Fathom blended extremely well with the Arro, augmenting the Arro's limited bass extension without calling attention to the fact that the midbass and lower bass were being reproduced by a radically different transducer than was the upper bass. In fact, with some careful tweaking (see the accompanying subwoofer primer this issue for set-up techniques), I'd go so far as to call the match nearly "seamless."

I had a real sense of hearing musical pitches, dynamic expression, and timbre, not of a cone flapping back and forth and of air chuffing through a port

What this configuration would not reveal, however, was the Fathom's capacity for delivering high levels of low bass; the Arro's woofer bottomed out well before the Fathom approached its limits (even with a very high crossover frequency). So I added the Fathom to the mighty Wilson MAXX 2 loudspeakers, crossing the system over at 50Hz. In effect, the Fathom replaced the Wilson's bass below 50 cycles. This was a different kind of torture test for a subwoofer; the MAXX 2 has an extraordinary bottom end in every respect: dynamic coherence, transient fidelity, extension, ability to play loudly without strain, and resolution of bass detail. Nonetheless, adding the Fathom didn't degrade the MAXX 2's bottom end and even extended the system's response in the very lowest registers (kick drum and pipe organ territory). I was also able to achieve a continuous transition between the MAXX 2 and the Fathom; the bottom-end sounded "of a piece," rather than as if a weight were dragging down the rest of the spectrum. I also ran the MAXX 2s full-range, with the Fathom coming in at 30Hz with the steepest possible low-pass roll-off (24dB/octave).

The Fathom's remarkable ability to blend with such diverse loudspeakers is, I believe, due to this subwoofer's tremendous agility, high resolution, and superb transient behavior. Forget the stereotypes of subwoofers—slow, turgid, thick, sounding like a disconnected boom underneath the music; the Fathom can

Transient Performance Über Alles

Subwoofer designers face tradeoffs when choosing how to load the woofer into the cabinet. As explained in the accompanying technical primer (page 74), reflex-loading (a ported enclosure) offers the advantages of deeper low-frequency extension, greater acoustic output, and increased sensitivity compared with infinite-baffle loading (a sealed enclosure). But those advantages come at a price, primarily poorer transient behavior and the potential for hearing air flow through the port ("chuffing").

Although a few reflex-loaded designs have managed to avoid these problems, the majority of ported woofers sound sluggish and thick, which has led to a general mistrust of subwoofers among audiophiles.

I'm convinced that a woofer's transient performance is of utmost importance to good sound. It is, I believe, a key determinant of whether or not the woofer blends with the main speakers and if the woofer sounds "musical." This transient behavior takes two forms: How quickly the woofer responds to a steep waveform, and how quickly the woofer stops after the signal has stopped. If the transient's leading edge isn't reproduced with the same speed (rise time) as the input signal, music's dynamic impact is reduced, and so is the musician's expression. Similarly, if the woofer keeps moving after the transient has decayed (overhang), we hear this as a turgid thickness. When audiophiles talk of a woofer that sounds "slow," overhang is usually the culprit.

"It's perhaps no coincidence that the Fathom's designers chose to load the driver in a sealed, rather than a ported, enclosure"

A slow rise time and woofer overhang smear music's dynamic structure, spreading out the energy of transient signals over time. Dynamics are a vital component of musical expression, and any alteration of this component of the sound affects our perception of the musician's expression. As I noted in the review, poor bottom-end dynamic performance tends to make a tight rhythm section (on music with bass guitar and a drum kit) sound less tight, lessens the feeling of the band being "in the pocket," and robs the music of its propulsive drive. It's easy to envision how a smearing of transient energy would lead to those perceptions. More specifically, however, poor dynamic behavior alters the relationship between the kick drum and bass guitar—the two instruments that form the rhythmic and tonal bedrock of much music. The kick drum's dynamics should "jump out" sharply over the bass guitar rather than sounding like a dull thud underneath it.

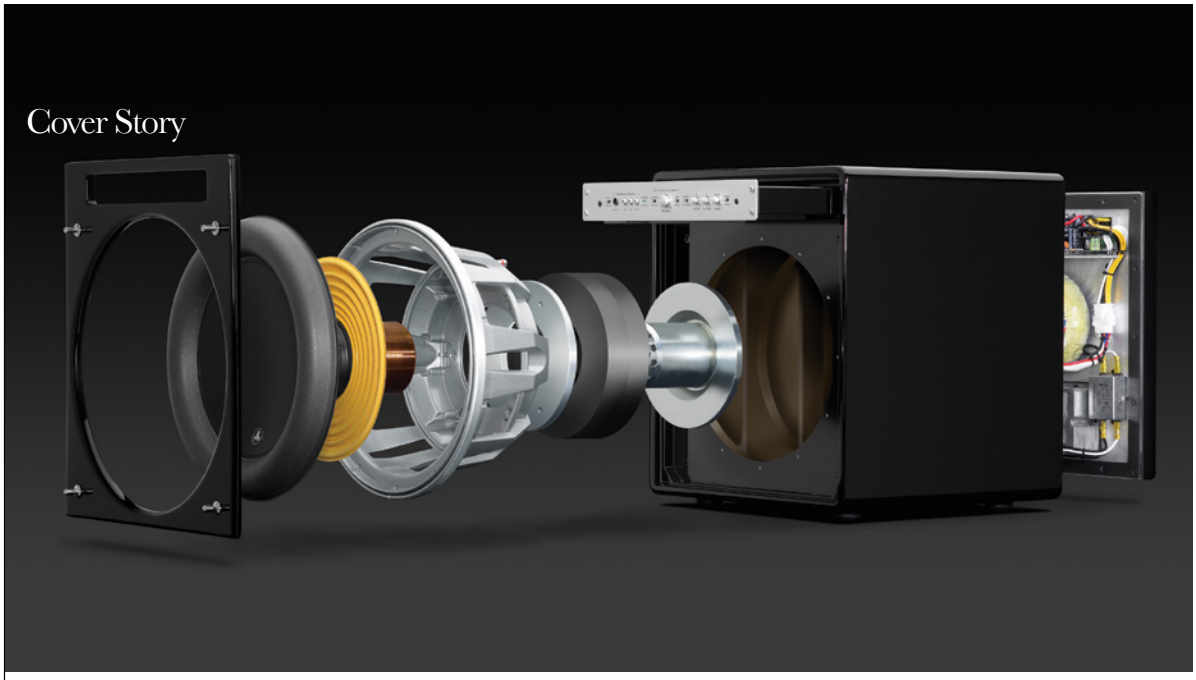
This is yet another example of how poorer technical performance in a playback system translates directly to a dilution of musical expression and to decreased listener involvement.

What makes the Fathom f113 special, in my view, is its combination of outstanding transient fidelity with brute-force power. It's perhaps no coincidence that the Fathom's designers chose to load the driver in a sealed, rather than a ported, enclosure. RH

turn on a dime, starting and stopping with surprising precision. In the midbass the Fathom sounded like a fast and tight 8" driver in a sealed enclosure; in the low bass, the sub delivered the full measure of this extraordinary driver's capacity for deep extension and explosive dynamics. It was the best of both worlds—finesse backed up with seemingly unlimited depth and impact.

These qualities were abundantly apparent in the Fathom's reproduction of kick drum. How a subwoofer portrays kick drum separates those few subs worth owning from the vast field of also-rans. All subs will deliver a thump in the bottom end, but only a select few will reproduce the sudden impact and equally sudden decay of well-recorded kick drum. If a sub doesn't faithfully reproduce this dynamic envelope, the result is an apparent slowing of the rhythm, which fosters the interesting perception that the band is a little lazy or sloppy. But when the kick drum, working with the bass guitar to form the music's rhythmic and tonal foundation, is reproduced with lifelike transient fidelity, music takes on a much more viscerally engaging and upbeat quality. This is particularly true of drummers with rhythmically interesting right feet—Terry Bozzio (Zappa), Peter Erskine (Weather Report, Steps Ahead), Mike Portnoy (Dream Theater), Rod Morgenstein (Dixie Dregs), Steve Gadd (everyone), and Jack DeJohnette, for examples. Drummers who use double bass drums present an even greater challenge to subwoofers; the closely spaced transient attacks tend to smear into each other if there's even a hint of driver overhang. The Fathom was remarkable in this regard, presenting clearly differentiated attacks even on fast double-bass-drum rolls.

I was also greatly impressed by the Fathom's resolution of pitch, subtle dynamic shadings, and inner detail. Acoustic bass was rendered with a wealth of information about the mechanism creating the sound, from the attack of the string to the sonorous resonance of the instrument's body. Passages in which the bass doubles another instrument playing the melody were particularly revealing of the Fathom's tight dynamic rendering and precise pitch articulation. Electric bass had a satisfying "purring" quality, coupled with a weighty warmth, that made



music physically as well as emotionally engaging. All of the Fathom's qualities were on display when I listened to bassist Abraham Laboriel's terrific playing on Victor Feldman's *Audiophile* on the JVC XRCD label. (*Audiophile* is a compilation of two direct-to-disc LPs originally released on the Nautilus label and engineered by the great Alan Sides.)

Throughout the audition, I had a real sense of hearing musical pitches, dynamic expression, and timbre—not of a cone flapping back and forth and of air chuffing through a port. In their quest to deliver low bass from small cabinets, many ported woofers end up overlaying the music with artifacts such as port noise, driver overhang (the woofer continues moving after the drive signal has stopped), and the sound of the cone moving in the box. The Fathom didn't impose a sound of its own, which is why it was so revealing of bottom-end detail.

Although capable of great delicacy and nuance, the Fathom had a bottom-end solidity, power, and iron-fisted control in the lowermost octave that was jaw-dropping. The f113 can move a large amount of air at very low frequencies (-3dB at 17Hz) with effortless ease and a feeling of anchored solidity. Even when reproducing the most demanding music at very high volume, the Fathom never gave any indication that it was nearing its limit.

The final system configuration in which I auditioned the Fathom was in a multichannel system that included the MAXX 2s, a Wilson WATCH center channel, four Revel Embrace surround speakers, an Arcam AV9 controller, Anthem P5 multichannel power amp (on the surrounds), and a Mark Levinson No.436 3-channel amp driving the front three speakers. I used a pair of f113s, with one acting as "master" and the other as "slave." The Fathoms were driven by the AV9's subwoofer output jack, which is a monophonic mix of the Low Frequency Effects (LFE) channel and the bass from any other channel designated as "Small" in the AV9's set-up menu.

I might be in the minority of audiophiles, but I greatly enjoy musical performances on DVD in multichannel sound. A great example of the Fathom's ability to keep up rhythmically and convey a tight, high-energy performance with a rock-solid bottom end is on the John Mayall & The Bluesbreakers DVD of a concert performance on Mayall's 70th birthday (which reunites Mayall with

Technology

The Fathom's heart is the so-called "W7" driver that is the subject of 14 granted patents. This driver has been in use in somewhat different forms in high-end car audio; the version in the Fathom f113 is one specially designed for home use. The 70-pound unit is massively overbuilt and designed to withstand the rigors and abuse of the mobile-audio world. This includes a massive magnet structure, huge voice coil, an unheard-of excursion of four inches, and several techniques to get heat out of the voice coil (excessive heat is the most common cause of driver failure). Several of JL's 7 patents on the driver are aimed at improving transient response. These include the "DMA-Optimized Motor Structure" that addresses how the motor system behaves under dynamic conditions. The goal is to keep the magnetic forces linear throughout the voice coil's entire excursion range. The "W-Cone" patent was granted for the cone-construction technique, which reportedly combines extremely high stiffness with low mass. Another patent is on a discrete control circuit within the Class D amplifier that reportedly increases the amplifier's damping factor and thus its transient performance. The amplifier, rated at 2500W RMS, was designed specifically for the W7 woofer's characteristics.

The enclosure is made from CNC-cut MDF and braced internally. JL Audio manufactures the driver in-house at its 140,000-square-foot Florida factory. RH

Eric Clapton after 34 years). This band's sharp-as-a-tack rhythm section was well served by the Fathom's combination of agility, quickness, and center-of-the-earth solidity. These guys have been playing together for years (the drummer has been in the band for 17 years), and the Fathom locked right into the groove along with the band.

Finally, I drove the Fathom to over-the-top sound-pressure levels with the most demanding bass content I could find and still didn't hear any signs of distress. Watching the driver during this exercise suggested that the cone didn't reach its maximum 4" excursion.

Conclusion

The JL Audio Fathom f113 is, in my experience, among the top echelon of subwoofers. In fact, I can't name a better-sounding subwoofer that I've had in my system. The Fathom not only sounds great, it's exquisitely engineered and built to an extremely high standard.

I walked into JL Audio's 2005 press conference and demo skeptical that a car-audio company could compete at the top level of high-end audio—and with its first home product, no less. But based on what I heard at the demo, I walked out enough of a believer to ask for a review sample. I'm glad I put aside my prejudices, because the Fathom f113 is not only one of the world's great subwoofers, but at $3200 an amazing bargain.

Specs & Pricing

JL AUDIO
10369 North Commerce Parkway
Miramar, Florida 33025
(954) 443-1100
jlaudio.com

Driver: 13.5" (1)
Enclosure: Sealed
Integral amplifier power: 2500W RMS (short term)
Frequency response: 17–200Hz, +1, –3dB
Inputs: Stereo or mono RCA; stereo or mono XLR; XLR master output and XLR slave input
Dimensions: 18" x 15" x 18.63"
Weight: 130 lbs.
Finishes: Satin black or gloss black

JL Audio's Carl Kennedy talks with Robert Harley

Robert Harley: Tell us about JL Audio and how the company made the leap from mobile audio to high-end home products.

Carl Kennedy: JL Audio began initially as a manufacturer of regionally distributed speakers in 1977 and grew to a large-scale mobile audio manufacturer in 1989. The company was founded by Lucio Proni, who continues to be our CEO and Chief Design Engineer. About ten years ago he brought in Andy Oxenhorn as partner and President. Andy came from MB Quart. In 2003, I was approached by them to develop a home and professional division for JL Audio. I was working for Miller and Kreisel at the time. We had a similar vision for what we wanted to do in home audio and hit it off right away.

RH: I've come to learn that JL Audio is highly regarded in high-end car audio.

CK: My forte isn't car audio, but I've learned an awful lot in the past few years I've been with the company. JL Audio is in the first position in mobile audio. Lucio's woofer designs set us apart since the company's inception. After he developed the W6 and W7 drivers, however, that put us over the top. A few years ago we broke into the amplifier business and now have the number-one selling amplifier in the market. So we had woofers, amplifiers, and enclosures—it made sense to put it all together into a home product.

RH: I tend to associate mobile audio with loud one-note bass, not with subtlety, refinement, and other qualities that audiophiles value.

CK: Well, you and I are cut from the same cloth, because I came to my initial meeting with JL Audio from a similar position. I was a bit skeptical as to what we might have in common, but as it turns out, you need to study any topic before reaching your conclusions. I heard some

of the show cars that we have here, and learned of the work that JL Audio had been involved in, and was pleasantly surprised. At the top of the quality heap, so to speak, car-audio guys have the same set of criteria that we would use in an audiophile or professional application. At the core of it is sonic excellence. I also saw immediately that JL had an advantage in developing high-end audio and professional products because we have a demanding fan base. That is, the products not only have to sound great, but they must be able to withstand a tremendous amount of abuse on a daily basis. That caused JL to address certain design parameters—excursion and thermal management, for examples—in a way that set the bar higher. When we approached making a home subwoofer, we had extremely high expectations and standards of performance for the product.

One of the things that Lucio, Andy, and I agreed on when I joined the company was that we wouldn't enter a category unless we felt we could create something significantly superior to the best products available. We didn't want to make "me-too" products that just tried to take market share from another manufacturer. Unless we could build the best product of its kind, we weren't interested in doing it. We also felt that a whole generation of young people who revered JL Audio was growing up, settling down, having families, and looking for home audio. We had a built-in market of people who appreciated what we'd done in car audio and who would respond to our home products. This expands upon the traditional home-audio or home-theater customer base and allows us to drive new customers into our dealers' showrooms.

RH: Let's talk a little bit more about the driver, because that's really the heart of the f113.

CK: There are seven issued patents on it and it took a total of seven years to design and build. It revolutionized the mobile audio industry prior to our development of home products. We make different variations on it for different applications. The total peak-to-peak excursion is 4", and it's linear for about two-and-a-half inches of excursion. It has an enormous excursion "comfort zone," if you will. It has a patented over-roll design for the surround that accommodates the huge excursion and doesn't waste any cone area. It's not obvious with regard to the Fathom, because there's a beauty panel that covers it, but if you were to look behind the beauty panel on the front of the subwoofer you'd see actually that there's no exposed mounting hardware. The surround ends in a small, aluminum extrusion, and that's all you see of the speaker, and by bringing the surround to the outside edge of the frame, we actually get much more cone area than a conventionally designed driver of thirteen-and-a-half inches. In fact the surface area is comparable to that of a typical fifteen-inch driver.

RH: These are the "OverRoll Surround" and "Floating Cone Attached Method" patents?

CK: Yes. We also have several patents that apply to cooling. One is a cross-drilled pole piece, and then there's the whole method of getting convection currents to flow through the driver and draw heat away from the voice coil. These ideas come from the requirements of the car-audio world. If you can't make a driver that will withstand daily abuse, you'll die from warranty claims or from a fan base that's lost faith in you. We had to develop techniques that would not only make the driver perform better, but that would also be virtually indestructible under the harshest of conditions.

RH: Why choose a sealed enclosure for the driver?

CK: There are a number of loading permutations—sealed, ported, transmission line, horn—and most of them can perform well if done correctly, with the key word being "correctly." We could have built an outstanding ported enclosure if size were not an issue. But a sealed enclosure allows us to equalize the driver for flat response, to tailor the roll-off, and to eliminate the possibility of port noise. We built the first prototype with flat response to 5Hz, just to see what we could accomplish. I knew from my background as a mastering engineer that 5Hz extension wasn't going to be useable, nor would it be appropriate. We spent the better part of a year tailoring exactly where to start rolling off and at what rate. The shape of the roll-off is quite thoroughly calculated.

RH: How big is JL Audio in terms of employees and factory space?

CK: We have about 300 full-time employees. We're based in Miramar, Florida, where we have about 140,000 square feet of manufacturing and office space. We have a facility in Phoenix with another 40,000 square feet where the electronics development and West Coast distribution takes place, plus development labs in Atlanta and in Geneva, Switzerland. One-hundred percent of our R&D, assembly, testing, and quality-assurance processes are done in-house. We make our own drivers and have a complete CNC machine shop and woodworking facility to make cabinets.

Carl Kennedy is Director of Home and Professional Products at JL Audio. Carl has been a professional studio and touring musician since 1968, playing drums, guitar, keyboards, and bass. In 1972 he began designing large-format loudspeaker systems, primarily for sound reinforcement and studio monitoring. He has also worked as a multitrack recording engineer, studio designer, record producer, mastering engineer, and sound designer. He has worked with such clients as Emerson, Lake, and Palmer, Scorpions, Sony Pictures, Paramount Pictures, MGM, Sony Records, Charisma Records, and Polygram Records.

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MUSIC IN THE ROUND

Music in the Round #21

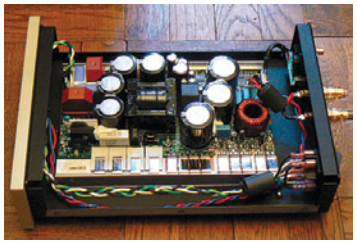
KALMAN RUBINSON

I've been tweaking my weekend multichannel system for years, but with my city system I've kinda faked it. I now realize that I listen more actively to the weekend system, and not only because that's when I have the time for it—the sound of that system is simply more engaging and psychologically immersive. So, with the growth of my library of SACD and DVD-Audio recordings to almost half the size of my CD collection, I told my wife that it was time to transform of "our" city stereo rig into a full-blown multichannel system.

I added a third B&W 802D loudspeaker for the center channel and a pair of B&W 804S speakers for the surrounds to the two 802Ds already in place. A B&W HTM1D for the center channel would have been a nearly perfect timbral match for the 802Ds—it has the identical FST Kevlar midrange cone and diamond tweeter mounted in an identical Marlan head. It is also one of the very few dedicated center speakers that doesn't suffer from the horizontal-plane dispersion problems endemic to center-channels with the common midrange-tweeter-midrange driver array. However, the only stand B&W makes for the HTM1D places it below a video screen; at that height, the tweeter would be some 10" lower than those of the flanking 802Ds. Because the only video component of this audio system is a 5" LCD used to read DVD-A menus, the use of a third 802D in the center was a no-brainer.

I wanted full-range speakers for the rear channels because my analog multichannel preamp has no bass management, my handy-dandy Outlaw ICBM bass manager is not quite transparent enough, and the bass-management systems in most disc players are rudimentary. In addition, my wife hates little speakers on stands, they take up as much floor space as much bigger speakers, but two more 802Ds aimed at me from either side of the couch would have been physically intimidating. The tweeter of the 40"-high 804S is at my ear level when I sit on the listening couch, and the speaker has the same footprint as the smaller 805S. I found that somehow appealing.

My main source is a PL-1a universal player from Bel Canto Design, which feeds a Bel Canto Pre6 preamplifier, whose output is distributed to three Bel Canto e.One REF1000 500W monoblock amps ($1995 each)—one adjacent to each of the three 802Ds—and an e.One S300 150Wpc two-channel amp ($1395) for the two 804Ss. There's also a Sony XA-777ES SACD player, and a Classé CA-3200 power amp is an alternative for the front-channel power. (My FM tuner, turntable, and phono preamp have no relevance for multichannel, but they do add to my musical experiences.)



These new Bel Canto digital amps, the successors to their Tripath-based eVo amps, are based on Bang & Olufsen's ICEPower modules. Bel Canto is not the only company offering ICE-based switching amplifiers, but their track record is good and these models suited my setup. The B&O modules come pretty complete, so you might expect that all ICE-based amps would be fairly similar (and be pretty disappointed that you can't buy them for DIY projects). However, some companies simply pop them into a box, while others, such as Bel Canto, pay attention to the details. For example, Bel Canto treats the B&O's 1000ASP module in the REF1000 with a fair amount of viscous goop to damp and stabilize the large capacitors, relays, and other components on the printed circuit board. The entire chassis is much like a well-dressed brick: compact and solid.

In addition, Bel Canto adds hefty ferrite RF filters on the speaker and AC leads. Switching amps have a reputation for generating high-frequency and radio-frequency noise, so I think this is as much to keep the e.One amps from affecting other components in the system and/or on the same AC line as it is to wall off the amps from external nasties. Bel Canto's John Stronczer tells me they use WBT and Neutrik connectors, internal balanced and shielded small-signal wiring of pure professional-grade copper, and single-crystal speaker wire.

Bel Canto conservatively rates the e.One REF1000 at >1000W into 4 ohms or >500W into 8 ohms, both somewhat within the specs for the OEM ICE module. The two-channel e.One S300, based on the 200ASC ICE module, is rated at 300Wpc into 4 ohms or 150Wpc into 8 ohms. The amps' other specs, available at Bel Canto's website, are equally impressive. The REF1000 has selectable RCA and XLR inputs, multiway speaker terminals, an IEC power socket and power switch on the rear panel, and a tiny blue

LED on the front. The S300 looks identical except that it has twice the number of input and output connectors.

Though I never found that the e.One amps added noise to the system, I ran them from the same Environmental Potentials EP-2450 that I used with the eVos, which also provides a single front-panel power switch for the three front-channel amps. In addition, I placed each amp on a Bright Star Audio IsoRock 6.3S platform and encased it in a Little Rock 6.3S. The Bright Stars fit the e.One amps perfectly, sandwiching them between layers of damped, shielded isolators but leaving their front and rear panels exposed. These amps, even under stress, generated no significant heat, so ventilation wasn't an issue. Fully clad in Bright Star Rocks, the e.Ones seemed almost glued to the floor, and their already thick skins responded even less to a rap from my knuckles than they had pre-Rocks. How much such blandishments contribute to performance is debatable, but with this belt-and-suspenders setup, the e.Ones were in as optimal an environment as possible.

Over the years, as my power megalomania has advanced, the space behind the speakers has filled with various hulking amps. No more. Despite their power, the Bel Canto e.Ones are so small and understated that they almost disappeared. Each REF1000 hid behind its associated 802D, and the S300 hid under the lowest shelf of the rack. It was almost like having powered speakers. I can easily imagine them fitting into the bases of the B&W 802Ds.

The sound, however, was hard to ignore. The little REF1000 bricks delivered all the clean power the big speakers could want, and the S300 was perfect for the 804S, even when they were used as a stereo pair. The bass was very tight and well delineated, without any power limitations aside from my own tolerance and a consideration for my neighbors. My current favorite demo is Penderecki's Credo, on a Polskie Radio SACD (see sidebar, "Recordings in the Round"). This Andrew Lipinski production places the listener in a tall, deep space with lots of long reverberation. Nonetheless, I could discern that the distances between the soloists, choir, and orchestra all fit within the boundaries of that space. Powerful tuttis, some discreetly supported by organ, were gripping, but the quieter parts were no less so, and all were realistically balanced. The e.One amps (and the B&Ws) were up to the task—they were even livelier and more transparent than their predecessors, with no vestige of HF grain to mar the awesome illusion.

Compared with nonswitching amps such as Classé's Omicron or CA-3200, the Bel Canto e.Ones could seem somewhat "literal" in terms of their tightly defined two-channel soundstage, but that disappeared in multichannel use. In fact, even in stereo, I could make a case for the Bel Cantos being more truthful than the Classés, if less luxurious.

For solo voice in multichannel, I always return to the late Lorraine Hunt Lieberson's *Handel Arias* (SACD, Avie AVI-30). Here, the smaller orchestra is in an acoustically drier space than the Penderecki, and Lieberson's glorious mezzo-soprano eerily appears right at the center speaker. There's a sense of personal communication with her that is the product of her art as well as of the uncanny simulation of a real event, something that is less convincing in two channels.

Stuff like Ladysmith Black Mambazo's *Long Walk to Freedom* (Telarc SACD-63109) and the Blue Man Group's *The Complex* (DTS Entertainment 69286-01120-9-4) are great and immersive, but how could they not be? Overall, though, these sounded equally good, if not equally loud, on my more modest weekend system.

Separate multichannel components—especially monoblock amps—require a lot of space, and are difficult to fit into a domestic environment not exclusively devoted to audio. The Bel Canto e.One amps make it possible to have multiple dedicated amps without compromise in sound quality or power output. My power-amp megalomania will probably never be cured, but the REF1000s make it less overt. That is, until I turn them on.

Outed!

"Why, Kal, you're a bass freak!" proclaimed Michael Fremer when he heard my choice of demo discs at a press presentation. Why not? Why is deep, solid bass the province only of rock, club music, ambient, and electronica? Cellos and double basses make extended low-frequency response de rigueur for classical music—even chamber music. Piano and organ require it. Having the fullest extension of the frequency spectrum has been essential for me to experience the satisfaction of hearing *all* of the music.

In fact, back in the late 1950s, when I made the transition from mono to stereo, I had what might then have passed for a subwoofer. I couldn't fit into my room two big River Edge bass-reflex speakers, with their 12" RCA coaxial drive-units, so I had to find another way. That led to a pair of Weathers Book Speakers, each the size and shape of a *Columbia Desk Encyclopedia* and containing a single 2.5" by 10" driver—and putting out, of course, no bass. I added a 2-cubic-foot bass-reflex enclosure, with a University C-12SW 12" dual-voice-coil woofer; with some inductors and capacitors, this became the common woofer for the system. Was it good? Doubtful. The woofer box was too small, and the crossover was straight from the textbook. Still, it was stereo, I was into calypso, and it worked for me.

Since then, from the home-built Altec A-7s of grad-school days, through homemade transmission lines, and on to the B&W 802Ds I now enjoy, almost all of my speakers have been full-size floorstanders. Somewhere in there I had a lingering affair with a pair of Stax ELS-F81s; they were beguiling, but drove me in desperation toward the bottom end, and to one ill-mated subwoofer after another. Nothing worked right—not until the rise of home theater and multichannel sound did the science of subwoofing flower.

Here's why. Multichannel sound means multiple speakers, and few domestic living spaces or spouses will tolerate five Wilson Audio Alexandrias. More significant, placement for best imaging and tonal balance is rarely ever in agreement with placement for best bass extension and linearity. With only two speakers, we have a shot at finding an effective compromise, but placing five or six speakers introduces many more choices—and many more ways to screw up the conflict between imaging and bass.

Now, you might think that three B&W 802Ds supplemented by a pair of 804S surrounds would need no help at the bottom end. Not so. John Atkinson's measurements of the 802D (see *Stereophile*, December 2005) show its woofer response rolling off below 30Hz, while its port response is pretty flat down to 20Hz. The woofer response, however, also is responsible for the broad elevation in the 100Hz area, and I co-opted the Speaker Boundary Interference Response (SBIR) to help. I moved the left and right 802Ds laterally rather farther apart than I had used for two-channel listening. When I toed-in the speakers a bit more toward me and put some absorption panels on the sidewalls, the imaging became spacious and precise, with or without the center speaker. With the woofers now only 34" from the sidewalls, SBIR reduces the in-room output to about 100Hz, flattening the overall response. The bass is cleaner and unbloated, though at the price of weight at

the very bottom.

Enter JL Audio's Fathom f113 powered subwoofer. Over the years, I've heard lots of bass from JL Audio—sometimes voluntarily, as I cruised the mobile-audio venues at a Consumer Electronics Show, and sometimes involuntarily, as annoying motorists cruised by my house—so I knew at least something of JLA's reputation when I heard their demo at the 2005 CEDIA Expo. It was the most intense bass experience I ever hope to have. Five subs were used in the small demo room, and the sound was palpable and apparently limitless. I immediately requested a Fathom f113 ($3300 in gloss black) for review. There is a larger JLA sub, the Gotham g213, but I would have been unable to move or accommodate it. In retrospect, the smaller Fathom f112 might have been all I needed.

The staff in my building is pretty easygoing, and probably gossips about the big boxes that stream in and out of our apartment, but this was the first time they actually said anything. The f113's relatively small carton was described as "really heavy," and at 130 lbs, it really is. JLA's unpacking instructions are to be taken literally: Get help, and unpack near the final location. The f113 is a sealed, beautiful near-cube with squishy, sticky feet. Moving it is like moving a Sumo wrestler.

I had to rely on JLA's guidelines to position the f113—moving it around the room, or even placing it temporarily at the listening position while I took measurements, were out. It went against the front wall, behind the B&W 802Ds and about a third of the way from the corner. (Someday, someone will combine an auto-EQ sub and a Roomba so that the sub can find its own damn sweet spot!) Between the large heatsinks on the back (needed for the 2500W peak output of the f113's class-D amplifier) are XLR inputs/output (for daisy-chaining another sub), RCA inputs, switches for master/slave and grounding, and the IEC power connector. All the user controls are on the front, under the removable grille—you don't need to move the sub to adjust its settings. Thank goodness.

Pop off the f113's very sturdy grille and you'll see a 13" drive-unit with a prominent OverRoll surround that permits huge cone excursions. This sophisticated driver, made by JLA, has many other specializations for this application that are described on the JLA website. The panel across the top of the front provides all the controls and connections for JLA's Automatic Room Optimization (ARO) software and for the signal-processing features needed for integration and tweaking.

ARO couldn't be easier to use. Just plug in the provided microphone, place it at the listening position, press the Calibrate button, and stand clear. ARO checks for adequate signal levels, then plays a series of tones as it measures the room's response. I was immediately impressed with the tightness and power of the small f113 as it progressively rattled my room's cabinets and clocks. A steadily illuminated LED tells you when ARO is done. Comparing the performance of the f113 before and after ARO, I found that the extreme bass didn't so much sound different as that the presence of the sub, as a discrete source in the room, disappeared. Either way, it was powerful and taut.

A quick check with the GoldLine TEF-25 acoustic analyzer was revealing. The f113's uncorrected pre-ARO output—referred to 80Hz, the standard bass-management crossover—was down only 5dB at 15Hz, but was +3dB from 25 to 40Hz, with a –11dB crevasse at 45Hz. Post-ARO, 15Hz was down only 2dB, 25–40Hz was flat, and there was only a crevice of 4dB at 45Hz. Variation from 15 to 80Hz went from 13dB to only 4dB!

This is quite remarkable linearity. When a conversation with JL Audio revealed that the ARO is a single-band parametric equalizer, at first I was disappointed. However, remember that a subwoofer as potent (and expensive) as this will probably be used with decent speakers, when it will cover no more than about two octaves. Heck, with the B&Ws, I should have set the bass-management crossover at 40Hz! Nonetheless, even with the 80Hz crossovers in the Bel Canto and Sony disc players, the transition was almost inaudible, the quality of the bass in no way inferior to running the B&Ws as Large speakers (well, they are!) and feeding the f113 only the LFE channel.

As for my subjective reactions, Penderecki's Credo sounded even more granitic in the bass with the Fathom f113 in the system. Even the double basses in Hunt Lieberson's Handel disc were more detailed. But these were only hints. A peachy (and punchy) new recital, Phantomes: An Organ Spectacular (SACD, Oehms OEH-606), opens with J.S. Bach's Toccata and Fugue in D Minor, played by Harald Feller. The weight and power of the instrument and the ripe acoustic are marvelous in 5.0 channels. However, when I told the SACD player that the 802Ds are Small and to redirect the low bass to the f113, the effect was physical. I felt as well as heard the pedal tones as throbbing pressure waves. But let's not stop there. I downloaded a fireworks WAV file and paid careful attention to the accompanying warnings. The f113 never cried Uncle, even when I turned it up to levels of 10–50Hz energy that approached pain. This bass freak's eyes glaze over at the thought of what its big brother, the Gotham g213, might do...

Small as it is, JL Audio's Fathom f113 makes a powerful and musical contribution to the bottom end, even in the context of an already full-range system. Its setup is sophisticated and simple, and its small size and beautiful appearance should make it welcome and valuable in any system.

Stop press!

The most impressive demo at Home Entertainment 2006 last May confirmed the value of acoustic room treatments. With identical equipment and recordings in paired rooms, Rives Audio, RealTraps, and RPG treated only one room, leaving the other as the hotel designer's had intended. The difference between the two was astounding. Because RealTraps' Tri-Corner traps seemed the perfect fit for the lower rear corners of my weekend room, I wheedled the prototype pair from RealTraps' Ethan Winer and slid them into position behind the stands that support my Paradigm Reference Studio/20 loudspeakers. Wow! These small equilateral triangles, 32" on a side and costing $249 each, had a bigger impact on the sound than I had expected. The low end, as already set up and EQ'd with care, became overpowering. I had to cut the level to my Paradigm Servo-15 sub by about 6dB to restore a musical balance. Measurements and more descriptions to come, but for those of us with spousal and decorative constraints, RealTraps' Tri-Corner Trap is a notable product.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demo
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calibrate
Input Mode
master | slave
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LP Filter
off | 12dB | 24dB
30
70
90
130
LP freq. (Hz)
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SUBWOOFER REVIEWS

JL Audio Fathom f112 Subwoofer

By Daniel Kumin

WIDELY RESPECTED IN HIGH-END MOBILE SOUND, JL AUDIO has only recently navigated into home theater waters. Domestic notoriety may come quickly, however. The new JL Audio Fathom f112 subwoofer has a high-tech 12-inch driver rated at more than 3 inches peak-to-peak linear excursion, mated with a digital amp said to produce "unclipped output voltages equivalent to 1,500 watts." Weighing in at a measly 115 pounds (less than half the mass of JL's largest sub), the f112 certainly has a big-bass recipe.

The F112's electronics include flexible low-pass filtering (though most will bypass this for the receiver's crossover) and an Extreme Low Frequency trim control supplying +3/-12 dB equalization over the bottommost octave. There's also Automatic Room Optimization: Plug in the supplied test mike, and the JL adjusts its single parametric filter to "tame the primary room mode." In many cases, this will yield at least somewhat smoother and subjectively deeper-sounding bass. In my room, with the sub in my proven spot left of my front-left speaker, it resulted in subtly tighter music bass.

Movie Performance

Here's the executive summary: The JL f112 outperformed my everyday sub, a somewhat more compact sealed 12-incher of similarly lofty price, by an audible margin in both depth and power - the first visiting woofer to do so in some time. I tried lots of film and music tracks, and while passages rating only "very demanding" yielded no audible differences, my "most demanding" list told the tale.

On the helicopter rotor-beats from Chapter 4 of *Black Hawk Down*, at cinema-reference levels, the f112 produced a clearly more thoracic overall effect. When playing the full speaker system, this was discernible only to a practiced ear, but it was perfectly obvious with the full-range speakers muted. Plus, the JL excited rattles in my room that my regular woof could not. More important, it delivered tangibly more near-infrasonic gut-thumping from stuff like that old standby, the 'zilla footfalls from *Godzilla*.

Music Performance

Music playback was just as impressive. Even with a fairly high crossover (80 Hz) dialed in from the processor, the JL produced a smooth, continuous blend with smaller sats, including exposed material such as solo string bass. I heard no hint of sub artifacts that called attention to its location, nor any of the "boom," "bloom," or "bloat" that afflict many subs. The f112 was invariably tight and detailed. And it was highly musical - along with powerful and low.

Bottom Line

This is a hell of a good subwoofer. If you've got the scratch to buy it and the abs to unpack and install it, you won't be sorry.

The Short Form

/ home.jlaudio.com / 954-443-1100

Snapshot
A fine, very high-performance, *comparatively* compact subwoofer.

Plus
- Powerful, controlled deep bass
- Reasonably compact size
- Flexible crossover; auto-EQ controls

Minus
- Heavy
- Expensive. (Did I mention heavy?)

Key Features
- 12-in woofer
- 1,500-watt RMS amp
- 19.5 x 16.5 x 19.8 in
- 115 lb
- Finish: Gloss or matte black

Test Bench

JL Audio Fathom f112 Subwoofer

In the lab

Frequency response (at 2 meters) 24 to 101 Hz ±2.5 dB
Bass limits (lowest frequency and maximum SPL with limit of 10% distortion at 2 meters in a large room) 16 Hz at 80 dB SPL 108 dB average SPL from 25 to 62 Hz 114 dB maximum SPL at 62 Hz bandwidth uniformity 94%

I measured the JL Audio Fathom f112 subwoofer's bass limits with it set to maximum bandwidth and full gain and placed in the optimal corner of a 7,500-cubic-foot room. In a smaller room, users can expect 2 to 3 Hz deeper extension and as much as 3 dB greater sound-pressure level (SPL).

The f112 has fairly high output (109 dB or greater at every frequency from 32 Hz upward) and good uniformity of output across its operating range. The subwoofer comfortably handled 16- to 20-Hz signals without exceeding our 10% maximum distortion limit, with its low-end limit measuring 16 Hz, where it produced 80 dB SPL. Maximum SPL (114 dB) was achieved at 62 Hz.

Although the crossover control is marked from 30 to 130 Hz, the true acoustic operating range was 60 to 92 Hz when the LP Filter was employed. Crossover slope was 18 dB/octave when the control was set to either Off or 12 dB; the slope measured 12 dB/octave when the setting was 24 dB. The ELF (extra low frequency) trim feature added 1.9 dB of SPL below 70 Hz when set to +3 dB. When the ELF trim was set to -12 dB, level began decreasing at 100 Hz and reached a maximum cut of 12 dB at the lowest frequencies. The ARO (Automatic Room Optimization) routine would not always fully complete when the microphone was more than 3 meters from the subwoofer and did not always make the optimal adjustments, as verified with MLSSA measurements. Users should listen with and without A.R.O. to confirm their results.—*Tom Nousaine*

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TEST REPORT

Amazing Bass, No Sacrificing Space

RATING

JL Audio Fathom IWS-SYS-1 In-Wall Subwoofer System

Performance ★★★★½
Features ★★★★½
Build Quality ★★★★★
Value ★★★★☆

By Darryl Wilkinson

JL Audio Fathom IWS-SYS-1 In-Wall Subwoofer System

PRICE $4,500 (plus installation)

AT A GLANCE

+ Plus

- **Enclosure designed for walls with standard 2 x 4 construction**
- **13.5-inch low-profile driver**
- **1,000-watt external amp with Automatic Room Optimization**

– Minus

- **Retrofit install can be difficult**
- **Expensive**

IF I NEEDED ADDITIONAL PROOF of how much Rob Sabin, our esteemed editor-in-chief (and part-time male stripper for the visually impaired) dislikes me, this would be it. He asks me the other day if I'd want to review another JL Audio subwoofer, one similar to the company's ginormous Fathom f212, which I reviewed in 2012. I have fond memories of, bruises from, and a partial hernia caused by that 220-pound behemoth.

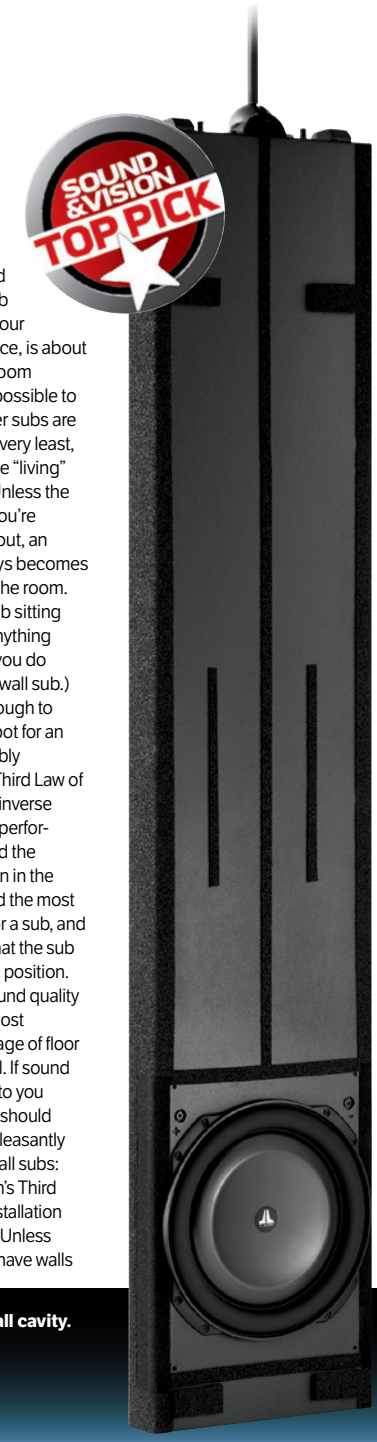
Still, without asking my doctor or checking my health insurance, I enthusiastically answer my favorite boss in the affirmative. (It's the only answer he accepts, so it isn't much of a stretch.) "Awesome," he says, breaking in before I've gotten to the end of the word *yes*, "and since you never turn in anything on time, your due date is today. That means you're already late." Then, as if it's barely worth mentioning, he adds, "Oh, by the way, this one's an in-*wall* subwoofer. JL says it can be used in new construction or installed in an existing wall. Sounds like just the thing for you." Without affording me the chance to stutter indignantly or negotiate a higher pay rate, he cuts me off again. "Sorry, buddy, got to go. Doing a show at the nursing home in 30 minutes. Good luck on that in-wall thing." *Click.*

To be honest, that's not exactly how things went down. (I might—*might*—have made up the part about Rob being a stripper.) But it is true that the logistics of reviewing JL Audio's Fathom IWS-SYS-1 in-wall powered subwoofer system were dramatically different from those of reviewing the in-room f212. A giant in-room sub gets manhandled into position, and that's the end of the manual labor. You don't need a two-wheeled dolly to plop boxes next to a wall for an installation inside the wall. That, however, was just the beginning of the manual labor required for this new Fathom. Fortunately (unless you happen to be the one reviewing the "in-wall thing"), there are professional installers for that.

Double Bass Bonus

Of course, paying a professional to install an in-wall subwoofer costs, well, money (unless you convince your brother-in-law to do the work in trade for a 24-pack of cheap beer). I can hear your inner frugality whispering, "So, why bother?" Here's the most obvious answer: to get rid of that ugly, black-box sub taking up floor space in your room. The f212, for instance, is about the size of a large dorm-room refrigerator, making it impossible to disguise. But even smaller subs are hard to conceal or, at the very least, to get out of the way of the "living" aspect of a living room. Unless the gear itself is something you're extremely passionate about, an in-room sub almost always becomes the acoustic elephant in the room. Nobody likes seeing a sub sitting there; yet nobody says anything because, well, what can you do about it? (Hint: Get an in-wall sub.)

Even if you're lucky enough to have the perfect hiding spot for an in-room sub, you'll inevitably encounter Butterworth's Third Law of Subwoofers: "There is an inverse relationship between the performance of a subwoofer and the convenience of its location in the room." In other words, find the most livable spot in the room for a sub, and the universe will ensure that the sub will sound its worst at that position. The inverse—the best sound quality will be at the absolutely most inconvenient square footage of floor space—holds true as well. If sound quality is more important to you than hide-ability (which it should be, by the way), here's a pleasantly surprising fact about in-wall subs: They can skirt Butterworth's Third Law because nearly all installation locations are convenient. Unless you live in a glass house, have walls



● **JL's in-wall subs are made to be suspended inside your wall cavity.**

THE VERDICT

This subwoofer system does the seemingly impossible in an impossibly seeming way by hiding an amazingly shallow, high-excursion 13.5-inch woofer, along with the 70-inch-tall cabinet it requires, inside a wall having standard 2 x 4 construction, with only a driver-hiding grille screen as evidence—and it does this surprising feat without causing excessive wall vibrations. Even better, it does all that while performing like a top-end in-room sub.

SUBWOOFER

JL AUDIO FATHOM IWS-SYS-1 IN-WALL SUBWOOFER SYSTEM

JL Audio • (954) 443-1100 • jlaudio.com

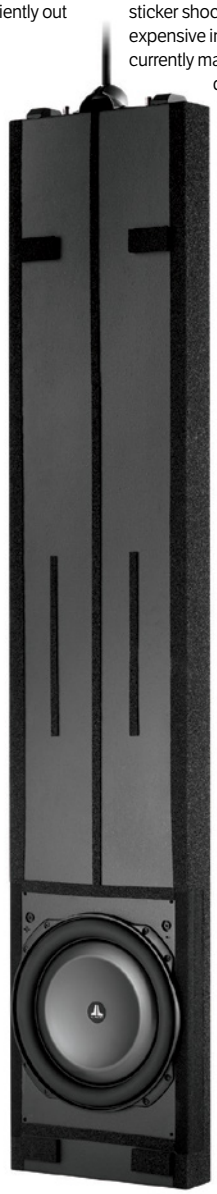
covered with large picture frames extending to the floor, or are hemmed in by shelves holding memorial urns with the cremated remains of deceased pets, you're bound to find a great-sounding spot that's also totally and very conveniently out of the way.

JL Audi—Who?

JL Audio has been around since the mid-1970s, and the company's first products were subwoofers for car audio—a market that was (and still is, to some extent) big on boom but small on space. They became known for building high-excursion/small-volume-enclosure woofers, as well as a line of custom-fit, car-specific Stealthbox subwoofer systems (and, eventually, marine audio gear). In 2004, the factory began cranking out its first home audio products, the highly impressive Fathom and Gotham in-room subs.

Word is that in 2010, after a long day "evaluating" marine speakers in JL's special "floating test facility" (wryly named the Bass Boat) off the southern Florida coast, two engineers got into a beer-soaked bet over who could come up with a way of stuffing a Fathom into a wall without the butt-half of the enclosure sticking out into the next room. Or they were attempting to cure Bass Deficiency Syndrome (BDS), which often plagues "spatially challenged" people. (It might have been some other reason, but if so, I don't remember what they told me.)

It might be a good time for me to point out that JL Audio doesn't make cheap stuff. (Spoiler alert: possible sticker shock ahead.) The least expensive in-room sub the company currently makes, the Dominion d108-ASH, is $800. That hellaciously awesome Fathom f212 I reviewed sold at the time for $6,300. Its replacement, the Fathom f212v2, is $7,000. And if you want JL's very best, there's the Gotham g213v2 for $15,000. Considering that the Fathom IWS in-wall subs are meant to perform as well as their Fathom in-room siblings, it's not surprising that the prices for the two IWS models are equally stout. For instance, the Fathom IWS-SYS-2—which includes an amp and two in-wall enclosures with a single woofer in each, making it roughly equivalent to the Fathom f212v2—commands a cool $7,500.



Gravity Not Included

For this review, JL Audio sent the Fathom IWS-SYS-1 in-wall subwoofer system, the single-driver, single-enclosure version, priced at $4,500. The system consists of three main components: a 1,000-watt, 35-pound, "purpose-tuned" amplifier, the woofer enclosure, and an amazingly shallow—and amazingly heavy—13.5-inch driver. (There's the grille, too, plus the mounting hardware, but I'll get to that later.)

The amp's black-texture-coated top panel, massive heatsinks (on the left and right sides of the chassis), and brushed-aluminum front panel combine to make for a visually stunning piece of hardware—which, sadly or fortunately (depending on your perspective), is likely going to be rack-mounted or stacked on a shelf in an A/V cabinet, to live a life of anonymity. JL says the amp is designed to be "built-in" friendly, and they certainly hit the mark on that count. All of the most-used controls (master level, low-pass frequency, low-pass filter, phase, polarity, and "e.l.f. trim" extreme low frequency) are located on the front panel. Furthermore, the amp ships ready to be rack-mounted but includes hardware (rubber feet and rack-ear covers) for placing it on a shelf, where the hefty, side-mounted heatsinks will help keep the amp cool even in a tightly packed stack of gear. And there's a calibration microphone input with Defeat and Calibrate buttons for JL's built-in Automatic Room Optimization (A.R.O.).

The illumination switch for the LEDs on the front panel offers three positions: off, dim, and on. "Dim," however, is slightly misleading, because if "off" were 0 and "on" were 10, "dim" would be about 8.7.

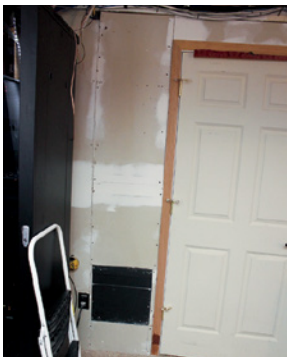
The enclosure that JL shipped looked like the monolith from *2001: A Space Odyssey*. It was tall (70 inches), thin (2.94 inches), and modest in width (13.75 inches). That's the perfect size to fit the cavity space between the 2 x 4 (1.5 x 3.5-inch) studs in a normal 16-inch-on-center interior house wall (like mine). Since not all walls are the same, JL offers the IWS-SYS enclosures in various depths for walls with 2 x 4 and 2 x 6 stud variants, to eliminate the need for modifications to the studs. The enclosure is made (in the U.S., by the way) from CNC-cut, cabinet-grade, Baltic birch plywood, and its internal bracing can withstand a magnitude 9.3 earthquake. (That's just a rough estimate, though.)

In a retrofit installation (like mine), it's extremely important to inspect the wall cavity and take accurate measurements because of the unique way the sub's enclosure will reside there. You don't hurriedly bolt it to the studs and let the sheetrock hide whatever MacGyver-ish modifications you did to hold it in place. The top of this enclosure is designed to hang (JL uses the word *suspend*) from a single anchor point straddling the wall cavity. That means the rest of the enclosure doesn't rely on anything else to

● The amp has an attractive brushed-aluminum front panel.

The IWS-SYS-1's enclosure is the perfect size to fit the cavity space between 2x4 studs.

Below left: A specially designed rod and the force of gravity are used to hang the cabinet in the wall.



Darryl's DIY photos show the installation of the cabinet (left) and the low-profile driver.

SPECS

Subwoofer: 13.5 in mica-filled polypropylene cone woofer; sealed enclosure • **Dimensions (WxHxD, Inches):** 13.75 x 70 x 2.94 (enclosure), 17.14 x 17.64 (WxH, primer white paintable grille) • **Weight (Pounds):** 43 • **Amplifier: Rated Power (Watts):** 1,000 RMS short-term • **Connections:** Line-level, XLR (2), RCA (2); speaker-level, binding posts (2) • **Crossover Bypass:** Switchable • **Available Finishes:** Silver brushed aluminum (faceplate), black (chassis) • **Dimensions (WxHxD, Inches):** 17.4 x 3.5 x 17.9 • **Weight (Pounds):** 35

support its weight—not the front or back wallboards, the studs, or even the floor.

After the installer secures an included adjustable mounting assembly between the left and right studs at 90.5 inches from the floor, the half-sphere on one end of an 11.25-inch-long "hanging rod" (26.25 inches for shorter/deeper enclosure variants) is inserted into a cup-like bracket attached to the mounting assembly. There's a half-sphere on the other end of the rod and a similar bracket on the top end of the enclosure. The installer lifts the enclosure, slides the free end of the rod into the enclosure's bracket, and steps back to admire his work. Each end of the hanging rod can swivel somewhat in its respective cup mount—which means that gravity is ultimately what holds the enclosure in place. (At this point, JL doesn't have plans for including a supply of gravity with the system, claiming, "It's the customer's responsibility.")

Strategically placed spacers and padding on the exterior surfaces of the enclosure help prevent any hard contact between the enclosure and the wall structure. And the installation hardware includes a huge roll of "energy-absorbing foam gasket strip." The installer applies this to the front edges of the studs and the mounting bracket to further minimize transfer of vibrations, something that's particularly helpful with walls containing metal studs.

A Heavy-Mass Woofer

The subwoofer driver is JL Audio's 13TW5v2. The fact that the diameter is 13.5 inches is unusual, but it pales in comparison to the amazing fact that the driver requires a mere 2.63 inches of mounting depth. JL calls the technology "Concentric Tube Suspension," but it's simpler to say it's just a molded concentric tube structure that's used to support both the spider and the driver's large-diameter voice coil. (Well, maybe not so simple to say.) Basically, JL took a 7-inch-diameter voice coil—yes, 7 frickin' inches!—and slid the magnet *inside* it rather than wrapping the magnet around the outside, as is found in typical loudspeaker drivers. The benefit is that, even though the overall depth is very shallow, the cone still has a great deal of excursion. It's heavy and built like a tank—and although I'm not usually a fan of staring at drivers, I admit I was sad when I mounted this beautiful piece of audio engineering in the wall and put a grille over it.

Despite the laudable lengths JL Audio went to in order to minimize enclosure/wall vibrations, I expected that a resonating Achilles' heel would be where the woofer met the wall. Ah, but this is where those extra install parts come in. After the enclosure is installed, the wallboard is replaced. A wooden template attached to the enclosure provides a guide for the wallboard guys to leave a square opening in the wall at precisely the location where the driver will hang in the enclosure behind the wall. It's absolutely, excruciatingly important that the size, shape, and position of the opening are correct. Otherwise, the two parts of the grille assembly—the removable, paintable grille itself and the "grille tray unit"—won't line up properly. They most definitely need to line up, too, because the grille assembly is the last bastion against vibration in the design of this subwoofer. As a matter of fact, alignment and placement are so important that JL makes three different grille models, with depths to fit wallboards ranging from a half-inch to 1 9/16 inches thick.

I've never encountered anything quite like JL's grille-assembly mounting system. The grille frame screws directly to the wall studs (through the wallboard)—not to the enclosure, as you might think. The grille tray unit includes a short, flexible sleeve that attaches to the grille frame on the *outer* side of the wall and extends *inward*, where, once the woofer is installed, it gets squeezed between the woofer's flange and the enclosure. It's like a sonic shock absorber that keeps the woofer/enclosure combo from touching the wall, and it acoustically seals the woofer itself from the in-wall cavity.

If you've got the money, and you've got a wall, this sub's for you.

While the sub was burning in, I took advantage of the repetitive playback of a heavy bass track to check out these various isolation techniques. I had installed the sub in a normal, ordinary interior wall separating my home theater and a hallway, so while the sub was playing, I walked out into the hall. Not surprisingly, I could hear muffled bass coming from the room, and the wall was vibrating slightly—but nothing an in-room sub wouldn't have also caused. The amazing thing was this: When I ran my hand along the wall of the hallway, spanning multiple studs, it was nearly impossible to tell where the sub was installed. Even more astonishing: As far as I could tell, there was a nearly equal amount of vibration along the wall on the left side of the door as there was on the right side, where the sub was installed. Those results made it well worth the time and effort involved in the installation.

Straight as an A.R.O.

Setting the acoustic parameters for the IWS-SYS-1 was almost a letdown. Everything stayed the same in my Onkyo TX-NR3030 A/V receiver except for the sub level, which I reset to 0, and all other tone controls and EQ functions were defeated. Then I plugged one end of the microphone cable into the mini-XLR jack on the front of the sub's amplifier. After tripping once or twice over the cable, I attached the calibrated mic to the cable and set it up at my main listening position.

The most difficult part was pressing the Calibrate button, waiting five seconds, and then enduring three minutes of a static-noise sequence. After that, I had to pack up the mic and watch a movie. (Exhausting, right?)

Unlike the room correction technologies from Audyssey and a few other companies, JL Audio's A.R.O. calibrates only for the main listening position, not the entire room. (Nor does it affect audio coming from any of the other speakers in your system.) Want to judge the result against the sub's sound without the optimization processing engaged? The Defeat button on the front of the amp makes it easy to do this. The changes that A.R.O. made in my room weren't subtle. They were more of the significant, "welcome to the big leagues" kind of improvement. A.R.O. clarified the bass output, both taming it in the range from 40 to 50 hertz (where it had gotten out of hand pre-calibration) and giving it a kick in the butt in the low 20-Hz region. In short, pre-calibration, the sub sounded good—but not good enough to warrant $4,500 plus installation. It gave hints every now and then of greatness, but nothing sustainable over time. Post-calibration, on the other hand, the sub turned into a bad-ass bully of a bass beast—and I mean that in the best of all possible ways.

By the Bass of God

Now that you've read the previous paragraph, the results of my listening sessions won't be too surprising. JL Audio's IWS-SYS-1 sidles up behind you, begins whispering sweet bass love into your ears, and then morphs into a full-fledged bass-pumping Goliath (sorry, I mean, Fathom…er, giant thing…) that's amazingly emotionally satisfying because, despite all the obvious power, the sub never loses control. The alt-metal beat of Disturbed's "Indestructible" (along with the surreal battlefield soundscape at the beginning of the track) was made even more heavy metal because of the extreme low frequencies the sub could generate. The Decemberists' "This Is Why We Fight" features a more agile drumming throughout the cut, and the sub easily kept up and stayed tight. My favorite track for the IWS-SYS-1 soon became "Big Shot" from Dr. John's Grammy-winning *Locked Down*. The combination of Dr. John's gravelly voice with the drums and bass—and damn well everything else in the track—was underpinned perfectly by the in-wall sub, which stayed as warm and as full as the music demanded without ever becoming boomy.

It's somewhat ironic that the people who devised the audio for *Deepwater Horizon* were so meticulous in their work—acoustically re-creating the catastrophic results of what happened after some potentially disastrous work wasn't done quite so meticulously. The IWS-SYS-1 handled the rig explosions exceptionally well, but I think what impressed me the most about the system while watching this movie wasn't the depth of the bass output—although that was definitely impressive. It was the agility of the sub, especially the quick hits and thumps of the oil-drenched seabird as it frantically flopped around the inside of the control cabin, as well as the snap of the shrapnel that cuts through multiple scenes.

Although I had promised myself I wouldn't watch *Independence Day: Resurgence* because the first movie was so stupid, I found myself sticking around for the whole thing because the IWS-SYS-1 was so compelling in its re-creation of the ominous mass of the alien mothership. This was quite spectacular during scenes where the ship begins drilling through the ocean floor. Similarly impressive was the sub's ease in instantly going from nothing to seriously extreme bass any time the fusion drive was engaged. It seems silly to say, but the sub never sounded like it was *in* the room (or in the wall, for that matter). The bass was just another part of the experience, not unlike the couch I was sitting on, or the air I was breathing. It was seamless, yes, but that's an easy word to use. It's harder to describe the emotional and physical sensation created by the near-perfect entanglement of low frequencies, the listener, and everything else in the room. That engrossing interaction made the abrupt cuts between dialogue and blasts of heavy rap beats in *War Dogs* all the more intense, and it drew me into that movie much more than I had expected.

● **JL supplies a mic for its A.R.O. room correction.**

Conclusion

JL Audio's $4,500 in-wall subwoofer system isn't for everyone. There are some people who can peacefully coexist with the largest species of in-room subs. There are certainly plenty of people who can't afford a $450 subwoofer, let alone one that costs 10 times that much. It's hard to believe, but there are even human beings who don't care about sound quality. Yet, for the demographic that has the financial means, desires the convenience of a nearly invisible subwoofer, and is serious about sound quality, the IWS-SYS-1 is an awesome choice. It's a sub that makes no acoustic compromises, nor does it force you to make the lifestyle compromises that a typical in-room sub would. In some ways, it's a shame that all the cool technology here is hidden from view—but, when you think about it, *not* seeing anything of this system is the coolest part of all. If you've got the money, and you've got a wall, this sub's for you. ◆

● **The amp features balanced or unbalanced inputs.**

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SEPTEMBER 2016

A ROUNDED MAN CANNOT BE EXPECTED TO FIT INTO A SQUARE HOLE

MUSIC IN THE ROUND

BY KALMAN RUBINSON

THIS ISSUE: JL Audio's E-Sub e110 powered subwoofer

Affordable Stereo Subwoofing

In January, I reviewed JL Audio's Fathom f113v2 subwoofer,[1] which features, among other improvements over the original Fathom f113, a better multiband equalizer. The significance of this relates to the great influence exerted by room dimensions and acoustics on a loudspeaker's performance.

The matter of room acoustics itself relates to the Schroeder frequency: a transition point, usually between 200 and 300Hz, above which a room will exhibit a high density of reflections that are analyzed statistically, and below which that room will display a limited number of discrete modal reflections. (Thus, it should not to be confused with the number of times that Beethoven's music appears in Charles Schulz's comic strip "Peanuts.") Above the Schroeder frequency, the sound is dominated by densely overlapping modes whose properties are easily addressed with such physical correctives as wall treatments. But in the frequencies below the Schroeder or *critical* frequency, the room's influence is dominated by discrete modes that depend on the room's dimensions and are more amenable to electronic correction. (Physical acoustical correction within this range would require the careful placement of structures whose own dimensions are mathematically related to sizable wavelengths—not easy to achieve, unless one has a dedicated listening room.)

Since subwoofers always operate below the critical frequency, JL Audio's enhancement of the equalizer in their v2 range of Fathom subs is to be applauded; otherwise, owners of analog systems would have to buy a standalone equalizer. However, many of us multichannel fans have systems that already include room-EQ capabilities, and while these vary greatly in convenience and capability, we might not want to buy a sub with its own EQ, thus adding unnecessary complexity and cost. In my Manhattan system, I prefer to use Dirac Live for all playback, as my serious listening is to files via my Baetis server and exaSound multichannel DAC. In my weekend system, in Connecticut, I use Dirac Live to play files, and Audyssey MultEQ XT32Pro for discs.

So when my reliable Paradigm Reference Servo-15 subwoofer developed a hum, and I decided not to ship the 80-lb, 16-year-old sub home to Canada for evaluation and repair, I faced the issue of replacing it.[2] All things pointed to getting a powered sub or subs capable of excellent bass extension that, more important, would integrate acoustically and aesthetically with my system. And there was no need for it to have built-in equalization.

JL Audio's E-Sub e110 subwoofer is made in the USA.

Below the Schroeder frequency, the room's influence is dominated by discrete modes.

1 See www.stereophile.com/content/music-round-76.

My experience with JL Audio's Fathom line led me to get two of their E-Sub e110 subwoofers ($1499.99 each in Black Ash finish). The E-Subs, one step down from the Fathoms, have slightly less impressive specifications for extension and power than the Fathom f113. The f113 has a claimed frequency response of 20–86Hz, ±1.5dB, and –3dB at 18Hz; the E-Sub e110, 25–116Hz, ±1.5dB, and –3dB at 23Hz. The f113's built-in power amp is rated at 3000W RMS (short term), the e110's at 1200W RMS. However, the e110's smaller size opens up more placement options, its lower weight makes it easier to move, and the use of two will mitigate some of the differences in FR and power between it and the f113. In fact, the use of multiple subs, carefully positioned and set up and equalized, is a growing trend supported by research efforts[3] to produce flat, spatially uniform bass response in real rooms.

I was surprised to find that each e110's double-boxed carton was nearly as large as the f113's, even though the e110 measures only 14.24" high by 13.5" wide by 16.51" deep and weighs 52.7 lbs (compared to the f113's 19.25" by 16.5" by 19.25" and 133 lbs). I moved the old Paradigm Reference Servo-15 out of the room (with considerable effort), then placed one e110 to each side of my center Monitor Audio Silver 8 speaker, at the front of the room, so that the JLAs would be equidistant from my main listening position. The e110's construction and finish were of high quality, and an excellent match for the Silver 8s.

Each e110 has a 10" driver, a pair of RCA inputs, and a pair of RCA outputs. With the sub's crossover engaged, the output jacks provide a 24dB/octave, Linkwitz-Riley-filtered high-pass signal; when the crossover is defeated, they provide a buffered version of the same signal that appears on the e110's input jacks. Controls include level, filter defeat, filter frequency, polarity, and variable phase, but I defeated the filter and left the polarity and phase at 0°. All I needed was the level control—Audyssey and Dirac Live would handle everything else, including EQ.

I began with Audyssey, because its first step in calibration is a handy subwoofer-level routine. Using the test tones and the e110s' level controls, I carefully set each e110 to 75dB, ±0.5dB. Audyssey may retrim the two sub levels during its calibration process, but because the server output to the Marantz AV8802A surround-sound processor is 5.1, Dirac Live on the server cannot. Measurements taken with Dayton Audio's Omnimic microphone-plus-software system showed that each e110 had an in-room response with a deep trough (at 53Hz right, 60Hz left), a broader hump (44Hz right, 42Hz left), and a smooth rolloff below about 6dB/octave, even though the left sub was about 4' from a corner and the right sub about 4' from an open doorway (fig.1).

The combined output of both e110s (green trace) was almost an algebraic sum of their individual responses. This is important, because Audyssey calibration (with nine measurement positions, using the array recommended by Dirac) applies the same correction to both subs. Looking at fig.2—the results for the two e110s operating together, before and after calibration by Audyssey—you can see that the deep trough was reduced to less than 5dB, and the broad hump replaced by a nominally flat response from 30Hz down to below 20Hz. Useful response was maintained to below 15Hz. Pretty impressive for a pair of 10" drivers!

Unfortunately, Audyssey didn't set the sub levels properly—a complaint I've often heard from others, but not something that had troubled me till now. It was immediately apparent by ear that the bass was very lean, and Omnimic confirmed that the subs needed 5–6dB more drive. That corrected, the e110s were getting the sub-40Hz bass from all five channels (plus LFE, where it existed), and it all seemed so right and so familiar. It sounded just like running the main speakers full range . . . until it didn't.

Any of a number of organ recordings revealed clean, deep sounds I hadn't heard from the Monitor Silver 8s sans subs—at least, not with the power and weight they had now. The sub-Saharan subject of the title track of Béla Fleck's *Flight of the Cosmic Hippo* (CD, Warner Bros. 26562-2) threw his weight around, and organ pedals in the second movement of Saint-Saëns's Symphony 3, with Christoph Eschenbach and the Philadelphia Orchestra (SACD/CD, Ondine ODE 1094-5),

Many multichannel fans have systems that already include room-EQ capabilities.

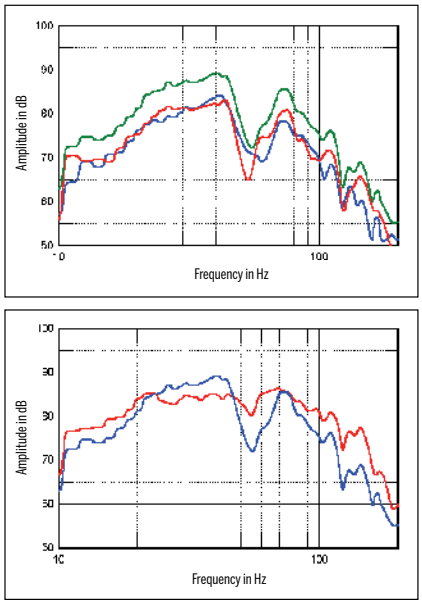

Fig.1 (top) JL Audio E-Sub e110, in-room response of individual subwoofers (left channel, blue, right, red) and summed response (green) (5dB/vertical div.). **Fig.2** (bottom) JL Audio E-Sub e110, in-room summed response before (blue) and after (red) calibration by Audyssey (5dB/vertical div.).

were firmly supported. Kick drums had palpable kick, and the overall balance of symphony orchestras was appropriate. For example, in the first movement of Manfred Honeck and the Pittsburgh Symphony Orchestra's recording of Tchaikovsky's Symphony 6, *Pathétique* (see sidebar, "Recordings in the Round"), the lower strings provided a rich carpet, unobscured even by the bursts of brass.

The JL Audio E-Sub e110s meshed better with my system than had the 15" sub they'd replaced, and my ears couldn't identify them as discrete sources of sound; often, I needed to get up to feel, with my hands, where all that firm, clean, deep bass could be coming from. It seemed as if the five main speakers themselves had been endowed with greater capabilities. And, of course, in a sense, they had.

On the other hand, these two 10" subs didn't "load" the room as had their far larger predecessors. This might seem predictable, but a good part of the reason was that the e110s

2 I still have a Paradigm Studio SUB 15 subwoofer, which I reviewed in the January 2010 issue: www.stereophile.com/musicintheround/music_in_the_round_40. While the SUB 15 includes Paradigm's Perfect Bass Kit EQ, I haven't used that facility for a while.

3 Todd Welti and Allan Devantier's original paper for Harman International Industries, "Low-Frequency Optimization Using Multiple Subwoofers," JAES Vol.54 No.5, May 2006, is available at http://mkloudspeakers.com/pdf/todd-welti-white-paper.pdf. A less formal presentation is available at http://tinyurl.com/hkl4qay.

seemed much freer of resonant behavior. Indeed, the two 13" JLA Fathom f113s in my Manhattan system are equally tight and integrated with the rest of the system, yet provide more encompassing bass than the e110s. I intend to pursue this by supplementing the two e110s with the Paradigm Studio SUB 15 subwoofer—or, perhaps, with another e110 or two. (Maybe I could hide them behind the sofa . . .)

JL Audio's E-Sub e110 is a compact subwoofer that offers deep, powerful bass. Most important, with the use of a competent room equalizer it's easy to integrate into any system, to provide welcome and gratifying low-frequency extension. And two were even better. ■

The e110's construction and finish were of high quality.

CONTACTS

JL Audio, Inc.
10369 N. Commerce Parkway
Miramar, FL 33025-3962
Tel: (954) 443-1100
Fax: (954) 443-1111 (General)
Fax: (954) 443-1108
(Technical Support)
Web: www.jlaudio.com

RECORDINGS IN THE ROUND

BRAHMS: SERENADE 1, VARIATIONS ON A THEME BY HAYDN

Jan Willem de Vriend, Hague Philharmonic Orchestra

Challenge Classics CC72692 (SACD/CD, DSD64 download from www.natived sd.com). 2016.

Brahms's Serenades for orchestra are, to me, analogous to Tchaikovsky's Suites for orchestra: both were freer expressions of the talents that their composers applied to their symphonies, and in some ways are more revealing of their personal characters. Brahms's first Serenade is as important to me as are his more frequently performed Haydn Variations, and it's wonderful to have both so ably performed and so spectacularly recorded as here. I was completely taken by Jan Willem de Vriend's ardent reading of the Serenade's opening phrases, which continue in an engaging sweep through the entire work; the result ranks with Stokowski's classic treatment. While de Vriend's Haydn Variations don't quite match his work in the Serenade, it's still a fine performance, if a notch below, say, Szell and Solti. The richness and breadth of the multichannel sound is beyond question.

TCHAIKOVSKY: SYMPHONY 6, PATHÉTIQUE
DVORÁK: RUSSALKA FANTASY (ARR. HONECK-ILLE)

Manfred Honeck, Pittsburgh Symphony Orchestra

Fresh! Reference FR-720SACD (SACD/CD, DSD256 download from www.natived sd.com). 2016.

I have effusively praised the previous efforts of Manfred Honeck, the Pittsburgh Symphony, and the Soundmirror recording team, and this is yet another winner. The Pathétique doesn't lack for recordings in any format, but this one rises to the top in recording quality, and the performance is outstanding. Honeck's pacing seems at first a bit deliberate, and at no time does he approach the intensity of Mravinsky or Markevitch. Yet his approach allows for a wider range of contrasts of tempo and dynamics, the latter well beyond what those much earlier recordings could have encompassed. That's not to say that the performance is exaggerated in any way; it's appropriately dramatic and completely satisfying—and the accompanying Russalka Fantasy, by Dvorák, is a delight.

WALTON: CELLO CONCERTO, PASSACAGLIA FOR CELLO SOLO
HINDEMITH: CELLO CONCERTO, SONATA FOR CELLO SOLO

Christian Poltera, cello; Frank Shipway, Sao Paulo Symphony Orchestra

BIS BIS-2077 (SACD/CD). 2014.

The Walton Cello Concerto is what attracted me to this release. The music has long spoken to me directly and clearly; I'd imprinted on the recording by Piatigorsky with Munch and the Boston Symphony (RCA Living Stereo), and had enjoyed several others over the years. Now I'm won over—especially in the last movement—by the extraordinary eloquence of cellist Christian Poltera and conductor Frank Shipway, and given the sound quality of this recording, I expect that feeling will endure. Walton's Passacaglia is intense and compact. The Hindemith was new to me, but it's archetypally big Hindemith: busy and, at times, boisterous. The solo sonata has more heart and delicacy. The BIS engineers have captured an impressive clarity and richness of instruments and hall.

IBERT: ORCHESTRAL MUSIC

Escales; Sarabande pour Dulcinée; Ouverture de fête; Féerique; Divertissement; Hommage à Mozart; Donogoo-tonka: Suite symphonique "Paris"; Bacchanale.
Neeme Järvi, Suisse Romande Orchestra

Chandos CHSA 5168 (SACD/CD). 2016.

In recent months the indefatigable Neeme Järvi has released on SACD musical surveys of the music of Offenbach, von Suppé, Saint-Saëns, Chabrier, Massenet, and Fucík, and each has been well played, well recorded, and entertaining. I judge his Ibert collection to be much more than that. The most familiar works, Escales and Divertissement, stand up to all competition. While the Suisse Romande strings can't match those of Philadelphia, Järvi's panache—a word I'd never thought applied to him—equals Ormandy's. Järvi's Divertissement is, to use another surprising label, witty, and reminds me of a concert performance of it by Charles Dutoit and the New York Philharmonic that actually provoked laughter. The less familiar works are flavorful and charming, and Chandos's recording is deliciously transparent.

—Kalman Rubinson


J.L.AUDIO

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TEST REPORT

Low and Loud

RATING
JL Audio e110 Subwoofer
Performance ★★★★★
Features ★★★★½
Build Quality ★★★★★
Value ★★★½

By Daniel Kumin

JL Audio e110 Subwoofer

WHAT CAN YOU SAY ABOUT A subwoofer? It goes *this* low, *that* loud. It has *these* jacks, knobs, and features and is *yea* big and costs *yon* dollars. And really, that's about it; almost all other discussion is so much verbiage.

Response "flatness" from a speaker covering barely two octaves is of little consideration unless a sub is horribly peaky (a few are), especially since room effects invariably dwarf such variations anyway. As to "bass slam," "tunefulness," "low-end detail," and all the rest: Don't make me laugh. My favorite, "fast bass," belongs in the Oxymoron Hall of Fame along with Military Intelligence and British Cuisine. The highest frequency of interest from any subwoofer crossed over at 80 hertz is, let's say, 200 Hz, which means the fastest thing you've got to reproduce is a sinusoidal waveform every 5 milliseconds or so—an eternity in electroacoustics terms. Put another way, every last element of "bass attack" arrives from the high-passed main speakers; the sub itself produces only the fundamental tone and, on the very lowest notes, the first harmonic.

Lecture over. But while we're on oxymorons, here's another: beautiful subwoofer. Yet the new e110 from JL Audio begs consideration. True, it's a plain, black, vinyl-wrapped almost-cube like so many others. But raising it high is a handsome fit and finish, from the carefully radiused inset heatsinks to the molded, removable, magnet-fixed cover that conceals its controls—plus thoughtful design touches like the controls' location at the top rear, where they are easy to reach, read, and adjust.

JL Audio is a Florida company with roots in high-end car audio. But for several years now, they have also produced some of the most expensive, nicest-looking, heaviest, and loudest/lowest home subwoofers you could buy, including the $12,000 Gotham model. Now, with the E-Sub series, JL is moving a bit closer to where the rest of us live. In the case of the e110, this means a "compact" 10-incher that costs "only" $1,500 in the black ash finish I received (a gloss version is $1,700) and weighs "just" 53 pounds. The E-Sub series (there's also an e112 at $1,900) incorporates a number of JL innovations trickled down from its more expensive brethren, most of which have to do with maintaining motional linearity from very long-excursion drivers. That the e110 exploits these in so surprisingly compact a form is thanks in no small part to the time-honored engineering wizardry of lotsa-lotsa power, in this case from a switching-power-supply-equipped amplifier delivering 1,200 watts "short-term."

Setting up the e110 was merely a matter of unboxing, lugging across the room, and connecting to AC power and my system's single-RCA subwoofer line cable. I am years past needing to drag heavy subs all around my studio, searching for the low-frequency sweet spot; in my room, this is a few feet right of the right-front speaker, about 4 feet from the corner, and a foot or so from the wall. (Yes, I know corner placement is theoretically optimal for maximally exciting room modes; in practice, my location is better.) And since room modes are indifferent to the source, what's optimal for one subwoofer is optimal for all.

JL's E-Sub designs eschew any auto-setup or room-equalization features. There's a volume knob, a crossover-frequency one, and a third for phase, plus slide switches for crossover defeat, polarity (a quick-flip for phase setting), and power on/off/auto. Simple.

AT A GLANCE

+ Plus
- **Powerful, deep bass from a compact 10-inch box**
- **Elegant visual design**
- **Flexible, fully implemented two-way crossover**

− Minus
- **Expensive**

First Bass

With the JL Audio subwoofer placed, quickly balanced up, and phase adjusted (this I do by ear, listening to a particular James Taylor track with my head midway between the sub

● **The e110's controls are thoughtfully located at the top of the rear panel.**

● **The e110's quality fit and finish includes attractive bevelled corners.**

THE VERDICT

A small, or at least smaller, subwoofer that goes truly low, loud, and clean—and looks sharp doing it.

JL AUDIO E110 SUBWOOFER

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ON THE WEB **See soundandvision.com** for full lab results and technical definitions

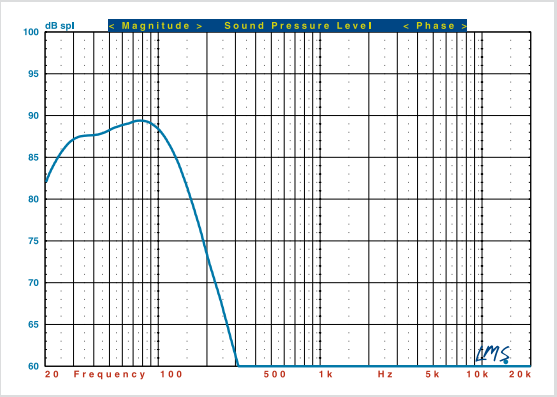
and the front right speaker), I went searching for low-hanging low-frequency fruit. My prompt reward was a showing of *X-Men: First Class* just beginning on cable. Within 10 minutes, I'd learned 90 percent of what I needed to know about the JL sub. Which was this: At my preferred listening level of a good few decibels below THX reference, the e110 fully matched my everyday sub in low-end grunt, extension, and impact from typical big-action soundtracks (and *First Class* has plenty of impacts, crashes, and high-volume down-sweeps even in its opening few scenes), with no discernible downside of boom, bloat, or obvious non-linearity. Of course, this doesn't tell you much until you learn that my regular woof is SVS's mighty PC-12-Plus, a 17-inch cylinder standing some 4.5 *feet* tall; the JL sub is roughly a 15-inch cube.

The e110 joined my system for nearly a full month, and the longer I listened, the more impressed I became. Musical deep bass, whether from Richard Strauss' *Also Sprach Zarathustra* or Saint-Saëns' Organ Symphony, was convincingly complete, with even the lowest fundamental tones geologically solid and fully accounted for. Electronica ultra bass, conveniently sourced from Net-radio vTuner's Bass Drive stream, was equally powerful and maintained its fundamental-tone gut-bucketing at far higher volumes—without the disco-thud second-octave embellishment added by too many less rigorously engineered subs. In all cases, I was very pleased with the JL's restraint in the crossover region; this is one subwoofer that, for whatever reason, seems never to overcook the top octaves. In the name of science, I mostly ran the JL sub at an 80-Hz crossover, where it still sounded superbly tight and controlled. My usual 60-Hz hinge-point made a just-discernible difference—not dramatic, but an improvement nonetheless. Either way, the JL was gratifyingly quick and easy to balance, which suggests a clean, well-behaved crossover filter.

Satisfied that the e110 was plenty of sub for my room, system, and somewhat restrained level preferences, I went looking for its limits. I found them a good bit beyond what I'd ordinarily ask. Playing a bass-heavy track like Sade's "Cherish the Day" a good 6 dB louder than I'd usually require, I sensed (rather than heard) a coarsening of the kick-drum thud. I had to power down my power amp and audition the subwoofer naked to hear it hitting its limits with a 50-Hz thwack, and even then the JL's combination of large, clean output and well-engineered "smart-limiting" kept it from producing any of the ruder noises I've heard from plenty of subs (including some quite expensive ones) under similar duress.

Test Bench

JL Audio e110 Subwoofer



e110 (blue) Close-miked response, normalized to the level at 80 Hz: lower –3 dB @ 26 Hz, –6 dB @ 21 Hz, upper –3 dB @ 119 Hz with Crossover switch set to Off.— *MJP*

SPECS

10 in woofer; 1,200 watts RMS short-term; sealed enclosure; line-level stereo in, high-pass out (defeatable 24 dB/oct. Linkwitz-Riley); speaker-level in; 13.5 x 14.25 x 16.5 in (W x H x D); 52.7 lb

Second Bass

For any who fear such limitations, know that JL recommends deploying the e110 in pairs, trios, or quads—in fact, the company sent me two identical subwoofers. I dutifully unpacked the second unit and set it up about two-fifths of the way down my left wall, where I've previously found duplicate subs to integrate best. My reward: lil' bit louder now. At a guess, I'd say the dual-sub layout gained me 5 dB or so peak level; theoretically, two powered subs will play 6 dB louder than one if located together, but the vagaries of room gain and uneven mode effects usually result in less than the theoretical summation with placement in real rooms. The character and quality of bass remained unchanged, but the second sub put the level limit beyond anything I could ever imagine wanting and into the range required to send your friends home speechless.

In all honesty, the rest of my test amounted to trying, unsuccessfully, to disprove my earlier impressions. Whatever I tried, even a single JL e110 was reliably loud, low, clean, and well behaved; two were just that much more so. I even played *Black Hawk Down* (an almost-free Blu-ray I scored from my local Blockbuster's closing) and cued up its famous helicopters: nada. I managed to set the pencils in my pencil jar visibly dancing, but I got nothing more than deep, floor-weaving, respiration-inhibiting bass from the subwoofers.

This one's a keeper. 'Merican-made, too. ◆

The longer I listened, the more impressed I became.

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TEST REPORT

Great Sound, Small Package

By David Vaughn

JL Audio Dominion d110 Subwoofer

AT A GLANCE

Plus

- **Powerful bass for a compact sub**
- **Performs extremely well with music and movies**

Minus

- **Lacks last half-octave of deep bass you can get from larger subs**

IT'S ANOTHER AMERICAN business success story. A couple of kids, Jim Birch and Lucio Proni, begin building home loudspeakers during summer break in 1975. More than 40 years later, Jim and Lucio are still going strong, having seen JL Audio become one of the most respected consumer electronics brands in the world, branching out from the home to mobile and marine applications. I've experienced their products at some custom shops and have read glowing reviews of their subwoofers over the years. My favorite review was by my colleague Darryl Wilkinson, who said the company's Fathom f212 sub could play a 20-hertz test tone loud enough to liquefy his bowels! High praise, indeed.

Needless to say, when I was asked if I wanted to review JL Audio's new Dominion d110 subwoofer, I couldn't hit the reply button quick enough to ensure an in-home audition. The Dominion line consists of four SKUs: 10-inch and 8-inch models with two finishes each, black gloss and black ash. JL sent me the black gloss d110 for review, which has an MSRP of $1,100. But if you don't need the piano finish, you can save $100 and go with the painted wood look; both models should sound exactly the same.

The Dominion d110 is at the upper end of moderately priced subwoofers, but it's also the lowest-priced offering from JL Audio. In fact, it's downright cheap compared with the previously mentioned Fathom f212, which goes for $7,000, and especially the Gotham v2, a $15,000 bass behemoth that those of us in the 99 percent club can only dream about owning! Given JL's rich history, could their entry-level model exceed my expectations? We'll have to see.

Judge Me by My Size, Do You?

Unboxing a Dominion d110 is relatively easy because of its small enclosure and manageable 38.2-pound weight, which made maneuvering it around the room a breeze; I could actually pick it up. Geometrically, it's not exactly a cube, measuring 12 inches wide x 13.4 high x 15.86 deep. The piano finish is flawless; after I had unpacked the d110 and wiped away my fingerprints, the sub was beautiful to look at. It boasts a sealed enclosure and is constructed from MDF with extensive internal bracing, in order to withstand the pounding it will take from the latest Hollywood blockbusters.

The d110 is powered by a 750-watt Class D amplifier designed to extract the most from the proprietary long-excursion driver platform. The 10-inch driver was designed using JL's exclusive DMA (Dynamic Motor Analysis) technology, which promises to deliver higher output levels with reduced distortion. In this model, the cone is claimed to have a full 2.7 inches of peak-to-peak excursion.

On the rear panel, above a rectangular heatsink, are the subwoofer controls: volume knob, Low Pass (LP) Filter switch (turning the internal crossover on/off), LP Frequency knob, Phase knob, and Polarity switch. There's a power indicator but no power switch since the sub kicks on when it detects an incoming signal and will automatically power down after 30 minutes without a signal.

Underneath the heatsink are both line- and speaker-level inputs, along with a wireless link connector, Grounded/Isolated switch, power connection, and fuse holder. The well-written manual explains that selecting the Grounded option can reduce hum in some systems. In my particular case, I didn't have any hum, so I left the setting at its Isolated default.

JL Audio sells a JLink TRX system ($200), which comprises a transmitter and a receiver that allow the d110, or any other sub, to be wirelessly positioned anywhere in the room for optimum subwoofer performance—as long as you have a power outlet available in that location. The d110 includes the JLink connector; hooking up the receiver via the Ethernet interface allows it to get power from the sub, reducing wire clutter during and after installation.

The only feature lacking from this subwoofer is built-in room correction, which is starting to appear now even in some mid- and budget-priced subs. This is a feature that JL offers in their expensive Fathom and Gotham lines. Granted, most buyers in this price class will forgo it, or use the room correction in their A/V receiver or preamp/processor, but that

The 10-inch driver has a claimed peak-to-peak excursion of 2.7 inches.

RATING

JL Audio Dominion d110 Subwoofer
Performance ★★★★½
Features ★★★★☆
Build Quality ★★★★★
Value ★★★★☆

THE VERDICT

If you're limited on space but have adequate funding, this is the strongest-performing compact sub I've auditioned.

SUBWOOFER

JL AUDIO DOMINION D110 SUBWOOFER

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solution doesn't always handle the lowest frequencies optimally. Another feature, app-based control via Bluetooth, is also starting to catch on now with subwoofers, and is hopefully something JL is looking at for future models. It's a great convenience to do setup and make on-the-fly adjustments from your money seat without having to walk across the room.

Pick One…No, How About Two?

JL Audio sent me two d110s for my review, and given their dainty enclosures, I fully expected that I'd go with the subs positioned next to each other to allow mutual coupling to boost the output. But it turns out that size can be deceiving, and I never felt the output lacking in the majority of my listening tests when I had the d110s in my two subwoofer sweet spots: the front left corner of my room and about halfway down the right wall. My home theater is just under 5,000 cubic feet, so generally speaking, it takes quite a bit of output to adequately fill the full audio spectrum—something the pair of d110s did quite well.

Considering its sealed enclosure, I expected the d110 to have the taut attack and lack of mudiness prized for music, and my suspicion was confirmed repeatedly. Regina Spektor's "Fidelity" (from *Begin to Hope*) is the most successful song in this artist's career. The track features some fantastic bass that complements the catchy tune, and the d110 never broke a sweat, even when I listened at high levels. The bass blended perfectly with my M&K Sound S150 studio monitors—especially after a full Audyssey calibration from my Marantz AV8802A pre/pro. Listening to only the front left d110, instead of the pair, wasn't quite as fulfilling, as I found the bass a bit too localized to the front of the room. However, when I engaged the second sub (and adjusted the subwoofer volume accordingly), I found the bass response much more satisfying and even.

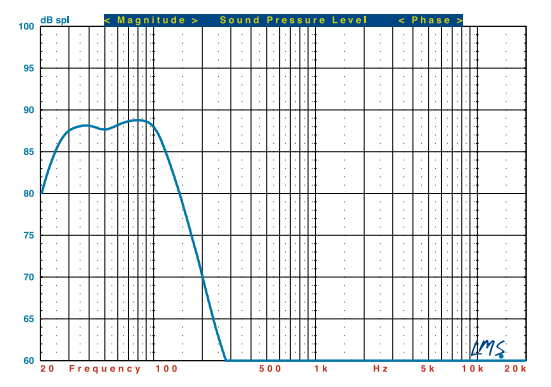
I'm not sure what Taylor Swift has more of: No. 1 singles or ex-boyfriends. Regardless, she knows how to write engaging music, and "Blank Space" is no exception. The song has an airy feel to it and harks back to the year in the title of its host album, 1989, with a synthesized beat that draws you in from the first note. But when the young lady starts to sing, the bass track kicks hard—really hard—and again, the d110s shined brightly. The bass response was tight and articulate, and it didn't linger in the room for even a moment longer than it was supposed to. Impressive would be an understatement.

After hearing the d110s display such prowess with music, I was very intrigued about what they could do with movie soundtracks, which generally dig deeper than pop music and end up being the Achilles' heel of small-enclosure subwoofers. I can't seem to get enough of *Game of Thrones*, as I'm in the middle of watching the series for the third time. "Blackwater" (season 2, episode 9) is one of the best installments of the entire series. Not only does it have drama and intrigue, but it showcases that Tyrion is a master tactician. As Stannis Baratheon's fleet arrives to sack King's Landing, Tyrion sends out a lone ship to meet the armada. Little does Baratheon know that the ship is loaded with "wildfire" propellant and, at the right moment, will unleash hell upon the invaders. When the moment comes, the Dolby Atmos track engulfs your listening room with flames, as the bass plumbs the depths.

Surprisingly, the d110s delivered copious amounts of bass, and they even had enough energy to shake my subfloor! While my reference SVS PC-Ultra and Hsu Research VTF-15H MK2 subwoofers are much larger and capable of far more output below 20 Hz, I honestly didn't expect the dual JL Audio subs to have such a visceral impact in this scene. Not only could I fully hear the explosion of the ship, but I could feel it vibrate the room. It's true that my reference subs can shake the floor to a greater degree, and I can feel it in my chest—something the dual d110s couldn't quite match. But overall, I came away quite impressed.

Test Bench

JL Audio Dominion d110 Subwoofer



DOMINION D110 (blue) Close-miked response, normalized to level @ 80 Hz: lower –3 dB @ 25 Hz, –6 dB @ 22 Hz, upper –3 dB @ 115 Hz with LP Filter switch set to Off.—*MJP*

SPECS 10 in cone driver; 750 watts RMS; sealed enclosure; line-level stereo in, speaker-level inputs; 12 x 13.4 x 15.86 in (WxHxD); 38.2lb

Next up was a trip down memory lane with *Star Wars, Episode II: Attack of the Clones*. Specifically, chapter 28: the asteroid field. Jango and Boba Fett aren't too happy with Obi-Wan tracking them to Geonosis, so they decide to drop a couple of seismic charges on the Jedi knight. Once again, the d110s surprised me with their exploding-bomb bass. The room filled with energy, and I could feel the explosions through the subfloor due to the kinetic energy from the dual subwoofers. Solid performance, indeed.

Conclusion

I'm very impressed with the Dominion d110 for the amount of bass produced from such a small enclosure. While it doesn't go as deep or hit quite as hard as my reference subwoofers—nor should it, given the physical constraints of its diminutive size—it impressed me enough to make it my go-to recommendation for those who have concerns about space and aesthetics. If that's you, be sure to put the d110 at the top of your audition list. While a pair of these were definitely preferred for my copious listening space, more average rooms would likely have no problem being similarly energized by a single d110. Of course, two of them would sound even better and be a lot more fun. ◆

● **The cabinet measures just under 16 inches on its longest side and weighs 38.2 pounds.**

● **Controls are located above a rectangular heatsink on the back panel.**


JL AUDIO

Barking mad

This well-designed smallscale subwoofer startles bass fiend **Adam Rayner** with its ability to track low-end effects without ever losing control

A black ash finish is also an option, and lowers the price to £820

SPECIFICATIONS

DRIVER: 1 x 8in long-excursion woofer
ENCLOSURE: Sealed
FREQUENCY RESPONSE: 31Hz-112Hz (+/-1.5dB); -3dB at 29Hz and 119Hz
ONBOARD POWER: 500W RMS Class D amp
REMOTE CONTROL: No
DIMENSIONS: 254(w) x 289(h) x 336(d)mm (including feet and rear fins)
WEIGHT: 12kg
CONNECTIONS: High-level speaker inputs (stereo or mono); phono inputs (stereo or mono); Wireless Link Port for use with optional JLink TRX system (rated at up to 30m)

JL AUDIO STRADDLES both the AV and car audio markets, delivering deep bass thrills to those who seek them. On the home cinema side it is best known for its premium-priced, insanely potent Gotham and Fathom subwoofers. This offering, new to the UK and debuted at the Bristol Show, is the company's idea of an entry-level product, and is called Dominion.

The £900 d108 is a sealed box of just 1.3 litres. It uses a single 8in woofer and a 500W RMS amplifier. The slightly bigger Dominion, the d110, has a 10in driver and a more punchy 750W power plant, and costs £200 more.

As well as high-level speaker wire connections via a neat quick-release plug system, the Dominion d108 has twin phono sockets and can be fed in LFE or stereo. There's also an Ethernet socket, used for connection of the receiver box of JL Audio's new JLink system. This £235 accessory comes with a 2.4GHz wireless transmitter that hooks into your source gear. Up to three extra receivers can be used (£135 each), to feed more subwoofers.

I connected the transmitter/receiver system and after a little time setting up the woofer, played some music before spinning *Inside Out* by Pixar. The back panel of the sub is interesting: there's a polarity flip switch (and an input ground lift switch, incidentally, to avoid any earth buzzes) but there's also a continuous-sweep phase control, zero to 280 degrees. You can take this as an indicator of JL Audio's affinity with bass.

The 8in driver has a very big top roll surround, with a bigger roll-diameter than found on most 15in drivers. Inside, a bevy of patented parts reside to allow a stupefyingly long throw – up to 2.5in, suggests JL Audio. Along with the iron grip of an amp with a closely regulated power supply, it makes for bizarrely impactful bass from a small woofer.

AV INFO

PRODUCT: 8in sealed subwoofer compatible with optional wireless transmission system

POSITION: JL Audio's entry-level, despite the price tag

PEERS: Velodyne MicroVee; Artison Nano 1

Luscious LFE

The d108 purred, growled and held luscious notes underneath my resident system of large B&W tower speakers and a centre speaker weighing thrice what this woofer does.

The Pixar 'toon starts very gently inside a newborn's head. We're given exposition about how memories are kept. And when a memory is stored, this plot-vital concept is accompanied by a rich, heavy, bass throb. Just so you don't miss it. And it was here that I realised JL Audio's tiny box has an identity crisis. It's like a Chihuahua that barks like a Great Dane. The d108 captured the depth and absurd weight of the effect, its relatively small driver aided by that massive excursion and firm suspension. Set deep into the front baffle behind a grille intended to be left in place, it shifts air with relish.

Without spoilers: Sadness and Joy accidentally get sucked up a big pipe. Another important soundtrack moment with a large, taut 'thwobb' effect that drops deep. The d108 simply delivered all this, with no evidence of its small size, and without a shrug. Even when our protagonist gets in trouble, Islands Of Personality crashing into the abyss, the room-shaking tones got played with clean, full-bodied aplomb.

Furthermore, Jangles the clown, asleep and snoring behind the doors of subconscious, presents a brooding LFE effect that goes almost to subsonics. This proved a test of the d108's bass extension. It's rated at 29Hz at -3dB, but JL Audio also claims a 21Hz response at -10dB, which is entirely believable. And higher up the frequency band, this woofer relished the rambling basslines of the jazzy end credits music.

So in addition to its pretty looks and capable controls, the Dominion d108 sub is astonishingly good in output. Played unseen, I might have thought it was subwoofer with a 12in driver and a solid amp.

It's certainly not cheap, but is very good indeed. Perfect for when space is tight ■

HCC VERDICT ★★★★½

JL Audio Dominion d108
→ www.av-techsolutions.co.uk

WE SAY: Significantly more money than some 8in subwoofers around, but the Dominion offers an output that belies its size, with superb control


JL AUDIO

Print Advertising

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Brace yourself.

The most acclaimed subwoofer in the world just got even better.

FATHOM f212

The new Fathom f212 employs a pair of massive, new generation 12W7 subwoofer drivers centered around the largest, most powerful and most refined motor systems we have ever used on a 12-inch woofer.

The payoff is mind-blowing bass with enhanced output, reduced distortion and even greater transient accuracy than our highly acclaimed single-woofer Fathoms. In fact, the f212 actually outperforms a pair of stacked f112's, without taking up any more space.

So, when we say "brace yourself", we're really not kidding... you're in for the ride of your life.

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JL AUDIO

"Subwoofer of the Year"

– The Perfect Vision, January 2007 (Fathom f113)

"Editors' Choice"

– The Perfect Vision, Winter 2007 (Fathom f112)

"Golden Ear Award"

– Absolute Sound, August 2007 (Fathom f113)

"Class A – Recommended Component"

– Stereophile, September 2007 (Fathom f113)

"Best Sound in Show"

– Home Theater Magazine, September 2006 (CEDIA Demonstration)

"Product of the Year"

– Home Theater & Sound, January 2007 (Fathom f113)

"Reviewers' Choice"

– Home Theater & Sound, January 2007 (Fathom f113)

FATHOM®

JL AUDIO®

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Decisions... decisions.

Fathom® f110

"...not only the most musical of subwoofers I've had the privilege of using, but by far the easiest to set up."

- Jeff Dorgay, ToneAudio, Issue 22, 2009

Fathom® f112

"Editor's Choice" Award

- The Absolute Sound (2007, 2008, 2009)

"a freaking rock of build quality"

- Colin Miller, Secrets of Home Theater and High Fidelity

Fathom® f113

Class A Recommended Component

- Stereophile

"Editor's Choice" Award

- The Absolute Sound (2007, 2008, 2009)

Fathom® f212

The Fathom f212 has raised the performance quality of my audio system, and my enjoyment of it, to much higher levels.

The Fathom f212 belongs in the top-rank–Class A–of "Recommended Components."

- Larry Greenhill, Stereophile, April 2010

Fathom® IWS

New for 2010!

True Fathom performance, invisibly installed inside your walls.

Gotham® g213

"...one of the rare pieces of high-end audio gear that will take you somewhere you have never been."

- Jeff Dorgay, ToneAudio, Issue 26, 2009

JL AUDIO®

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While a single Fathom powered subwoofer will enhance any fine loudspeaker system, a pair of them will take your audio experience to the highest possible level.

Discover the science and the magic of dual Fathoms at your authorized JL Audio retailer.

the absolute sound 2008 EDITORS' CHOICE AWARD WINNER

the absolute sound 2009 EDITORS' CHOICE AWARD WINNER

Class A Recommended Component stereophile

JL AUDIO®

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Your ears won't believe what your eyes don't see.

It is time for an in-wall subwoofer that does not require lowering your expectations.

The same minds that engineered JL Audio's reference-grade Fathom® and Gotham® powered subwoofers have created this remarkable in-wall solution, centered on a purpose-engineered, thin-line driver with patented technology. Housing this exotic driver is a critically engineered enclosure with a unique floating mount design to minimize wall excitation. Each system is driven by a purpose-tuned amplifier, delivering up to 2 kW and armed with serious processing power, including our acclaimed Automatic Room Optimization system.

Introducing the **Fathom® IWS**: True, stand-alone, JL Audio subwoofer performance that disappears into your walls.

JL AUDIO®

ahead of the curve®

the absolute sound 2008 EDITORS' CHOICE AWARD WINNER

the absolute sound 2009 EDITORS' CHOICE AWARD WINNER

GOTHAM® g213
FATHOM® f113
FATHOM® f112

Unprecedented.

In 2008 and 2009, The Absolute Sound honored three of our subwoofers with an Editors' Choice Award.

(The other two haven't been reviewed yet.)

JL AUDIO®

Ahead of the Curve®

The fathom® f212

Home Theater 2012 Top Picks of the Year: Subwoofers

"If it weren't just a subwoofer, this would be a national treasure – or a secret weapon."

Home Theater magazine, Feb/March 2013

JL AUDIO®

Ahead of the Curve®

— the fathom® f212 —

“It was masterfully awe-inspiring”

“...I have to say that I sincerely hate the folks at JL Audio because they have forever ruined any pleasure I might have enjoyed with any other subwoofer. I’ll never be able to listen to another without comparing it to the f212.”

“JL Audio’s Fathom f212 is more than just one hell of a subwoofer—it’s one hell of an experience.”

– Darryl Wilkinson, Home Theater, March 2012

JL AUDIO®

Ahead of the Curve®

‘Off-the-shelf’ was off the table.

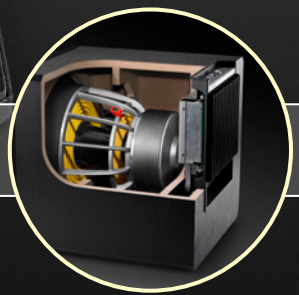
The E-Sub™ powered subwoofer

e110
10-inch driver
1200 watts

e112
12-inch driver
1500 watts

JL Audio powered subwoofer design, packed with new technology... from a radically designed, extreme-excursion driver, to an amazingly efficient and powerful amplifier.

Unleash it in your system and discover the magic of a truly exceptional subwoofer.



E SUB

JL AUDIO® | How we play.®

JL AUDIO®

Ahead of the Curve®

"...the no-brainer buy of the year."

e110
10-inch driver
1200 watts

e112
12-inch driver
1500 watts

"At the end of the day, the E-Sub e112 is an output beast with fidelity to match. That's worth the asking price in most any system. In fact, its performance makes the e112 the no-brainer buy of the year."

- Jeff Fritz, *SoundStage! Network*, October, 2013

E SUB NOW AVAILABLE

JL AUDIO® | How we play.®

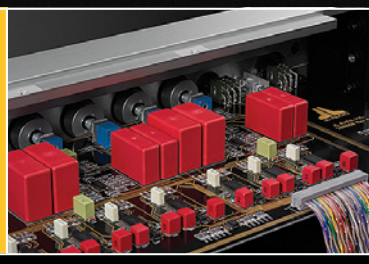
JL AUDIO®

Ahead of the Curve®

It wasn't there...

So, we built it.

CR-1: analog, 2-channel bass management for purists



JL AUDIO® | How we play.®

GOTHAM® v2

"This subwoofer really leaves former subwoofer-hater Jonathan Valin at a loss for words. It is so good at what it does—which is deliver power, clarity, color, texture, and sheer oomph in the the bottom octaves—**that he's never heard anything that can beat it in the bass,** either in a subwoofer or a full-range floorstander."

- The Absolute Sound, Editors' Choice Awards 2016

JL AUDIO® | How we play.®

American Awesomeness

(available in two convenient sizes)

"True supersub performance in a handsome package that doesn't break $2,000"

- Jeff Fritz, *SoundStage! Network*, October 2013 (e112)

"...a no-brainer highest recommendation if ever I heard one."

- Jonathan Valin, *The Absolute Sound*, June 2014 (e110)

"...the longer I listened, the more impressed I became."

- Daniel Kumin, *Sound & Vision*, February 2014 (e110)

2014 the absolute sound PRODUCT of the YEAR Awards

e110
10-inch driver
1200 watts

e112
12-inch driver
1500 watts

E SUB

The same DNA and American-built quality that underpins our renowned Fathom® powered subwoofers is also available in the E-Sub lineup, starting at less than $1,500.*

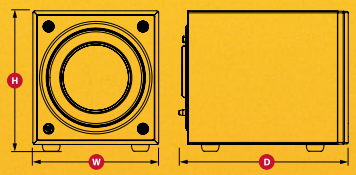
Give your audio system a present you will never forget.

JL AUDIO® | How we play.™

DOMINION™

With all the finesse and quality that their larger siblings are known for, Dominions establish a new benchmark for audio quality in super-compact powered subwoofers.

Audition a pair at your authorized JL Audio retailer to hear what all the fuss is about.



* All height dimensions include feet, depth dimensions include grilles.

d108

8-inch driver, 500 watts
Dimensions* (H x W x D):
11.37 in. x 10 in. x 13.23 in.
289 mm x 254 mm x 336 mm

d110

10-inch driver, 750 watts
Dimensions* (H x W x D):
13.4 in. x 12 in. x 15.86 in.
340 mm x 305 mm x 403 mm

Built in USA with global components.

True Substance.

In a smaller size.

DOMINION™

SKU#97141 09-2017
Printed in U.S.A.

JL AUDIO® | How we play.®

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