TESTBERICHTE

ADAM AUDIO T7V

Nearfield Monitor

Sound & Recording

PRAXIS-MAGAZIN FÜR MUSIKER

Review from Issue 04.2018

In the 07/08.2017 issue of Sound & Recording, we reviewed the new S-series monitor by ADAM Audio, the S3V. The Berlin-based company latest release is the T-series, positioned considerably below the S-series in terms of features and price yet offering some impressive characteristics such as a U-Art Air Motion Transformer for the tweeter, a DSP system and newly developed Class D power amps.

ADAM Audio T7V

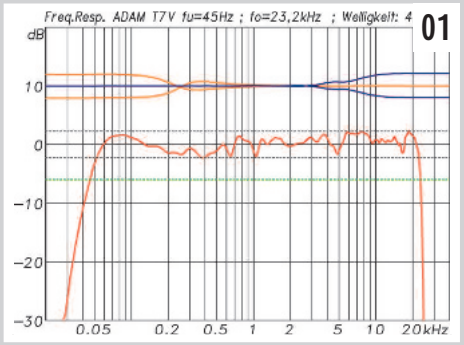
Budget nearfield monitor with U-ART Air Motion Transformer

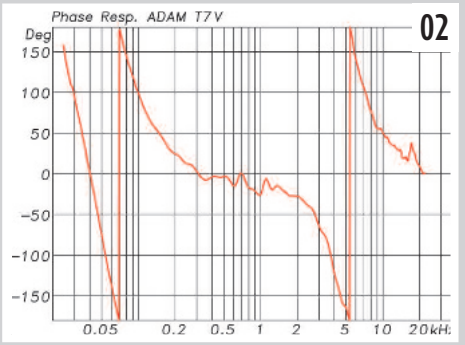
AUTHOR: ANSELM GOERTZ

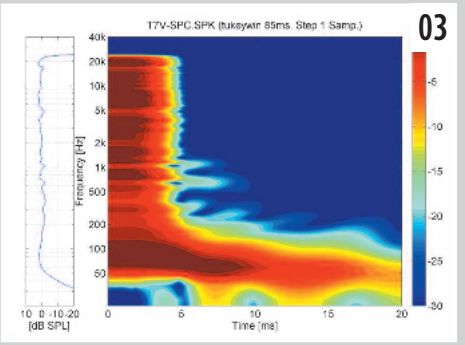
The T-series currently comprises the T5V and T7V models, with a 5" and 7" woofer respectively. Both have a 1.9" AMT tweeter with waveguide. Visually, these monitors have a simple and elegant design. The front of the housing is angled around the tweeter. With the exception of the rear panel, no screws are visible. This has not only aesthetic but also sonic advantages. This removes a source of potential disturbance to the sound field, especially in the area around the tweeter. The housing is made from 15mm thick MDF externally coated in black plastic foil. The front panel consists of two layers, being covered in a second matt black panel hiding the driver basket and screws.

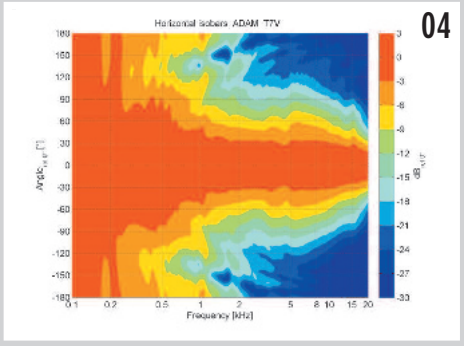
Opening the rear panel reveals a small HF switched mode power supply and some very compact electronics. The overall design is unpretentious and solid. The electronics are based around the Texas Instruments TAS5754M DSP and power amp chip which is pre-configured for a typical audio set-up. The power amps deliver 50W to the bass driver and 20W to the tweeter. All the electronics and cables are very well secured to prevent vibration noise. The generously dimensioned bass reflex channel runs at a 90 degree angle into the middle of the housing. Its design includes well-proportioned trumpet-shaped openings on both sides, which is commendable. The inside of the side panels are coated with polyester wool. There's an additional

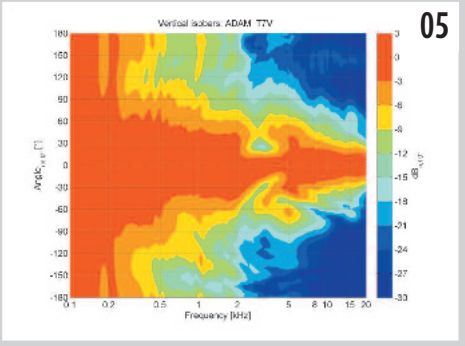
Lab Tests conducted in a reflection-free space delivered the following results for frequency response, directivity and distortion. A Class 1 measuring environment, this space allows data to be gathered at up to 8m away and is reflection-free above 100 Hz. All measurements were performed using the B&K 1/4"-4939 microphone recorded at 96 kHz sample rate and 24-bit resolution and the Monkey Forest audio measurement system. Measurements made below 100 Hz combine nearfield and farfield values.

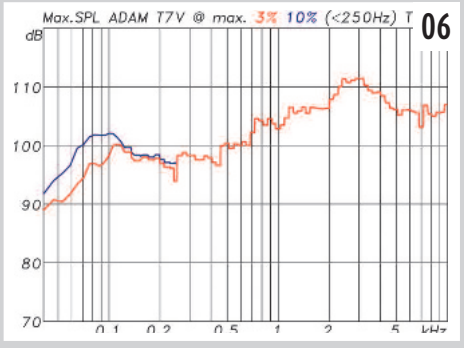


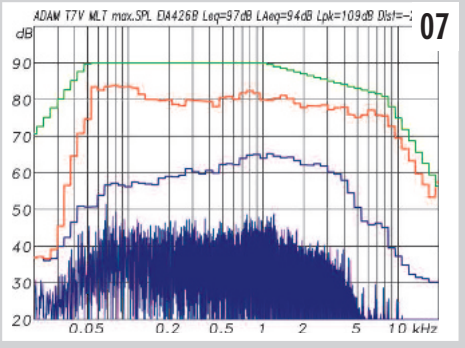


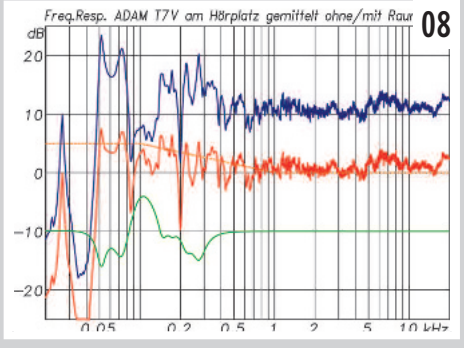












01 On-axis frequency response (red curve) measured at 2 m away. The green line shows the frequencies produced (–6 dB) from 45 Hz bis 23.2 kHz. The gray area shows the amplitude tolerance between 100 Hz and 10 kHz as ±2.25 dB Above: the filters used to accommodate for the acoustic space, with ±2 dB HF und ±2 dB LF activated.

02 Phase response on-axis with 360° phase movement for the 4th order x-over filter and 360° + x at the low end produced by the bass reflex housing and an electronic HP filter.

03 Spectrogram for the T7V with a small resonant frequency between 200 Hz and 1 kHz.

04 Horizontal directivity displayed as isobars. The boundary between orange and yellow represents a fall of 6 dB compared to the middle axis. The average spread coverage angle above 1 kHz is 106°.

05 Measured vertical directivity for the T7V. A neck at 3 kHz is visible at the crossover between mid-range and HF drivers. The average spread coverage angle above 1 kHz is 86°.

06 Maximum volume at 1 m with max. 3% distortion (red curve) and at max. 10% distortion (blue curve) for the LF band up to 250 Hz. The response curve is smooth and shows no weak spots.

07 Measured Intermodulation Distortion with a multi-tone EIA-426B-compliant signal with a 12 dB crest factor, 10% distortion. A level of 94 dBA as L_{eq} and 109 dB $L_{pk}$was measured at 1 m distance in a free-field environment.

08 Average frequency response at over 30 positions for left and right speakers around the listening position (blue). This data was used to set up the room EQ (green), with the average response with EQ activated shown in red. The dotted line was used for the filter settings as a target.

09 The ADAM T7V in a test lab at the IFAA laboratory in Aachen, Germany.

second layer inside the internal space, achieving a better result than on the side walls. The makers of this speaker thought of everything and got it all right.

As well as the power connector, the rear panel offers XLR and RCA inputs for the audio signal. There's also an input selector switch and a knob to set the desired sensitivity. Because simple rotary knobs make it difficult to set up multiple speakers identically, it's best to use this at its maximum setting, which is unequivocal. To help adapt the speaker to the setting or personal taste, two switches marked LF and HF have been provided, each with a neutral position and ±2 dB settings. The filters activated with these switches are shelving filters (see panel, Image 01).

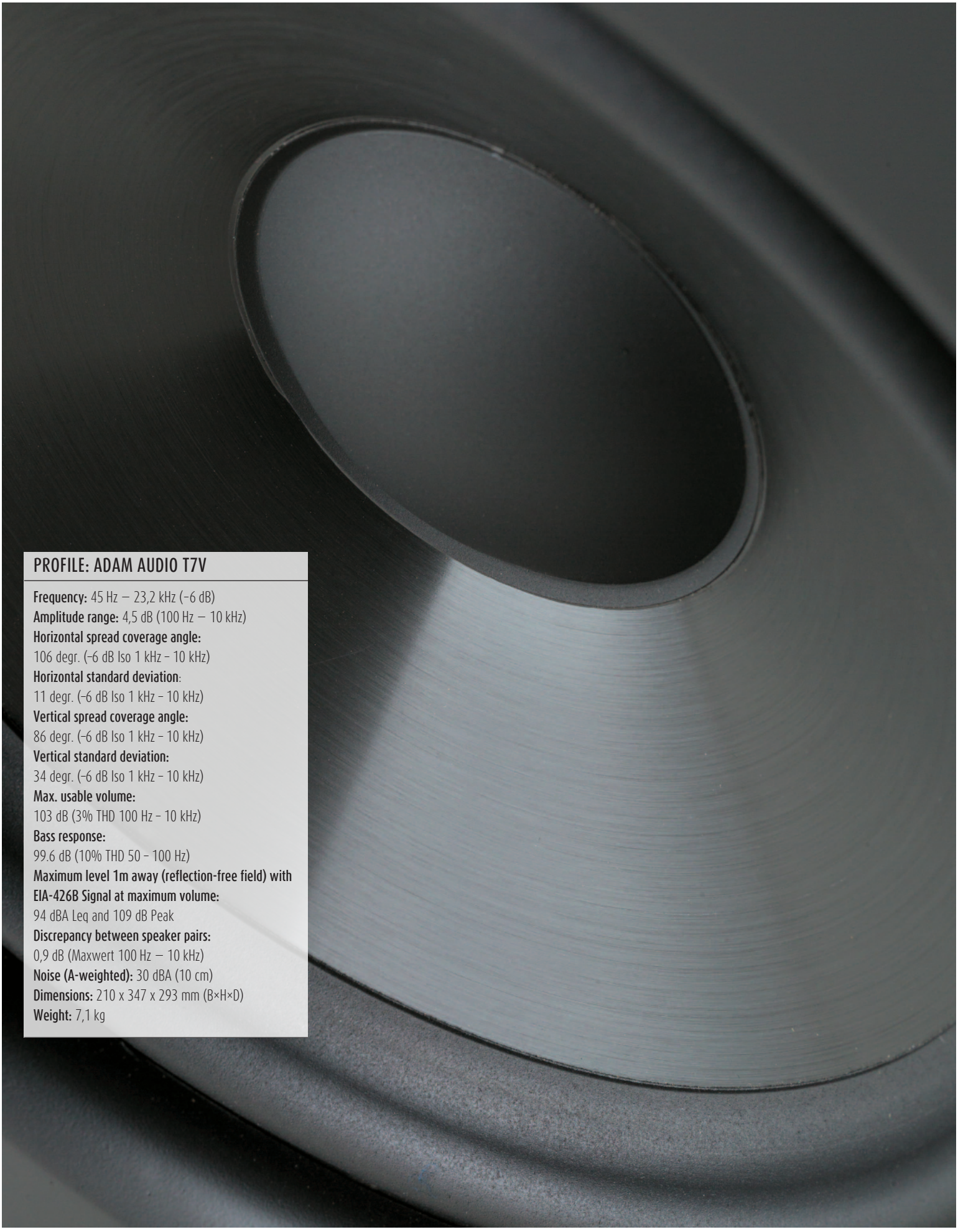
TEST LAB RESULTS

Let's start with the on-axis frequency response. This isn't the only characteristic that's important for a good studio monitor, but one of the most significant. Image 01 shows a red curve with a nice, smooth shape with an amplitude tolerance of ±2.25 dB. In these kinds of tests, we usually measure the amplitude tolerance between 100 Hz and 10 kHz. With the T7V, however, the values are steady between 51 Hz and 22.6 kHz. The drop-off frequency where the curve falls by 6 dB compared the mean value between 100 Hz and 10 kHz is 45 Hz at the low end and 23.2 kHz at the top end. For a compact monitor, 45 Hz is a very respectable value. The HF boundary is not set by the tweeter but by the integrated DSP system. In any case, 23 kHz are ample.

The phase response depicted in Image 02 shows the usual 360° phase movement when crossing over between the woofer and the tweeter. The curve is somewhat too steep and the relatively high frequency measured for the change in phase indicates a slight driver misalignment. The official data sheet states that the crossover is a low 2.6 kHz. The spectrogram of the T7V shown in Image 03 shows the small dips in the frequency curve at 650 and 1050 Hz that correspond to resonances that may be caused by housing modes or tunnel resonances. Neither of these can be completely ameliorated by the relatively high upper boundary frequency for the bass driver that you'd expect of a 2-way speaker.

The directivity is determined by the dimensions of the emitter surface and the use of any waveguides to deal with undesirably wide spread characteristics. This is what ADAM Audio has done here on the T7V, where a waveguide is used to constrain the directivity of the lower end of the tweeter's spectrum. Without it, we would see a sudden change in the radiation pattern crossing over between the woofer


The AMT Tweeter



PROFILE: ADAM AUDIO T7V

Frequency: 45 Hz – 23,2 kHz (-6 dB)
Amplitude range: 4,5 dB (100 Hz – 10 kHz)
Horizontal spread coverage angle:
106 degr. (-6 dB Iso 1 kHz - 10 kHz)
Horizontal standard deviation:
11 degr. (-6 dB Iso 1 kHz - 10 kHz)
Vertical spread coverage angle:
86 degr. (-6 dB Iso 1 kHz - 10 kHz)
Vertical standard deviation:
34 degr. (-6 dB Iso 1 kHz - 10 kHz)
Max. usable volume:
103 dB (3% THD 100 Hz - 10 kHz)
Bass response:
99.6 dB (10% THD 50 - 100 Hz)
Maximum level 1m away (reflection-free field) with EIA-426B Signal at maximum volume:
94 dBA Leq and 109 dB Peak
Discrepancy between speaker pairs:
0,9 dB (Maxwert 100 Hz – 10 kHz)
Noise (A-weighted): 30 dBA (10 cm)
Dimensions: 210 x 347 x 293 mm (B×H×D)
Weight: 7,1 kg

and tweeter, as the emitting surface of the tweeter is far smaller. The waveguide has a welcome side effect, namely increasing the tweeter's on-axis sensitivity. Moving up towards the higher end of the spectrum, the waveguide's effects are felt increasingly weakly, as the tweeter itself constrains the sound more strongly that the waveguide would. As we can see in the isobar curves for the horizontal axis depicted in Image 04, the combination of tweeter and waveguide used here is perfectly balanced. The crossover point is hardly discernable, if at all, in this image. On the vertical axis, however, we see a more pronounced effect at 3 kHz (Image 05). In speakers with at least two drivers, this interference effect is unavoidable if the drivers are mounted above one another because the angle of hearing will produce slight time misalignments between the two drivers. Overall, the directivity characteristics of the T7V are favorable for practical scenarios. With a very smooth horizontal coverage spread angle of 106°, the user has plenty of freedom of movement in front of these speakers without drastic changes.

We measured the maximum sound levels using sinus bursts, recording a respectable value averaging at 103 dB between 100 Hz and 10 kHz. An important aspect here is that the response curves in Image 06 are smooth and show no weak spots. For practical use, though, the results measured using a multitone signal with a spectrum and crest factor similar to music are probably more relevant. For a distortion of up to 10%, the maximum level in a reflection-free environment was measured as 94 dBA as LAeq average level. The maximum level Lpk delivered by the T7V is 109 dB. This matches the data provided on the speaker's spec sheet. Both values are typical of and satisfactory for a nearfield monitor.

++	Audio test results
++	Sound quality
++	Applications
++	Build quality
+++	Value for money

T7V Manufacturer ADAM Audio MSRP/End price per pair
€478.00 / around €400 www.adam-audio.com

LISTENING TESTS

During our listening tests, we used our standard procedures of using LF filters to compensate for any problems caused by the room and listening position. Image 08 shows the calibration measurements.

As expected, the T7V presents a neutral sonic picture. The speaker manages to reproduce the individual sources precisely and with high resolution, depicting the high frequencies accurately. Any doubts we may have had going into the tests about the combination of the Class D power amps and the AMT tweeter proved unfounded. The T7V reaches its limits when pushed louder, with the power delivered by the amp being unable to produce the peak levels required. Unfortunately, there is no visual indication of when the electronics hit their limits. We would like to have seen an LED on the front to indicate clipping.

SUMMARY

With the T7V, ADAM Audio has introduced an unpretentious nearfield monitor that does without all the gimmicks but delivers where it counts, namely the drivers and electronics. The build quality and test results are good across the board, and this speaker is definitely up to the standards required of a professional nearfield monitor. This package is available at EUR 400 per pair (end price). This is down to the well thought out, elegant yet sober design and large-scale volume manufacturing in China. In summary, the T7V comes highly recommended as a nearfield monitor for those on a budget, for compact surround systems or use in the home. ■