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Review

Stand mount speakers

Raidho Acoustics

D-1

Price (in Poland): 69 950 zł/pair (walnut)

Manufacturer: **Raidho Acoustics**

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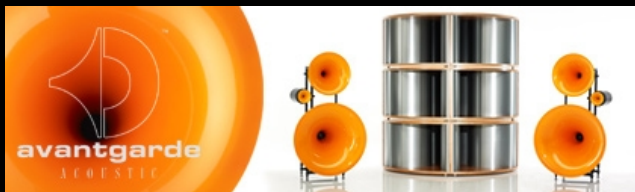
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First Impression Music

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Raidho acoustics



Speakers' specifications quoted by their manufacturers are very useful. Reading those supplied with the D-1 from Raidho Acoustic one can learn that they are two-way speakers with the dimensions of 200 x 370 x 360 mm and weight of 12.5 kg (each), sporting a 2nd order crossover at 3 kHz and rear vented design. And that they feature a ribbon tweeter and a 115-mm "Diamond" mid-woofer. The quoted diameter is that of the woofer cone itself, without the front suspension. What one doesn't find out is that they are very expensive, that they look beautiful and are very solidly built, and that they employ a

The D-1 is a stand mount speaker with a low cabinet capacity and a relatively small mid-bass driver. Each of these elements defines the amount of bass and its extension. However, it doesn't say anything about the things I've just mentioned. And it's them that make it a truly unique speaker.

The first impression after hooking up the speakers is that there is no shortage of bass. We play the tracks from the second disc of Jean Michel Jarre's double album *Essentials & Rarities* and we know that it's good. There is growl and rumble, great color differentiation and a physical sense of "push". The impression is

proprietary Raidho Cutting Edge Diamond technology of woofer cone coating that was used for the first time in this model. And one more thing – the latter is the only difference between the D-1 and the C-1. Although the difference might seem small, Jonathan Valin, editor of "The Absolute Sound" had no doubts awarding them the Best Sound of Show Award in his coverage of CES 2013 (see [HERE](#)).

Diamond has long been known and appreciated in audio. It's been used in turntables (styluses and bearings) and speakers (tweeter and midrange driver diaphragms) for its unmatched rigidity and abrasion resistance. In the case of driver diaphragms the key is diamond's hardness that gives them unparalleled stiffness. According to Raidho diamond is 140 times harder than ceramics, considered by many manufacturers to be a much better material than paper (see the Avalon speakers).

Raidho has implemented diamond differently than most manufacturers. Instead of using it to make the whole driver cone, a thin diamond layer is formed on its surface. The amount of diamond

applied to each cone equals 1.5 carat of pure diamond and makes it extremely expensive. The cone's base is a sandwich composed of a thin aluminum layer with sintered ceramic on both sides. By adding diamond to both sides for a total of five layers it is possible to push the first fundamental cone resonance frequency from the – already very high – 12.5 kHz beyond 20 kHz.

It may seem not that important as the driver is crossed over much lower at 3 kHz and even a gentle 2nd order filter should adequately deal with the resonance. In reality, parasitic cone resonance is extremely difficult to suppress. I know this only too well from various driver designs. The D-1's 3 dB resonance peak which, it must be stressed, is quite modest is damped by 36 dB at the crossover frequency. It's still not very much but significantly more than in the case of aluminum and ceramic cones.



The Raidho speakers also feature a unique tweeter. The manufacturer uses a rather large FTT75-30-8 quasi-ribbon in a sealed chamber to provide damping. It incorporates an array of neodymium magnets to drive an ultra-thin 0.02 g aluminum membrane. The woofer is angled upward to ensure a better phase alignment with the tweeter. A thick aluminum front baffle and an aluminum panel bolted to the back ensure proper cabinet rigidity. The D-1s come with great looking stands (at 6,950 PLN / pair). They are not too heavy but their design is well thought out and tailored for these particular speakers. Special care has been taken to provide a maximally efficient speaker isolation – the speaker doesn't sit directly on the top plate but is decoupled from the stand by small discs supported on metal ball bearings.

Using heavy speaker cables like my Tara Labs Omega Onyx may prove to be a problem. The vibration decoupling system in the stands works on the basis of movable isolation elements that have some play – both those under the speakers and in the floor spikes. If we put some weight on the rear of the speaker, the whole unit moves backward lightening the front, which is less than ideal. I solved this by simply putting a pile of heavy books on each stand's bottom panel made of MDF.

Two men are responsible for Raidho speakers and drivers design - Michael Børresen, president and chief designer, and Lars Kristensen,

similar with the guitars on the *New Dawn* album from the duo of Dominic Miller & Neil Stacey. Although a purist Naim release, it shows the work of sound and mastering engineers to bring the instruments closer to us and to give them a meaty sound even if they are slightly lighter live. And it sounds awesome! Especially on such speakers as the D-1.

Their excellent low-end reproduction was confirmed by listening to the new releases from Mobile Fidelity - Frank Sinatra's *Where Are You* and *In A Silent Way*, and Miles Davis's *'Round About Midnight*. Mobile Fidelity CDs are known to sound similar to well-mastered XRCDs – warm, deep and smooth. In other words, exactly as the speakers do. However, the characters of the CD medium and the speaker were not superimposed on each other and did not "up the ante". They combined the advantages without showing weaknesses. The result was a beautiful, clean, warm, intriguing sound, inviting to turn the volume up. Even at high volume levels the Danish speakers did not change their tone and resolution or show any signs of distortion.



I promised to get back to the subject of imaging and space. Those who expect of the high-end monitors a good imaging and large soundstage will not be disappointed. The speakers can show the instruments placed on their axis (and usually heard IN them) as if they were BEHIND them, as long as they were so recorded. The soundstage is presented OUTSIDE, not just between the speakers. They just need to be positioned slightly more straight on than usual, without too much toe-in. In my opinion, their outstanding soundstage reproduction and great imaging, without as much as an attempt to isolate the instruments from each other or to show them too selective, does not result from their narrow front baffle, but rather stems from their very well braced cabinet, finely tuned crossover and above all their exceptional midwoofer. The fact that the speakers are able to show the low range with power and softness, the way it sounds "live", and that there is no impression of limited bass results from a fantastic definition and resolution of that sub-range. Although the bass extension seems very low, a comparison with the large Harbeths and a look at the measurements will tell us that it is not, nor can it be. The impression, however, comes from the great handling of higher bass harmonics. They are largely responsible for the fact that we "hear" it.

The D-1's tone is beautiful. Let me repeat – it's dark, warm and naturally silky. Dynamics and differentiation go hand in hand. This involves (or perhaps results from?) the ability to present the events on the soundstage in a very precise way. Despite what I wrote earlier.

Take for example the already mentioned *'Round About Midnight*, a mono recording from 1956. Played from the vinyl it delights with its fullness and depth. Its 2001 release in the "Miles 70th Anniversary" series is pretty good in showing the definition and music planes. The sound, however, is focused exactly in the center and is compressed. How do I know that? First of all, I know the original vinyl release, but also by its comparison to the new Mobile Fidelity version. Although imaging should be the same on both records, at least in terms of the volume of sound, it is not. The Mobile Fidelity release is much fuller, with the instruments occupying a large space between the speakers. Their presentation is much more credible. How is this possible? Both being mono recordings, they don't carry spatial breadth information, only spatial depth, do they? Well in mono presentation the impression

co-designer and sales manager. Lars's professional career is particularly interesting. He is associated with the Nordost Corporation which is why all Raidho speakers use very expensive Nordost cables for internal wiring. In the case of the D-1 it's the Odin Supreme Reference. He is also associated with the Dantax Group led by John Jensen, a former owner of another Danish manufacturer, Scan-Speak. The latter association has resulted in the development of in-house drivers, which is quite unique. Typically, speakers' manufacturers – with a few exceptions, to name Dynaudio, Focal, Triangle, Cabasse, Harbeth and Spendor (save for tweeters) – use driver units manufactured by big specialists like Scan-Speak or SEAS. Developing an advanced transducer in-house requires lots of money and experience. In this case, both were provided by the Dantax Group, with the addition of Raidho's own design and creative ideas. In fact, almost all the components we find in these speakers were made in a small Raidho factory or made to order by one of its Danish subcontractors. Only the wooden cabinets are made in China. And - by coincidence? - they look better than a large proportion of those made in Europe.

SOUND

Albums used during this review

- Bach, *Violin Concertos*, Yehudi Menuhin, EMI/Hi-Q Records, HIQXRCD9, XRCD24, CD (1960/2013).
- Depeche Mode, *Delta Machine*, Columbia Records/Sony Music Japan, SICP-3783-4, 2 x CD (2013);
- Depeche Mode, *Delta Machine*, Columbia Records/Sony Music Japan, SICP-3783-4, 24 bity, FLAC [źródło: HDTracks] (2013);
- Dominic Miller & Neil Stancey, *New Dawn*, Naim, naimcd066, CD (2002).
- Dominic Miller, *Fourth Wall*, Q-rious Music, QRM 108-2, CD (2006);
- Frank Sinatra, *Where Are You?*, Capitol Records/Mobile Fidelity, UDSACD 2109, "Special Limited Edition No. 261", SACD/CD (1957/2013).
- Jean Michel Jarre, *Essentials & Rarities*, Disques Dreyfus/Sony Music, 62872, 2 x CD (2011).
- Miles Davis, *'Round About Midnight*, Columbia/Legacy, "Miles 75th Anniversary", CK 85201, CD (1957/2001).
- Miles Davis, *'Round About Midnight*, Columbia/Mobile Fidelity, "Special Limited Edition No. 167", UDSACD 2083, SACD/CD (1957/2012).
- Miles Davis, *In A Silent Way*, Columbia/Mobile Fidelity, "Special Limited Edition No. 1311", UDSACD 2088, SACD/CD (1969/2012).
- Stan Getz/Joao Gilberto, *Getz/Gilberto*, Verve/Lasting Impression Music, LIM K2HD 036, K2HD Mastering, "24 Gold Direct-from-Master Edition UDM", CD-R (1964/2009).
- The Jimi Hendrix Experience, *Electric Laydyland*, Columbia/Sony Music Japan, SICP-30003, Blu-Spec2 CD (1968/2013).
- The Oscar Peterson Trio, *We Get Request*, Verve/Lasting Impression Music, LIM K2HD 032, K2HD Mastering, "24 Gold Direct-from-Master Edition UDM", CD-R (1964/2009).

Japanese editions of CDs and SACDs are available

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There are many fans of stand mount speakers. They praise them primarily for their perfect soundstage presentation (spatiality and imaging) and little bass coloration. The former is associated with narrow front baffles, narrower than the distance between the (statistical) listener's ears. This belief underlies the emergence and

spatial depth, as they: when, in mono presentation the impression of "being there" is actually related to how well the speakers handle the low range and how well-defined are the instruments that are hidden behind each other. In the case of the D-1 this comes naturally and easily. Hence, the differences between the two Davis's album releases were so clear.

Conclusion

Does it mean that the D-1 is without flaws and can safely replace any floorstanding speaker, provided one gives up on a narrow range of lowest frequencies? Not really. One needs to make sure that one likes a closely shown, palpable, warm foreground and a dense sound. This is how the Danish speakers emphasize sound coherence, but they also tend to focus listeners' attention on what is happening just in front of them. Decays, reverbs and details located deep in the back of the soundstage are very natural and distinct, but they are "covered" with what's in front of them and may seem faint and less clear. One also needs know that low bass but do not get. The low extension on Dominic Miller's *Fourth Wall* and the 24-bit version of Depeche Mode's *Delta Machine* was impressive, also because it was part of something bigger and never existed for its own sake. But the lowest end, which was also audible with the double bass, was only indicated and not really reproduced. The volume of sound was thus lower than that of the Harbeth. Not by much, but still. Although we may never notice that – due to a close up foreground presentation the impression is exactly opposite.

These are, however, only minor details against a whole lot of goodness offered by the speakers. Excellent resolution, coherence, fluidity, dynamics, warmth, softness and imaging. We have all that. While I still think that the Dynaudio tweeter used in the Electa Amator (I) from Sonus faber shows more resolution and sounds more delicate, the difference is not large by any means. From now on, the quasi-ribbon from Raidho secures the second place by me, losing by a small margin. The D-1 means huge money but the sound is equally big, as is the pleasure of listening to music on them. This is real engineering, with high own costs and great performance. You won't get that anywhere else.

The D-1 speakers from Raidho Acoustics receive the RED FINGERPRINT AWARD.

DESIGN

Two-way speakers almost always look the same: small, rectangular boxes with two drivers mounted to the front baffle. In most cases the cabinet is made of MDF, sometimes fiberboard, multilayered hardboard, or plywood. Very few are made of solid wood. Their fundamental shape archetype was modified by Franco Serblin in Sonus faber speakers and then in his Accordo speakers, designed and manufactured under a new brand, Franco Serblin (see [HERE](#)), with the cabinet sides curved in the shape of a lute. We will miss you Mr. Serblin! Speakers of this type have a wide front baffle and narrow, rounded back.

The D-1 from Raidho Acoustics uses only the latter "patent", developing it in a similar way as seen in the last Magico and Sonus faber speakers, with stiff, thick panels on the front and rear baffle. Here, the front panel is actually made of two parts: the vertical upper half with the quasi-ribbon tweeter and the lower half angled upward that houses the 115-mm midwoofer. Only the sides (including the top and bottom) are made of naturally veneered MDF.

Both drivers are made in-house by Raidho, which makes it stand out from almost all other speaker manufacturers. The quasi-ribbon tweeter sports a 0.02 g aluminum membrane and powerful neodymium magnet. Neodymium magnets are also used in the piston type mid-bass driver in which they are arranged vertically in a push-pull configuration around a dual voice coil. This creates an open structure to allow air to move more freely. It's a very expensive design with a highly durable basket. As in the C-1, the cone is made of a sandwich material consisting of three layers - aluminum with sintered ceramic on both sides, here additionally coated with a thin diamond layer. This gives the cone an even greater stiffness. The cabinet back panel features a single pair of speaker terminals and a bass-reflex port. Internal wiring is made of the most expensive Nordost cable – the Odin Supreme Reference.

popularity of floor-standing speakers with very narrow fronts and woofers mounted on the side of deep cabinets. I must say that although I find its theoretical arguments appealing, my experience however shows a completely different relationship between soundstage/imaging and speaker design type. What helps the speakers create – or re-create, depending on the adopted philosophy – an immersive soundstage is primarily a proper phase coherence between drivers and a solid front baffle, not to mention driver units' quality. Another important factor is their frequency response, especially in the bottom end. Although it may seem illogical, it is the bottom rather than the top range that is much more important in building a natural space and relationships between the instruments. Hence, the best speakers I know in terms of imaging, or building a phantom image and placing it in a specific place in the soundstage and linking it with other instruments, are large floorstanders. Save for a very few exceptions that actually seem to prove my point, only those monitors that produce strong, coherent bass can show something similar. The Raidho D-1 do it better than almost all such designs, except the Sonus faber speakers driven by electronics from Ancient Audio that stand in Janusz's living room (of the Krakow Sonic Society fame). They do it almost as good as the best floorstanding speakers.



That's not, however, what I wanted to start with. A few words on space and imaging were necessary due to legacy "deposits" distorting the perception of stand mount speakers. I will come back to it as it's a fascinating subject, something else is more important, though - the tonal balance of the Danish speakers. This is what I'd like to focus on first.

The D-1 is one of the few designs that resemble my Harbeth M40.1's tone color, at least within their useable frequency response range. I swapped them back and forth looking for differences and could hardly find any. It's the type of presentation I like more than anything. Slightly warm but the warmth results from smoothness and the lack of coloration, not from any warming or coloration. A similar music presentation can also be achieved by rounding, withdrawing and softening the attack to provide a seemingly better vividness and differentiation. This is just a trick, however; one that may be at a premium in budget oriented speakers but is dubious in high-end. It is only acceptable on condition that it serves something greater and more important.

The D-1s offer warmth and smoothness, depth and "black" background without leaning on anything that might impair their other characteristics, especially speed and resolution. The speakers sound as if they had a single driver due to excellent pairing of the transducers that prove to be a great match. I was somewhat cautious about the planar tweeter as it's rather difficult to integrate with other types of drivers and to suppress its resonance, which almost always messes up its frequency response. The quasi-ribbon from Raidho seemed to be free of such problems. I heard no irritating coloration, sharpness or hardening. Prolonged listening posed no discomfort. This is probably helped by the decision to cross it over quite high at 3 kHz, but it also reflects the skill of the crossover's designer and his choice of its - apparently high quality - components.

The praise that was heaped on the speaker after its demonstration at this year's CES in January was dominated by something else – a reflection on its high bass quality. The amount of bass is something we pay attention to on every stage of our audiophile-music lover nilarimage. At first it's a pure fascination with "meat" and power.

Lars Kristensen's Nordost links apparently paid off. It is extremely rare for speaker manufacturers to use premium cables in their designs, not to mention such expensive cable as the Odin. Off the top of my head I can only think of one other company, Crystal Cable, which uses its own top-series cables. The D-1 cables are soldered to the speaker terminals.



The cabinet is not only reinforced with aluminum plates on the outside, but also heavily braced inside with a vertical MDF frame, with cutouts to allow airflow to the back of the enclosure. There is no damping material in the front but the space behind the frame is tightly packed with natural wool. The same damping is used in a small tweeter chamber. All internal wooden components look as if they were impregnated with wax-like material. I didn't manage to see the crossover network apart from a large ribbon coil silicon-mounted in a frame cutout. Removing the aluminum back panel shows that the designer didn't neglect the bass-reflex port. Almost always, including the Harbeths, the port is made of paper and its exit is made of plastic. Wilson Audio has its own way where the whole port is made of several aluminum components. So does Raidho – the exit is made of aluminum and the port of some kind of plastic, probably polyethylene. The level of workmanship and finish quality is exceptional, as is the quality of all the components that must cost a fortune. Nothing has been left to chance. Apart from that, it's a classical two-way stand mount rear vented design...

Specifications (according to the manufacturer)

Type: stand mount speakers
 Frequency Response: 50 Hz - 50 kHz
 Impedance: > 6 Ω
 Crossover Frequency: 3 kHz / 2nd order
 Cabinet: rear vented
 Drivers:
 1 x quasi-ribbon tweeter
 1 x diamond coated sintered ceramic/aluminum sandwich, 115 mm mid-bass driver
 Finish: Black Piano, all available veneer and lacquer colors
 Dimensions: 200 x 370 x 360 mm
 Weight: 12.5 kg / piece

phillyge. At first it's a pure fascination with music and power. Quite normal in every way. The needs are then clearly defined: more, stronger and lower with the predominance of 'more'. As we grow up towards a true music reproduction we begin to appreciate things like speed, definition, color, differentiation to end up with the soundstage and scale of the reproduced sound and the volume of the instruments. At this stage we are often willing to sacrifice the amount of bass for its quality.



Gallery

Galeria



Associated equipment

ANALOG SOURCES

- **Turntable:** AVID HIFI Acutus SP [Custom Version]
- **Cartridges:** Miyajima Laboratory KANSUI, review [HERE](#) | Miyajima Laboratory SHILABE, review [HERE](#) | Miyajima Laboratory ZERO (mono) | Denon DL-103SA, review [HERE](#)
- **Phono stage:** RCM Audio Sensor Prelude IC, review [HERE](#)

DIGITAL SOURCES

- **Compact Disc Player:** Ancient Audio AIR V-edition, review [HERE](#)
- **Multiformat Player:** Cambridge Audio Azur 752BD

PREAMPLIFICATION

- **Line Preamplifier:** Polaris III [Custom Version] + AC Regenerator, regular version review (in Polish) [HERE](#)

AMPLIFICATION

- **Power amplifier:** Soultion 710
- **Integrated Amplifier:** Leben CS300XS Custom Version, review [HERE](#)

LOUDSPEAKERS

- **Stand mount Loudspeakers:** Harbeth M40.1 Domestic, review [HERE](#)
- **Stands for Harbeths:** Acoustic Revive Custom Series Loudspeaker Stands
- **Real-Sound Processor:** SPEC RSP-101/GL

HEADPHONES

- **Integrated Amplifier/Headphone amplifier:** Leben CS300XS Custom Version, review [HERE](#)
- **Headphones:** HIFIMAN HE-6, review [HERE](#) | HIFIMAN HE-500, review [HERE](#) | HIFIMAN HE-300, review [HERE](#) | Sennheiser HD800 | AKG K701, review (in Polish) [HERE](#) | Ultrason PROLine 2500, Beyerdynamic DT-990 Pro, version 600 - reviews (in Polish): [HERE](#), [HERE](#), [HERE](#)
- **Headphone Stands:** Klutz Design CanCans (x 3), review (in Polish) [HERE](#)
- **Headphone Cables:** Entreq Konstantin 2010/Sennheiser HD800/HIFIMAN HE-500, review [HERE](#)

CABLES

System I

- **Interconnects:** Acrolink Mexcel 7N-DA6300, review [HERE](#) | preamplifier-power amplifier: Acrolink 8N-A2080III Evo, review [HERE](#)
- **Loudspeaker Cables:** Tara Labs Omega Onyx, review (in Polish) [HERE](#)

System II

- **Interconnects:** Acoustic Revive RCA-1.0PA | XLR-1.0PA II
- **Loudspeaker Cables:** Acoustic Revive SPC-PA

POWER

System I

- **Power Cables:** Acrolink Mexcel 7N-PC9300, all system, review [HERE](#)
- **Power Distributor:** Acoustic Revive RTP-4eu Ultimate, review [HERE](#)
- **Power Line:** fuse – power cable Oyaide Tunami Nigo (6m) – wall sockets 3 x Furutech FT-SWS (R)

System II

- **Power Cables:** Harmonix X-DC350M2R Improved-Version, review (in Polish) [HERE](#) | Oyaide GPX-R (x 4), review [HERE](#)
- **Power Distributor:** Oyaide MTS-4e, review [HERE](#)

COMPUTER AUDIO

- **Portable Player:** HIFIMAN HM-801
- **USB Cables:** Acoustic Revive USB-1.0SP (1 m) | Acoustic Revive USB-5.0PL (5 m), review [HERE](#)
- **LAN Cables:** Acoustic Revive LAN-1.0 PA (kable) | RLI-1 (filtry), review [HERE](#)
- **Router:** Liksys WAG320N
- **NAS:** Synology DS410j/8 TB

ANTIVIBRATION ACCESSORIES

- **Stolik:** SolidBase IV Custom, read [HERE](#)/all system
- **Anti-vibration Platforms:** Acoustic Revive RAF-48H, review [HERE](#)/digital sources | Pro Audio Bono [Custom Version]/headphone amplifier/integrated amplifier, review [HERE](#) | Acoustic Revive RST-38H/loudspeakers under review/stands for loudspeakers under review
- **Anti-vibration Feets:** Franc Audio Accessories Ceramic Disc/ CD Player/Ayon Polaris II Power Supply /products under review, review [HERE](#) | Finite Elemente CeraPuc/ products under review, review [HERE](#) | Audio Replas OPT-30HG-SC/PL HR Quartz, review [HERE](#)
- **Anti-vibration accsories:** Audio Replas CNS-7000SZ/power cable, review [HERE](#)
- **Quartz Isolators:** Acoustic Revive RIQ-5010/CP-4

PURE PLEASURE

- **FM Radio:** Tivoli Audio Model One