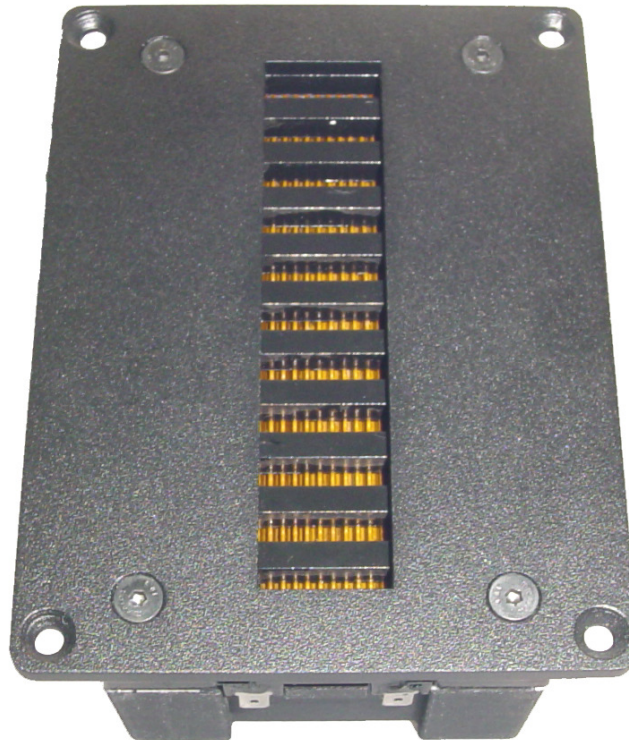


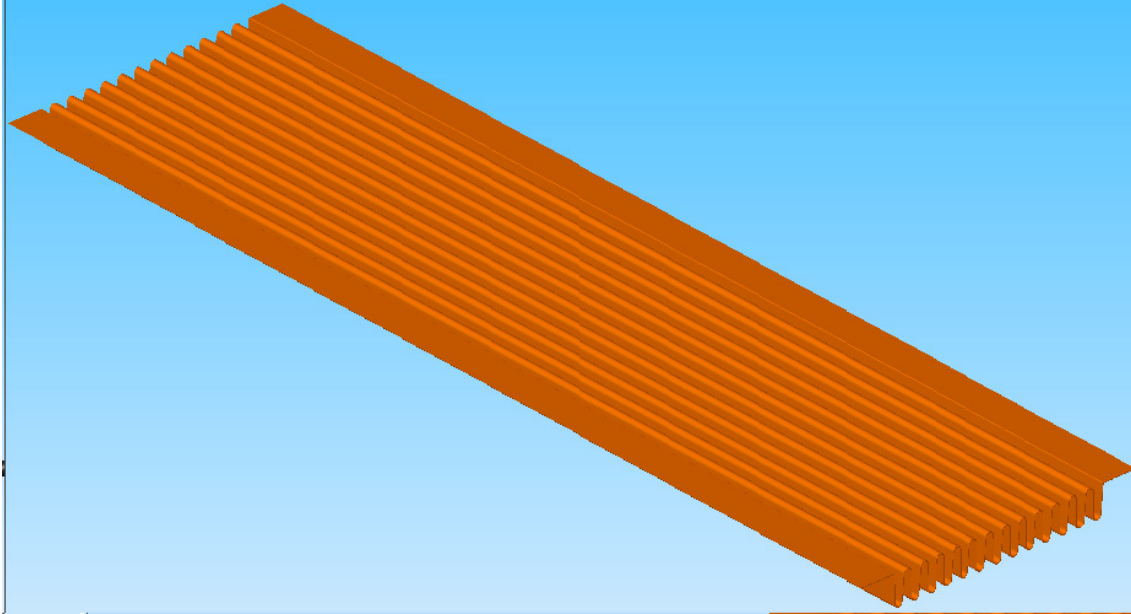
NEW beyma TPL-150



Beyma introduces a new type of component for the professional sound, bringing the highest sonorous quality of the most demanding audiophile to the world of live music.

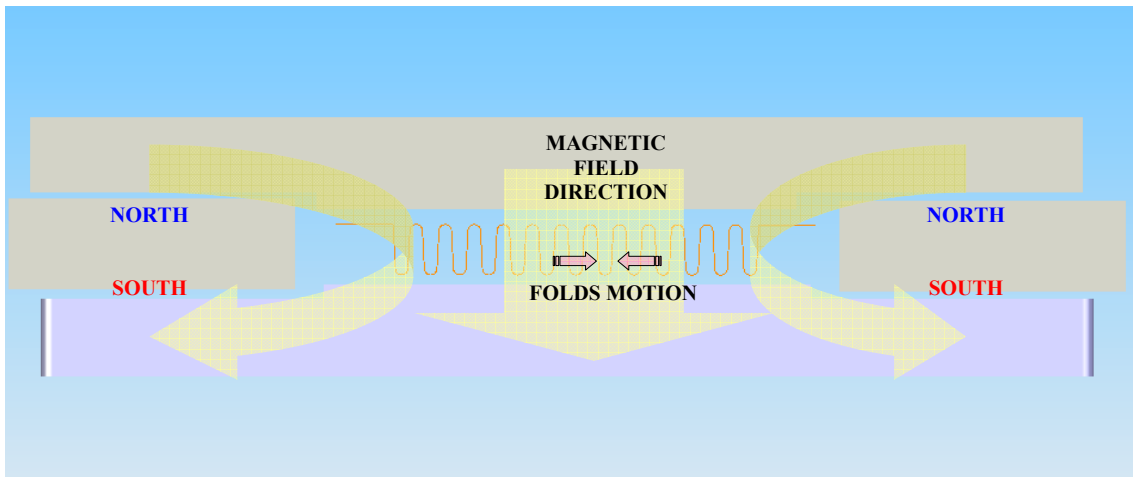
This type of high frequency transducer is based on the AMT technology (Air Motion Transformer). In this type of transducers, invented by the German physicist Oskar Heil, the generation of the sound takes place in a very different way than habitual in ribbon tweeters. In figure one, we can see that in this device, the diaphragm is formed by longitudinal folds, like in an accordion. In the straight face of each one of these folds, there is a printed conductive copper thread.

The advantage in this type of device consist in the small and very controlled movement of each fold, accelerating the surrounding air inside each fold, which produces an almost perfect acoustical output, both in amplitude and in phase in all the radiating area of the transducer.



This diaphragm is made in Beyma, on a material able to support extreme temperatures and of a great flexibility. It is used in military and aerospace applications to manufacture flexible printed circuits. It is of great durability and reliability.

The operation principle is the same one that in a regular tweeter, but geometry is totally different:



As it is possible to be seen in this figure, the magnetic field is closed happening by where the diaphragm is located. When an alternating electrical current circulates along the copper threads of the membrane, a movement takes place in the folds from left to right. The sound wave is generated when the air between the folds is compressed.

This causes that, being the displacement of each fold very small, the air moves at great speed, producing an important sound pressure.

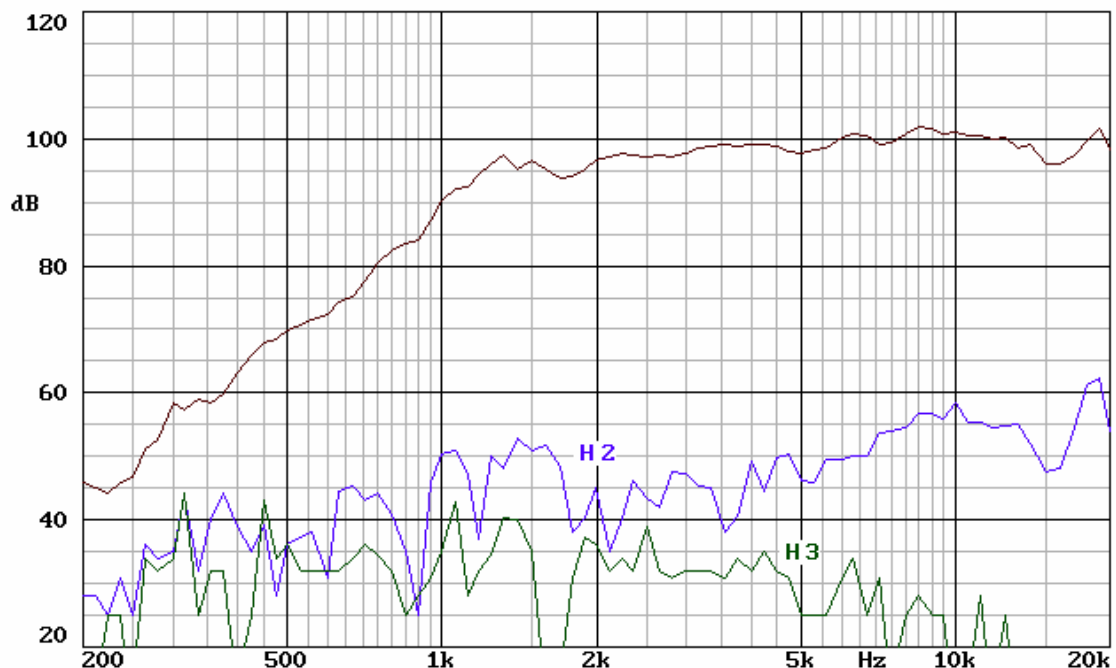
The advantages of this type of tweeter can be summarized in:

- Radiating surface four times the one of a tweeter or an equivalent compression driver, thanks to its folded geometry.
- Mobility transformer of air (Air Motion Transformer) because it causes in the air a speed four times greater than the one of the folds themselves (relation 4:1).
- This confers an enormous dynamics and an incredible transient response, vastly superior to that of any conventional tweeter, including ribbon tweeters and compression drivers.

What Beyma has done has been to develop this technology creating a component for professional use, of which would be possible to emphasize:

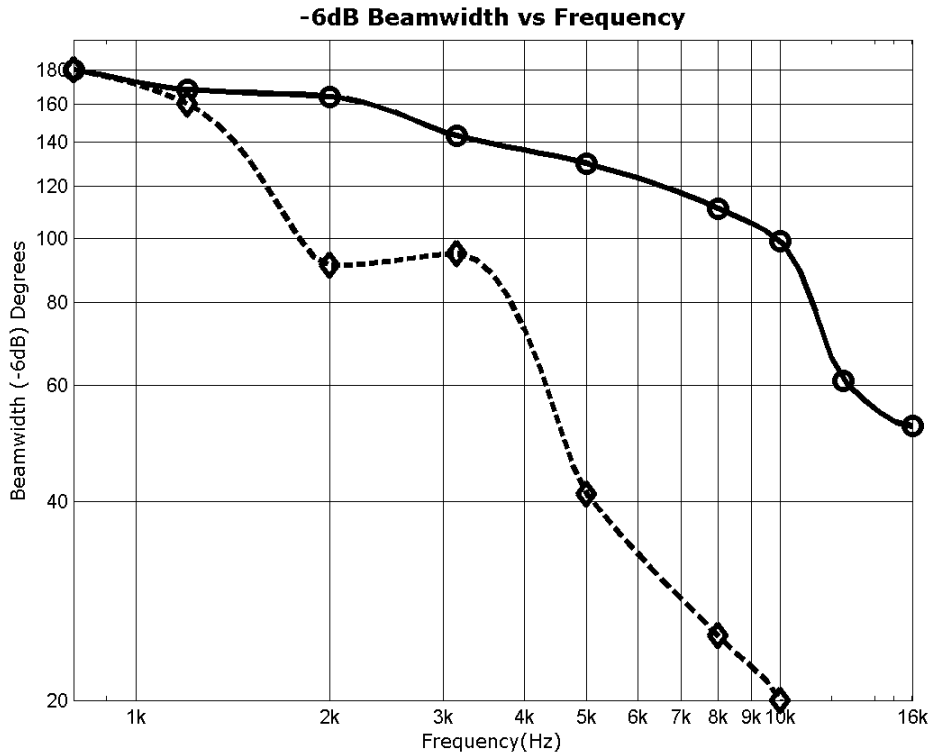
- High sensitivity: **99 dB@1W, 1m.**
- Wide frequency range: **from 1 to 23 kHz.**
- Admissible power handling without precedents: **80 W AES.**
- **Directly applicable for Line Array systems,** with total coherence of the wave front with no need of any adapter.
- Also suited for other conventional applications, with a **horizontal coverage superior to 100° up to 10 kHz.**

All these characteristics make of the TPL-150 an authentic alternative to the conventional compression drivers, and contributing an enormous added value to any sound system that incorporates it. The sonic quality, timbre, definition and clarity of this transducer are simply unsurpassable.



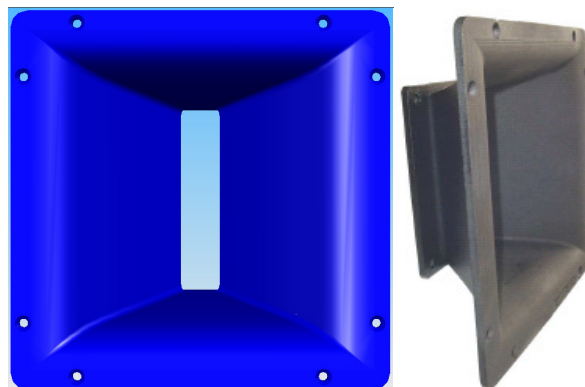
Frequency Response 1W@1m without baffle neither horn

By looking to the frequency response, although usable from 1 kHz, it may seem that the sound pressure level until 2 kHz is lower than requested for an equivalent use as a compression driver. It should be taken into account that this response is achieved without any horn or baffle, just with the unit in free air. In these conditions, the horizontal dispersion of the TPL-150 is completely awesome.

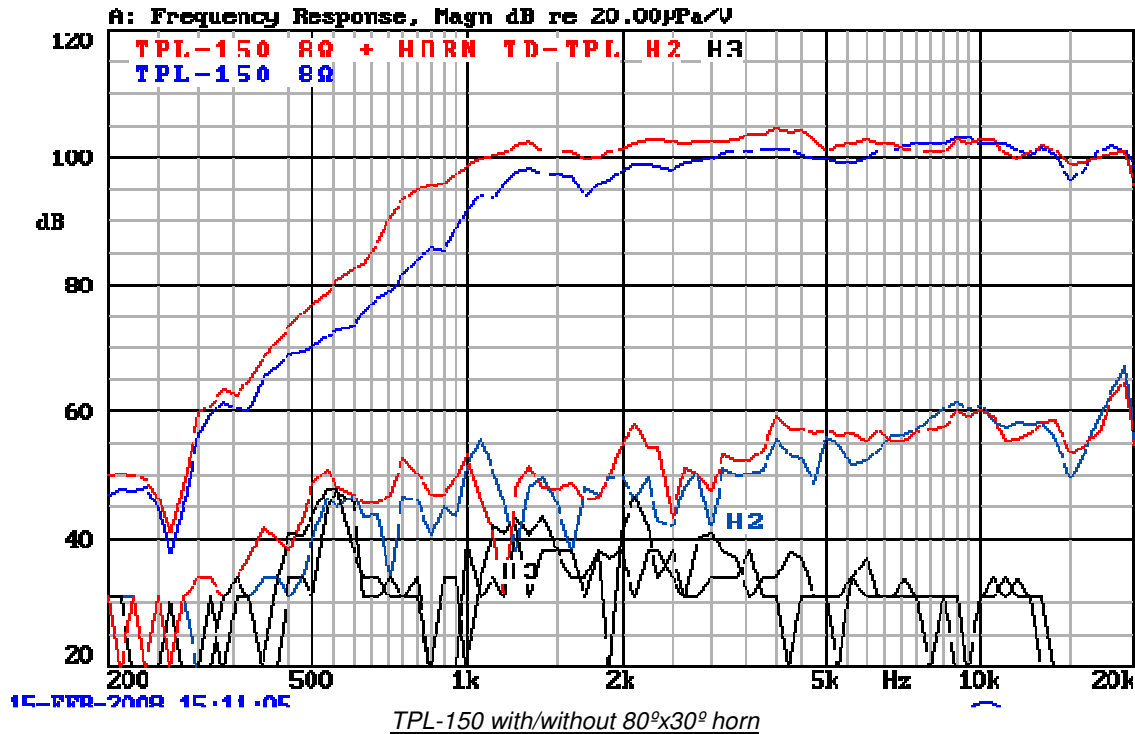


Note: heavy line, horizontal beamwidth; discontinuous line vertical beamwidth.

As it can be seen in the dispersion chart, the horizontal coverage is 180° at less than 1 kHz. By using a small diffuser, limiting the coverage at those frequencies to 90° is very effective to achieve a higher SPL from 800 Hz to 5 kHz, getting more than 4 dB increment, without losing the spectacular dispersion consistence. No compression driver with horn is able to have 100° coverage angle at 10 kHz. Next we can find a frequency response with a new horn, the TDTPH, to reinforce the low-mid band-pass of the TPL-150:



Horn used for the measurement

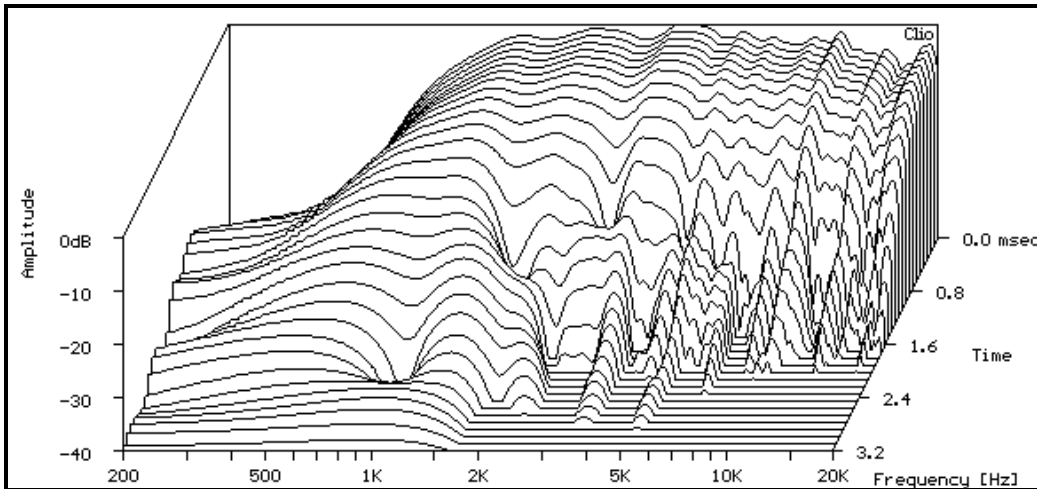


With the help of this horn, the TPL-150 gets a much higher sensitivity, especially from 1 to 7 kHz, with an average sensitivity about 104 dB, and still maintains a very low distortion figure.

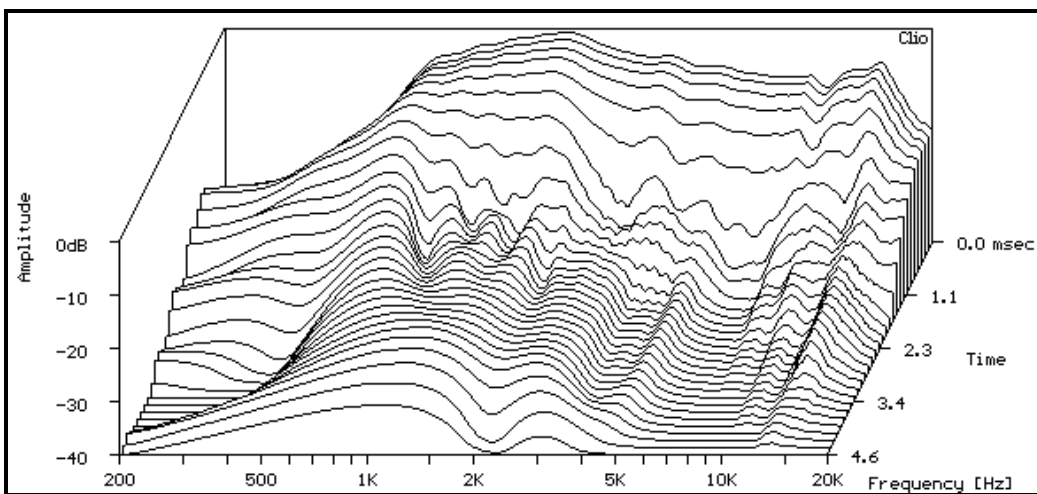
But how does the TPL-150 compare to a normal compression driver? In Beyma, we have made an extended and complete set of measurements to illustrate the superiority of the TPL over a conventional compression driver. In the next table we can compare the specifications of the TPL compared to the used compression driver in the comparison:

| SPECS | COMPRESSION DRIVER | TPL-150 |
|---------------------------|-----------------------------|---------|
| Power Handling | 70W AES (3 in. voice coil) | 80W AES |
| Av. Sensitivity with Horn | 108 dB | 104 dB |
| Horn Coverage | 80°x50° | 80°x30° |
| Voice Coil Material | Copper | Copper |
| X-Over frequency | 0.8 kHz | 1 kHz |
| Diaphragm Material | Ti Dome with mylar surround | Kapton |

Let's start with time definition. A waterfall plot will be very self-explanatory about the difference between a dome with unavoidable resonances and time smearing and a structure where the voice coil itself is the radiating surface at the same time:



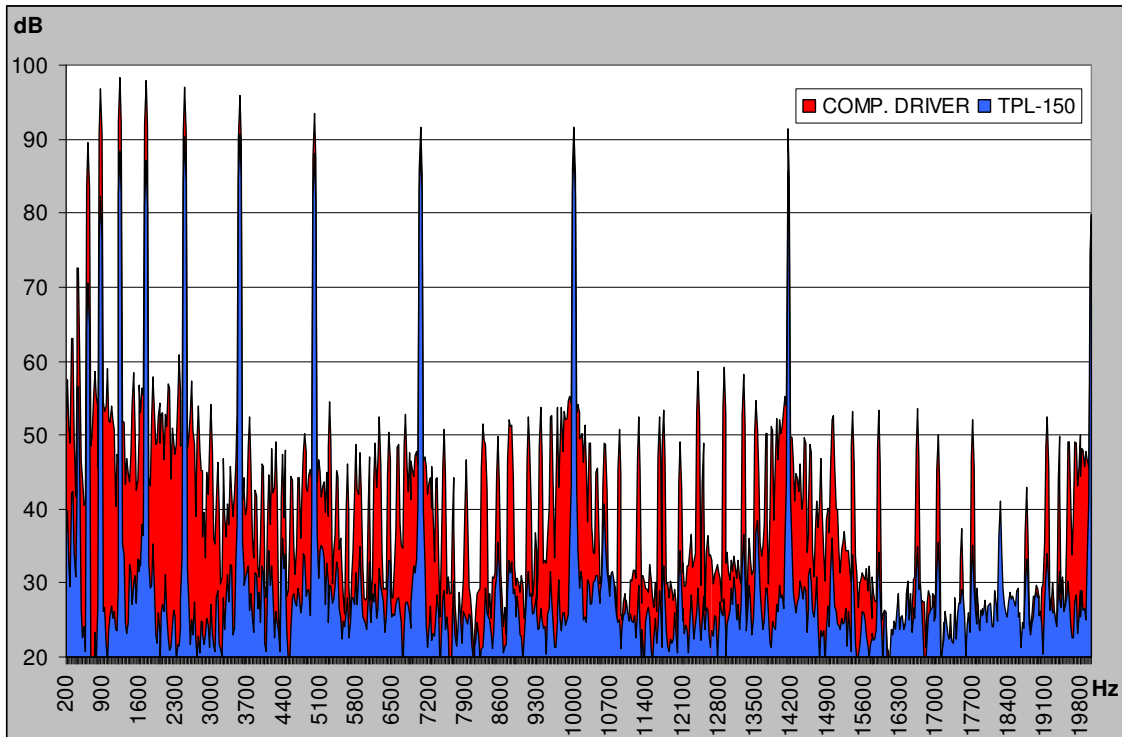
TPL-150 Waterfall, less than 2 msec. time response



Comp. driver Waterfall, more than 5 msec. time response

As we can see in the Waterfall measurements, almost all the energy in the TPL-150 has gone away in less than 2 milliseconds. However, if we look the compression driver response, even after 5 milliseconds, the diaphragm is still resonating, blurring the acoustic message.

What about distortion products?



This new transducer will be a key component for the next level of professional sound systems of the future, in terms of sonic quality and Live Sound experience.

For more information, please visit <http://profesional.beyma.com> or contact beyma@beyma.com

