Mündorf 197PP27-R and Beyma TPL200-S comparison

Frame of the project :

Medium throw (scene size typically 20m width, 30m depth), ultra high quality sound systems. We first evaluated the "classical" compression solution, which we eventually decided to put aside considering the very high distortion figures.

AMT technology then appears as a pertinent alternative above 2000 Hz. There are very few devices capable of high enough SPL available on the OEM market, and we selected the only two ones supposed to match our requirements.

The devices will later be arranged in short line-arrays of six items, requiring specific three channel amplifier drive, which should allow for outputting 95 dB à 30m. The power capability of the devices is a very significant parameter we look at.

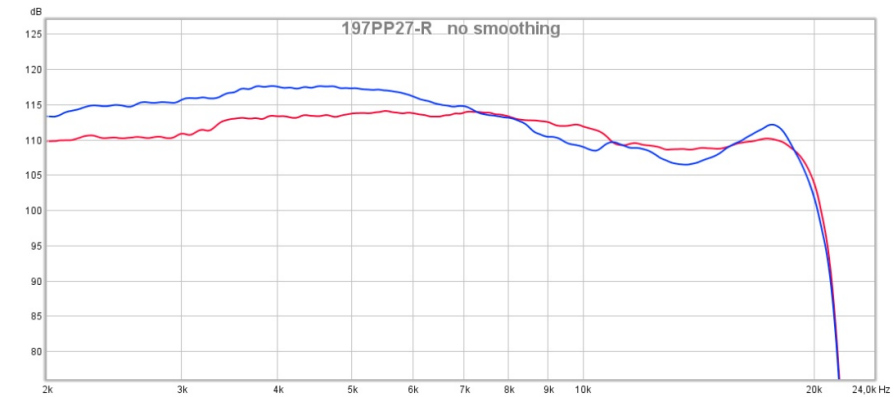
For directivity reasons, the definitive setup will use hornless devices.

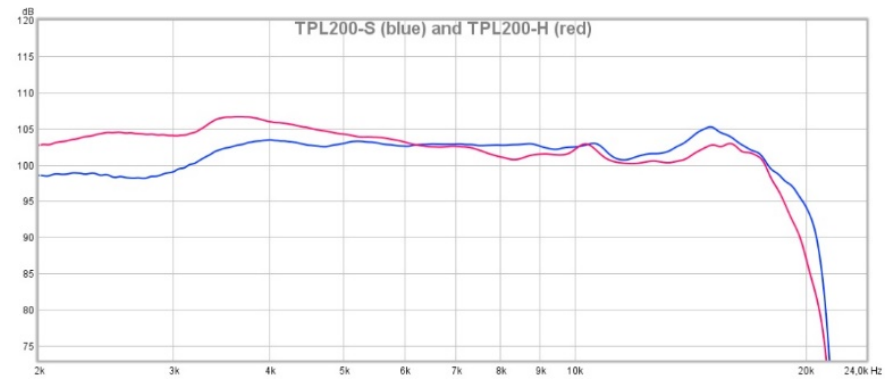
Measurement conditions :

- Outdoor on axis measurements, flange mounting for proper half space measurements
- Bruël & Kjaer 4189 calibrated microphone, measuring distance 1 meter
- Antelope Pure2 external soundcard
- REW software

Hereunder the results of the study. On the left Mündorf 197PP27, on the right Beyma TPL200-S

Frequency response





Red line : without horn, blue line : with horn. No smoothing, REW settings : left window 125ms, right window 100ms.
Satisfactory response for both devices, but a better global behavior of the Mündorf, which displays a good extension at the top of the range.

Harmonic distortion

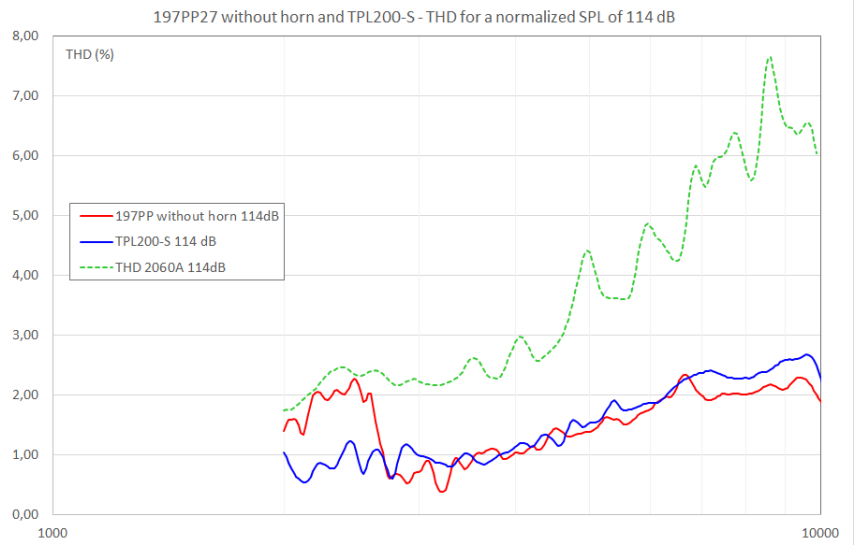
Red line : Mündorf, blue line : Beyma

Mündorf's THD is about twice the Beyma's under 2,8 kHz, and a bit lower beyond that area, where it is probably unaudible.

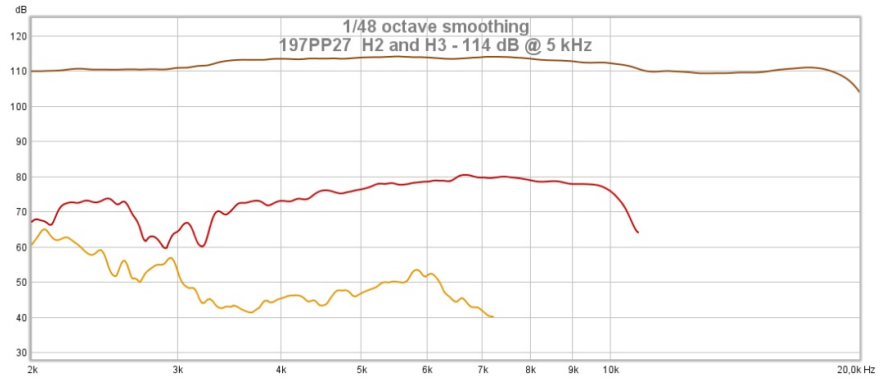
The green dooted line shows the THD of a very good 2" compression driver, the 18 Sound Nd2060A on AzuraHorn AH-340 horn, at exactly the same SPL.

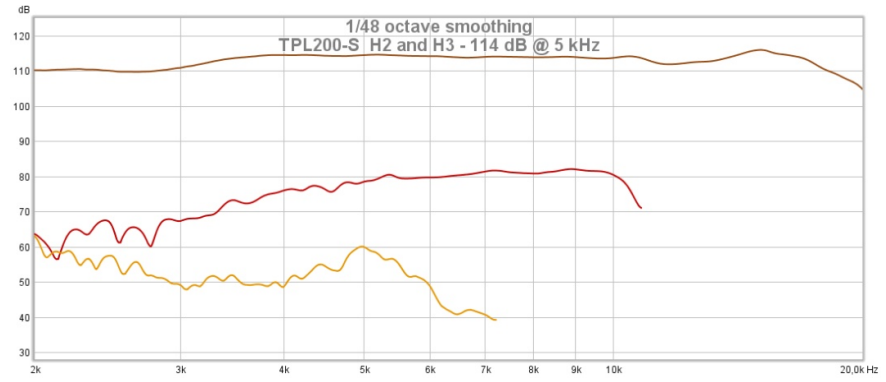
The THD figures of that driver are abour three times higher than for the AMTs, put apart the 2000-2800 Hz area for the 197PP27.

As far as THD is concerned, we could prefer Beyma's performance.



Harmonic distortion morphology



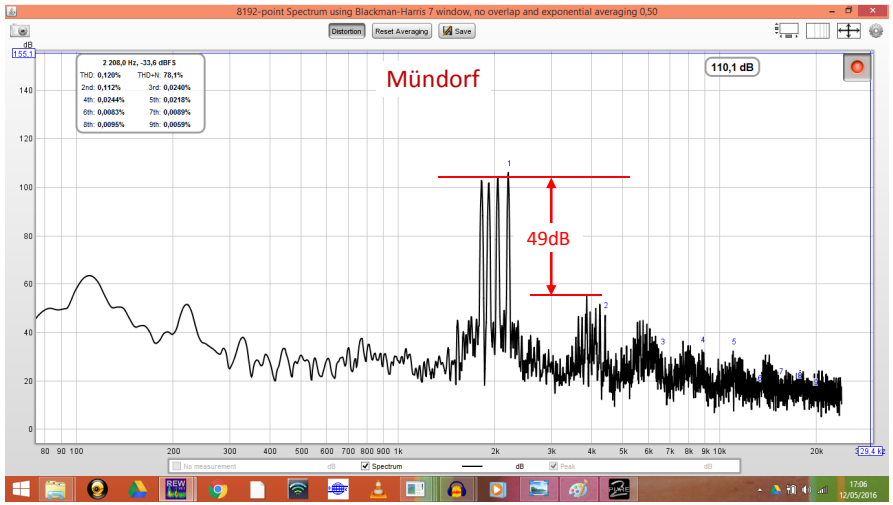


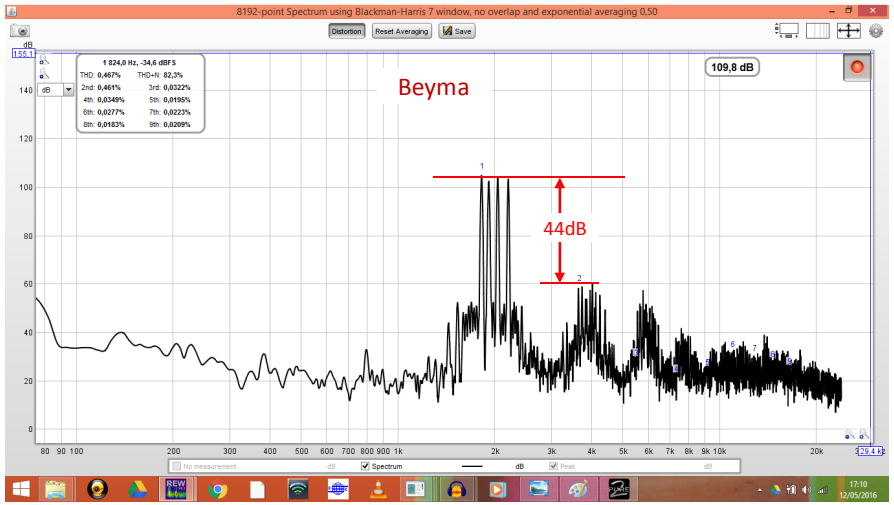
The H2 and H3 curves of both devices are very similar, with H3 well below H2 in both cases.

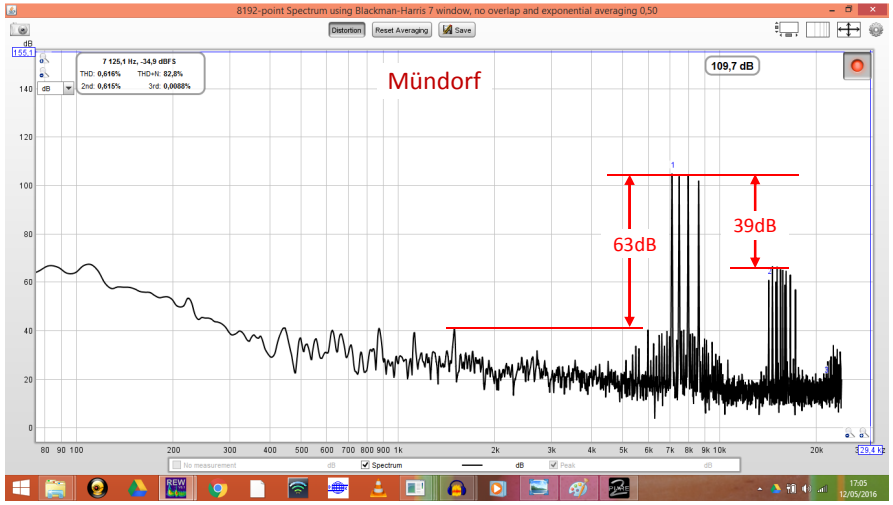
Intermodulation distortion

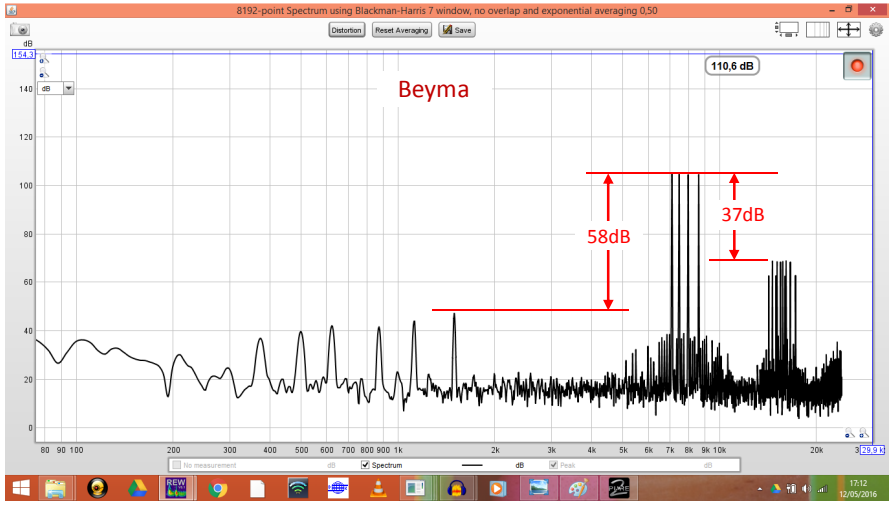
Our test procedure includes intermodulation measurements, using four tones signals close enough to each other to realize a good "filling" of the concerned octave thirds. This kind of measurement is interesting when comparing different transducers.

The hereunder measurements were made with a 2 kHz and a 8 kHz sequence, at a total SPL of about 110 dB.



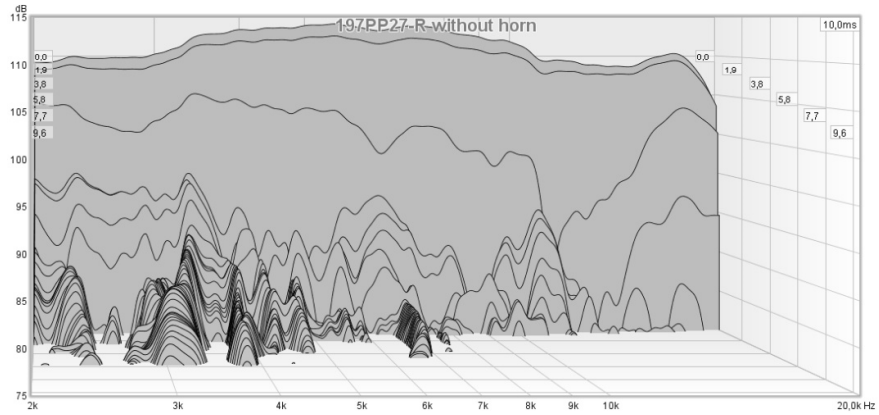


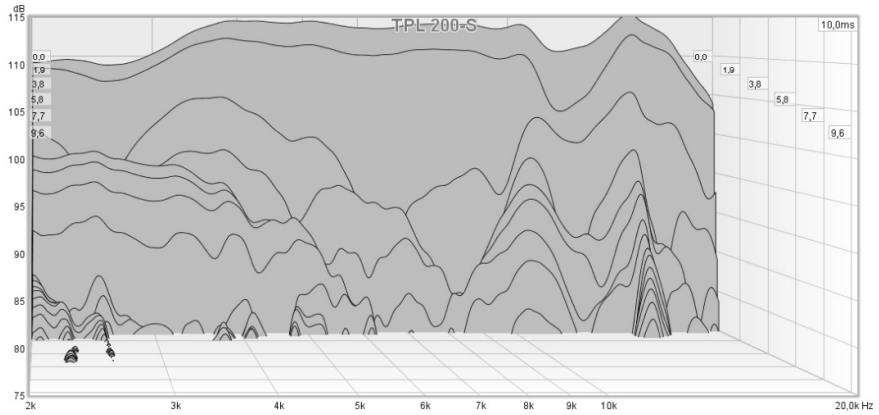




The 2 kHz plot shows that the Mündorf's performance outmatches Beyma's by about 5 dB.
The 8 kHz sequence highlights the infraband IMD products, by 5 dB again. In appearance low, those infraband products are audible, even with ear muffs on.
For this IMD concern, Mündorf 197PP27 clearly outmatches Beyma TPL200-S.

Time behavior





REW settings : total slices 100, time range 10ms, window 10ms, rise time 0,2ms, ***depth 40 dB****, smoothing 1/24, CSD mode.*

The analysis depth (40 dB) is unusually severe. For this parameter, the Beyma TPL200-S outmatches clearly the 197PP27, especially in the 2000-5000 Hz zone.

Maximum output

We saw in the specific test report of this device that it is able to output **118 dB** at 1 meter when driven in the severe conditions of our pulse power test (average power 80 W), this figure reached in spite of a high level of thermal compression.

In its specific test, we found out that either in the continuous power test or in the pulse power test this device was capable of a **112 dB** output at 1 meter (average power 120 W) without response degradation.

For this parameter, the Mündorf 197PP27 outmatches unambiguously the Beyma TPL200-S by about 6 dB.