

Review of mbl Radialstrahler 101 E mkII loudspeakers, by Paul Miller, 07/2021, on :



## MBL Radialstrahler 101 E MkII Loudspeaker





*The speaker with no sweet spot arrives on our shores, offering a sound that's as distinctive as its aesthetics*

Few loudspeakers are as instantly recognisable as the 'Radialstrahlers' – directly translated 'radial emitters' – designed and built by German brand MBL. At every international hi-fi show their appearance draws crowds while the all-encompassing sound of those iconic 'melons' keeps visitors rooted to their seats. Am I giving away the punchline? Not really. Few seasoned audiophile travellers will not have heard these incredible music machines, but we have still waited a decade for them to reach these shores and be explored, inside and out, Hi-Fi News-style.

Originally conceived and created by the company's founders, Meletzky, Bienenke and Lehnardt (hence 'MBL') in 1979, the Radialstrahler design has since evolved under the guidance of chief engineer Jürgen Reis.

Representing the Radialstrahler clan here is the MkII version of the 101 E, priced at an eye-watering £51,000 and available in main/trim colourways including black/gold, black/chrome (as photographed), white/gold, white/chrome and arctic silver/chrome.

### **Big Brother**

Standing a little over a metre and a half tall, and weighing 80kg apiece, the loudspeaker's custom radial drivers are ordinarily protected by a huge lift-on/lift-off cage, though even Jürgen Reis recommends removing them before listening. Incidentally, this is not the grandest realisation of the Radialstrahler principle. That honour goes to the flagship System 101 X-Treme that, in broad terms, takes the form of two 101 E MkII's flipped and stacked with their tweeters nose-to-nose, and augmented by two massive active subwoofer towers. Cost, if you must ask, is £185k-£194k depending on finish.



Most loudspeakers are omni-directional at low frequencies becoming progressively less so at higher octaves, but the Radialstrahlers are as close to full range omni-directional speakers as currently exist, and all achieved without myriad drivers, reflectors or directivity-guiding DSP.

### **Feeling Fruity**

I've covered off the general principle of these pulsating drivers in our boxout, with specific detail of the main bass melon. Frankly, I see it as a 'rugby ball', but 'melon' seems to have stuck in the audiophile vernacular. I'd also suggest the topmost high frequency driver is closer in stature to a grape than a melon, its petals fashioned from a uni-directional carbon-fibre with each segment just 130µm thick. These are very stiff segments with a longitudinal resonance pushed up to 48kHz.

Slightly less stiff – and with a less aggressive behaviour at breakup – are the thicker (200µm) two-layer woven carbon-fibre segments employed for the midrange melon. In both treble and mid drivers these petals are sealed and separated along their vertical edges using a lightweight silicone polymer. The low and high frequency limits of the melon concept are governed in practice by driver dimensions and choice of material(s). There's only so far down that big 'ol melon will go, and so MBL has married it – with surprising transparency I might add – to a sub-bass enclosure. Extensively cross-braced and covered in a high-gloss lacquer, this truncated pyramid functions as an acoustical bandpass. It's powered inside by what's described as a 300mm aluminium sandwich woofer, although the two alloy layers of this bass driver are separated only by glue – there's no cellular foam filling here.

### **Juggling Act**

At the top-end of the loudspeaker and frequency scale there's a trade-off between the physical size of the treble petals and the HF extension and sensitivity (output) that can be achieved, so the sensitivity of this 'heavy' woofer has been reduced to better match that of the melons.

MBL specifies a 4th-order electrical/acoustical crossover for the 101 E MkII, the sub-bass enclosure augmenting output below 90Hz, the main melon operating between 90-560Hz, and the midrange up to 3.5kHz before handing over to the smallest carbon-fibre driver. All the components are housed in a separate enclosure at the rear of the speaker and partially split with separate 4mm binding posts feeding the low bass and melon crossover arms. This opportunity to further adapt the sound of these speakers with bi-wiring or, more fundamentally, bi-amping with different power amps, will doubtless prove irresistible for many audiophiles!

The internal cabling passes up from the sub-bass enclosure through the spine of the speaker, the metal tube filled with a polyurethane foam to suppress any resonances. A closer inspection of the cabinet rear – despite being an 'omni' there is still clearly a front and back to this loudspeaker – reveals a series of jumper links that MBL offers to fine-tune the 101 E MkII.

Only the bass settings involve a real change in the crossover network. 'Attack' switches in an alternate LC combination in the main melon's filter, providing a little lift at 120-130Hz and 'altering the timing behaviour to counter room modes in boomier settings'. 'Smooth' is default here. The midrange 'Natural' and 'Rich' options route the signal via air-cored or iron-cored inductors, respectively, though both have the same value. The treble settings are subtler still: 'Smooth' is connected via solid-core wiring, 'Fast' deploys silver-plated solid-core, and 'Natural' uses conventional multi-stranded copper. After some dabbling with the various options, I settled on Smooth/Natural/Natural for the bulk of my listening.



## **Sound All Around**

Space, and the amplification to fill your space, is everything with these astonishing loudspeakers. Placed some 1.5m from the side and rear walls of the HFN room, with limited damping behind and plain walls to the left and right, yielded benign primary reflections (this is subjectively acceptable provided the spectral content of the direct and delayed sounds is sufficiently similar). Neither was I short of power with the resident Constellation Inspiration Monos [HFN Oct '19] joined in the room by Classé's Delta Monos.

But I'll cut to the chase: not only are the Radialstrahlers a strange sight to behold (40 years in front of more conventional moving-coil boxes rather sets the scene) but they also reveal the musical event, well, differently. There is certainly a 'sound' here, not only with respect to tonal colour but also in the speaker's ability to drive the room and create a truly huge but meticulously crafted soundscape.

Whether you park yourself in a typical hot seat position or off to the left or right, the 101 E MkII's are not physically evident in the aural landscape – close your eyes and as those alien shapes disappear, so does any clue to the origin of the sound.

## **Smooth Integration**

Furthermore while the freedom from 'cabinet' is very refreshing, so is Jürgen's very careful voicing of the transition between the bass melon and bandpass subwoofer. He has almost eliminated any trace of the 'two speakers in one' effect heard with some panel/electrostatic designs married to moving-coil subs but, by way of trade-off, there's not quite the low bass wallop or 'snap' you might expect from a speaker with a sub-30Hz extension. The Linkwitz-Riley crossover doubtless has a positive impact on the audible coherence of this speaker's sound, top to bottom, but it cannot assist with the inertia of the alloy sub-bass cone or, indeed, quite recover that suggestion of lost 'air' and extreme top-end transparency.



Turning my attention to a tried-and-tested bass torture track – Massive Attack's 'Unfinished...' [Blue Lines, 2012 Remix, Virgin; 96kHz/24-bit] – the 101 E MkIIIs revealed those sampled layers with the same clarity as the haunting overtones of the vocals. The scene was suitably dark, the tenor absorbingly melancholic and I was perfectly happy to trade the immersive 'all of a piece' acoustic for some loss of low bass kick and extreme treble bite.

Melancholic for entirely different reasons, the superlative title track from Amy Winehouse's Back To Black [Universal Records 00600753450628; 96kHz/24-bit rip from Blu-ray audio] found the singer pouring her heart out, nay excoriating, in a way never quite emulated by all those that followed in the last 15 years of the 'British Soul' movement. Emotion, and especially heartfelt vocal emotion, is something these Radialstrahlers convey with particular sensitivity. They have a way of expressing music rather than simply projecting sound. Like I say, these speakers are different...

Switching generations, we've probably all enjoyed the familiar strain of The Beach Boys' Pet Sounds [Universal UICY-40181] countless times before. But not like this. The Wrecking Crew's sparkling instrumentals set out their stall – professional, tight and with perfect timing – while the Boys' soulful harmonies, recorded and mixed some time later, proceeded through this superlative song cycle, constructed by producer Brian Wilson and his lyricist buddy Tony Asher, with seemingly renewed youthfulness. Interestingly, neither did it sound obviously 'mono' (Brian Wilson was deaf in one ear...).

### **Love And Dancing**

Inspired by our Ken's observations on the artificiality of The Human League's 'Don't You Want Me?' I also sought out the largely instrumental version on the 21st Anniversary Edition of Dare – Love And Dancing [Virgin CDVX2192].

While this remaster, with more than a tweak to pitch and reverb, lacks some of the richness of the original, the orchestration of those synthesisers is all the more vivid, punchy and squeaky-clean. Which is just as it should be, except that through these novel Radialstrahlers it's possible to hear the low, mid and high patterns radiating as if from the individual 'melons'.

Along, perhaps, with Depeche Mode, The League blended pop with the electronica of Kraftwerk and Tangerine Dream to birth a more focused audio artform just before the advent of the 'New Wave'. MBL's speakers are the perfect canvas on which – through which – to enjoy this polyphonic masterclass.

### **Hi-Fi News Verdict**

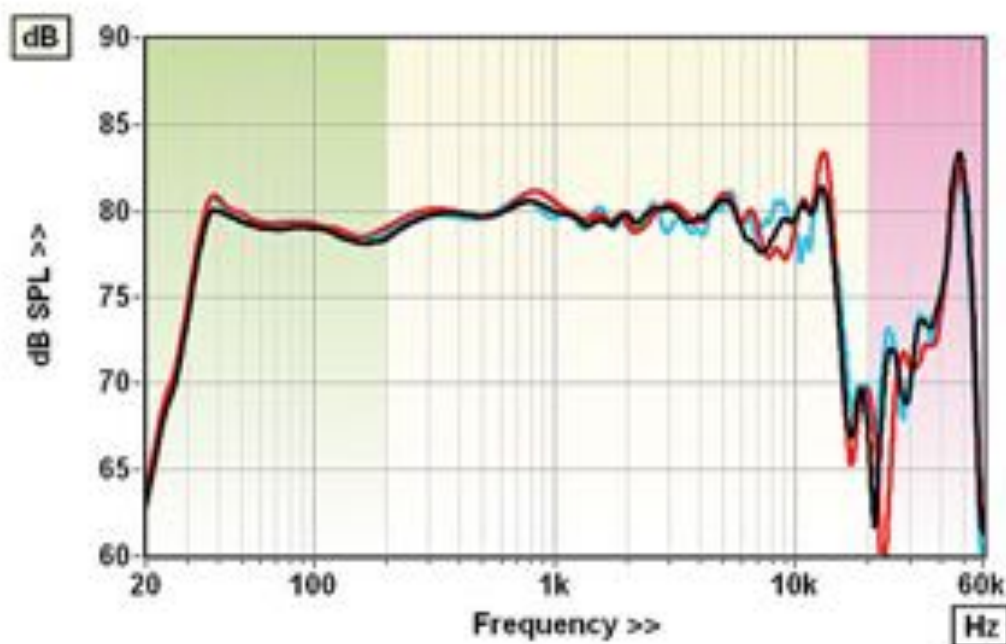
It was worth the wait. Nearly a decade after first seeing and hearing these loudspeakers in a less than ideal environment there was still that glimmer of magic in the air and the promise of so much more to come. I was not disappointed, and while the Radialstrahler 101 E MkII's offer a musical soundscape that's as distinctive as their appearance is startling, to listen to them is never less than an experience.

### **Lab Report**

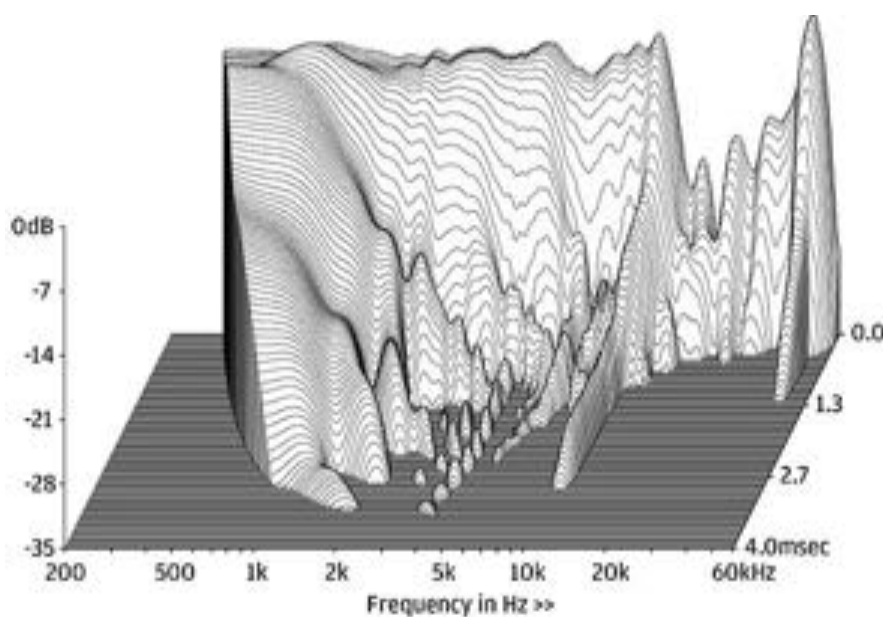
Measured on the tweeter magnet axis, the impact in forward response of the various 'Natural/Rich' and 'Smooth/Natural/Fast' mid/treble modes is minor – the difference between the three treble settings amounting to just  $\pm 0.1\text{dB}$  (5-12kHz) while the 'Attack' Low setting offers a  $+0.7\text{dB}$  upper bass lift (100-150Hz) vs. 'Smooth'. In all instances the response of the 101 E MkII is impressively flat from 200Hz-6kHz with errors of just  $\pm 1.1\text{dB}$  and  $\pm 1.3\text{dB}$  and a tight  $0.8\text{dB}$  pair matching [see Graph 1, below]. There's a mild peak in treble output at 13kHz following a limited dip from 7-10kHz, although the HF output rolls away thereafter to an early 15.4kHz ( $-6\text{dB}$  re. 10kHz). The huge grilles cause reflections appearing at 0.87msec (33cm) intervals, matching the width of the perforated cage [blue trace, Graph 1]. There's an ultrasonic peak at 48.4kHz, a resonance in the carbon-fibre petals of the treble melon [pink shaded area, Graph 1], but other in-band modes are very well controlled [see Waterfall, Graph 2].



Down below, the  $-6\text{dB}$  bandpass of the tuned bass enclosure extends over a narrow  $30\text{Hz}$ - $66\text{Hz}$ , peaking at  $38\text{Hz}$  and rolling off very steeply at  $\sim 24\text{dB/octave}$  ( $>100\text{Hz}$ ), while the diffraction-corrected LF extension is a deep  $28\text{Hz}$  ( $-6\text{dB}$  re.  $200\text{Hz}$ ). Due to the Radialstrahler's  $360^\circ$  output its low 'axial' sensitivities of  $81\text{dB}$  ( $1\text{kHz}$ ) and  $82\text{dB}$  ( $500\text{Hz}$ - $8\text{kHz}$ , all re.  $2.83\text{V}/1\text{m}$ ) are not especially indicative of the perceived in-room loudness. However, the low  $3.6\text{ohm}/40\text{Hz}$  ( $3.7\text{ohm}/460\text{Hz}$ ) impedance – typically  $<8\text{ohm}$  from  $50\text{Hz}$ - $20\text{kHz}$  and toughest at  $4.15\text{ohm}/37\text{Hz}/-42^\circ$  – suggests it must be partnered with powerful, load-tolerant amplifiers if the rated  $104\text{dB}/3\text{m}$  SPLs are to be achieved. **PM**



*Response inc. nearfield summed driver/port [green], freefield corrected to 1m at 2.83V [yellow], ultrasonic [pink]. Left, black; right, red; w. grille, blue*



*With no main cabinet, resonances are minimal, and any driver modes quickly suppressed*