

## Raidho C1.1 Loudspeakers

by Roy Gregory, January 7, 2012

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Once upon a time, there was a little speaker with big ambitions. It had an aluminum baffle and a boat-backed cabinet, and its manufacturer made some serious claims about their revolutionary drivers and materials, their in-house production, their advanced mounting, and the quality of their crossovers. In fact, if all the claims were true, the speaker should be capable of a near-magical performance. It would also be very, very expensive, but not as costly as you might assume, because the speaker I'm describing is probably not the one you are thinking of. The speaker I have in mind is the Raidho C1, a compact, two-way stand-mount from Denmark, exquisite of form, impressive of function and genuinely revolutionary when it came to hardware: no off-the-shelf or "modified" tweeter or reconed bass unit; instead, it used real in-house-designed and -built drivers and

components, and real clean-sheet engineering solutions. The C1 was about as far from a "me-too" product as it's possible to get.

The Raidho story actually starts with a driver -- a planar-magnetic high-frequency unit, sometimes (erroneously and confusingly)

referred to as a ribbon. In my lexicon, a ribbon has an entirely conductive moving element, with signal going in one end and out of the other. The Raidho unit used a thin aluminum trace etched onto a mylar diaphragm, creating a continuous sheet. Magnets are placed either side of the driver membrane and behind its center. This construction, with signal passing down one side of the membrane and up the other, means that the electrical load represents something akin to a conventional voice coil, but flattened, with a nominal 7-ohm impedance -- in marked contrast to many ribbons that either exhibit





cripplingly severe impedance characteristics to the driving amplifier or employ a transformer to overcome them.

Not that definitions really matter. What matters is performance, and in this regard the Raidho unit was spectacularly good -- but also problematic. So quick and clean, it was hard to integrate properly with conventional, dynamic midrange or bass drivers. Even the fastest available units were struggling to keep up, resulting in a range of hybrid loudspeakers that had phenomenal performance potential but were almost unworkably critical when it came to placement and system matching; just a little extra weight in the wrong place, whether it came from positioning or the driving system, and the whole thing fell apart. Those X Series speakers were the classic hi-fi conundrum: when they were good they were very, very good, but when they were bad, they sounded broken.

The C1 was the first of Raidho's next-generation loudspeakers, and it was aimed at solving the problems experienced with the X Series models. Another hybrid planar-magnetic/dynamic design built around the original tweeter, this time it was based on a mid-bass driver built entirely in-house. Of course, many manufacturers state that their drivers are "unique," "custom" or "modified." What that generally means is that they have collaborated with a driver manufacturer to adapt an existing unit or develop a new one from the manufacturer's existing kit of parts. The result may indeed be unique -- but it is also generally pretty conventional.

There's nothing -- and I do mean nothing -- conventional about the mid-bass unit that Raidho developed for the

C1. Faced with the challenge of creating a driver that could match the speed of response and dynamic range of their tweeter, they quickly realized that extreme measures were necessary. Let's start with the cone as an example.

Rather than relying on an existing part or material, they set out to develop their own. An innovative production process was employed to create what Raidho refer to as

a "deep ceramic coated" cone for the bass driver. Most ceramic cones are homogenous structures, the most familiar being Accuton's white-bowl diaphragms. These are about 500 microns thick and undoubtedly stiff and light. The issue with them is preventing them from ringing, which accounts in part for the various cutouts or holes with which they are decorated.

The Raidho driver adopts a different approach: 100-micron ceramic "skins" being formed on the surface of a thin aluminum structure, leaving a metal core. That creates a sandwich cone with thick, light ceramic layers on either side of a thin aluminum center. The aim is to produce a cone structure that is as light and stiff as conventional ceramic cones, but offers far better self-damping.

But the innovation didn't stop there. Conventional dynamic drivers are built onto

a chassis that is then attached to the cabinet by bolts, clamps or some other fixing. The Raidho driver eliminated the chassis entirely, along with any mechanical discontinuities or energy loss that resulted from its fixing to the baffle. Instead, the cone surround attached directly to the contoured aluminum baffle, the basket structure being replaced by a motor mounted on a ring that was screwed directly into the back of the baffle by a series of stand-offs. The motor itself used an array of neodymium magnets in a push-pull arrangement, the short voice coil being massively





overhung. The former was fully vented to further aid dynamics and avoid thermal compression. The whole unit was a model of elegant engineering and utter simplicity, dedicated to the single goal of creating the fastest possible driver by eliminating mechanical compromise, stored or reflected energy and compression. It is both an impressive and extreme solution, an unequivocal response to the particularly demanding question presented in the form of Raidho's own planar-magnetic tweeter. The C1's bass driver was that answer -- and a pretty comprehensive one at that.

The high-frequency unit was also built directly onto the rear of the contoured baffle, ensuring accurate interfacing between the driver membrane itself and the shallow flare that loaded it, a vital consideration in achieving consistent results. The X Series had used a molded polymer element to load the tweeter, but made the mistake of using a simple push fit to locate it. Variations in the precise alignment of the driver and the throat of the flare, as well as the distance between the two, produced clearly audible irregularities in response. The answer was to integrate the two elements by eliminating the existing faceplate and constructing the driver directly onto the rear of the flared baffle -- which also happened to create a pleasing continuity with the construction of the mid-bass driver.

The two drivers were married by a simple crossover constructed from hand-built inductors and capacitors manufactured specifically to a Raidho design, using precisely specified elements and materials. The diminutive cabinet was narrow and deep, with curved walls and a rear-facing reflex port, carefully flared and integral with the contoured spine. The high-gloss burl walnut finish was immaculate, and the company also supplied a strikingly elegant stand, with a lightweight, sprung construction and resonance control interfaces top and bottom.

All in all it was a stunning product: innovative and visually elegant, it sounded mighty impressive too. But best of all, it cost rather less than half the price of some other options -- speakers that attracted considerably more attention despite being arguably less accomplished and definitely less fully engineered. Those in the know simply smiled, sat back and enjoyed the music, while Raidho worked on developing larger systems and the drivers to populate them.

I reviewed the C1s several years ago, and they've been a constant presence since, either in one of my systems or on the end of Chris Thomas's setup. Their dynamic and musical coherence, their transparency and sensitivity to the nuances of technique and expression have made them an invaluable tool, a crystal-clear window onto system performance. At the same time, their revealing character has made them a demanding review partner and a draconian task-master when it comes to system setup and state of tune. Nothing gets past the C1s, musically or in hi-fi terms.

Which brings us finally, to the new C1.1, the latest incarnation of this challenging and rewarding compact speaker. Outwardly virtually identical to the original, the updated model draws in part on experience and technology developed for those larger speaker systems, particularly the imposing C4 floorstander. As well as changes and refinements in the drivers, there have also been a number of improvements in the other hardware components, which might seem almost insignificant yet collectively have a profound effect.

The most obvious change is to the high-frequency diaphragm. The original employed incredibly thin conductive aluminum traces, etched in a classic "prison bars" pattern in a thin foil bonded to a mylar membrane. The revised tweeter employs the same magnet structure, but now the conductive traces constitute an interlocking, almost herringbone pattern. Raidho claim that this improves the linearity and consistency of the ribbon/diaphragm's motion, helping prevent bowing or rippling under drive. Given the width of the radiating area and the lateral spacing of the magnets (one on each side, one in the middle), I can certainly understand that this might have been an issue





with the original. Of course, having the C1s on hand allows direct comparison between the two, but let's not get ahead of ourselves.

Changes to the mid-bass driver are confined to the motor assembly, and more specifically the voice coil and former. The original version employed an aluminum former and this has now been changed to a zero-hysteresis titanium part, while the voice coil now uses a double-layer winding that is claimed to reduce the driver's inductance by 50%. Once again, direct comparisons are both instructive and conclusive.

The cabinet structure remains unchanged, the aluminum baffle plates still neatly mated to the beautifully lacquered 1"-thick HDF carcass. As if the small-panel dimensions and curved side walls aren't stiff enough, there are three internal horizontal braces and another vertical one. Despite its diminutive dimensions, this is one solid and substantial little box. It is still available in the original burl walnut finish, but now also comes in high-gloss black or white, the latter being particularly attractive -- at least to my eyes and in the context of our distinctly modern interior décor.

The other visible change is to the rear terminals, which are now Raidho's own design, in place of the previous WBTs. These are low-mass, dimensionally tuned items that might not look particularly impressive but sound amazing. Or rather, they don't; they just let you hear how much impact most other terminals have on the signal that passes through them. Internally, the wiring has been upgraded, now incorporating Nordost Odin as well as the previous Valhalla conductors -- suitably classy partners for the hand-crafted componentry employed in the crossover.

**T**he sum total of these changes might not seem that significant, more a tweaking than a fundamental redesign, but let me be absolutely clear about this: sonically, the C1.1 is a whole new ballgame. As previously mentioned, having the C1 in-house as a long-term reference allowed direct comparison between old model and new -- and it wasn't pretty. Face to face, the new speaker goes deeper with considerably more purpose. Bass notes have greater presence and energy, better pitch definition and shape. Music has greater impact, both physically and emotionally.

Impact -- it's an interesting term, and particularly so when it comes to the C1.1. There are two elements

that matter when it comes to impact: weight and speed. Something heavy travelling at moderate speed can have a lot less effect than something lighter but travelling an awful lot

faster. Just think ballistics. A six-gun fires a heavy slug that's almost half an inch in diameter. An M16 fires a thinner, longer round that's less than quarter of an inch in diameter and maybe a third as heavy -- but it travels a lot faster, and as a result, despite being smaller and lighter, it's a lot more lethal. Just ask the people on the receiving end.

In the same way, the physics of small drivers in small cabinets mean that small speakers simply don't go that low -- at least not unless they resort to mass-loaded drivers or other trickery. Which takes us straight back to bullets and slow and heavy versus light and fast. Over the years, different designers have tried different approaches to faking it when it comes to coaxing orchestral climaxes out of small speakers: varying degrees of "voicing," ABRs, isobaric bass loading and countless other approaches I either haven't heard about or have simply forgotten. Few if any of them actually deliver a convincing impression of the real thing, at least not without simply dumping the problem in someone else's lap -- normally the person designing the power amp.

So if realistic weight is darned near impossible to achieve, how about a convincing sense of impact? It's the road less traveled, at least in terms of speaker design, but it's the path chosen by Raidho. What the C1.1s do is deliver clean bass information as low as they can -- and they do so extremely quickly. Those bass notes might not go that deep, although the second-generation driver with its titanium voice-coil former certainly seems to help in this regard, but boy are they fast. The result is plenty of impact but without any of the "padding" so often added on to the bottom end of little speakers to make them seem larger than they are.

The resulting clarity cleans up the midbass and brings color and separation to the midrange. And musically the changes are no less profound. Play the recent Jurowski/LPO recording of Honegger's *Pastorale D'Ete* (CD [LPO 0058]) and the C1.1s deliver a dramatically more transparent, spacious and spatially focused picture of the orchestra. Tonal separation is significantly better, woodwinds, horns and celli easily picked as they play in concert. That's partly down to the extra substance





through the mids -- but I suspect it also reflects an increased sense of body and color from the tweeter. However, it's not just the ease with which each instrument can be identified; its purpose and contribution simply make more sense. The shape and structure of the work is more apparent and the playing more accomplished. The C1.1s bring an easy fluidity to the music, a natural ebb and flow that breathes life into the performance.

Move on to Amy Macdonald's *This Is The Life* [Melodramatic Records 173 212-4] and all the same benefits are apparent, the newer speaker easily sorting out what is a less-than-wonderful modern recording and injecting a much-needed sense of pace and intent. The guitar that drives the title track has real attack and once again the album as a whole has a purposeful momentum that engages and draws the listener in. The shifts in density that are such a part of this disc, the way so many of the tracks build from basic folk arrangements to almost anthemic proportions place a heavy burden on the system's dynamic envelope, a load that's readily encompassed by the C1.1s' enthusiastic response. So much so in fact that the use of compression to fill out the music's density and create the feeling of loudness is clearly revealed, the recording never pushing the speakers' dynamic range all the way -- despite the musical demands. Where most speakers are all too glad to accept a little judicious help when it comes to louder passages, these small Raidhos have a real "bring it on" attitude. It's almost as if they're saying, "We don't compress the music -- why should you?"

If you read **the introductory blog that preceded this series of speaker reviews**, you'll see me advance the theory that small speakers didn't really hit their stride until designers recognized the central importance of dynamic coherence and expression to their ability to convince musically.



The C1.1 goes much, much further than that; dynamic coherence might well be described as its *raison d'être*. It's what, in combination with its tactile, unimpeded bass performance, makes this speaker so astonishingly expressive and communicative -- and what allows it to speak (despite its diminutive dimensions) with a voice of such musical authority. And let's face it, if you can't have bandwidth, then authority is definitely the next best thing!

Take the bass clarity and presence, the useable, meaningful output that goes lower than you expect, without slowing or slurring, as well as those unfettered dynamics, and what

you get is a speaker that delivers not just tremendous resolution and dynamic discrimination, but a sense of tonal shading and subtlety that normally escapes speakers of this ilk, where color and resolution tend to be either/or qualities. Don't get me wrong -- a speaker like Crystal Cable's Arabesque Mini has a wider and richer tonal palette and better harmonic definition than the C1.1, but if you expect the Raidho to sound anemic, you are in for a very pleasant surprise. Lean it may be, but gutless it ain't. Instead, it leans on the front half of notes, which, along with its rhythmically articulate, sure-footed presentation and sudden leading edges, is



what imbues music with a real sense of purpose and the playing with precision.

I used the C1.1s with a range of amps, but mainly the VTL MB-450 IIIs, the Icon Audio Stereo 60 and, perhaps most impressively of all, the Rowland 625. This is no Avalon Indra or Coincident Pure Reference Extreme, speakers that stand so far apart from the music that what you hear is dominated by the amp. The tonal tailoring imposed by the Raidho is subtle, but it's there, and it's enough to give the speaker an identifiable character -- defined by its quickness and a sound that's clean without ever being sterile. But whereas most speakers will leave you thinking that the Rowland amp has slightly understated dynamics, perhaps a lack of absolute dynamic range, the Raidhos reveal that actually it's those other speakers imposing the limitation. The unexaggerated dynamic envelope delivered by the Rowland amp is given full scope, allowing its easy, unobstructed clarity full rein. Comparing the recent Boxstar re-release of Janis Ian's *Between The Lines* LP [Boxstar 88697691871] to my original pressing [CBS 33394] is a case in point. Using the tried-and-trusted test track "At Seventeen," the C1.1/625 combination clearly reveals the natural fluidity and phrasing in the performance, as well as a wealth of detail, easily separating the multiple guitars and the chorus horns. It also identifies the peculiar tonality of the trombonium as well as revealing the slight loss of immediacy and absolute clarity on the reissue.

Lest you think that softness comes from amp or speaker, not only is it absent from the original pressing, it's absent on many others too. The Argenta/Yepes *Concierto de Aranjuez* LP [Alhambra SCLL 14000] is a perfect example. This is one of the great classical recordings, where a performance of real majesty is captured in sound that truly does it justice. Its magical blend of musical brilliance and spatial coherence reveals both the C1.1s' strengths and character. The transparency and seamless space of this recording are clearly apparent, the soloist perfectly centered, his instrument presented with real immediacy and presence. The soundstage is broad, but whilst the instruments are both layered and precisely located, it lacks the obvious sense of (slightly exaggerated) depth you generally hear from this disc, an artifact of the simple, minimalist microphone technique. The speakers' wide stance and clarity create an expansive sound space

with precisely arranged and located instruments, but they don't define the acoustic as a whole, with clearly discernable boundaries. Listen for depth in the soundstage and it's there; it just isn't *obviously* there because you aren't hearing the side wall, the rear wall or the sense of proportion between them.

However, what is really, really impressive is the sheer intensity of Yepes' playing, his attack, his shaping of notes and phrases. The opening passage of the second movement is a lesson in that strange alchemy that somehow seamlessly combines delicacy and power, poise and an almost abandoned cascade of notes. It underlines not just Yepes' ability, but the grip and authority of the C1.1 when properly driven. If a system is a whole that's greater than the sum of its parts then the C1.1/625 setup definitely qualifies, which is doubly impressive given the quality of the individual elements. Throw Rowland's Aeris DAC into the equation and things really start to cook. Driving the 625 directly from the DAC's output brings a dramatic improvement in dynamic range, transparency and temporal integrity, as compared to the Wadia S7i alone. The sparse opening of Martin Stephenson's "Left Us To Burn" (from *Boat To Bolivia* [Kitchenware/Sony 88697145962], with its deep bass intro, tom toms and percussion, takes on a new purpose and pace, the timing and weight of hand on skin more apparent, the blackness of the background deeper and more velvety. The instruments step away from the speakers, the voices, lead and backing, are more focused, more natural and easier to separate. Suddenly, the performance is crisper, tighter and just plain *better*.

What's that got to do with the speakers? After all, it's the DAC that was changed. Sure -- but it was the speakers that let you hear the difference that the DAC made, and just how big that difference was. In the same way that the C1.1s don't compress dynamics, they don't compress system differences either, allowing the music as much presence and authority, intelligibility and impact as the equipment can deliver. One thing's for sure: with the Raidhos you'll never be left wondering.

If the C1.1s' *raison d'être* is uncompressed dynamic delivery, the other area in which they truly excel is temporal and spatial integrity. Each instrument or voice

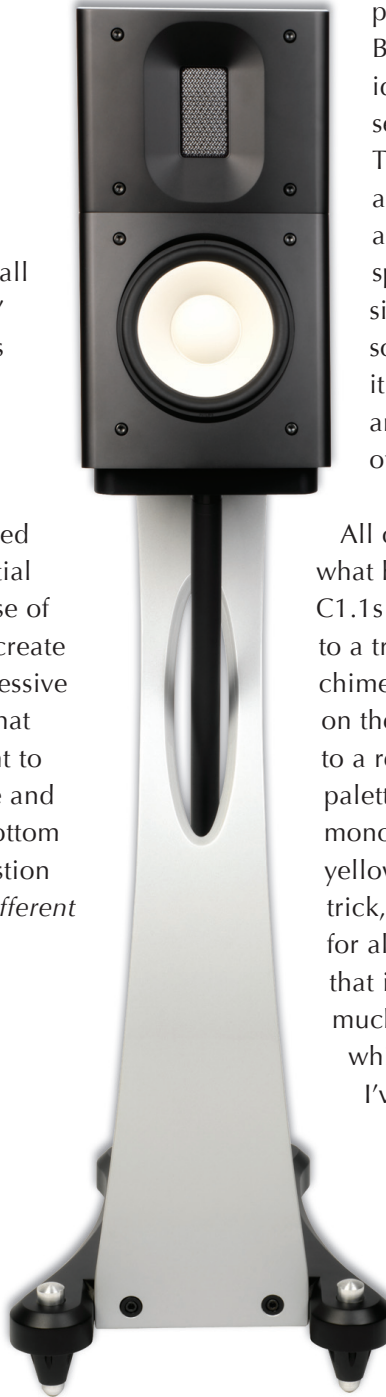


is precisely located in space (assuming that the information is encoded in the recording), its contributions timed to perfection (assuming that the driving system is capable of achieving that). This “a place for everything and everything in its place” sense of organization is crucial to the incredible intelligibility these speakers bring to recorded music.

They make it much easier to sort out or make sense of the music and the system as a whole -- not just what’s happening, but why as well. So when musicians hit a note together, *they really do*, adding just the right weight or emphasis to the music. The solidity of tutti, whether brass or percussion, gives a realistically sudden impact and explosive quality that escapes all but the best speakers, while the musicians’ placement in the musical scheme of things gives the music just the right impetus, whether it’s a gentle prod or a full-on orchestral climax.

Taken together, these qualities of uncluttered clarity, dynamic range and resolution, spatial and temporal integrity and the overall sense of organization and intelligibility they bring create a speaker that’s capable of singularly impressive musical feats. They also create a speaker that sounds distinctive -- and distinctly different to most other speakers, with that wide stance and absence of added weight to pad out the bottom end, muddle it and slow it down. The question potential owners need to ask is whether *different* means *better*, and what that means for the music they’ll play.

Let’s take Nouvelle Vague’s inspired cover of the Ultravox classic “Fade To Grey” from *Bande A’Part* [Perfect Kiss PFG079] as an example. Quite apart from the whole notion of reproducing this New Romantic milestone with solo female-voice and accordion accompaniment, it presents systems with a musical challenge of quite another kind. Behind the simple instrumentation, Marc Collin creates a complex synthetic soundscape, a sparsely populated metro station that then itself transmogrifies.



The C1.1s present the core elements with almost pristine clarity. True to type, the voice is a little hollow, more mouth than chest, the accordion lacking a little harmonic texture, almost making it sound synthesized rather than like the real thing. Behind them, the collage of quick, hurried steps are clearly located in space, each individual scurrying left or right and precisely angled across the soundstage. But what is almost spooky is the immediately identifiable echo of footsteps in tunnels, the sense of the tube extending beyond them. The hollowness in the voice fits right in, along with the rushing wind of trains and all the other incidental noises. When the spoken voiceover starts, most systems simply submerge it in the general wash of sound. The C1.1s pick it out and separate it with almost startling clarity, adding another layer to the cool, grey emptiness of the recording.

All of which is pretty impressive; but it’s what happens next that really sets the C1.1s apart. The soundscape slowly changes to a tropical beach, metallic knocks and chimes to steel drums, rushing trains to waves on the shore, the slightly threatening isolation to a reassuring calm. As it happens the tonal palette shifts completely, from cold, dull, monotone greys to warm, bright, golden yellows. It’s a piece of studio artifice, a party trick, but one that’s musically no less important for all that. In fact, it’s this shift in perspective that informs the performance and adds so much more to the original -- and without which it becomes little more than a curio.

I’ve never heard that shift so clearly, or heard it presented so effectively, as I did on the C1.1s. The Raidhos don’t just tell you what’s happened; you also understand why. This ability to grasp the essential sense of a performance is, in my experience, unprecedented. It’s rooted in the clarity with which the speaker presents the elements in the music and the relationships between them, and it makes the Raidho C1.1 a musical communicator par excellence.





**T**he C1.1s cannot create a replica of the original performance -- and in truth, they don't even try. Instead they concentrate on the sense of the music rather than the fact. It's a time-honored approach that probably dates from the design of the Linn Kann -- but I've never heard it done so well. It might sacrifice a palpable sense of the enclosed acoustic space, the sheer harmonic beauty and complexity of instruments, but that's less of an issue if you don't depend on acoustic recordings for the majority of your listening, and many don't. But whatever you listen to, the purpose and intent in the playing will rarely have been presented so clearly -- or driven home quite so effectively. It doesn't necessarily make for a comfortable listening experience, but then too much hi-fi spends far too much time trying to be musically polite, even cuddly. When Shostakovich wrote his 13th Symphony, named for the pogrom at Babi Yar, do you think he meant it to be easy listening? The Raidhos succeed in encompassing the full range of musical expression, from the guilty pleasure

and almost jaunty lightness of Nouvelle Vague's version of the Buzzcocks' "Ever Fallen In Love" to the somber pathos of the Leningrad Symphony.

This emotional range is one of the last great frontiers in hi-fi -- and the C1.1s break new ground. At a time when systems in general and loudspeakers in particular seem to play things ever safer, opting for flat frequency response, resolution or some other technical parameter, at the expense of musical expression and involvement, the C1.1s are a welcome breath of fresh air. The challenge they represent for listeners comes in the form of a question, "Do you want to play it safe or are you feeling adventurous; do you want music to confirm what you already know or become a voyage of discovery?" Think carefully, because the wrong answer will generally prove expensive -- even if it might have seemed like the "safe" solution at the time.

If it's adventure you want (or need), look no further than the C1.1s. Believe me, they'll take you on quite a trip!

**Price:** \$15,000 per pair in black or white finish, \$17,000 per pair in burl walnut finish. Raidho speaker stands cost \$3000 per pair.

**Warranty:** Five years parts and labor.

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### Care and feeding

The C1s were remarkably tolerant of system and setup, especially after the experience of the previous range. They needed to be placed well away from walls, well apart and slightly toed in. They weren't particularly hard to drive, but they placed a heavy premium on the coherence of the system doing the driving as well as its state of tuning. Decent supports and a coherent cable loom were pretty much *de rigueur* if the C1.1s weren't going to tell you all too clearly about discontinuities in the energy spectrum of your system. Beyond that, a decent source and a straight-

line approach were all that were required to achieve excellent results.

The C1.1s are almost but not quite as easy to feed. System-wise, they need exactly the same care and attention as the C-1s; start mixing and matching cables and they'll tell you just how dumb an idea that is. The good news is that every time you improve the quality or effectiveness of your system infrastructure, whether that's the surfaces supporting your electronics, what's coupling them together or a new, clean ground for your AC supply, the Raidhos will tell you all about it loud and clear.

They also like the same wide stance as their older siblings, working best when placed one speaker's width (or about 15") outside the norm for my listening room. They also like to be toed in far more, pointing directly at the listener, and are far less forgiving when it comes to front-wall distance. I'm guessing that it's the deeper bass from the revised driver, but you really need to get their front/back positioning spot on. In this regard, the matching stands make life easy. Unchanged from the originals, they offer cup-and-cone-type vibration control at top and bottom, along with a





carefully shaped and tuned lightweight construction to help dissipate unwanted energy. Distinctly different, they are also extremely effective. I've tried the Raidho speakers on other, more conventional stands and the performance suffers markedly. Two aspects of the stands' design contribute to easing setup: their light weight and the fact that the conical feet on which they stand have broad, rounded noses that are easy to shift on just about any surface, so small adjustments in angle or distance are easily achieved.

Which brings me to my one real bug-bear with the Raidho stand. Those feet are not adjustable! And there are four of them! For a speaker that is this thoroughly engineered this seems like a massive oversight -- and one that is now being repeated. Not only does it mean you can't get the speakers precisely level, one of the feet will almost certainly be unloaded and left to rattle. Come on guys, get with the program; a retrofittable foot that incorporates the same vibration control as well as leveling needs to be a priority. Given the focus and precision with which these speakers present sound sources, I can only wonder what would happen if you could get them perfectly planted and vertical to boot. What's really frustrating is that the stands are so essential to the speakers' performance. Otherwise you could just go with a different option.

**-Roy Gregory**

## Associated Equipment

**Analog:** VPI Classic 3+ turntable with VPI JMW 12" and Tri-Planar Mk VII Ull tonearms; Lyra Titan, Skala, Dorian and Dorian Mono cartridges; Clearaudio Goldfinger Statement and van den Hul Condor cartridges; Connoisseur 4.2 and Coincident Speaker Technology Statement phono stages.

**Digital:** Wadia S7i CD player, dCS Paganini three-box digital front-end, Jeff Rowland Aeris digital-to-analog converter.

**Preamplifiers:** Connoisseur 4.2, VTL TL-7.5 Series III and Coincident Speaker Technology Statement line stages.

**Power amplifiers:** Jeff Rowland 625 stereo amp, Berning Quadrature Z, VTL MB-450 Signature Series III, Jadis JA-30 and JA-120, and Coincident Speaker Technology M300B Frankenstein Mk II monoblocks.

**Integrated amplifier:** Icon Audio Stereo 60 Signature.

**Speakers:** Coincident Speaker Technology Pure Reference Extreme, Focal Chorus 807V and Stella Utopia EM, Sonus Faber Cremona, Spondor SA1 and A6.

**Cables:** Nordost Odin throughout the system, from AC socket to speaker terminals.

Power distribution was via Quantum QRT QB8s with a mix of QX2 and QX4 power purifiers and QV2 AC harmonizers.

**Supports:** Racks are finite element HD-04 Master Reference racks and amp stands along with a 26"-wide Stillpoints ESS. These are used with equipment couplers throughout, either Stillpoints or Nordost SortKones. Cables are elevated on Ayre Myrtle wood blocks.

**Accessories:** Feickert protractor and Aestetix cartridge demagnetizer, a precision spirit level and laser, a really long tape measure, and plenty of masking tape. Also extensive use of the Furutech anti-static and demagnetizing devices and the VPI HW27 Typhoon record-cleaning machine.