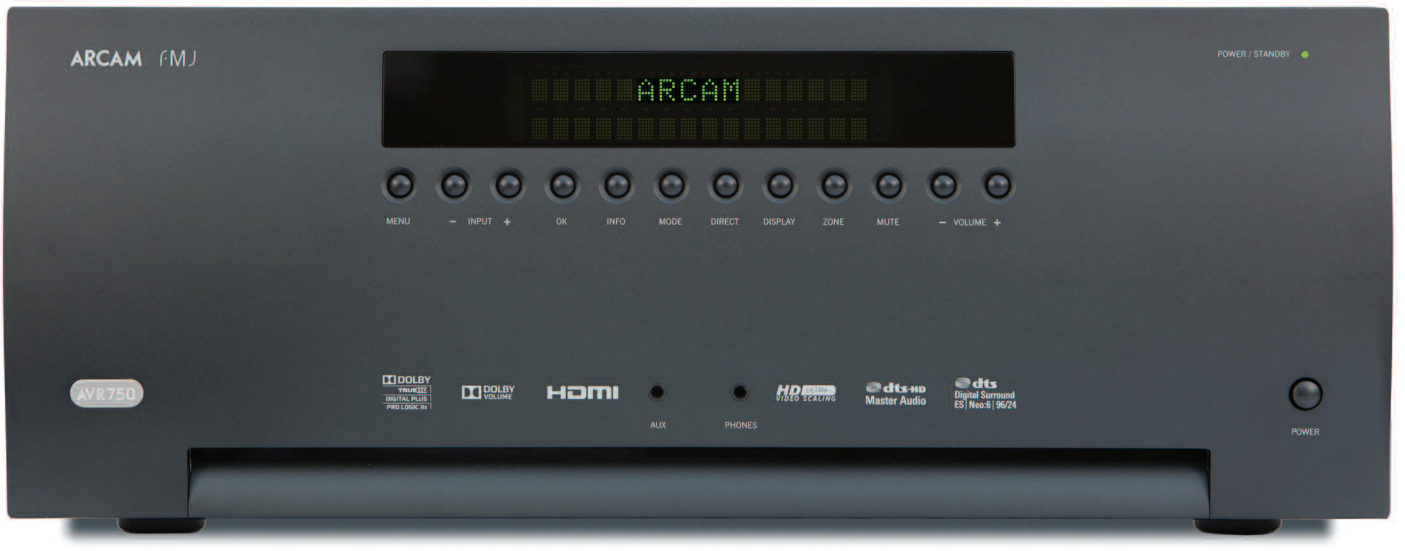


Arcam FMJ AVR750

Seven-Channel Class AG Surround Receiver

Peter Moncrieff

Just two simple things you need to know.

First, the Arcam AVR750 is a stunning advance in decoding and playing back of all your digital media. With my best digital recordings (on various media), the Arcam AVR750 produced sound an order of magnitude better (yes, 10 times better) than I have ever heard before (with video quality to match).

Second, the Arcam AVR750 contains one of the few amplifiers on the planet (the others being megabuck monoblocks) that give you both guts and glory. Indeed, I feel the Arcam AVR750 can lay claim to being the world's best Class AG amplifier, giving you both the guts (dynamic force and stupendous bass) that Class G can excel at, as well as the sonic glory (transparent, pure accuracy) that Class A can excel at.

And that, to paraphrase Keats, is all ye need to know. Just ring up your nearest Arcam dealer, get your hands on an AVR750, and start listening for yourself, hearing all your digital sources as you have never heard them before. You can thank me later—but also, above all, thank the Arcam engineers whose creative talent and assiduous work has wrought such a huge advance over their already superb previous efforts.

Digital Revelations

In my 2011 review of Arcam's AVR400 (the most recent and advanced of Arcam's previous generation of A/V surround receivers), I lauded it for being the first to crack open the door to digital's future, giving us a tantalizing peek of what the future could bring us from hi-res digital sources via interfaces such as HDMI, USB, and network connection to computer servers. The AVR400's sophisticated circuitry, especially its professional-grade jitter reduction, for the first time conquered the bad jitter and noise inherent in these digital sources and interfaces, thereby introducing us to truly good sound from these problematic digital sources and interfaces (instead of the high-distortion sound heard from competing A/V products trying to play them). For the first time, we got a tantalizing peek at the future, where the promise of these hi-res digital sources could finally be fulfilled.

The AVR400 opened this door to digital's future by a crack, giving us that tantalizing peek at the future of superior digital sound, a peek at the dancing in the ballroom next door.

Arcam's AVR750, king of Arcam's newer generation, flings this same door wide open and invites us into the spacious ballroom of digital's future, to sing, dance, and make merry—with an order of magnitude better reproduction of all digital material than even Arcam themselves had managed to achieve with their previous products. Thanks to the Arcam AVR750, that tantalizing future of superior digital sound is here and now, today

And, as Arcam's AVR750 opens wide the door for all of you, it also blows the doors off the competition. In just about every sonic parameter that matters, the AVR750 literally sounds than everything else I have heard, playing high-quality source material via all the various digital input media and interfaces.

Your key to understanding the AVR750's leap forward is simple: revelation. The AVR750 simply, utterly, undeniably reveals much more of what's in every good digital source, and reveals this in every sonic parameter that matters.

The AVR750's sheer transparency effortlessly reveals whole new layers of information that you've never heard before from your various digital sources. The subtle textures, timbres, and noises; which naturally emanate from (and which you hear live from) real musical instruments, real human voices, and real sound effects, are suddenly dramatically clearer—and thus all these sounds are suddenly much more realistic from the AVR750 than you have ever heard them before.

It's a simple equation and a simple truism: revelation equals realism. The AVR750 is a stunning leap forward in transparent revelation of all the information in your various digital source material, so it is also a stunning advance in convincing realism. The AVR750 gives you more revelation and more realism, than anything else before. It is not a subtle step upward. Your jaw should drop. (If it doesn't, then likely the rest of your system needs upgrading, to truly reveal what the AVR750 is giving you.)

Special kudos also go to the AVR750's reproduction of the spatial framework surrounding the music, the voices, and the sound effects. In reviewing Arcam's first surround processor, the AV8, I wrote that space is the final frontier, by which I meant the challenge of reproducing the space itself that surrounds (and is interspersed among) the music, the voices, the sound effects—and that also should surround you in your surround sound listening room. With each new generation of its surround processors, Arcam has steadily improved this challenging reproduction of space itself. And the AVR750 is the crowning glory of Arcam's progress.

The AVR750's revelation of spatial information, from both film soundtracks and music recordings, is such a giant leap of progress that it's spooky. The space itself has a vivid, palpable, tactile, and tangible reality that you can reach out and touch, even grab. You can clearly hear the space and volume of the recording venue as a whole, all around you. And you can also clearly hear the acoustic space immediately around and framing each soloist and each sound.

The stunning advance in transparent revelation—that the AVR750 brings to the direct sounds (of all instruments, voices, and sound effects)—also achieves wonders for the indirect reverberant sound of all the spatial information defining the acoustic space and recording venue. All the hallmarks of good spatial imaging (width, depth, rich ambience, precise localization, etc.) reach new heights when played by the AVR750.

Most remarkably, on good recordings the AVR750 seamlessly integrates all the various aspects of all this spatial information into a holosonic® experience wherein you and the performers share this tangible space together. You and the performers become united, in the same, shared spatial experience. Thus, space itself, so realistically and believably portrayed, becomes the enveloping common bond between you. And that, I submit, is a good definition for suspension of disbelief, the holy grail of most arts. That is the believable spatial realism that you and all of us seek from our playback systems and A/V experience.

After you have experienced this new, higher level of believable realism from the Arcam AVR750, there's no going back to anything lesser.

The AVR750 also sounds effortlessly natural while it's achieving all these transparent revelations. Its sound is very clean and pure in virtually all operating modes, due in part to the very rich Class A operation of the power amplifier stage. Its high frequencies are very fast, extended, articulate, and finely resolving (even delicate when called for). Its bass is astounding, due in part to the Class G capabilities of the power amplifier stage. The tonal balance of the entire spectrum, including the sensitive midranges, is neutral and musically natural.

The AVR750's sound also has a remarkably coherent and fine focus, from the very bottom to the very top of the spectrum. All parts of all transients are united together, both temporally and harmonically, instead of being splayed or dispersed apart, as they are by most other audio products. This, of course, enhances even further the believable realism of all sounds. And it also improves their dynamic impact, since all parts of each transient occur together, exactly when they should, and thereby add up to a higher dynamic peak.

All of the above qualities of the AVR750's sonic prowess are made even more striking by the fact that the AVR750 has a markedly quieter, blacker background, so that all of the above sonic virtues are thrust into even greater relief and prominence, against this quieter, blacker background. This lower noise floor seems to owe its improvement both to lower static background noise and also to lower dynamic (or modulation) noise.

This lower background noise yields the further benefits of also making the sound cleaner, clearer, and more coherently focused. Background noise masks some of the important subtle details of the signal, and it also worsens jitter, smearing, and distortion—so reducing background noise audibly lessens all these evils. These improvements are especially striking on some of the AVR750's digital inputs. For example, the USB input (usable by USB flash drive sticks) sounds about 100 times (two orders of magnitude) quieter than Arcam's previous effort (in the AVR400)—and this provides not just a quieter background, but also a much cleaner and clearer-sounding signal from USB, as though the jitter (with its smearing and distortion) had been dramatically reduced (which, in effect, it indeed has been).

Guts And Glory

Why is it so rare for a power amplifier to have both guts and glory? And what's the significance of the AVR750 being the world's best Class AG amplifier?

SPECIFICATIONS

Power Output
2 channels driven, 20 Hz to 20 kHz, <0.02% THD: 120 Watts (8 Ohms), 200 Watts (4 Ohms)
2 channels driven, 1 kHz, 0.2% THD: 130 Watts, 210 Watts
7 channels driven, 1 kHz, 0.2% THD: 100 Watts, —

Audio Performance
Signal/Noise Ratio: 110 dB
Frequency Response: 20 Hz to 20 kHz ± 0.1 dB

Inputs/Outputs
Video Inputs: HDMI (7), Component (3), Composite (4)
Audio Inputs: HDMI (7), Coaxial SPDIF (4), TosLink (2), RCA Phono (6), USB (1), Ethernet Client (1), Internet Radio, ARC
Video Outputs: HDMI (2), Z2 (1)
Audio Outputs: 7.1-channel Pre-Amp, Zone 2

General
Surround Modes: Dolby TrueHD, Dolby Digital Plus, Dolby Digital Surround EX, Dolby Digital 5.1, Dolby Pro Logic IIx, DTS-HD Master Audio, DTS-ES 6.1 Discrete, DTS-ES 6.1 Matrix, DTS 5.1
Power Consumption (Max): 1.5 kW (5200 BTU/hour)
Power Consumption (Standby): <0.5 Watts

Specifications
Dimensions (WHD In Inches): 17.4 x 6.7 x 16.7
Weight (In Pounds): 36.8
MSRP: $5,999

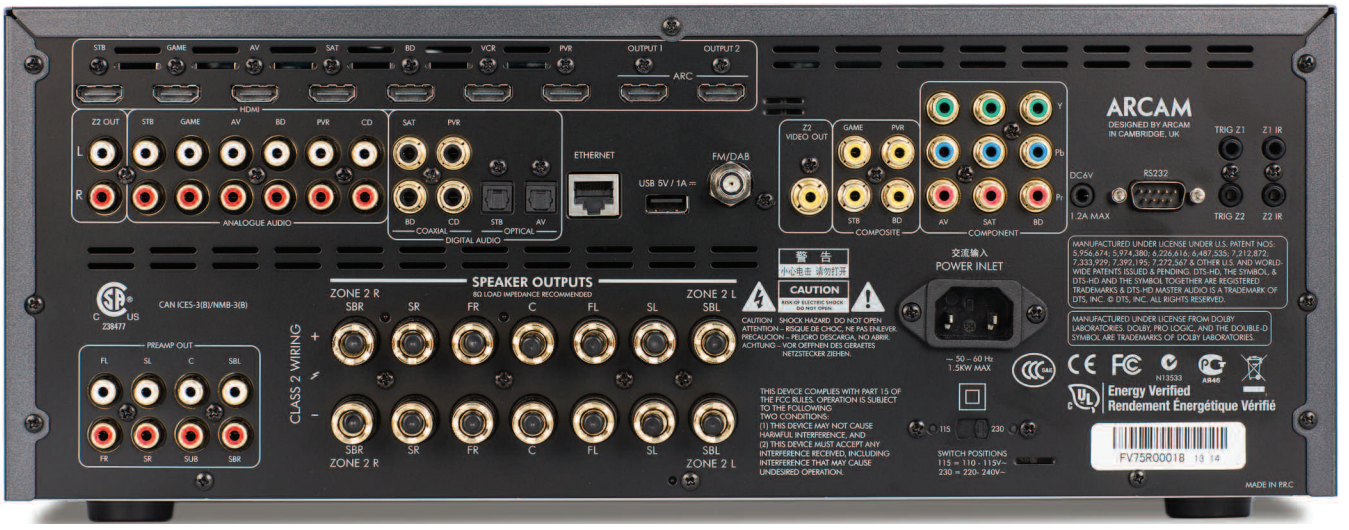
Manufactured By:
Arcam
Arcam Pembroke Avenue
Waterbeach Cambridge
CB25 9QR England
Phone: 011 44 1223 203200
Web Site: arcam.co.uk

It's no secret that Class A power amplification is the only way to achieve true glory. It can be made very linear and very fast, which means accurate and transparent revelation of the input signal. Moreover, Class A is inherently clean and pure, free of the distortion artifacts that plague other classes of amplification (e.g. crossover notch distortion, with small signal nonlinearity and turn-on delay). Unfortunately, Class A inefficiently generates a lot of heat, so the physical package to adequately dissipate this heat must be large, heavy, and therefore, costly.

That's why most power amplifiers are designed as Class AB types. They operate in Class A only at very low-signal levels (perhaps merely milliwatts of output), and then Class B takes over for the entire remainder of the power output range. The inefficient heat-generating Class A portion of this amplifier's output does not generate much total heat since it operates only at very low power. Then, the Class B operation that takes over is efficient, so it does not generate much heat, even with many watts of output power. The result is decent sound, with a lot of output power, in a reasonably sized and priced package.

Some very good-sounding Class AB amplifiers have been designed over the years, but they are still a compromise in the quest for the ideal, namely getting both guts and glory. In this quest, Class AB is neither fish nor meat. It does not have the glory that Class A does, and it also does not have as much guts as other amplifier classes can have.

What are these other classes that can have more guts? Arcam's AVR600 showed us that Class G can have more guts than Class B or Class AB, with more power and better gutsy control of the loudspeaker. In Class G, a whole separate transistor is added into the output stage at high-power levels. This separate added transistor, of course, adds more power capability. And, more importantly, it can also be optimized to improve the amplifier's high-current capability and low-output source impedance, the two chief factors that achieve gutsy sound, precisely and firmly controlling the loudspeaker's excursions.



As I found in the AVR600, properly optimized Class G can provide stupendous low-bass quality, with deep extension, powerful impact, and tight control. This is what gives guts to sound, a forceful and dynamic punch, which is even more important than mere loudness. True guts is about quality, not just quantity.

We can now start envisioning an ideal amplifier that could give us both true glory and true guts. It would marry the glory of Class A with the guts of Class G. A Class AG amplifier!

Arcam's own AVR600 was the pioneer in this area, and the power amplifier in the AVR750 is based on the AVR600, but with many improvements, which summed together make the AVR750 a major sonic advance over the AVR600. The AVR750 retains the gutsy sound of the AVR600's Class G, and then scores major sonic improvements in the glory of its Class A sound.

A key factor in the AVR750's sonic advance is a near doubling of the power provided by glorious-sounding Class A, from 20 watts in the AVR600 to 38 watts (per channel) in the AVR750. Thanks to their dynamically adaptive Class A design, Arcam was able to shoehorn an astounding 266 watts of Class A sonic glory into a modest-sized receiver chassis, with no heroic heat dissipation (38 x 7 = 266). This 38 watts per channel of Class A means that, even when playing most program material loudly, near clipping on its peaks, perhaps 99 percent of what you hear will have the transparency, clean purity, and accuracy of glorious Class A sound. This higher level of Class A also means that, when Class G kicks in to supply its gutsy abilities, any switching artifacts (distortions) will be less audible since they'll be buried under a higher level of pure, glorious Class A sound.

Incidentally, neither of the two junior models in Arcam's present AVR lineup, the AVR450 and AVR380, include this very rich Class A, nor do they include Class G. So, though they may well be very fine products at their lower price points, neither can give you the sonic guts and glory that the flagship AVR750 does. The AVR750 is what you want to get, and save your money for, if need be. The AVR750 is (literally) in a class by itself.

As I said, the AVR750 is the world's best Class AG amplifier, giving you the best combination of guts and glory. First, it gives you the glory of Class A for more of your program than other amplifiers do. And then, when a big bass transient comes along, AVR750's Class G swings into action, to give you its gutsy sound, delivering not only extra power but also the extra current and lower source impedance needed to precisely control your loudspeaker, so you hear (and feel) a gutsy kick and dynamic impact (instead of the weak, loose, woolly, or bloated bass transient that other amplifiers provide).

Optimizing Your AVR750 Experience

Since the key to the AVR750's stunning advances is revelation, obviously the AVR750 will not only reveal more about your source material but will also reveal more about the manner and care with which you have set it up and are using it. Think of this section, then, as a helpful guide to getting the most out of your AVR750's capabilities, and thus, experiencing it at its best.

First, of course, you should make sure that the rest of your system is worthy of the AVR750. The AVR750 easily reveals the strengths (and weaknesses) of the very finest components in the rest of the system, so it deserves to be partnered with the very best system components you can afford.

I partnered the AVR750 with my lab reference system, which includes: an Arcam BDP300 Blu-ray Disc™ player, an Esoteric silver disc player mounted on a Mapleshade mounting system, an Arcam D33 two-channel outboard DAC, and a surround array of seven B&W 802D full-range loudspeakers—with new "Return of the Legend" power cords and analog interconnects by Von Gaylord, digital coax interconnect by Mapleshade, Nordost Valhalla 1 loudspeaker cable, and Nordost Optix coax video interconnect.

The video from the AVR750 is superlative, continuing what is now the Arcam tradition of providing you with video that actually surpasses the video coming directly from most video sources (thanks to Arcam's superior video processing, drive circuitry, etc.). I continue to be especially impressed by Arcam's mastery of subtle luminance gradations in the midrange. Other video products often go for the superficially impressive flash of high contrast, emphasizing the luminance extremes while failing to be adequately discerning about subtle variations in the middle of the luminance range. As a result, they look cartoonish, and human flesh acquires a monotone that looks like too much pancake makeup on the actors. But this vital luminance midrange is where, for a discriminating viewer, video reality occurs and either looks believably real and three-dimensional or cartoonishly unreal and two-dimensionally flat. That's why Arcam's superior video is consistently more realistic to the eyes of a viewer who knows and recognizes what reality actually looks like—even though it might appear less impressive to the eyes of a naïve viewer who only wants video images to flash and pop.

You should break in the AVR750 with at least 100 hours of playing loud material that has a lot of high-frequency transients. Fresh out of the box, the AVR750 (like many other high-end products) sounds slightly brittle, but after 100 hours of active signal play it gradually settles into sounding as described above: neutral and accurate, articulate, yet also musically natural.

Even though the AVR750's sonic advances mostly pertain to digital sources, the AVR750 also honors analog inputs. Its Cirrus Logic codec does an excellent job of A/D conversion, as well as D/A conversion, especially as Arcam's engineers have specially configured it. In other surround processors, inputting an analog signal to then be converted to digital for processing, to then be converted again to analog for output, was a recipe for sonic disaster. There was just too much degradation after the signal had been through two conversions. But in the AVR750, for the first time, I can award a rating of

excellent for the sound of a perfectionist-quality analog source, when subjected to the AVR750's dual conversion, from analog to digital and then back to analog again.

This opens up a whole world of possibilities for you. For example, you can send the analog output from your favorite outboard two-channel music DAC (e.g. the Arcam D33), or from your vinyl phono preamplifier, into the AVR750's analog inputs, secure in the knowledge that the AVR750 will deliver excellent sound from them. Moreover, by taking this route, you can also take advantage of the AVR750's surround enhancement capabilities. I have achieved breathtaking sonic portrayals of two-channel music by applying the AVR750's surround enhancement (especially Dolby® PLIIx Music) with special settings of surround channel delays and levels. On well-miked, two-channel recordings, this enhanced surround effect, and the believable realism of being there in the same large space as the music, is actually on par with discrete multichannel surround recordings. If you want to play your two-channel analog input sources in straight two-channel mode, without surround enhancement, simply select analog two-channel stereo.

Incidentally, the AVR750, like many other digital processors, includes a Direct button, which feeds analog inputs (just two channels here) directly into the power amplifier, bypassing all digital processing and bypassing the A-D and D-A conversions. Normally this Direct path produces even better sound, but in the AVR750 it happens to produce worse sound—becoming veiled instead of transparent, with several distortions, including a sandy texture imposed on all high frequencies. The likely culprit is the electronic switch that switches in the Direct bypass path, but ironically is itself sonically sub-optimal.

Luckily, this is not a big deal. The A-D and D-A conversion in the AVR750 is so excellent that I'm happy using this longer, more indirect path for all my analog source inputs (and this is the path whose sonics are described so glowingly above). Moreover, using this indirect analog path also makes it easy to use all the features of the AVR750's digital processing section, with your choice of straight two-channel playback versus surround enhanced playback of your two-channel analog sources.

By the way, when playing older (DVD, not Blu-ray) movie soundtracks, I found that I often preferred the Dolby PLIIx Music setting to the nominally prescribed PLIIx Movie setting. The Music setting sounded markedly cleaner and clearer, and also portrayed a more solidly anchored location for each sound source across the front stage and around the surround field.

The reconstruction filter Arcam chose to use, in the on-board DAC by Cirrus Logic, affects all the sounds you hear from the AVR750. A digital reconstruction filter literally re-creates the original signal waveform from the very sketchy clues hidden in the sampled data coming off the digital disc, so different reconstruction filter designs will literally create different final playback signal waveforms, which of course can sound very different from one another.

The reconstruction filters used nowadays in DACs largely fall into two opposing design camps. One design camp uses the classic sinc (sinx/x) brickwall filter, which is symmetrical. This is the one and only correct and accurate reconstruction filter design, and boasts perfect time domain transient response (plus flat frequency response in the passband). The opposing camp designs reconstruction filters that are deliberately asymmetrical, featuring allegedly "natural causal post-response," but with no "unnatural, noncausal pre-response." These filter designs are actually inaccurate colorizers, acting like tone controls that modify frequency response and (more seriously) modify the whole waveform (including time domain transient response) of the original signal, thereby changing its sound (usually in a softer, rounder, duller, more liquid direction).

The reconstruction filter used in the AVR750 is an interesting design that lies between these two opposing camps. It has two cycles of "pre-response," followed by a full "post-response." These two cycles of "pre-response" make this filter much more accurate than those filters with only "post-response," especially for the top three-quarter of the audio spectrum (5 Hz to 20 kHz). This filter can see a short distance into the future, so it can approximately compute the interpolation path (hence signal reconstruction) to the next data sample—whereas the "post-response-only" filter design is totally blind to the future, thus, has no clue as to what the next sample value of the signal waveform will be, and therefore, cannot possibly interpolate at all between the signal waveform's past values and its future values, in order to perform its job of reconstructing the present value that lies temporally between the past and future sample values. Incidentally, the sinc brickwall filter design can see very far into both the future and past, which is why it is the only truly accurate filter design for interpolation reconstruction of the original signal waveform.

I Feel The Arcam AVR750 Can Lay Claim To Being The World's Best Class AG Amplifier...

Thus, this reconstruction filter design used in the AVR750 is much more accurate than the colorizing filters used elsewhere, yet is euphonically softer and sweeter in the upper frequencies than the completely accurate sinc filter is.

I use this to advantage by connecting my player (and outboard DAC) into the AVR750 via both analog and digital connections. When I want to hear the full accuracy of a sinc reconstruction filter (e.g. on music discs recorded with exemplary high-frequency transients, such as those from Reference Recordings and Chesky), I use a player or outboard DAC (such as Arcam's superb D33) that includes a sinc filter design, and bring that accurately reconstructed signal into the AVR750 via its excellent analog input. On the other hand, with typical recordings and film soundtracks having high-frequency glare or distortion (e.g. those processed through mixing boards laden with IC chips), I might prefer the subtle sweetening and softening provided by the AVR750's own reconstruction filter, so I simply select the digital input path to the AVR750.

Conclusion

The famous paradoxes of the Greek philosopher Zeno teach us that, as we get closer to our goal, the incremental steps of our journey keep getting smaller and smaller. That is certainly a truism and conventional wisdom of high-end audio and video. As the state of the art nears what seems like perceivable perfection, the incremental steps of yet further improvement keep getting smaller, and more costly.

Thus, it was a stunning, unexpected shock to hear the AVR750 so dramatically defy the wisdom of Zeno, and so dramatically improve upon the previous state of the art, with such a large leap forward instead of yet another small step.

Get an Arcam AVR750, play some of your reference audio and video recordings, and prepare to join me in being amazed. WSR