Having decided to work on the active driving capability of my XTZ Divine 100.49 speakers (also briefly reviewed) and the fact that I would use a s/w-based setup of the DSP for maximum configuration flexibility, I decided that I had to try the “Room Analyzer Pro” (RAP) to facilitate the active driving of the speakers (using various power amps) and try to document and improve the behavior of the listening space where the whole audio system operates, that is my home living (and main listening) room.

The room itself is a “difficult” space (as you would expect from one that is not completely dedicated to audio reproduction). Its openings and obstacles and dimensions and construction are dictated by modern apartment building and usage rules, rather than audio reproduction performance criteria. Having said that, the biggest advantage of such a space is its irregularity. As everybody knows the most difficult space to handle would be a rectangular box with clean surfaces. So, no, 90% of the walls are not bare (mostly covered with record/book shelves from floor to ceiling, or some paintings hanging, or shelves with various stuff on them), most of the floor is permanently covered by carpets (indeed rugs) to minimize reflections from the polished granite tiles, and there are various other objects scattered around the room (nothing directly in front of the speakers’ sound path), which means the basic causes of standing acoustic wave generation are eliminated. Still, there should be weak points and thus room for improvement in various aspects of the space and the equipment being used, in which case the RAP should come very handy if it works. And it does very well. The hardware components of it being built very nicely (even the smart aluminum carrying case means that if you need to carry it in various locations, you do it safely and in style!) and the easy to install and learn s/w, means that you can start working with it very quickly. Assuming that you do have a fair idea of acoustic wave concepts (the documentation provided is fair (both documentation and the tool s/w user interface need improvements in terms of English language and layout) but not enough for the uninitiated), if you are going to interpret and make use of the results that the tool gives you, a basic college-level knowledge of waveform transmission analysis and spectrum behavior would be required.

The first thing you would be tempted to achieve using the RAP would be to confirm –or discard- various convictions you may have about your room/system’s acoustic performance and the factors that –may- affect it. Anyone involved with sound systems and the little details affecting in one way or another their performance has assumed a wide spectrum of factors (affecting the sound) ranging from the absolutely physical to the unarguably metaphysical. The processing of the results from using the RAP had the consequences one might reasonably expect also in my case: Some assumptions were confirmed as correct, some others were not correct at all (and for some I still remain doubtful). One very general (though maybe obvious) conclusion one can make is that every room has its own acoustic identity (or call it signature) which will always be there, i.e. changes within this room of equipment, positioning, materials, etc. will produce small changes to the overall spectrum, but not that big that it becomes

similar to another room/space. So if you heard a set of amps/speakers in a certain room and have been impressed by it, and wonder why it doesn't sound the same in your room whatever you try, don't waste your time changing small details hoping to recreate the other room's impression (or even worse, buy those $10K power cables that the dealer claims will sort out your problem), just accept that the room is different and try to achieve the best you can within its boundaries (or change home…). The RAP is just the kind of tool you need to start capturing the initial "signature" of your listening space and then start experimenting with little changes and confirming that they are moving in the correct direction or not. So the systematic use of the tool should spare you lots of time and erroneous moves, if the results are evaluated carefully and systematically. Of course there are things the tool cannot quantify, either at all or in a usable way, and by that I mean that your ears would still remain a vital part of the process of improving the sound you hear (just try to keep out your metaphysical nuances). As a simple example, I am exchanging two very different speaker cable sets between the power amp and the tweeters of the actively driven Divine 100.49 speakers, and I can easily confirm the difference in tweeter response/clarity (between the two) by ear, but in the measurements produced by the RAP there is no difference at all. That is not to say that you won't be able to measure differences in room response from factors normally considered of marginal effect. In my house, temperature difference of around 12 degrees Celsius (say from 19 in winter up to 31 in summer, inside the room) produce different acoustic response measured by RAP, while equally important was for me to confirm the effect that opening of doors and windows in adjacent rooms has in the way sound is travelling in the listening room.

Here is a good point to note that the most valuable part of the RAP analysis lies mainly in the low frequencies behavior, rather than the higher end of the range. I guess if you use RAP in a room with many reflective areas, you may get significant point corrections in the mid or high frequencies as well, but this was not the case in my space.

One important thing I'd like to mention about the usage of the good microphone provided with the RAP that captures the sound, is how critical it is to achieve exactly identical horizontal & vertical (call it azimuth) orientation of the microphone in relation to the speakers being monitored, if you are going to compare results between different sessions, i.e. when you remove the microphone tripod from its standing position and bring it back some hours or days later to do another measurement and then want to compare the results. Because the microphone is very directional its absolutely vital to achieve the same orientation, else the results may vary greatly. In order to control this I have created a set of pieces of strings, used as measures from static points in the room, so I can make sure the microphone has the identical orientation, when comparative sets of measurements are needed.

One of the important features of RAP is that it produces a set of recommended room correction parametric equalization (PEQ) values (after each analysis session), which can be directly transferred/applied on a PEQ system. Since I am using a s/w-based DSP system I can apply the recommended changes on my DSP PEQ filtering setup, the main target being to eliminate room frequency resonances and improve the sound transmission delay spectrum profile. The process is of course not completely straightforward. I mean, you don't get a set of recommended correction values, you apply them once, and you perfect and done forever. The whole thing might require many iterations, where you apply recommended PEQ changes, then measure again, then re-apply further changes and re-test, and so on, until you reach a point of accepted stable (not further improving) response of the room space, equipment, etc, using possibly a subset of the recommended range of changes. Needless to emphasize, if between measuring sessions you start to vary other elements in the room –e.g. using different amps, inserting-removing sound absorbing materials in various places, slightly moving the position or angle of the speakers, etc.- you will need more and more sets of comparative tests, and, yes, the process becomes amusingly complex. The product itself does offer some option for measurement comparison, but if you are going to perform 100s of different setups & measurements you'll need to manually save previous results & make comparisons between them. The results are in both data from as well as images of frequency and delay responses. Then you compare data and images as files stored on your computer, along with a detailed description of the conditions of each measurement. You need to enjoy that kind of work, else you will just become frustrated.

As a conclusion, this is a valuable or even indispensable toll for those wanting and enjoying the process of improving the sound behavior in their listening space. For those who expect "quick-and-perfect/plug'n'play" solutions it is not recommended (I'd say sound improvement/hi-fi is not for them anyway). For me it been so much fun to get involved with it, let alone the sound improvement far exceeding the product's modest price.