USING A PARAMETRIC EQUALIZER WITH ROOM EQ WIZARD

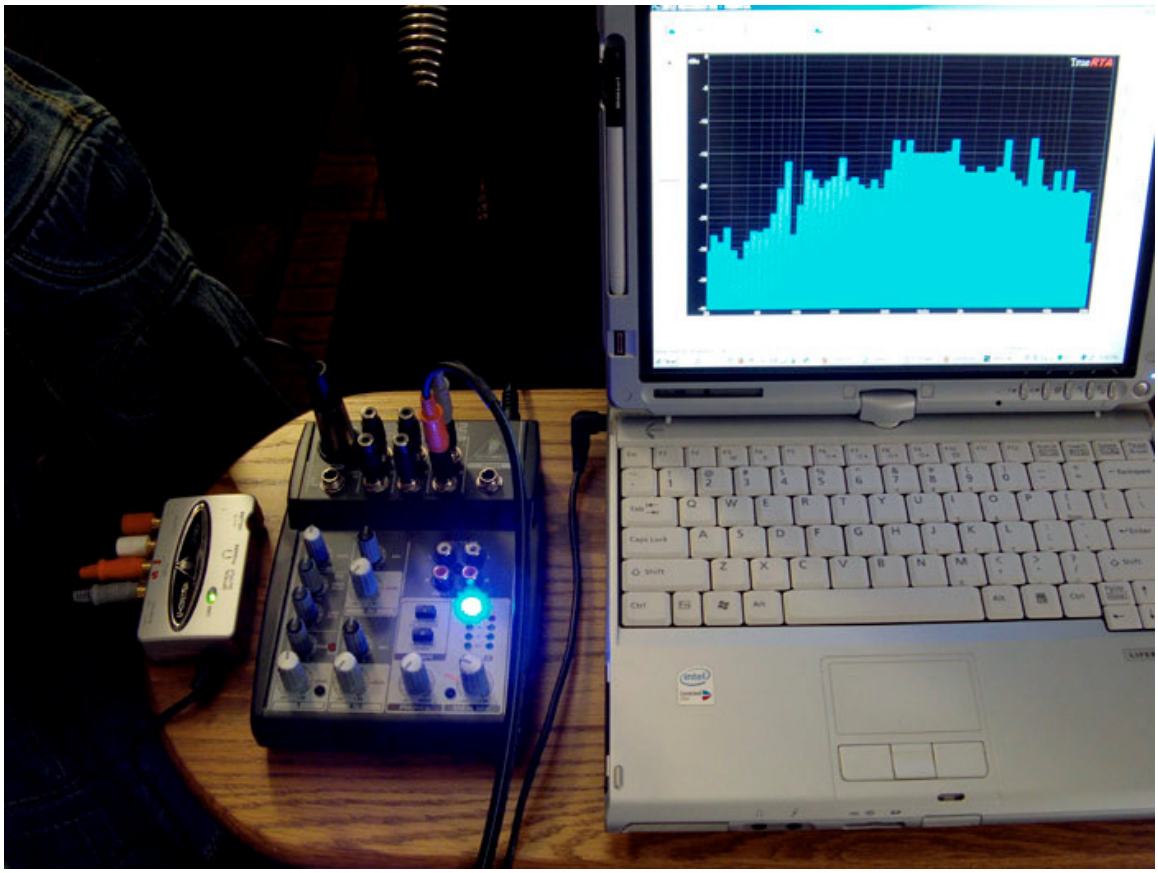
Basically the same with any system and setup ... either spend years guessing and trying to tune a room by ear as I did originally, or use some fairly simple tools to do it right.

What you need to analyze your room ...

- A laptop
- A cheap ADC if your laptop audio sucks (most do)
- A calibrated microphone (a mike stand is a nice option)
- An SPL meter to set the reference level for the testing software (lots of smart phone apps for that now)
- A mixer to provide power for the mike if required. Most will need 24v "phantom" power to work.

Your equipment may vary. Since putting my test system together, Dayton now has a USB mike that's quite popular and doesn't require either the ADC or mixer. Worth noting, I have less than a couple hundred into my RTA setup, excluding the laptop.

- An older laptop with crap sound
- A Behringer UCA202 to handle the ADC chores
- A Dayton EMM6 calibrated mike
- A Behringer XENYS 502 mixer
- A BSR old school analog SPL meter



The laptop shows TrueRTA software loaded up, but I changed over to Room EQ Wizard shortly into the process. Much easier to work with, very robust, and FREE!

http://www.roomeqwizard.com/

From there, follow the instructions included with REW to calibrate the test system. Real important, or your results will be screw ... er ... skewed. Set the mike in the primary listening position (that's where the stand is handy) and make sure any foam covers and such are removed from the element. Once that's done, run a couple test frequency sweeps on the room for each channel - REW will allow you to combine those to average the results, then eventually build stereo filter sets to EQ the system. Once again, good instructions with the software.

You can skip the next step if you want to try a pure digital solution, but I HIGHLY recommend you take a close look at the results and start researching hard room treatments to handle any major excursions from flat. Baffles, traps, reflectors ... all that stuff is a google away, and every room is different. Try some tweaks, run another set of sweeps, repeat as needed.

Once you've handled all the big audio lumps, run one final set of sweeps and build your digital filters. REW has several export options and also can print out the actual results. I took the easy way out and just had the software build WAV files export as DSP filters that I could import into jRiver Media Center's convolution kernel (google google, and check the jRiver wiki for more information). Simple as transferring the WAV file to that computer, tagging it in jRiver, and enabling the filters.

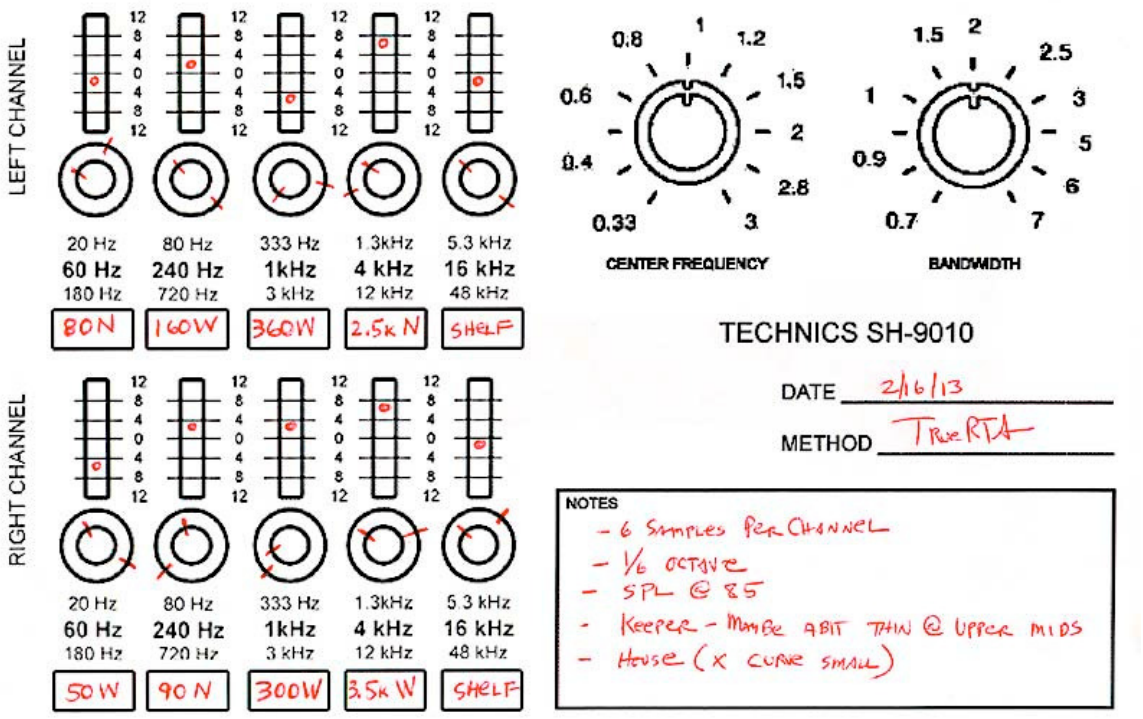
Up till then, I'd thought I was close, but ... difference was night and day. Digital = Done.

ANALOG PARAMETRIC EQUALIZER FOR ANALOG SOURCES

Digital sources taken care of, next step was addressing my analog stuff, like turntable, tapes, etc. Solution there was a Technics SH9010 PEQ ...

That's a bit trickier, as you have to reference the REW printout of the filter sets and narrow what you use to however many you can use on the analog PEQ. The SH9010 only allows five per channel, but that should be enough if you've handled the room treatments mentioned early to smooth out the big lumps. Here you can see the controls set to match the filters I chose to use from REW's results. The controls look like they're all over the place, but that's due to the way they're calibrated.

Setting up a PEQ isn't exactly intuative - I built a cheat sheet for mine (sample here) ...



... and you can see that the controls aren't linear, so they can be quite confusing till you catch on. Also, each PEQ is different, so your method has to match your equipment.

I mentioned earlier the original hit and miss "play it by ear" approach to tuning an EQ. Same thing, only different to adjust the PEQ. I got REAL close right away using REW's printout, but I also had the advantage of being able to switch over to the digital DSP filters in jRiver to compare the results - listen to the digital output, scratch head, switch to analog PEQ, tweak knob, listen - repeat as needed. I eventually got it to the point where I couldn't tell much difference. Keep in mind, the digital DPS filters WILL be more accurate as there's more filters in the set to fine tune the results.

See? Nothing to it! <G>

CONCLUSION

Yes - it IS a lot more work than simply adjusting a tone control, but as mentioned earlier, the difference can be substantial. Even if you're currently satisfied with what you're hearing, you'll be surprised by the additional sound quality most will experience with good EQ. Our ears will adjust over time to all sorts of irregularities in how a system works in a room. Google "Psycho Acoustics" and see what the experts have to say about the subject. From personal experience, I spent literally YEARS fine tuning the room by ear, and thought I'd done quite well, but was shocked to hear the results of this process. I'll admit to a few stumbles and bumbles at first, but once I caught on to what I was doing, it became relatively easy and painless. Since then, I haven't touched the setup, and really feel no need to. I figure I should be good as long as I don't make any major changes to the system or the room, and if I do, I've still got the equipment to do it again.