

REVIEW

Solving the Listening Room: The Meridian 861 Version 4 A/V Controller with Room Correction

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The Meridian 861 has long been one of a handful of A/V controllers that truly deserve the description "high end" for their outstanding ability to reproduce soundtracks and music. Each new version of this modular unit has brought better sound and video quality and more features—all of which can be added to earlier units, usually by having a dealer swap circuit cards. The Version 4 of the Meridian 861 is no exception to the rule. It has a new internal DSP card (EF20), and provides: 24-bit upsampling for all PCM inputs including CD; more versatility for the Meridian Smartlink that allows a direct digital input from Meridian DVD players for CD, DVD, and DVD-A; higher-resolution processing (48-bit internal) for all sound modes; Dolby PLIIx; and more flexible bass management. The Meridian 861 also now has some of the best video

switching I have seen. The main advance, however, is the addition of a new form of automatic correction for room problems.

As virtually all audiophiles know, the listening room is one of the most important components in a system, and often the most colored. In fact, the better the electronics and speakers, the more dominant room colorations. Even at the best of times, the interaction between the speaker and room creates a small mountain range of peaks and valleys in the response curve below 300Hz. At the worst, the interaction between speaker and room creates a mountain range that looks like the Himalayas, which becomes extremely audible as bass power increases and bass response extends down to the bottom end.

Most such problems come with your house or apartment, and moving speakers or applying conventional room treatments can only deal with parts of them.

Although I deliberately chose my house so that my stereo listening rooms *wouldn't* create Himalaya-like bass response, my video room was set up much later, and is far more typical of the rooms virtually all audiophiles have to deal with. There are significant 4–6dB resonant peaks in the area below 100Hz, as well as peaks in the range from 100–200Hz. Furthermore, these peaks vary according to the listening position and the location of speaker and subwoofer in the room. No amount of practical room treatment—short of a major rebuild—can do much to correct such room interactions when frequencies are this low. The solution has to lie in either the design of the speakers or the electronics.

Specially designed speakers *can* make a difference. The Snell XA90Ps I use as my main video reference speakers make me luckier in this regard than most audio-videophiles. They have a parametric equalizer built into their

subwoofer that can correct for the main resonant peak below 80Hz; just getting rid of the most serious resonant peak extends the bass power delivered into the room significantly, and provides far more apparent detail at low frequencies. It also reduces room excitation at high frequencies, which means I can listen to action films at louder levels. The more complex parametric equalization built into a few subwoofers like the Revel B15 provides even more flexibility.

However, the best you can hope for with such notch filters is better bass, and this is not *neutral* or *accurate* bass. Even with speakers that have parametric equalization, I can still hear significant problems in music and movie soundtracks. All such speaker designs have one major inherent limitation: a lot of the most audible room interaction problems occur between 80Hz and 200Hz—well above the frequency range their parametric equalization can affect.

Enter the Meridian 861, Version 4. Its new circuit boards provide what Meridian calls “Meridian Room Correction.” The full technical details of this approach to room correction are described in detail in a white paper downloadable at www.meridian-audio.com/lib_pap.htm. In brief, however, Meridian Room Correction is a form of digital processing that does not try to solve all the response problems in speaker/room interaction. Instead it corrects for the most serious problems in the bass in ways that leave the fundamental sonic character of the speakers intact and do not affect their life and excitement.

Meridian’s rationale for this “gentle” approach to room correction is that the full-frequency-range correction used professionally, and in many competing audiophile products, works well in theory but doesn’t work as well in practice. Such systems attempt to equalize all of the audible frequencies to compensate for problems in listening-room acoustics by generating a plot that indicates where any peaks and troughs in the response lie, and then inverting the curve to produce a flat response. Where there is a peak, the equalizer provides a trough to cancel it out; where there is a

dip in the response, the processing provides a compensating boost.

Meridian feels the end result fails to create the proper phase response at the listening position, and that if the equalizer tries to correct for significant dips in bass response, the amplifier and speaker can easily run out of headroom. (“Imagine you have a 100W amplifier. To cancel out a 10dB notch, you would need to trade that in for a 1000W amp.”) In addition, Meridian feels that equalizing frequencies above 300Hz will only work for one location in the room because, “a dip in one place in the room may be a peak in another...[and] attempting to improve the listening in one spot can make the sound significantly worse for everyone else in the room.”

As a result, Meridian Room Correction only operates below 250Hz, and only tries to correct for room modes and resonances that occur as a result of the setting up of standing waves generated when sound waves encounter a boundary such as a wall, and are reflected back on themselves. As most audiophiles know (and all have certainly heard), the original and the reflected waves, where they reinforce, produce “antinodes” (areas of louder sound), and where they interfere destructively corresponding “nodes” (areas of quieter sound). Unlike nodes and antinodes at higher frequencies, these stay in the same place in the room for a given frequency and do not vary sharply according to listening position.

Meridian feels that successfully handling room resonances requires two things: an ability to detect the room modes and the ability to build notch filters to control them. Using the correction feature is relatively easy. The Meridian 861 Version 4 performs the correction measurement automatically with the aid of a PC and the kind of microphone built into in a Radioshack SPL meter. The program runs unattended, and provides an excellent range of readouts that show you the effects of using the correction program.

The end results are also highly flexible. You can set up several remote-control-selectable profiles, corresponding to

different speaker layouts or room configurations. (I found this feature useful in setting up my system to work with and without the subwoofer.) Editing, as well as display, can be carried out numerically or graphically. Clicking on the “Graphical” tab brings up a display of the overall filter response. Each notch filter has a small square above it, and clicking on the square brings up an edit mode for the filter with allows you to adjust its center frequency, width, and gain.

How valuable are the sonic results? Simply put, once you’ve heard room correction this effective you simply will never go back to anything else. Your first reaction may be that the bass is weaker, but this is only because you are no longer hearing the key resonant peaks. Once you spend a few minutes listening to the corrected subwoofer and/or corrected full-range speakers, you’ll realize just how much room problems have interfered with your quest for the absolute sound. Instruments like the organ and bass viol take on a whole new character—one with far more detail and information. In most rooms, the lowest frequencies are far less masked by the resonant peak, and both music and soundtracks appear to have much deeper bass. You can play your system louder without strain in the bass, and the end result does significantly less to excite room buzzes and rattles.

Oddly enough, however, great bass is not the main sonic advantage. Believe it or not, there is more to audio/video listening than the nuclear explosion in the opening scenes of *Terminator 3*. Older audiophiles may remember something called the “midrange,” and getting the upper bass and lower midrange right has a major impact on the overall timbre and realism of the system. Smoothing out the frequencies between 80Hz and 250Hz invariably makes significant improvements in male voice, piano, lower strings, woodwinds, and lower brass. This, in turn, improves the balance between bass, midrange, and treble, and lets your speakers fully perform in ways that were never possible before you cleaned up the bass. You hear the best musical warmth your electronics and speaker are capable of.

Once I learned how to run the Meridian program on the PC, I couldn't keep myself from spending a weekend trying the Meridian 861 out in all four stereo and audio/video systems in my house. It made this same set of improvements in each room, using speakers as diverse as the Snell XA90PS, TAD-1, Theil 7.2, and Polk Rti-15 and Rti-25. The resulting difference was scarcely night-and-day—these were very good-to-great speakers in decent-to-good rooms—but it was still a most impressive improvement in every case, and particularly in listening to stereo and surround music with natural acoustic instruments or naturally-miked male and female voice.

The Meridian room-correction program also provided an additional benefit with surround listening. Getting rid of all of the peaks from 250Hz down provides a

much more coherent soundfield. The different locations of the individual speakers are less audible and the sound is notably more involving. This is not simply true for music discs; it's true for virtually all surround effects. Surprisingly, it also tends to make highly directional effects, like bullet shots, cleaner and more detailed.

There are, of course, limits. The Meridian program does not correct for the drops and suck-outs in bass response below 250Hz, which are significant problems in virtually every real-world listening room. The Meridian room correction will not make up for a bad speaker or for the limits to the bass response of the speaker or component. It can compensate for mediocre listening rooms in ways that are extremely impressive, but nothing can compensate for the kind of truly horrible room that virtually booms on its own.

As is almost always the case, you

really do need to listen to the competition. Convincing as Meridian's rationale for its approach to room correction may be, I found that the full-range correction provided by the TacT 2.2X (also reviewed in this issue) made more than a few further minor audible improvements in bass sound quality. The TacT 2.2X's ability to tailor the overall frequency response of the system to a given room—and to ten different settings for different types of sources and music using a combination of digital room correction and parametric equalization—can have advantages in some systems and rooms that the Meridian 861 doesn't provide. (While the TacT 2.2X is a stereo unit, you should be aware that an earlier version of the TacT TCS audio/video preamp provided the same basic features in a home-theater unit and that a new and much improved version

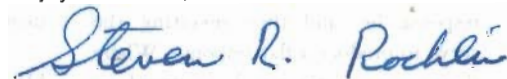
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of the TCS is now on the market.)

Which approach is best? There really is no one answer. That is going to depend on system, room, and taste.

I doubt, however, that most audio and audio-videophiles are really going to care all that much about the resulting difference. The Meridian version of room correction provides at least 90% of the TacT's benefits in the bass. The Meridian version also means you won't have to worry about amplifier power, speaker power-handling, and the additional practical problems of designing full-range frequency-correction curves for the midrange and treble tailored to a given room and system. The natural sound character of your speakers is preserved, which presumably is the reason you bought them in the first place.

Moreover, the overall audio and video performance of the Meridian 861

is simply superb, and nothing I have yet heard can touch it for CD and DVD-A sound quality using the direct digital input from the Meridian 800 or from the new Meridian G98 DVD player (at a fraction of the Meridian 800's price). Furthermore, if you don't have the \$16,000 to \$20,000 to buy the Meridian 861, be aware that you can get the same room correction and much of the same performance from the new Meridian G68 for \$6995–\$8995.

There is a reason that room correction is becoming one of the hottest features in A/V controllers, although none of the competition with such a feature that I have yet encountered comes close to the Meridian in overall performance and some do room correction so badly and erratically that the world would be better off without them. The Meridian 861 Version 4 is more than highly rec-

ommended—it is a clear candidate for Product of the Year. 

ASSOCIATED EQUIPMENT

VPI TNT HRX-X turntable and HWJr 12.5 tone arm, Van den Hul Black Beauty, Sumiko Celebration, and Koetsu Onyx Cartridges; Meridian G08 CD player; Sony SCDXA9000ES SACD/CD player; Pass Xono phono preamp; Pass X0.2 stereo preamp; Pass XA160 power amplifiers; TAD Model 1 and Thiel 7.2 loudspeakers; Kimber Select, Transparent Audio Reference XL, Wireworld Super Eclipse interconnects and cables

MANUFACTURER INFORMATION

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Price: \$16,000 to \$20,000