

# the Stereo Times

Digital Tweaking- Inside and Outside the Box

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Audiophiles love to tweak their equipment to maximize performance and add their own unique personal touch to the stock product. Some audiophiles stick with outside the box tweaks like cables, isolation platforms, AC power conditioners, room tuning devices, add-on processors and all sorts of lotions and potions to enhance contacts and surfaces. The more adventuresome audiophiles will pop the hood and look for parts like capacitors, resistors, and diodes, etc.... to upgrade. For some, the “tube rolling,” is an art form. I’ve followed both paths in search of greater musical enjoyment from my audio systems.

After years of sharing listening space with my family, I finally got my own dedicated listening room and the fire to tweak was rekindled. Lots of equipment changes and tweaks ensued, but the big decision of how to deal with the complex subject of room correction/treatment, still remained. It was “my room” but I didn’t want it to look like a recording studio.

Living on Maui, where electricity costs are high, I wanted to eliminate the need for air conditioning the room. So, I sold my tube equipment and started trying the new generation of “digital” amps. Like Stereo Times founder, Clement Perry (CP), I too was lead to the TacT room correction system and amps. As reported on Stereo Times, the TacT equipment does an excellent job of dealing room related problems.

## Back to the subject of tweaking.

All digital equipment benefits from reducing and controlling the low/high frequency noise from the incoming ac supply, noise generated internally by digital circuits and ripple noise and radiated E.M.I. noise from switch mode power supplies. This helps reduce wave form/phase distortion and jitter. All of which, translates into more music.

All of these noise related problems are additive. Starting with your CDP or transport, you can clean up its power supply, clock and digital circuit path, but if you send it through another piece of digital equipment in the signal path that hasn’t been cleaned up, the improvements will never be fully realized. The same goes for a fully tweaked out digital processor or DAC being feed a signal with timing and/or noise problems.



Borrowing from the world of professional digital audio equipment, an excellent example of an outside the box tweak to clean up the digital signal path is the Apogee Big Ben 192k Master Digital Clock. Designed for recording studios to synchronize the word clocks of digital devices, Big Ben (BB) uses advanced Direct Digital Synthesis technology along with DSP based digital filtering to produce an ultra stable clock they call C777, which helps reduce excessive jitter. BB also provides format conversion from S/PDIF to AES, AES to ADAT, ADAT to S/PDIF, etc. More detailed information is available on their website: <http://www.apogeedigital.com>. MSRP is \$1495.00.

Used in an audiophile system, the BB can be inserted between any two digital devices to smooth and improve the clocking function and /or provide format conversion. Plug your jitter prone transport into the BB, and out comes a cleaned up digital signal to feed into your DAC, digital signal processor or in TacT's case an amp with a direct digital input. Obviously, an extra digital cable is required, and tweakers will also want to apply an audiophile grade power cord. TacT users employing the BB have reported an increased smoothness through the entire frequency spectrum. Complex musical passages on less than perfect recordings sound less distorted, indicating a reduction of jitter.

Apogee says, "The Big Ben has a 'Bell' shaped curve (Thus the name Big Ben as the bell inside the tower is Big Ben) which provides a very smooth transitional clock. This smooth clock provides other gear with the necessary shape to clean up the signals going in and out of the devices."

I first heard the BB performing its' duties in Clement Perry's (CP) excellent system. Digital noise and jitter affects the higher frequencies more than the lower frequencies, and CP's system is very revealing in this area. With one of my favorite recordings, Kurt Elling's Live in Chicago- Out Takes CD, I thought the sonic outlines of both voices and instruments sounded better defined. It was my first visit to CP's home. We both use the same TacT RCS and amp, so I wasn't sure if I was hearing the BB or the differences in the high end performance of our speaker systems, cables, power conditioner or something else. Plus, I was there on another mission.

In an effort to improve the performance of my RCS, I had modified the unit's switch mode power (SMPS) following proven modification guidelines\* I had used on other equipment. One of the major causes of jitter and distortion in digital equipment is power supply noise. The modified SMPS made a big improvement in my system, so I was looking forward to hearing what it would do in CP's BB equipped tweaked out system.

I offered to install a modified supply in CP's RCS, while I was in NJ. CP made a leap of faith and invited me into his home. After the new supply was installed and its' output voltage checked, CP reinstalled the RCS and powered up the system. With Kurt still in the transport, I immediately knew I had accomplished my mission. The sonic presentation was smoother and more open sounding. CP put on one of his favorites, Shirley Horn's wonderful Here's to Life CD. He and I, plus his friend Terry who had joined us, enjoyed hearing Shirley's voice and piano work fill the room with a sound most people would not have thought possible from an all digital system. I could have spent the rest of the afternoon exploring CP's jazz collection, but I had to get to a birthday party in NYC. I told CP, I'd love to try the BB in my system. He promised to work on it. A couple of weeks later, Stereo Times' Key Kim contacted me about a modified SMPS for his RCS. Kim offered to let me borrow his BB for a couple of weeks, while he was traveling.



The first place I tried the BB was between my 12 year old Cal Delta transport. The TacT RCS with 5 digital inputs, is a great tool for A/Bing. Levels on each digital input can be adjusted, and everything can be changed via the remote from the comfort of your listening chair. The Delta has both SPDIF and AES outputs, so I ran one output through the BB and one directly into the RCS. I started with the SPDIF into the BB and AES directly to the RCS, but I switched connections a number of times to make sure I wasn't hearing cable/format differences. Audience Au24 cables were used for the testing. The BB's front panel display shows when it's locked onto an incoming signal, and indicates the exact clock frequency it's receiving. If you're not sending it 44.1, 48, 88.2, 96 or 192K, it will show you very quickly the quality of your transport or CDP's clock. BB locked onto the Delta at 44.1K with both AES & SPDIF inputs.

Here's a quick overview on the Delta. Many moons ago, Stereophile ran jitter testing on a number of transports and CDPs. The Delta's jitter was measured at 50ps, one of the lowest. Over the years, I've heard people describe the Delta as a smooth sounding transport, but lacking in bass slam and inner details compared to the higher price competition. I've held on to this solidly built transport, and it's never failed to read any disk. It's only upgrades are a new power cord and some Black Hole Pad damping applied internally. No special feet or platform, just a VIP Magic brick on the top cover. After leaving the BB powered up for three days and confirming the listening levels were the same straight in and through the BB, I sat down for some A/B listening. I started with Barry Harris' Live in New York CD. This excellent recording has a very natural presentation of the band's performance, with lots of low level details and overtones. With the BB in the circuit, there was no great sense of the increased smoothness as reported by other TacT users. On the negative side, the soundstage was slightly reduced in all directions. One of my favorite, but less than perfect sounding recordings, Tony Monaco's Intimately Live at The 501, was next up. Tony recorded this on his computer's hard drive. A great performance but a little ruff around the edges in the digital glare department. Since TacT users had reported the BB's positive effects on less perfect recordings, I thought this would be a good test. The BB did nothing to change the sound of this recording in my system.

Either the Delta has a pretty good clock/low jitter, or what the BB does is too subtle for me to notice. Based on all the positive comments about the BB on the TacT user forum, I expected to hear more, but I then realized many of these users hadn't cleaned up the noise problems in their RCS. For them, the BB's smoother clock is probably helping out by not adding to the noise related jitter problems inside their units. To try feeding the BB with a lower quality signal, I pulled a stock Pioneer DV-414 out of my HT system. Straight into the RCS, the DV-414 sounded pretty awful, compressed and bright. Nothing you'd want to sit down and listen to music with. Running the DV-414 through the BB, smoothed out the sound and restored most of the missing dynamics. I A/B'd the DV-414 via the BB against my modified DV-45a used as a transport. The modified DV-45a was more open sounding, with a much larger soundstage, which creates a more exciting and relaxed listening experience. The DV-414/BB combo was smooth, but just not as transparent. Finally, the BB was also tried between my RCS and M2150 digital amp using the AES inputs and outputs. I couldn't hear any changes or improvements with the BB in this part of the signal path.

Hope you enjoyed another trip to "Tweakers Paradise." As I watch the sunset over Ma'alaea Bay, Key's BB is on a big silver bird back to NYC (Mahalo for the loan!). On this trip, there's good news for tweakers both inside and outside the box. If you're not into modifying your digital equipment on the inside, adding a device like the Apogee Big Ben to your system can improve the sound. If you're also into home or professional digital recording, I'm sure the Big Ben's numerous studio features will enhance your ability to make better sounding recordings.

Aloha.

Official Disclaimer Statement-I'm not advising anyone to remove, replace or modified any part of your audio/video equipment. Neither Stereo Times nor I will be held responsible for any damage of equipment or personal injury resulting from use or application of any published tweak herein.

The information here is supplied "As Is" and without any warranties expressed or implied. Tweak at your own discretion, and think twice before performing non-reversible tweaks. Always use good judgment and take all necessary safety precautions.

#### Equipment Used:

TacT RCS 2.2X, modified SMPS

TacT M2150, HSDB mod

Budge Khorus Speakers

Modified Pioneer DV-45a & Cal Delta transports

Nottingham Spacedeck with Space & Sumiko MDC-800(aka- the arm) tone arm

Blue Point Special & Grado Sonada Ref. Grado Phono Preamp

**Audience Au24, speaker, power and digital cables**

DIY Power strip & digital neutral to ground noise filter

\* All electrolytic caps in the power supply were replaced with Black Gates (BG) caps. This eliminates E.M.I. radiation, lowers operating temperatures and improves reliability. Non-polarized BGs using the famous "Super- E" configuration, were used to reduce ripple noise, and achieve ultra-low noise operation. BG Hi-Q caps are employed for very high frequency bypass filtering. The SIP diode bridge was replaced with a high speed devise. **Audience Auricaps are used on the pre-rectification filters, and all input/output connections are hardwired using Audience hook-up wire.** Current robbing parts were eliminated and some transformer damping was applied.