

Pointing the Way?

OMNIDIRECTIONAL SPEAKERS HAVE ALWAYS BEEN CONTROVERSIAL, BUT MALCOLM STEWARD AND MARTIN COLLOMS BOTH FIND SHAHINIAN'S COMPASS A SEDUCTIVE PROPOSITION

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I feel obliged to state at the outset that I have a soft spot for Shahinian loudspeakers. How can one fail to respect anything that remains eminently musical and thoroughly enjoyable while quite literally blowing panes of glass out of one's windows through playing a little bit (bang bang *Fanfare for the Common Man*) of Aaron Copeland at an enthusiastic – but nevertheless entirely realistic – volume? That was back in the 1990s, and admittedly with an *Arc*, a slightly larger model than the *Compass* that's under consideration here.

In truth there is little not to like about Shahinian's designs, which flout conventional wisdom at every available opportunity. Bi-wire connections? Not here. Spiked feet? Another no. Drive units facing the listener? Only if the listener happens to be suspended from the ceiling. Parallelepiped cabinets? Don't be silly!

Dick Shahinian, the Armenian American who designed the speakers that bear his family name, has some distinctive views about what constitutes a good loudspeaker. Needless to say, those views are not shared by the majority of the commercial speaker building community, even though they can be traced back to tenets held by early and respected pioneers in the world of loudspeaker design. His endeavours are driven entirely by his intense passion for music, of which he has an encyclopaedic knowledge. He is particularly fond of English composers, and 'warm' English beer, especially endearing traits I discovered when he visited me in London many years ago.

Shahinian observes that his company is: “Far too small to have grand commercial aspirations” and that he is “foolish enough to believe that if we study and practice hard enough, we may discover real artistic solutions to acoustic problems.”

His writings about the *Compass* continue thus: “[This] brings us to 1934, Westphalia, and Enckel, the original designer of the omnidirectional or Kugellautsprecher. His loudspeaker was brought to the USA in 1955, and was used for the first FM stereo experimental transmission of the Chicago Symphony under Stokowski to New York via the Crosby system. The impression, shared by many, was that this was a stunning achievement technically and artistically. Of course, it was hardly commercial or mainstream and consequently disappeared.

“The effect on me was absolutely conclusive. It was clear that the only valid approach to recreate the

radial omnidirectional waveforms in real life was to use omnidirectional loudspeakers. The new vertical loudspeaker with a diamond shaped baffle shall be called the *Compass*. It is nothing more than a continuation of the work we started in 1977 after many years of investigation begun in 1952.”

Which means that the work on which this speaker is based began two years before I was born – a sobering thought in these days when product lifetimes are measured in months. It puts ‘progress’ into some kind of perspective.

The *Compass* enclosure is a rigid pipe containing two dissimilar chambers. The bass loading is achieved through strategically placed ‘friction slots’. The diamond baffle is ideal to reduce unwanted typical diffraction problems, and thereby produce a smooth, uniform radiation characteristic. The one-inch titanium tweeter with neodymium magnet is Shahinian's first choice device, and is used in several of its other loudspeakers. The six-and-a-half inch woofer with a new see-through hybrid cone is almost equally spectacular. The filter network, as in all of Shahinian's designs, has a 6dB trailing edge for the woofer and an 18dB leading edge for the tweeter. There are, to quote the maker, “no zobel, resistors or special correctives. The phase is correct and seamless.”

The enclosure is 19mm Finnish birch ply with a variety of face veneers. All four surfaces are finished, permitting a variety of placement choices, including surround applications for those who are inclined towards such musical abominations. Connections are made in the base of the enclosure.

Shahinian notes that: “We take a peculiar view of so-called specifications as they tell very little about the actual sound produced. (Almost like specifying the smell and taste of food.)” It's hard to disagree with such a sentiment, especially now that current Shahinians appear to be far less challenging for amplifiers than were earlier models with their murderous impedances at high frequencies.

I connected the *Compass* to a Naim *NAC52* pre- and *NAP250* power amplifier using Chord Company *Signature* cable. I also briefly tried this speaker with the range of £600 amplifiers that I reviewed in *Issue 8* of this fine journal, and with a £2,000 Roksan *Caspian* pre/power combination. Sources were my Naim *CDS* and Roksan *Caspian M Series-1* CD players.

MALCOLM STEWARD

Sound Quality

From the outset it became abundantly clear that this is a very special loudspeaker. The *Compass* communicates with outstanding fluency and ease, especially when you consider its relatively compact dimensions. It's a small loudspeaker, but has the reassured, confident presentation and scale of a much, much larger model.

Rather than creating the impression, as many loudspeakers do, that the sound is being squeezed out of them like toothpaste from a tube, the music trickles effortlessly from the *Compass* as though no mechanical processes whatsoever are involved. Given an amplifier with a suitably stiff power supply, the music simply appears almost as casually as the smoke rising from a cigarette resting in an ashtray.

Which shouldn't create the impression that this loudspeaker sounds in the least bit vague or ephemeral. The *Compass* excels dynamically and in terms of timing: it swings, rocks, boogies and funks like very few others. This might seem unusual for a loudspeaker designed by a lover of, in particular, English orchestral music, but I don't think that Dick Shahinian would ever compromise his designs by listening solely to his preferred genres: indeed his son and colleague, Vasken, used to keep and play a full rock drum kit at the factory, and you rarely encounter one of those in classical arrangements. That might be why its lack of floor-spikes does nothing to temper or modify the starts and stops of musical notes or reduce their dynamic impact. (The polymer feet are quite hard and couple well.)

If you want to check the veracity of the way this speaker handles drums, listen to Brad Wilk's exuberant and committed playing on the eponymous *Rage Against The Machine* album: this warehouse-band recording is so raw and unprocessed that the kit, for once, truly sounds like a drum kit. Wilk's exciting and spartan drumming style — with its lack of flashy fills and transitions, his ferocious attack on the snare and kick drum, and the varying spaces he leaves in his patterns — creates a savage tension, a disquiet that the *Compass* seems to savour. Listen to *Bullet in the Head*, for example, and the speaker lets you know that this is definitely not Phil Collins — nor someone who came from any remotely related gene pool — holding those sticks. Wilk cites John Bonham, Keith Moon and Elvin Jones as his top three influences, and the Shahinians convey the weight, timing and authority of his playing so convincingly you would never contradict his assertions.

These speakers don't just sound astonishingly convincing with percussion, but also do an equally compelling job of portraying the album's bass, electric

guitar and vocal elements, with an egalitarianism of which radical left-wing vocalist Zack de la Rocha would thoroughly approve. Some speakers tend to subjugate the bass lines, effectively combining them with the kick drum, but the *Compass* keeps them distinct and separate. De la Rocha's rap-metal vocalising is never anything less than crystal clear and perfectly intelligible, whether he is whispering or letting rip with a full-throated yell. And the *Compass* seems to take great delight in exposing the intricacies of Tom Morello's impudent, DJ-style guitar excursions. Listening through the *Compass* is almost like watching a high-definition DVD: you can visualise him tapping strings, cranking the whammy bar and flicking the pickup selector switch, along with all the other wizardry he employs to make his guitars sound like



hip-hop DJs' turntables or stuttering ambulance sirens – anything other than a regular guitar.

While it is easy to detail specifics of the *Compass*' musical performance, what is harder to articulate, but which represents the most crucial factor, is the Shahinians' ability to knit all the instruments' and players' individual sounds and performances together so compellingly and utterly persuasively, something it does with ease and completely without artifice. If one listens to many hi-fi components, one often detects a quality that can only be described as plasticky; they create a sense that one is definitely listening to a CD or LP, an artificial and mechanical fabrication of the original performance. The *Compass* comes tantalisingly close to allowing one to suspend disbelief utterly and allow oneself to accept as true, if only for a fleeting moment or several, that the musicians are actually with you in the room – or, more correctly, that one is in the venue with the musicians.

Never before have I felt this so strongly than when listening to the Dr John album, *Duke Elegant*. Perhaps it's an American homeland thang, but the *Compasses* convey the Dr's lethargic Louisiana drawl with such conviction that I feel compelled to raise a glass of Bourbon to the space in the soundstage he occupies. This rendition is about as far removed from 'plastic' as one can get. His voice resonates like a true human being's and has all the qualities one would expect of the same – a sense of body resonance, space around it and air moving through lungs and larynx. Magical!

It goes without saying that the *Compasses* pay identical respect to his piano and Hammond B3 as they do to his voice, the bass – acoustic and electric – and all the other instrumentation on this fine album. The same is true of the way they respectfully and graciously handle the delightful and arguably superficial Euro pop of Ulla Meinecke on her album *Wenn Schon Nicht Für Immer Dann Wenigstens Für Ewig*. Few loudspeakers can truly present this woman's voice so scrupulously and sympathetically, conveying it with its inherent blend of fragility and power. The *Compass* simply allows her voice to float before me, sounding as young and naïve as it probably did back in the 1980s when the recording was made.

These speakers somehow seem to know what each individual listener wants. I say this because they delighted all of the listeners – each of whom has different and very specific criteria – who heard them in my home. One, for example, excitedly observed that they presented a solid and coherent soundstage no matter where he sat: even when he was wildly off-axis the musicians maintained their relative positions in the sonic picture. While that

isn't a major consideration for me, I have to say that the *Compass* certainly maintains tonality, instrumental timbre and dynamic authenticity far better off-axis than most directional designs. In fact it does so many things more fluently and with greater ease than 'conventional' loudspeakers that I wouldn't take issue with anyone who elected to subscribe to Shahinian's supposedly 'radical' way of thinking. Why not dare to be different and enjoy your music like you probably have never before?

Malcolm Steward

Martin Colloms' Second Opinion and Lab Tests

INTRIGUED BY MALCOLM'S EFFUSIVE ENTHUSIASM FOR THE SHAHINIAN *COMPASS*, I BORROWED A PAIR FROM TONY GRAHAM OF GRAHAMS HI-FI, FOR LAB TESTING AND ADDITIONAL COMMENT.

Malcolm clearly valued the sense of aural comfort and the sweet, open sound. He could play them more or less as loud as he wanted, loved the uncritical listener positioning, and the large scale stereo images which such a near omni-directional design can generate.

Subjectivity is the keyword. It's all a matter of taste and preference, especially when one's own room acoustic is closely involved in the end result, as here. No speaker is perfect; no designer has a monopoly on the right way to do it; and few designs succeed in both driving the room and the listener axis equally well. A speaker that delivers near-perfect on-axis results may then fail to 'voice' the room neutrally, a scenario that is quite common. However, when an alternative that tries harder than most to balance both the room drive and the direct on-axis sound is auditioned, it is bound to sound different, and may strongly polarise listener opinion.

To balance a speaker for a natural result that includes voicing the room acoustic, the designer must juggle two separate acoustic targets, namely the balance on the listener axis, and the energy or power delivered across the frequency band into the room. With the *Compass* the normal driver axis is tilted upwards and directed well away from the listener. The speaker is then tonally balanced so that the sound from this designed listener axis still complements the total sound power output in the room. Such a system may need tweeter modifications to deliver a smooth, extended high frequency output well off-axis. In this case I'd estimate that output needs to

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be well maintained at about 65 degrees off the primary baffle axis (the direction the baffle is facing), where most systems have given up trying!

Regardless of the success of this radical approach for home listening, in my view the *Compass* would not pass muster as a monitor for assessing program character, because it's intentionally dependent on the room, and will not have an idealised flat response on the main axis that is considered crucial for judging timbre and spectral balance. Sweet and rich, the *Compass* asks to be played at higher sound levels, and even so sounds a little distant, like far off music heard in the open air played at a modest volume.

And yet I heard exactly what Malcolm heard. This speaker likes being driven quite firmly, whereupon it comes to life with a sparkling airy treble, and a complete lack of aggression or hardness. While mid dynamics are softened and rim shots somewhat muted and polite, percussion is portrayed with agility and discrimination, and it motors along enthusiastically with a comparatively dry, quick bass.

On classical material one is magically transported to the concert hall, with a sumptuous sound reminiscent of row 35 or thereabouts. For rock it is certainly quite laid back, giving more of stadium than a studio effect, with a big generous sound. The almost searchlight glare encountered when auditioning many speakers directly on axis is avoided, and the room acoustic is undeniably more open and airy than usual, which is worth several brownie points. The stereo imaging is perhaps surprising: although clearly elevated and diffuse in height, it's also spread well across the front stage with quite crisp, even localisation. This was achieved even for listeners away from the centre line, assisting shared musical experiences.

Lab Report

Decades of experience show in the fine build and finish of this compact and elegant floorstander. It stands simply on four extended, non-scratch polymer feet, allowing operation of the perforated panel vent located in the floor of the enclosure. Gold plated binding posts for wire, spade and 4mm connections are also in the bottom panel. A second acoustic resistance panel that also braces and divides the enclosure is located internally about a third of the way up, to damp the vertical pipe mode found in an enclosure of this geometry.

The carcass is 20mm top quality birch ply, naturally veneered and with very high density MDF bracing. A two-way design, the bass/mid output is supplied by a 170mm magnesium chassis SEAS unit with a large 39mm voice coil and a clear laminated cone. High frequencies



emanate from a 25mm metal dome unit, its output modified by a deflector plate hidden under a perforated steel cover. The tweeter is located at what constitutes the apex of the enclosure, endowing it with the widest possible radiation angle. The driver panel is oriented at 45 degrees upwards and inward of the listening area, helping to throw most of the sound upwards. A high quality hard-wired crossover has selected high voltage polypropylene capacitors and a low resistance air-cored inductor: 3rd-order for the treble; 1st-order for the bass/midrange. There are no resistors. The grille panel is only 4mm thick, but has more effect on the output than might be anticipated due to the off-axis drive.

Sensitivity measured an average 86.7dBW on the listener axis, but is actually louder than this, probably by 3dB, due to the greater amount of energy delivered into the room. Still better is the genuine 8ohm impedance, momentarily dipping to just 5.8ohms in the high treble, and friendly to both cables and amplifiers, including tube designs.

Judging from their vestigial reflection in the impedance graph, vertical pipe modes are well suppressed. Listening axis frequency responses are provided, but cannot alone tell the full story, though trends are evident. The main output (uppermost) has a smooth but gently falling output with frequency, well extended to 21kHz and confirming the modified tweeter radiation; the bass extends to 40Hz under room-loaded conditions. The specific axial frequency response, allowing for the tilted



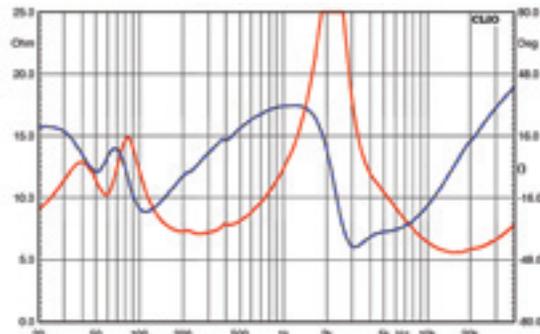
trend, is a smooth 50Hz – 21kHz +/-3dB, and traces for above and below axis also show commendable uniformity and driver output integration. The lateral responses (not shown) are equally good. For the record, grille-off (blue) and grille-on (green) are shown, and despite the grille's low profile the effect is quite strong due to the off-axis angle inherent in the design.

More relevant is the spatial average for the in-room driven soundfield, with a smooth and reasonably uniform bass and midrange, a little rich in the 500Hz range, and then a gentle downward shelving of power to 6kHz or so, where it is normally level with most loudspeakers, and then the final expected slope to the highest frequencies. The spatially averaged in-room curve is nonetheless well extended to 20kHz. An 'open' sound with a more distant upper mid perspective is what you get from this and it is what you hear. But nothing is actually missing from the response.

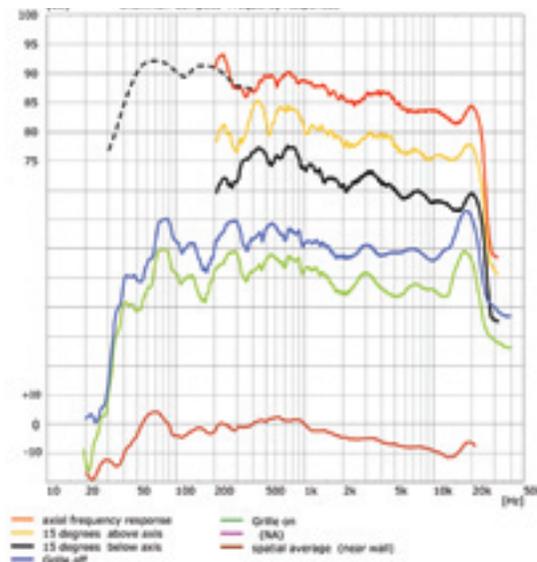
Finally, the waterfall analysis of energy decay with frequency reveals a clean coherent early sound, confirming the observed clarity. The remaining decay trend is tidy enough, if partly obscured by the off-axis drive.

The near-omnidirectional Shahinian designs are an exception to the normal direct radiator rule. Spaciousness, a natural room acoustic, high listening comfort and a large stereo image and listening area are all provided by this speaker, along with a generous sounding, large scale sound. Images are somewhat elevated but do focus evenly across the stage. While not for everyone, those who aspire to aural ease, a seat near the middle of the concert hall, and an immersive sound may well find the answer with a Shahinian. I enjoyed it rather more than I anticipated, and taking everything into account I can certainly recommend this fascinating and skilfully fabricated loudspeaker. Experiencing this design has been something of an education.

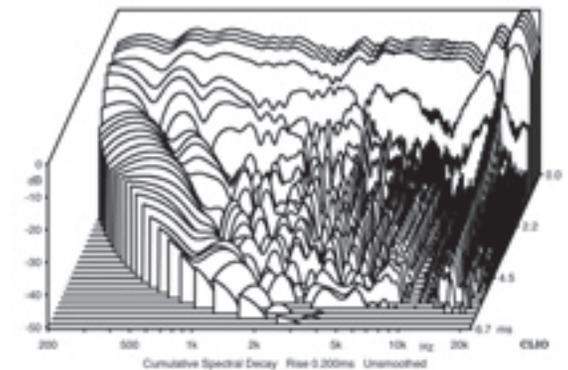
Impedance and Phase



Frequency Response



Waterfall Frequency Decay



DATA AND TEST RESULTS

Make Shahinian	Model Compass
Serial Nos	97081/97082
Sensitivity (2.83V, 1m)	89.5dB (effective)
Recommended amp power	25 -150W
Recommended placement	fairly near wall
Axial frequency response	40Hz to 21kHz +/-3dB (see text)
In-room averaged response	45Hz to 2kHz +/-3dB (see text)
LF rolloff (-6dB ref midband)	40Hz
Average impedance	80hms
Minimum effective impedance	50hms
Ease of drive	good +
Size (HxWxD)	25 x 86 x 25cm
Weight	14kg

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