

REVIEWS

ADAM AUDIO S3V

Midfield Monitor



Sound & Recording

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After a turbulent few years and a change of ownership, the Berlin-based loudspeaker manufacturer ADAM Audio is under new management and is once again focused on producing and developing studio monitors. The S3V is one of the latest; we put it to the test.

ADAM Audio S3V

3-way monitor with S-ART tweeter, new waveguides and built-in DSP

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One of the team now in charge at ADAM Audio following all the changes at the company is Chairman David Angress, who with his decades of pro-audio experience is known for bringing calm and stability to companies. Also on board is Philippe Robineau, himself hardly an unknown on the audio scene and Andreas Guhde, the Head of Acoustic Research & Development, who has returned to ADAM Audio after a short break and also brings a great deal of experience and knowledge of loudspeaker development to the table.

Over the past few weeks, ADAM Audio has taken its S Series monitors out on tour, the idea being to introduce the new speakers to customers past, present and future. The five-strong range was designed from scratch over the past two years to become the flagship products for the rebooted company. Indeed, pretty much everything on the S Series is new. Together with the chassis manufacturers, Andreas Guhde spared no efforts, designing the ELE (Extended Linear Excursion) bass driver and the DCH (Dome/Cone Hybrid) mid-range unit from the ground up — the latter a hybrid tweeter featuring a carbon-fibre-composite-laminated membrane that exhibits the acoustic and mechanical properties of a dome and a cone tweeter, and conveys the benefits of both. Even the renowned ADAM Audio ribbon tweeter, based on the Air Motion Transformer concept and manufactured by hand in ADAM's Berlin factory, underwent further development and was fitted with a newly designed waveguide. The so-called HPS waveguide (High-frequency Propagation System), which is built into the tweeter housing, was milled from a block of aluminum to minimise resonance and enhances HF dispersion, as well as encouraging heat dissipation from the driver.

Completely new cabinet designs were also created for the range, with distinctive, rounded edges and corners and redesigned bass reflex ports optimized for maximum throughput. The cabinet construction is of a noticeably thick material, necessarily so to allow for the machining of the rounded edges, but of course this also usefully reduces unwanted cabinet resonances. Though you wouldn't know it when you first set eyes on the speaker, together with the bass and mid-range driver's powerful magnets, the weighty construction makes for a pretty hefty product — 25kg in the case of the S3V. However, this isn't likely to be a problem, as studio monitors are usually set up once and left in position as a rule.

For this review, we were sent the S3V, the middle model of the S Series range, which has its three drivers arranged vertically. There's also an S3H, designed for use horizontally, which is equipped with two 7-inch bass drivers instead of a single 9-inch woofer, but is otherwise identical. The S3V, typically for a midfield monitor, is best used free-standing and gives optimal results when listening at distances of between two and four metres.

With a street price of around 4600 Euros a pair, these are definitely monitors aimed at professional users. As David Angress has mentioned in his recent interviews, there are various aspects that are important to

this user base: for example, an assurance that anyone who buys these monitors can be certain that the product is destined for a long life, with product support that continues throughout and reacts to problems quickly. (Forgetting ADAM Audio for a moment, these are concepts whose adoption would do the entire pro-audio industry good; imagine, if instead of a constant turnover of new hardware with minimal changes and 'improvements' of questionable value, we had more products on the market that had been thoroughly developed with this kind of long-term perspective in mind.)

FEATURES & ELECTRONICS

Let's look at the S3V in more detail. This is a fully active three-way speaker which combines the S-ART tweeter and waveguide with a four-inch mid/high driver and a nine-inch bass unit. The crossovers are set at 250 Hz and 3kHz, so that all of the drivers are served with the frequencies they are best designed to reproduce. Two Ice-Power Class-D amplifiers drive the bass and mid-range drivers with a maximum output of 500 W and 300 W respectively, while the HF driver is powered by a 50 W Class-A/B amp of ADAM's own design. Despite the high standard of modern Class-D amplification, the ADAM Audio designers have chosen to drive their delicate, high-resolution S-ART ribbon tweeter with a more traditional Class A/B amp — but then the audio qualities of a properly set-up Class A/B amp define the standards that designers of Class-D circuits are always striving for anyway.

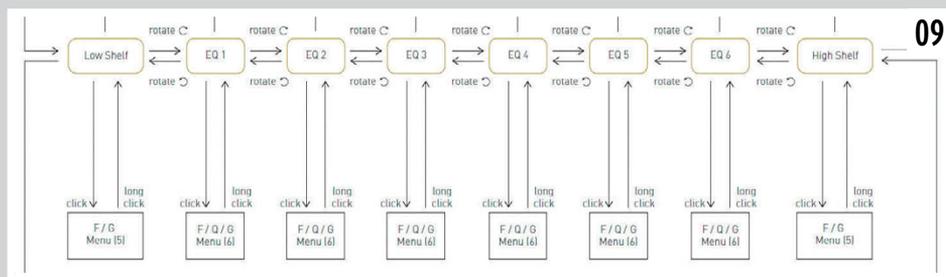
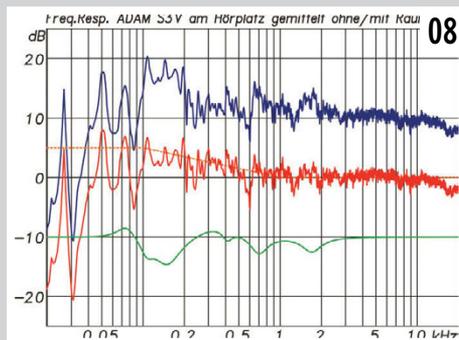
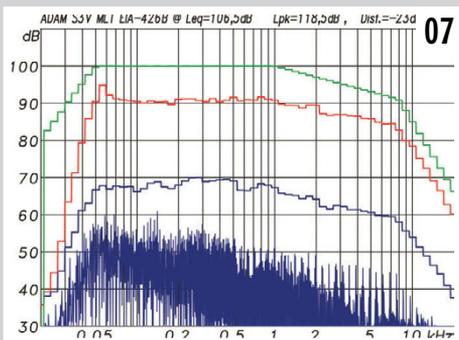
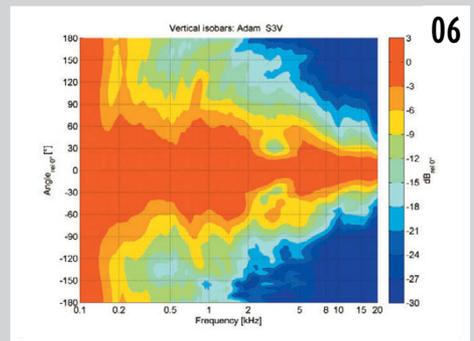
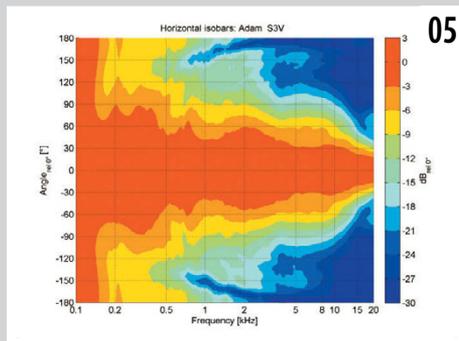
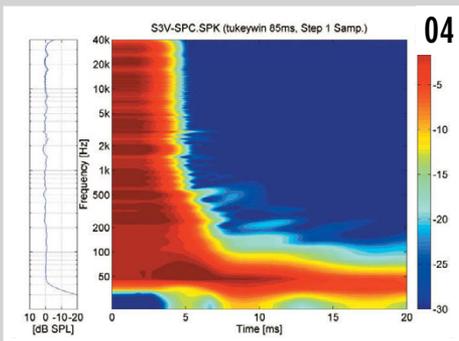
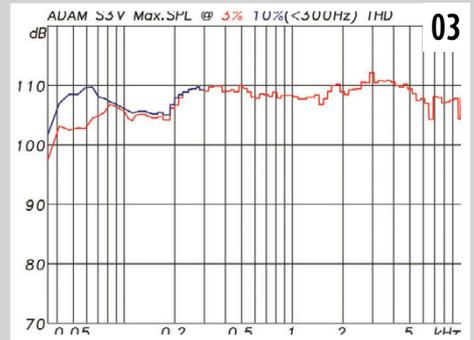
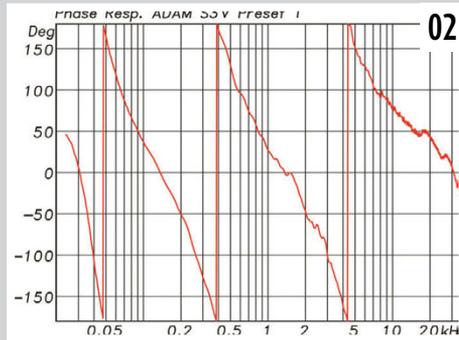
A completely new addition for ADAM Audio on the S Series is a DSP section for signal processing, which provides the crossover filtering, the onboard EQ and the limiters. As a result, end-users now have the option of tuning the monitors to suit the environment in which they're installed, and using the built-in EQs, delays and level-adjustment controls to create personally tailored user setups to taste. Audio signals can be fed into the S3V through analog inputs or digitally via its AES/EBU interface. There's also the option of feeding the digital signal through to another S Series loudspeaker via the rear-panel Link connector. The choice of whether to send the left or right channel via this connector is made via the DSP menu. DSP firmware upgrades can be carried out via a USB connector. The user interface for the DSP section is straightforward, involving an incremental data-entry knob and a rather small display, which doesn't always reveal what functions are available or, indeed, how they may be accessed and adjusted.

TEST MEASUREMENTS

That completes a run-down of the new features — but how does everything perform in practice? A quick look at the frequency plot in Figure 1 looks very promising. With EQ Preset 1, the curve is pretty much perfect. The lowest output frequency is 36Hz, making a subwoofer unnecessary. At the other end of the spectrum, the highest frequency is above 40 kHz. This is one of the specialities of ADAM's S-ART tweeter, which can repro-

About The Test Lab

The test measurements for frequency response, dispersion characteristics/frequency and distortion were made in an anechoic environment. Our Class 1 measurement chamber allows measurements to be taken at distances of up to 8 m and permits free-field measurements to be made from 100Hz upwards. All the test results quoted in this review were taken with a B&K 4939 quarter-inch measurement microphone at 24-bit resolution and a sampling rate of 96 kHz, using a Monkey Forest audio test system. All tests performed at below 100 Hz were taken as combined near-field/far-field measurements.



01 Frequency response curve (in red) measured at a distance of 4 m with ADAM Audio preset number 1 ('Pure'). The gray line shows the operating range (-6 dB) from 36 Hz to 40 kHz. The blue curve was measured with ADAM Audio preset number 2 active ('UNR', or Uniform Natural Response).

02 Graph of phase featuring three 360° phase shifts. These are due to the fourth-order high-pass filtering used, and the two crossover regions featuring fourth-order filters.

03 Graph of maximum output level for low frequencies (up to 300Hz) taken at a distance of 1 m, with (in red) a maximum of 3% distortion and (in blue) a maximum of 10% distortion. The curve is uniform even at high levels of output, and shows no real weaknesses in the design.

04 Spectral display for the S3V, showing only very few, limited resonances as driver excursion decays.

05 Isobar display showing the S3V's horizontal dispersion. The area where the graph changes from yellow to light green represents a drop of 6dB relative to the central axis. The average dispersion above 1 kHz is 123°.

06 Isobar display showing the S3V's vertical dispersion. Unavoidable narrowing can be seen where the mid-range driver gives way to the tweeter. The average dispersion above 1 kHz is 94°.

07 Intermodulation distortion measured with an EIA-426B multi-tone signal with a 12 dB crest factor and with distortion running at 7%. At a distance of 1 m, taken in a free field, a level of 103 dBA L_{eq} and 118 dB L_{pk} is attained.

08 Averaged frequency response (the blue curve) created from 30 measurements taken from left and right speakers from slightly differing locations around the main listening position. The EQ curve derived from these measurements and reproduced with the speakers' built-in room EQs is shown in green and the averaged response with the EQ in place is in red. The dotted line was used as a reference while setting the filters.

09 The structure of the S3V's room EQs in the onboard DSP, rendered as a block diagram. Each preset has a low- and high-shelving filter and six fully parametric EQs.

duce frequencies between 20 and 40 kHz perfectly. Although this is beyond the range of human hearing, it's still relevant for two reasons. Firstly, any tweeter that can reproduce 40 kHz audio without any problems will not have difficulty with frequencies in the audible range. Secondly there can be problems with performance caused by resonances above 20Hz which can be heard as intermodulation in the audible frequency band — but the S3V suffers from no such difficulties. The frequency response curve is also fairly flat throughout its range, exhibiting a ripple of only 2.9 dB from its minimum to its maximum, which augurs well. The second curve (in blue) was measured using ADAM's second EQ preset, the Uniform Natural Response (or UNR), which gently emphasises the low and high end of the speaker's response. Three further setup memories can be filled with your own presets; the onboard DSP generously offers users a low and high shelving filter plus six further fully parametric filters per user preset. Figure 9 depicts the structure of the filter section as a block diagram. If your room suffers from problems with resonances or standing waves, or if your speakers are set up near a wall or large flat surface, the filters can help to compensate. The phase graph shown in Figure 2 reveals the presence of the usual fourth-order IIR filters to handle the crossover filtering; at every crossover frequency, there is a 360° phase shift. It would be interesting to see what would have happened at these points with an alternative implementation using phase-linear FIR filters.

The results of the maximum output level measurements are also encouraging. The S3V produces just over 110 dB of level in response to a virtually constant sine-burst stimulus, and with a maximum of 3% distortion. The curve just falls short by a few dB between 100 and 200 Hz; there aren't really any serious weak points at all. When tested with a multitone stimulus in free-field conditions, the S3V produces an average output level of 103 dBA measured at 1 metre, and a peak level of 118 dB, with distortion at 18%. It was impossible to reach the usual measuring limit of 10%, because the internal protection limiter kicked in before then.

Dispersion measurements (see the isobars in Figures 5 and 6) revealed a uniform spread of frequencies over a wide horizontal throw of around 120°. Above 10 kHz, probably due to the size of the tweeter, there is a gentle narrowing. In the vertical plane, there is unavoidable narrowing at 3kHz due to the crossover and the physical arrangement of

the drivers with respect to one another. In all, by design the dispersion of the tweeter is slightly narrower. On the horizontal plane, the mid-range and bass drivers perform about the same.

Two further test results are worth a mention: at 22dBA, measured at a 10-centimetre distance from the ribbon tweeter, the noise level is very low. The divergence in performance between both speakers in the pair, which amounted only to 0.7dB, was also very convincing.

LISTENING TEST

For the listening test, the review S3Vs were set up free-standing in a midfield configura-

tion at a listening distance of around three metres. Figure 8 shows an averaged measurement taken from 30 different positions per speaker from the immediate surroundings of the listening position, as well as the EQ curve derived from these, and also the results with that EQ applied. By way of direct comparison, or as a reference, if you will, measurements were also taken from another, well-established pair of active three-way monitors. The results were clear for us to see (and hear!). Thanks to its wide-ranging frequency response, the S3V won everyone over with its profound bass and very lovely, finely rendered highs. Imaging overall, together with a real sense of the acoustic environment of



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Test Measurements

+++

Sound Quality

++

Flexibility

++

Build Quality & Finish

++

Value For Money

S3V Manufacturer/Distributor ADAM Audio / various
Recommended Retail Price/Street Price Per Pair
 Currency 5518.00 Euros / 4600.00 Euros (approximately)
www.adam-audio.com



original recordings, was conveyed beautifully and naturally, as was the human voice. It was noticeable how the S3V was able to render even sonically difficult and/or complex material with clarity and transparency. Compared to the 'reference monitor', the S3V easily held its own, and was out in front on several points.

SUMMARY

After an uncertain period in its history, the Berlin-based company ADAM Audio has bounced back with the S Series. There's no doubt that the new flagship acquits itself impressively. The model under test, the S3V, with its newly developed driver chassis, waveguides, amplification and DSP, shows us something of the direction ADAM Audio's R&D department is heading in. During our tests, the S3V gave an excellent performance, and the favourable measurements were borne out in our subsequent listening tests. In summary, the S3V gives a perfect frequency response up to the limits of our measurements at 40Hz, a high SPL of up to 118 dB at peak, and all this with very low distortion. The cabinet and finish make a very solid impression, and the built-in DSP offers ADAM users the option of creating their own filter settings and user setups for the first time. ■

ADAM AUDIO S3V AT A GLANCE

Frequency range: 36 Hz – 40 kHz (–6 dB)

Ripple: 2,9 dB (100 Hz – 10 kHz)

Horizontal dispersion:

123 degrees (–6 dB Iso 1 kHz - 10 kHz)

Horizontal standard deviation:

15 degrees (–6 dB Iso 1 kHz - 10 kHz)

Vertical dispersion:

94 degrees (–6 dB Iso 1 kHz - 10 kHz)

Vertical standard deviation:

41 degrees (–6 dB Iso 1 kHz - 10 kHz)

Maximum volume:

108 dB (3% THD 100 Hz - 10 kHz)

Bass performance:

108 dB (10% THD 50 - 100 Hz)

Maximum level @ 1 m (free-field conditions) with EIA-426B signal at full scale:

103 dBA Leq and 118 dB Peak

Performance divergence per speaker pair:

0,7 dB (maximum value from 100 Hz to 10 kHz)

Noise level (A-weighted): 22 dBA (10 cm)

Dimensions: 293 × 536 × 380 mm (B×H×T)

Weight: 25 kg