Triangle Elara LN05

LOUDSPEAKERS

The Triangle Elara LN05 made its world debut in Australia in July, at the New-Tech 2015 show run by Chester Group, some months prior to the official release in October. It's one of the first of this famous French company's loudspeakers to be produced in its new factory in China and, not co-incidentally, also one of the company's first 'budget' loudspeakers, the others being the LN01 bookshelf/standmount, the LN02 centre-channel, and the LN07 floorstanders (the LN07 is the flagship of the Elara range).

As you can tell from the presence of the LN02 in the Elara range, Triangle intends that the models in the Elara series will be combined in various configurations for use in multi-channel hi-fi and home theatre systems, as well as in traditional two-channel high-fidelity systems. In fact in France the first sales promotion I saw for the Elara Series was for 5.0-channel and 5.1-channel home theatre speaker packages using speakers from the Elara range, rather than for individual models from the Elara range.

THE EQUIPMENT

The Triangle Elara LN05 is a 2.5-way, three-driver, bass reflex design that's housed in a modestly-sized (165×263×921mm WDH) floor-standing enclosure, each one of which weighs 29kg. When I saw the LN05 at New-Tech '15 I was a bit disappointed they didn't have Triangle's unique—and rather fantastic—horn-loaded tweeter (to see why I am so keen on this tweeter, you should look up my review of Triangle's Titus EZ. It was published in Australian Hi-Fi Magazine Vol 45 No 4,

The 25mm fabric dome tweeter is neodymium-powered and slightly horn-loaded, presumably to increase efficiency…

but is now available on the internet here: www.tinyurl.com/ahf-titus-ez-review). But I guess when you're building a range of speakers in which the lowest-priced model will be only $999 per pair (the Elara LN01) budgetary constraints come into play, even despite the lower costs of doing your manufacturing in the People's Republic of China.

Not that the tweeter fitted to the LN05 (and common to all models in the Elara range) is any slouch. On the contrary, it's a very well-made 25mm-diameter soft-dome tweeter whose fabric dome is driven by a neodymium magnet. The dome is very slightly horn-loaded, presumably to increase efficiency, but the horn is formed by a rubberised moulding that also presumably affords some isolation from cabinet vibrations. If this is the case—and I'm not sure that it is—it did not appear to me to be an overly-compliant mounting, so its ability to do this would be hindered.

The two bass/midrange drivers are identical: they have to be, because both act in concert to deliver low frequencies, whereas only the uppermost of the two delivers the midrange frequencies. It's this characteristic that defines what's known as a two-and-a-half-way (2.5-way) design. The design means you get the advantage of lots of cone area when it's required (to deliver bass!), but the tight focus necessary to deliver an accurate midrange and a good stereo image. In the Owners' Manual supplied with the LN02 Triangle did not state the cone dimensions, and at the time of this review, that information was not available on the company's website, so it was up to me to do the measurements. My ability to do this was hampered by the fact that in order to ensure the speaker has clean lines, Triangle has attached a trim to the circumference of the cone drivers that stopped me measuring either the overall diameter or the mounting hole diameter. All I was able to measure was the 'moving' diameter (cone plus surround) which I put at 115mm, the cone diameter (which I put at 90mm) and the all-important Thiele/Small (T/S) diameter, which I put at 105mm.

The T/S diameter is the dimension that enables speaker design engineers to determine the effective cone area (Sd), which is the number they put into their computer programs to work out the ideal size of both the cabinet and the bass reflex port. For the Elara LN05 my measurement of 105mm put the Sd at 87cm². However, as I made clear earlier in this review, because both drivers deliver the low frequencies, this means that the total area available at low frequencies is double this (i.e., 174cm²). This means that if Triangle had instead built a true three-way speaker (bass driver, midrange driver and tweeter) and wanted that single bass driver to deliver the same level of bass as the two bass/midrange drivers, it would have had to have had a Thiele/Small diameter of 149mm.

At the base of the front baffle is a relatively small (around 50mm diameter) and relatively short (77mm) bass reflex port that's flared at the exit but not flared internally… inside it's just a clean-cut tube.

The rear of the LN05 has just a single pair of what appeared to me to be chromium-plated speaker terminals. These looked great against the superb gloss-white paint finish of the cabinet, but when I tried to tighten them against the bare-wire of the speaker cables I was using, the chromed surface of the knob was so slippery that I found it a bit tricky to exert enough pressure to establish a reliable, low-resistance connection. I did manage to do it after a minute, but perhaps Triangle could consider putting a few flats on the knob to enable a better grip or the use of a suitably-sized spanner.

As you can see from the photographs accompanying this review, the cabinet has a fairly large plinth at its base to provide additional stability, but despite it the LN05 will overbalance if tilted more than 12.2° off the vertical from either side. Because this base is removable (in fact the speakers come without the bases attached: it's up to the owner to screw them on) it would be a very easy matter to replace it with one with a larger footprint, which would increase stability.

TRIANGLE ELARA LN05
LOUDSPEAKERS

Brand: Triangle
Model: Elara LN05
Category: Floorstanding Loudspeakers
RRP: $1,999
Warranty: Five Years
Distributor: Audio Marketing Pty Ltd
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(02) 9882 3944
info@audiomarketing.com.au
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- Stylish modern cabinets
- Pure, accurate sound

- Smooth terminals
- Sideways stability

LAB REPORT

Readers interested in a full technical appraisal of the performance of the Triangle Elara LN05 Loudspeakers should continue on and read the LABORATORY REPORT published on page 24. 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.

Lab Report on page 24

IN USE AND LISTENING SESSIONS

I wasn't sure what I'd think about the sound of the Elara LN05, because it seemed to me from Triangle's advance information on the range that it had voiced the Elara range differently to previous Triangle models… or at least this is how I interpreted the following statement from Triangle (France): '*For this range Triangle has taken a new acoustic approach, which brings speakers with tremendous energy, deep bass and a breath-taking realism in the midrange.*'

While I rarely agree with the breathy hyperbole of most press releases, and wouldn't entirely agree with the example of same above, I do most whole-heartedly agree that the Triangle Elara LN05 delivers breath-taking realism in the midrange. In fact, this was the stand-out area of these speakers' performance, so far as I'm concerned, though as an attribute it was followed very closely by their uncanny ability to create a totally realistic stereo image: one that had not only width, but also height, so that no matter what I played, if I closed my eyes, I could visualise all the performers on the stage. There was even appreciable depth to the image, which is a rare find at this price-point. The midrange was so accurate that I was reminded of some of the studio monitors I've heard over the years, with their ability to deliver crisp, articulate sound that allows you to hear the *minutiae* of musical performances: bows on strings, strings buzzing on frets, the almost-imperceptible intakes of breath before a vocal entry… I was able to hear all these and more when listening to the Triangle Elara LN05s.

Very light on their sonic feet, delivering clean, crisp and a totally musically satisfyingly sound

If you want to hear the midrange of the Elara LN05 at its best, I'd recommend investing in the latest album from The Jungle Giants, 'Speakerzoid', which was produced by Magoo (think Custard and Regurgitator). The album is beautifully recorded, but most particularly all the sound in the midrange is fabulous. My favourite track, *Kooky Eyes* (gotta love the lyric!) has a 'you are there' vocal and lovely guitar sound. The same is true on *Creepy Cool*, but this time there's a phantom flute added in the background. The tambourine sound on *What Do You Think* is crisp and realistically jangly, yet wonderfully delineated by the Elara LN05s.

There's not a lot of deep bass on Speakerzoid, but you can nevertheless get a taste of what the Elara LN05 design can deliver by listening to the bass and drums on *Every Kind of Way*, but if you really want to hear the powerful, clean bass the Elara LN05s can deliver, listen to the CD 'Invite the Light', by Dam-Funk (Damon Garrett Riddick) not only to enjoy its deliciously funky sound, but to hear its fat bass lines, and its extended (though sometimes just plain weird) synthesiser sounds. Much of the playing is fast, but the bass you'll hear from the Triangle LN05s is fleet enough to keep up effortlessly.

High-frequency performance was capable without being exceptional. I evaluated it with Natalie Imbruglia's out-of-self-imposed-exile album 'Male'—where she covers songs composed by such well-known 'males' as Pete Townshend, Damien Rice, Tom Petty, Neil Young and Josh Pike—and found the highs to be nicely balanced against the mids and more than extended but perhaps, if I were to be *really* picky, a tad on the 'polite' side… but then again perhaps I'd been so spoiled by the sound of the tweeter fitted to Triangle's Titus EZ that the LN05's tweeter sound was only polite by comparison.

CONCLUSION

Slim, modern and stylish, the Triangle Elara LN05s are very light on their sonic feet, delivering clean, crisp and a totally musically satisfyingly sound with bass that is deep and extended. I liked listening to these speakers as a stereo pair so much that I have no doubt I'd be even more-impressed if I heard them in 5.1-channel concert format with Triangle's LN01s, LN02 and matching subwoofer.

Jutta Dziwnik

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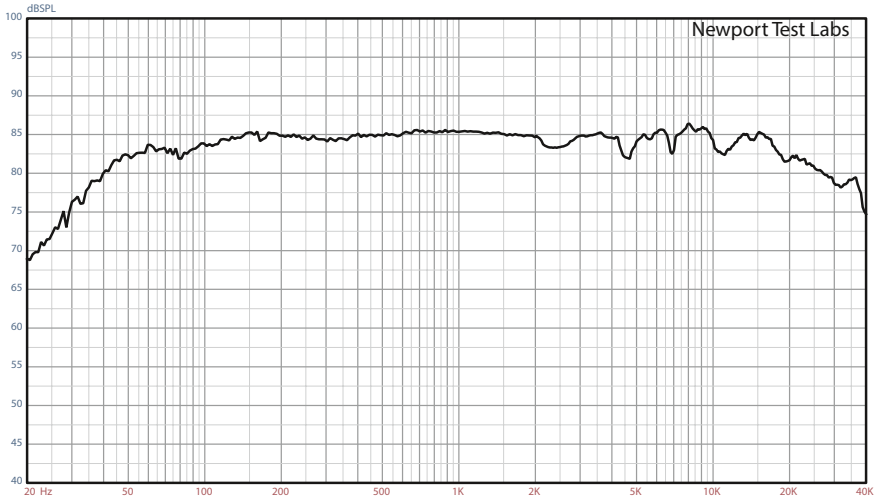
LABORATORY TEST REPORT

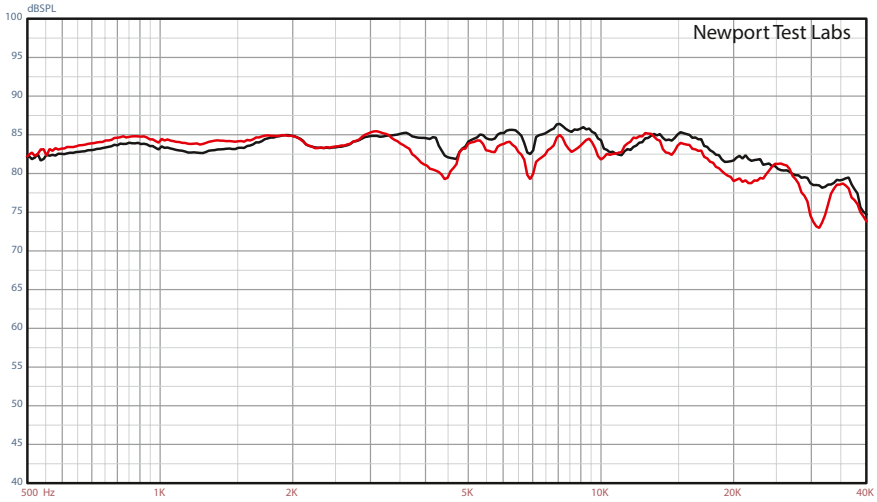
The frequency response of the Triangle Elara LN05 that's shown in Graph 1 was measured by *Newport Test Labs* using two different techniques. The trace below 2kHz shows the Elara's in-room response using pink noise as a test stimulus. This has been spliced using post-processing to the Elara's anechoic high-frequency response, obtained using a gated sinus technique. The measured response is extraordinarily flat and extended, as you can see. As measured, the Triangle's frequency response was 42Hz to 26kHz ±3dB. This is notable for its flatness and extension, both at low frequencies and high frequencies. However it's also notable for its lack of 'skew' so that the variations in the response are not concentrated in any one area of the audio spectrum. On the contrary, the Elara follows the speaker designers' ideal, where the frequency response is almost totally flat between 100Hz and 10kHz, but rolls off below 100Hz and above 10kHz… though in this case the 'roll-off' at both ends of the spectrum is more of a gentle slope.

Graph 2 shows the Triangle Elara LN05's frequency response between 500Hz and 40kHz, this time measured in its entirety using a gating technique that delivers the same frequency response that would be achieved if the speaker were measured in an anechoic chamber. This method allows extremely precise measurements of level across very small bandwidths. You can see that between 500Hz and 2kHz the response is almost as flat as was measured using the pink noise measuring technique in Graph 1. The response was also almost the same irrespective of whether or not the loudspeaker grille was in place. Above 2kHz, it's obvious that the frequency response of the Elara is both smoother and flatter without the grille. You can see that with the grille fitted, there are very small, narrow-band suck-outs in the response at 4kHz, 7kHz, 15kHz, 20kHz and 31kHz. I wouldn't worry overly much about this, since the lowest of these, at 4kHz, would affect only the two highest notes on the piano keyboard ('top B' at 3951.1Hz and 'top C' at 4.186Hz), and these are very rarely played. And I wouldn't worry at all about the very highest ones, as the hearing of most people aged over 30 tops-out at around 17kHz.

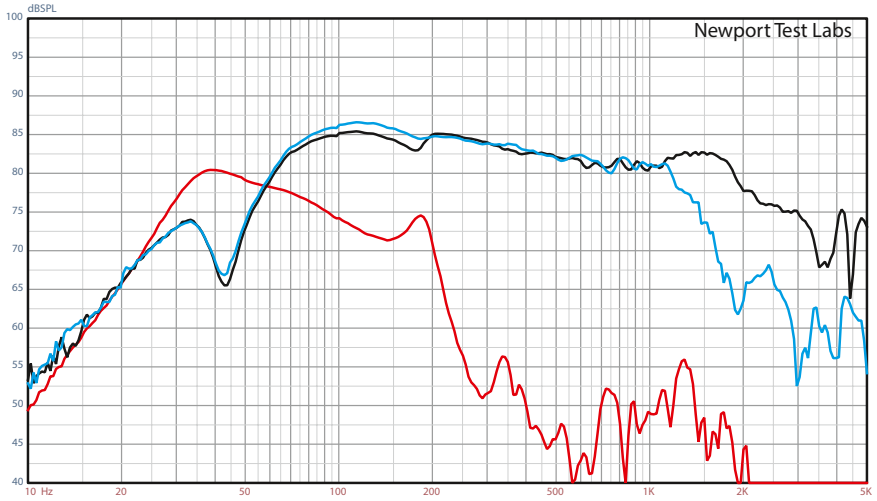
Low-frequency performance, measured using a standard near-field technique, shows the bass reflex port's output peaks at 38Hz, slightly lower than I'd have expected, and provides useful bass reinforcement from around 25Hz up to 130Hz. The port has a resonance at around 180Hz that affects the output of the upper-most of the two bass/midrange drivers but not the lower of the two. The frequency responses of the two drivers shows that Triangle is running both bass/midrange



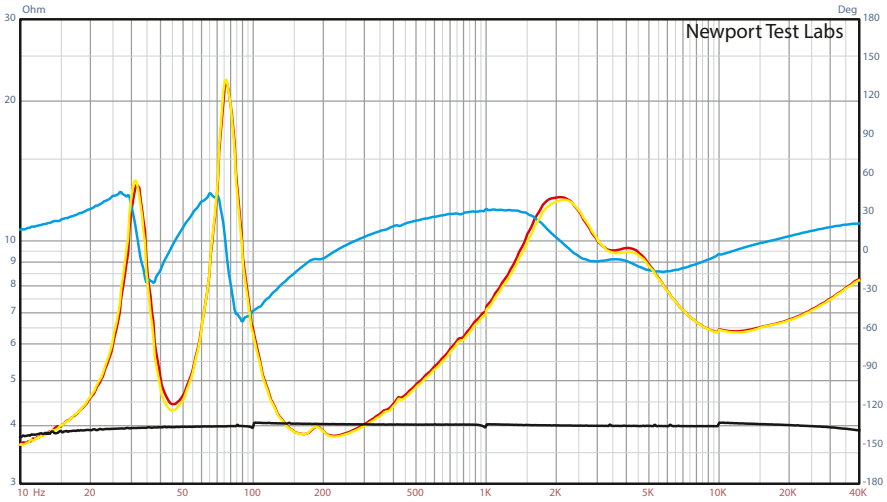
Graph 1. Frequency response. Trace below 2kHz is the averaged result of nine individual frequency sweeps measured at three metres, with the central grid point on-axis with the tweeter using pink noise test stimulus with capture unsmoothed. This has been manually spliced (at 2kHz) to the gated high-frequency response, an expanded view of which is shown in Graph 2. [Triangle Elara LN05 Loudspeaker]



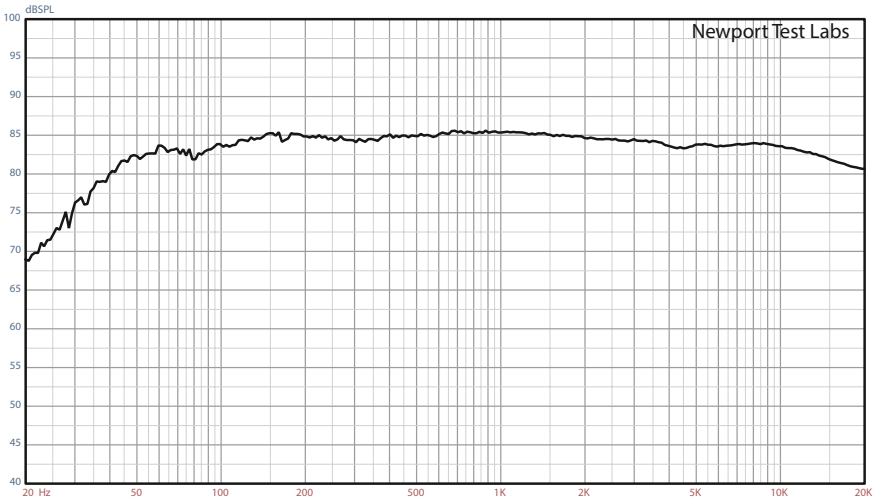
Graph 2. High-frequency response, expanded view, showing response with grille on (red trace) and with grille off (black trace). Test stimulus gated sine. Microphone placed at three metres on-axis with dome tweeter. Lower measurement limit 500Hz. [Triangle Elara LN05]



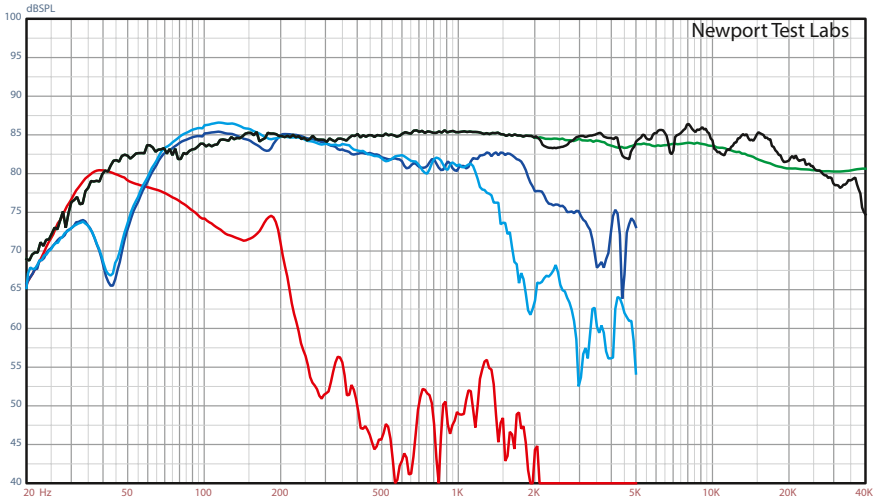
Graph 3. Low frequency response of front-firing bass reflex port (red trace), lower bass/midrange driver (blue trace) and upper bass/midrange driver (black trace). Nearfield acquisition. Port/woofer levels not compensated for diff radiating areas. [Triangle Elara]



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.



Graph 5. Frequency response (in-room). Trace 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. [Triangle Elara LN05]



Graph 6. Composite response plot. Red trace is output of bass reflex port. Dark blue trace is anechoic response of upper bass/mid driver, light blue trace is anechoic response of upper bass/midrange driver. Black trace is gated (simulated anechoic) response above 2kHz and room response below 2kHz. Green trace is averaged in-room pink noise response (from Graph 5), extended to 40kHz. [Triangle Elara LN05 Loudspeaker]

Excellent performance with a nicely-tailored and linear frequency response and very low distortion

drivers up to around 1.2kHz before rolling off the bottom-most of the two very steeply (at around 18dB/octave).

The impedance of the Triangle Elara, as measured by *Newport Test Labs*, is mostly lower than 8Ω and drops below 4Ω between around 140Hz and 300Hz, so this is very definitely a 4Ω design that will require an amplifier that is happy driving low-impedance loads. The saddle at 45Hz between the two resonant peaks shows that you shouldn't expect much bass below this frequency. There are some ripples in the response that indicate the likelihood of a few cabinet-related resonances. The main one is at 180Hz, as noted earlier, but there are small resonances at 410Hz and 750Hz. It is good to see Triangle's engineers have made sure the impedance is fairly high at 20kHz and continues to rise above this frequency, because this practise makes a speaker very 'amplifier-friendly'. It's also good to see so few differences between the two impedance traces, which suggests excellent quality control over both the drivers used in the design and the assembly process. Such superb pair-matching bodes well for the pair's ability to create a stereo image.

Graph 5 shows an averaged in-room response, using pink noise. Averaging nine responses in this way tends to 'smooth' the response a little, but it also approximates what the ear will hear. The upper graphing limit on this graph is 20kHz, but you can see that the response of the Triangle Elara extends from 40Hz to 20kHz ±2.5dB. This trace appears again on Graph 6, this time with the other measurements as well, showing the 'fit' across the entire frequency range.

The speaker sensitivity tests conducted by *Newport Test Labs* showed that the linearity and extension of the Elara design was accomplished partly by trading off a little sensitivity, because the lab reported a result of 86dBSPL at one metre for a 2.83Veq input, which is a little lower than average and means that best results will be obtained using a slightly higher-powered amplifier, maybe in the range of 80–100-watts per channel.

Overall, I am happy to be able to report that the performance of the Triangle Elara LN05, as measured by *Newport Test Labs*, was excellent, with a nicely-tailored and linear frequency response, very low distortion and an above-average power-handling ability. ***Steve Holding***

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