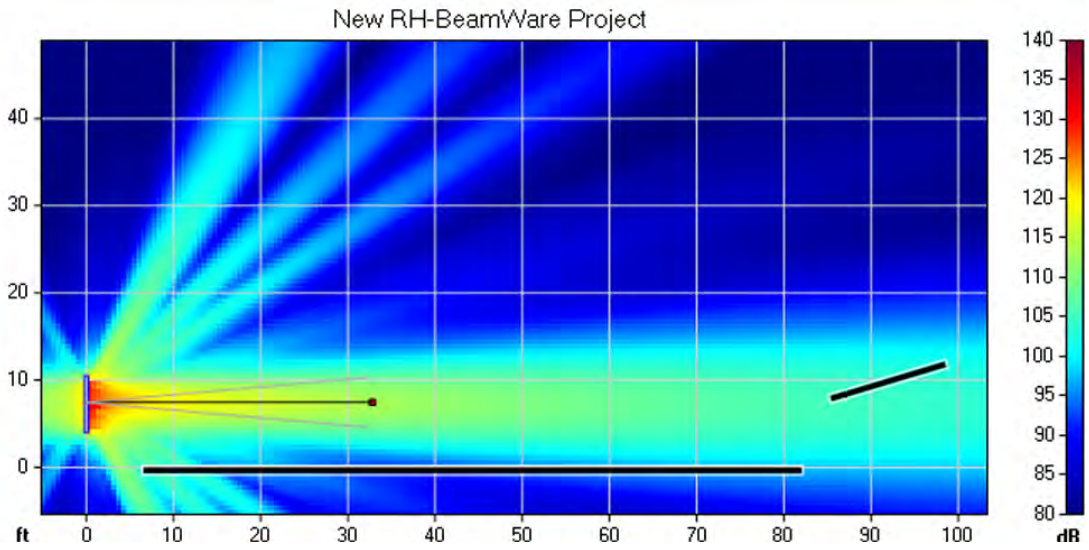
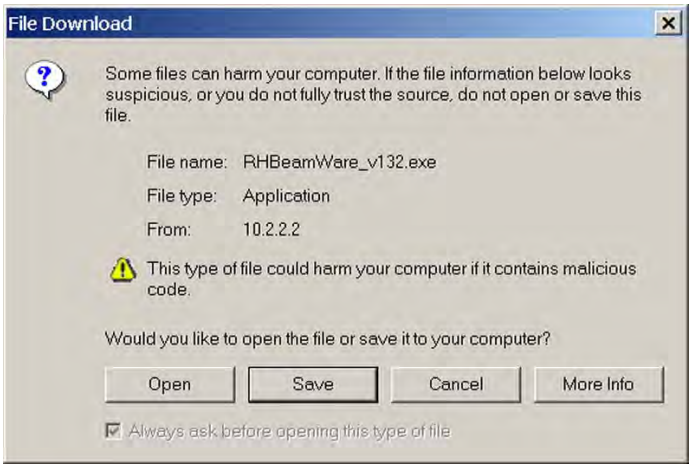
BEAMWARE
Users Manual



RENKUS-HEINZ
FOR A BETTER SOUNDING WORLD

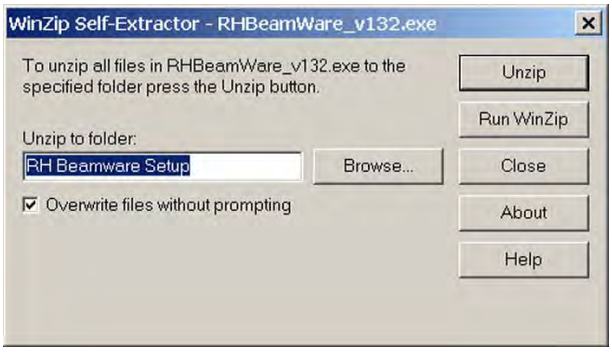
DOWNLOADING & INSTALLING BEAMWARE

1. Clicking on *Download BEAMWARE for Iconyx* will open the following *File Download* window.



2. Click on *Save* and when the File Destination window opens accept the default *"My Documents"* location for the file by clicking on *Save*.

3. Open your *My Documents* folder, locate the *RHBeamWare_132.exe* file and double click on it to open the Unzip window shown below. Select *Unzip.* Press *Close* after the file has been unzipped.

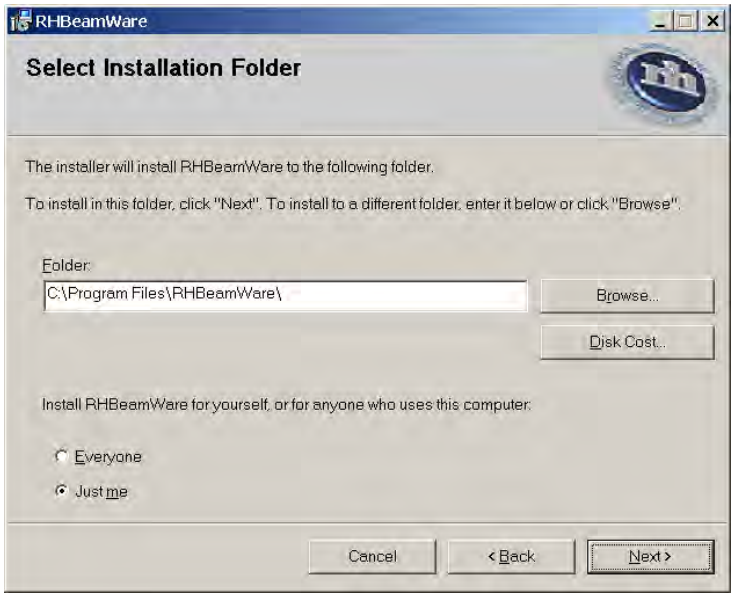


4. Open the *RH Beamware Setup* folder and double click on *Setup.exe.* to open the Setup Wizard window shown below.

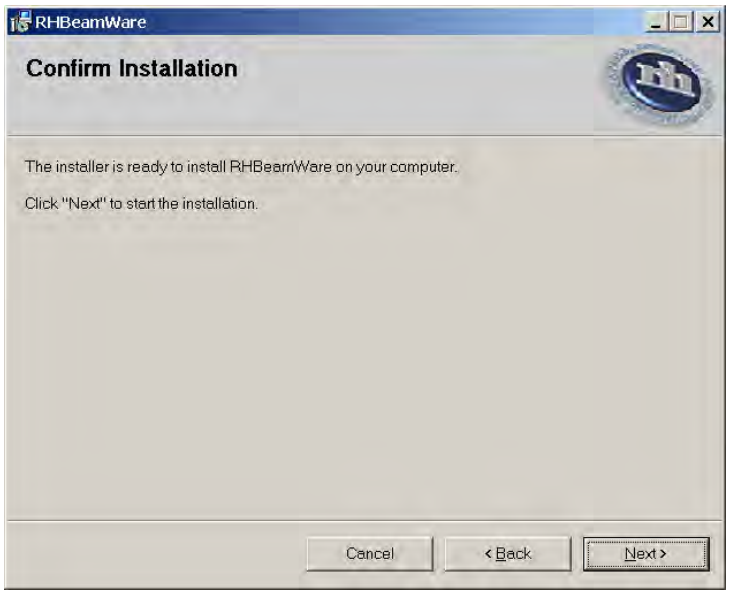
Note 1. The Welcome to the RHBEAMWARE Setup WIZARD window shown on the previous page will open only if you have a previous version of BeamWare on your computer. If you don't have a previous version of BeamWare on your computer, the Setup Wizard window shown below will have opened.

If you have an old version of BeamWare installed in your computer, you must uninstall it by selecting the *Remove RHBeamWare* option and pressing *Finish*. The RH BeamWare Setup Wizard window will close when the uninstall is completed and you will have to restart the Setup routine by clicking on *Setup.exe.* This time the Welcome to the RHBeamWare Setup Wizard window shown below will open.

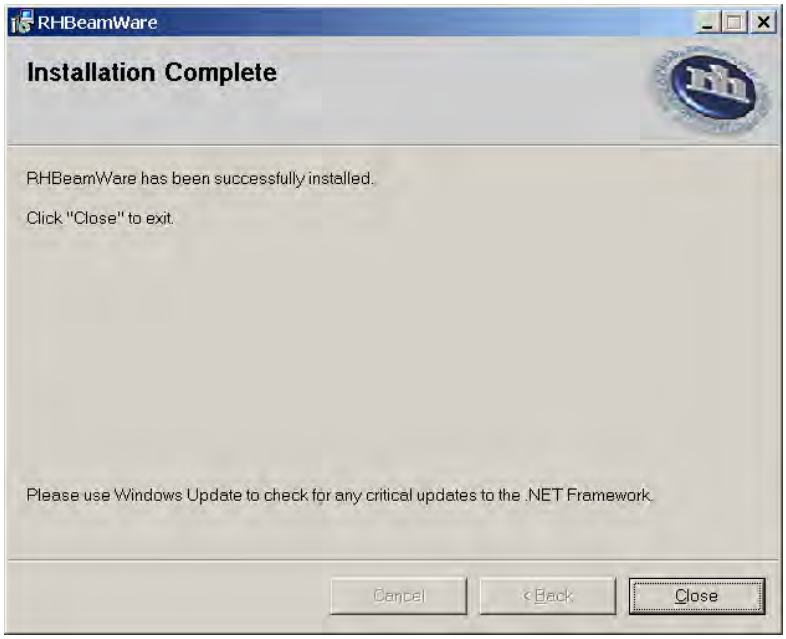
1. Click on *Next* to start the installer and open the Select Installation Folder window shown below.



Approve the suggested file location by clicking on *Next*. Notice that you are given the choice of limiting access to BeamWare to just yourself or of giving access to anyone using the computer.



Click on *Next* to start the installation.



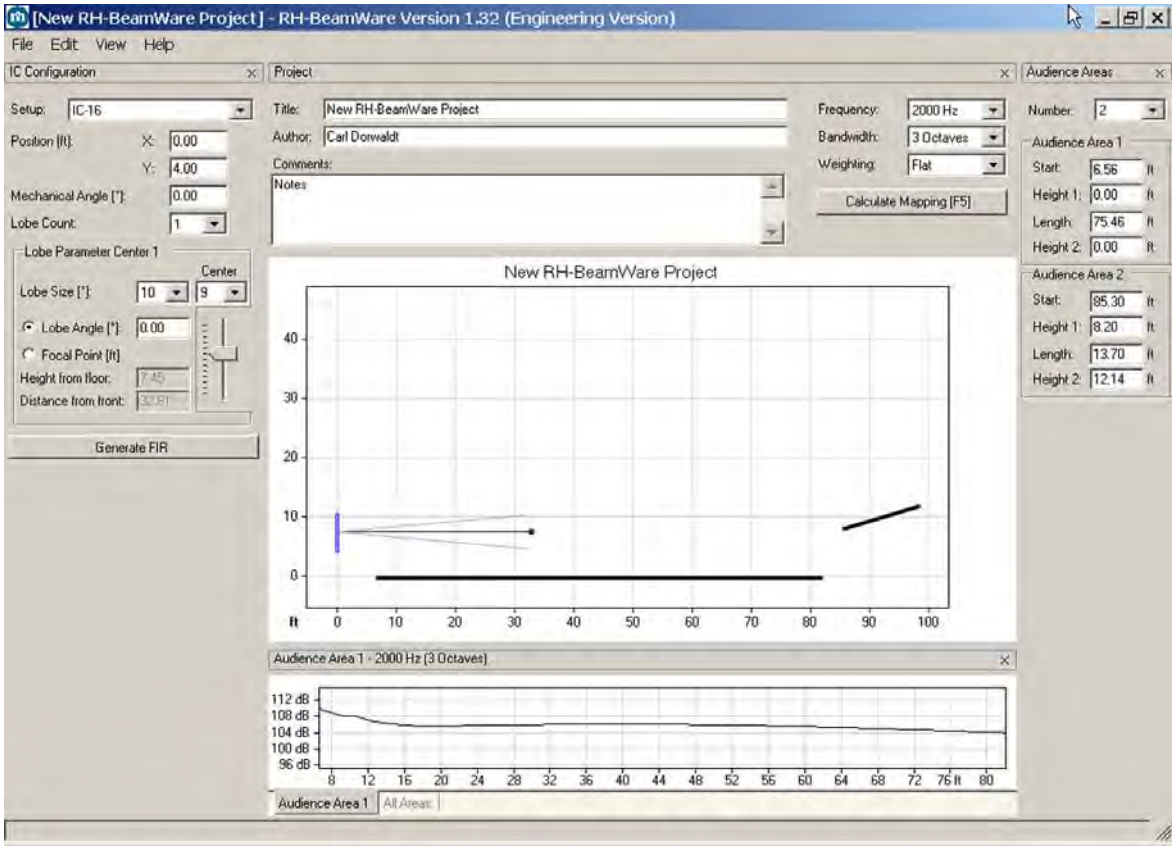
Click on *Close* to exit the installer.

Notice that the installer placed a BeamWare icon on your desktop.

Note: Microsoft's .NETFramework must be installed on your computer to operate BeamWare. In case you do not have .NETFramework installed on your computer, the Microsoft installer can be downloaded from the same location on our website as the Beamware download.

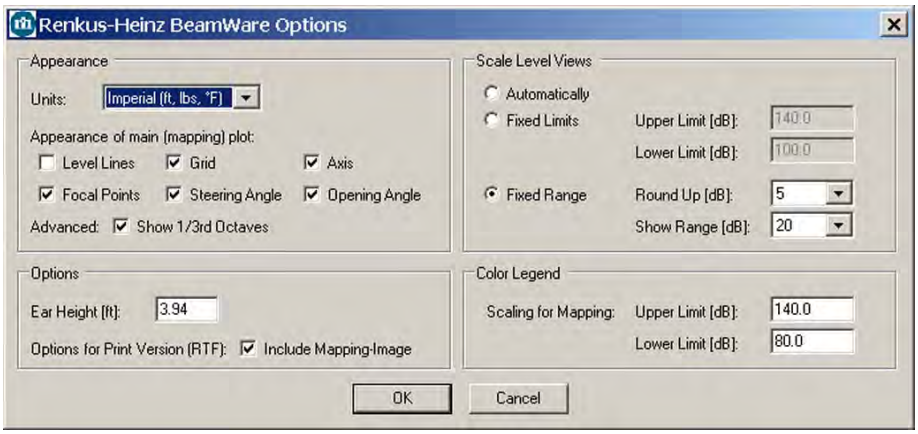
USING BEAMWARE

1. To open BeamWare, click on the BeamWare icon the installer placed on your desktop. This will start BeamWare and open the screen shown below.



2. Before you go any further, you should first verify that you are using the correct measurement system (feet or meters). The default measurement system is Imperial (feet), but it's always best to check.

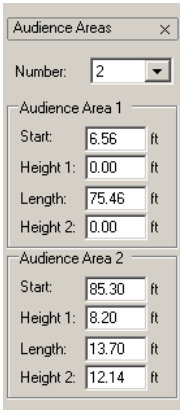
If you want to change it, go to the *File* pull down menu and click on *Options* or right click on the BeamWare Project window in the center of the screen. Either method will open the Options screen shown here. Make the change and then click on *OK* to approve the change.



Notice that the Options window also allows you to change the height of the measuring plane (the *Ear Height*), the *Scale Level Views* and the *Color Legend*. Until you are more familiar with the program we suggest you accept the default settings. There are times, however, when you will want to change the height of the measuring plane. It is set to 3.94 feet (1.2 meters) which is fine for a seated audience, but not for a standing audience. Many experienced users also like to use the *Fixed Range* option under *Scale Level Views*; setting the *Round Up* to 5 and the *Show Range* to 20. This places the SPL line in the graph nearer to the center of the graph than the *Automatically* setting which places the SPL line near the bottom of the graph.

3. Your next step will probably be to use the *Title, Author* and *Comments* text boxes at the top of the screen to insert the project's name, to identify yourself as the user and to add any comments you may want to make.

4. You should know the physical dimensions of the area(s) you want to cover, so the next logical step is to complete the *Audience Area* section on the right side of the screen.



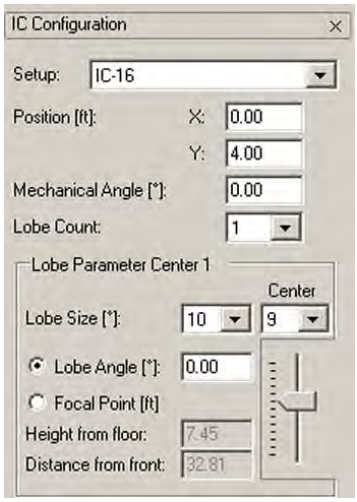
To simplify this step, BeamWare provides five templates, the Standard one used as the default starting point and four others; Small Arena, Large Arena, Open Air and Theater. These templates are available under the *Edit* pull down menu by clicking on *Venue Presets*. You should become familiar with these templates, so we suggest you try each one of them and then choose the one that comes closest to matching your project. Note how the number of areas and the sizes of the Audience Areas change.

Once you have selected the template, alter the Audience Area size(s) and location(s) to match your project's dimensions. Notice that you can also add or delete up to a maximum of 3 Audience Areas by using the *Number* field and associated drop down arrow.

The *Start* field establishes the beginning point of the Audience Area relative to the "0" point of the graph. The Start point is usually the first row of seating. *Height 1* is the height of the front of the Audience Area. It usually is "0" for the front of the first floor area. *Length* is the physical length of the Audience Area from the front edge to the rear edge. *Height 2* is the elevation (height) of the rear of the Audience Area above the "0" plane.

6. The next step is to select the steerable column you want to use in the simulation, position it and define the beam (lobe).

Select the appropriate column, IC8, IC16, IC24, IC32, IC16/8 or IC32/16, using the *Setup* field on the left side of the screen and its associated drop down arrow. See below.

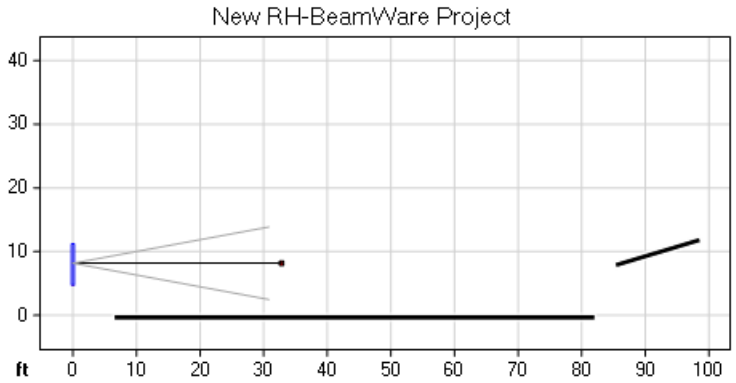


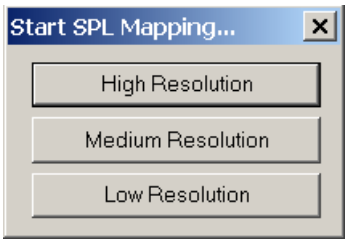
Now, it's time to locate (position) the steerable column. Usually it will be on the front wall (X = 0.00) on the New RH BeamWare Project display. If it will be placed away from the wall, the front of the stage, for example, move it forward by inserting its correct location. Note that after you insert a figure in the field, you need to press *Enter* on your keyboard to OK the change in location.

The *Y* field controls the height of the column array by positioning the bottom of the column above the Floor level (the "0" level) The default position is 4 feet (1.22 meters). The *Mechanical Angle* field tilts the column forward or backward (minus [-] numbers tip it back and plus [+] numbers tilt it forward).

The next step is to choose the *Lobe Count*. One of the unique features of Iconyx steerable arrays is the ability to generate either single or multiple lobes. We'll be discussing multiple lobes later in this tutorial, so for now accept the default *Single* lobe shape.

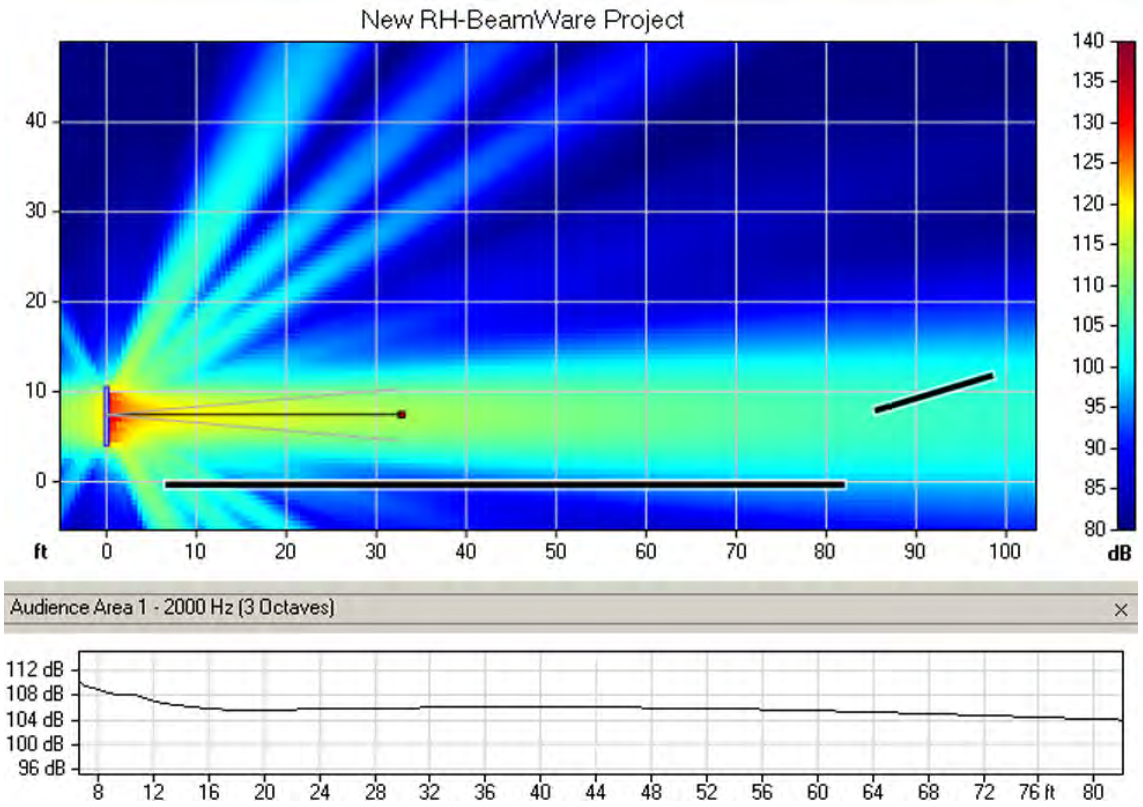
Lobe Size lets you choose the Array's opening angle which controls the sharpness of the vertical lobe (beam). Try it out using the drop down arrow. Notice how the opening angle of the array in the graphic varies as you choose different opening angles.





Note that at any point you can click on the *Calculate Mapping [F5]* bar to tell the program to map the array's performance. Initially, a pop up screen will ask you to choose the resolution of the simulation. Low Resolution simulations are much faster to run than High Resolution ones. Al you need to do to start the simulation is to make your resolution choice by pressing one of the bars.

The simulation shown below was made using Medium Resolution.



Lobe Angle aims the vertical beam up or down. Try it out by selecting *Lobe Angle [*]*, changing the number and observing its effect. Note that after entering a new number you will need to press *Enter* to initiate the change. You will also need to do a new *Calculate Mapping* to view the change. The old map will have been wiped out by the program as you made the change.

Note that you can also check *Focal Point [*]* and then enter the exact location of the beam's focal point in *Height from Floor* and *Distance from Front*. Another way to position the beam's focal point is to use the mouse cursor to grab the end point of the aiming axis and and move it to the desired location. Try it out. It's easy to do.

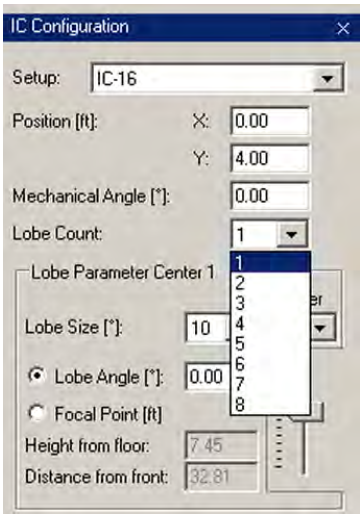
The *Center* field section allows you to move the location of the column's acoustical center up or down using either the drop down arrow or the associated slider control. Notice that the acoustical center can be moved at will, but cannot be placed on either the very top transducer or the very bottom one.

Now, let's investigate the multiple beam capabilities of Iconyx. In many installations, a single beam is the ideal solution for the room's acoustical challenges and the beam's movable acoustic center provides all the mounting location flexibility needed.

In some cases, however, multiple beams are needed to provide the desired coverage. Rooms with a balcony are a good example; in most cases a single beam can't cover both the main floor and the balcony. One solution is two line arrays, one for the floor and the other for the balcony, but this is expensive. In other cases, architectural considerations or microphone placement dictate that the column be mounted higher than is ideal and it's impossible to cover the audience area with a single beam.

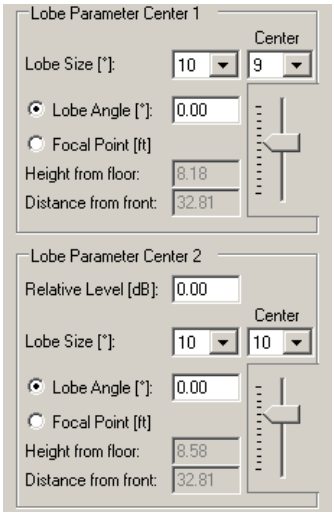
Iconyx solves these problems by offering multiple beams, each having its own acoustical center.

To explore this unique Iconyx feature, click on the drop down arrow associated with *Lobe Count.* This will produce the following screen.

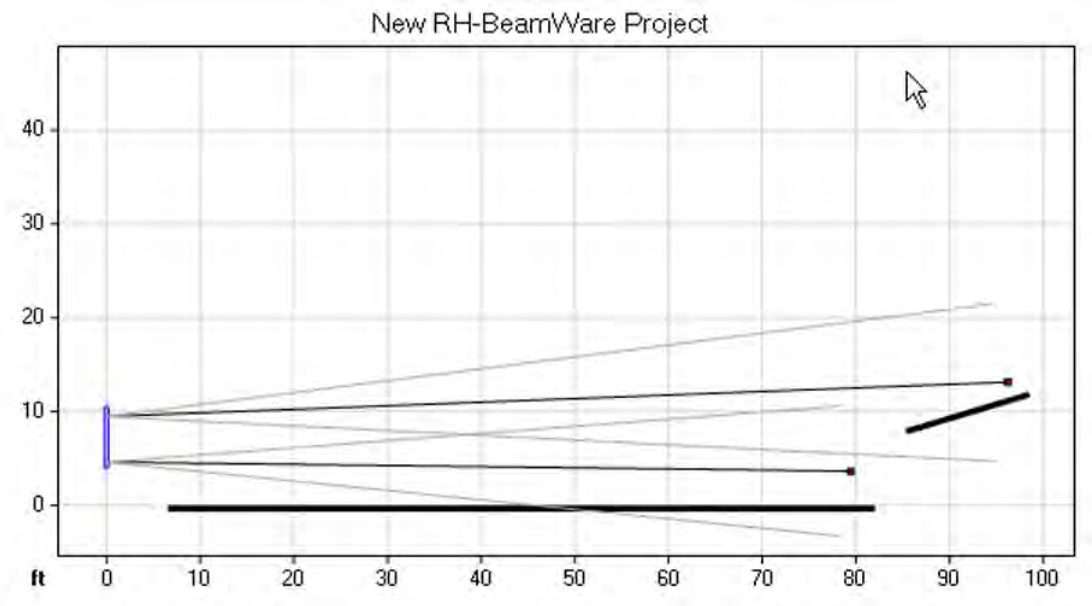


Notice that on the IC16 you can select up to a maximum of 8 lobes. It's up to four on the IC8, 12 on the IC24 and 16 on the IC32.

Start exploring this feature by selecting two lobes (beams). At first glance it may appear that nothing happened since the program placed the second beam almost on top of the first beam. The only way to really tell is that the left side of the window now includes a Lobe *Parameter Center 2* section.

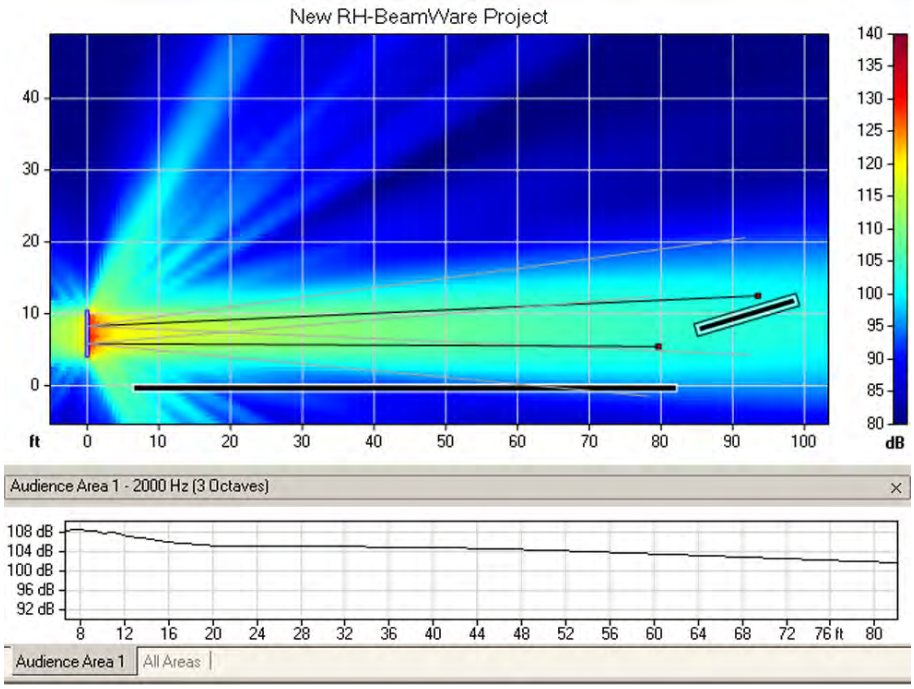


Change the acoustical center for both beams, placing the acoustical center for one beam at the top of the array and the other one at the bottom.

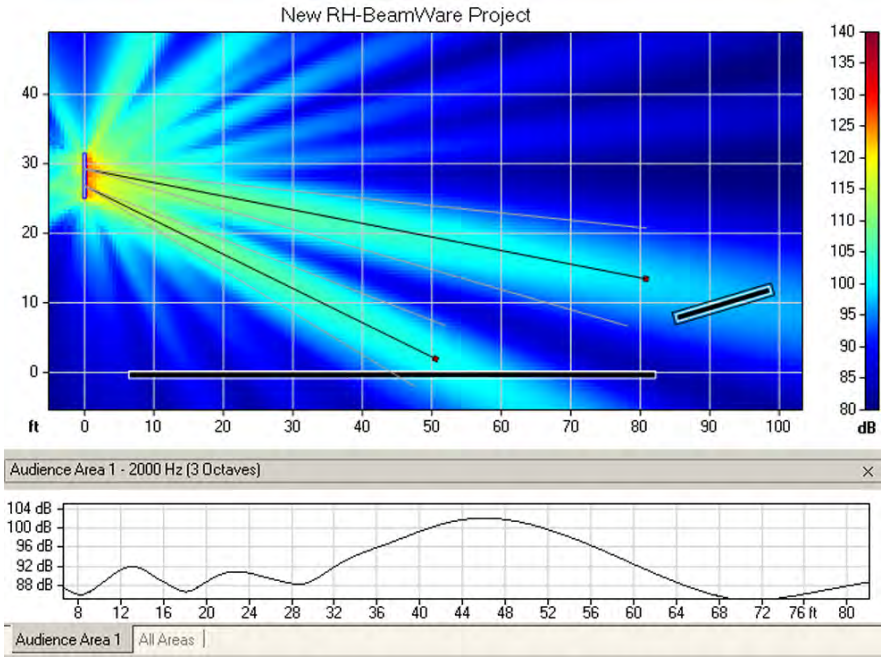


Note that you can place the acoustical center of either beam 1 or of beam 2 at the top of the array. In other words, either beam can be above or below the other one. In fact, both beams could have their acoustical center at the same location.

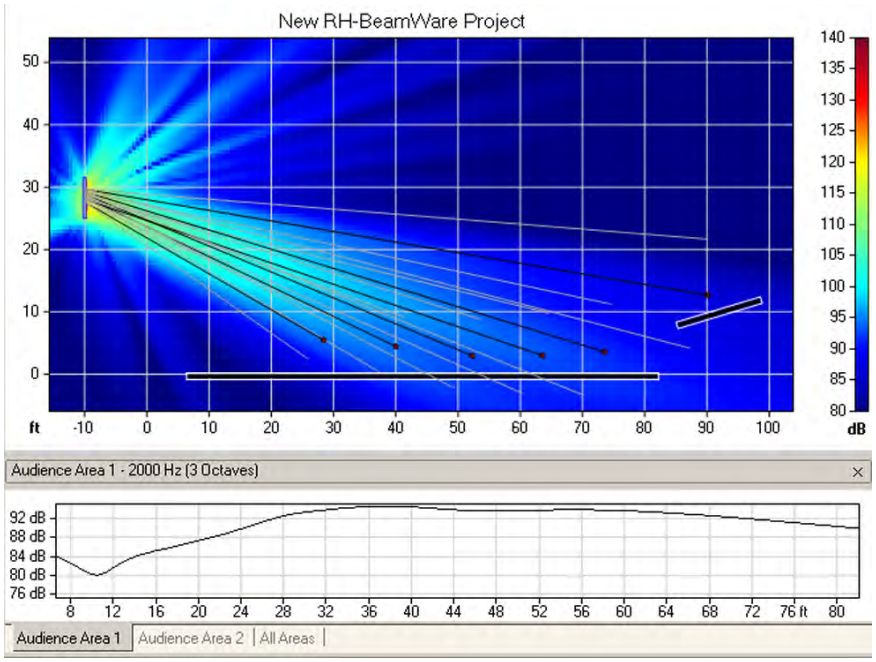
The only difference is that the level of beam 2 can be reduced by inserting a negative value in the *Relative Level [Db]* field, while the level of beam 1 can not be changed. This ability to reduce the level of beam 2 allows you to balance the SPL levels when the beams are covering different audience areas.



As the next step in this excercise, let's assume you have to move the IC16 10 feet futher away from the audience area and up 20 feet in height. Change the Position [ft] parameters to read X = -10 and Y = 24 and reaim the two lobes.



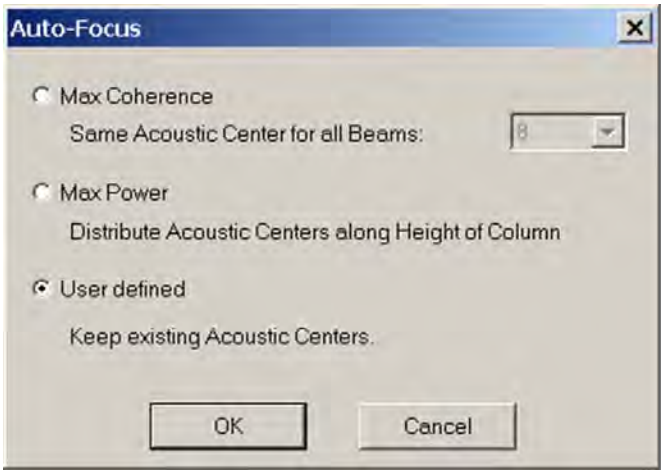
As you can see, there is no way to get smooth coverage from this mounting location with just two beams. Switch to 6 lobes and try again. Notice how the coverage is much smoother. You probably also noticed that with the array placed at this height, you cannot get good coverage on the front of the audience area. You will either need to add front fill loudspeakers or lower the column. The following screen shows what can be accomplished with the column lowered to 15 feet and the beam aiming and levels adjusted.



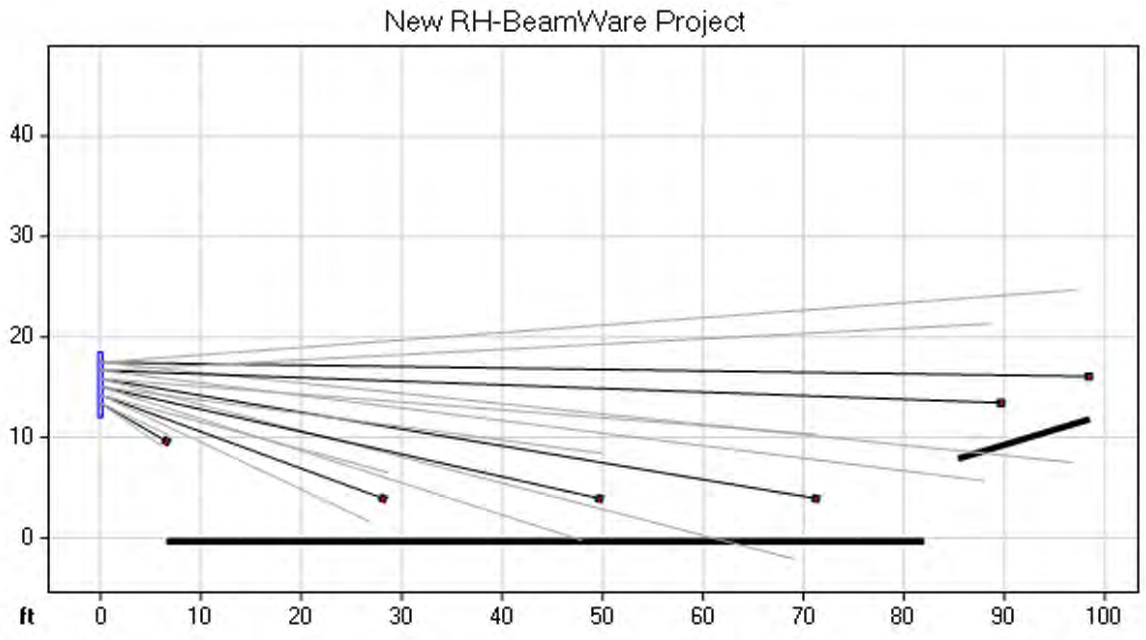
Notice that the SPL levels dropped significantly. The more lobes you use the lower the level of each lobe. Spacing the beam's acoustical centers further apart will produce higher overall SPL levels than placing all the acoustical centers at the same spot. Be aware that moving the acoustical centers of the multiple lobes apart affects the signals coherency and degrades the sound. It's best to keep them close together in systems like this.

Now that we understand the basics of using Beamware, it's time to investigate one of the unique tools Beamware includes to even further speed the design process. It's called Auto-Focus and it is available as a design aid whenever you choose to use 2 or more beams. You'll find it under the Edit pull down menu.

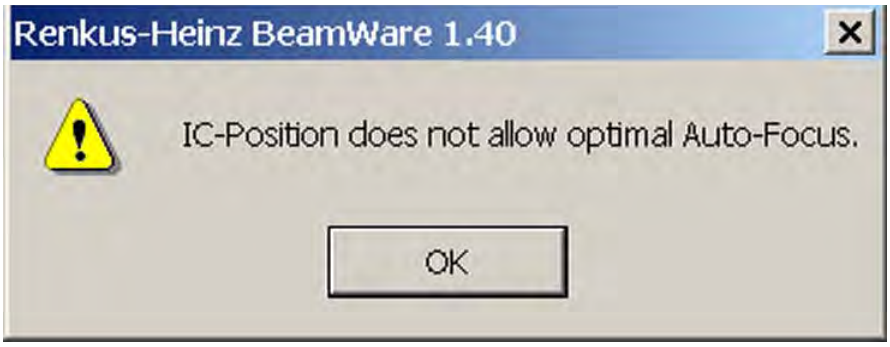
Clicking on Auto-Focus or using the Ctrl+F shortcut key will open the setup window shown below.



Notice that it gives you the option of dictating the location of the acoustic centers or of allowing the program to select them on the basis of maximum power or best coherence. Approve the location method by clicking on OK and the program will automatically determine for you the best focus point for each of the beams.

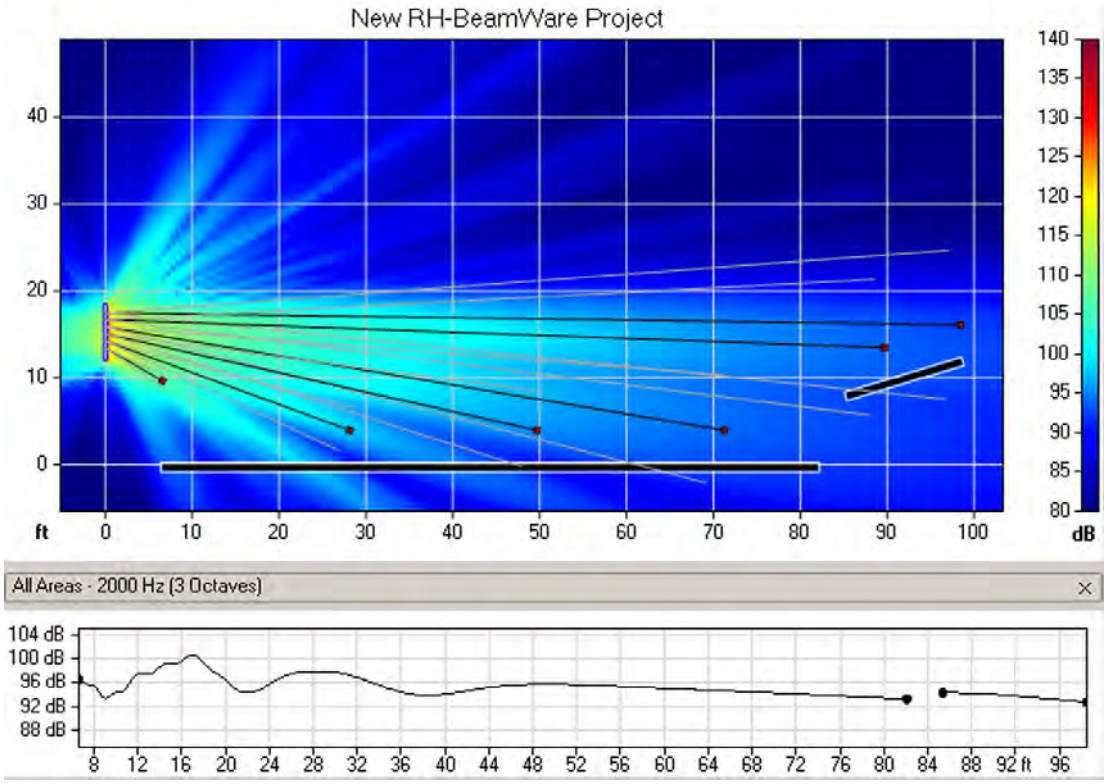


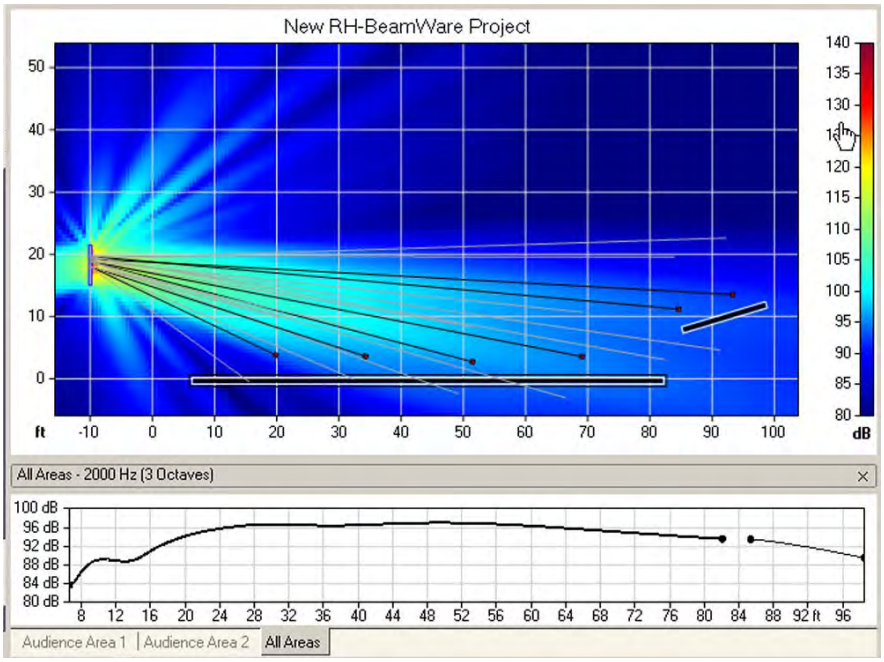
Auto-Focus will also warn you if the location you have chosen for the steerable array isn't ideal; see below.



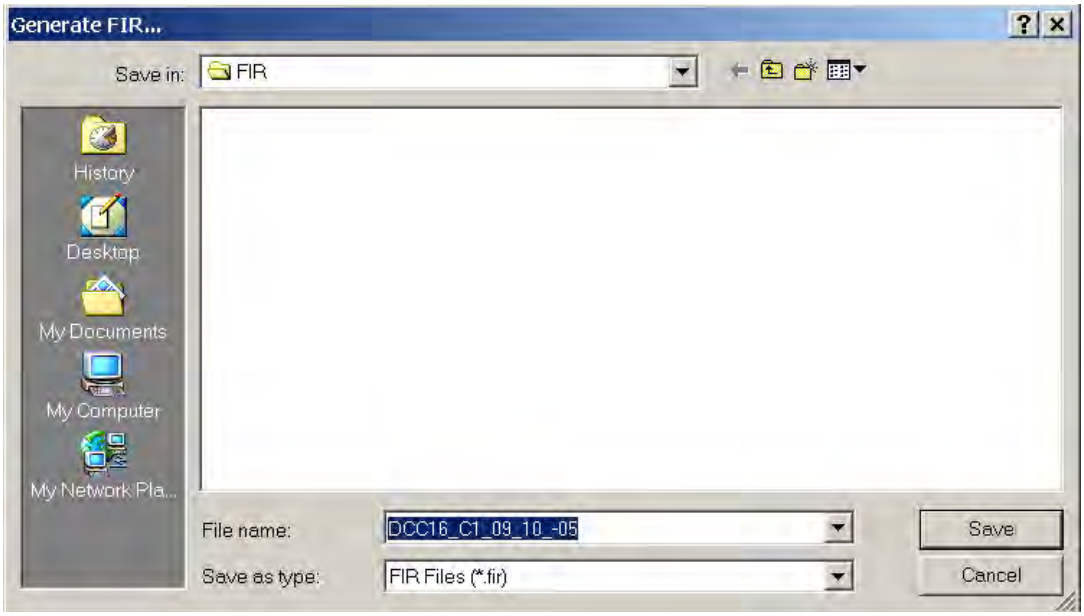
You can override this warning if you want and the program will still attempt to properly focus all the beams. You may, however, want to try moving the array up or down to see if you can find a better location for the Iconyx array or use more or fewer beams to see it you can eliminate this warning prompt.

Notice that Auto-Focus will have placed the focal points on the measuring plane established in the Options Menu under EAR Height. Default is 3.94.feet, the approximate height of a seated listener's ear. If your audience will be standing most of the time, you will want to increase this 5.5 or 6 feet.





8. The final step after you are happy with the design is to create the FIR (Finite Impulse Response) file that will be used by the Array II program to control the column's performance. Pressing the *Generate FIR* bar will open the FIR file naming/destination screen shown below.

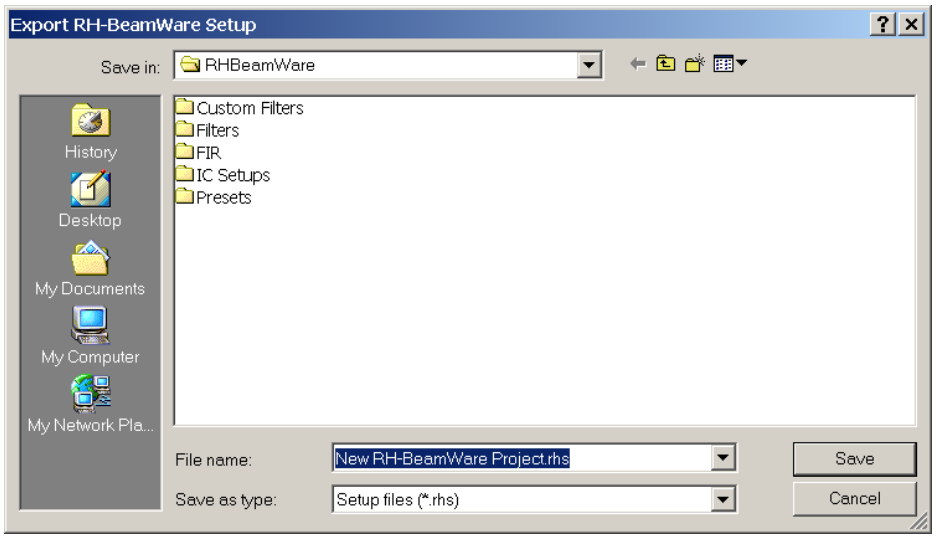


Although the program will let you change the File name, we recommend accepting the one generated by the program. If you want to easily identify individual project files, use Windows Explorer to create a project folder and then store the .fir files there. It's easy to do. Just click on the *Create New Folder* icon at the top of the Generate FIR window and follow the prompts. One word of caution, don't use a "." (dot) in the folder name. Dashes and underscores are allowed, but dots are not.

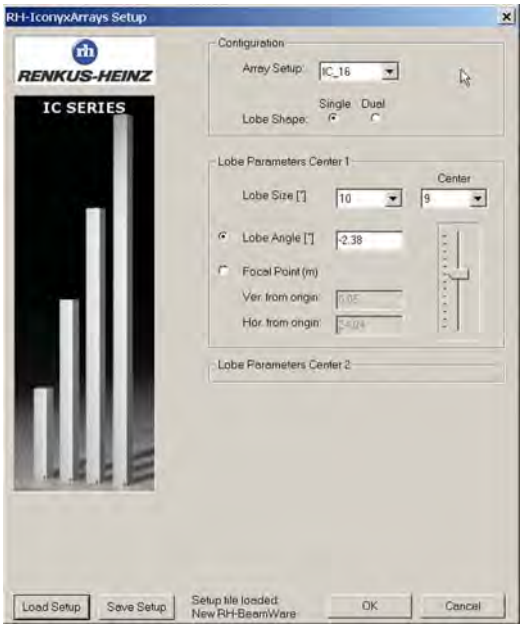
Before exiting BeamWare you probably want to save you work. BeamWare offers you a variety of methods to do this. Using *Ctrl+S* will save it as a project file that can be opened again at a later date and *Ctrl+A* allows you to save it under another name.

Selecting *Create Print Version* under the *File* pull down menu will create a Word document that can easily stored. Selecting *Save Picture As* under the *File* pull down menu allows you to save the graphic project display as an electronic file, for example as a Bitmap or JPEG.

Selecting Export under the File pull down menu opens the Screen shown below that allows you to Export (save) the Beamware Setup as a .rhs setup file that can easily be imported into EASE.



It's a simple thing to do; just open the EASE Iconyx DLL file into your EASE project in the normal fashion and then click on *Load Setup* to import all the Beamware settings into EASE.



If you have EASE or EASE JR, we strongly encourage you to take the time to model the project in EASE and evaluate the system's overall performance. Beamware only shows you the column arrays vertical coverage and does not allow you to view the horizontal coverage or the effect of reflections on intelligibility or clarity. EASE also allows you to analyse the effects of interference in designs having more than a single column array.

If you do not have EASE or EASE JR, we urge you to consider purchasing at least EASE JR to assist you in your design efforts.