

# HIFICRITIC

AUDIO REVIEW MAGAZINE  
£15 Vol7/No1 JAN - MAR 2013

## STAN'S SAFARI

Stan Curtis discovers a powerful statistical analysis tool that explains some of the differences we can clearly hear

## ALEXIA SCRUTINISED

Martin Colloms discovers that Wilson Audio's new Alexia floorstander is something rather special

## THE NEW BOSS?

Does Naim's new NDS network-connected digital player/streamer/DAC deliver flagship worthy performance?

## FOCAL WITH NAIM

Focal's managing director Gerard Chretien tells Steve Harris about his own company and the Naim Audio merger

## HEADSOUNDS

Headphones and earbuds are hot right now, but they're often not as good as they pretend. We put a dozen through their paces

## ULTIMATE CONTROLLER

Linn's Akurate DSM streamer/pre-amp can handle virtually anything – analogue or digital – that's thrown at it

## MUSIC & MUCH MORE

REVIEWED THIS ISSUE: NAIM NDS, C.E.C. TL3N/DA3N, WILSON AUDIO ALEXIA, LINN AKURATE DSM, AUDIOQUEST DRAGONFLY, GRADO SR80i, CAMBRIDGE AUDIO DACMAGIC 100, THINKSOUND TS02+, MICROMEGA MYDAC, GRADO SR325i, PSB M4U 2, MARTIN LOGAN MIKROS 70, CONCERT FIDELITY CF-08LSX2, BEYER CUSTOM ONE PRO, BOWERS & WILKINS P5, BEYER T70/T70P, GRADO PS1000, BEYER DTX 501P, BOWERS & WILKINS P3, VON SCHWEIKERT UNIFIELD-2, SENNHEISER IE80



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Printed in the UK by  
Premier Print, London

HIFICRITIC is a printed publication available by subscription only.

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**A** hot topic in the hi-fi industry today is whether or not the Compact Disc medium has much of a future. Hard it may be to believe the fact, but the CD format has actually been around now for nearly 30 years, which is an unquestionably good run by any standards, given technology's rapid rate of progress. Indeed, I started using CD players (albeit rather reluctantly) some years prior to the arrival of my first Mac, and indeed well before mobile telephones became commonplace.

The last 30 years have seen all manner of changes, in both the music software itself and the means of delivering the music. In the UK at least, sales of downloaded digital music files via the internet (to computers, tablets and smartphones) actually overtook that of other means of music distribution during the first three months of 2012.

While I don't think such a trend necessarily applies to, or has much relevance to a hi-fi listening minority, anecdotal evidence does suggest that CD player sales are currently weak. And it's certainly also true that downloaded files no longer have to be a poor MP3-encoded relation of the full uncompressed 16-bit/44.1kHz resolution that is the CD medium.

So is the CD format on the way out? Frankly, I doubt it. I for one like a solid and physical piece of software, rather than something rather nebulous called a file, sitting in a computer or cloud, especially as said computer is constantly updating itself, and will probably need upgrading in a couple of years.

Computer audio in its various forms clearly represents a threat to hi-fi's traditional component approach, partly because of its potential to deliver 'hi-res' digital music files that represent a significant improvement over CD's 16-bit/44.1kHz, but probably more significantly for its extra convenience in rapidly accessing one's music. And as far as the public at large is concerned, I'm quite certain that convenience of music access (and relatively low cost) is of vastly greater importance than the possibility of superior quality.

I can't help recalling the era of the Compact Cassette, which offered 'go anywhere' convenience over the vinyl LP, especially for Walkman and in-car applications. Consumers loved it, but the music business regarded it with deep suspicion, coining and publicising the slogan: 'Home Taping is Killing Music'.

Music survived, thanks much more to the creativity of the musicians themselves than the greed of an increasingly profit-driven and accountant-led music biz. I might well have used a cassette deck to record friends' albums back in my impecunious 1970s student days, but it hasn't stopped me from subsequently accumulating an enormous quantity of paid-for music on vinyl and CD. The music biz has done very well out of me.

However, I must admit I've been struggling to find new material that I've wanted to buy and play in recent years. The music biz blames file-sharing for a 40% drop in world sales by value between 1999 and 2011, but I'm inclined to believe that a lack of creativity, the widespread use of dynamic compression, alongside a general ineptitude when it comes to spotting and fostering new talent, is equally significant.

*Paul Messenger*  
**Editor**



# Alexia Under Scrutiny

MARTIN COLLOMS EXAMINES THE ALEXIA, WILSON AUDIO'S LATEST FLOORSTANDER

Excluding subwoofers and home cinema components Wilson Audio's core stereo range now comprises seven loudspeaker systems, from the adjustable 'shelf or stand-mount' *Duette* (*HIFICRITIC Vol? No?*) to the latest version of what began as the *X1 GRAND SLAMM* (which I reviewed for *Stereophile* 20 years ago), morphed into the *Alexandria*, then finally the recently introduced *Alexandria XLF*, which sells for no less than a quarter of a million (pounds or dollars!)

In between we've had three versions of the successful one-box *Sophia* floorstander (*Vol? No?*), the 'Watt-Puppy' two-boxers (currently called *Sasha*) (*Vol? No?*) a market leader for the concept over 20 years, and the *MAXX* tower, now in *MkIII* form (*Vol? No?*). These are now joined by the much heralded *Alexia*, a good bit taller than the *Sasha* and with greater bass enclosure volume, but still a tidy and shapely design that's smaller than a *MAXX III*. While I have used and owned many speakers over the years, I seem to have turned to Wilson Audio more often than not, including the beloved *WITT*, several generations of *Watt-Puppy*, and currently a *Sophia 3*.

Having successfully completed the in-house development of new mid and treble drivers for the *Alexandria XLF*, proprietor David Wilson decided to try and downsize the unusual strategy of combining different size bass drivers in one enclosure, first seen in the *X1* some 20 years ago and continued in the *MAXX* series. Could those new mid and treble drivers create superior performance in a relatively compact system? Would this be a step up from the *Sasha* (or rather, a step down from the *MAXX*)? In fact this project seems to have finally crystallised as a reduction of the *Alexandria XLF* itself.

The low frequency driver differences across the range are as follows: *Sophia* has a single 10in (240mm), *Sasha* uses a pair of 8.25in units (equivalent to an 11in, 264mm), *MAXX* has a 10in and a 12in parallel (15in/380mm equivalent), while the *SLAMM* and *Alexandria* combine 12in and 15in drivers to provide a massive 18in/457mm equivalent. The latter three models' 'differential low frequency tuning' involves the inherent engineering properties of the dissimilar bass drivers and complex acoustic loading. The idea is that the smaller bass driver blends more easily with the midrange, while the pair as a whole shares power over a wider low frequency bandwidth, reducing coloration and extending the bass response.

So now we have the £48,000/pair *Alexia*, also differentially tuned with 8in and 10in bass units (equivalent to a 13in/330mm driver). Weighing a total of 256lbs (116.12kg), Each *Alexia* comes in three sections, comprising a well spiked floor coupled bass

'bin', a low diffraction midrange enclosure (three-point mounted on adjustable aluminium spikes), and a smaller treble module that's also adjustable for depth and angle *via* three-point anti-vibration fixings. A sweet spot is specified for the speaker array and is calibrated on installation to recreate focused optimum-axis drive to a central listener. The adjustments allow this for virtually any combination of ear height and seat distance. Wilson uses the term 'aspheric' for an arrangement in which the focal points for each driver follows a more complex path than simple displacement. Driver angles *and* inter-driver delays are optimised at the listening point, to help recreate the reference acoustic alignment. Consequently it should have better depth and focus with a more natural timbre. Detailed alignment tables are provided in the lengthy instructions.

The speaker comes fitted with hard plastic-crowned wheels, which unfortunately indented my polished hardwood floor. Once the initial acoustic alignment had been performed, leaving them on the wheels allowed some jockeying for position, for best focus, timbre and uniform bass extension. The system was measured while they could still be moved about.

Once settled and run in, an elegant floor jack allows the wheels to be replaced by vibration-sinking conical aluminium alloy 'diodes' and stainless steel floor spikes. These comprise a conical foot threaded for the adjustable spikes, to be additionally interfaced with machined brass pads. After levelling, micro adjustment is still possible by gently nudging of the enclosures into final position.

So great was the improvement wrought by proper floor coupling that listening began anew, leading to further system fine tuning in choice of cables, equipment supports and cable routing. This single-wired speaker has heavy duty gold-plated hex terminals for spade connections, and cables made up with screw-on spade adapters just will not do.

A further step may or may not be required, perhaps for unusual room acoustics. A detachable cover in the bass enclosure provides access to the mid and treble protection resistors, which may be adjusted from the calibrated values to micro-tune the *in-situ* timbre.

This three-way speaker comes with a recommended 20W minimum power, but no maximum. A difficult '4ohm nominal' impedance has a disclosed very low minimum of '2ohm', but a high 90dB/W voltage sensitivity provides some compensation. A very wide rated response of 20Hz to 32kHz +/-3dB is quoted, albeit with undefined acoustic conditions. *Alexis* stands 1.4m high, is 38.4cm wide and 53.7cm deep, and may be ordered in a range of fine 'piano gloss' automotive finishes.

### Technical Details

A 13in equivalent driver operating in a large 104 litre bass reflex enclosure at 90dB sensitivity should deliver useful low frequency clout. The reflex port diameter is 75mm, backed by a 32.4cm machined alloy duct, and interestingly the box tuning is a very low 20Hz, not rising above 23Hz at higher powers. Port tuning (normally above, say 40Hz) imparts significant group delay that can often affect musical timing, depending on the chosen degree of damping. For example, the bass may be sufficient, and have good clarity, but may seem a little out of time with the midrange, affecting the speaker's ability to reproduce a well-timed beat on appropriate programme.

In fact the subjective bass level may be out of proportion to that expected from measurement, as the bass notes hang on for a little longer than they should. Now, a shift in tuning from 40Hz down to 20Hz is actually a full octave, and radically improves the time response compared with 40Hz tuning and above. In fact the *Alexis's* 20Hz tuning confers a nicely over-damped, essentially time coherent bass alignment, theoretically offering more upbeat bass on all kinds of music.

A larger bass cone area is always desirable in a three-way to reduce excursion for a given loudness. This helps control distortion, reduces compression and thus increases dynamic expression, which may be important if a relatively compact system is to drive larger spaces to high sound levels successfully. The increased enclosure volume over *Sasha* aids broader tuning for a better damped upper bass, together with a more extended lower bass, keeping the overall width reasonably modest and commensurate with the price.

The part-separated enclosure's back loading on the two drivers is achieved with internal baffling and strategically located fibre absorption, and also by the location of the reflex port. The point at which the inner extremity of this large, lengthy and powerful acoustic duct is fed acoustic pressure relative to the enclosure volume does matter, with respect to local low frequency sound pressure distribution, and this has been carefully considered.

The Wilson bass drivers have a high claimed sensitivity of 90dB per 8ohm watt (though the specification does admit to a very low 2ohm minimum). Even a tolerant '4ohm rating' does reduce the 'technical' sensitivity to a numerical 87dB per 4ohm watt.

Near-overload power handling is sometimes neglected, but Wilsons are tested over a wide range of sound levels, which can be useful for driving large spaces. I have attended many Wilson demonstrations in what are effectively small halls, where

*"So great was the improvement wrought by proper floor coupling that listening began anew, leading to further system fine tuning in choice of cables, equipment supports and cable routing"*

*“The larger Wilson designs allow complex movements to angle and space the individual sub-enclosures. Such tilting and depth adjustments available for combination enclosures allow them to get that much closer to a more accurately focused design axis that may then be aimed at the listener”*

unexpectedly good dynamic range was achieved at clean, stress free peak levels where many other high end speakers would fail to cope. Few speakers can approach the realistic dynamics and loudness of concert piano reproduction as well as Wilson models. Usually the room overloads first, as smaller rooms have greater higher frequency modes which subjectively crowd the perceived sound and clarity. (Such rooms may be subject to further damping treatment in order to play louder, though this can be self defeating to some degree.)

The prototype enclosures were subjected to extensive analysis, including laser vibrometry, to explore the frequency distribution and magnitude of panel and related structural resonances. This work is essential if coloration, transparency and the more subtle aspects of dynamic expression are to continue to improve. The key here is to begin to understand the relationship between the observed vibration patterns with frequency and then how they are radiated and heard. For example, one panel may show a clear vibration response but can barely be heard, while a similar energy pattern for another is plainly audible. This discrepancy may depend on the effective axis of the radiated mode, or even that the radiation is effectively silent because equal energy negative and positive phase contributions effectively cancel out in the radiation space.

The larger Wilson designs allow complex movements to angle and space the individual sub-enclosures. Such tilting and depth adjustments available for combination enclosures allow them to get that much closer to a more accurately focused design axis that may then be aimed at the listener. The system can then provide that magical inner coherence that may be achieved when the phase and delays of the radiated sound coalesces in an orderly fashion at the designed listener location, providing maximum smoothness, clarity, definition and transparency.

This is not found at a typical 1m ‘lab measurement’ location, since the phase angles for each driver’s output are a significant function of frequency and distance, whereas the listening distance in practice is typically much greater, say 3-5m. Conventional nearfield measurements cannot define this well, while loudspeakers such as the *Alexia* are optimally voiced at greater distances by design, so that the radiated energy balances and delays of each driver blend in a predictable manner. Applied first to *Alexandria* and now *Alexia*, this is what Wilson terms the ‘aspheric’ focusing of the audio wavefront to the listener – the alignment of the optimal angle and distance so that the timings and radiated wave fronts of the driver outputs are fully consonant at the seated listener’s head location.

Voicing a speaker is a painstaking task that involves blending the response shape, crossover points, and the levels of each driver for the most coherent and transparent whole, while also maintaining high standards for distortion and power handling. The best sources for assessing neutrality are natural recordings of live sound. Electronically produced ‘studio’ programme is much less useful, as the designer may try and ‘fix’ the most natural result for a few inaccurate recordings. The result may sometimes be impressive but never quite sounds ‘real’ on real music.

For years, most Wilson designs have used customised, hard inverted dome Focal tweeters with various diaphragms. A recent research program into finding a new generation of high frequency units examined every possible diaphragm material, eventually reverting back to the ubiquitous soft dome of treated silk, made by respected Danish OEM driver maker Scan-Speak under Wilson direction. With an optimised diaphragm capable of similar ultrasonic bandwidth to more exotic alternatives, Wilson worked with Scan to get the required high sensitivity, extended low range and dynamic capacity. Wilson also builds the acoustically tailored back end of the tweeter to shape the required lower frequency extension. First used in the *Alexandria XLF*, a version of this Wilson-branded tweeter now appears in the *Alexia*.

The larger than usual pulp cone midrange driver is also a variant of that used in the *Alexandria*. It has a particularly wide bandwidth, low distortion and delivers realistic musical dynamics. The midrange enclosure is resistively vented by thin, foam damped rear slots, to combine aperiodic (non-resonant) loading with superior coloration and power handling, this seen at the back of the enclosure. This loading can also help reduce the crossover complexity.

A cover plate over the upper crossover section complete gives access to the mid and treble protection resistors, and the book values may be subtly adjusted to optimise the sound in a given location. In my system I found that about 0.5dB extra treble had an almost magical effect, and was achieved by lowering the treble resistance from 4.7 to 4.3ohms (by means of a 47ohm shunt component). If the system is overdriven, the fusible resistors usually and harmlessly fail open-circuit, which is often replaceable by the owner (at far less cost than new drivers). Sometimes a system fault may also occur and again the more fragile drivers are rendered safe. In a decade’s time this can be even more important, as replacement drive units may start to become unavailable.





### Sound Quality

These speakers had been used for a few demonstrations and the odd in-situ magazine review at the agent's premises, but needed some serious hours of use before they were properly acclimatised and run-in after warehouse chilling and transporting. Initially they were left on the transit wheels for first order tuning and room placement; even so first impressions were not unpromising.

It is in their nature that loudspeakers have a degree of character, as their complex assembly of moving and vibrating parts will always make some additional contribution to the music. One aspect of the design art concerns identifying, qualifying and balancing these contributions so they don't significantly get in the way of the reproduced music. Another concerns balancing the power contributions of the drivers, *via* the crossover and acoustic loading, so that they play well together across a wide dynamic range. It is quite obvious that the drivers do play really well as a system here, sounding coherently connected and all of a piece, with very good verve, pace and expression.

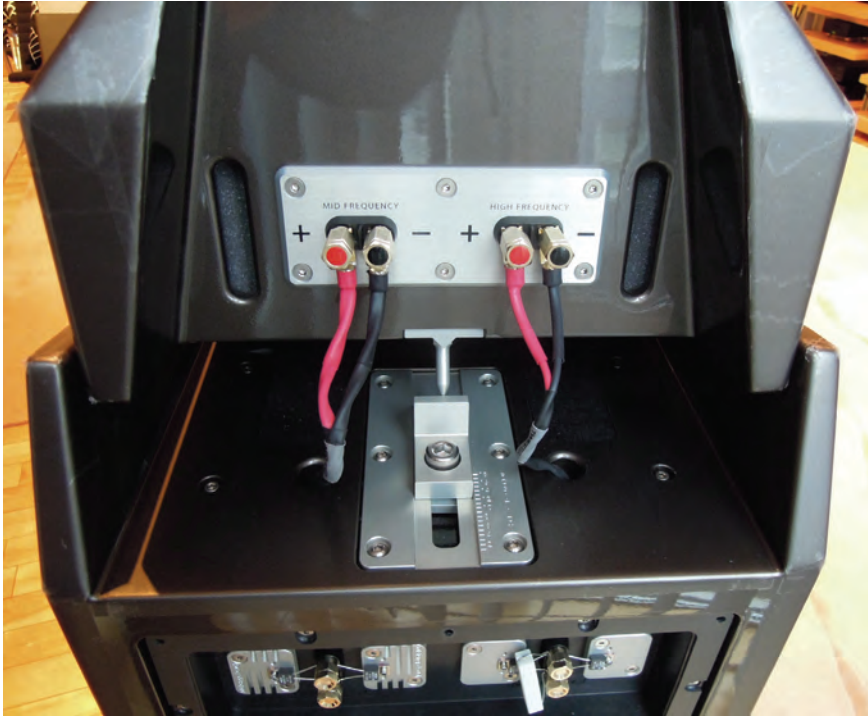
As it should be, this is delivered without significant artifice, exaggeration of any part of the spectrum, with neutral and very natural timbre. Do note that a high current power amplifier with low resistance speaker cables and really tight connections are required to bring everything fully into focus. It's quite easy to hear the subjective tempo and timbre adversely altered by connections that are not fully tight (or less than car battery thickness speaker cables). That unusually deep bass tuning proved ruthless in revealing timing deficiencies in the partnering equipment. Careful choice of cables,

set up and ancillaries was essential to hear all that this speaker could do in rhythm terms. This quality proved that *Alexia* could treat rock, pop, jazz and classical programme evenhandedly.

As the review system settled down it was clear that here was something quite special. A degree of intimacy, of 'whispering in your ear' on some program was uncanny at times. Vocals are presented at full standing height, with near holographic focus and presence, and it lacks the commonly encountered lower-mid bloom which can ground the subjective tonal balance at the enclosures. The *Alexia* subjectively lifts the sound away from the enclosures, which is a neat trick; time and again, listeners were rendered silent by the sheer musicality.

A key element is that excellently extended low frequency range: deep enough to be neutral and natural, powerful enough to give the right sense of scale and weight. It adds pace and drive to upper bass lines without overhang, together with low frequency envelopment and a sense of being in the auditorium which enhances realism. Although critical comments are few, a hint of mild grain may be heard in the high treble, and its acoustic signature does reveal that this is after all a moving-coil and -cone design rather than a panel. However, putting the grilles on would give more grounds for criticism, as the losses introduced are clearly audible, all the more so as the intrinsic design target is so musically neutral.

Piano is very natural, dynamic and exciting, cathedral organ thrills, and this speaker thrives on accurate, detailed, natural and spacious recordings. Full bore symphonic works are handled with aplomb, yet R&B material works well too: lead guitars do not screech, and the bands play with fine syncopation



and upbeat rhythms, helped by that neutral, propulsive and crisp upper bass. Hard to handle solos in massive choral works are also very good with rewarding spatial separation and perspective. This is a transparent loudspeaker with highly rewarding image depth, but above all I valued its unusual coherence: that feeling of seamless integration.

### Test Results

The main axis frequency response for both speakers was wide and quite uniform,  $\pm 3\text{dB}$  20Hz – 25kHz, extending to 42kHz -10dB (with a little more treble extension on one channel). Rather wider limits are required with the grilles in place (see Fig ??). I consider that there's a hint of 'BBC free field balance' in the curve by which I mean that a perfectly flat response was not the design aim, as this often disappoints. Rather, there is a frequency balance delivered to the listening area which sounds musically convincing and includes the room as it is driven by the speaker.

The bass is well extended, reaching 20Hz, and the port is tuned so low that the primary output above 45Hz essentially comes from the drivers alone. (Many ports continue an often erratic output up to 100Hz.)

Measured with 1/3-octave weighting to get an idea of trends, particularly for the off axis acoustic output, the 15 degrees above trace (A) is exceptionally good, partly reflecting the benefit of more open cabinetwork in this direction. A mild loss of integration but no phase notch is seen at 15

degrees below axis (which is actually directed at knee height), and it still meets  $\pm 3\text{dB}$  to 18kHz; these are very good results. The lateral off axis data for 15, 30, 45, 60 and 75 degrees (the rainbow colour traces) are first class, with no nasty dips or audible chasms in the output. This fine result will help with image stability and ensure that both side wall reflections and the overall room sound will be clean and 'open' with no awkward surprises. Even at 75 degrees off-axis laterally, the new tweeter is still within -6dB of the main output right up at 15kHz.

When all that output is averaged up with room loading in the listening region you get the very fine in-room response shown (the result of 64 1/6<sup>th</sup>-octave averages), with an excellent  $\pm 3\text{dB}$  for 40Hz to 6kHz, and only -10dB at 15kHz. The range below 50Hz is understandably less reliable but suggests no loss in output down to 18Hz. The impulse response is fast with good integration, showing a clean waterfall presentation for *Alexia* energy decay with time and frequency.

Crossover network frequency responses may look tidy in theoretical syntheses, but achieving them in the face of driver variations, different radiating sizes, driver physical displacements and enclosure diffraction effects can be a nightmare. I include the responses for the mid-to-treble crossover which are indeed set at a low 1.5kHz, -6dB, while the midrange unit itself is particularly well behaved, with an output extended to 15kHz and showing only minor ripples in the treble pass band. Wilson designs favour extended driver overlap, well controlled and in-phase. The tweeter crossover looks to be failing below 1kHz but this is only because the upper bass driver runs strongly into the lower mid (and cannot be easily turned off for this measurement). This overlap helps prevent the mid unit sounding 'isolated', helping it seamlessly blend the bass output to the midrange. The listening results confirm that this system really does avoid sounding like a collection of drivers, which can be difficult with such a tall loudspeaker.

Close pair matching can enhance image focus among other things, and I expected rather better here, but the result is more than satisfactory nevertheless. The match was fine (within 0.5dB) at low frequencies, although some  $\pm 1.5\text{dB}$  variations were found in the midrange, and also in the upper treble to 15kHz. One tweeter had a small notch at 15kHz; the other fell 3dB above this point, but both then continued to an extended 35kHz. In practice small differences in the upper treble are not uncommon and not very audible, but I still consider that pair matching could have been a bit tighter at this price level.



Give or take 0.25dB, the 2m referenced sensitivity is right on spec at a high 90dB per 8ohm watt/1m. However, the low impedance at low frequencies does need to be considered. There's a measured minimum combination of 1.8ohms at 80Hz with a 20 degree reactive phase angle, and a still low 2.5ohms at 60Hz with a 42 degree phase shift. This amounts to amplifier dynamic drive conditions of just an ohm or so around these frequencies that carry high music power, and to some degree reflects the design struggle required to achieve the desired subjective result. Given that this low impedance range extends from 20Hz to 300Hz, I must estimate the effective load at just 3ohms. Consequently it's hardly surprising that the timbre will be subtly influenced by speaker cable impedance, tightness of terminations and amplifier output resistance.

The *Alexia* will take 200W peak programme power (40V rms, 56V peak), and generate a substantial 108dB programme sound level for a pair in a typical room. But to do so requires a worst case peak current of nearly 30amps, not far from the likely limits of even some of the larger solid state amplifiers. Even the most current capable valve (tube) amplifiers stick at around 10A peak and most are clipping by 5A. Realistically, if the mid-bass is to run unimpeded to full capacity, the amplifier current capacity should be 45A, and the total loop resistance to the speaker should also ideally be less than 150 milliohms, both quite tall orders.

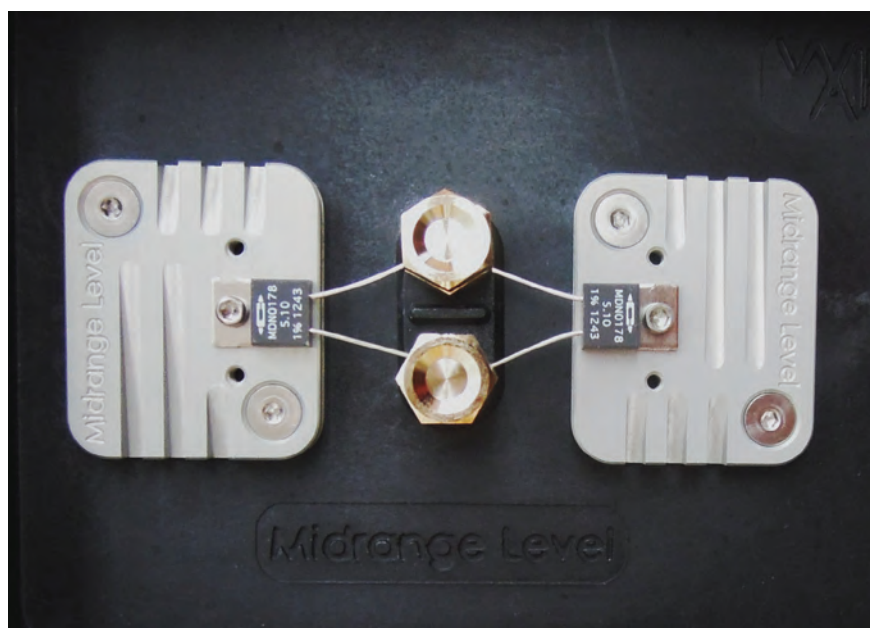
During the review I mainly used very low impedance Transparent *MM2* cable with a 49A capable D'Agostino *Momentum* amplifier, and tight connections. Even then I could not quite meet my criterion. In addition, above 300Hz the impedance rises to about 4.5ohm midband and then to 8ohm at higher frequencies. Taking 1ohm as the typical output impedance of a moderate feedback valve amplifier, and assuming that it is not current limiting, the effective frequency response of the speaker will still be modified. For example the 89Hz region will be attenuated by about 3dB relative to the midband, and the potentially flat low range response will now carry a mild reflection of the impedance curve. Since the low frequency range is on average 3.5ohms and the treble, say, 7ohms, the upper frequency range will now be a little bright by comparison. A solution here might be to increase the value of the tweeter adjustment/protection resistor to compensate for the brightness, if found.

While the above is a theoretical discussion, Wilson Audioreports good customer reaction when using valve amplifiers, even an Audio Research *D120* on its 8ohm taps. Here subjective reaction to

a given combination may confound my technical reservations, while momentary current limiting can be quite hard to detect subjectively on music programme: further the consequent tonal balance change might even be preferred in some set-ups, even though there is a theoretical mismatch.

Investigating the low frequency behaviour for such a large speaker in a relatively modest (7.6 x 10.7m) room is fraught with difficulty. With that low tuning frequency I was minded to take nearfield measures of the port and drivers under several conditions, and made a small discovery that could help with other assessments. It is customary to examine the nearfield output of the bass drivers and the port separately, and then consider their summation to the overall output. The port is specifically examined for its tuning shape and also for unwanted breakthroughs. The resultant port output graphs are often criticised in review for a degree of leakage into the upper frequency range, with potential masking and coloration in the midrange – those measured for the *Alexia* indeed show 'unwanted' output at 600Hz, 800Hz and 1.8kHz. However, because in this case it was possible, I disconnected the mid and treble drivers, measured again and was surprised (though perhaps shouldn't have been) to get the improved red trace, now showing a near perfect 12dB /octave rolloff for the bass drivers, and the right port response too. While some speaker ports do have breakthrough output in the upper range, particularly those with bass/mid drivers, this port output of the *Alexia* is intrinsically and notably clear of such noise. Incidentally, the intrinsic nearfield bass response

*Midrange level and protection*





of the drivers alone is quite uniform down to 50Hz, registering -6dB at 40Hz under sealed-box condition; indeed, this could be enough for smaller rooms with greater low frequency gain.

With the port active the summed responses hammer on down to an estimated 16Hz -6dB. The in-room response will partly depend on structural losses at these frequencies; I know that my window array was beginning to move under high power low frequency testing.

The small grille frames sit close to the drivers and are quite symmetrical in form, increasing the degree of aberration they introduce. The losses are actually quite significant, a general 1 – 2dB loss overall for the mid and treble, introducing a 10dB notch at 4kHz and some +3/-4dB variations in the upper range, which in my view is quite destructive. Above 18kHz the output falls by 6dB by 30kHz, simply due to cloth attenuation. It's better to leave the grilles off, such is the inherent precision and transparency of this speaker without them, and in my opinion the loss incurred by using them is simply too great in terms of focus, clarity, timbre and dynamics. If the grilles are considered essential, I'd recommend that installation and alignment (even those resistor adjustments) should be done with them in place, to get the best result.

The energy decay response shown is optimal (grilles omitted). The uniform response array at the back of the graphs (t = 0 - 1mS) is very good, showing generally rapid, even decay and obviously good time alignment. A mild tweeter artefact is visible at 15kHz, leading to a decay ridge decaying after 4mS, which at this high frequency is not considered very significant. When the grilles are fitted there are some decaying disturbances above 1.5kHz, plus delayed 'clutter' in the treble range, confirming the poorer sound heard for this condition. Accelerometer testing of the enclosure showed some moderate output from the lower part of the rear panel, but little else of consequence.

A combination of sweep tones and single higher resolution tones form a picture of this loudspeaker's linearity. Very good results were obtained, commensurate with the high power handling, and such good distortion control helps ensure consistent timbre and clarity over a wide loudness range. For the mid and treble ranges, third harmonic is commendably low, which I consider important to the preservation of transparency and natural timbre. Below about 100dB spl the distortion is at or close to inaudibility right down to 20Hz. This is quite an achievement, illustrating to some degree what larger speakers are all about.

**Table1:** Alexia Harmonic Distortion (%)  
Spot Frequencies 1W, 90dB spl

Frequency	2 <sup>nd</sup> (%)	3 <sup>rd</sup> (%)
20Hz	2.2	1.5
25Hz	1.2	0.8
35Hz	0.62	0.16
60Hz	0.52	0.11
150Hz	0.11	0.03
300Hz	0.12	<0.03
600Hz	0.12	0.03
1kHz	0.33	0.023
2kHz	0.09	<0.02
5kHz	0.1	0.02
10kHz	0.1	0.06
15kHz	0.15	-

**Table2:** Alexia Harmonic Distortion (%)  
Spot Frequencies 10W, 100dB spl

Frequency	2 <sup>nd</sup> (%)	3 <sup>rd</sup> (%)
20Hz	5.2	3.5
25Hz	8.2	2.5
35Hz	0.8	1.5
60Hz	0.5	0.4
150Hz	0.35	0.15
1kHz	0.1	0.42

**Note:** The upper mid had some 'just audible' 4<sup>th</sup> harmonic, 0.15% for pure tone; it's not known whether this is from the tweeter or the mid driver as there will be some power sharing on this measurement.

Power testing showed that the port loading effectively increases the audible (distortion limit) power handling by nearly four times at frequencies below 40Hz. The speaker will also take a high 50W sine wave at a low 35Hz before audible limiting, a very good result that agrees with the high dynamic capacity shown on sustained bass notes for cathedral organ music. This is around 105dB, a seriously high power level.

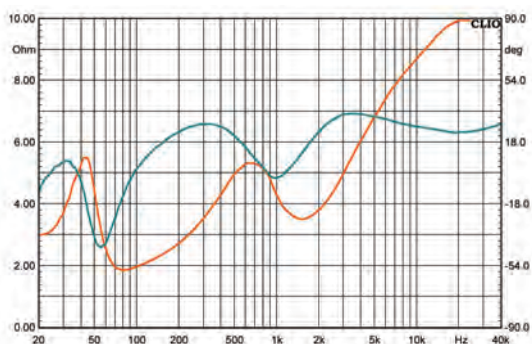
**Conclusions**

It has been a long journey to get to this point, and we have to take into account this loudspeaker's particular demands, including the fine tuning and focus installation, but the result is unmistakably magnificent. While I still love the *MAXX III*, the *Alexia* is faster, more open, clearer, better focused, more upbeat, more transparent and has more tactile bass and faster, more upbeat rhythms. However, it represents a significantly tougher load, and is not quite as powerful – though more than powerful enough to set the musical standard for size and price. And it really does echo a significant proportion of the flagship *Alexandria* performance. As I found with the *MAXX III*, the *Alexia* settled into my listening room without fuss, sounding both familiar and yet reinvented. Piano reproduction is particularly good, and I shall not easily forget what it did for Evgeny Kissin playing Chopin sonatas with the full 250W peak programme drive of the D'Agostino *Momentum*s. *Alexia* manages to avoid favouritism

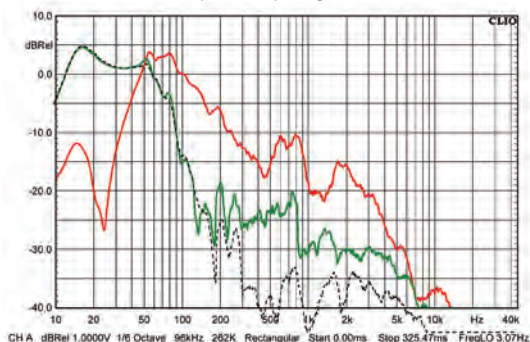
and plays all kinds of good music really well. It also takes no prisoners, and if so minded I could clearly hear every link in my audio chain with their subtle and complex contributions including losses.

Take full regard of its exacting needs, and the resulting sound is world class, natural, dynamic, powerful, entertaining, exciting, gripping, revealing and yet remarkably subtle where those qualities are also appropriate. It has been a pleasure to have these speakers on board. While there's no denying that a pricetag of £48,000 is very high, on build quality, finish, engineering and not least sound quality, the Wilson Audio *Alexia* is quite simply an outstanding example of audio excellence.

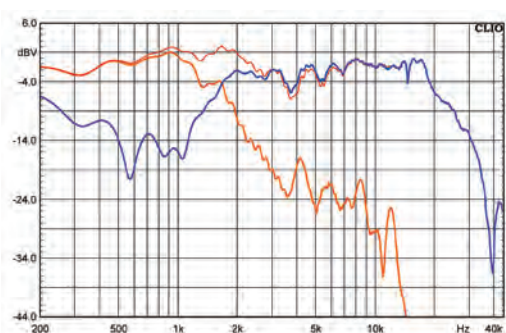
Wilson Alexia Impedance, Frequency Response and Phase (teal)



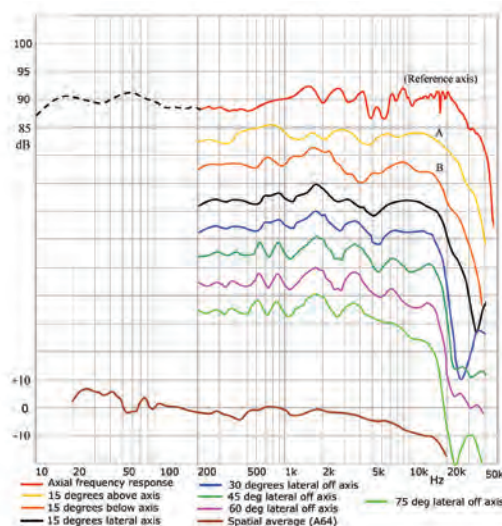
Alexia Frequency Response for bass and Port (dashed) alone, then mid-on port output (green)



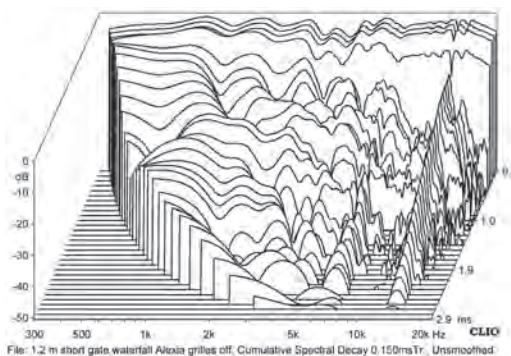
Alexia Upper Crossover Frequency Response



Alexia Composite Frequency Responses



Alexia Waterfall Response, Energy Decay for Time and Frequency



### HIFICRITIC Loudspeaker Results

Make	Wilson Audio, Provo, Utah, USA
Model	Alexia
Price per pair	From £48,000 (5 year guarantee)
Finishes	High gloss, automotive colours
Size (HxWxD) cms,	140 x 38.4 x 53.7
Weight	116kg (256 lb)
Type	floorstanding moving-coil 3-way: 200mm and 250mm bass, 175mm mid, 25mm HF soft dome, bass reflex loading
Sensitivity for 2.83V	90dB/W measured, 8ohm Watt
Amplifier loading	3.5 ohms typical, 1.8 ohm min: difficult loading
Frequency response, axial	35Hz to 25kHz +/-3dB (listener axis)
Frequency response off-axis	Very good, see graphs and in-room response
Bass extension	24Hz for -6dB, (20Hz in-room)
Max Loudness, in room Power rating (max, min)	108dBA for a stereo pair 200W, 50W (solid state amplifiers recommended)
Placement	Free space, spike coupled

### The System

Krell *Evo 402E* and D'Agostino *Momentum Stereo* power amps; Audio Research *REF10* and *REF5 SE* control units; MSB *Platinum Signature IV DAC* with *Diamond* supply, *Metrum Hex DAC*; Naim *UnitiServe* network server and S/PDIF source; NAIM *NDS/555PS* streamer/DAC, Wilson Audio *Sophia 3*, Quad *ESL63* speakers; Finite Element *Pagode Reference* racks; Cardas *Golden Reference* and Transparent *XLmm2* cables.

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# Subjective Sounds

PAUL MESSENGER

## HIFICRITIC

AUDIO AND MUSIC JOURNAL

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*Martin Colloms, Publisher*

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Since my days of editing the original A5-size *Hi-Fi Choice*, I've always rather enjoyed the extended schedule of a quarterly publication. I can cope with monthlies, but dislike the time constraints of weeklies, and the prospect of working on a daily fills me with dread. I like to be able to take my time, and to have time for second or even third thoughts.

That said, I still haven't quite adjusted to the *HIFICRITIC* schedule. One problem I've encountered concerns my own reviews. I start work at the beginning of the quarter, gathering in the components I'm planning to try, writing a couple of introductory paragraphs and carrying out some initial listening.

Then the pressure of putting together the rest of the magazine seems to take over. Articles arrive and need subbing; others need chasing; components need to be organised for other reviewers; and so on. My own writing is consigned to a Pending file, in the often vain hope that I'll get around to paying it some attention before the contents list has to be finalised.

In the end I did manage to finish the C.E.C and Linn reviews. I also wrote the first example of a planned series of music features called *Favourite Things*, the idea being to persuade at least our reviewers to share their favourite music with the *HIFICRITIC* community. Meanwhile, several items remain in the Pending file, so this column will act as something of a preview for the next edition.

I was intending to report on the Roksan *Caspian M2*. It's a relatively upmarket integrated amplifier that has been around for at least two years, so tends to be overlooked in the media. However, a friend suggested it was sufficiently exceptional that I ought to give it a try, and a brief listen has left me very impressed. I don't think it handles the extreme bass and treble quite as well as my regular Naim amplification, but it does show an exceptional ability to reproduce midrange voices with considerable poise and precision. Indeed, on some familiar discs I found myself making out lyrics and phrasing that had hitherto been obscure, so I'll have to make certain it receives full and proper treatment in the next *HIFICRITIC*.

I've also started work on my latest wallspeakers. The baffles have been cut for the latest 260mm Tannoy *Kensington* drivers, and these have been inserted into the hatch-like holes in my end wall. Crossover networks have been appropriately located and the speakers connected to the system.

The initial impression was certainly positive. It has been some years since I've actually got around to using a big Tannoy Dual Concentric flush-mounted into the wall, and I was immediately made aware of the bonus of eliminating the enclosure. However, adopting such an ad hoc approach is always unpredictable – after all, the *Kensington* is intended to be loaded by a specific volume of air in a port-loaded enclosure, and that combination unquestionably works very well indeed. Right now I'm not entirely convinced that the wall-mount arrangement works quite as well as I had anticipated. It's good, without question, but my first impressions are that it falls short of true greatness.

I've also got around to baffle-mounting the pair of vintage Goodmans *Axiom 80* drivers I've acquired, but I haven't worked out the wiring arrangements or tried them yet. I'm also a little apprehensive about damaging these ancient full range drivers, as a friend recently informed me that a pair sold on eBay for around £2,500 the other day!

Then there's my plan to write about the sound quality differences between several generations of Naim power amplifiers, temporarily held up by the need to find the old Cannon *XLR-LNE* type mains lead that original casework *NAP250s* used. Hopefully I'll have found them in time for the next issue.