

Тест домашнего кинотеатра на базе акустики M&K Sound: кинозвук для трехмерного мира

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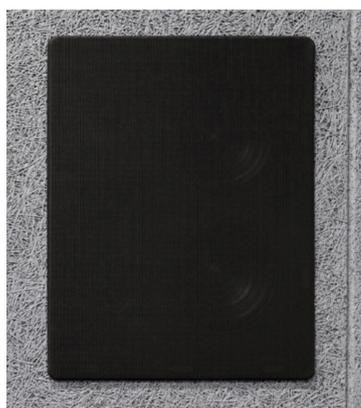
Test of Home Theater System with M&K Sound: Movie Sound for a 3D World

Testing stereo or home theater systems normally implies that there is a complete set of equipment that can be transplanted into a potential owner's room or home without any significant modifications. But in a demo theater, there is always the possibility of encountering much fancier configurations.

A theater with M&K Sound audio equipment created by distributor Alef Hi-Fi has an augmented sound system complete to meet three standards for multi-channel audio all at once: Dolby Atmos, DTS X, and Auro 3D. This is a unique opportunity both to listen to a professional-level theater system and to compare the three formats while meeting the baseline requirements of all three.

Combination Style

The theater is equipped with several types of M&K Sound audio all at once. Sound for the three front channels is provided by the IW300 in-wall model. It has the familiar M&K Sound configuration with a square front panel, a couple of relatively small polypropylene midrange/bass drivers (165 mm) and three 25-mm high-frequency drivers with soft fabric domes. All the speakers are equipped with a dual-magnet system and have a high overload capacity. The acoustic enclosure is of the closed type.



A minimalistic black rectangle, almost a square, is all there is to the high-end in-wall unit.

The IW300 body is equipped with DogLeg rotating latches around the perimeter, while the front has a thin overlay whose perimeter goes outside the cabinet's

primary dimension covering up the uneven edges of the installation opening. The speaker's front panel is covered by a clean frameless grille with magnetic attachment. However, if the theater screen were a little wider, the grilles would not be necessary, and all three speakers could have been concealed behind an acoustically transparent canvas.



The appearance minus the grille is much more interesting and familiar.

Since the theater room is relatively small, the configuration includes only two back channels, albeit of a special Tripole design. The S300T model only has a single mid-range/bass and a single

HF driver on the front panel (of a type and size similar to those of the IW300), and the slanted side walls of the acoustic box house two 100-mm full-range drivers each: they produce a wider sound beam.

Tripole Acoustics for Widest Possible Sound Propagation



These five speakers make up the base level that provides a conventional non-3D movie theater experience. However, in a contemporary theater, all the more interesting things are located above eye level, i. e. on or directly below the ceiling. Both the solutions are implemented in the Alef Hi-Fi demo theater. The second level required for the Auro 3D format, is implemented as four MP150II speakers that attach to the wall and have a slanted front that implies they are to be installed much higher than audience ear level. They are positioned virtually directly below the ceiling on the front and the rear walls. This model is somewhat smaller than the Series 300 and has a pair of 133-mm polypropylene midrange/bass and three HF drivers.



The specifics of the design can be discerned easily through an opening in the housing.



Full-range drivers were installed on the side walls instead of the usual pair of HF-midrange/bass drivers.

The third and highest level is implemented as five small IW5 in-wall speakers. And where all the above models were enclosed, these

small'uns are not. The speakers include a 100-mm polypropylene midrange/bass driver and a 25-mm fabric HF driver (with a neodymium magnet instead of the dual-ferrite one). Interesting: the speaker's rectangular front is covered by a round grille which makes IW5 indistinguishable from many other different ceiling speakers.

Mystery black rectangle again to be found under the hood

At the end of our study of the list of speaker systems, we will sink down to the very bottom of the frequency range: into the bass area. This is implemented as a pair of different-sized subwoofers: a 10" X10 and a 12" X12. Both have the push-pull design that I have described before when talking about the Model X10 test. Briefly, this is a bass speaker of incredible power. And in X12, we have all the same features, albeit somewhat scaled up.

Two subwoofers of different size and power were required to get a sufficient power margin and avoid the bass compression effect at the loudest and power-intensive low-fre



quency effects. In addition, this approach helps widen the effective operating range of the low-frequency channel and provides better opportunities for fine-tuning the resulting frequency response.

Subwoofers with a Balanced Connection? High-End Standard

As you see, the list of speakers in this theater is only slightly shorter than the Catalog of Ships in the Iliad. To make it easier for those that have already lost count, I will put the final configuration down as a string of numbers: the theater uses the 5.2.4.5 configuration.

General Characteristics

It was no coincidence that I used the word "professional" when describing M&K Sound audio. The thing is that brand-name audio not only has a THX certificate but is also used quite broadly in music recording and movie sound track mastering studios. In particular, the sound tracks of the prequel Star Wars trilogy were aligned and processed using M&K Sound audio; therefore, when these movies are screened, the sound promises to be authentic in the most direct sense of the word.

Ceiling Satellites: Not the Highest Level Yet

Before talking about sound, it would be worthwhile saying just a few words about the rest of the system. The Oppo UDP-203 player was being used as the digital carrier, audio



signal processing was handled by a Storm Audio ISP 3D.32 ELITE 32-channel AV processor paired with a Storm Audio PA 16 ELITE 16-channel power amplifier. The process boasts both the three 3D sound decoders and the DIRAC Live technology which performs high-precision sound calibration, corrects for the acoustics of the room, and brings the frequency response into full compliance with the movie theater standards.

A small slant in the front panel helps position the surrounding audio to meet movie theater standards



It would seem that this approach would make the acoustic coloring and its contribution to the total audio experience hard to identify. However, M&K Sounds special features were fairly audible. Those who listened to this audio without calibration will recognize the detail, the expressiveness, and the extremely tidy sound without any uncomfortable distortions in the tonal balance or stridency in the upper midrange that you get from many designers attempting to compensate for a lack of detail with sound intensity. M&K Sound's ability to sound realistic is also all there while an appreciation of the low-frequency effects has become the most spectacular part of the listening experience. A pair of M&K Sound Series X subwoofers almost helped feel the bass range in one's bones. Sound pressure was so high, that passages that included especially deep bass sound caused clothing to start to move on members of the audience as if from a gust of wind.



Those that have previous experience with M&K Sound audio must have noticed the familiar foam squares

The use of well known test trailers and videos initially produced an unexpected result. Some of the content sounded realistic and had volume, a precise grasp of the room, and noticeable sound movement around the audience rather

than from one speaker into another. The Leaf trailer from the Dolby Atmos demo disc completed with a flourish: the audio field turned out to be absolutely seamless, while sounds moved around the audience in a very natural and smooth manner. However, the sound of some trailers lacked the expected hard edge or the audio picture came out less than crisp and clear. Thus, the Mad Max; Fury Road movie trailer sound track came out surprisingly well without any sharp or rough sounds and with a better coverage of the room than I had heard previously.

X10 or X12? I would not take it upon myself to take an off-the-cuff guess

I believe the reason to be the high resolution of the sound equipment and the various individual components providing a better interpretation of good recordings and bringing out the imperfections in the way less high-quality sound tracks are mastered. In other words, the situation is similar to what you get when listening to a Hi-Fi stereo system. The higher the performance rating of a system, the more important it becomes to select a high-quality recording and the right sound format.



Same push-pull but smaller

In reality, sound track mastering quality in movies is an issue as complex and as challenging as mastering quality in stereo. Some people like first releases, others will take nothing except Japanese publishers, while still

others are happy with a modern remaster. Therefore, we will leave this matter to be researched at another time by current and future owners of high-end movie theaters.



The fins on the back panel are not large at all but they are the same radiators used on an amplifier for heat rejection.

As far as sound track formats are concerned, this is fairly simple. The minimum recommended

level of quality is represented by the Dolby TrueHD and DTS-HD, with the conventional Dolby Digital and DTS sounding totally uninteresting, while the 3D formats for which the theater has been created are the best option.

Very Diverse 3D

It would be absurd not to take advantage of the opportunity to compare the three formats in the same theater, which is exactly what I did during the test. Sound tracks recorded in the LPCM format served as references.



Very Impressive Sound Immersion Effect

I like the sound of Auro 3D recordings the best: they provided the most accurate space coverage, the highest resolution, and the best dynamic performance. When using Dolby Atmos, the result was close but the impres-

sion was of a smaller scale. The first impulse was to add detail and dynamic performance. DTS-X had good dynamic performance, and the level of detail was very similar to that of Dolby Atmos with objects being somewhat better defined in space but the sound texture being harder. In this case, the difference between the formats was not the only thing of note: I had not heard these differences in other theaters.

Music with No Video

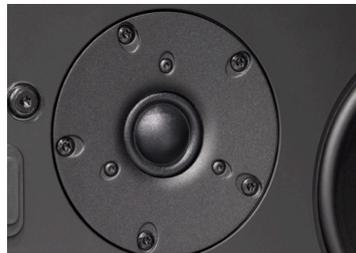
The system's ability to handle musical content is worthy of separate note. Since directors focus more on sound quality when recording music, the result is always very good. From the music stand point, the system evaluated as neutral but good: it does not contribute anything new to the audio (if you previously deactivated the relevant "gad-getizers") but the combination of high detail and excellent dynamic performance makes the sound expressive and realistic.

M&K Sound Audio System is Also Very Musical

In two-channel mode, the music sounded like it was coming from a reasonable-quality high-end stereo system but since the subwoofers had been disconnected to make the test cleaner, bookshelf monitors were the object of the hypothetical comparison, of course. In addition to the high resolution, the good volume, the extremely comfortable and natural sound, M&K Sound satellites demonstrated high overload resistance.



Where in theater mode, the huge dynamic performance margin and the high acoustic pressure could be explained by the number of sound systems involved, in stereo mode, the pair of speakers was left face to face with a large and acoustically set up room. And even then, the IW300 performed confidently at any volume level without even a hint of overload.



Fabric HF-Drivers Pro- duce Clear and Comfort- able Sound

However, the most interesting use of the theater for music play back is listening to concert re-

cordings in Auro 3D format of which there are plenty. Play back of the Vienna Philharmonic Christmas performance produced the effect of being completely immersed in the event. I have never listened to a concert like that live but judging by my impressions from the experience and based on the fact that microphones in the auditorium hung from the ceiling over the musicians' heads, I can hypothesize that the play back was quite realistic.

Conclusions

If memory serves, the nature and the sound quality of M&K Sound audio have not changed in the 10 years I have been following them. And stability in this case is a mark of quality. It is also extremely important that speakers of different sizes, types, and power are fully compatible. The sound field was really wholesome and seamless which is extremely important when working with object-oriented audio codecs.



The HF-driver of the back satellite is located at the bottom because even the lowermost level has to be positioned slightly above the audience's ears.

When setting up a high-end movie theater that uses M&K Sound audio equipment, do not forget to ask the installer to create several pre-installed modes in your AV processor that would reflect your audio preferences. This way, you will be able to "liven up" some badly recorded movie sound tracks and get the desired sound coloring when listening to music. And even in this case, I cannot help but recommend that future owners of such movie theaters be more careful about the quality of the audio content they will be playing back. This is the only way that listening and viewing will bring you maximum enjoyment.

Pros: high level of quality, comfortable and natural delivery of the sound tracks, a good choice for listening to music

Cons: the theater is sensitive to content quality

Official Website: [MK Sound IW300](#), [MK Sound MP150II](#), [MK Sound IW5](#), [MK Sound S300T](#), [MK Sound X10](#), [MK Sound X12](#)

Specifications

MK Sound IW300

Type: In-Wall
Quantity in Theater: 3 (main level front and center)
Frequency Range: 80-22,000 Hz
Sensitivity: 93 dB
Impedance: 4 Ohm
Power: 25 - 500 W
Dimensions: 430 x 345 x 120 mm
Weight: 10 kg

MK Sound MP150II

Type: On-Wall
Quantity in Theater: 4 (upper level front and back)
Frequency Range: 77-22,000 Hz
Impedance: 4 Ohm
Power: 25 - 400 W
Dimensions: 314 x 268 x 137 mm
Weight: 7.7 kg

MK Sound IW5

Type: In-Ceiling
Quantity in Theater: 5 (ceiling level)
Frequency Range: 100-22,000 Hz
Sensitivity: 80 dB
Impedance: 4 Ohm
Power: 80 W
Dimensions: 4,164 x 124 x 103 mm
Weight: 2.4 kg

MK Sound S300T

Type: On-Wall, Tripole
Quantity in Theater: 2 (main level back)
Frequency Range: 80-22,000 Hz
Impedance: 4 Ohm
Power: 25 - 400 W
Dimensions: 345 x 345 x 180 mm
Weight: 12 kg

MK Sound X10

Type: Subwoofer
Quantity in Theater: 1
Frequency Range: 20-200 Hz
Power: 350 W
Dimensions: 380 x 560 x 420 mm
Weight: 28 kg

MK Sound X12

Type: Subwoofer
Quantity in Theater: 1
Frequency Range: 20-200 Hz
Power: 400 W
Dimensions: 440 x 660 x 460 mm
Weight: 36 kg