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MBL's Omnidirectional 101 E MK.II Speaker

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MICHAEL FREMER

MBL Radialstrahler 101E Mk.II loudspeaker

LOUDSPEAKER

Take a casual look at the Mk.II edition of MBL's Reference 101E Radialstrahler loudspeaker, and you won't immediately see what's new compared with the original version, which I reviewed in October 2004. But the Mk.II has a shorter, sleeker bass cabinet, designed to, among other things, slightly lower the stack of omnidirectional drivers it supports. While the many other major revisions to this familiar and fascinating loudspeaker can't be seen, it's fair to say that, from the ground up, the Reference 101E Mk.II is a new loudspeaker in design, if not in concept.

Since reviewing the original Reference 101E, I've heard them in owners' listening rooms and dealer setups around the world, some of those contexts optimized for the speakers in ways a reviewer's all-purpose room simply can't be. The results were spatially majestic and musically compelling. Ideally, this omnidirectional speaker should be placed well away from side and rear walls—something that is not possible in my room. Nonetheless, that didn't prevent the original 101E from revealing its unique virtues in my room—and, as with all loudspeakers, their limitations. Two RPG Skyline diffuser panels I've recently installed on the front wall have proved beneficial for the speakers I've subsequently heard in my room, but especially for the 101E Mk.IIs.

Omnidirectional sound production

A signal applied to the bottom-mounted voice-coil of each of the three visible circular-section drive-units uniformly flexes each driver's array of vertical petal-like segments to produce a uniform, 360° horizontal wave launch. This means that, unlike with a traditional driver, both the frequency and power response are uniform wherever you sit.

The amount of energy the Radialstrahlers spray into the room is enormous compared to what's produced by standard speakers with cone midrange drivers and dome tweeters, but because that energy is radiated uniformly, unlike with a conventional cone speaker the reflections from the sidewalls will be identical to the signal that's reaching you directly, though of course it will be time delayed.

While a large room with boundaries distant from the speakers provides the best environment for an omnidirectional design, as long as the reflected energy is sufficiently attenuated by room treatments, the imaging should be as good as, if not better than, what's obtainable from standard speakers. The best baffle is no baffle, and, other than for its woofer, the 101E Mk.II has none.

This doesn't mean that MBL's design has solved every speaker problem, or that it produces its benefits without cost. After all, this is the real world. The Radialstrahler design is extremely insensitive—about 80dB anechoically—which means it requires high-powered amplifiers capable of delivering ample amounts of current in order to produce realistic SPLs, even though its enormous radiating surface makes it sound louder than it measures.

By far the Reference 101E's biggest problem has always been the audible lack of seamless integration between the bass box and the stack of omnis atop it. MBL's current chief

SPECIFICATIONS

Description Four-way floorstanding loudspeaker. Three omnidirectional bending-mode drive-units: 24-segment carbon-fiber tweeter, 12-segment carbon-fiber upper-midrange unit, 12-segment aluminum lower-midrange unit; plus, in separate enclosure, bandpass-loaded 12", aluminum-cone woofer. Crossover frequencies: 105Hz, 600Hz, 3.5kHz (Linkwitz-Riley, fourth-order). Acoustic center: 45" (1140mm) from floor. Frequency range: 24Hz–40kHz. Sensitivity: 81dB/2.83V/m. Nominal impedance: 4 ohms. Power handling: 320–500W continuous, 2.2kW peak. Dimensions 67" (1720mm) H by 16" (410mm) W by 18" (460mm) D. Weight: 176 lbs (80kg).
Finishes Piano Black, Piano Silver, or Piano White, with chrome or gold-plated accents.
Serial numbers of units reviewed: 233831 & '2.
Price $70,500/pair. Approximate number of dealers: 7.
Manufacturer MBL Akustikgeräte GmbH & Co. KG, Kurfurstendamm 182, 10707 Berlin, Germany. Tel: (49) 030-2300584-0. Fax: (49) 030-2300584-10. www.mbl.de info@mbl.de
US distributor: MBL North America, Inc., 263 West End Avenue, Suite 2F, New York, NY 10023. Tel: (212) 724-4870. www.mbl-northamerica.com.

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designer, Jürgen Reis, has been working for the past 20 years on this problem—which is compounded by the speaker's unique positioning requirements. Traditional cone designs can be placed wherever the bass works best, with fewer concerns about how that will affect the performance of the upper-frequency drivers. Not so with an omni like the 101E: the best position for the bass might conflict with what works best for the speaker's omnidirectional upper-frequencies.

Redesigned from the ground up

Along with the woofer cabinet's new profile, the Reference 101E Radialstrahler features a better-braced, more rigid box that's now built exclusively in Germany. (Before, the parts sources ranged from Denmark to the Far East.) A higher quality of lacquer and a greater uniformity of its application produce a more finely finished and attractive cabinet.

The new 12" woofer has an aluminum cone claimed to be both light and stiff. The Mk.II retains the earlier version's bandpass-loaded design. The internally-mounted woofer fires into a chamber that communicates with the outside world via dual ports on the front of the cabinet, while the rear of the woofer is loaded by a sealed enclosure. According to Reis, the proportions of the box's interior on both sides of the cone have been altered. The new woofer system, he says, produces tighter bass with superior attack, but because that also changed the woofer's phase response relative to that of the lower midrange "melon" driver, the crossover had to be redesigned as well.

The 101E's higher-frequency drive-units are true omnidirectional radiators.

Reis told me that he also redesigned that melon. While its 12 segments continue to be made of an alloy of aluminum,

MEASUREMENTS

I used DRA Labs' MLSSA system and a calibrated DPA 4006 microphone to measure the MBL Radialstrahler 101E Mk.II's frequency response in the farfield, and an Earthworks QTC-40 for the nearfield and spatially averaged room responses. Because of its bulk, I measured the speaker (serial no.233831) in Michael Fremer's driveway; though we raised it as far as practicable, the inevitable reflection of the speaker's sound from the ground affects the resolution of the measured response in the midrange. The axis chosen for the farfield measurements was level with the center of the upper-midrange unit's vertical "petals," 45" from the bottom of the speaker and below the tweeter, which sits atop the upper-midrange magnet. (This is what I understood to be the optimal axis.) The shorting plugs on the rear terminal panel were set to HF Natural, MF Natural, and LF Attack, which was how MF had listened to the speakers.

The Mk.II version of the 101E has a specified sensitivity of 82dB/2.83V/m; my estimate was slightly lower than this, at 81dB(B), which is very low. However, because of its omnidirectional nature, the MBL will seem louder than this in a room of typical size. Despite the changes to the crossover and woofer section, the electrical impedance of the 101E Mk.II (fig.1) is very similar to that of the original version (see fig.1 at http://tinyurl.com/7dsbo5x). The lowest magnitude now occurs in the midbass rather than the middle of the midrange—3.3 ohms at 41Hz—but the speaker will still demand a good, high-powered amplifier rated at 4 ohms to give of its best, especially as there is a current-hungry combination of 3.8 ohms and -51° electrical phase angle at 37Hz.

The impedance traces were free from the wrinkles that would indicate the presence of cabinet resonances, and I could find none of significance in the bandpass enclosure (not shown). As I explained in our October 2004 review of the original version of this speaker, the output of a bandpass enclosure resembles that of the port of a traditional reflex design, but with symmetrical 12dB/octave rolloffs above and below its passband. This can be seen in the nearfield response of one of the ports (fig.2, red trace): Though the low-pass rolloff is initially less than 12dB/octave, it is then steepened by the crossover filter to what appears to be 18dB/octave. The ports' limited passband is associated with a less well-defined

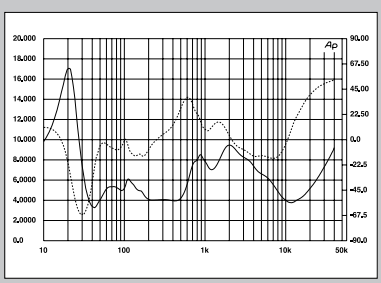

Fig.1 MBL Radialstrahler 101E Mk.II, electrical impedance (solid) and phase (dashed). (2 ohms/vertical div.)

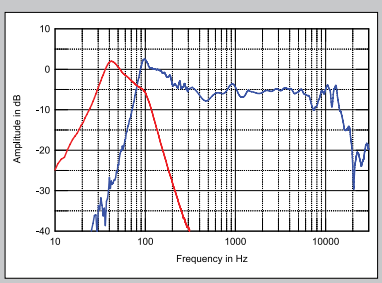

Fig.2 MBL Radialstrahler 101E Mk.II, anechoic response on upper-midrange axis at 50", averaged across 30° horizontal window and corrected for microphone response, with nearfield response of midrange unit plotted below 300Hz (blue trace) and of bandpass ports plotted below 400Hz (red).

magnesium, and silicon, the proportions of those metals in the alloy have changed, as has the drying curve. How fast a material cools affects its physical properties, especially its flexibility, which is why, Reis told me, as with airplane parts, the melon's petals are air-cooled for two days, which results in minimal stress. Each petal is given two days to cool. The result, he told me, is a lighter, more flexible membrane that produces a louder-sounding driver. The 101E's frequency response remains unchanged, he said, but the speaker now sounds both louder and "easier."

That change in the melon's sound meant that the 12- and 24-segment carbon-fiber midrange and tweeter also had to be revised, as did the crossover network, which is still housed in an isolated enclosure at the back of the woofer cabinet. The MBL 101E Mk.II may look like its predecessor, but it's been revised from the ground up.

On the rear panel are two pairs of hefty copper binding posts and three jumpers. With the latter, you can choose Smooth or Attack for the low/midrange, Natural or Rich for the midrange, and Smooth, Natural, or Fast for the tweeter. The tweeter's three positions select among different types of wire from the crossover: braided copper (Natural), solid-core copper (Smooth), and thin silver-plated copper (Fast).

Setting up the Radialstrahlers

Most speakers sound best in my room when placed the same distance from the front wall, but, like the original 101Es, the 101E Mk.IIs needed to be farther out into the room. But they did spend time at the usual distance; there, though there was an excess of low frequencies, double basses sounded just right on a variety of familiar material, including the reissue of Patricia Barber's *Café Blue* remixed by Jim Anderson (180gm LP, Premonition PREMLP9819). But there was also a hollowed-out quality to the lows that eventually became distracting. Moving the 101E Mk.IIs farther forward diminished that, but created in its place an excess of midbass energy that's typical of what you hear in audio-show hotel rooms. I played selections from the astonishing boxed set *The Nat King Cole Story* (5 45rpm LPs, Capitol/Analogue Productions APP-SWCL 1613); when Cole's voice dipped down to its lower register, it bloomed—and not, like a flower, attractively. Even Julie London's lower register bloomed, which MBL's Jeremy Bryan heard as he moved the 101Es around, trying to find the right spots.

The MBL 101E Mk.II may look like its predecessor, but it's been revised from the ground up.

Those spots ended up being where the speakers were somewhat closer together and thus farther from the sidewalls. Although there was a hint of bass bump even there, the vocal bloom disappeared, indicating that the shift had produced smoother response above the bump.

Even though my room is not small, the Radialstrahlers needed more space than I could give them—to perform

measurements, continued

time-domain output, so setting the correct level of the bandpass section is tricky for the system's designer.

Higher in frequency in fig.2, the nearfield response of the aluminum-petal lower-midrange unit (blue trace below 300Hz) peaks up a little more than I was anticipating, though this will be partly due to the nearfield measurement technique. It might also stem from the fact that I had to measure the speaker outdoors, and the temperature was around 55°F (13°C), which might have stiffened the suspension of the petals. This unit rolls off with a fast, 24dB/octave filter slope. The 101E Mk.II is remarkably flat throughout the midrange and treble, and this version of the speaker is less peaky in the top octave than the original, though it does roll off quickly above 14kHz. I doubt that listeners will find this a problem. This response was taken with the HF control set to Natural; the Attack setting brings up the top octave by about 2dB at 15kHz.

The 101E Mk.II's plot of lateral dispersion (fig.3) indicates that the speaker is indeed a true omnidirectional design. Though the radiation pattern is disturbed a little by the inevitable reflections, there is as much energy radiated to the sides in this graph as there is to the speaker's front. The MBL's vertical dispersion (fig.4) is even over quite a wide angle, suggesting that the 101E Mk.II is unfussy regarding listening axis, which is what you'd expect from the use of fourth-order Linkwitz-Riley filters in the crossover.

The somewhat complicated-looking traces in fig.5 show three spatially averaged responses: the response of the Radialstrahler 101E Mk.IIs in Michael Fremer's listening room, as initially set up by him (blue trace) and then by MBL North America's Jeremy Bryan (red); and the response of Mikey's reference Wilson MAXX 3s (green). You can see that Bryan's fine-tuning brought up the MBLs' 90–150Hz region to give a better blend

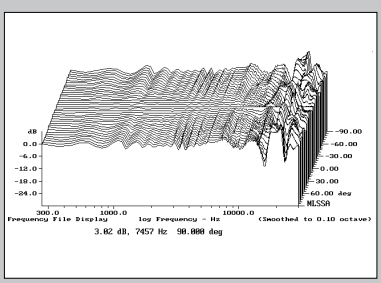

Fig.3 MBL Radialstrahler 101E Mk.II, lateral response family at 50", normalized to response on upper-midrange axis, from back to front: differences in response 90–5° off axis, reference response, differences in response 5–90° off axis.

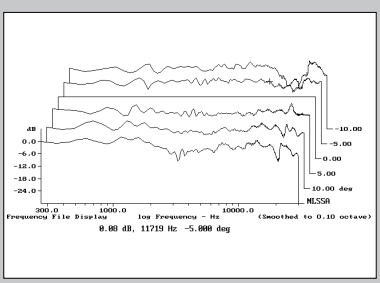

Fig.4 MBL Radialstrahler 101E Mk.II, vertical response family at 50", normalized to response on upper-midrange axis, from back to front: differences in response 10–5° above axis, reference response, differences in response 5–15° below axis.

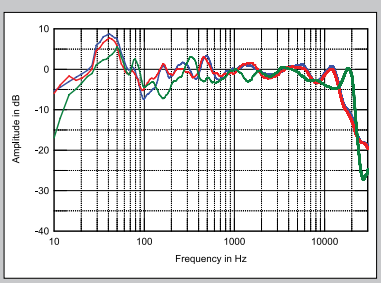

Fig.5 MBL Radialstrahler 101E Mk.II, spatially averaged, 1/6-octave response in MF's listening room as set up by MF (blue) and by MBL's Jeremy Bryan (red), and of Wilson Audio MAXX 3 (green).

at their best spatially and tonally, they should be farther away from room boundaries than I could place them. Still, once their positions were optimized here, the sound was mesmerizing; nothing fettered my listening pleasure in the months the MBLs were in my system. As I wrote in my 2004 review of the original version, "When everything—or *anything*—was wrong, there was an odd chesty, compressed, almost grainy midbass coloration, and a sense that female singers centered between the speakers were performing in a closet in the next room. The offending sound was probably due to an unusual combination of placement and reflective interference. But when that nastiness had been eliminated and everything had been optimized, including cables, AC treatment, and the jumper selections [Smooth/Natural/Smooth, same as last time], *look out!*"

Sound still spectacular!

Despite the one obvious peak (at least in my room), the 101E Radialstrahler's new woofer system was clearly a major step forward, even in less than ideal circumstances. The low bass seemed to extend significantly deeper, and the bottom octaves were punchier and better defined than I remember hearing eight years ago. I described the original 101E's bass as "far weaker at 30Hz." Not this time.

While I described the bass last time as being "slightly lean but tight," now there was no leanness at all; when I drove the speakers with either MBL's Reference 9011 monoblocks or Musical Fidelity's Titan, the integration of the woofer's and

Jumpers allow the 101E's tonal balance to be subtly altered.

melon's outputs was far smoother. Driven by the Titan, the 101E Mk.II's bass was definitely tighter, punchier, and better defined; driven by the Reference 9011s, it was fuller-bodied and more effusive. After acclimating to the sound of the 101E Mk.IIs, I replaced MBL's spikes with sets of Stillpoint Ultras. It was as if the speakers had been liberated from the floor: the bottom became even "grippier" and better defined. If you own MBL Radialstrahlers—or any floorstanding speaker—this is definitely a worthwhile tweak. (I haven't yet installed them on my Wilson Audio MAXX 3s.)

measurements, continued

with the outputs above and below that region, while leaving the midrange and treble regions untouched and with slight depressions balanced by slight plateaus. Bryan also reduced the height of the peak centered on the output of the bandpass section by a dB or so, but I suspect that the MBL's port output coincides with the frequency of a resonant mode in Michael's room, as the peak's level remains exaggerated. As MF noted, although his room is not small, the MBLs really require either a larger room than his, or one in which they can be moved farther away from the room boundaries, to get the smoothest low-frequency performance.

The Wilsons, too, suffer from an exaggerated midbass response in Michael's room, though not to the same degree as the MBLs. However, the faster reflex rolloff of the MAXX 3s results in less output below 30Hz. The Wilsons have less good integration between their upper bass and lower midrange than the MBLs, but their midrange and treble balance is smoother overall, with a touch less mid-treble energy.

As with the original version of the 101E, the Mk.II's step response (fig.6) suggests that all of its drive-units are connected in positive acoustic polarity, with the output of the tweeter arriving first at the microphone, followed by the outputs of the upper-midrange unit, then the lower-midrange unit, and, finally, the bandpass ports. The decay of each unit's step blends smoothly with the start of that of the unit next lower in frequency, correlating with the excellent blending of their outputs seen in the frequency domain (fig.1). Early reflections of the drive-unit outputs can be seen just after the 6 millisecond line in fig.6, these reflections coming from the magnet structures and the horizontal styling plates under the lower-midrange "melon." As a result, I had to aggressively window the impulse-response data when I prepared the MBL's cumulative spectral-decay plot (fig.7), which resulted in a dotted region where the data are invalid. I suspect that the rather hashy-looking decay of the speaker's output in this graph is due to even earlier reflections than to the storage and delayed release of energy, but the strong resonant ridge at 14kHz in the original version's cumulative spectral-decay plot (fig.8 at http://tinyurl.com/7dsbo5x) is absent.

As I said of the original MBL Radialstrahler 101E, this is an intriguing design that works as advertised, providing truly omnidirectional performance at all frequencies. But to ensure smooth, extended bass, that bandpass low-frequency section requires care in setup and a room of optimal size, something about which the MBL dealer will be able to advise.—**John Atkinson**

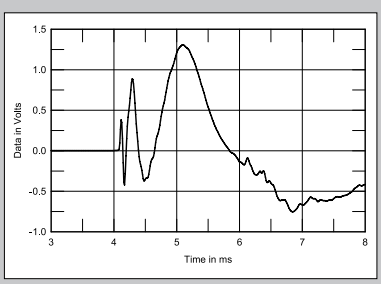

Fig.6 MBL Radialstrahler 101E Mk.II, step response on upper-midrange axis at 50" (5ms time window, 30kHz bandwidth).

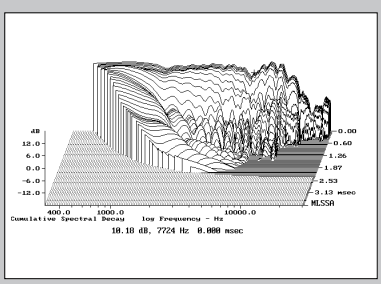

Fig.7 MBL Radialstrahler 101E Mk.II, cumulative spectral-decay plot on upper-midrange axis at 50" (0.15ms risetime).

For best sound, MBL recommends that the grille "pagodas" be removed.

Above the improved bottom octaves, everything there was to love about the older 101Es remained. Can I tell you with great specificity how the sounds of the two versions differed, given that my reference system has entirely changed in the long meantime? No more than you can physically distinguish them without a side-by-side comparison, and I didn't have an older pair handy. But I'm fairly certain that the transition from woofer to melon has been substantially improved, and that the 101E now sounds more of a piece than before.

How revealing was the 101E Mk.II? Looking back at my review of the 101E, I can't help but wonder if I wasn't to some degree inadvertently reviewing the Musical Fidelity kW amplifier I was using at the time, and not the MBLs themselves. Compared to MF's Titan, the kW was leaner in the bass, and "tonal balance leaned slightly toward the bright and less-than-rich side"—which was how I described the 101E in 2004.

Unlike the older 101E, the Mk.II's overall balance *didn't* lean slightly toward the bright and less-than-rich side, driven by either the Reference 9011 or the Titan. Though it did sound fuller and richer when driven by the 9011, the speaker sounded smoother, more relaxed, and not quite as hot in the upper octaves when driven by either amp, without losing any of its open, airy, spacious, and attractively crystalline qualities.

All of which is to say that, tonally at least, and other than the bottom octaves, the 101E Mk.II is a blank slate on which, with your choices of associated gear (including cables), you can impose whatever sonic modifications you wish.

Cables

Anyone who's spent a lot of money assembling a system but who gets casual about cabling is missing the point. At the level of performance of the MBLs and my system, cables *will* spell the difference between supreme satisfaction and disappointment. MBL internally wires the 101E Mk.II with Wireworld cable. Jeremy Bryan had supplied me with a double run of Wireworld's Platinum Eclipse speaker cable that I'd first tried with the Wilson MAXX 3s. I found it to be darker and not nearly as transparent as TARA Labs' Omega Gold, but I had to wait for a second run of TARAs; until they arrived, I listened through the Wireworlds.

Had I reviewed the Radialstrahlers based on my experience with the Wireworld Platinum Eclipses, I'd now be telling you that the 101E Mk.II lacked the older version's "effortlessness, openness, transient clarity, and crystallinity." The Wireworlds were coherent, but to me that meant coherently dark on top, soft and warm on bottom, and lacking the TARAs' fast, clean attack, soaring sustain, and lengthy decays into blackness. Double runs of ZenSati #1 produced a similar openness, but not the TARAs' bottom-end weight and sense of completeness.

With double runs of TARA Omega Gold installed, the sound entered my comfort zone, which has narrowed as I've grown older and more particular. When it's not just right, it's all wrong.

Space

Why belabor the point? No box above the bottom octaves and a 360° radiating pattern should produce imaging and soundstaging superior to that of any boxed or planar speaker, and once the speakers had been placed properly, the 101E Mk.IIs did just that, reproducing with eerie verisimilitude recordings of large orchestras as well as of small ensembles in intimate settings, such as a superb-sounding reissue of Johnny Hartman's *I Just Dropped By to Say Hello* (LP, Impulse!/ORG 176). The sound was intimate and properly sized, and produced Hartman's baritone with a natural warmth free of congestion or bloat.

Going back to some of the live Carnegie Hall tracks I listened to for my 2004 review reinforced the 101E Mk.IIs' astonishing spatial abilities. The speakers' presentation of physical instruments and musicians in space required no suspension of disbelief—the holographically three-dimensional picture was just *there*. The *Weavers' Reunion at Carnegie Hall 1963* (single-sided 45rpm LPs, Vanguard/Classic 2150) was reproduced with the singers arrayed holographically across the stage. The images of Ronnie Gilbert's and Pete Seeger's voices and the glistening acoustic guitars were as convincingly portrayed as I've heard them here, including the toe-tapping, the wooden stage floor, and the airy, open space. Lights out and you're there!

As for rock, you'd *want* to hear Neil Young's *Le Noise* (LP, Reprise 25956) through these speakers: They managed both the warm upper-string shimmer and the ground-shaking bass notes of Young's electric-guitar strumming, performed mostly on a split-pickup 1950s Gretsch White Falcon that allowed producer Daniel Lanois to carefully dial in and manipulate each pickup, as played through a vintage Fender Tweed Deluxe guitar amp. The 101E Mk.IIs presented the guitar as a whole, which was the idea (despite the two pickups), never letting the bass strings produce artificial-sounding, out-of-control bottom-end lump or bloat. The speakers produced bass weight that, while it didn't rival that of the Wilson MAXX 3s, was greater than I remember the original 101Es being able to manage.

Tonally at least, and other than the bottom octaves, the 101E Mk.II is a blank slate on which, with your choices of associated gear (including cables), you can impose whatever sonic modifications you wish.

Scaling the dynamic peaks—or not

Despite the 101E Mk.II's low sensitivity, given sufficient wattage and current drive, it could play *very* loudly without strain—as anyone who's heard a pair of them in a relatively large room at an audio show can attest. However, as with the previous iteration, at some point the sound gave way to macrodynamic compression: the increase in volume wasn't

accompanied by the shifts in dynamics you get with some traditional moving-coil designs. However, you're not going to be listening at such SPLs for extended lengths, if ever, and I was more than satisfied with the combination of high SPLs and dynamic nuance with well-recorded rock records. There was never a problem with classical music, which has wider dynamic range and doesn't reach such high average SPLs.

The drum *thwacks* on "Boy in the Bubble," from Paul Simon's *Graceland* (LP), contain dynamics about as great as on any commercial rock record, and the 101E Mk.II handled them with ease, producing textural nuance, weight, and slam enough to please anyone but owners of giant horn speakers.

Microdynamic resolution and transparency remained the 101E Mk.II's weakest suits, compared to electrostats and the best horn and moving-coil speakers, but whether it was the melon's added "give" or other improvements, or the changes in my system, I thought the 101E Mk.II was dynamically more supple at lower SPLs than the earlier version, and more transparent overall.

Three solo-piano recordings played at realistically low SPLs demonstrated that whatever the 101E Mk.II gave up to some other speakers in this area was minor. I used: Endre Hegedüs's *Piano Music in a Church*, recorded in analog using two microphones (CD, Tone-Pearls TPRCD 1); a remarkable-sounding recording by Lydia Artymiw of Schumann's Humoresque in B-flat, recorded direct to Studer A80 at 30ips in 1980 and mastered with no compression or noise reduction (LP, Chandos ABR 1029); and John Lill playing Schumann, recorded by Tony Faulkner and mastered by Stan Ricker, and used in my 2004 review (LP, Green Room Greenpro 4001/2).

With all of these recordings, the MBLs produced as believable a rendering of the sound of a solo piano as you're likely to hear from any speaker, whether the instrument was recorded in a reverberant church (Hegedüs, Artymiw) or the drier-sounding Henry Wood Hall in South London (Lill). I played them at the approximate SPLs I hear from my seat in the center of the 20th row of Avery Fisher Hall, both toward the end of my listening and again as soon as the Wilson MAXX 3s had been reinstalled. Both times, all three sounded as believable as any recording can, but in different ways.

The MBLs produced the more convincing senses of space (stage height excepted) and image solidity, carving out with almost alarming specificity the contours of the pianos within those spaces, while the MAXX 3s produced more believable microdynamics at *pianissimo* and macrodynamics at *fortissimo*, with a greater harmonic and textural consistency overall, particularly at the low end of the keyboard.

But the results were closer than I think they would have been had the comparison been between the Wilsons and the original 101Es. As best I could tell, given the changes in my system since 2004, the Mk.II sounded more coherent from top to bottom, and richer and fuller overall, with less of a tendency to sound "slightly laid-back" in the midrange or lean "slightly toward the bright," as I said of the original 101E's sound.

Acrylic styling plates surround the base of the lower-midrange melon.

Conclusions

The result of Jürgen Reis's Mk.II revisions is a far more coherent, controlled, and nuanced MBL Reference 101E Radialstrahler. The difficult job of stitching together cones and petals has, for the most part, been accomplished; fewer sonic seams are left showing in the sound.

The price for a pair of 101Es has risen from $44,900 in 2004 to $70,500 in 2012. That's unfortunate, but if you can spend $44,900 on a pair of speakers to indulge your audiophile passion, you're probably able to spend $70,500—especially as you're going to need to drop another bundle on the highest-quality analog and/or digital front-end electronics, cables, power conditioning, and room treatments.

The Reference 101E Mk.II is among the most revealing speakers you're likely to hear. It ruthlessly reveals the sonic characters of the equipment it's hooked up to, which means that that system, including the cables, must be assembled with great care. It's also tricky to set up, and requires both an optimally sized room and careful placement in that room. Although my entire system has changed in the eight years since the first version of the 101E Radialstrahler was here, I feel confident saying that the sound of the Mk.II is more refined and well behaved, and far more capable of speaking with a uniform, focused voice. The combination of MBL's 6010D preamp and the 9011 amplifiers that I reviewed last month driving the 101E Mk.IIs was among the most formidable-sounding audio systems ever assembled in my room. ■

ASSOCIATED EQUIPMENT

Analog Sources Continuum Audio Labs Caliburn turntable & Cobra tonearm & Castellon stand; Graham Phantom II tonearm; Miyajima Labs Premium BE (mono), Ortofon A90, Soundsmith Sussurro cartridges.
Digital Sources Simaudio Moon Evolution 650D DAC & CD transport, BPT-modified Alesis Masterlink hard-disk recorder, Meridian Sooloos music server, Pure Music software.
Preamplification Ypsilon VPS-100 phono preamplifier; darTZeel NHB-18ns, MBL 6010D, Ypsilon PST-100 Mk.II preamplifiers.
Power Amplifiers MBL Reference 9011 monoblocks, Musical Fidelity Titan.
Loudspeakers Wilson Audio Specialties MAXX 3.
Cables Phono: Hovland/Graham MG2 Music Groove. Interconnect: Stealth Sakra, TARA Labs Zero Gold, Wireworld Platinum Eclipse, ZenSati. Speaker: TARA Labs Omega Gold, ZenSati. AC: Shunyata Research King Cobra Helix CX & Anaconda CX, TARA Labs Cobalt.
Accessories Shunyata Research Triton power conditioners; Oyaide AC wall box & receptacles; ASC Tube Traps, RPG BAD & Skyline & Abffusor room treatments; Finite Elemente Pagode, HRS SXR stands; Symposium Rollerblocks; Audiodharma Cable Cooker; Furutech DeMag & deStat LP treatments; VPI HW-17F, Loricraft PRC4 Deluxe record-cleaning machines.—**Michael Fremer**

unique high end audio

MBL Akustikgeräte's products (such as the X-treme Reference System) are designed by a team of talented engineers. Chief Developer Jürgen Reis has been responsible for shaping the acoustic imprint of all MBL products for nearly thirty years. Time and again MBL has developed jewels of sound whose naturalness and synergy far exceed those of any established standards. For all employees at MBL, technically sophisticated circuitry is just the first step in a long journey of listening and research in the quest for the perfect audio component. Guided by long experience as a musician and sound engineer, Jürgen knows that in the world of natural sound, with its multilayered patterns and interwoven structures, there are dimensions that lie beyond anything he learned in electrical engineering textbooks. Development of MBL products can only be concluded when the act of listening to music transcends the technical and blossoms into a highly emotional experience.

MBL products are manufactured in our own factory outside Berlin. To build a tweeter capable of reproducing every nuance of natural sound – and this component serves as an example of every product we produce – MBL had to strike out in new directions and pursue them through to their ultimate consequence. When we found no tweeter on the market capable of performance we knew was possible, Jürgen invented our own carbon-based Radial Tweeter – a true masterpiece of engineering and craftsmanship. It takes no less than twenty-one hours before even a single MBL radial chassis has completed all its stages in the production process. Vertical integration at MBL is one hundred percent because only in our own factory can we build such high precision components to our exacting standards. Obviously we could save a great deal of money and effort if we took a standard dome tweeter that comes off a sub-supplier's mass production line at the rate of nearly one a minute. But if we did, we'd be depriving you of the enjoyment of too much sonic bliss.

MBL products are distributed in over 40 countries through a world-wide distribution network which are designed to bring you service commensurate with MBL performance. Please visit our website or contact us for further information on the MBL experience, whether for a single component, Radialstrahler speaker or a complete MBL system.

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