

Small Room Acoustics • Audio Excellence 7.2 Home Theatre System Part II

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Audio Excellence

7.2 Home Theatre Sound System

Part II

Doug Blackburn

As promised, Part II of the Audio Excellence system review is here with subjective listening results. Part I appeared in the previous issue, Issue 226, April 2018, and covered Patrice Congard's guiding principles for the design of his custom installed systems. His main guiding principle is to make his home or commercial systems produce an entertainment experience at home or in a studio that is as capable (or more so!) than sound systems in the world's best commercial theatres.

A correction that didn't make it into Part I was the cost of the system. We previously indicated \$40,000 to \$46,000 for the system as reviewed, but Audio Excellence says the correct price for the 7.2 system is \$50,000 for all the hardware. The installer/integrator will include that hardware cost in their system installation/upgrade contract, so installation labor is in addition to the cost of the hardware. While I was working on Part I, Audio Excellence was working on selling their first system in the United States. The customer, who will remain nameless, would be familiar to everyone with even minimal interest in audio and cinema/home theatre.

A quick re-cap of the Audio Excellence system is in order. The LCR loudspeakers are three-way Vertex 3 loudspeakers with a passive crossover for the midrange-high frequency and an active

DSP crossover for the woofers. Two amplifier channels are required for each Vertex 3 loudspeaker. These three loudspeakers are placed behind an acoustically transparent screen like the Seymour-Screen Excellence Enlightor-Neo screen provided for this review. This is a fabric screen where the weave is what allows sound through, rather than many solid screen materials that are made "acoustically transparent" by punching tiny holes all over the screen surface. The three loudspeakers are all mounted at the same height in the same plane. These operate from 100 Hz to 22,000 Hz. The digital crossover directs all the bass from the LCR channels (all set to "Large" in the processor) to the four subwoofers for the LCR channels. The fairly small and thin subwoofers, Raijuu 1, look too small to operate from 20 Hz to 100 Hz, but they do a surprisingly good job of it. The Raijuu 1 and Vertex 3 loudspeakers are thin enough to be placed in-wall, but the review system came with on-wall hangers attached. Two amplifier channels are used to drive pairs of Raijuu 1 loudspeakers in parallel, giving them an equivalent impedance of 4 Ohms. The number of Raijuu 1 loudspeakers will vary from room to room. The wider the room, the more Raijuu 1 loudspeakers would be installed. The goal

is to install the Raijuu 1 loudspeakers no more than the wavelength of 100 Hz apart—call it 11 feet apart or closer. The four Raijuu 1 loudspeakers provided for the review system were placed halfway between the center channel and L&R loudspeakers and outboard of the L&R loudspeakers so that they were spaced fairly equally across the width of the room. The point of this is to have them produce a single bass wave that moves across the room as a single big wave. This eliminates lateral room modes, improving bass response in the room. The Vertex 2 loudspeakers provided for the surround channels are two-way designs with two drivers, and the Vertex 3 loudspeakers are a smaller two-way suitable for small rooms or for use as height loudspeakers. Audio Excellence also provided a pair of the Raijuu 2 subwoofers, which are unpowered subwoofers with a single 18-inch driver and a port. The Raijuu 2 is considerably deeper than the other loudspeakers so it won't "disappear" in-wall unless the wall construction is much thicker than typical walls. All of the Audio Excellence loudspeakers have steel enclosures that have modern damping materials applied to all the internal metal surfaces. Rapping your knuckles on these enclosures makes less noise than knocking on the side of virtually any loudspeaker made from high-density fiberboard, the material used to make most loudspeakers these days. All of those loudspeakers in the Audio Excellence system need 20 amplifier channels to operate, so Audio Excellence provided five of their four-channel amplifiers along with one of their multi-channel digital crossovers. Another feature or lack-of-feature of the Audio Excellence system compared to most other systems is that the Audio Excellence system does not utilize any type of room-correction software. Instead, the customer's system and room are optimized to work together in ways that reduce the need for room correction.

And with no further delay, our feature presentation. I will begin the Audio Excellence system evaluation with the first observation I made after hearing the system for the first time: This is really different. I've heard bits and pieces of what the Audio Excellence system does in other systems, but I've never experienced this many things done so differently in any single system before. As discussed in Part 1, the Audio Excellence system relies on loudspeakers that are much more efficient/sensitive than average loudspeakers. That means their amplifiers can deliver extremely high SPLs without distortion and without huge amounts of current and heat. A 200-Watt-per-channel amplifier in the Audio Excellence system will play the system as loudly as an 800-Watt-per-channel amplifier used with conventional loudspeakers with more typical sensitivity/efficiency.

To make this review process entirely transparent, I should say that I was not able to use the LCR loudspeakers and their Raijuu 1 bass extension loudspeakers in the intended on-wall mounting locations. In order to use these loudspeakers in my system, I put them on top of 32-inch-tall equipment racks behind an acoustically transparent projection screen as they were intended to be used. The LCR and four Raijuu 1 loudspeakers were all mounted in the same plane as intended, but there was simply no baffle behind them, though, the top shelf of the rack offered a modicum of bass reinforcement, the loudspeakers themselves didn't sound too bad. I tried to compensate (in my head) for any changes caused by using these loudspeakers without a solid wall behind them. I was able to listen to the Vertex 2 loudspeakers mounted on-wall and freestanding on the same shelves as the Vertex 3 loudspeakers. So I had a good idea of how the lack of wall mounting affected the loudspeakers. Because the Raijuu 1 loudspeakers were on the

floor rather than being wall mounted some height off the floor, their sound didn't seem to be much different with either placement option.

I verified the high efficiency/sensitivity of the Audio Excellence system by substituting a single Audio Excellence loudspeaker used in the side surround location for a conventional loudspeaker with 89 dB sensitivity/efficiency. The Audio Excellence loudspeaker had to be brought down in level by 7 dB to match the conventional loudspeaker used in the same location. So the sensitivity spec is definitely correct. High sensitivity/efficiency loudspeakers require amplification that has an especially low noise floor. Where a -95 dB noise floor may sound low, loudspeakers as sensitive as those in the Audio Excellence system could end up producing enough noise from the amplifier that you could hear the noise in the room. An older multi-channel amplifier I have here from the early 1990s is acceptable with loudspeakers with efficiency/sensitivity below 90 dB, but with the Audio Excellence two-way side surround and back surround loudspeakers, if connected to that older amplifier, there was audible hiss and hum from that older amplifier being produced by the Audio Excellence loudspeakers. I definitely recommend sticking with the amplifiers Audio Excellence has engineered for this system. I found them to be absolutely silent in operation with the Audio Excellence loudspeakers.

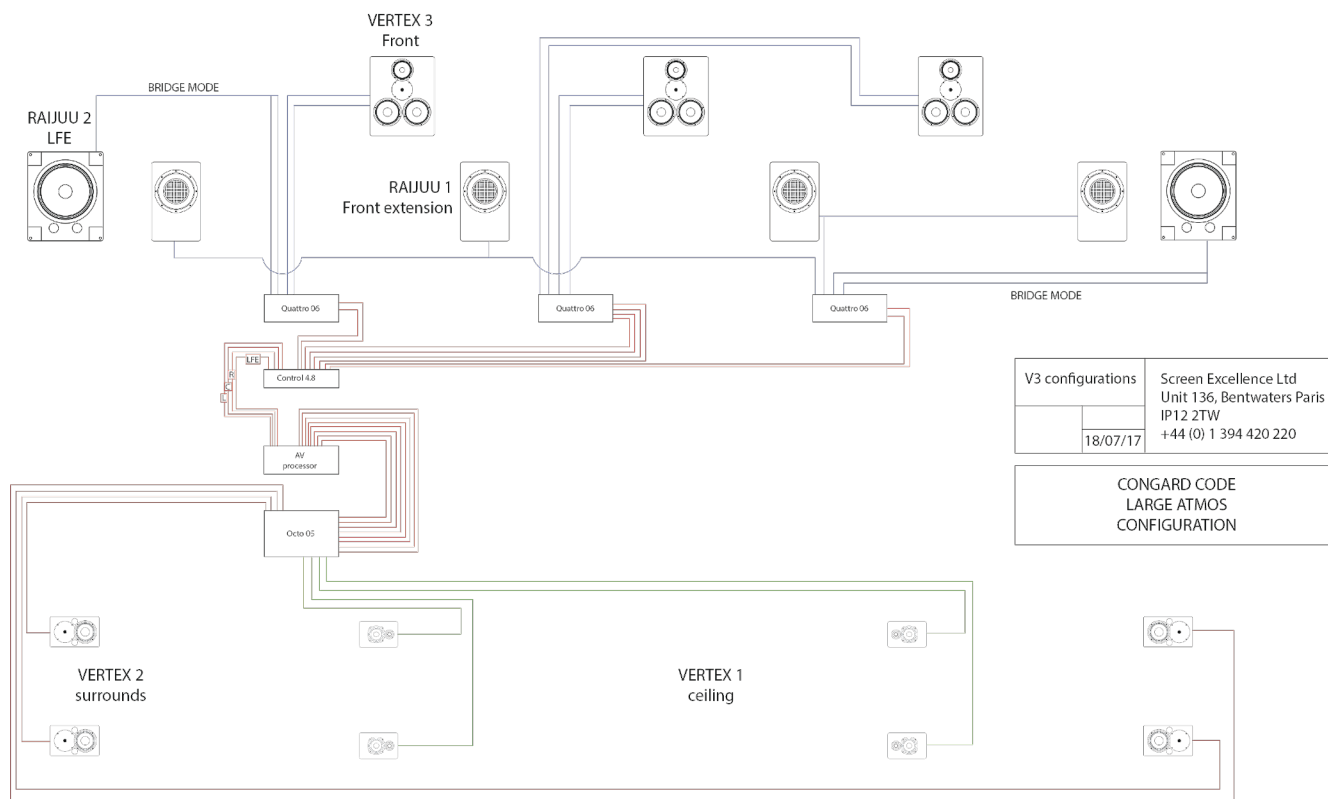
Audio Excellence 7.2 Home Theatre Sound System

Warranty: 5 year, parts and labor
Estimated system price 7.2 system, as reviewed: \$50,000;
7.2.4 system cost \$61,500

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One of the things this system does better than any home theatre sound system I've heard so far, is reproduce the bass in movie soundtracks. We have had subwoofers with "movie curves" foisted on us for what seems like decades. These subwoofers boost bass in the 38 Hz to 70 Hz range to make nice, big, satisfying explosion booms. But the director and sound engineer probably already boosted the explosion relative to other soundtrack elements, so we end up with a double-boom at home and it is not exciting. There is none of that in the Audio Excellence system. The pair of 18-inch subwoofers receive only the LFE bass signal, and with two subwoofers with a driver that big, they don't have to work very hard. The result is much smaller cone excursions, and much lower bass distortion. Any low frequencies in other channels are redirected by the Audio Excellence system to the four Raijuu 1 loudspeakers, like nothing you've seen in any other home theatre loudspeaker system. These four loudspeakers (different rooms may need more or fewer of these depending on the room dimensions) make all the bass below the limits of the LCR, surround, back surround, and height channels (if any). This keeps the LFE



Loudspeaker Configuration.

subwoofers exclusively for LFE bass. As a result, bass is powerful, extremely articulate (higher-frequency details blend perfectly with the fundamental bass frequency), and has a low-distortion character that is extremely difficult to achieve at home with most of the home theatre equipment we have available to us. If you have ever heard outdoor explosions in person, you will recognize that what you heard doesn't sound anything like what passes for explosions in movie soundtracks. Some of that is due to how they record explosions and use them as sound effects, and some of that is due to how our home theatre systems reproduce bass with drivers that are smaller than optimum, with excursions that are longer than optimum, and bass distortion that is higher than optimum. As far as I can tell, everything the Audio Excellence system is doing is the inverse of that... low distortion, (relatively) small excursions, high efficiency/sensitivity. And it is a different listening experience. There was never any hesitation on my part to warm up to the Audio Excellence system's presentation, different as it was from more typical presentations. I'm not certain everybody hearing this for the first time will think it's better since the lack of bass boom makes low frequencies sound a bit leaner than what most people are used to hearing. However, if you hear live gunshots and explosions, they do sound more like what you hear in real life when you hear those sounds reproduced by the Audio Excellence system. If the event in the movie soundtrack was embellished with "boom" by manipulating the spectral content of the explosion, you still hear that via the Audio Excellence system. But when the boominess comes from the equipment and room, it's gone when the Audio

Excellence system is properly integrated to the room. I found the bass to be so entertaining, it made me want to revisit all of my favorite movie soundtracks, all the way back to *Terminator 2*, where the chases were more visceral and sharply percussive than I remember hearing from any other system. The bass, while not incredibly obvious at times, was doing subtle things that made for much-more-realistic-feeling locations. For example, the alley the Harley Fat Boy is parked in had an especially "you are there" feel to it. I suspect it was because of very low-frequency air movements that don't make obvious sound but do make big spaces seem more real somehow by making the ambience more closely resemble what you experience in a similar location/space. These spaces "breathe" as winds change velocity and direction, sounds can change, and I did encounter that a number of times when the sound recording was done live on scene, versus being done on soundstages after production. The extreme low-frequency event at the beginning of *The Edge Of Tomorrow* was alive and fully present, filling the room with dread from the very first scenes of the movie, with the bass effect starting even before the Village Roadshow logo disappears from the screen.

I was very happy that my first viewing of *Blade Runner 2049* was with the Audio Excellence system, since the ambitious soundtrack was such an integral element of the movie. The Audio Excellence system very carefully presented the dialogue, Foley, and music as separate but intertwined elements supporting each scene. For this movie, the silences and subtle sounds are as important as the big moments. The rumbles and booming sounds

“Music Video Was As Immersive An Experience As I’ve Had At Live Performances.”

reveal more differences in bass pitch and integration with higher frequencies. Silences are palpable, and sounds in unusual spaces, like the stone room with water surrounding a platform, exhibit subtle layering of echoes that makes the space peaceful and foreboding at the same time. The unusual street sounds are considerably more complex than they seem to be on first hearing them, and the spatial placement of sounds around the central focus of street scenes were exemplary. The ability of the Audio Excellence loudspeakers to differentiate subtle pitches and levels produced very convincing outdoor and indoor spaces. Subtle detail was not abandoned in favor of powerful dynamic swings. The Audio Excellence system was especially adept at conveying emotional content like tension, dread, foreshadowing, rage, and fear. The subtle shades of pitch and intonation of instruments was especially well done, often coming into the soundtrack so subtly you begin to notice it almost subconsciously before you consciously hear the sound. Even the interesting small details, like the very quiet violin flourish of the “Peter And The Wolf” theme (Prokofiev) heard when the button on an electronic device is pressed, pristine clarity is evident, even though the volume of the sound is very, very low. The very low-level sound of windshield wipers and raindrops on the ship produced a heightened sense of being in the scene. Dialogue was easier to follow than my experience with many systems. It’s not uncommon to miss a word and have to backup a few seconds to have a second shot at understanding the word. But I don’t recall that happening at all with the Audio Excellence system.

Music video was as immersive an experience as I’ve had at live performances. Whether classical, rock, or jazz, a theatrical orchestra, a small ensemble, or a small group, the Audio Excellence system presented all the music with great sensitivity. But I could only achieve that with Auro Technologies’ Auro-Matic® processing of the 5.1 soundtracks you get with most music video discs. Use Dolby Surround to process music, and the music more or less dies. The emotion and interest are drained from every recording by Dolby Surround processing. DTS Neural:X is somewhat better than Dolby Surround, but still trails the superior musicality of Auro-Matic processing (comes with Auro-3D decoding where available; Marantz, Denon, Trinnov, Datasat, Lyngdorf, Storm Audio, and others offer Auro-3D processing, but a number of brands do not). Peter Gabriel’s *New Blood* concert disc was served well by the Audio Excellence system with Auro-Matic processing to 7.2 channels. The synthesizer bass was especially clean sounding because it was recorded from the mixing board, before the inevitable battle with the acoustics in the performance venue. Individual voices and instruments were exceptionally well presented, with positioning in space being very precise. As performers moved, so did the sonic perspective. But it wasn’t because they

presented the performance as a live event. Rather, with everything coming from the mixing board, all of the spatial positioning was done by the recording engineers during mixing. The mix and the surround and Immersion Sound effect via Auro-Matic created a very enjoyable entertainment experience.

A very different sort of recording, Editor Gary’s 2016 recording of *The BBB Featuring Bernie Dresel Live N’ Bernin’* used microphones placed to capture the live performance as if you were a member of the audience. The Audio Excellence system did a great job of re-creating the original space, making the venue seem much bigger than a living room but much smaller than a theatre or arena. With the drums prominently featured, the Audio Excellence system was masterful at creating the live impact you hear from Bernie’s drum kit. This particular recording is the only example of the new Immersive Sound format I’ve come across that strives to create a live performance in your room at home, and it does indeed achieve its goal extremely well. The space of the venue and placement of the musicians is so well done you can almost see them in the room. More conventional home systems have gotten the space right, but they fall slightly short of the live dynamics you hear at a performance like this one. The Audio Excellence system had no compression of dynamics, though. To achieve that, you need sharper attacks than you may be used to experiencing. That means optimizing the rise-time capabilities of not just the loudspeakers but of the components driving them as well. The high efficiency/sensitivity of the Audio Excellence loudspeakers allows them to respond to voltage/current changes faster than conventional loudspeakers and electronics. Imagine a peak in a movie that requires several amplifier channels to produce 50 volts with an extremely fast rise time. The Audio Excellence system will need peaks with far less voltage, closer to 12 volts, in the same time window to produce peaks as loudly as systems with more conventional loudspeakers. That 12 volts or so can rise much quicker than the 50 volts you might need from a more conventional system.

High efficiency/sensitivity loudspeakers are trickier to design well for the highest-quality sound, but when it is done right, as Audio Excellence has done, the system does something that literally feels different than conventional home theatre systems. The high-efficiency route can be thought of as reducing the inertia of the entire system by making small driver excursions create a significant amount of sound. The small excursions also reduce distortion when everything is designed properly. The result is low-distortion sound with very fast transient capabilities. Sounds start and stop more abruptly than what you might be used to, having spent decades listening to conventional/typical home theatre sound systems. Yet, when decay is part of the sound, like a musical note trailing off to silence, or dialogue in a large public space with a

long reverberation period, high-efficiency systems can sustain the decay or echo as well as any home theatre sound system.

Another movie viewed with the Audio Excellence system was *Maze Runner: Death Cure*. While the movie seemed to have a substantial production budget, the Audio Excellence system revealed the soundtrack to be relatively basic. It served the story, and dialogue was easy to follow, but it lacked subtle details you find in better soundtracks. These little details tend to make soundtracks more interesting, but not necessarily on a conscious level. You have to force yourself to step back and look for the missed opportunities to have other sounds in the mix that would heighten the sense of reality. The Audio Excellence system didn't over- or understate details in the soundtrack, it just used the soundtrack as intended... to push the story along at a quick enough pace to avoid bogging down. *Jumanji: Welcome To The Jungle* was revealed to have a bit better-sounding mix than *Maze Runner: Death Cure* but this was more of a fun soundtrack than one painstakingly realistic. That approach suited the movie quite well. The direction changes with chases by various types of wildlife and aircraft were all very well done, with excellent phantom images, when animals or people were "between loudspeakers." But again, the Audio Excellence system let me know exactly what the sound/recording engineers put into the soundtrack. It didn't make the movie less enjoyable to know that the soundtrack wasn't the ultimate in detail or dynamics. But if I wanted to know, the truth was right there to document.

When not thinking about what the sound system was doing, it was easy to forget the sound system altogether and just enjoy the music. This is not something I can say about most of the high-effi-

ciency/sensitivity loudspeakers I've experienced over the years. I tend to find high-efficiency loudspeakers to be imperfect transducers in ways that I don't like. But the Audio Excellence system never caused me to wish I were listening to something else. In fact, it was pretty hard to take breaks in the reviewing and put conventional loudspeakers back into the system to refresh my memory of the sound. As the review progressed, these changes went from about two days at a time to more like three or four hours... with the Audio Excellence system right there ready to go, it got harder and harder to listen to the "old" system sound.

Conclusion

I've heard some very good home theatre sound systems, but the Audio Excellence system is very impressive by any measure. Audio Excellence likens the performance to bringing the sound of commercial theatres into your home, but I've only been to one commercial theatre that sounded remotely as good as this Audio Excellence home theatre system. The noise floor is lower than I am used to hearing in just about any commercial movie theatre, and the precision and detail delivered is beyond anything I've heard in a commercial movie theatre. The Audio Excellence system delivers an entertainment experience that is lively, colorful, detailed, and addicting. If your theatre budget can handle the cost of this system, it should be on your short list of serious contenders. Patrice Congard has done something special here, and it would be a shame to miss out on this audio experience in a great home theatre system. **WSR**

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