

## RPlusD Frequently Asked Questions (Mar 2010)

### **(1) What features does RPlusD have ?**

The main features of the software include waterfall plots, fractional octave measurements up to 1/20 of an octave, a psychological (varying time gate) response, unfiltered FFT result, Sweep, MLS & hybrid test signals, high resolution LF measurements, 8th order Bessel filtered band pass ETC curves, impulse response- (filtered/not filtered), real time operation, wireless operation\*, EQ time domain emulation, DSP crossover emulation\*, RT60 measurements, curve fitting of filters, export of jpg's for graphics, resampling, wave file export, automatic sound card response corrections, use of sound card tone controls for excitation spectral shaping, saving of sound card mixer settings, decorrelated L/R test signal, instructional videos that speed up learning curve (posted on site).

### **(2) Which operating systems are supported ?**

RPlusD runs on MAC emulators, but should be tested first. We cannot support the various MAC emulators.

It runs on Vista and Windows 7, some users may need to download support files, but most will not. This is outlined in the Vistalssues.PDF posted on the site. Most users will already have these files installed on their computer from the installation of other software products that required them. These files are included in the download.

### **(3) Which sound card do I need ?**

Any standard sound card for windows will be fine. A high end sound card offers no advantage, RPlusD uses a loop through connection on the sound card for the left (or right) channel that has the output of the sound card directly connected to the input. The software measures the sound card affect on frequency response from this channel and corrects the measured response. This means that tone controls or equalizers built into the sound card do not have to be set to flat and will not influence results.

The old SoundBlaster MP3 is a great unit because it has RCA jacks rather than stereo 1/8 inch plugs as standard with sound cards since this unit was discontinued.

### **(4) Does RPlusD have real time operation ?**

RPlusD does not measure frequency response in real time. A single microphone/measurement for frequency response is practically useless, except for some specific uses, as in the case with RTA's. Users are advised to take a number of measurements with the microphone position changed for each measurement, and to then view averages. Many measurements that people take for acoustics are essentially useless and amount to nothing more than a measurement being a random number generator. This is explained in the manual with example results to illustrate this (surprising) point - see the chapter on Practical Measurements.

It does provide a real time reflection measurement (ETC) for easy and convenient placement of

reflection absorbers. The ETC curves in RPlusD are very flexible and much better than those provided by ETF. It also provides a real time analyzer for measuring an EQ response for the purpose of setting an EQ to the RPlusD determined solution (set according to many measurements that are averaged). Its a mistake to set an EQ to only one measurement. RPlusD uses internal EQ emulation that can be applied to many measurements after they are taken and averaged providing highly accurate and useful measurements from which to set an EQ accurately. Problems with EQing arise from in-accurate setting, often doing more harm than good. RPlusD was designed to specifically address this problem and is the only analyzer that does full time-domain emulation of equalizers at or below its price point that we are aware of. It is the ideal EQing tool.

#### **(5) Do I need a calibrated microphone ?**

Unless you are doing EQing, a calibrated mic is not necessary. For low frequency measurements and for reflection measurements, the popular Radio Shack or Circuit City SPL meter is ideal. This unit has a built in preamp to drive the line level inputs of a sound card. RPlusD requires that the line level input of the sound card be used as input due to its necessary left channel loop through connection. If EQing is to be used an individually calibrated microphone such as the one we offer will be necessary. Our unit has the mic preamp and USB sound card built in and users of this unit do not require a USB sound card.

#### **(6) Will it work on a laptop ?**

Laptop users are advised to purchase an external USB sound card rather than use the internal sound card built into laptops. These units tend to be noisy for measurements. Other than this, laptops are fine.

#### **(7) Why is it better than ETF (and most other analyzers)?**

There are several reasons for this:

- (a) More user friendly "hybrid" test signal that combines low frequency sweeps and higher frequency MLS filtered pink noise. This provides a test signal that is better than the one for ETF at low frequencies and easier to listen to at high frequencies while taking repeated measurements. It provides sweeps and pure MLS as well.
- (b) Ability to create microphone calibration describing functions allowing users to create calibration files from mic supplied response curves.
- (c) Precise EQ emulation of the DSP parametric EQ's: Behringer FBQ 2496 and DSP 1124. This allows these units to be set once after many measurements are taken rather than the Measure->EQ->Measure->EQ cycle required by other systems. This is because RPlusD emulates the equalizers in the time domain through all measurements. The RPlusD method for EQing is exactly equivalent to having 32 microphones taking measurements in real time at different locations while an EQ is being set, except its much faster and easier than doing this.
- (d) Ability to take up to 32 measurements.
- (e) More friendly user interface and basic design that prevents neophyte users from taking erroneous or useless measurements (this was often the case with ETF). RPlusD

uses a different test signal for the right (measurement) channel than the left (sound card loop through) channel to prevent internal sound card crosstalk from being interpreted as part of a measurement rather than noise. (ETF and other analyzers take this signal as part of the measurement, RPlusD interprets this as noise)

(f) Better wireless operation. RPlusD provides a test signal CD to be played through the system under test for cases where a direct connection between the computer and sound card is NOT POSSIBLE, such as for car audio. This system is not ideal and requires a knowledgeable user to identify possible artifacts from this method. (Wireless is only available with the enhancement add on)

(g) Signal to Noise graph that estimates the amount of noise affecting a measurement in the context of a frequency response graph. Measurements can be verified to be noise free after they are taken.

(h) Ability to add the microphone calibration file after a measurement is taken if it is forgotten or missing during the taking of a set of measurements.

(i) DSP emulation of DSP based crossovers, this allows two way DSP based crossovers to be emulated inside the software over up to 32 measurements (16 for the LF unit and 16 for the HF unit). This allows precise determination of DSP crossover settings in a lab or for a real environment. In the case of three way speakers, 10 measurements for the woofer, 10 for the mid-range and 10 for the HF unit can be stored and used for emulation of a standard DSP crossover unit. This allows high precision optimization of crossover settings for digital units and is explained in the manual.

(j) The RPlusD manual provides interesting and surprising results from experiments that illustrate the need for practical experimental procedure yielding repeatable, precise and accurate, meaningful measurements.

(k) Dual microphone RT60 results that give superior RT60 results to those in ETF (as well as other software)

(l) More flexible viewing of results, better graphics and mouse control than with ETF.

(m) Filtered impulse response for viewing the low frequency impulse in a better way than that available in ETF.

(n) Many more minor improvements over ETF that are too detailed to list here.

## **(8) Support**

RPlusD provides videos that instruct the user how to use the user interface. Many features have been added to the program since the videos were produced but the videos give a basic overview and shorten the learning curve associated with using this product. The videos are approximately 10 minutes in length. They can be downloaded from the web site as \*.zip files and opened for viewing in browsers and earlier versions of Quicktime. These are SWF files.

There is a 160 page manual filled with diagrams and experimental results that carefully illustrate

correct measurement procedures and debunk many myths associated with measuring sound in small rooms.

A support option is available for support in measurement interpretation. Support regarding software usage and function is both free and very fast when requested by email.

### **(9) Why buy RPlusD ?**

When there are free audio analyzers on the market people often ask why they should spend money on this one. Experienced users can see the differences from these listed FAQ's. Inexperienced users need to have an analyzer that is built to prevent them from making errors and generating erroneous results typical of new users. Most audio measurements are taken in error due to incorrect experimental procedures. RPlusD has a manual to guide the user in taking meaningful results and the ability to get those results. It has far more flexible and useful ETC curves than free analyzers. It provides fast support. The time involved in learning and taking measurements is far greater than the investment in an actual analyzer. RPlusD shortens the learning curve and provides the tools and documentation necessary to take good measurements without so much experimenting and wasted time.

### **(10) Where Can I Buy RPlusD ?**

Currently IBF Akustik (Germany) and [Acoustisoft.com/Etfacoustic.com](http://Acoustisoft.com/Etfacoustic.com) (AcustiSoft Inc) are licensed retailers of the software. Other sellers than this will be selling an illegal and older version of the product that cannot be updated or supported. RPlusD is only sold over the internet.