

Focal Sopra N°2

The name is all about superiority, and its looks are striking, but do Focal's new floorstanders live up to their billing?
 Review: **Andrew Everard** Lab: **Keith Howard**

Most hi-fi manufacturers have a distinctive visual identity for their products, but few are quite as unique as the looks of the higher-end speakers from French company Focal. Yes, it may make almost prosaic-looking models such as the Chorus and Aria ranges [HFN Aug '15], but when its designers are let off the leash they come up with something as imposing as the Utopia series, with the appearance of having been sliced and then bent forward to loom over the listener – especially so in the massive (in every sense of the word) Grande Utopia EM, all 2m and 260kg of it [see HFN Sep '14].

The new Sopra range, slotting in between the Utopia and the rather boxier Electra, with the Sopra N°2 floorstander we have here at £9599 a pair, has styling clearly derived from Alain Pineau's work on its bigger brothers. With a name apparently derived from the latin 'Supra', meaning 'superior', and despite its smaller dimensions, it's able to conjure almost as much visual impact thanks to its curvaceous cabinetry, tempered glass base above which the main enclosure appears to hover, and a range of striking finishes.

You can have your Sopra N°2s in a less than happy-looking combination of walnut veneer side panels with black baffle or – if you're feeling conservative – black lacquer throughout, but you can also celebrate the shape of that curvaceous cabinet in a choice of Carrara White, Imperial Red or Electric Orange automotive quality lacquers. And having spent a while in front of a pair of the speakers for the purposes of this review, I'd say: 'subtlety go hang – give me bright any time.'

While dwarfed by the Grande Utopia, the Sopra N°2 – there's a smaller standmount model, the Sopra N°1 – is hardly tiny, at 1.2m tall, and nor indeed is it a lightweight, with each speaker a substantial 55kg. It's a three-way design,

with a pair of 18cm woofers handing over to a 16.5cm midrange at around 250Hz, and one of Focal's familiar beryllium inverted-dome tweeters taking up the baton at 2.2kHz.

KEEPING THINGS COMPACT

The midrange is mounted above the tweeter in its own upper housing, separated from the main enclosure by the wedge-shaped tweeter section [see picture, p31], and in fact the enclosure for the bass drivers extends through to part of this upper section, maximising volume while keeping the speaker relatively compact. It does this via two vents through the assembly in which the tweeter sits, which Focal describes as Infinite Horn

Loading (IHL). In this, a shaped and foam-filled (reverse) horn chamber behind the lightweight diaphragm and its motor absorbs its rearward radiation before finally dissipating what

remains through a grille to the cabinet rear, thus avoiding a source of distortion.

This patented IHL design is one of several Focal innovations in the Sopra range. While the company makes great play of its 'Made in France' origins, which extends from assembly of drive units all the way through to finishing of the cabinets and final assembly, it's perhaps sometimes overlooked that its base in Saint-Étienne is also the hub for a lot of theoretical research and practical development, meaning that just about every new Focal speaker range arrives bristling with fresh in-house technology.

Thus the familiar Focal W-cone drivers, so-called because they use two layers of glass-fibre either side of a filler to create

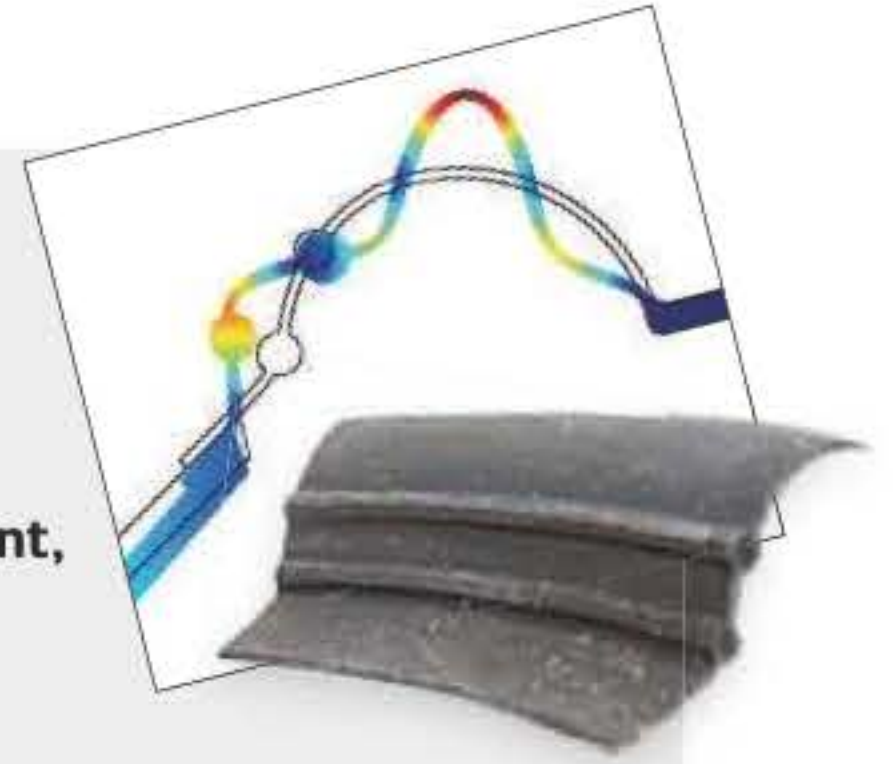
'Focal's inspiration here was the suspension of Formula 1 cars'

RIGHT: While lacking the articulation of the Utopia models, the Sopra N°2 has much of their style, placing the twin 18cm bass units in the lower cabinet, and the 16.5cm midrange above the beryllium-domed tweeter



TUNED MASS DAMPING

However stiff you make the cone or dome of a moving coil drive unit, ideally obviating all 'breakup' resonances within the driver's passband, the roll surround can still let the side down. It has to be flexible to allow cone movement, so is itself subject to bending resonances; and because it forms an annulus around the external diameter of the diaphragm, it represents quite a large radiating area. Focal's novel solution is to adapt a well-known technique from other fields of mechanical engineering called tuned mass damping, in which carefully dimensioned and positioned masses act to suppress resonance. In the *Sopra's* midrange driver these masses take the form of two small ribs moulded into the roll surround. KH



a sandwich – hence 'double verre' or 'double-V' – are used here, with the addition of a new Tuned Mass Damper in the surround to remove resonances [see boxout, above]. Focal says its inspiration here was the suspension of Formula 1 cars – Renault, of course!

Like the treble design, this is all part of Focal's analogy with photography – improving the resolution, colour accuracy and focus of an image. It's the same thinking that informs the use of a new 'Neutral Inductance Circuit' (NIC) in the drive-units' motors. Designed to compensate for current variations in the voice-coil, and the position of the voice-coil within the magnet assembly, NIC aims to maintain a stable magnetic field, and thus reduce distortions. As Focal likes to point out, such developments are borne of powerful dynamic simulation software and put into practice thanks to its custom, in-house driver assembly: all fairly unusual for a speaker company of its scale.

MAGICAL IMAGING


From the off, it was clear that these *Sopra* speakers are capable of power, punch, refinement and a quite magical sense of stereo solidity and image focus. Well, when I say 'from the off', perhaps I should clarify that it took a while to get them playing nicely with the room, although all the effort was very much worthwhile.

Focal's set-up instructions for the *Sopra* speakers are a combination of *laissez-faire* and precision: after saying the obvious stuff like keeping them well clear of corners and setting them up to form an equilateral triangle with the listening position, it goes

on to trot out a formula to follow. ' $B^2=AC$ ' is how it goes, where 'A is the distance from the centre of the woofer to the nearest floor or wall, B is the distance to the next closest floor or wall, and C is the greatest distance.' Cue much juggling of the hefty speakers in the editor's listening room [see www.hifinews.co.uk/news/article/meet-the-team;-paul-miller/9952], measuring and listening – after which I kind of gave up and went for the position that sounded best.

Which, by the way, was pushed back just a bit more than the formula ordained, and with rather less toe-in than I would normally use. Adjusting the spikes to get the tweeters bang-on ear-level made a significant difference – easy, as they can be twiddled from above. Removing the grilles from the mid and bass units (the tweeter has a fixed mesh cover) also proved beneficial in tightening things up. Interestingly, just lowering the front of the speakers a smidge using those big spike adjusters had also a marked effect on the weight definition of the bass, while the usual idea of increasing toe-in to firm up the stereo image also seemed to have the opposite effect here.

Used on the end of the newly-renamed Devialet Expert Le 800 amplifier, the Focals were fed music from the Melco N1A digital music library [see *HFN* Aug '15] connected via USB, and controlled by Kinsky and PlugPlayer apps. A pretty minimal system, then, but one very much able to demonstrate what the *Sopra* N°2 loudspeakers can do.

They delivered a lovely, spacious presentation of Supertramp's *Crime Of The Century* [A&M 393 647-2] in 192kHz/24-bit, with good ambience and focus on the voices of the title track. But things really took off when playing the histrionics of Muse's 'The Handler', in 96kHz/24-bit from *Drones* [Warner 0825646121212], 





ABOVE: Focal's new IHL (Infinite Horn Loading) tweeter employs a 25mm inverted solid beryllium dome said to be 5x lighter than an equivalent 'diamond' dome at just 21mg

with the thundering bass line delivered in particularly thrilling fashion, and plenty of snarl and attack to the sound.

TIGHT AND POWERFUL

Going back from pretenders to the real thing, Queen's 'Keep Yourself Alive' from the band's debut album, in DSD from the Japanese SACD release [Universal UIGY-9510], had the chugging guitar-line much in evidence, and Freddie Mercury's voice delivered with excellent clarity. Roger Taylor's drum solo was tight and powerful via the Focals, and the soaring Brian May guitar delivered with its characteristic tonality singing out of the mix. On lesser speakers, this set can sound

"Border Song" brought a real thrill with the entry of the backing choir'

somewhat thick and compressed, but there was no such problem here.

Strip back the music to something much simpler, and the Focals are equally convincing, with a captivating delivery of Elton John's 'Border Song' from his self-titled album in DSD [from the SACD release,

Mercury UIGY-9612], a clear, precise view of the accompanying strings and a real thrill to the entry of the backing choir.

What these speakers do so well is make instruments sound

real and unforced, ensuring you are soon listening *through* them, not *to* them, and this is especially apparent with one of my enduring test favourites, Lake Street Dive's pared-down version of 'I Want You Back', from the *Fun Machine* EP [Signature Sounds SIG2048], where the jaw-dropping voice of lead singer Rachael Price just hangs in space between the speakers, pretty well defining the term 'in the room presence'.

As initially set up, the speakers gave a slightly artificial clipped sound to Bridget Kearney's string bass on this track, with no sense of the snap and resonance of the strings – notes just seemed to stop in a rather artificial manner. With a bit of speaker adjustment, including the removal of the grilles, that resonant sound was back, and sound was suddenly warmer, more organic, more real.

On a roll now, I tried Gov't Mule's live version of Floyd's 'Shine On You Crazy Diamond Pts 1-5', from the *Dark Side Of* ↪

LEFT: Monoblock tweeter moulding seen from above. The horn section (empty here) is filled with foam to absorb the rear radiation from the tweeter dome, pictured above. Voids maximise the internal volume available to the bass driver



THE SOPRA MEN

Shintaro Hosoi, Focal's Home Audio R&D Manager, spent ten years in acoustic and DSP engineering at Pioneer in his native Japan, working on speaker models such as the S-1X, before joining Focal in 2009.

With Classic range product manager Raphael Triomphe, he explained that the Sopra speakers fit a new segment for the company, which it's calling 'Premium High End'. 'The aim was to obtain a compact line of loudspeakers with a lot of strength and modernity. Technical decisions led us to employ the Focus time technology (where all drivers are equidistant from the listener), while the IHL tweeter gave the Sopra range its distinctive cosmetic signature.'

Shintaro explains more about this Infinite Horn Loading design, saying that 'the horn shape avoids any reflection coming back to the dome, while the progressive-density filling gradually absorbs the sound, minimising the non-linear effects of a single-grade absorbent.'

'Thanks to the horn-like shape of the tweeter's rear chamber, the velocity of the sound progressively decreases with distance. The density of the absorbent material is increased to further improve its effectiveness. This concept is very similar to the wedge shapes used in an anechoic chamber.'

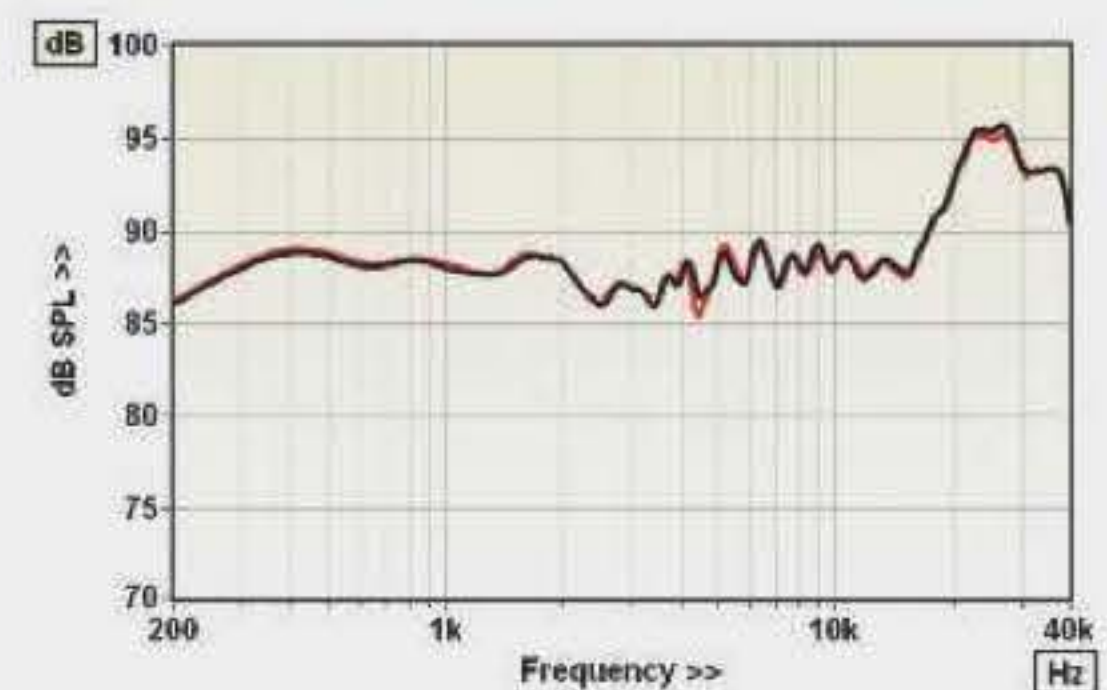
Finally, I asked whether the fixed metal grille over the tweeter was merely there for protection, or part of the acoustic design, to which the answer was a very engineering one: 'Simply for protection, but acoustically well considered.'



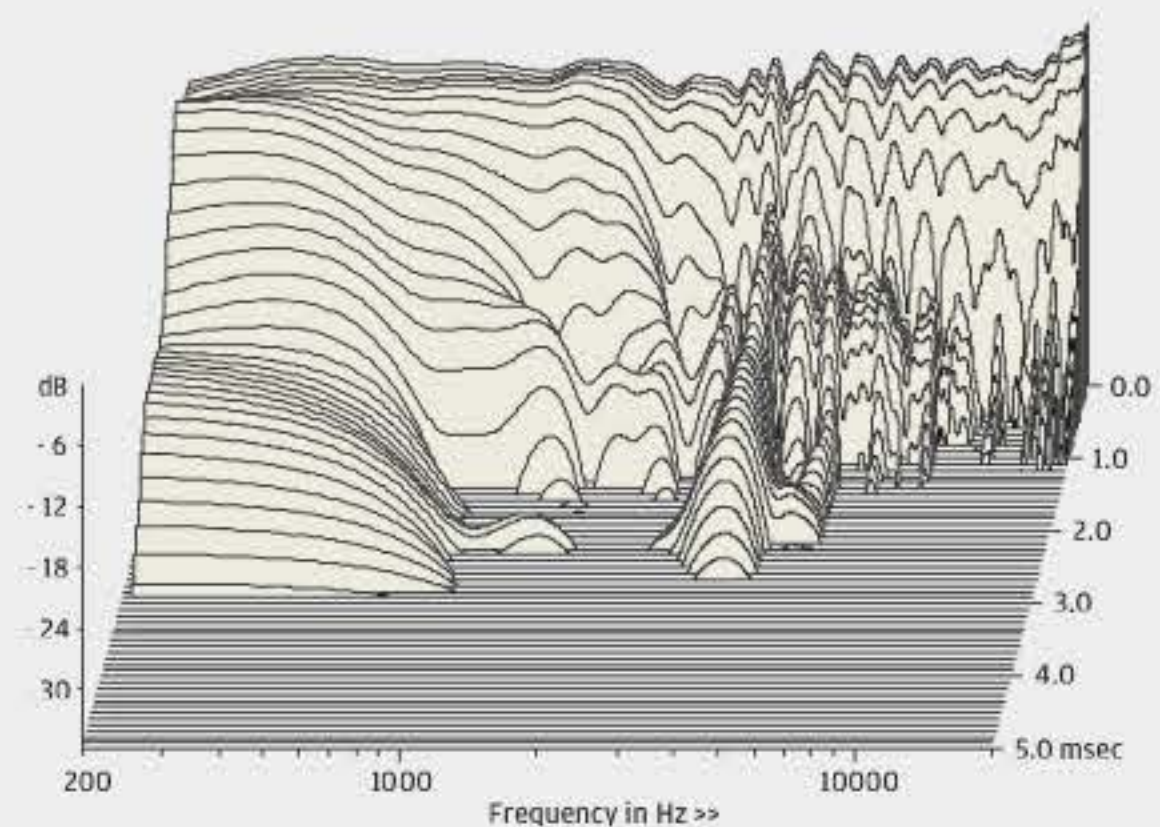
FOCAL SOPRA N°2

Focal claims 91dB sensitivity for the Sopra N°2 but our measured pink noise figure of 88.2dB falls almost 3dB short of this. Low impedance is a factor in achieving this figure: Focal specifies a minimum impedance of 3.1ohm (which would indicate a 4ohm nominal rating rather than the specified 8ohm) but we measured a dip to 2.6ohm at 104Hz. Combined with high impedance phase angles at low frequencies this results in a minimum EPDR (equivalent peak dissipation resistance) of 1.1ohm at 85Hz – challenging to the partnering amplifier. The forward frequency response [Graph 1, below], measured on the tweeter axis, is essentially flat in trend with just a mild presence band dip.

Response errors are modest at $\pm 3.4\text{dB}$ and $\pm 3.5\text{dB}$ respectively and pair matching error would have been a fine $\pm 0.7\text{dB}$ but for a narrowband disparity at 4.3kHz which raised it to $\pm 1.1\text{dB}$. Above 16kHz the output begins to rise towards a broad peak centred on 25kHz, something we've seen before from Focal's inverted dome beryllium tweeter but disappointing as it suggests the first breakup frequency is no higher than for an aluminium alternative. That said, as the broad peak suggests, the resonance is very well damped and extends the ultrasonic output to $>40\text{kHz}$. At the other end of the frequency range near-field bass measurement is made more difficult by the port venting through an angled slot between the underside of the cabinet and the plinth but we recorded a tentative bass extension of 37Hz (-6dB re. 200Hz). The CSD waterfall [Graph 2], suggests that the unusual response ripples between 3kHz and 15kHz are due to a series of resonances. KH



ABOVE: Forward response is generally flat but a cone resonance is linked to ripples in presence/treble



ABOVE: Cumulative decay waterfall shows a well-damped cabinet but also a mid cone mode at $\sim 4\text{kHz}$

HI-FI NEWS SPECIFICATIONS

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| Sensitivity (SPL/1m/2.83Vrms – Mean/IEC/Music) | 88.7dB/88.2dB/87.9dB |
| Impedance modulus min/max (20Hz–20kHz) | 2.6ohm @ 104Hz 46.2ohm @ 20Hz |
| Impedance phase min/max (20Hz–20kHz) | -72° @ 56Hz 45° @ 900Hz |
| Pair matching (200Hz–20kHz) | $\pm 1.1\text{dB}$ |
| Frequency response error (200Hz–20kHz) | $\pm 3.4\text{dB}$ / $\pm 3.5\text{dB}$ |
| LF/HF extension (-6dB ref 200Hz/10kHz) | 37Hz $>40\text{kHz}$ / $>40\text{kHz}$ |
| Dimensions (HWD) | 1190x358x540mm |

LEFT: Just a single set of terminals at the bottom of the cabinet, which sits on a tempered glass base plinth with large, easily-adjusted spikes. The vent higher up is part of the tweeter-loading system

Symphony release under Michael Tilson Thomas [96kHz/ 24-bit WAV from the orchestra's own label]. This is an early work (1790) with which I wasn't familiar before – hardly surprising as it's one of Beethoven's least-recorded compositions.

DRAWING YOU IN

Listening to it through the Focals showed just what I'd been missing, this early composition crammed with hints of what was to come in the later pieces, all presented with exemplary weight, fine detail and sheer attention-grabbing realism.

These aren't speakers to hurl 'hi-fi' at you, and in some cases can even sound somewhat understated by comparison with some more 'obvious' rivals, but their ability to draw you into the music-making is never in any doubt.

If there's a criticism, it's the same sensitivity to positioning I mentioned when discussing the set-up. This can also make the speakers a bit fussy about *listening* position, meaning that what sounds good at the ideal position can be slightly less convincing off-axis. But I'm talking well off to one side or standing up here, and with the tweeters at about seated head height, sliding along the sofa still showed pretty good consistency. The combination of trickle-down technology and all that in-house research seems to have hit pay dirt here. ☺

HI-FI NEWS VERDICT

Big – though not as huge as its Utopia stablemates – the Sopra N°2 is one of Focal's best designs to date. It offers an explicit, involving sound with stereo imaging and soundstaging bordering on the magical when you manage to get the speakers set up and 'dialled in' to suit the room. All that work has paid off, and the bonus is a speaker with an arresting visual style – especially in bright red or orange!

Sound Quality: 88%



The Mule set [Provogue PRD 7446 5] – which is rather more fun than the po-faced Floyd original – and the Focals did an excellent job of conjuring the live atmosphere, while still slamming out the lead guitar against a big, rich instrumental backdrop. My listening notes say simply 'Just bags of presence and impact here!'

With tracks like this, it's good to hear that these speakers, so accomplished with pure and simple music, can also do down and dirty when required. They're equally at home with a high-quality orchestral/choral recording, as was clear with Beethoven's massive, and moving, *Cantata On The Death Of Emperor Joseph II*, in the recent San Francisco



Paul Miller Editor

Technician and writer on all things audio for some 30 years, Paul Miller took over the editor's chair in 2006. He invented the QC Suite, used across the audio industry

Adjusting focus

Having heard Focal's new Sopra loudspeaker range in two separate locations before auditioning them in his own media room, **Paul Miller** was eager to match the experience with measurements

On a very rare trip away from the coalface that is *Hi-Fi News*, I was given a preview of Focal's new Sopra range of loudspeakers at the company headquarters. Joined by a few European colleagues, we were treated to some truly sublime sounds from the standmount N°1 and floorstanding N°2 models. I was struck by the astonishingly tactile imaging of vocalists and accompanying performers alike, all played out in what can only be described as magnificently spacious soundstaging.

This was one of the most uplifting and communicative systems I'd ever heard, but then it was being ushered forth by one of the world's most capable amplifiers – the Naim Statement [HFN Jun '15]. Was

this just one of those rare fortuitous coincidences, or a true reflection of the Sopra's everyday performance?

The answer came a month or two later when I was exposed to another Sopra N°2 at the EISA Convention in

Brussels, accompanied by many of the same editors. Here the Sopra delivered much the same experience, driven by far more modest amplification. And it did it again, after some fine-tuning of position, when the Sopra N°2 finally made it to Blighty and my listening room [see p28].

SUBLIME SOUNDS

Fed via a Melco-USB-Devialet Le 800 combination, this was now one of the most involving, informative and 'real' reproductions of music I'd enjoyed

in my own space. I'd never especially 'bonded' with any Focal loudspeaker in the past and those that we'd lab tested had sometimes exhibited pretty obvious flaws. So what had Focal's engineers done

differently this time around?

Focal has certainly turned the technological tap wide open on what are, ostensibly, a familiar set of in-house drivers. The 'W-sandwich' midrange driver still combines two layers of a fibre glass skin with a plexiglass foam filling, but the suspension resonance located at 1-2kHz is now better controlled, says Focal, by tuned mass damping (TMD) – two peripheral ridges which resonate in opposition and reduce the Q of these surround modes.

Focal claims this reduces distortion by 50%, just as the narrower Faraday ring (the NIC or Neutral Inductance Circuit) stabilises the magnetic field without impacting on its efficiency or causing dynamic compression. Distortion is reduced by a claimed 70% here (a 10dB reduction up to about 2kHz).

RADIATING RIPPLES

So you can imagine my raised eyebrow when Keith Howard, our speaker testing guru, and I sat down to view the lab data as it spooled across the computer screen.

'Focal has turned the technological tap wide open for its Sopra drivers'



ABOVE: Focal's Sopra range – the N°1 standmount and N°2 floorstander [see p28]



ABOVE: Focal's latest 'W-sandwich' midrange unit employs numerous revisions, including a narrower Faraday ring in the magnet system

There was an obvious ripple in the forward response and a complementary mode visible in the CSD waterfall at 4kHz and above. Had Focal just moved the resonance problem to a higher frequency, out the way of the oh-so critical mid-vocal range?

The proof of the pudding is in the listening and the Sopra N°2 certainly makes for some high class dining. So perhaps this isn't an example of a loudspeaker sounding great despite less than ideal measurements. As Keith himself says in reply to a letter [p115], 'I praise a flat frequency response when I find it and flag up benign or challenging impedance loads and clean or scruffy CSD waterfalls. But these do not tell us, definitively, how a speaker sounds.' Ⓞ