Richter Wizard 3.5

Loudspeakers

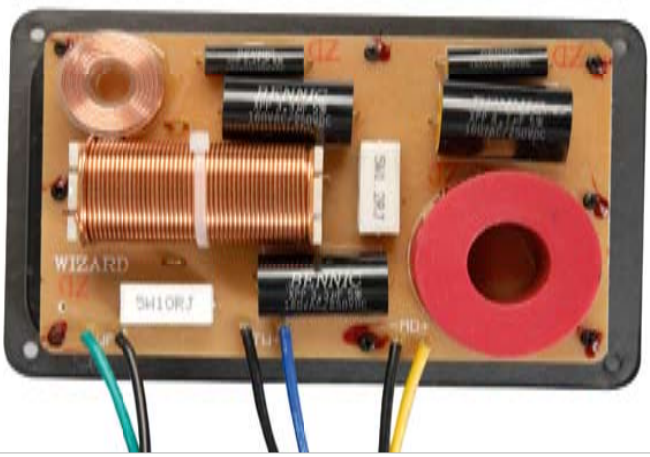
Richter's 'Wizard' loudspeakers are aptly named, because they do indeed have extraordinary powers. One of these is longevity. The Wizard design first appeared 'way back in 1986 and quickly became Australia's most talked-about loudspeaker. (It was also the only Australian design that's ever been copied, with the cheap 'knock-off' imitations being marketed under the name 'Lizard'.) But just as time and technology don't wait around for ordinary mortals, they don't hang around for magical beings either, so the 'Wizard' design that is in the stores today bears no resemblance to the Wizard of 1986… other than sharing a name and being a floor-standing design.

The Equipment

What's changed? Everything! Better drivers, better cabinet, better components in the crossover, better internal wiring, better speaker terminals… and, dare we say it… better design. Whereas Richter's original designer not only didn't have access to the sophisticated loudspeaker design tools that are available today, he also unabashedly ensured the original Wizards were voiced to please retailers (he was quoted at the time as saying of them that they: "kicked ass, went loud and didn't blow up."). Richter's 'new' designer (we use inverted commas because Martin Gosnell has been designer-in-residence at Richter for almost a decade now!) has gradually been imbuing them with a more measured bass and a more even-tempered treble, yet has managed to do so without losing the excitement and immediacy of the overall presentation that made them so popular in the first place… or the accuracy of the midrange.

This latest (0.5) iteration of the Wizard continues on those same themes, this time around with Gosnell having simply made minor changes in the crossover to accommodate the stylish new cabinet, which is a far cry from the rectangular, sharp-edged Wizards that preceded it. As you can see, the new cabinet has rounded sides… even a rounded front baffle! What isn't quite so obvious is that the new cabinet is angled back slightly, such that the top of the back of the cabinet overhangs the bottom of the cabinet by around 70mm. And although the cabinet is approximately the same size as the earlier Wizard, this new cabinet has slightly less internal volume, due to the curved walls and front baffle. The 'footprint' of the new Wizard 3.5 is 255×940×380mm.

The bass driver and bass/midrange driver in the Wizard 3.5 have woven Kevlar cones and were apparently designed by Gosnell specifically for use in the Wizards. The cones are driven by enormously powerful magnets. The neodymium-powered 20mm tweeter has a titanium dome. A large bass reflex port is hidden away at the back of the Wizard 3.5. Richter rates the Kevlar-coned drivers with a nominal diameter of 150mm, which is quite a bit smaller than we measured the overall diameter of the basket (175mm) so the company is obviously not 'gilding the lily' like some others we could mention regarding driver size. In any event, the Theile/Small diameter is 130mm, which puts the effective cone area (Sd) at 266cm^2. The tweeter sits in a shallow horn that has been specially moulded to improve the tweeter's dispersion in the horizontal direction (to ensure better sound for listeners sitting off to one side), but to inhibit it somewhat in the vertical direction (to prevent early reflections from the ceiling and floor, which interfere with precise imaging).



The Wizard's crossover network comprises three inductors (two air-cored inductors, one iron-cored), four Bennic XXP Series metallised polypropylene capacitors and a duo of 5W cermet resistors. The only economy we could see was that the Wizard 3.5 cannot be bi-wired. As usual, it's a 'two-and-a-half'-way crossover, so the lower of the two cone drivers is rolled off earlier (–1dB at 250Hz) than the higher driver (–1dB at 900Hz).

Listening Sessions

If I hadn't already pulled the speakers apart and seen the size of the magnets driving those smallish Kevlar cones, I'd have wondered where all the great bass sound was coming from! And if I hadn't peered inside the cabinet and seen all the peripheral bracing around the sides, I'd have wondered why the cabinet wasn't contributing to the sound, despite the relatively thin MDF walls. The best thing is not just that there's plenty of deep bass, but the bass keeps punching above its weight even at high volume levels, far above the sound pressure levels at which most 150mm drivers just Bundy* out and call it a day.

I didn't have a pair to compare with, but having lived with the previous model Wizard for some lengthy period of time, I'd swear that the midrange sound of the 3.5s is improved over the earlier v3.0—not in flatness, but by having an ever-so-slightly 'drier' presentation that enables the delivery of more midrange detail than previously. It would appear that this may be the result of a reduction in internal and panel resonances thanks to the now-curved cabinet walls. However I also thought it could also be the subtle result of the tweeter now being differently offset from the midrange driver. Either way, it's a worthwhile improvement!

The curvature of the baffle also appears to have improved the dispersion of the tweeter, so the off-axis performance of the 3.5 is superior as well, but I'd still recommend that you aim these new Wizards directly at the listening position, rather than having them 'fire' straight up the listening room.

Conclusion

The new Wizard 3.5s are not only the best-sounding versions of the Wizards that Richter has ever released, they're also by far and away the best looking.

- Highly efficient
- Attractive enclosure
- Good sound

- Lowish impedance
- No bi-wire facility

*The 'Bundy' clock (designed to automatically log the start and finish times of employees), was invented by Willard Bundy on November 20, 1888. Willard and his brother Harlow then formed the Bundy Manufacturing Company to mass-produce the clocks and the punch-cards used for 'clocking in.'. Bundy Manufacturing was absorbed by International Time Recording Company, which eventually transmogrified into a company known as CTR: unfriendly initials that were later changed to IBM.

LAB REPORT

Readers interested in a full technical appraisal of the performance of the Richter Wizard 3.5 Loudspeakers should continue on and read the LABORATORY REPORT published on the following pages. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

Richter Wizard 3.5 Loudspeakers

Brand: Richter
Model: Wizard 3.5
Category: Floorstanding Loudspeaker
RRP: $1,499
Warranty: Five Years
Distributor: Richter Acoustics Pty Ltd
Address: Unit 45, 176 South Creek Road
Dee Why, NSW 2099
T: (02) 9981 1844
F: (02) 9981 7988
E: info@richter.com.au
W: www.richter.com.au

Test Results

As you can see from *Graph 1*, the frequency response trace measured by *Newport Test Labs* for the Richter Wizard 3.5 was almost entirely constrained within a 5dB envelope from around 60–70Hz right up to 20kHz, and indeed the smoothed pink noise response (the pink trace on *Graph 5*) came in at 65Hz to 20kHz ±3dB. You can see on *Graph 1* (and on *Graph 2*) that the tweeter's response dips quite sharply at 19kHz, but the combination of the extremely high frequency, the Q of the dip and the fact that it falls only 5dB below the window mean that it would be completely inaudible.

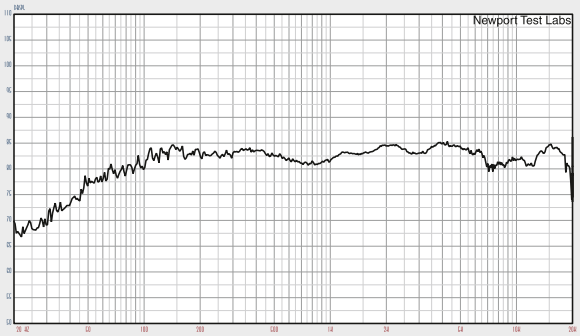
Graph 2 (which shows the response between 400Hz and 30kHz, as graphed using a gated sine technique) shows not only the response of the speaker without the grille in place (black trace), but also with the grille in position (red trace). The most significant differences between the two are that with the grille in place, there are dips in the response at 5.8kHz (5dB) and 9.5kHz (2.5dB). Obviously, you'll get superior performance if you remove the grilles when listening, but my guess is that few people will be able to hear any difference between these two configurations, since the two traces are almost identical right up to 5kHz, and this frequency is sufficiently high as to be well above the highest note on a piano keyboard.

The Wizard 3.5's low-frequency performance is shown in *Graph 3*. In this graph, only the lower of the two cone drivers has been graphed (nominally the 'bass' driver). The port's output (which has not been compensated for differences in radiating area) peaks somewhat lower than the minimum output of the driver would suggest is usual, but has a very low Q, so the port delivers substantial output from 20Hz to 100Hz, and has some effect up to 180Hz, after which it rolls off sharply. Although this graph shows the bass driver's response rolling off quite smoothly, the upper limit of this graph (500Hz) is too low to show a significant resonance occurring in the response at 740Hz (visible on the dark blue trace on *Graph 5*), though this resonance is not strong enough to impact on the frequency response in any way.

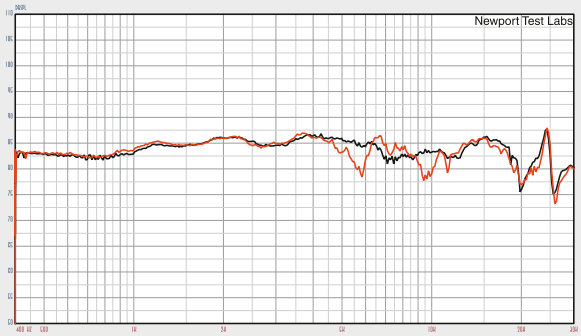
Newport Test Labs' impedance graph shows that the Wizard 3.5s are nominally a 4Ω design, due to the impedance dropping below 4Ω between 140Hz and 250Hz. However, with the phase angle hovering around 0° over this same area, they won't be too difficult to drive, though the use of a good-quality amplifier would certainly be advisable. The left and right speakers are quite well-matched, but not quite perfectly, as you can see from the minor differences in the traces below 100Hz. The 'kinks' in the impedance and phase traces at around 740Hz are caused by the resonance mentioned previously. (There's another insignificantly tiny speaker resonance at 200Hz, but you should ignore the glitches in the trace at 100Hz, 1kHz and 10kHz because these were caused by the test equipment switching from one measurement range to the next at these frequencies.)

Speaker sensitivity is very high, with *Newport Test Labs* measuring 90.1dBSPL at a distance of one metre under its standard test conditions.

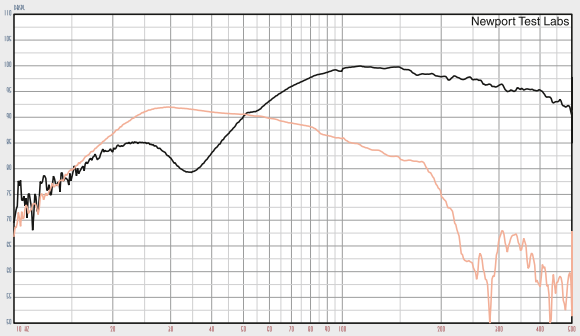
Steve Holding



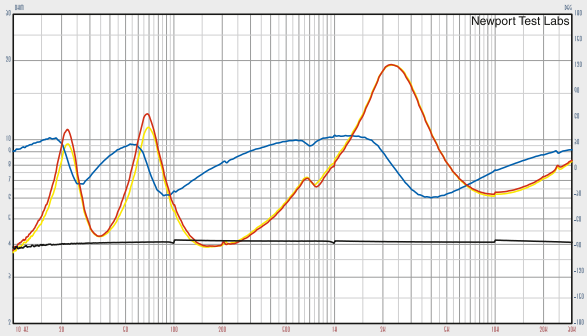
Graph 1. Frequency response. Trace below 1kHz is the averaged result of nine individual frequency sweeps measured at three metres, with the central grid point on-axis with the tweeter using pink noise test stimulus with capture unsmoothed. This has been manually spliced (at 1kHz) to the gated high-frequency response, an expanded view of which is shown in Graph 2.



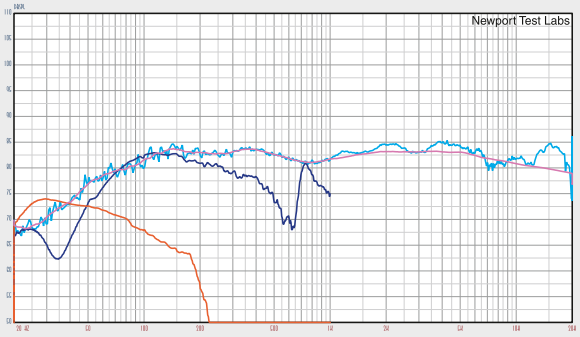
Graph 2. High-frequency response, expanded view. Test stimulus gated sine. Microphone placed at three metres on-axis with dome tweeter. Lower measurement limit 400Hz. Black trace measured without grille. Red trace measurement with grille in position. [Richter Wizard 3.5]



Graph 3. Low frequency response of rear-firing bass reflex port (red trace) and woofer (black trace). Nearfield acquisition. Port/woofer levels not compensated for differences in radiating areas. [Richter Wizard 3.5]



Graph 4. Impedance modulus of left (red trace) and right (yellow trace) speakers plus phase (blue trace). Black trace under is reference 4-ohm precision calibration resistor. [Richter Wizard]



Graph 5. Composite response plot. Red trace is output of bass reflex port. Dark blue trace is anechoic response of bass driver. Pink trace is averaged pink noise response smoothed to one-third octave. Light blue trace is averaged in-room pink noise response spliced at 1kHz to gated high-frequency response (See Graph 1).