Audio Space Reference 3.1 (300B) Integrated Amplifier

A Sonic Jackpot

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Having been exposed almost exclusively to KT88 and EL34 designs this past year, I jumped at the opportunity of reviewing something different—a 300B-based push-pull amplifier. With the Ref 3.1 you get the full enchilada—an integrated amplifier complete with a phonostage, gorgeous cosmetics, and excellent fit and finish. In particular, take note of the attention paid to important detail such as the floating 300B tube sockets and chassis isolation feet. Much to my surprise, especially in view of its modest asking price, the Ref 3.1 turned out to be a major find, a virtual sonic jackpot in not one but several system contexts. (Jonathan Valin came to a similar conclusion about the Audio Space Reference 2 preamp in Issue 173.)

What is the attraction of the venerable 300B power triode in push-pull application? Certainly not power output. A pair of KT88s is capable of 40 or even 60Wpc depending on the operating point. The Ref 3.1 is rated at 21 Class A watts per channel. That's a 3dB sacrifice in power output relative to power tetrode or pentode designs, but not all watts are created equal. For starters, there's the issue of bass damping. In practice, obtaining decent bass damping from a beam power or power pentode output stage has proven to be a tough proposition. In the case of a triode, its low plate resistance and the fact that the optimal output transformer's primary impedance is several times this plate resistance results in a source impedance that may be as low as a third of the load impedance—even without any global feedback. Recall that the damping factor is defined as the ratio of the load impedance to the amp's source impedance, which argues for low source impedance. However, it is not clear that a damping factor greater than about five makes an audible difference. The situation is far less favorable in the case of a tetrode or pentode stage. Here a high plate resistance is coupled to a primary winding whose impedance may be smaller in value in order to reduce distortion products. The end result is a source impedance that may even exceed the load impedance, giving poor bass damping. Hence, there's a clear need to incorporate lots of global feedback to counteract confused pentode bass.

The age-old debate about triodes versus pentodes is not just about bass damping factor. There's also the nature of the distortion spectrum. In general, it's fair to say that triode sound is smoother and more liquid relative to that of pentode designs, whose sound is often dominated by odd-order distortion products. I am of the opinion that a designer should be allowed artistic license to voice a product to either his liking or to a particular standard. He should have control over the tonal balance, bass character, and distortion spectrum. In the case of the Ref 3.1, designer Peter Lau made the right call to offer the design in two flavors: KT88 and 300B. I can't say that I've auditioned the KT88 version, but to be honest, the 300B version is so musically compelling, its siren song so irresistible, that I have no interest in its beam power cousin.