

# STEREO — VIDEO & MULTIMEDIA — STEREO

## AMR CD-77 Review

### ‘Elegant Heavyweight’

By Nikolay Mikheyev  
Authorised Translation

Price: EUR9800



In Stereo Video & Multimedia № 2, 2010, we introduced the AMR Premium Class CD player, the AMR CD-777. Positioned above its "elder brother" is the CD-77 Reference Class Compact Disk Processor, a real "monster" in the world of CD players. The development of this machine by AMR was based upon an uncompromising vision to attain the highest level of CD playback. The following is a review of this machine.

Abbingdon Music Research (AMR) - a truly British company was established with the aim to revive the British tradition and approach to the design of high-end audio equipment: it has succeeded in this regard.

Based upon the invaluable experience and solutions of their outstanding designers with a single desire to do everything from scratch, using their own approaches, this is a rare ambition. A huge number of patented technologies, the best time-honoured components (many to military standards), the so-called "old school" approach where the final product voicing is carried out by referencing to their vinyl systems - that's what AMR stands for and, without exaggeration, they develop unique products.

The motto of its engineers is - "Maximum musicality and precision." And AMR strictly adheres to these maxims. Technical director and principal developer Thorsten Loesch - a known audio designer is a staunch supporter of valve circuitry and at the same time, is a specialist in digital electronic design, who boasts a long record for original, exceptional circuits.

Thorsten Loesch considered a project to create the CD-77 as an attempt to implement single-ended tube-like sound signature with hybrid components. And we can attest that this brief was successful!

Uncompromising approaches and solutions without regard to cost and commercial viability, along with high cost of hand-selected, best components and technologies are all not often found in mass production. The

result by AMR - is indeed, outstanding. There is nothing on a similar concept plane, with such complicated circuitry, stylish design and a completely "too heavy" form factor. Yes, it is very expensive, but it sounds like it! No wonder other reviewers have been unable to find a player to compare with the CD-77, for *any* money.

Let us carefully consider the CD-77 - "heavyweight", which, in the opinion of eminent experts, is one of the most interesting and unusual CD-players ever produced. No wonder, because the developers of this reference-tube device set themselves the task of creating a player of equal or even superior to the quality of sound from Super Audio CD.

According to their objective, this machine is capable of being the bridge between the analog sound of vinyl/master tapes and digital recording.

### **Appearance**

Weight and size characteristics make the AMR CD-77 more than impressive. Weight - 28 kg, with an almost half-meter width and depth, the chassis is made from extruded aluminum with walls as thick as a finger. It seems that it was produced in a tank factory! The remote control is like a neat, flat brick, metal mass of 1 kg. Note, it is only a CD-player!

For comparison purposes, for you to be clear about the non-standardness of this machine, a vintage reel-to-reel tape recorder weighs about 22 kg with its three motors, thin shaft, kinematics, powerful chassis and rugged looking, stuffed, beneath lies all good electronics.

For maximum vibration control and to reduce resonances, the aluminum housing for the CD-77 was sourced from the aerospace industry. The result: excellent anti-resonance, thermal and electrical properties.

The powerful, large front panel with smooth contours is equipped with a display that emits a blue glow that is also used to highlight each of the five touch-sensitive buttons located below the display. To the left and right of the top-loading CD tray - are three windows through which are a total of six valves.

Each window is intended not for admiring the contents of the player but for its ventilation properties as there are slits between the acrylic and the chassis to facilitate cooling. This proprietary cooling system is called OptiCool® and has enabled them to abandon traditional heatsinks that incidentally, resonate.

The neat remote control is equipped with a touch-screen and also emits the same blue glow. On the back of the CD-77 are analog XLR and RCA connectors, the power switch, IEC connector and a USB-port. To complete things are - four large legs with inserts made of a special material to reduce unwanted vibrations.

### **Interior**

Of course, in itself, a heavy body and large dimensions do not a serious player make. With the CD-77, this is not the only high-end aspect. Even with the high cost of the chassis, the inner contents also seem to have cost a similar amount of serious money.

The CD-77 is founded on hybrid technology, electron valves get on fine with the modern digital components and the interface of USB, which lets you use the player as an external DAC at a professional level of quality for any digital audio source. A great partner, say for the PC, where the hard disk stores hundreds of CDs.

The form factor, like a tank turret – is a secure base for the precision CD-Transport. This provides easy access via the top-loading drive. Its sturdy cover slides easily and smoothly.

Looking at it, you'll find suspended, four springs that hold the powerful CD drive in an LED-lit blue area. There is a spirit level and a heavy magnetic clamp to secure the CD-disk. This exclusive development from AMR, which received the name OptiDrive®, is based upon components from Philips (CD-18 servo system), Sony (drive K-series) and Mabuchi (engine).

The Brits have taken and thoroughly reworked electronic components and added their own separate power source. All this is placed on an aluminum platform, an isolated special "pillow". In fact, they designed from scratch the transport for CD-77, taking the best from the different companies.

The designers explain, "Philips Electronics stopped producing transports back in 2001. Today, so-called Philips transports, are Asian clones produced to quite different standards. Even the stunning Transport Victor (JVC) XL-Z900 is not available, since all manufacturers have switched to the Multi-format DVD-drives, which are by no means better quality for CD playback."

The circuit modules inside this player are each individually located within a fully shielded case. The key digital section is all located on a single board to ensure the signal path is the shortest possible and is located under the "free floating" transport unit.

Two large powerful transformers - in sealed cases and other smaller-sized elements of power supplies are located to the rear.

The analog tube output stage (OptiValve®) with low distortion and low impedance is built on NOS tubes which are to a military standard in a "dual mono" circuit without feedback. Each side has its own power supply. Tubes are fixed with special mounting clips. For protection from microphonic effects, they are equipped with special dampeners. This player uses six NOS tubes: a pair of EZ80 / EZ81 / 6CA4 double triode for power rectification, two ECC81 / 12AT7 / 6072A for amplification and another pair of 5687s in the output buffering stage.



The CD-77 has as standard analog RCA and balanced XLR outputs, to ensure compatibility with any balanced equipment. At the same time, to maximize the sound quality, the designers kept to a single-ended electronic circuit throughout.

All the high-quality components in this player were selected manually after thorough testing and listening. The printed circuit boards are made to a military standard, with polypropylene capacitors, proprietary music capacitors and also capacitors from the German manufacturer Mundorf. The ultra-quiet diodes are schottky, with wiring FEP of the silvered copper Teflon insulation type.

Particular attention was paid to the design of AMR CD-77's power supply. The power supply has - separate transformers for digital and analog circuits. The system optimizes the mains through OptiReg® for digital circuits. Instead of using a few simple filters, it uses 14 dual and triple-stage regulators.

The quality of the mains voltage is uncompromising, developed by Thorsten Loesch, who believes it is essential for addressing wideband digital noise. This approach, is said to reduce noise by 1000x compared to standard solutions and virtually eliminates digital noise.

At the heart of the player – are a DSP from Texas Instruments and a DAC from the "old school" style of design, the "King of the Multibit" and legendary 16-bit Philips TDA1541A DAC chipset with the latest CPLD (Complex Programmable Logic Device) circuitry.

AMR was able to buy this Philips chipset in sufficient numbers together with NOS tubes. This retro-DAC came soon after the launch of CD and to establish this format (recall that the first CD was released in 1982) this chip was made to be

the strongest performer of all time. It was developed in the 80's, when the price was not the № 1 issue. As a result, according to the developers of CD-77, the most "cool" modern DACs are nowhere near for attaining the "humanity" of sound.

The TDA1541A has established a reputation as one of the best DACs (if not the best) and is widely used in the construction of high-end equipment. Despite the fact that this chip was withdrawn from production a dozen years ago, according to many professionals, even today, no other chip approaches it for musicality.

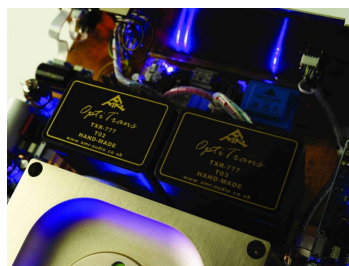
The British designers have thoroughly investigated this good old chipset and realized there is even more performance to be extracted from it. Some experts recommend the use of specially selected chips as the most successful modification to the Philips such as the Double Crown TDA1541A, which sounds better than its standard version. However, this version is absolutely unavailable. In addition, the developers found that the improvement in sound was far less after they improved the standard version of the chipset externally. They developed the OptiSignal® electronic circuitry to work with the TDA1541A and as a result – playback is almost "live" via this digital medium.

Taking the stance that standard approaches to reducing jitter were unacceptable, the company developed its OptiClockLock® system. According to the developers, the main drawbacks of the traditional solutions – are false representation about the accuracy of the clock generator, especially the so-called “super-

clock". Common machines have several clocks that are of medium quality so they can be further improved by a "Super Clock" because they generate inconsistent signals with one another. The result is - jitter, digital noise.

To reduce jitter, the OptiClockLock® system fed by its own power supply, has very low noise and synchronizes all the internal clocks of the CD-77 with the main temperature controlled master clock - a precision oscillator of military standard.

As a result, the standard DAC chip is brought up to operate at the level of the "two crowns" chipset. And the noise, according to developers, remains at a level close to the theoretical limit of how low noise can be.



The TDA1541A chip allows one to make analog and digital filters in the external circuit, and it gives developers the freedom to experiment.

They used the Texas Instruments DSP and developed their own software that allows users to offer different sampling options through a digital filter with six versions of sampling, which are supposed to meet virtually all sound preferences (via OptiSample®, the listener is able to choose sampling via the remote control).

Among them - Digital Master I does without digital or analog filtering, to ensure the highest possible frequency fidelity. Digital Master II – with a simple analog smoothing filter that compensates for the slight roll-off at higher frequencies inherent in (according to the AMR developers) Digital Master I. Therefore, Digital Master I is useful for bright recordings.

However, to maintain the same, the developers, recommend Master II as the standard for enjoying music. Other options: 2 times or 4 times Oversampling and Upsampling (oversampling frequency of 96 or 192 kHz) can also be used if you want to make the sound more detailed and dynamic which also gives rise to a harder, "digital" sound.

The designers of the CD-77 also made sure that the "management" (operating system) includes such peripheral functions as monitoring the external environment and protection from dangerous fluctuations. For example, sudden changes in line voltages outside of tolerances.

And about the little things that speak volumes about a person's knowledge. To replace the batteries, the remote requires a screwdriver – with a mounting screw with a fine thread. Instead of screws with washers and instead of ordinary steel – they are stainless steel.

Impressive design, this is a "Museum" package and the machine itself, arrives in a deep, huge and luxurious aluminum case along with an exhaustive corporate test CD, which has warm-up tracks, high-quality interconnects and power cables



with the logo of AMR. The manufacturer has even taken care of such trifles as high-quality fuses.

The gold-plated AMR Gold Fuses were developed after years of testing and auditioning and deserves a few words. Its ceramic body – antiresonance, helps to eliminate microphonic effects. The high-grade silver alloy fuse wire eliminates microphonic effects and offers low inductance and does not lead to a drop in power. The end caps are non-magnetic, 24K Gold plated brass capsules.

Now some criticisms. Perhaps, except for a USB-port it would have been nice to equip the AMR CD-77 with a digital optical Toslink input (Interface S/PDIF). It would have surely made this wonderful machine, perfection. But the British claim that the connection of an S/PDIF in combination with a high-precision internal clock generator would have degraded the sound quality of this player.

Somewhat surprising is the lack of a digital output. The developers explain this by saying that they are unable to offer transport connections to an external DAC without an unacceptable rise in jitter generation. And perhaps, they are convinced that there is no better DAC on the market than the one that resides in the shell of the CD-77.

Finally, this player does not offer a headphone connection. I quote again the AMR developers: "Virtually all CD recordings were designed to be played through speakers. So playing through headphones is not realistic. To improve this situation requires special digital

and analog processing. We think that this task is best left to specialized amplifiers for users of headphones."

## Sound

This expert player was auditioned in a system with other AMR products all from the experts at "English sound", which is the exclusive distributor for Abbingdon Music Research in the Ukraine and CIS countries. The reference path - from AMR (hybrid integrated amplifier AM-77, professional monitors LS-77).

When the player is powered on, it activates a 45-second warm up. These figures are displayed on the front display and the countdown – another sign of the pedigree and professional approach of the developers behind the design of the CD-77. During this time the mysterious optimisation schemes do their job and, among other things, gradually power-up the tubes. Then the device can be switched to standby mode, which maintains power to the digital section, but the tubes are turned off to prolong their service life.

Specifically the sound of "British" machines – is liveliness, as well as a focus on definition, their harmonious combination and an excellent transfer of nuances. It is not over-analytical, with very warm colors. The result – this machine has a very good tonal balance, especially in the mode of Digital Master II.

This player coped with difficult tasks - to preserve the balance of resolution, clarity and detail, without rigidity or sharpness. There is a completeness to the sound stage, resolution and

transparency. Of the dynamics, without batting an eyelid, it is able to move from a quiet whisper to a violent attack. From micro to macrodynamics, no questions asked.

The broad bandwidth and tonal accuracy of sound the CD-77 is perfect: from the bottom to the top - no coloration, protrusions, such as romance. The low frequency performance of this "battleship" is just the tops. From the upper bass register and down - all articulated, tonally correct, tightly executed without flinching. In this powerful player, it has "adult" bass, not hard and not rounded. It has lots of inner fire, builds up a firm, durable, but not homogeneous foundation. It's not just digital bass, more tonally rich, realistic bass.

Lively, with fast attack, the mid-bass means the music is imbued with an infectious rhythm, while the mids are not artificial. The upper frequencies are of air, clean and without any sharpness or being artificial.

A big plus for this apparatus is that it is capable of working "in tandem" with a computer. This is not just another high-end player, but *the* digital machine. And at the same time – what a standard of sound quality. It is impossible not to note its unique ability to adjust to the tastes of listeners - six instantly switchable sampling modes. Freedom of choice - this is cool.



## **Summary**

You may ask why do you need to still buy a CD player like this AMR CD-77?

Let us think. With the vinyl renaissance, today the volume of sales has barely reached 1% of the total volume of music sold. It seems that under the onslaught of computer formats the same fate awaits its polycarbonate "brother".

But let us not forget the large quantity of hugely expensive turntables available now in comparison to the peak period of development. Audiophiles have not parted company with vinyl, rather, come back to vinyl, attracted ultimately, by the quality of its sound. This is the same case with CD.

One must confess that over the last quarter of a century, CD playback has matured and the difference in quality to vinyl has narrowed. Has the full potential of CD been fully explored?

One last thing, there is such a thing as tactile contact with the music storage media. So, if you are not ready to part with your CD-discs, you have to examine closely such a unique machine as the AMR CD-77.

### **+ Advantages:**

Uncompromising sound, unique and outstanding conceptual design

### **- Disadvantages:**

Lack of headphone output and a standard digital input

## Specifications

### Modes:

Direct Master I; without analogue and digital filters

Direct Master II; without a digital filter, analog filter anti-sin (x) / (x)

2x Oversampling

Oversampling 4x

Upsampling 96KHz

Upsampling 192KHz

Transport in-house design, top-loading

Digital audio inputs 1 x USB interface, 1 XS / P-DIF interface (optional)

Analog Outputs: 1 x RCA; 1 x XLR to channel

Digital outputs: 1 x S / P-DIF interface (optional)

Valves: Rectification: EZ80 / Amplification: ECC81/12AT7 / Output Buffering: 5687

Output voltage, V > 2

Output impedance, Ohm < 100

Frequency characteristics, Hz (+0.0,-0.5dB) 20 - 20 000

Signal to Noise Ratio 'A' Weighted: > 100 dB

Total harmonic distortion + noise (THD + N) < 0.3%

Dynamic range, dB > 90

Channel Separation, dB > 100

Power consumption, Watts Standby: < 45, Power on: < 90

Rated voltage 100V/120V/230V ~ AC 50Hz - 60Hz

Colour champagne, dark titanium

Dimensions (WxHxD) 46x16x47 cm

Weight, 28 kg