

Rotel RB 1080 power amplifier

What could be easier to review than a power amplifier? No features or functions aside from inputs, outputs, and a power switch. So when Jonathan Scull asked if I could help out by taking on the Rotel RB 1080, which another reviewer hadn't been able to get to, I accepted the assignment. Before I could click my heels and say "FedEx!" twice, Rotel's 200Wpc RB 1080 had appeared.

I'm old enough to remember the Dyna Mk.II, which for the first time allowed impecunious audiophiles who had ogled Marantz and McIntosh equipment to acquire a power amp capable of driving nearly any speaker on the market. Later, in the 1980s, the Adcom GFA-555 rewrote that declaration of independence for Krell cravers, its 200Wpc capable of driving nearly any contemporary speaker.

Today, 200Wpc is still a lot of power, and is not commonly available for \$1000. So despite the changing times, the Rotel RB 1080 offers a lot of watts per buck. Moreover, the 1080 is far from a stripped-down device. Its sculpted front panel is decidedly more stylish than those of its utilitarian ancestors. It offers selectable balanced (XLR) and unbalanced (RCA) inputs, and has an input for low-voltage, remote power control. In fact, the made-in-China Rotel RB 1080 looks like a high-end amp, with specs to match.

The accompanying CD-ROM and DVD-ROM take the new owner on a simulated 3D fly-by tour of the 1080's innards, the pilot's voice describing points of interest along the way. Once past the Rotel-manufactured 1.2kVA



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toroidal power transformer, we fly over Vishay and Roederstein metal-film resistors, fancy slit-foil film capacitors designed by DNM's Dennis Morecroft, multiple power-output devices, and steep, cliff-like heatsinks that run from front to back on each side of the chassis. These inboard heatsinks do their work well; the sculpted front-panel extrusions, which look like heatsinks, are just pretty.

Playing in the Big Leagues

I briefly skimmed the Rotel's instruction manual (more warnings against stupid misuse than anything else), unpacked the amp, and plugged it into my main system. I used my usual balanced interconnect (AudioQuest Python) and speaker cables (AudioQuest Granite) to patch the RB 1080 in between the Sonic Frontiers Line-3 preamplifier and the Revel Studio speakers, pushed the button on the Rotel's front, and off we went.

The 1080 was virtually noiseless (except for the music), and my first impression was of a somewhat soft, dry sound lacking in dynamics. Balance across the audible spectrum was smooth, with tight, impressive bass, but there seemed to be a lack of presence. The treble was

clean and detailed. Such hastily formed opinions are as often wrong as they are right; in the case of the 1080, they were mostly right but definitely incomplete.

With the unlikely load of the Revel Studios, the \$1000 Rotel had two discrete personalities. At low levels, such as one might use for casual listening, the characteristics were as described above. I was persistently bothered by a micro-dynamic compression that sucked life out of the music, even though the really big moments did not lack for impact. I was also disturbed by a reticence in the treble that, by contrast, made the extreme treble transients of cymbals and triangles seem a bit over the top.

But when I turned up the volume, the 1080 came to life. The glossing-over of small dynamic changes was replaced by a clarity of inner detail that can happen only if subtle dynamics are not lost. Even allowing for the presence-region shifts that are the concomitant solely of playing louder, the Rotel-Revel combo became a bit more forward at high levels as the treble smoothed out. And, except for the sacrifice of domestic tranquility, nothing was lost in macrodynamic potential as the RB 1080 drove the Studios to quite

Description: Solid-state stereo power amplifier: Line-level inputs: 1 pair RCA, 1 pair XLR. Outputs: 1 pair of multiway speaker binding posts per channel. 12V signal switching input and output for remote power control. Output power (continuous): 200Wpc into 8 ohms (23dBW), 20Hz–20kHz at 0.03% THD max, both channels driven. Input sensitivity for full output:

1.5V RMS. Input overload level: 5V. Input impedance: 32k ohms. Distortion at 1W: 0.02% max at full power, 0.01% max at half power. Frequency response: 15Hz–100kHz, +0.5dB/–3dB. S/N ratio: 116dB, A-weighted. Damping factor at 8 ohms: 1000. Power consumption: 550W.

Dimensions: 17 15/16" W by 5 1/2" H by 15 3/4" D. Weight: 37 lbs.

Serial number of unit reviewed: 72563 05311.

Price: \$999. Approximate number of dealers: 140.

Manufacturer: Rotel of America, 54 Concord Street, North Reading, MA 01864. Tel: (978) 664-3820. Fax: (978) 664-4109. Web: www.rotel.com.

impressive levels, and on down into the nether reaches of the lowest bass. Whether it was the dynamic and emotional extremes of Mahler's Symphony 5 (Zander/Philharmonia, Telarc 2SACD-60569) or the deep, detailed sonorities of *Sera Una Noche* (M•A Recordings M052A), the Rotel was capable of truly impressive performance—but only when played at substantial levels. When I

turned down the gain, the sound faded into pale miniatures.

After the Rotel had spent a few weeks with the Studios and a weekend in the country with the Paradigms, the even more wildly inappropriate B&W Nautilus 800 Signatures arrived. The RB 1080, which was still cooking in the system, was given the job of driving this “statement” loudspeaker. *Mirabile dictu*, it

turned out that the 1080 was a better match for the N800s than for the Revels. This could have been because the N800s are more forward-sounding than the Studios, or are an easier load to drive. (Dunno about the latter—that's John Atkinson's job to determine).

Nonetheless, the RB 1080 displayed fewer symptoms of its bipolar personality with the N800s—its behavior was

Measurements

After the usual one-hour preconditioning at one-third power into 8 ohms, the Rotel RB 1080's chassis was pleasantly hot. However, the shrouded internal heatsinks (not those on the front panel) were way too hot to touch, which I assume is why they're protected from prying fingers.

The RB 1080's input impedance, measured at 1kHz, was to spec at 34k ohms (unbalanced) and 38k ohms (balanced), and the amplifier didn't invert signal polarity at either input. The voltage gain (into 8 ohms) was 28.4dB via the unbalanced RCA jack. This is slightly on the high side for a THX-certified design, but 6.7dB lower via the balanced XLR jack, which is very unusual.

The output impedance was very different in the two channels, measuring a superbly low 0.05 ohms from the right channel but a significantly higher 0.23 ohms from the left. Assuming the amplifier didn't malfunction during KR's auditioning, this suggests a QA problem at the Rotel factory. Nevertheless, even from the left channel, any response variations due to interaction between this source impedance and the manner in which the loudspeaker's impedance varies with frequency (fig.1, top trace) are no more than ± 0.15 dB. The other traces in this graph show that there is also a 0.25dB imbalance between channels (presumably due to the difference in output impedance), but that the response is flat within the audioband, rolling off to -3 dB at 110kHz. (These responses were taken using the balanced input; the response via the unbalanced input, not shown, was identical.)

With such a flat audioband response, it is no surprise that a 1kHz

squarewave was reproduced with an excellently square shape (fig.2). However, if you look very closely at this graph, a hint of overshoot can be seen. This is more clearly visible on the leading edges of a 10kHz squarewave (fig.3).

The Rotel features very low harmonic distortion at moderate power levels. Consequently, to examine how the THD varies with frequency, I used a high level of 25V RMS, which is equivalent to 78W into 8 ohms. The results are shown in fig.4. Even at this highish power level, the THD+noise percentage remains below 0.02% across the band into both 8 and 4 ohms from both channels. Only into 2 ohms (top trace) did the level of distortion rise significantly, but even then, it was still below 0.1%. The harmonic content of that distortion (fig.5, lower trace) consists of third and higher harmonics. At very high powers, however, the distortion content is very unusual in that it consists of the fourth, eighth, 12th, and 16th harmonics (fig.6), with very little of the usual second and third harmonics.

Nevertheless, the RB 1080 offered very low levels of intermodu-

lation distortion, even at an output power close to clipping with the demanding mixture of 19kHz and 20kHz tones (fig.7).

The Rotel has sophisticated output protection, in addition to 6.3A fuses

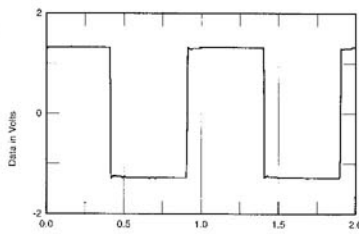


Fig.2 Rotel RB 1080, small-signal 1kHz squarewave into 8 ohms.

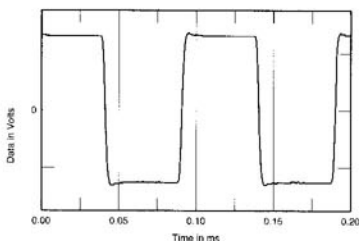


Fig.3 Rotel RB 1080, small-signal 10kHz squarewave into 8 ohms.

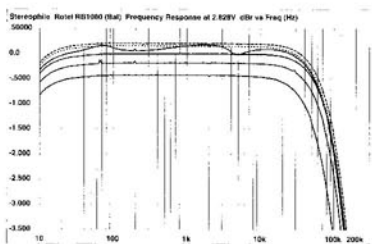


Fig.1 Rotel RB 1080, frequency response at (from top to bottom at 2kHz): 2.83V into dummy loudspeaker load, 1W into 8 ohms, 2W into 4 ohms, 4W into 2 ohms (right channel dashed, 0.5dB/vertical div.).

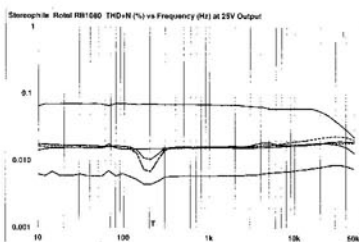


Fig.4 Rotel RB 1080, THD+N (%) vs frequency at 25V into (from bottom to top): simulated loudspeaker load, 8 ohms, 4 ohms, 2 ohms (right channel dashed, 5dB/vertical div.).

exemplary. *David Johansen and the Harry Smiths* (Chesky SACD225) was vivid, with tremendous kick. Even with only two channels, I found the Rotel-B&W combo to be very convincing, despite my having just attended a recording session with the same group in the same recording venue. In fact, I used the 1080 for about two weeks with the N800s, and never felt the need to

switch to one of the other amps on hand—I was *curious* to do so, but felt no urgency. The N800 made it clear how good an amplifier the Rotel was; only those intimately familiar with the N800's performance with other amps would notice any lapse from the speaker's optimum performance.

But I'd be misleading you if I gave the impression that one would ultimately

want to get by by using the Rotel RB 1080 to drive the Revels, or even the B&Ws. The 1080 was not the last word in soundstage openness or grain-free treble, and always retained a slightly withdrawn mid- to upper treble. Switching swiftly between power amps in less than a minute, it became apparent that amps such as the Simaudio W-5, the Bel Canto eVo, and the Sonic Frontiers

in the positive and negative voltage rails for each channel. Nevertheless, during the high-power testing, I blew the rail fuses when I was testing the amplifier's continuous output into 2 ohms. Even after I'd replaced these

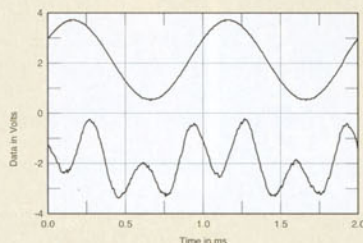


Fig.5 Rotel RB 1080, 1kHz waveform at 37W into 4 ohms (top), distortion and noise waveform with fundamental notched out (bottom, not to scale).

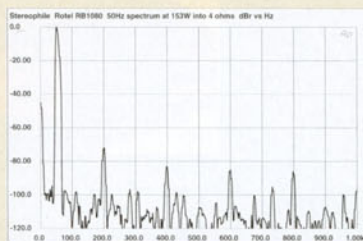


Fig.6 Rotel RB 1080, spectrum of 50Hz sine wave, DC-1kHz, at 153W into 4 ohms (linear frequency scale).

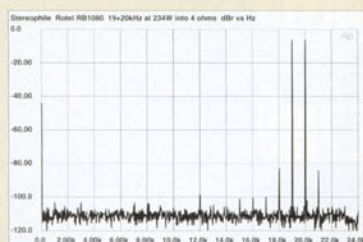


Fig.7 Rotel RB 1080, HF intermodulation spectrum, DC-24kHz, 19+20kHz at 234W into 4 ohms (linear frequency scale).

fuses, the amplifier would not turn on again—even after I'd let it cool down and had reset it with the front-panel Power button. As a result, I couldn't measure the RB 1080's channel separation, S/N ratio, and power output on toneburst signals. However, I did examine its power capability in continuous drive with just one channel driven, using the Miller Audio Research Amplifier Profiler.

The results into 8 and 4 ohms are shown graphically in fig.8. Below 500mW or so, the calculated THD percentage (this FFT-based measurement does not include any contribution from noise) drops with increasing power, presumably because it is crossover-related. But distinct drops in the measured THD level can be seen at around 210mW into 8 ohms (red trace) and 420mW into 4 ohms (black trace), both equivalent to an output voltage of 1.3V RMS. In addition, temporary increases in THD (to

still negligible levels, however) can be seen in both traces at powers equivalent to an output voltage of 4.2V. I have no idea to what this behavior is related, but I do wonder if it correlates with KR finding the amplifier to have different sonic characters at high and low powers.

Fig.8 shows that the RB 1080 clips quite suddenly. However, this is at very high power levels. Using the conventional 1% THD definition of clipping, the Rotel puts out 291W into 8 ohms with one channel driven (24.6dBW), 558W into 4 ohms (24dBW), and even 800W into 2 ohms (23dBW)! Considering its modest price, this is one powerhouse of an amplifier. But, as Rotel recommends in the handbook, the RB 1080 is best used with speakers whose impedances don't drop much below 2 ohms.

—John Atkinson

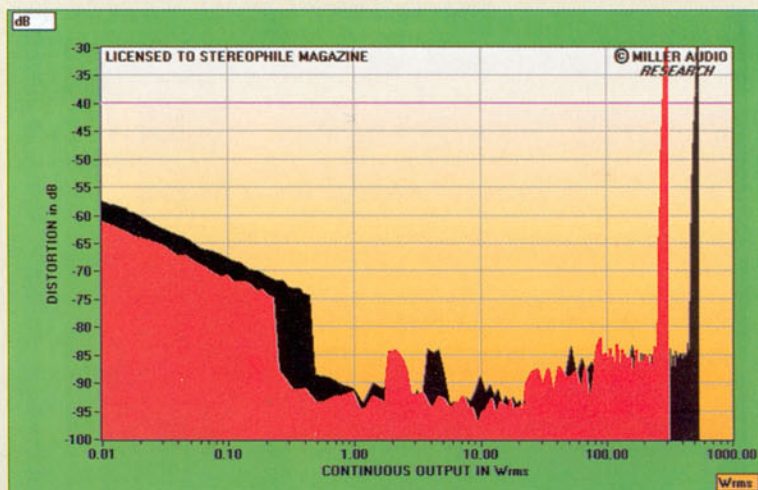


Fig.8 Rotel RB 1080, distortion (%) vs continuous output power into 8 ohms (red trace) and 4 ohms (black).

Power-3 did not suffer from the 1080's minor foibles in low-level microdynamics and treble reserve. Furthermore, those other amps ably demonstrated that the Revel and the B&W are capable of truly transparent treble, detailed and finely drawn, which the RB 1080 merely outlined. On Cyndee Peters' "House of the Rising Sun" (*Test CD 4, Opus3 CD 19420*), the ultimate delicacy of the triangle and brushed cymbals eluded the Rotel but not the other three amps.

But the votes did not go all one way. Sheer power was not a limitation for any of the amps, the 1080 included. Moreover, at the bass end of Béla Fleck's infamous "Cosmic Hippo" (*Flight of the Cosmic Hippo, Warner Bros. 26562-2*), the Rotel was simply world-class, nearly approaching the Simaudio, and making the otherwise super Bel Canto sound just a bit overripe and less controlled in comparison. (Could this be related to the RB 1080's damping factor of 1000 vs the eVo's 100?) And while I can't seriously suggest the permanent use of the \$1k Rotel with the B&Ws, I know I can sucker-bet discerning listeners with this combination... because I have.

Pick on someone your own size...

When I ran the RB 1080 via its unbalanced inputs with more compatibly priced speakers, such as the Paradigm Reference Studio/20 or Studio/60, I had no complaint. The Rotel provided all the power the Paradigms could handle, and I heard no low-level limpness. The Paradigms' tweeters are a bit

bright; the slightly reserved Rotel 1080 complemented them very well, and greatly tamed the Studio/20's slightly emphasized bass. That this was increased control and not premature rolloff was confirmed by the RB 1080's

With everything I matched it with — whether fairly or unfairly — the Rotel did adequately to superbly.

extended bass performance with the Studio/60, not to mention with the Revel Studio and the B&W 800. The Rotel 1080 and the Studio/60 made for the most complementary combination: the Rotel soothed the slightly extraverted Studio/60 at both ends of the spectrum, produced extended and convincing bass, and seemed to have infinite reserves of power for micro- and macrodynamics.

I ran through the varied and fascinating selections on Opus3's *Test CD 4* and found the distinctions between the CD and SACD layers as readily apparent through this modestly priced combo as through the big system. If I had room for a two-channel amp in this usually multichannel system, the Rotel RB 1080 would be a permanent fixture.

Conclusion

In pure engineering terms, it would

seem that it should be easy to make a good power amp at nearly any price. With the big budget of a high-priced amp, the designer-manufacturer can attend to all the fine details and still provide substantial output power. As the budget decreases, compromises must be made, and the usual one is in power output. Unfortunately, compromises in tonal balance and subtlety are sometimes encumbered as well, and the resulting tonal inaccuracies are often flaunted as a distinctive "character." Even some pricey power amps are guilty of this.

No such compromise was evident in the Rotel RB 1080. Sure, it was less than an ideal match for speakers costing 10 times its price, but it did better than I would have guessed. With everything I matched it with — whether fairly or unfairly — the Rotel did adequately to superbly.

The Rotel RB 1080 is as powerful an amp as almost anyone needs, and did not suffer from significant coloration or tonal imbalance. Only the *n*th degrees of treble grain and reticence separate it from the very best power amplifiers. I can't think of an amp for even twice its price that I'd prefer. ☒

Associated Equipment

Two-Channel System

Analog source: Heybrook TT2 turntable, SME III tonearm, Ortofon SME30H cartridge.

Digital sources: CAL Audio CL-20 DVD/CD player, Meridian 508-24 CD player, Sony SCD-XA777ES SACD player, Mark Levinson No.360 DAC.

Preamplification: Sonic Frontiers Line-3 preamplifier, Audiolab 8000PPA phono stage, TacT RCS 2.0 digital EQ/room correction.

Power amplifiers: Bel Canto eVo 200.2 monoblocks, Simaudio W-5, Sonic Frontiers Power-3.

Loudspeakers: Revel Ultima Studio, B&W Nautilus 800 Signature.

Cables: Interconnect: AudioQuest Anaconda Balanced, AudioQuest Python Balanced, JPS Balanced

Super-Conductor 2. Speaker: Audio-Quest Granite. AC: PS Audio Lab Cables.

Multichannel System

Digital sources: Philips SACD 1000 SACD/DVD-V player, Technics DVD-A10 DVD-A player, Technics SH-A500D DD/DTS/DPL processor.

Preamplifier: Sony TA-P9000ES. **Power amplifiers:** Bryston 9B-ST, Theta Intrepid.

Loudspeakers: Paradigm Reference Studio/60, Studio/20.

Cables: Interconnect: Harmonic Technology multichannel prototypes, Alpha-Core Goertz Micro-Purl Copper. Speaker: Goertz MI 2 Veracity.

— Kalman Rubinson

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