

LA Audio File

Product Review (July 2011) Anthem - MRX 700 A/V Receiver

By Kevin Nakano

Anthem has finally entered the home theater receiver market with their new MRX series. While they are widely known for their high-end components, Anthem seems to have taken what would otherwise be untouchable gear into the affordable category. There are plenty of audiophiles who would love to own Anthem products, but simply cannot afford to. Anthem's history goes back over a decade when the Canadian company emerged from what was known as Sonic Frontiers International. In the late 90's, Anthem merged with Canadian speaker company Paradigm to create a powerful entity — combining high-end electronics with reference quality speakers.

More recently, Anthem is well-known for their high-end processors (Statement and AVM series). This is their first entry into the more mainstream receiver market, but they do it with a reputation that audiophiles recognize. Anthem is offering three MRX receivers (300, 500, & 700), with each higher numbered model offering more output power and built-in features. We are reviewing their flagship MRX 700, which includes 120 watts per channel in 2-channel mode and 90 watts per channel in 5-channel mode. All three MRX receivers include Anthem's Room Correction (ARC) system, which samples audio sweeps from 5-10 listening positions and then computes and compensates for room acoustics, frequency response, and time delays. We will talk more about this later. These receivers can scale video up to 1080p60 and fully supports 1080p24 (Blu-ray) mode. They can also decode Dolby TrueHD, Dolby Digital Plus, Dolby Digital EX, DTS-HD Master Audio, DTS-ES



(Matrix, Discrete), and DTS 96/24. Listening modes include Anthem's own AnthemLogic-Music and AnthemLogic-Cinema along with Dolby Pro Logic IIx (Movie, Music, Game), Dolby Pro Logic IIz, DTS Neo:6 (Music, Cinema), Dolby Virtual Speaker (Wide, Reference), All Channel Stereo and Dolby Digital EX. Other notable features on the MRX 700 include an AM/FM receiver, Internet radio via built-in ethernet port, HD Radio and the ability to play music from a flash drive or USB hard disk drive. The MRX 700 offers the latest 3D Support over HDMI through a software upgrade.



The MRX 700 weighs in at just over 35 pounds and measures approximately 17.25" x 6.5" x 15.25" (LxWxD). The unit has a nice black brushed aluminum front panel, similar to other high-end Anthem products and can be rack mounted with an optional kit. The front panel button layout is simple with navigation controls on the left, input select buttons in the middle and the volume on the right. A sliding access panel on the lower left reveals a headphone jack, standard A/V connections, and a USB port. This section of the front panel is normally covered for aesthetic reasons.

Connections

The back of the MRX 700 has a nice selection of analog and digital interfaces to support



current and legacy components. Four HDMI inputs and a single HDMI output are provided. Digital audio interfaces include two coaxial and three toslink inputs. There is also a coaxial and toslink output for audio monitoring. Three full sets of component video inputs are supported along with three composite sources. The good news is all of the analog video inputs get converted to the digital domain, so you can view this on your HDMI display. All seven sets of multi-way speaker terminals are provided. The 7.1 preouts and a 2-channel (Zone 2) preouts are provided. The 12-volt trigger output can be used to signal other components such as an external power amplifier that the receiver is on. This receiver can communicate over a hardwired RS232 interface for better reliability than line-of-sight IR commanding. However, there is also an IR input and two IR outputs if the user wishes to use a wired IR interface. Wired ethernet, USB, and a proprietary Anthem Dock connector are available. There is no WiFi built into this unit. AM/FM and HD Radio antenna connections are made through an F-connector and twin leads. A detachable power jack is provided. This can make it easier to install in tight places. The IEC input power jack does not have a ground pin, which was good to see since grounding can sometimes cause ground loops.

While there are some who might complain about the MRX 700 not having 7.1 analog input jacks, I did not find this to be an issue, especially when using this receiver with an OPPO BDP-95 or BDP-93. This universal (SACD, DVD-Audio, DVD-Video, and Blu-ray) player supports virtually all formats over HDMI. The downside (if you call this a downside) is you have to use the DACs in the MRX 700 and not the ones in your source component. We were somewhat surprised to see composite video support with no s-video interfaces on the receiver. However, in Anthem's defense, few products are using s-video interfaces so it may be completely justified.

The Insides

Under the hood, the Anthem *MRX 700* consists of several circuits. Four layers of boards are stacked near the rear panel to support the many interface connections. I counted a total of nine boards inside of this unit. The *MRX 700* has a large toroidal power transformer, which is typically only found on high-end amplifiers. Toroidal transformers offer several advantages over traditional laminated power transformers. They provide quiet, efficient operation with very low stray magnetic fields. Buried deep in the main amplifier board are two high quality audio-grade ELNA capacitors that are used for the power amplifier voltage rails. Each of these two rails use a 71 volt, 18,000 uF capacitor for filtration and charge storage. These capacitors are some of the best in the industry with low ESR (effective series resistance) for maximum audio performance. Even the chassis of the *MRX 700* has special conductive elements that ensure a good connection to the cover to help reduce EMI.



Audio Processing

The main processing board has two Texas Instruments TMS320D788 32-bit Digital Signal Processor (DSP) chips to handle the Dolby Digital and DTS as well as other functions. The 8-channel audio is converted from the digital domain to the analog world using a Cirrus Logic CS42528 multi-channel DAC. The analog audio runs through an 8-channel volume control (R2A15218FP) chip, which is the same device we have seen in other A/V receivers including Denon and Yamaha. The 7.1 channel preouts run through JCR 2068D opamps before exiting the rear panel. Also included on this board is an ST Microelectronics STM32F103 high-performance 32-Bit ARM Cortex-M3 Processor.

Video Processing

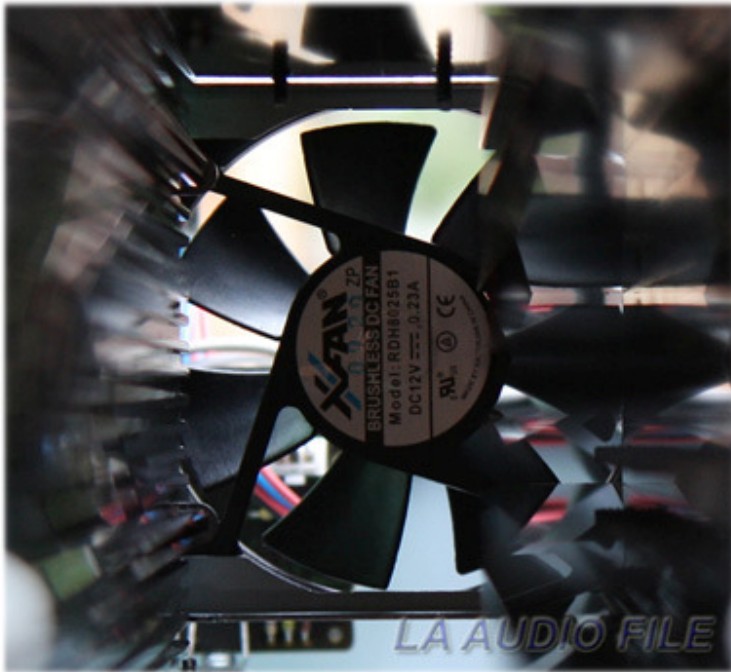
The incoming analog and HDMI video is handled by an Analog Devices [ADV7840](#) video chip, which includes a 3D Comb Filter Decoder (for analog video) and a 4-channel HDMI receiver. The analog composite and component video inputs are converted to the digital domain allowing for a single HDMI connection to the display for all types of video sources. The analog video outputs use an Analog Devices [ADV7342](#) digital-to-analog video encoder for the component and composite outputs. The digital video board sits on top with four HDMI inputs and one HDMI output. The HDMI output is handled by an Analog Devices [ADV7511](#) HDMI transmitter, which is fully HDMI 1.4 capable.

Seven Amplifiers

Each of the seven amplifier channels use a complementary pair of SanKen NPN/PNP (darlington) output transistors. These high gain, complementary 15 amp (130W) output devices are capable of driving reasonably low impedances. The *MRX 700* is capable of 120 watts RMS (8 ohms) per channel in 2-channel mode and 90 watts RMS (8 ohms) per channel when driving 5-channels. We installed some pretty demanding M&K speakers on all five channels (rated at 4 ohms) and the *MRX 700* had no problem driving them. We recommend using higher impedance (6 or 8 ohm) speakers, but we wanted to emphasize that this receiver has good drive capability. All of the speaker outputs have relays to prevent speaker "thump" during power on and power off.

Keeping It Cool

Anthem does not rely on passive cooling alone to keep the output transistors cool. Instead, all 14 output transistors are mounted on a foot-long tunnel heatsink with a 3.25" muffin fan installed on one end to provide more airflow if needed. Normally the fan is not running and appears to be temperature controlled. During my course of the review, I never heard any noise from the receiver, which is a good sign. The unit did get warm, but never hot. Adequate ventilation is always recommended for A/V components to increase reliability.



Remotes

The *MRX 700* comes with two remotes for convenience. A full featured design (8" x 2.25") for controlling all aspects of the powerful *MRX 700* and a smaller remote (4" x 2") for the simpler tasks. Personally, I would have liked to see the dumbed-down, backlit remote design that remained physically larger. For some reason I find the smaller designs more difficult to use ergonomically. However, the intent is understandable and it meets the simplicity goal.

The main (larger) remote is laid out well and the backlight is one of the better ones I have seen over the years (okay decades). Instead of using a strange backlight color, this remote simply uses white (Thanks Anthem!). This makes it easier to read. The buttons are a little small, but still completely useable and spaced far enough apart for ease of use. The remote uses a pair of standard "AAA" batteries.

The smaller simple remote has no backlighting and runs from a standard lithium button type battery (CR2032) commonly found in smaller portable devices.



Installation

For this review, we swapped our Denon AVR-5308CI A/V receiver with the MRX 700. Speakers included a trio of M&K S150THX speakers to the front channels and a pair of M&K SS-250 surround speakers in the rear channels. All five speakers are pretty demanding and are rated with a nominal 4 ohms impedance. We connected a single M&K MX-350THX subwoofer to the receiver as well. Source material came from an OPPO BDP-95 Universal Blu-ray player. We also have a Dish Network ViP 722 high definition satellite receiver with an integrated ATSC tuner for local broadcasts.

Our Anthem LTX-500v projector (same as DLA-HD950) is mated to a 100-inch 16:9 Stewart FireHawk. We used Accell's UltraRun active HDMI cable between the MRX 700 and the projector that is mounted in the back of the room. The walls are covered with *Echo Buster* sound absorption panels to help eliminate slap echo and significantly reduce the RT_{60} time in the room. Secondary reflections, which often blur the sonic image are largely reduced or eliminated with these panels.



Main Menu

The menu system on the MRX 700 is set up to be simple. Anthem even has a *Quick Setup* to get users up and running with minimal configuration inputs. Users just need to specify HDMI or analog TV, component video resolution (if analog TV is selected), subwoofer (if installed), and the number of speakers in the system (5 or 7). Once this information is collected, the MRX knows how best to configure the receiver. There are too many sub menus to list here, but each sub menu on the screen has many more configuration parameters available for user definition. You can see a deeper list of menu controls below.

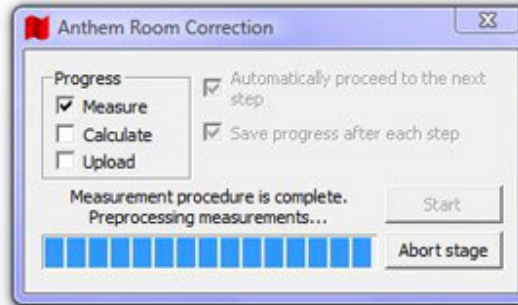
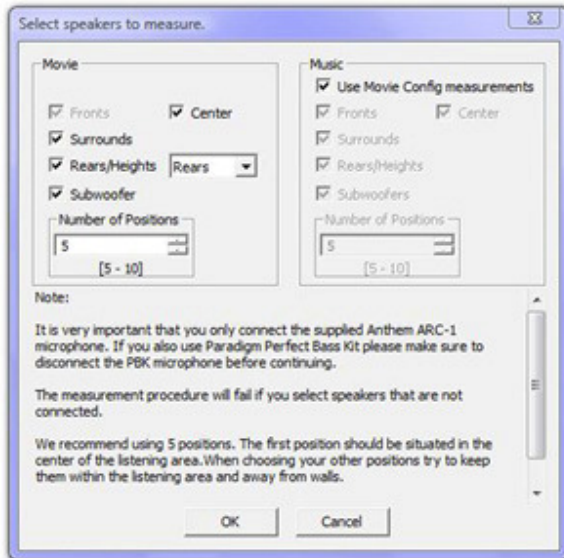
[Video Output Configuration](#)
[Speaker Configuration](#)
[Audio/Video Setup and Presets](#)
[Display/Timeout](#)
[Trigger Configuration](#)

[General Configuration](#)
[System Information](#)
[Quick Setup](#)

Anthem Room Correction

One of the premium features offered on MRX series receivers is Anthem's Room Correction (ARC) system. The ARC kit comes packaged in a separate box that includes a USB microphone, sturdy tripod, USB cable, RS232 cable, software, and instructions. The cables are long, so there should be plenty of length as long as you have a laptop handy. Since most modern-day laptops do not have an old-fashioned serial port, Anthem provided us with a Keyspan (model USA-19HS) USB-to-serial adapter that can be used for both room correction as well as firmware upgrades. The calibration microphone also plugs into the laptop through a USB port. The tripod is fully adjustable allowing for virtually any simulated seating position. Anthem requires the microphone to point straight up where the listener's head would normally be positioned. ARC analyzes each speaker's in-room response then sets output levels, crossover frequencies and room correction parameters accordingly. This applies to each of the speakers being measured. ARC has separate corrections for music and movies.



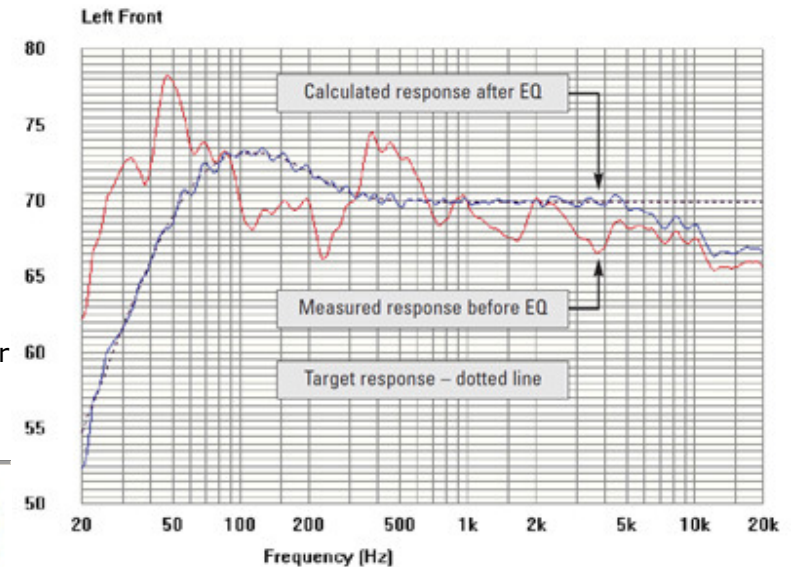


Running ARC

We ran V3.0 of the ARC software on our laptop. The ARC goes through 3 basic steps as part of the calibration process. Measurement of 5 to 10 seating positions are first acquired. For each seating position the ARC sweeps frequencies 8 times per channel including the subwoofer. Each seating position took about one and a half minutes to complete for our 5.1 system. Larger 7.1 systems would take a bit longer. For calibrating our five seating positions, it took about 10-15 minutes depending on how fast we set up the microphone for the next seating position. It was a fairly painless process and similar to the Audyssey calibration I performed on my Denon (AVR-5308CI) receiver.

Graphic Results

The collected data is then processed by the computer and finally transferred back into the MRX 700. The advantage of this system is it relies on the processing power of a computer with full 64-bit floating point processor to calculate the correction curves to a high degree of accuracy. In addition, the external laptop typically has a lot of memory and storage space. The ARC design makes sense and the performance we experienced with the room correction was excellent. The nice part about running the correction algorithms is that you can see the results in graphic form. Once the ARC completes, a frequency response chart (dB versus Frequency) with three plots for *measured* (red line), *calculated* (blue line), and *target* (dotted line) are displayed for each of the channel. This is purely a frequency graph and does not indicate any time delay corrections applied to the channels. Users can run a fully automated ARC or go manual. It is up to you.

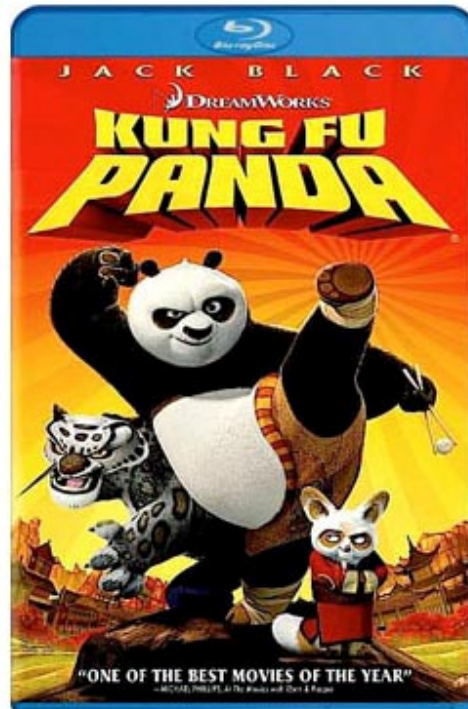


Video Performance

The MRX 700 handled any video we threw at it and did so with excellent results. Whether it was blu-ray running 1080p 24Hz/60Hz or objectionable artifacts. The high definition seen it in our system. Video revealed the same false contouring through changing gradations. from *Kung Fu Panda* where *Po* fights with *Tai* aggressive sounds for several minutes. This was were thoroughly impressed.

Analog video material from DVD also looked using the HDMI interface. This is likely due to

The picture produced by our Anthem LTX-video running through the MRX 700. I never system, but there is a first time for everything.



standard DVD over HDMI, video was free of any material looked unaltered and as good as we have always rich, well saturated colors we have always seen with no One of our favorite audio/video tests is running the scene *Lung* for the *Dragon Scroll*. There is a lot of action with a real test for us to see how this receiver performs and we

very good, but lacked some of the definition we saw when slight bandwidth loss and time shifts in the analog domain.

500v LCoS projector was nothing short of stunning with thought that I would have two Anthem components in my



Audio Performance

Anthem always pays a great deal of attention to sound quality, so it was not surprising to expect this receiver to perform well for a \$2000 unit. The *MRX 700* decoded *Dolby TrueHD* and *dts-HD Master Audio* multi-channel audio from our BD titles without any issues and the sound quality was superb from the crystal clear dialogue to the deep, tight penetrating bass coming from our MX-350THX subwoofer. We also tested a few of our favorites music discs using various formats including John Mayer's *Heavier Things* on SACD. This is a familiar recording that we play on all of our review systems. The *MRX 700* played *Clarity* (Track 1) effortlessly while keeping the brass instruments sounding analog. Bonnie Raitt's *Road Tested* in DTS 5.1 provided us an example of a well recorded live performance with exceptional fidelity with virtually no fatigue even at higher volumes with long durations. Sheila Nicholls' *Wake* album provided excellent resolution and clarity in her song *Faith*. This DVD-Audio disc includes MLP lossless audio which is considered to be a favorite among audiophiles and the *MRX 700* revealed all the great attributes of this high resolution format.

Conclusion

The *MRX 700* is quite an achievement by Anthem, balancing sound quality, output power, and features in a single unit. The result is a great sounding receiver and one that would make any audiophile on a budget quite happy. The performance is solid and the conservatively rated power amplifiers deliver an impressive home theater experience. Anthem focused the resources in the right areas and made the audio and video quality first priority. The added benefit of the ARC (Anthem Room Correction) is the excellent correction of the non-ideal properties of our room acoustics. Video processing is what one would expect in a \$2000 receiver with very good upconversion and scaling of both analog and digital video inputs.

As a reviewer, it is important for me to spend a lot of time with a product to fully engage in the way it works and how it behaves. With that said, there is little not to like about the *MRX 700*. Even without the 7.1 analog inputs and s-video support, the *MRX 700* shines in my opinion and will stay in our short list of worthy A/V components. The performance and build quality of the *MRX 700* makes this receiver a natural choice for the discerning audiophile and videophile. Those who are familiar with Anthem know their commitment to high performance, so their should little surprise that the *MRX* series of receivers meet the critical demands of their followers. For those looking into an affordable receiver made by a company known for high-end gear, the *MRX 700* is it.

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