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Floorstanding Loudspeakers

Focal Electra 1037 Be loudspeaker

By Michael Fremer • July, 2007

With the introduction of the 1000 Be series in 2005, Focal slipped its exclusive, high-performance beryllium tweeter out of the stuffy-looking Utopia series and into a sleeker, more stylish, more modern form.

The sound kept pace with the new look: from warmish, comfort-food rich to faster, leaner, low-fat nouvelle. The 1000 Be series brought Focal to the attention of a new segment of the audio enthusiast marketplace and, according to the company, the handsome, floorstanding 1027 Be ($7995/pair), enthusiastically reviewed by Sam Tellig in *Stereophile* in November 2005, quickly became a best-seller. (John Atkinson favorably reviewed the stand-mounted 1007 Be in June 2006.)

Focal's new Electra 1037 Be ($10,995) is essentially a larger, more powerful 1027 Be, with the latter speaker's basic architecture and components. Both are three-way, bottom-ported designs, and both feature Focal's exclusive 1" inverted beryllium-dome tweeter with Infinite Acoustic Loading (IAL) enclosure and 6½" W midrange cone. In place of the 1027's two 6½" W cones, the 1037 features three 7" W drivers, which should result in improved bass extension, dynamic capabilities, and sensitivity.

The Electra 1037 Be's stack of three woofers necessitated a 6" height increase over the 1027, to 49", though the 1037 is only 1" wider and 2" deeper. Still, it weighs almost 40 lbs

more: 112 lbs each. The result is a tall, graceful, imposing, wedge-shaped structure with stained redwood side cheeks, glossy, black curved baffle, recessed drivers, and flush-mounted grilles. It's probably the most attractive-looking speaker Focal has produced.

Factory specs
Last summer, when Canada-based American importer Audio Plus Services found out I was attending Milan's Top Audio Show (on my own dime), they invited me to make a detour (on their dime) to visit Focal in France, before flying on to the UK for the *Hi-Fi News* show at Heathrow Airport.

My first French stop was the Roman-built village of Bourbon-Lancy, home of the Guy.HF woodworking and cabinetmaking factory, where Focal's furniture-quality speaker enclosures have been built since Focal was founded in 1980. By 2001, Focal was accounting for 95% of Guy.HF's output, and so bought a 49% stake in the company from longtime audiophile and cabinetmaker Jean-Paul Guy, whose father, Emile, had founded the firm in 1945.

Next day, I went to Focal's company headquarters in St. Etienne, with a side trip to an off-site facility where they make their proprietary W cones from a light, stiff sandwich of aircraft-grade foam and glass fiber, the latter impregnated with a bonding agent. Focal claims this results in the lightest, stiffest, best-damped cones in the business. (How Focal came up with this idea (it involves yachting) and how they worked for years to bring it to fruition are stories that should be told, but not here.) Focal is vertically integrated: its speaker designers can specify the precise mass, rigidity, and damping factor required for a particular drive-unit cone, vary these by changing the thickness of the glass fiber, and then produce the actual cones—all at this same facility.

Then came a tour of the main factory, where Focal assembles by hand its premium drivers; makes all of its crossover networks and aluminum, titanium, and beryllium inverted-dome tweeters; and where a semi-automated driver-assembly production line, designed and built-in house, lets Focal continue to build drivers for its lower-priced lines in France instead of outsourcing them to China, as most companies have done.

Assembly, testing, and boxing of the finished loudspeakers also take place in the main factory. To eliminate customer confusion, the parent company, Focal, is in the process of dropping from its products the JMlab brand (named after company founder Jacques Mahul, who remains its president).

Electra 1037 Be specifics
The 1000 Be series uses what Focal calls Advanced Gamma® cabinet construction, in which wooden side panels, varying in thickness and radiused where they meet the curved front baffle, create an enclosure with nonparallel sides. This inhibits standing waves and creates a low-diffraction environment for the tweeter, which is incorporated into a curved, self-contained aluminum structure that matches the front baffle's contour.

The midrange driver and the three woofers are set back into recesses in the baffle. Two grilles whose curves match the baffle's contour are mounted flush with the surface of the baffle to create a clean, integrated appearance. A removable wire mesh puck, held in place by concealed magnets, protects the tweeter.

The midrange drive-unit operates between 230Hz and 2kHz. While extending this driver's range to the more typical 2.3kHz or 2.7kHz region (or up to 4.8kHz, in the case of the Peak Consult El Diablo, which I reviewed in May) has the potential to improve the system's tonal

and phase continuity by having a single driver generate the key instrumental and vocal fundamentals, beaming occurs as the crossover frequency rises and the cone diameter exceeds the sound's wavelength. Beaming results in an overpolite, "mellow" sound caused by the speaker's inability to deliver enough presence-region frequency energy off axis.

One of Focal's goals for the 1000 Be series was to move the crossover point down to 2kHz to avoid the beaming problem and to take advantage of the beryllium tweeter's fast response time in the critical 2–4kHz range. According to Focal (and Isaac Newton too, I'll bet), acceleration is inversely proportional to mass. Focal's tweeters of ultra-stiff beryllium are both thinner and of far lower mass than Focal's own aluminum and magnesium tweeters and, the company's literature claims, the highly touted deposited-diamond domes made by "others." Focal admits that, as a marketing tool, diamond is a boy's best friend, and that diamond domes are three times more rigid than beryllium—but they're also almost *five* times as heavy, and thus, Focal claims, have a far slower response time.

One way to get greater low-frequency extension from a beryllium tweeter would be to increase its mass, but that would be self-defeating. Instead, Focal's engineers incorporate a Poron surround (an inverted dome is much like a woofer), and place the driver in a small aluminum IAL enclosure that can be tuned to provide a near-infinite-baffle load. Focal claims that the combination of the very stiff beryllium tweeter and the IAL enclosure produces nearly flat response from 2kHz to 4kHz, along with improved definition and dispersion, lower distortion, and a drop in the tweeter's low-frequency resonance to 680Hz, obviating the need for steep filtering near the 2kHz crossover to the midrange driver.

The specifications Focal provided did show very low distortion in the tweeter's passband, and an impressively smooth high-frequency response that was virtually flat to 20kHz, with a high-frequency resonance just beyond 20kHz of low amplitude and narrow Q, followed by a steep rolloff and a response extending to around 40kHz. The tweeter's impulse response was equally impressive: very fast and well behaved, with a fast settling time. You'd think such measurements would indicate exceptionally smooth frequency response and uncolored sound.

Easy setup, riveting sound

Placed where virtually every other pair of speakers has worked well in my room, the Electra 1037 Bes immediately lived up to the high level of performance promised by Focal. Even the sorts of seams and bumps that jump out in my early listening to most speakers, but which often fade into the background over time, never showed up.

While the Focals neither plumbed the depths like nor produced the CinemaScopic soundstage of my reference speakers, the Wilson Audio Specialties MAXX 2s, they easily compensated for those minor acts of omission with top-to-bottom speed, transparency, resolution, and cohesiveness. The Electra 1037 Be was as fast and tightly sprung in the bottom octaves as it was in the middle and top ones. Its beryllium tweeter dispensed with "air" and "sparkle," replacing them with *real* detail I could hear way into the soundstage.

Transients were faster than sharp, approaching the ease, physicality, and true speed that lets you know, even from down the block or around the corner, that you're hearing live music, not a recording. And bass notes reproduced by the 1037 Be had equal speed, clarity, and cleanness, unmarred by cabinet "hangover" or bloat.

Cold colorations add grain, edge, and brightness. Warm ones produce chestiness, thickness, and rhythmic sludginess, as well as hoots, honks, and hollowness. The Electra produced no colorations, either cold or warm. Like the Audio Physic Scorpio, which seemed to just be and proved to have impressively flat in-room response (though many

more problems when measured semi-anechoically, for what that's worth), the 1037 Be seemed to melt into the woodwork to become one with the musical universe of space and tonality, especially the latter.

Rhino's recent reissue on 180gm vinyl of Joni Mitchell's *Blue* (Reprise MS 2038) suspended a startlingly clear, compact apparition of Mitchell between the Electras. The solidity and three-dimensionality of her voice were matched by the delicacy, transparency, and effervescence usually produced only by ribbon, electrostatic, or planar magnetic drivers.

You don't want to hear any chesty residue weighing down the voice, but the subtle, low-frequency percussive taps slipped into the mix of "All I Want" should have texture and weight, and sound not at all brittle or cardboardy. The distinctive timbre of James Taylor's guitar should ring cleanly, with the strings and body given appropriate space. The Electras delivered it all with that track, as well as with "My Old Man": the piano's percussive character was in pleasing balance with its rich, woody, timbral overtones, while the wide range of expressive pressures in Mitchell's chording were effectively and subtly communicated.

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Company Info

Focal-JMlab
Web Site

> US distributor: Audio Plus Services
156 Lawrence Paquette Industrial Drive
Champlain, NY 12919

(800) 663-9352

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The moody, Coltrane-esque title track of guitarist Pat Martino's *East!* (SACD/CD, OJC/Mobile Fidelity UDSACD 2018) sounded every bit like the somewhat flawed but immediate and transparent 1968 recording that it is, and while the piano exhibited the boxy, distorted coloration typical of that era, it didn't get lost in additive lower-midrange slop, while the delicately drawn percussion shimmered cleanly against a black backdrop. Locked into the right channel, the sound of Martino's hollow-body electric guitar believably combined wood, vacuum tubes, strings, and the soul of Wes Montgomery.

While some speakers' speed and almost colorless neutrality seem to flatter particular musical genres or even specific instruments, the Electra 1037s complimented all of them. Recordings of closely miked acoustic guitars; or of solo oboe, violin, or piano; or of lush massed strings or brass ensembles; or of female vocals or small jazz ensembles; or of grunge—every well-engineered recording that made its way onto the turntable or into the CD player was handled with equal effectiveness. The only exceptions were recordings of pipe organs, which need a speaker's deep-bass response to extend below 30Hz; and live recordings, which require ultra-low-frequency response to capture the ambience of a large venue.

But such limitations are not the same as faults. The Electra's designers wisely chose to let these limitations remain exposed rather than try to cover them up with sonic sins of commission. Rather than have an elevated or fattened lower midbass, the 1037 Be seemed to extend down smoothly to the limits of its low-frequency response and then just stop. But if you think that the 1037 Be therefore sounded lean or bass-shy, that was hardly the case. Low bass was there when it was called for, and wasn't when it wasn't.

The result was a nimble, fast, extremely well-textured foundation that gripped, held, and supported everything above it, rhythmically and tonally. Recordings of solo piano—such as Lydia Artymiw's performance of Schumann's *Humoreske* in B-flat Major, Op.20 (LP, Chandos ABR 1029), simply recorded in a highly reverberant space—unfolded with smooth, evenhanded sonic precision across the breadth of the keyboard, free of resonant hot spots; in soft passages, the lower octaves never faded into the reverberant ooze.

The Electras' macrodynamic capabilities, while very good, couldn't match the explosiveness of my Wilson MAXX 2s—hardly surprising, given the Focals' smaller size and far lower price. When pushed, the 1037 Be simply ran out of steam without losing its composure. The 1037 was at its most revealing at the lower end of the dynamic scale, producing the small, subtle dynamic shifts that give recorded music that all-important breath of life. Credit the rigidity and low mass of the drivers for that, along with what appears to be a very stiff, well-constructed cabinet. Greater macrodynamic detail can be had, but only by spending a lot more.

The 1037 Be's upper-octave performance was as smooth and well-behaved as it was below, producing effortless, unforced, grain-free detail, high resolution, and subtle but spectacular transparency (footnote 1). Still, my addition of a pair of Townshend Audio

supertweeters (reviewed by Art Dudley in November 2004, Follow-Up to come) indicated that the last vestiges of air and extension were beyond the 1037 Be's abilities. However, as a complement for the bottom end, the Focal tweeter's voicing was probably ideal.

I had no complaint about the 1037 Be's performance in the midrange, where its combination of speed, suppleness, and velvety smoothness free of even a hint of congestion produced unforced, uncolored vocals, and believable instrumental textures and tonality rivaling those of the most impressive loudspeakers at any price that I've heard. The sound of Norah Jones' voice on her latest album, *Not Too Late* (LP, Blue Note/Classic 3 74516 1), recorded all-analog and mixed to ½" 30ips tape, was eerily real. When she whistles on one track, it was real.

The picture painted by the Electra 1037s was somewhat smaller than that produced by some other speakers of similar size, with good but not expansive stage width and somewhat limited height. Moving the speakers farther apart to get a wider soundstage tended to dissipate the coherence of the center image, while changing the rake angle did nothing to increase stage height.

Overall, though, the Focals' picture was proportionally correct. Within the stage, images were solid and very well focused without being too sharply etched, and were of proper size. While I'm used to the MAXX 2s' much larger, deeper, and especially *taller* sound picture, the Electras' smooth yet detailed, always solid presentation never failed to engage me.

Conclusion

That a company can design and build outstanding drive-units does not guarantee that that company can make great loudspeakers. Over the years, though admittedly under less-than-ideal show conditions, I've never walked away from a Focal-JMlab demo with a great deal of enthusiasm. In the early years, I thought the company's bigger speakers sounded too bright and falsely "airy." Even the latest version of the Grand Utopia Be, which I heard in the company's own huge, well-treated listening room, while exquisite on top and in the mids and able to deliver the full weight and dynamic capabilities of the finest symphonic recordings, sounded overstuffed on the bottom and too full in the midbass, though I understand why others might like such a sound.

The Electra 1037 Bes were a different story: a pair of attractively modern-looking, beautifully built, moderately priced (by today's high-end standards) loudspeakers that seemed to deliver a seamless, coherent, faultless presentation in terms of tonality, harmonics, and rhythm, with limitations only at the extremes of frequency, dynamics, and soundstaging. I never found them too bright or too dull, or too lean, or too *anything*. The few "not quite enoughs" were omissions so far out of range that I could easily ignore them.

The Electra 1037 Bes remained in my system for almost three months, yet try as I might, I couldn't find a seam in the speaker's frequency balance. I'm certain that, at least in my room, it produced the smoothest, most coherent frequency response of *any* speaker I've reviewed, and especially of any model that extends down into the 30Hz region. The result was among the most convincing and believable expression of instrumental harmonics I've heard.

The Electra 1037s had limitations at the extremes of frequency and dynamics, and their soundstaging was less than expansive. If I had to assign any negative attribute to the Focal's overall presentation, it would be that it was on the somewhat dry and reserved side. But if you crave *real* detail, accurate instrumental timbres, rhythmic certitude, utter transparency, overall coherence, musical believability, and—especially—a speaker that, while it might not bowl you over on first hearing, over the long run will keep bringing you

back to the listening room, and keep you happy and enthralled through every listening session, I can't imagine a better $11,000 candidate than the Focal Electra 1037 Be. When the design expertise that went into this loudspeaker is applied to a refreshing of the top of Focal's line, watch out.

Footnote 1: It was immediately apparent that the 1037 Be's beryllium tweeter was noticeably faster and more resolving than the titanium one Focal sells to Wilson Audio Specialties for use in Wilson's MAXX 2. (Wilson Audio remains the only other speaker maker to which Focal continues to sell drive-units.)

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> US distributor: Audio Plus Services
156 Lawrence Paquette Industrial Drive
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(800) 663-9352

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Floorstanding Loudspeakers
Focal Electra 1037 Be loudspeaker: Specifications

Sidebar 1: Specifications

Description: Three-way, floor-standing, reflex-loaded loudspeaker. Drive-units: 1" inverted beryllium-dome tweeter, 6.5" W-cone midrange unit, three 7" W-cone woofers. Crossover frequencies: 230Hz, 2kHz. Frequency response: 33Hz–40kHz, ±3dB. Nominal impedance: 8 ohms. Sensitivity: 93dB/W/m. Recommended amplification: 40–400W.
Dimensions: 49 3/16" (1250mm) H by 11 15/16" (303mm) W by 15¾" (400mm) D. Weight: 112.2 lbs (51kg).
Finishes: Gloss black and aluminum baffle with rosewood side cheeks.
Serial Numbers Of Units Reviewed: 10A000037, 10A000038.
Price: $10,995/pair. Approximate number of dealers: 180.
Manufacturer: Focal-JMlab, BP 374-108 rue de l'Avenir, 42353 La Talaudiere Cedex, France. Tel: (33) 04 77 43 57 00. Fax: (33) 04 77 37 65 87. Web: www.focal.tm.fr. US distributor: Audio Plus Services, 156 Lawrence Paquette Industrial Drive, Champlain, NY 12919. Tel: (800) 663-9352. Fax: (866) 656-0686. Web: www.audioplusservices.com.

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Floorstanding Loudspeakers
Focal Electra 1037 Be loudspeaker: Associated Equipment

Sidebar 2: Associated Equipment

Analog Sources: Continuum Audio Labs Caliburn, Grand Prix Audio Monaco turntables; Continuum Audio Labs Cobra, Graham Phantom tonearms; Lyra Titan i, Air Tight PC-1, EMT Jubilee JSD 5 cartridges.
Digital Sources: Musical Fidelity kW DM25 DAC & transport, Alesis Masterlink BPT-modified hard-disk recorder.
Preamplification: Manley Steelhead, NAT Signature, S.A.P. Anniversary phono preamplifiers; Musical Fidelity kWP, darTZeel NHB-18NS preamplifiers.
Power Amplifiers: Musical Fidelity kW, Ayre MX-R (monoblocks); darTZeel NHB-108.
Loudspeakers: Wilson Audio Specialties MAXX 2.
Cables: Phono: Hovland Music Groove 2, Crystal Cable CrystalConnect Ultra. Interconnect: TARA Labs Zero, Crystal Cable CrystalConnect Ultra. Speaker: TARA Labs Omega, Shunyata Research Anaconda Vx Helix. AC: JPS.
Accessories: Continuum Audio Labs Castellon magnetic isolation stand, Finite Elemente Pagode equipment stands, Symposium Rollerblocks; Audiodharma Cable Cooker; Shunyata Research V-Ray Reference & Hydra 2 power conditioners; Oyaide AC wall jacks; ASC Tube Traps, RPG BAD & Abffusor panels; Furutech DeMag cartridge demagnetizer; Loricraft, VPI record-cleaning machines.—**Michael Fremer**

Article Continues: Measurements »

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Focal Electra 1037 Be loudspeaker: Measurements

Sidebar 3: Measurements

The Focal Electra 1037 Be was significantly more sensitive than normal at an estimated 90dB(B)/2.83V/m. However, its plot of impedance magnitude and electrical phase (fig.1) indicates that it is a demanding load for the partnering amplifier in the lower midrange and bass. Not only is there a minimum value of 3 ohms at 33Hz, but there is a combination of 4.25 ohms and –47.5° capacitive phase angle at 27.3Hz. Fortunately, music with significant energy below 40Hz is relatively rare, but an amplifier that has no trouble driving 4 ohm loads at high levels will still be required. The fact that the impedance remains above

10 ohms for much of the treble means that the 1037 Be will tend to sound shelved-up in the highs with tube amplification.

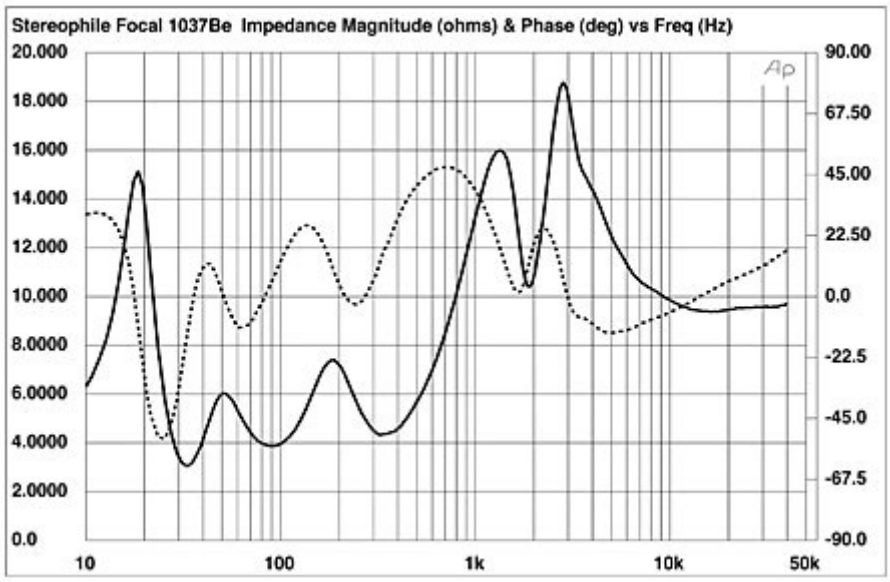

Fig.1 Focal Electra 1037 Be, electrical impedance (solid) and phase (dashed). (2 ohms/vertical div.)

It is very difficult to see at the scale these graphs are printed in the magazine, but there is a very slight discontinuity at 350Hz in the impedance-magnitude trace, which suggests a cabinet resonance mode of some kind at this frequency. Using a simple piezoelectric-plastic accelerometer, I did find a strong mode present at 344Hz on all surfaces (fig.2). It is difficult to predict the audible effect of this behavior, but some midrange congestion at high levels might be noticeable.

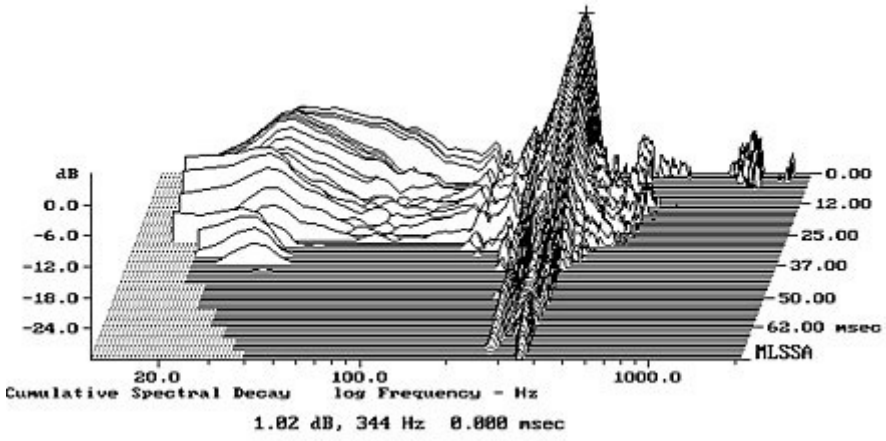

Fig.2 Focal Electra 1037 Be, cumulative spectral-decay plot calculated from the output of an accelerometer fastened to the cabinet's side panel level with the tweeter (MLS driving voltage to speaker, 7.55V; measurement bandwidth, 2kHz).

The impedance graph appears to suggest that the big, downward-facing port that loads the triple woofers is tuned to a low 33Hz; the port's nearfield response (fig.3, red trace) does peak at this frequency, with second-order rollouts above and below. However, the minimum-motion notch in the summed output of the woofers, again measured in the nearfield (fig.3, blue trace), occurs almost a third of an octave higher, at 39Hz, suggesting

that the reflex alignment is not quite optimally tuned. The woofers roll off above 120Hz, crossing over to the midrange unit (green trace) with symmetrical second-order slopes at 160Hz, and are well-behaved outside their passband. The port, however, has a severe peak at 350Hz, this suspiciously close to the frequency of the panel resonance noted earlier. Fortunately, the port fires down into the carpet, which will work against the audibility of this mode.

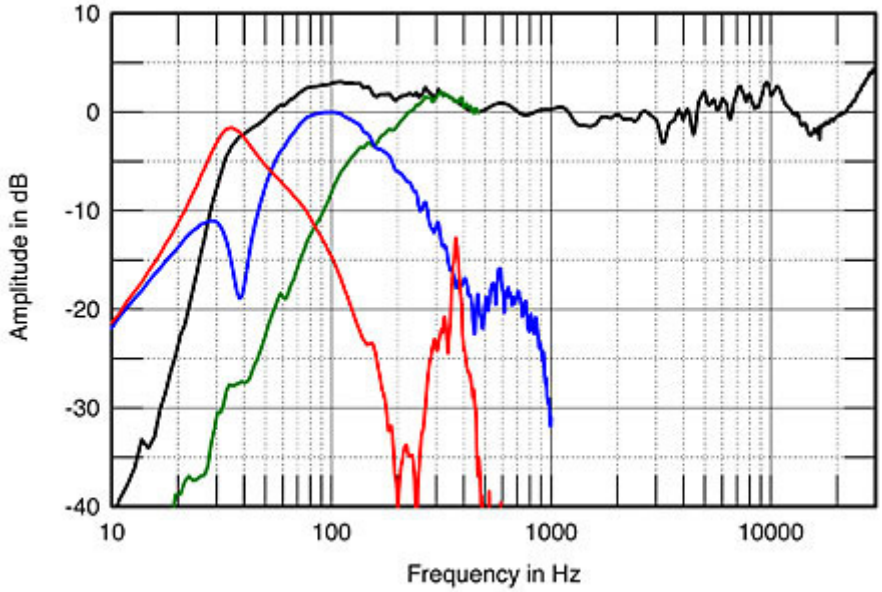

Fig.3 Focal Electra 1037 Be, anechoic response on tweeter axis at 50", averaged across 30° horizontal window and corrected for microphone response, with the nearfield responses of the midrange unit (green), woofers (blue), and port (red) plotted below 500Hz, 1kHz, and 600Hz, respectively, along with their complex sum plotted below 300Hz (black).

The complex sum of these nearfield bass responses, taking into account both acoustic phase and the differing distances from each radiator to a nominal farfield measuring position, is shown as the black trace below 300Hz in fig.3. There is the usual boost in the upper bass, due to the nearfield measurement technique, but the Electra 1037 Be actually shows good low-frequency extension. And the midrange and treble, assessed across a 30° horizontal angle on the tweeter axis, are superbly flat overall. There is a slight on-axis uptilt between 4 and 11kHz, and the tweeter's increasing directivity above 10kHz gives rise to an apparent slight lack of energy between that frequency and 23kHz, but these are minor departures from perfection. And note how the beryllium-dome tweeter's response is still at full level at the graph's upper limit of 30kHz.

The Focal's horizontal dispersion (fig.4) is actually even, the apparent flare between 3 and 5kHz resulting from the fact that a slight on-axis suckout fills in to the sides of the tweeter axis. The tweeter does get quite directional above 12kHz, however. In the vertical plane (fig.5), the Focal's balance doesn't change appreciably over quite a wide angle, even with the separation between the midrange unit and the woofers taken into account. A suckout does develop at the upper crossover frequency for standing listeners. Don't stand up while listening to this speaker!

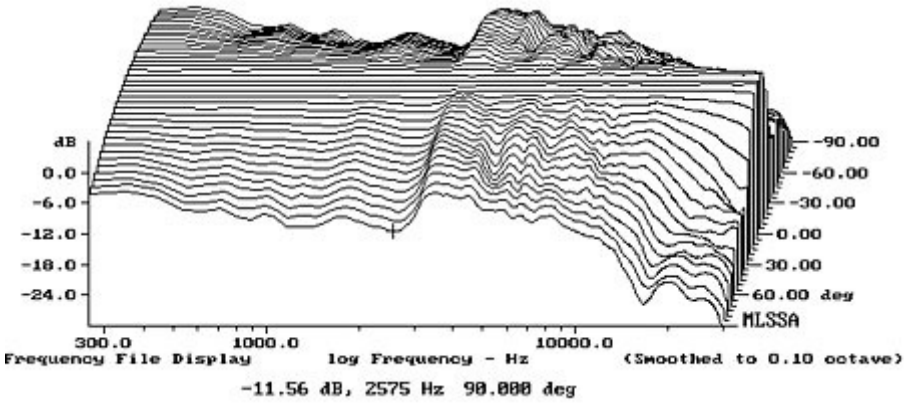

Fig.4 Focal Electra 1037 Be, lateral-response family at 50", normalized to response on tweeter axis, from back to front: differences in response 90–5° off axis, reference response, differences in response 5–90° off axis.

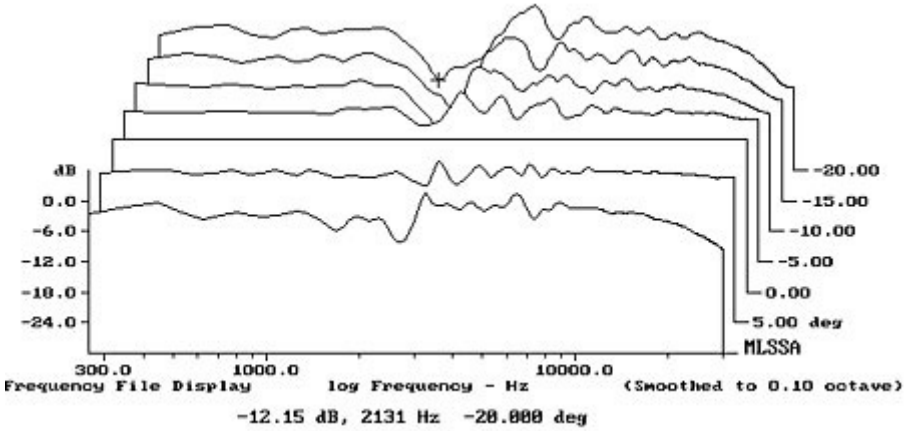

Fig.5 Focal Electra 1037 Be, vertical-response family at 50", normalized to response on tweeter axis, from back to front: differences in response 20–5° above axis, reference response, differences in response 5–10° below axis.

To take the graph shown in fig.6, I averaged 20 individual, 1/6-octave-smoothed spectra, taken in a rectangular grid centered on the position of Michael Fremer's ears in his listening chair. The peak between 30 and 60Hz is a residual room effect that has not been eliminated by the spatial averaging; it results from the boundary loading created by MF's having to place speakers relatively close to his room's corners. Otherwise, the Focals' in-room response is remarkably smooth and even. There is a slight excess of energy at the bottom of the tweeter's passband, but that will be heard as enhanced detail rather than as a tonal imbalance. And even with the tweeter's limited top-octave dispersion, the speaker's in-room response extends smoothly up to the 30kHz limit of the graph. Impressive.

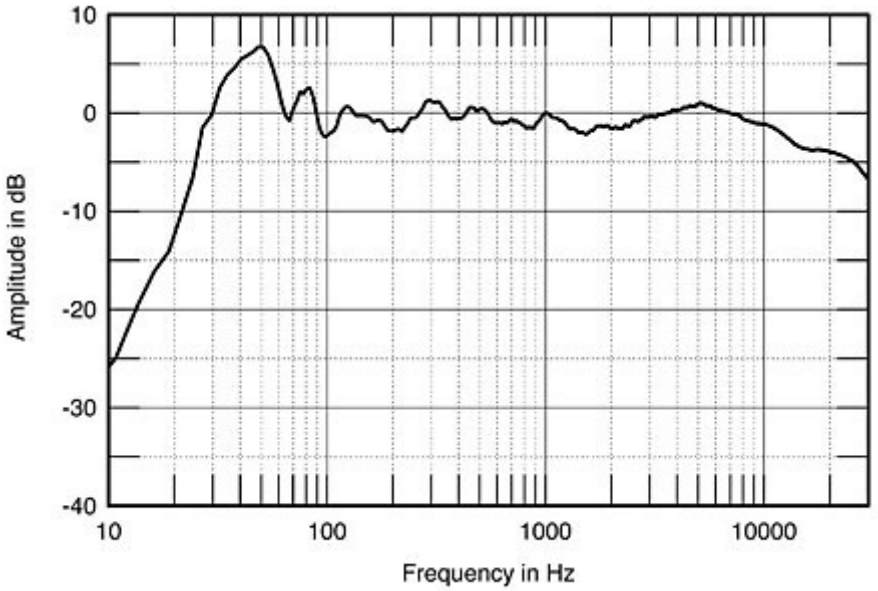

Fig.6 Focal Electra 1037 Be, spatially averaged, 1/6-octave response in MF's listening room.

Moving on to the time domain, the Electra 1037 Be's step response is shown in fig.7. This rather complicated-looking graph is explained by the fact that the tweeter and woofers are connected in inverted (negative) acoustic polarity, the midrange unit in positive polarity. Correlating with the excellent frequency-domain integration seen between the drive-units in figs. 3 and 6, each step response dovetails smoothly with that of the drive-unit next lower in frequency. The cumulative spectral-decay plot (fig.8) is not as clean as I was expecting from Michael's description of the Electra's sound. However, this is not due to the presence of resonant modes, but to early reflections of the tweeter's output, presumably from the lips of the baffle recesses of the lower-frequency drivers. (This behavior also gives rise to the small response ripples visible in the upper treble in fig.3.)

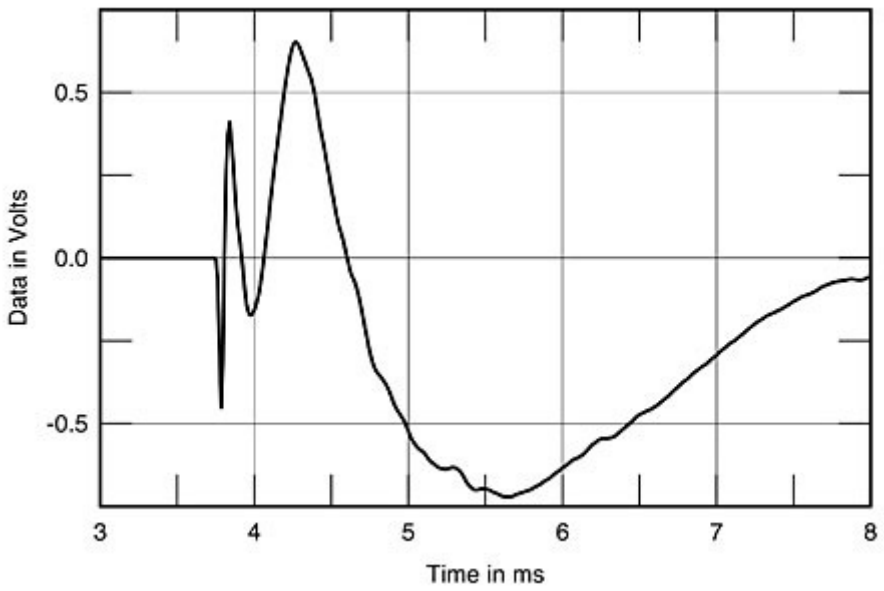

Fig.7 Focal Electra 1037 Be, step response on tweeter axis at 50" (5ms time window, 30kHz bandwidth).

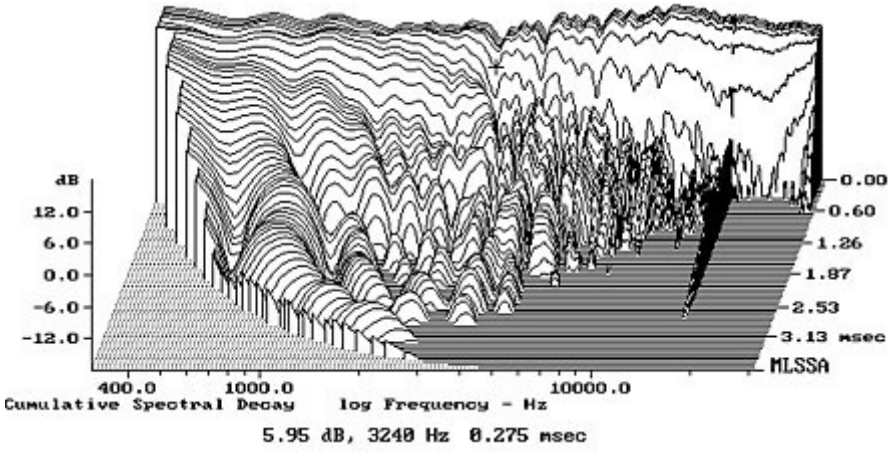

Fig.8 Focal Electra 1037 Be, cumulative spectral-decay plot at 50" (0.15ms risetime).

The Focal Electra 1037 Be offers superb measured performance, but I keep returning to that in-room response (fig.6), one of the best I have encountered. Wow!—**John Atkinson**

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