LspCAD

Standard
Users guide

Dedicated to :
Kristina
Jennifer
and
Julia

© Ingemar Johansson, IJData
Luleå, Sweden
Email: ingemar.johansson@ijdata.com
Homepage: http://www.ijdata.com

LspCAD Standard
Feb 2002

1 Introduction

Congratulations to your purchase of LspCAD Professional.

LspCAD is a software that helps you to construct and model loudspeaker boxes and passive crossover networks. The name LspCAD is short for **L**oud**sp**eaker **C**omputer **A**ided **D**esign.

LspCAD includes four utilities. The **box utility** that works as a box modeling program, the **passive crossover utility** that works as a filter modeling program with passive components and the **advanced passive/active crossover utility** that works as a filter modeling program with passive and active components.

LspCAD does not only present ready to use solutions, a number of diagrams shows virtually all information needed in order to construct passive and active loudspeaker systems. For starters it must be mentioned that this manual covers the program mainly, i.e. the goal is not to be a construct-your-loudspeakers-in-twentyfour-hours book, please feel free to read the tutorial section in chapter 8. This chapter gives a brief introduction how to use LspCAD in the construction work. See chapter 9 for literature recommendations.

The box utility

The box utility manages to model 9 different kinds of loudspeaker boxes with dynamic loudspeaker units, these are:

- Closed box.
- Bass reflex.
- Double tuned bass reflex. Two types.
- ABR (passive radiator).
- Bandpass 1.
- Bandpass 2.
- Bandpass 3.
- Bandpass 4.

The bandpass boxes are named as above due to the lack of decent names for these boxes. The different box types are described later on in this manual.

LspCAD has a powerful tool for modeling room response and cabinet diffraction effects which will further help you as a user to create good sounding loudspeaker systems.

An active/passive filter (that can be optimized simultaneously with the box parameters) is also included in the box utility.

The simple passive crossover utility

The simple passive crossover utility can model 2-way and 3-way loudspeaker systems. Besides the rudimentary filter calculator existing in most loudspeaker modeling software the user can here import measured SPL and impedance data and thus model a real system. With the help from a unique feature one can filter a music sample through the loudspeaker systems frequency response and listen to the result through a pair of high quality headphones.

The advanced active/passive crossover utility

The advanced passive crossover utility can model 1-way through 4-way loudspeaker systems with up to four loudspeaker units in each network. Modeling capabilities are much more extensive than for the simple passive crossover utility. A major benefit is the capability to optimize the filter components in order to achieve a predetermined transfer function, this makes construction of complex filter structures as easy as a walk in the park.

System requirements

The demands on your IBM compatible are:

- At least an intel-Pentium compatible CPU.
- 64Mb RAM, the program consumes up to 12Mb RAM when started.
- About 3 Mb disk space.
- Display resolution 640x480 is minimum, 800x600 or more is recommended for the box utility, for the crossover utility 1024x768 resolution is recommended.
- Math co-processor.
- Mouse or other pointing device, makes life much easier.
- Windows 95/NT/98/2000 (Windows 3.x is not automatically supported as LspCAD is a 32bit application).
- A color printer, this is optional, but it will make printouts easier to read.