INFINITY TURNS 40 IT SOUNDS GOOD

by **BEBO MORONI**

Infinity, the onetime cottage industry that grew into the great industrial unit today incorporated into the huge **Harman International**, is celebrating its 40th anniversary in style. On this occasion, it has decided to offer enthusiasts a speaker that, in terms of its acoustic fingerprint and its particularities, even in the innovation behind its solutions, recalls as closely as possible the great systems of the glorious past. Not that the **Infinity** has failed in the last decade to introduce important systems; in fact, we can hardly say that their research laboratory has been sitting on its hands. The problem is rather that a certain policy adopted by the group (now fortunately revised) saw its best products included in a common distribution strategy alongside other products from the Californian producer, which favoured mass-distribution outlets over boutiques of sound. The result has been that a number of highly attractive products, such as the **Intermezzo** or **Prelude MTS** series, have been confused with much less important and less expensive systems, or virtually ignored by the press, never really entering the imagination of audiophiles.

INFINITY
PRELUDE FORTY

With the **Prelude Forty, Infinity** is putting a check on this situation, perhaps recalling the fact that although the Infinity of the 70s and 80s achieved the bulk of its turnover with mid-market, economy products, these, while well-designed and well-sounding, owed a significant part of their success to the great, overriding image the


Infinity

better systems had – especially dream products such as the IRS.

The **Prelude Forty** has been created precisely with this intent – but an intent facing a series of apparently insurmountable problems: to create the sound and the charm of the great Infinity products of the past, the systems were equipped with rather particular midrange and ribbon tweeters (although its diminutive to call them that because they in fact entailed far more original and complex creations than normal ribbon speakers); in any case, flat diaphragms and dipolar **EMIM** and **EMIT** (Electromagnetic Induction Tweeter/Midrange) have their own very special personality and virtually inimitable sound. They are extremely complex diaphragms to make and construct, produced entirely by hand, which today would cost a fortune (assuming you could find a manufacturer capable and willing to make them.) In short, they're impossible to replicate, also because of the new laws about the safety of certain materials.

But the team of engineers who currently work at **Infinity** didn't lose heart. After all, they did have at their disposal (see the article by Giuliano Nicoletti) two formidable patents for speakers: the mid-high **MRS** (Maximum radiating Surface) and the ceramic-metal sandwich woofers **CMMD** (Ceramic Metal Matrix Diaphragm). The issue was how to use them, or rather, how to ensure that they assimilated that very particular sound of the great **Infinity** ranges, from the already mentioned Reference Series right through to the Kappa Series.

Even if I wanted to, I don't think it would be possible to create a chronology of the attempts and research that's gone into the process; but safe to say, somehow they managed this seemingly impossible task. I don't mean that the **Prelude Forty** have the exact same sound figure of the great systems of the past, but this slim and stylish system certainly offers more of an **Infinity** sound than has been heard in these parts for some fifteen years.

Care must be taken, however, with how they are positioned within your environment: the lateral woofers must be at the right distance from the walls to ensure that their sound is correctly reflected; the **MRS** diaphragms need air around them in order to express their amazing and very consistent spatiality.

NEW, YET OLD FRIENDS

I must admit to knowing these speakers extremely well, even before hearing them emit their first sounds: I'd listened to them previously in extremely varied environments and in the most diverse set ups. Listening to them again, in our listening room, driven by the fantastic **Audiogram** amplification tested in issue number o of this magazine (still available, but not for much longer) and with the first-rate multiplayer **NaimUniti** as source, only confirmed and underlined my initial impressions. You certainly can't say that they err on the side of "warm", this has never been a characteristic of the **Infinity** range, but their sound, while extremely characteristic, with an almost maniacal attention to micro-details such as the dynamic micro-contrast, decidedly open on

the medium and high frequencies, never comes across as cold or pointlessly over-analyzed. In fact, what is particularly impressive is the absolutely peaceful coexistence between this eminently revealing personality and very low listening fatigue even at very high volumes, almost as if the ruthless attention to detail melts and disperses in an amazingly natural way in the stunning three-dimensional panoramic image.

What I'm trying to say is that such a load of personality, details, the opening and finishing on high frequencies, etc. might prove annoying and too striking in a more directional speaker. However here the impression instead is that of being literally immersed in sound, surrounded by it, both having the ability to observe and physically feel – even if it's hard to put into words – the very real lightness of the sound image, objectively one of the best I've heard for years and years. The stage is

described in detail; the sound elements are distinguished by airiness and are separated by just the right amount of air from each other, according to an extremely credible proportional system. The center of the horizon is located very far away, so that in my traditional classification of sound using great Renaissance painting as a metaphor, here a decidedly Flemish landscape swims into view, an apparently infinite space within which every detail is focused, small or big, with the same meticulous attention.

The bass is much larger than it appears from the measurements, the dedicated woofers for the lower frequencies, which are particularly attenuated in their frequency response, make a good contribution to the environment. Compared to the old **Infinity** systems, you don't get that sense of release between the low and medium-high ranges due to the impossibility of finding low-frequency transducers as quick as **EMIM** and **EMIT.** The **MRS** are similarly not as lightning fast, but blend very well with the **CMMD** woofers. That said, especially in large environments, without wanting to scandalize anyone, you could always combine them with a top-class subwoofer – it certainly wouldn't do any harm... even better with two identical subs.

So, are we looking at the perfect speaker? Not quite; after all, which loudspeaker doesn't have at least one defect? The main issue with the **Prelude Forty** lies precisely in their dominant personality, which doesn't admit any kind of compromise: or you like them, or you don't, take it or leave it.

But, as the main accusation of the last few years of even more expensive systems has been precisely a lack of personality, it's probably worth considering that the best remembered speakers today are certainly the less perfect and more characteristic ones of the past. The **Prelude Forty**, at least, certainly cannot be accused of being aseptic and impersonal. And that, for me, is a pretty big compliment■

INFINITY PRELUDE FORTY
TECHNICAL ANALYSIS

by **GIULIANO NICOLETTI**

The Infinity Prelude Forty speakers are impressive four-way floor standing speakers, encompassing in a slender and well finished unit several first-rate technical solutions; featuring particularly unconventional choices and new technologies of sound transduction, they represent today the apex of the potential of one of the leading producers for audio playback devices. So it was with great pleasure that I accepted the task of analyzing their technical characteristics and design choices.

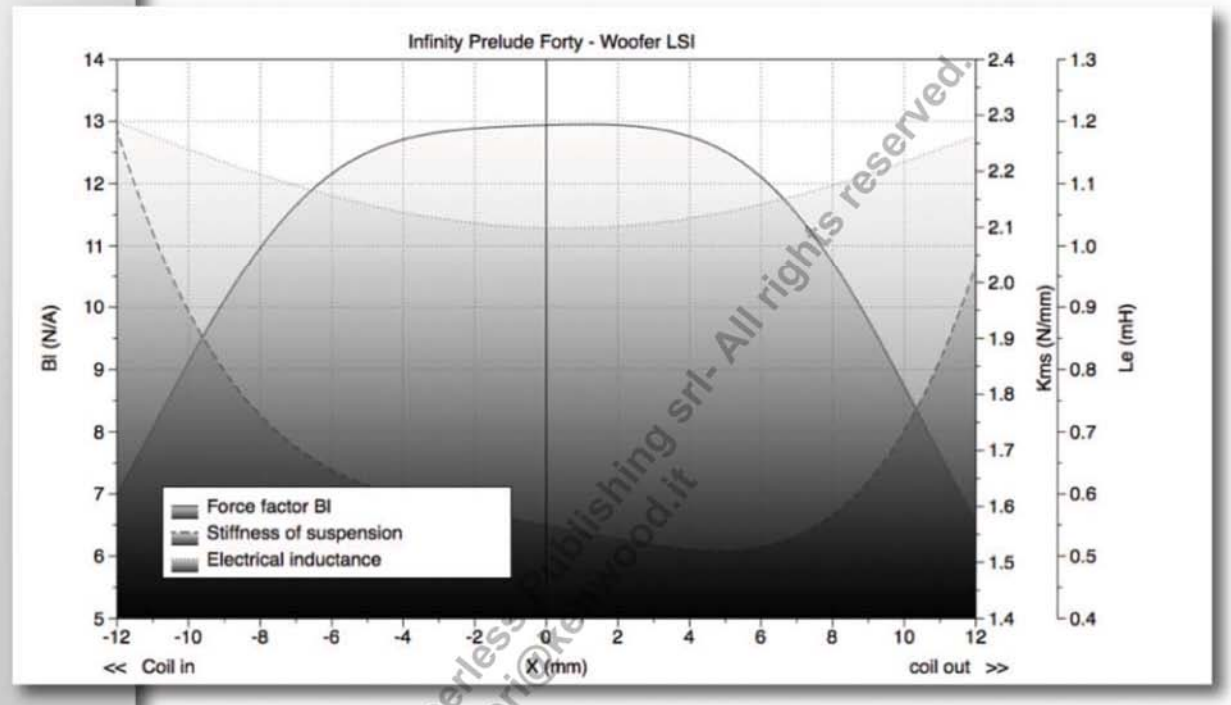
The peculiarities of these speakers are already evident at first glance: the front panel is in fact almost entirely occupied by the four, flat membrane transducers, which the manufacturer calls the MRS (Maximum radiating Surface) flat-panel transducer. Recalling the traditions of the legendary EMI (Electro Magnetic Induction) transducer technology, which made some of Infinity's most popular creations truly unique, the designers have developed a new configuration of the entire transducer, to maintain the virtues of the old Emit and Emim components and obtain superior performances in terms of dynamics, bandwidth and acoustic pressure.

The lower range is entrusted to a pair of woofers of 8" in diameter, configured in reflex load with the tuning duct open on the back panel, while the high range uses the services of a one-inch dome tweeter. The membranes of the three components are made of a specially developed material called CMMD (Ceramic Metal Matrix Diaphragm), a composite made by depositing, via anodizing, a thin film of ceramic on the body of the membrane, made of aluminum.

A full-on "white paper" produced by the manufacturer describes all the most important features of these exceptional speakers in detail, so I' d advise anyone who may just be intrigued by these beautiful acoustic towers to have a read of it, leaving me to get straight to the analysis. First of all, there' s an exceptional attention to detail: the five front speakers are lined up along the front through a pair of tapered panels in ABS, the tray that houses the terminal is made of aluminum die-casting, just as is the outer part of the tuning duct. The finish of the woodwork is excellent, and the under feet which broaden at the sides of the speakers to ensure stability have a pleasant design and finish, completing the overall elegant and discreet look.First of all, there' s an exceptional attention to detail: the five front speakers are lined up along the front through a pair of tapered panels in ABS, the tray that houses the terminal is made of aluminum die-casting, just as is the outer part of the tuning duct. The finish of the woodwork

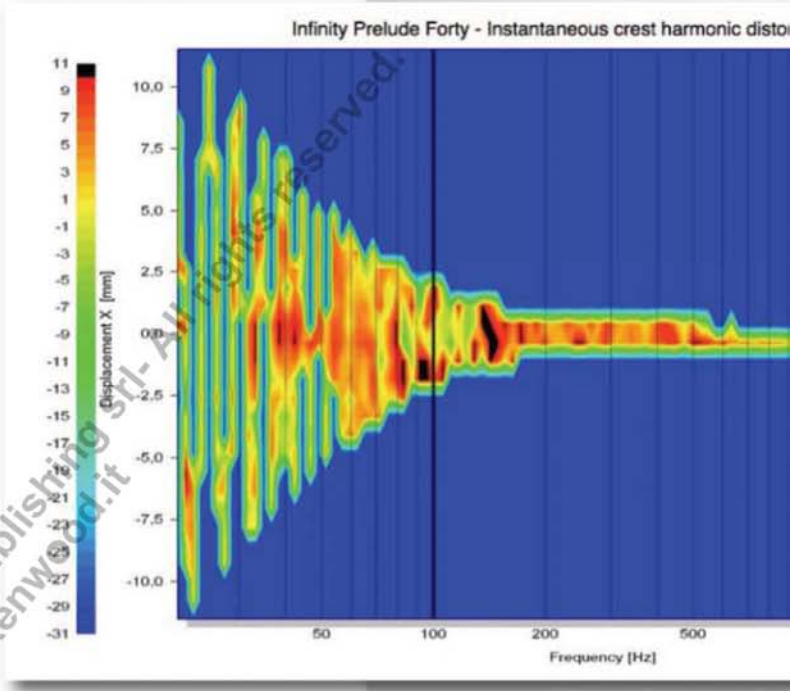
is excellent, and the under feet which broaden at the sides of the speakers to ensure stability have a pleasant design and finish, completing the overall elegant and discreet look.

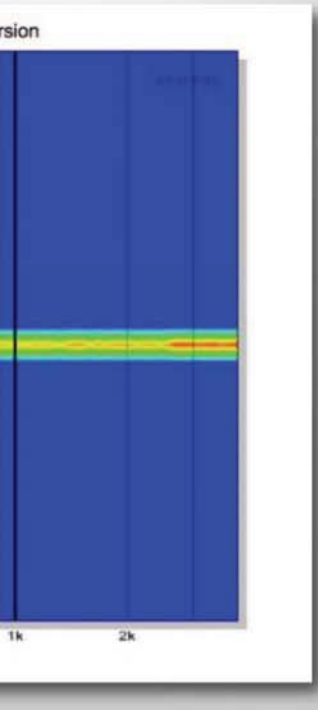
Proceeding with the analysis of the speaker, first we come across one of the first two lower woofers, which make up the lower section of the system. This is a nice component with a neodymium magnet, die-cast basket and diaphragm in CMMD. The design of the spider is progressive, the upper suspension in butyl rubber. The results of linearity tests performed by the Klippel DA (Distortion Analyzer) are excellent: I have to say that this is one of the most linear components ever tested in recent years, with well-centered parameters for use in reflex load and a refined design of the whole motor group.

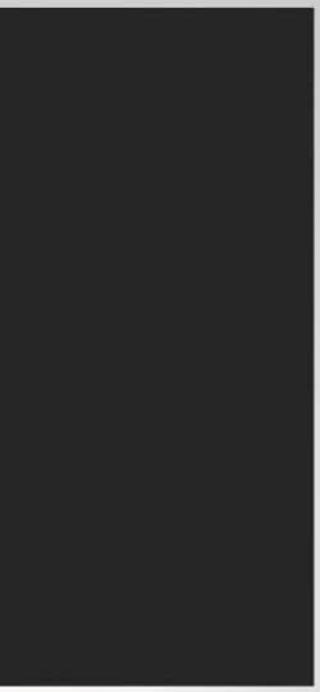


As we can see from the analysis of the large signals graphic (Large Signal Identification), the shiftment of the Bxl factor and the inductance of the coil is entirely symmetrical up to excursions above the 10 mm peak to peak, yielding a suspension which is still well balanced. This graphic demonstrates extremely careful design in terms of the magnet group, within which there are almost certainly devices for the linearization of the inductance, along with a careful attention to the interaction between the magnetic pole and the floating coil, and excellent precision during assembly. Wonderful.

The measure of the instantaneous harmonic distortion also displays simply outstanding behavior: 15 V rms for the sinusoidal sweep does not generate a single millimeter of offset on the moving element, with very low distortion and no sign of compression at maximum excursions, for a pattern very close to the theoretical ideal. The woofers have a decidedly custom continuous resistance, of around ten ohms, and are connected in parallel to the crossover filter, to obtain a total load simply drivable from the amplifier and a good level of ambient sound pressure Spl. The position of the two components is very close to the floor, which allows for a reasonably quite efficient loading effect of the low frequencies in the environment, and excellent performance in terms of maximum acoustic pressure and reduced distortion.



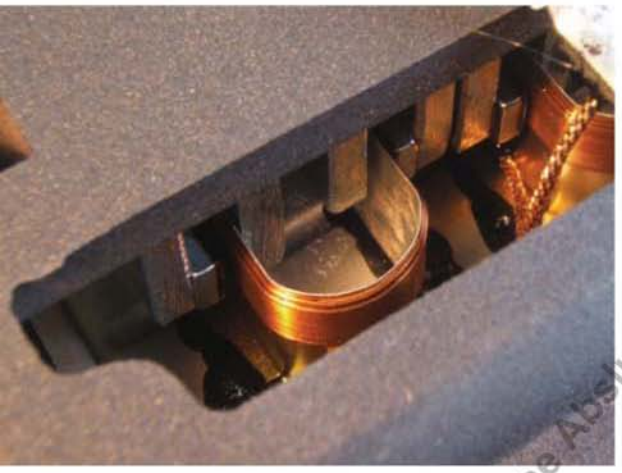




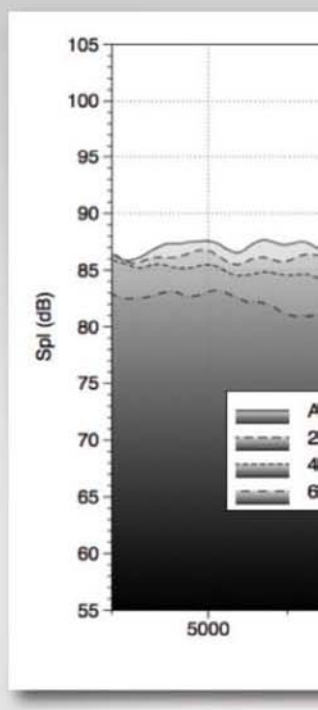
The midranges are all mounted in an under-cabinet created from a mold made of ABS, equipped with raised bands to minimize the resonances of the walls and completely filled with sound absorbing acrylic. These boxes allow for the efficient installation of the four midrange in the main working volume, dedicated to the two woofers, effectively optimizing the separation of the load volumes for individual routes. The four midranges are all identical, but are filtered differently by the elaborate crossover distributed inside the cabinet of the speaker: the lower two components are coupled to a very narrow bandpass in the envelope that limits the emission in the vicinity of around 200 Hz, while the upper two continue until the intersection with the tweeter, in a symmetrical configuration MTM (midrange-tweeter-midrange).

These midranges are without doubt the most interesting part of the Prelude Forty: the membrane is made in the same sandwich of aluminum and ceramic, with a rectangular shape that optimizes the surface emission in ratio with the encumbrance and the raised bands laterally

derived from the mold, which control the main break-up modes. The basket of the speaker is made with a die-cast aluminum alloy, within which are positioned the two elliptically shaped coils and their relative motor groups, made of soft iron rods and powerful neodymium. The only suspension that controls the movement of the moving element is the external one, made from butyl rubber, while on the back of the component the terminals of the two coils are arranged, also connected in series. In the details, shot at close range, one can observe the interesting geometry of the motor group and the coils: it looks like the coils are firstly wound in a circular form, before a special tooling process forms them in the final geometry.

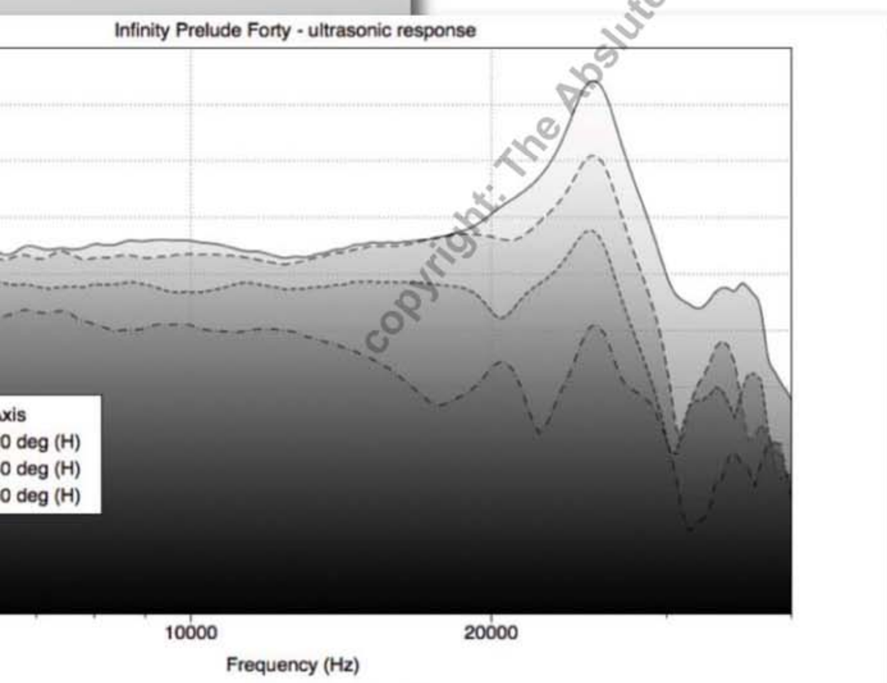


The air gap created by the motor is pretty tight, and the parameters measured confirmed the rather substantial presence of factor Bxl, even in the face of higher resistance than usual. The Klippel LSI measurements show a good linearity for excursions limited to about 5 mm peak-peak, but obviously the only external surround is unable to properly monitor the excursion of the moving element. The movement of the inductive component of the floating coil shows a substantial modulation in the value of Le (which is also quite high from the module), which makes the parts less suitable for use along the whole range. Some small resonances of the membrane and the outer

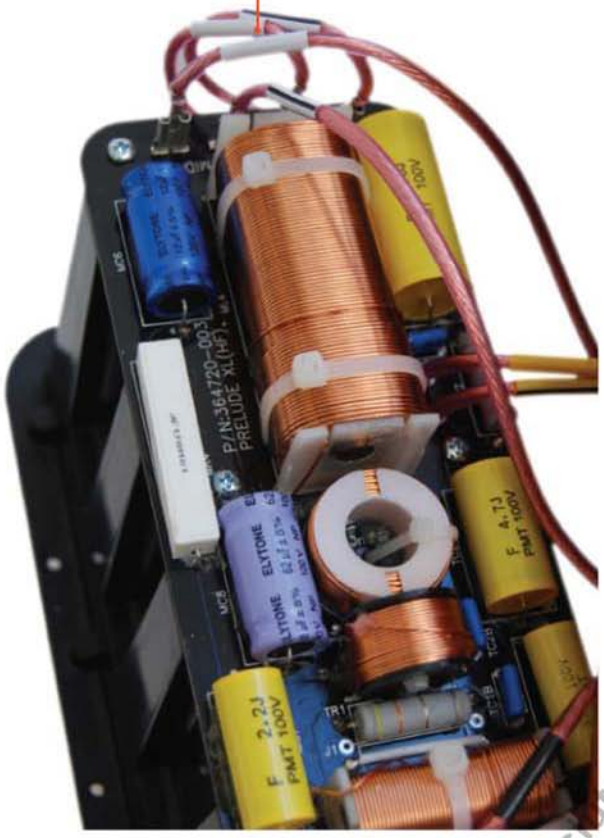


suspension, centered around the 800 Hz are clearly visible in the impedance module and could somehow characterize the acoustic emission of these components.

The last of the speakers to pass under scrutiny is the small and graceful Tweeter: the load flange is once again made from die-cast with two small and transparent reinforcing ribs in steel. The component once again uses extremely rigid CMMD in the manufacture of the dome, with a magnetic group made from neodymium and employing the services of a small, rear decompression chamber, to extend the response to the lower frequencies and check the hight pass of the transfer funcion. The response in the ultrasonic range shows a pressurem peak located in the vicinity of around 28 kHz, well outside the audio range, but farly persistent even at more angled measurements.



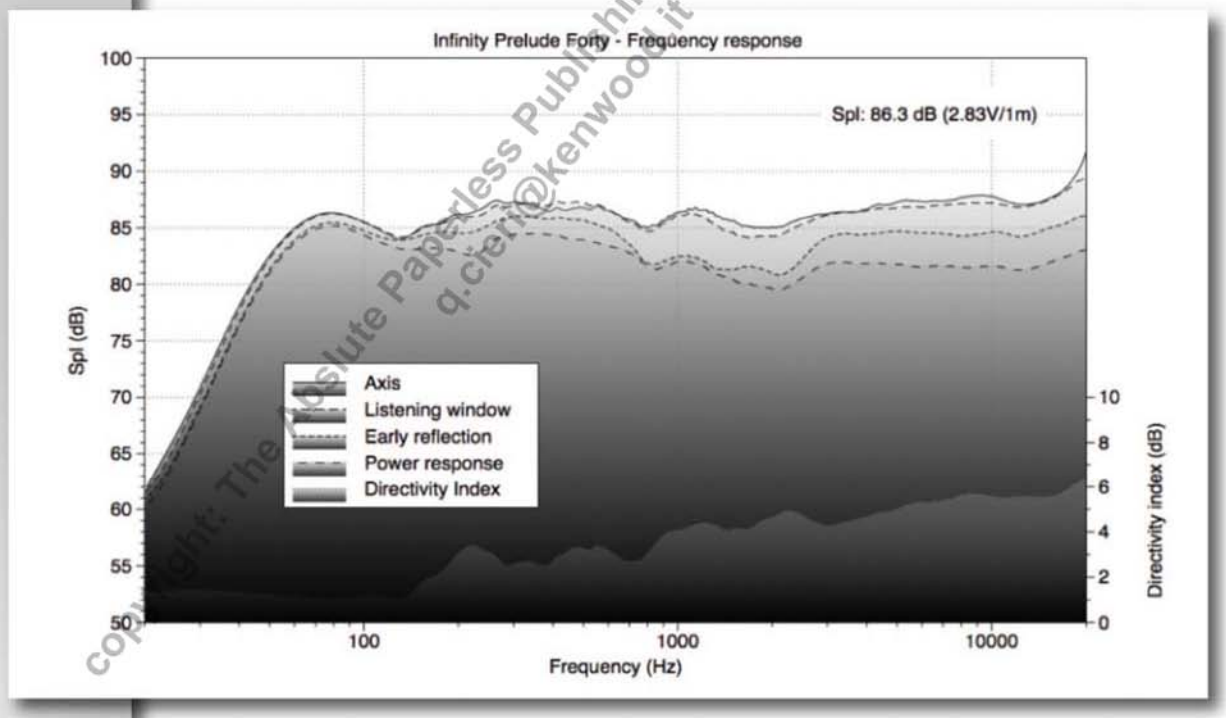
A SECTION OF THE CROSSOVER FILTER



The crossover filter, decidedly complex and impressive in its construction, is positioned on different PCBs scattered around the speaker: the woofer section is attached to the base, while the other two panels are screwed onto at the rear of the two midrange boxes which are dedicated to the remaining routes: the components are of excellent quality once again, the layout is nice and well engineered, the wiring has been done with care and is always attached to the sides with screwed clips, to avoid the risk of any spurious vibrations. Everything has been carried out with the utmost attention, quality and care that only a large company can afford to take: the Infinity Prelude Forty is fully assembled in the United States with a very strict quality control procedures needed to produce a series (albeit limited) of demanding and complex speakers.

The measurement of the transfer function of the Prelude Forty is very smooth both in the axis measurement and in the average of the listening window. The average of the initial reflections also show a good performance throughout the mid-high range, which holds

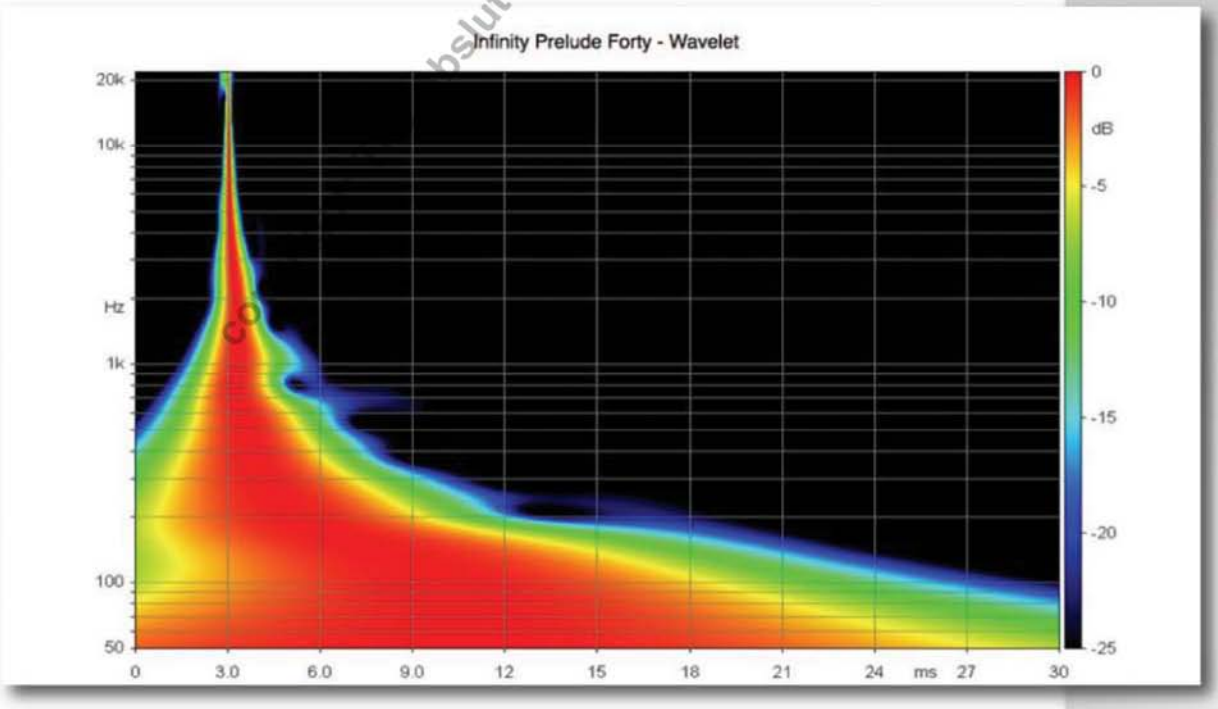
perfectly at greater angulation but shows a quiteevident deepin the crossoverregion, between the woofers and midranges; the MTM configuration of the midranges and the tweeters is responsible for the depression located between 800 and 2000 Hz, due to the typical directivity in the vertical plane that goes with it, and must therefore be interpreted as a clear choice in the design, probably directed towards the optimization of the vertical plane in the composition of the acoustic image. The power response

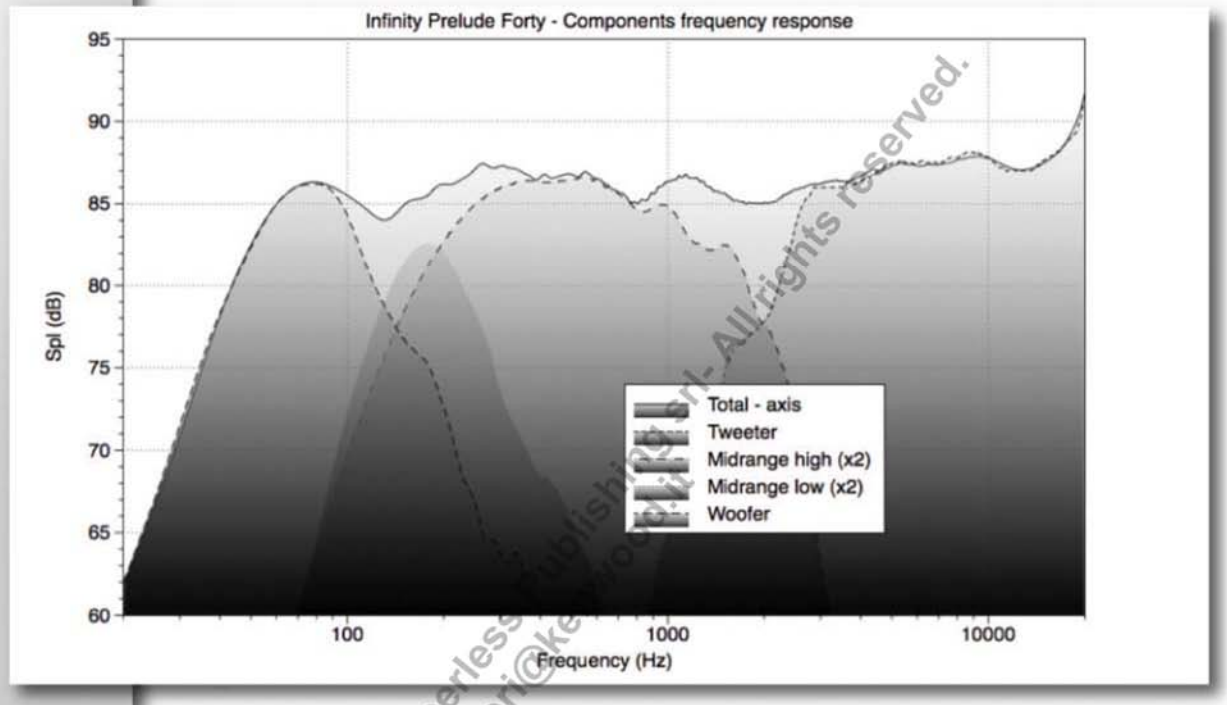


in fact shows a remarkable balance, with a partial compensation of both characterizations just described, and a very smooth directivity index, which only reaches 6 dB at 20,000 Hz.

I have not yet been able to hear these speakers, but I imagine that their characteristic tone balance has been set to obtaining the maximum linearity of emission, an analytical and sincere sound. In listening tests Bebo Moroni has the last word. It' s worth mentioning their rather low sensitivity value, especially given the size of the speakers: watch out for their interfacing with the amp, especially if used in large environments, where the Prelude Forty certainly looks at ease.

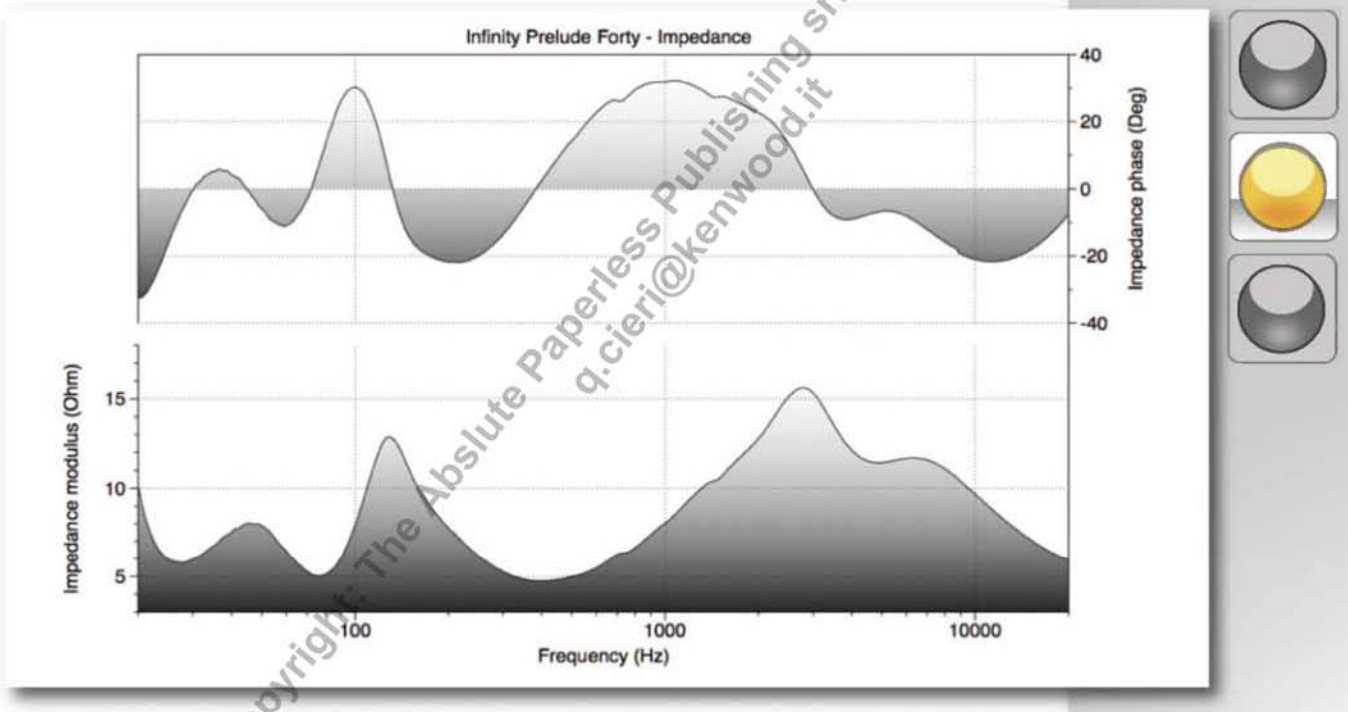
The Wavelet gives further confirmation of the strictness and characteristic determination of the Prelude Forty: the decay is fast and clean, with the exception of small resonances in the midrange, due to the modes of vibration of the midrange membranes and a slight uncertainty in the vicinity of 200 Hz, probably due to resonance components inside the cabinet.





The response of each speaker clearly shows us the choices made in the design of the system: the small attenuation immediately above 100 Hz is due to the opening of the crossover region between woofer and the mid-bass section: doubtlessly it has to be assessed in view of its interaction with the environment, and characterizes the operating range of the woofers in much the same way as would an external subwoofer. The two lower woofers are thus used as energy filler in this very sensitive range of movement, and in fact their acoustic phasing has been optimized for maximum uniformity of emission with the upper midrange. The frequency of crossover between midrange and tweeter is quite low, at around 2000 Hz, but the clear slope of attenuation makes the work of the robust tweeter less stressing, and characterizes the vertical emission lobe, as just noted on the graphic of the transfer function of the complete system.

The impedance graphic shows a sufficiently linear load, and straightforward to drive: the minimum impedance is reached in the vicinity of around 400 Hz, with a module of about 4.75 ohms, and a rising phase towards positive values. In any case, the amplifier used with the Prelude Forty still requires a consistent power output, due to the low sensitivit, but the stability of the load shouldn' t constitute a real problem.




40TH
Infinity
TECHNOLOGY • PERFORMANCE • DESIGN
PRELUDE FORTY
A Harman International Company
HF

The results from the analysis of multitone distortion are excellent; the two woofers show an absolutely outstanding dynamic capability on the graphics, confirming the analysis carried out on the individual components: the signal-distortion ratio remains constant right through until 100 dB, with an excellent value in the low range of almost 30 dB. Throughout the midrange it stays at very low values, with a dynamic above 40 dB and a small concentration of intermodulation around 2 kHz, probably linked to inductance modilation of the voice coil of the two midranges and the small resonances of their membranes. The tweeter on the other hand does not yield a single dB and remains on thresholds very close to the background noise, about 70 dB below the signal level. The Infinity Prelude Forty demonstrates a first class dynamic, and I am sure that listening experience will reflect those values ■