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KALMAN RUBINSON

# JL Audio Fathom f110v2

## POWERED SUBWOOFER

Some contentious issues will not be resolved in my lifetime: vinyl vs. digital, tubes vs. solid state, subjective vs. objective, streaming vs. physical media.

Also, subwoofers vs. no subwoofers in a stereo music system.

Setting aside the issues of cost and space and domestic tranquility and considering only the quality of the musical experience, I believe a subwoofer, or a few, should be a basic component of any modern audio system.

Regardless of the size and range of yours, loudspeakers—the main ones—are always positioned for optimal tonal balance and imaging based on their on-axis frequency response, off-axis dispersion, and the interaction of those parameters with a room's reflective surfaces. Optimizing low bass presents completely different challenges: Sources of low bass should be positioned to optimize interaction with low-frequency room modes, which in turn depend on the room's dimensions and shape. (Low bass is not involved in imaging, and in the low bass, "direct sound" is not even a useful idea.)

Except by chance or in a few purpose-built rooms—not all of them—there is no common solution to both tasks: no single spot that's best for low bass and the rest of the audible frequency range. The addition of subwoofers allows independent solutions to a music system's high- and low-frequency needs:



### SPECIFICATIONS

**Description** Powered, sealed-box subwoofer. Drive-unit: one 10" cone woofer. Effective displacement: 160in<sup>2</sup>. Effective piston area: 60in<sup>3</sup>. Low-pass filter: 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: 50k ohms (RCA), 100k ohms (XLR). 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±3dB at 25Hz); Polarity (0°/180°); Phase (variable, 0–280°, at 80Hz). Amplifier: switching, class-D, 1100W RMS short-term. Frequency response (anechoic): 27–111Hz, ±1.5dB; -3dB at 25Hz/120Hz; -10dB at 19Hz/155Hz.

**Dimensions** 15.64" (397mm) H × 12.92" (328mm) W × 17.27" (439mm) D. Weight: 71lb (31kg).

**Finishes** High-gloss black. Serial numbers of units reviewed 00464JOFB, 00472JOFB  
**Price** \$3500. Approximate number of dealers: 200. Warranty: 3 years, nontransferable.  
**Manufacturer** JL Audio, 10369 N. Commerce Parkway, Miramar, FL 33025-3921. Tel: (954) 443-1100. Fax: (954) 443-1111. Web: jlaudio.com.



You can position the subs independently of the main speakers, putting each in the position that works best. The possibility of incorporating several subs, each at a different location, adds to this advantage.

Smaller speakers with limited low-frequency output can of course benefit from the addition of subwoofers because the subwoofers' range extension helps balance the highs for a more optimal frequency response. Plus, the diversion of low frequencies to (typically powered) low-frequency drivers reduces the load on the main power amplifiers, which can improve system performance.

Finally, in contrast to passive speaker systems, most powered subwoofer systems incorporate DSP-based equalization in modern subwoofers—so now you can control both frequency response and—by moving the subwoofers around—which room modes are energized the most.

Working against this are mainly practical issues: Powered subwoofers tend to be large and take up space.

They need to be plugged into the wall—which means an extra power cord for each one—so, all-in-all, subwoofers are not that room-friendly. High-quality subwoofers can be expensive—though probably cheaper than comparable extension in a high-quality full-range loudspeaker.

And yet, subwoofers make it possible to extend the bass to very low frequencies in a controlled and musically satisfying manner. High-quality deep bass can make a big difference in the quality and character of the listening experience.

JL Audio has been near the forefront of mobile and home subwoofers for decades. The f110v2 I'm reviewing here is the smallest model in their most advanced class.

### Physical

At roughly 16" × 13" × 17", the f110v2 isn't large, but via its W7 driver and internal 1.1kW class-D amplifier, it can move a lot of air. Its small size makes it possible to employ several in a room, multiplying the output power and, by exciting the room from more than one location, have more control over *which* room modes are excited, compared to what could be achieved using a single, larger subwoofer of equivalent power. The result is, potentially at least, a more even low-frequency response in real-world rooms.

The f110v2 incorporates the latest, multiband version of JL's Digital Automatic Room Optimization (D.A.R.O.) processor, which uses internal signals and a provided



**To my surprise, the newfound clarity extended above the crossover and into the lower midrange.**

microphone to correct for irregularities in frequency response that result from room resonances and the subwoofers' positions. D.A.R.O. can be used independently on each sub, or you can daisy-chain the subs together and equalize *le tout ensemble*.

As I unpacked the f110v2, I was impressed, as I have been before with this company, by the competence and practicality of the packaging. Even this relatively small sub is quite heavy, and yet a single person of no more than average strength can unpack it by inverting the box, sliding the sub onto carpet or a rug, then reinverting it to "walk" it into position.

The f110v2 is impeccably finished. As with its big brother, the f113v2<sup>1</sup>, left and right XLR and RCA inputs

are on the back, nestled between massive heatsinks. There is an XLR output to connect another sub as a slave, two input-mode switches, an IEC-style AC input, and a fuse post.

The typical controls and indicators are at the top of the front panel: power/standby; microphone input; illuminated Demo/Defeat/Calibrate buttons for the EQ; input-mode LEDs; a level-mode switch; the master level control; a switch for dimming or turning off the LEDs; a low-pass filter switch; low-pass frequency/ELF level<sup>2</sup>/phase controls; and a polarity switch—all behind a sturdy, well-fitting (and removable, obviously) front grille; when lit, the LEDs can be seen when the grille is in place.

Ever since the Fathom series was launched, the EQ has worked the same way. Plug in the provided microphone and press the "Calibrate" button. An LED flashes as you hurry back to your listening spot and hold the microphone at head level or, if you can, fix the microphone at head position using a microphone stand. Within seconds, the test tones begin. After a few minutes, the "Calibrate" LED stops flashing and the calibration is done.

What has changed since the Fathom series's early days is how capable the system is. Original, v1 Fathoms had a single band of parametric EQ, which sought to correct only the room's most aggressive mode. Current, v2 Fathoms, like the f110v2, have 18 parametric EQ filters operating in a range from 25Hz to 130Hz.

There's little doubt or controversy about the advantages of having several subwoofers instead of just one; recommendations for placement vary; practical issues tend to play a big role. Like many people with home systems, placement in my room was limited by the room's shape, the position

<sup>1</sup> See [stereophile.com/content/music-round-76-page-2](http://stereophile.com/content/music-round-76-page-2).

<sup>2</sup> "The Extreme Low Frequency trim control adjusts the sub's level at 24Hz from -24dB to +3dB, allowing the user to compensate for room or boundary gain and mitigate unwanted vibrations." It can also be used to "make certain material feel more exciting."

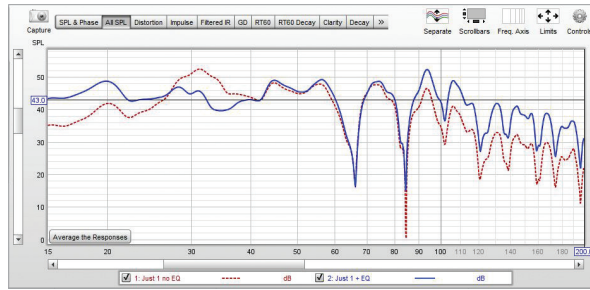
of furniture and other audio equipment, and the need to have the subs be as unobtrusive as possible—and to have an electrical receptacle nearby. Still, I had some options:

- ▶ I could use *one* f110v2 on the front wall, placed behind and between the front right and center speakers and about one-quarter of the distance from the side wall;
- ▶ I could add a *second* f110v2 on the left sidewall about one-third of the distance from the front wall;
- ▶ I could add a *third* sub in the room's right-rear corner.
- ▶ All three, or any two of the above.

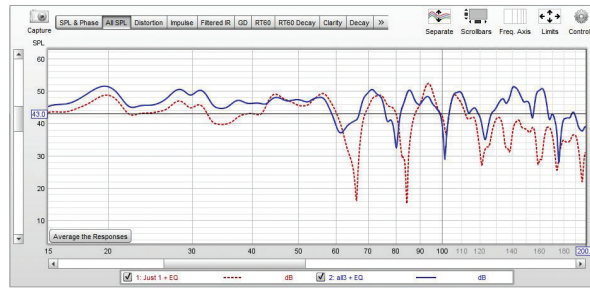
A key issue in the placement of subwoofers is how high up you intend to use them. Research shows that sounds below about 80Hz cannot readily be localized; if your subwoofer doesn't go above that frequency, the only consideration in placement (other than the practical considerations mentioned above) is how they energize the various room modes. But if you use your sub at higher frequencies it becomes possible to hear its location in the room, which complicates placement.

With a single subwoofer set up along the front wall, listening to the test tones during the D.A.R.O. calibration, which go well above 80Hz, I found it easy to hear the sub's location. When I added the second sub, on the left sidewall, the test tones seemed to come from the whole left wall. When I added the third sub in the right rear corner, the test tone filled the room, with no identifiable source. That last situation is ideal, but I judged the first acceptable: It's OK to have bass emerging from the part of the room where the main speakers are located. I eliminated the two-sub setup from consideration and limited my listening to one f110v2 along the front wall and the three-sub array, arranged as in the third bullet point above.

I started out in multichannel, feeding the subs—either one or three—from the Sub/LFE (low-frequency effects) channel of my multichannel server. In that arrangement, the main speakers are running full-range while the sub gets only the LFE channel on tracks that have one. Postcalibration, the results were rewarding, even though on music the LFE channel mostly tracks the low-frequency content of the front channels and contains little unique information. On a recent recording of Jean Guillou's organ transcription of Mussorgsky's *Pictures at an Exhibition*, performed by Zuzana Ferjenčíková on *Jean Guillou: Organ Works* (SACD, MDG 9062089), I didn't hear any new notes, but I did perceive more solidity and definition in the pedal tones,



**Fig.1** In-room low-frequency response of single JL Audio f110v2 subwoofer before and after running D.A.R.O. Before D.A.R.O. (dotted red trace), a large, broad hump at 32Hz and two nulls at 66Hz and 84Hz dominate the sub-100Hz range. After D.A.R.O. (solid blue trace), the 32Hz hump is mitigated and the range below the nulls is flattened and extended. Note that, as positioned, the single subwoofer cannot significantly reduce the two main nulls. Note the smooth low-frequency extension to below 15Hz, impressive for a single 10" driver.



**Fig.2** In-room low-frequency response of a single JL Audio f110v2 subwoofer (dotted red trace) vs. three of the same subs (solid blue trace), positioned as described in the text, both with D.A.R.O. equalization. The single f110v2 plot is the same as in Graph 1. Because three subwoofers can energize different modes to different extents by feeding in energy from different locations, this arrangement, in contrast to the single-sub arrangement, is able to mitigate the two main nulls. Also note the further flattening at the lowest frequencies.

whether I used a single f110v2 or three. As I turned up the volume, the balance between those low notes (so essential to this transcription) and the rest of the spectrum tracked more naturally than without the sub. On their own, the Revels (five of them for this test) could handle the load at any tolerable level, but the addition of the subs expanded the scale for which Guillou's original stereo recording of this repertoire (CD, DOR-99117) is revered.

All that is fine for a discrete multichannel system with a 5.1 system with large, full-range loudspeakers. But what about systems with smaller speakers, or with a prepro or AVR? With such systems, some form of bass management is required. The f110v2 subs do not offer a high-pass-filter option to roll off the bass from the main channel. Such full bass management is, of course, built into all prepros and AVRs and, with experimentation and effort, I could implement it in JRiver or Room.

However, JL Audio offers an easier solution: the CR-1 Active Subwoofer Crossover.<sup>3</sup> I inserted one between the L and R output of my preamp and the Left and Right inputs of the power amps and the subs.

D.A.R.O. cannot adjust the CR-1's settings; the CR-1 must be adjusted by the user independently of D.A.R.O. The CR-1 manual recommends making all the CR-1 adjustments *before* running the D.A.R.O. processor, but to me that seems illogical: Any settings in the CR-1 depend on what is *downstream*, and those settings will be compromised if the subs are EQ-ed *post hoc*.<sup>4</sup>

The CR-1 has adjustments for crossover slope and frequency, sub/sat balance and damping in the crossover region, and JL provides excellent instructions for setting them by ear. I followed those instructions, but I also found it helpful to observe the OmniMic V2's live display of in-room frequency response during the process. The settings were unremarkable—except for my choice of 90Hz for the crossover, which is higher than I would normally choose, and high enough that at the top end, the bass can become directional; JL Audio recommends a high crossover point, so that more of the bass is provided by bass-specialist subwoofers—and more is equalized.

3 See Larry Greenhill's review of the big brother f212v2 and the CR-1 for more details on the latter: [stereophile.com/content/jl-audio-fathom-f212v2-powered-subwoofer-cr-1-crossover](http://stereophile.com/content/jl-audio-fathom-f212v2-powered-subwoofer-cr-1-crossover).

4 I exchanged comments with JL Audio about this. They said that they would reconsider their recommendations.

JL Audio also recommends stuffing ports and raising the crossover above the range where the port operates so that all low bass is from nonresonant, sealed woofers. I declined to stuff the ports, but with the ports' output down 20dB at 90Hz<sup>5</sup> and a 24dB/octave crossover slope in the CR-1, the ports should not be audible in this setup.

### Deep listening

How do you audition a subwoofer? The obvious answer is to haul out the bass-buster recordings you use to show off your system. So that's what I did, in both stereo and multichannel. Since the CR-1 has a bypass button, I could instantly switch between my main speakers (stereo or 5.0) run full-range and the same set with one or three f110v2s taking over the bass.

With my stereo bass chestnuts, Béla Fleck and the Flecktones' *The Flight of the Cosmic Hippo* (CD, Warner Bros. 9 26562-2, CD) and Mendelssohn's Organ Sonata for No.1 in F, with Thomas Murray (CD, Raven 390, originally from LP, Sheffield Town Hall S-13), the bass was tight, deep, and full. Both of these recordings are endowed with powerful lows, which even a single f110v2 delivered in spades while



delineating individual tones clearly enough to reveal the harmonic progression of the music.

From there, I went on to other old favorites such as the Telarc bass drum on the final march of the classic recording of Holst's First Suite for Military Band by the Cleveland Symphonic Winds (SACD, Telarc 60639); I relished its physical impact. In the same league but in multichannel, there's the final exclamation point (with bass drum) concluding Holst's ballet music from *The Perfect Fool* (SACD, Reference Recordings RR-146). *No problemo*, in stereo or multi-

channel, with either one f110v2 or three.

That's what a good subwoofer can do when you are listening for bass and not paying a lot of attention to the music. I moved on to a performance with a solo guitar where the music usually distracts me from the excellent sound: Tárrega's "Capricho árabe" from *La Guitarra de Torres*, played by Stefano Grondona (CD, Divox CDX 29701). The guitar's range extends below the 90Hz crossover of this

<sup>5</sup> See fig. 2 at [stereophile.com/content/revel-ultima-studio2-loudspeaker-measurements](http://stereophile.com/content/revel-ultima-studio2-loudspeaker-measurements).



setup, but this did not pose a challenge for decent speakers or a well-integrated sub. Grondona was recorded up close in a reverberant acoustic that endows his guitar with great warmth and weight. I have loved this recording for decades and carried it with me to many hi-fi shows, but it never sounded this good before. Replacing the excellent low end of the Studio2s with the tautly controlled f110v2 more completely disambiguated the sound of the guitar's lowest strings from that of the wood, without diminishing the warmth and weight of either.

Buster Williams's acoustic bass fiddle on *Griot Liberté* (SACD, High Note HCD 7123) goes down further below that 90Hz crossover; with the bass managed by JL subs, both the plucked and bowed tones are better defined in tonal character and space than with the Revels running full range.

To my surprise, the newfound clarity extended above the crossover and into the lower midrange. "I heard it through the grapevine," the stereo original of the classic Marvin Gaye performance, on *The Marvin Gaye Collection* (SACD, Motown B0003502-36), is an anemic recording; even switching in the JL f110v2 couldn't add lipstick. With the multichannel remix, which is much better mastered, the addition of one or three JL subs cleaned up the bass and rounded and projected Gaye's voice. Creedence Clearwater Revival, on *Cosmo's Factory* (SACD, Analogue Productions, CAPP 8402), in stereo, benefitted both from improved bass definition and from enhanced vocal clarity.

I had to try my go-to recording of Finzi's *Come Away, Death* (SACD, 2L 2L-064-SACD). From the first note of the piano, I felt the presence of the instrument and that strange, detailed illusion of a large instrument on legs with space around it. Kielland's voice seemed more rounded, yet lighter. Stereo with one f110v2 or multichannel with three were equally ravishing, save for the ingratiating ambience of multichannel. I thought I really knew this recording, but the JL Audio subs and the CR-1 have enhanced my respect for it and my joy.

Instead of continuing with an extended list of striking moments,<sup>6</sup> let's jump ahead to an orchestra-and-chorus extravaganza: Prokofiev's cantata *Alexander Nevsky* in a magnificent recording by Thierry Fischer and the Utah Choirs and SO (SACD, Reference Recordings "fresh" FR-735). From the opening chord, there was satisfying weight and texture in the lower strings; in the "Song About Alexander Nevsky," it was easy to hear the inner structure of the instruments and chorus. With the opening of the apocalyptic "Battle on the Ice," the double basses and the low brass growled with menace, and the timpani and bass drum made the ice-breaking tactile and almost visual.

Having accepted that the addition of the f110v2 and associated stuff suited me, I played a new 2L recording, *Ole Bull - Stages of Life* (SACD+Blu-ray, 2L 2L-159-SABD), which includes music for violin, pianos, and orchestra by the 19th century Norwegian virtuoso, often called "the Nordic Paganini." I loved an earlier recording of Bull's Violin Concerti (SACD+Blu-Ray, 2L 2L-067-SABD) from the same crew, so I had high expectations of both the music and the sound.

I was charmed and lulled by the sweet, sedate beginning of "Largo posato e Rondò capriccioso"; it put the image of the soloist and orchestra in my mind. Then, about 5 minutes in, a *sforzando tutti* hits with the impact of a small bomb. There's the timpani, *right there* on the front left, to the back of the orchestra (confirmed by the instrument map in the brochure); despite its apparent distance, it has weight and shape and specificity. Switch off the JL subs and, yeah, it's a

## ASSOCIATED EQUIPMENT

**Digital sources** Oppo Digital UDP-105 universal disc player, Pink Faun 2.16 Linux-based music server running Roon (review forthcoming), Baetis Prodigy-X PC-based music server running JRiver Media Center v26 and Roon, Mytek Brooklyn, exaSound e38 Mark II and Okto DAC8 Pro D/A processors. QNAP TVS-873 NAS.

**Preamplifiers** Audio Research MP1.

**Power amplifiers** Benchmark AHB2, Classé Sigma Mono.

**Loudspeakers** Revel Ultima2 Studio (L/C/R), Revel Performa3 f206 (SL/SR).

**Cables** Digital cables: AudioQuest Coffee (USB). Analog interconnects: AudioQuest Earth/DBS balanced, Kubala-Sosna Anticipation (RCA). Speaker cables: Benchmark Studio&Stage (NL2 to banana), Canare 4S11 (Blue Jeans Cable). AC Cables Kubala-Sosna Emotion, SignalCable MagicPower 20A.

**Accessories** AudioQuest Niagara 5000 and Brick Wall 8RAUD power conditioners, HDPLEX 400W ATX Linear Power Supply, CyberPower 850PFCLCD BBU (supplied with server).

**Listening room** 24' L x 14' W x 8' H, furnished with 2 MSR Acoustics Dimension4 SpringTraps in the front corners, 2 Ready Acoustics Chameleon Super Sub Bass Traps to the sides, and moderately sound-absorbing furniture. Front wall has large windows partly covered by fabric drapes and 4" thick 2' x 4' OC 705 panels. Rear of room extends into 10' x 7' foyer and a 12' x 8' dining area.—**Kalman Rubinson**

nice tutti but nothing special.

## Conclusions

I have learned that despite my abiding predilection, crossing over from main speakers to subwoofers at the lowest possible frequency is not a global solution. If the main speakers are placed for balance and imaging and not for optimum bass, and if one is using high-performance subwoofers with capable room EQ, such as the JL Audio f110v2 with D.A.R.O., a higher crossover point means that the optimized subwoofer is effective over more of a frequency range where room modes are important.

A corollary benefit of bass management with equalized subwoofers is that the lower midrange becomes clearer and more transparent. This is apparent on human voices and many instruments.

I found that this bass management is subjectively more satisfying than simply having a subwoofer playing the LFE channel on multichannel music recordings.

The JL f110v2 is a mighty mite of a sub, conceding little to its larger brothers. Placing it up front in a stereo system, crossed over to the main speakers and, most crucially, matched to the room with D.A.R.O., it can extend and clarify the bass response of your system. For a large room and/or a multichannel system, the f110v2 can be daisy-chained to additional f110v2s (or e110s) to increase the amount of bass power available, to reduce the influence of room modes and let D.A.R.O. finish the job. ■

<sup>6</sup> Here are three. The sprung-from-a-bow opening of Britten's *Variations on a Theme of Frank Bridge* (2L Records 2L125, SACD), the deep, plush bass ballast of Handel's *Concerto grosso in G Major* (Pentatone PTC 5186737, SACD), and the ripe bass and guitar that drive Keve Wilson's rendition of "Alone" (Pure Imagination, Composers Concordance Records COMCON002, CD).