



For technical support contact [D3@martin-audio.com](mailto:D3@martin-audio.com)

## Major build update

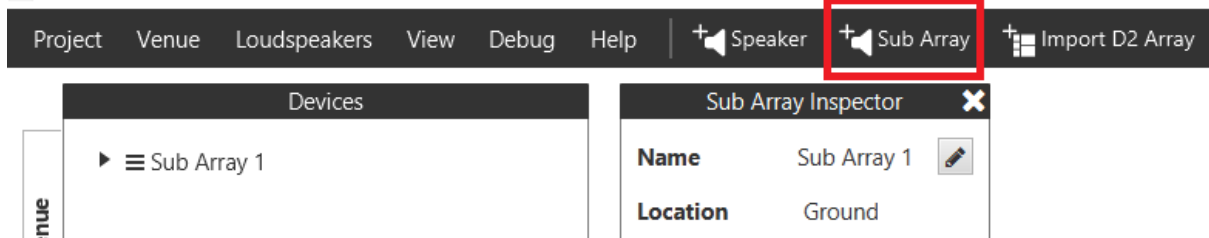
## Contents

Introducing.....	2
Subwoofer Array Tool .....	2
Types .....	3
Array Elements.....	5
Pattern .....	6
Beam .....	7
Configuration .....	9
Export.....	9
Basic Frequency Response Tool .....	10
Torus T8 .....	12
Snap to Nearest Pin.....	13
Default Speaker Insertion Heights .....	14
Open Recent .....	15
BlacklineX.....	16
Freely Assigned Subwoofers .....	16
Speaker Configurations.....	17
Changes.....	18
Fixes .....	18
Known Issues.....	18

## Introducing

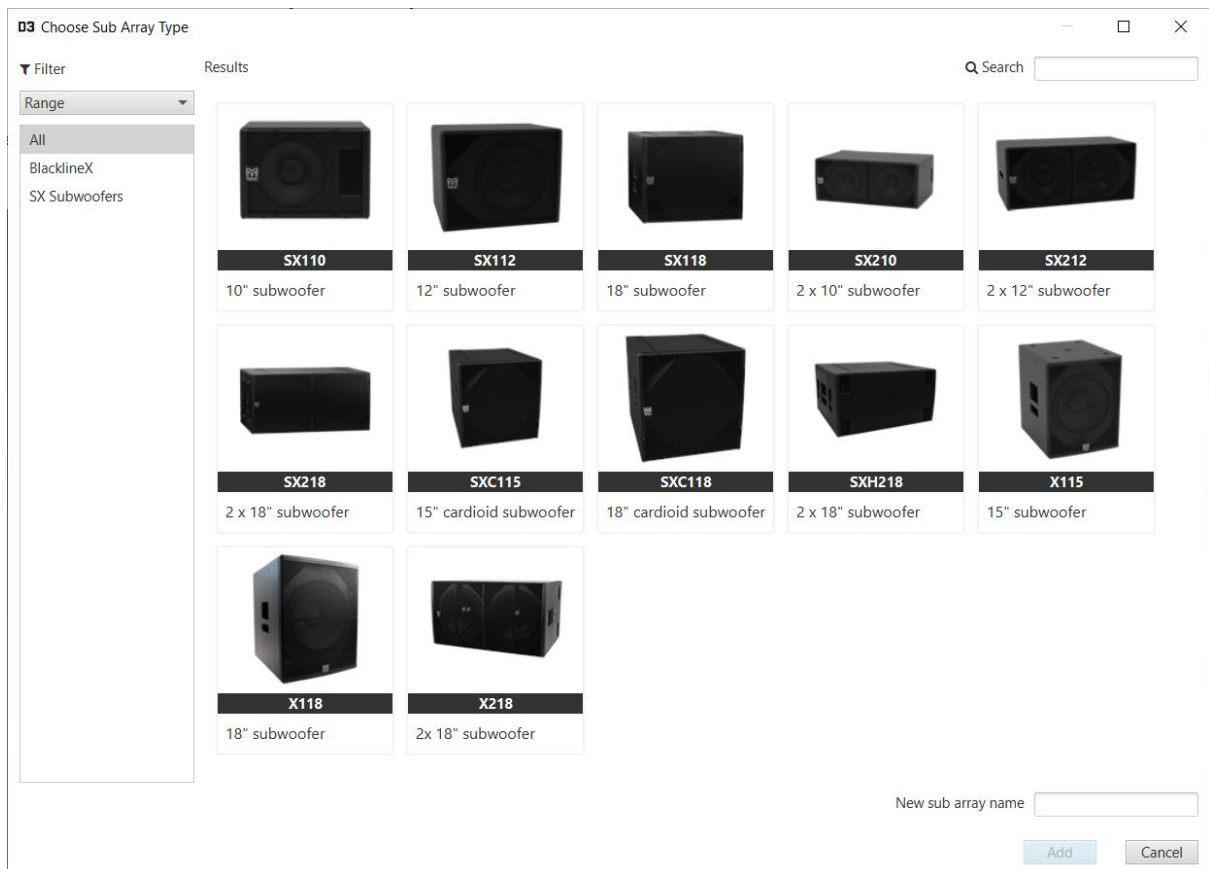
### Subwoofer Array Tool

D3 Display 3 \*[C:\Users\ambrose\Desktop\d3\SubArray test 1.d3]



The first part of a new Sub Array type is available from the main Toolbar whilst in the Coverage, Loudspeaker or SPL context (tab). It enables rapid design of ground deployed linear arrays of subwoofers. Traditional techniques have been employed to determine the EQ required to approximate and steer far-field beams. Emphasis has been placed on the speed of design using a handful of parameters, rather than requiring manipulation of individual loudspeakers and associated EQ elements.

Clicking **Add Sub Array** will open a window for you to choose which sub to use, the list of all available subs are presented

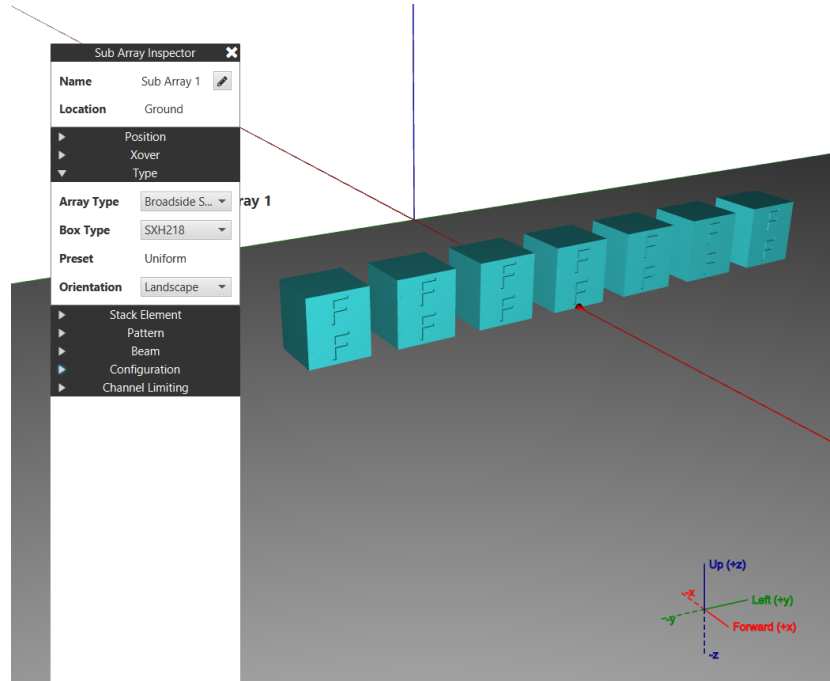


Select and **Add** or **double click** on the one you want and the default array will be created. You can easily change the box type later in the Property Editor

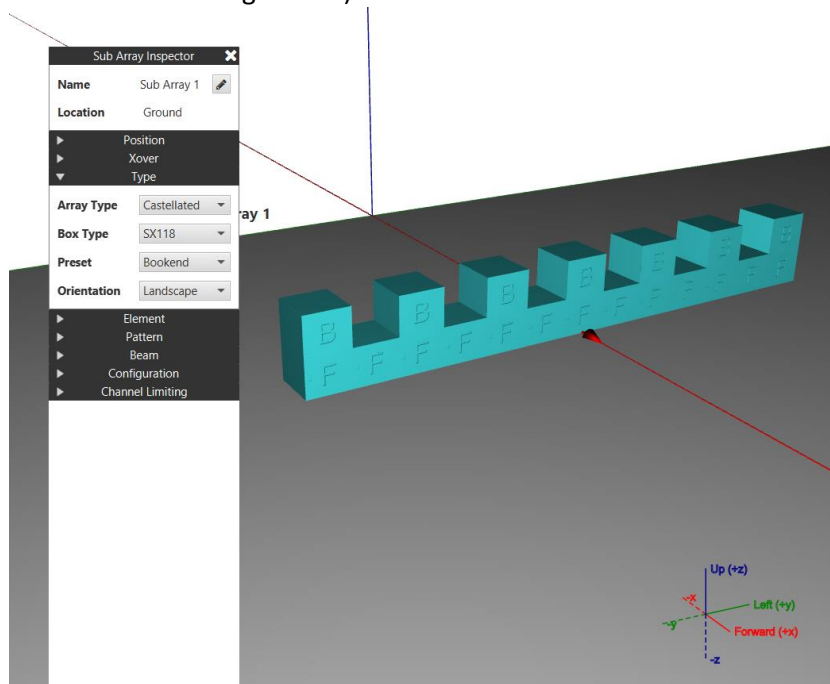
Click on any box in the sub array (or in any list of Devices/Sources in the Loudspeaker or SPL context) and the Property Inspector will be displayed. The array can be renamed and positioned just like any other loudspeaker.

## Types

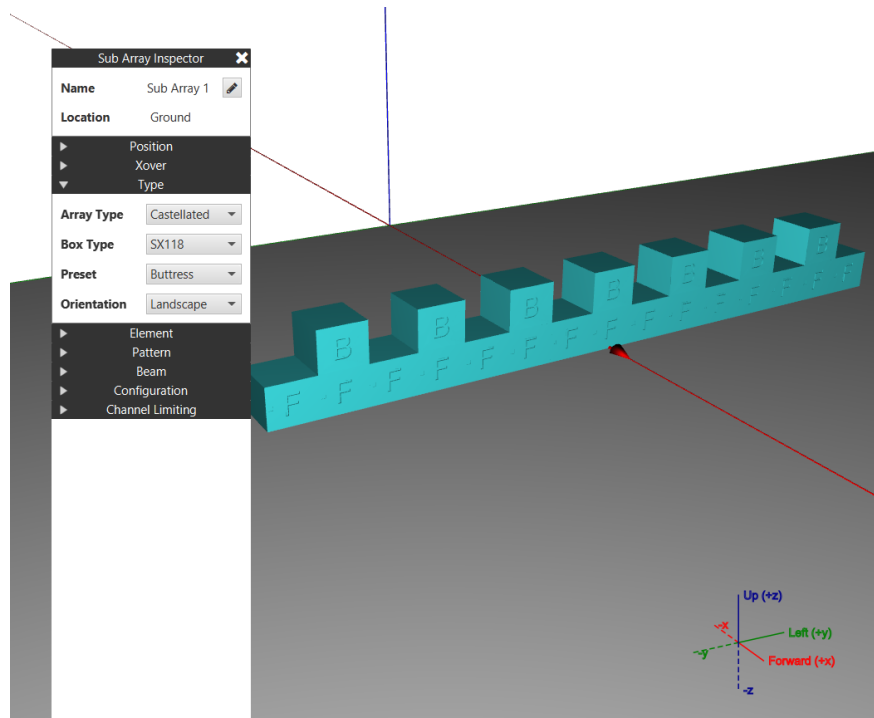
Two **Array Types** - 'Broadside Stack' and 'Castellated' are available.



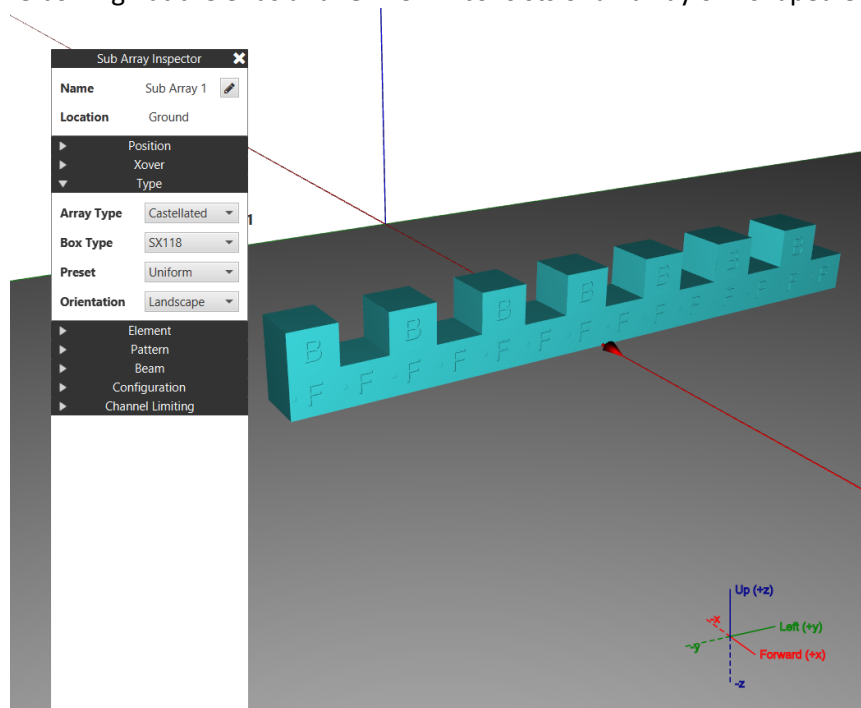
For **Broadside Stacks** any sub loudspeaker Box Type can be selected, for Castellated only subs which have cardioid settings available can be selected (email us if you want to use a sub in cardioid mode that currently has no cardioid configuration).



**Castellated** arrays have 3 styles defined as **Presets**, the above is 'Bookend' where the end parts of the array are two high.



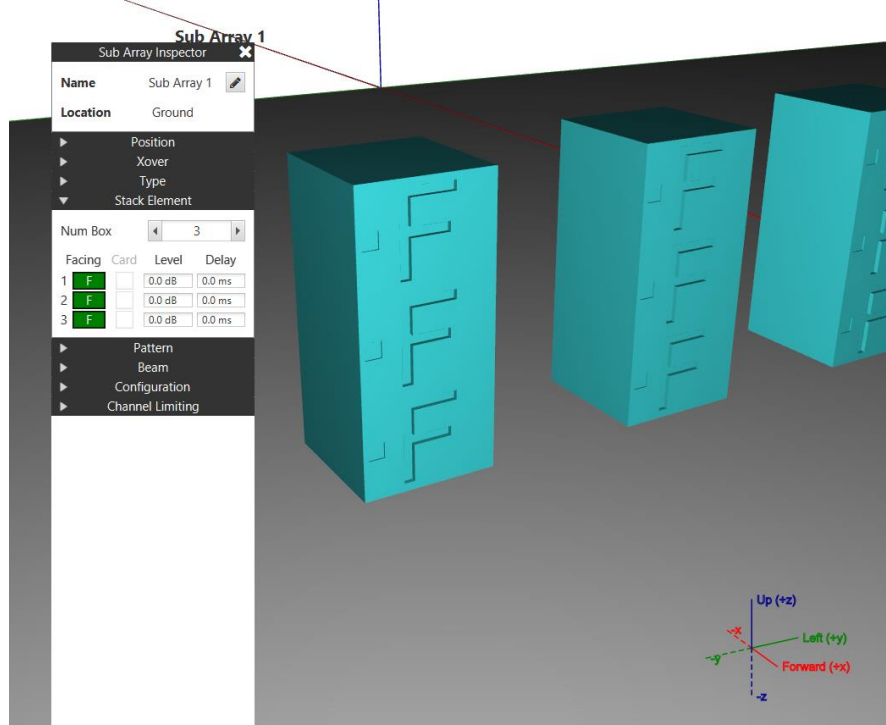
'Buttress' is one box high at the ends and 'Uniform' consists of an array of L shaped elements.



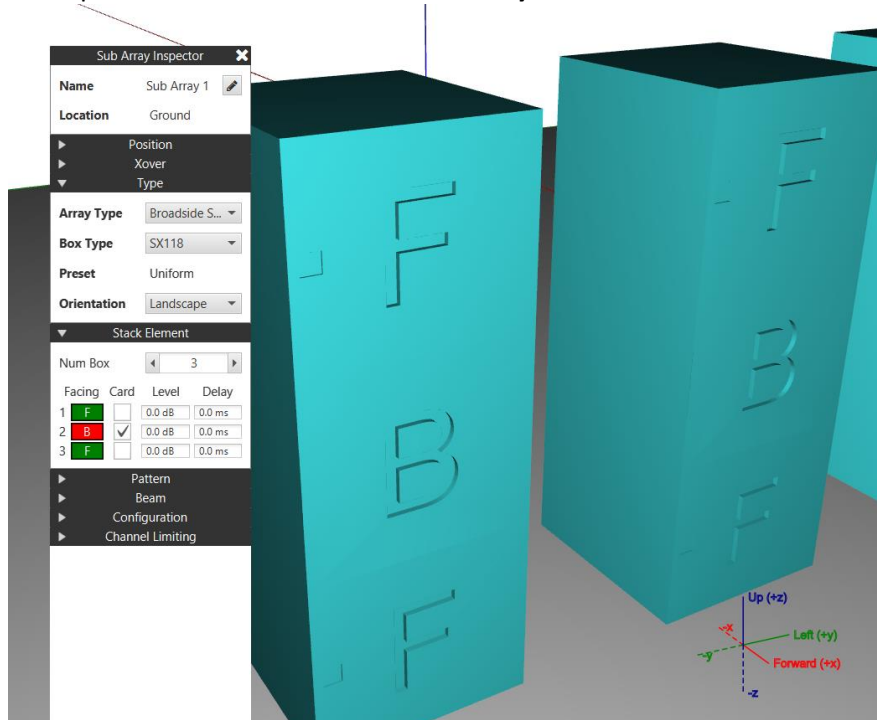
The **Orientation** (Portrait or Landscape) of all boxes in the array can also be set in the Type Section

## Array Elements

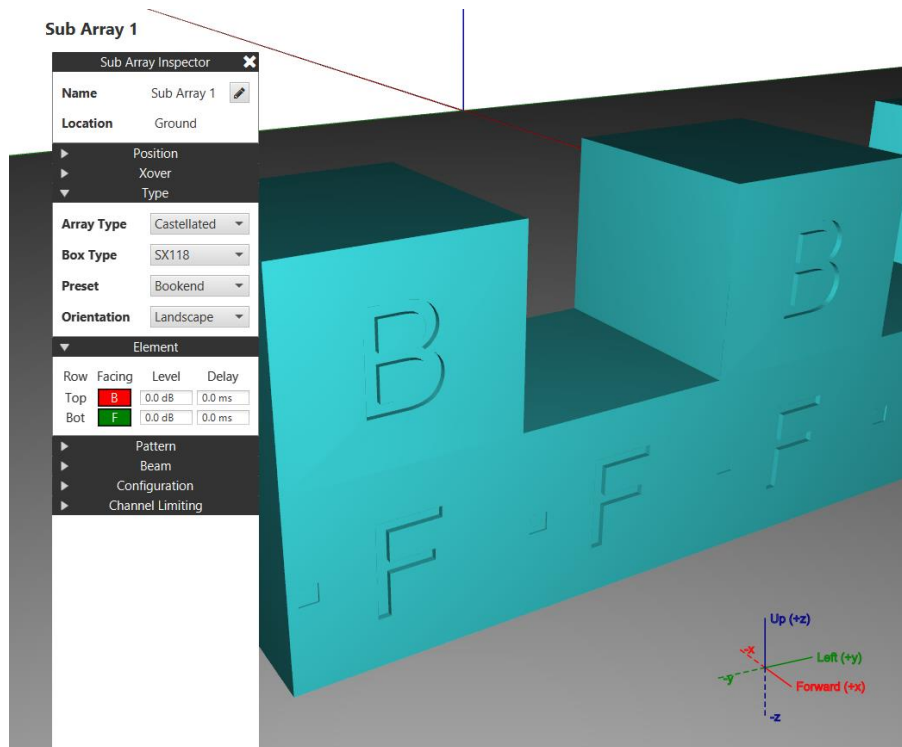
An **Element** can be a single sub or group of subs and is the entity which is replicated in a linear **Pattern**. Each array type generally has a different ‘patternable’ element. For Broadside Stacks then the element is the Stack which can consist of one or more sub boxes



You can change the **number of subs** in the Stack and **Level./ Delay** (add only) for each of those subs. These values are copied across all Stacks in the **Sub Array**.



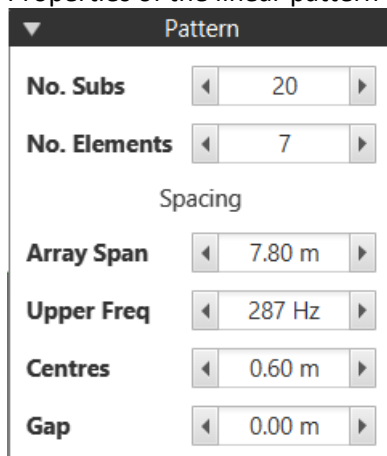
For subs with a cardioid configuration then you can assign that property with the **Card** checkbox – the sub will automatically re-orient and internally select cardioid filter EQ



Castellated Elements consist of whole or partial L shaped groups of subs that have cardioid configurations defined. Here, you can change the **Level** and additional **Delay** on a **row** basis – each sub in that row will be affected by the values you set.

## Pattern

Properties of the linear pattern

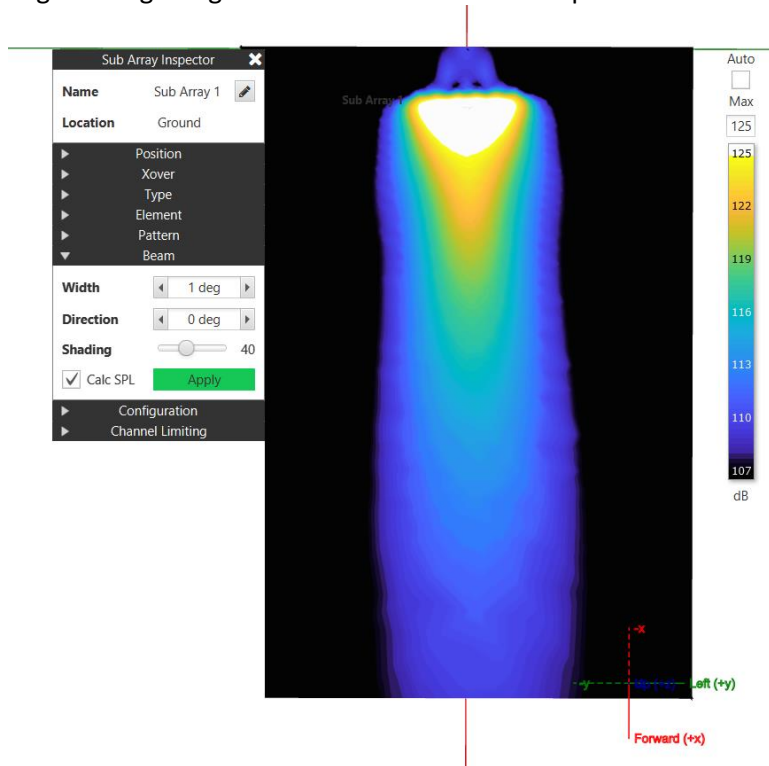


You can set the total number of **Subs** or **Elements** – changing one will automatically update the other. The number of Elements can increment in steps of 1 but, depending on the Array Type and **Preset**, the number of Subs can only increment in steps that preserves the Array Type

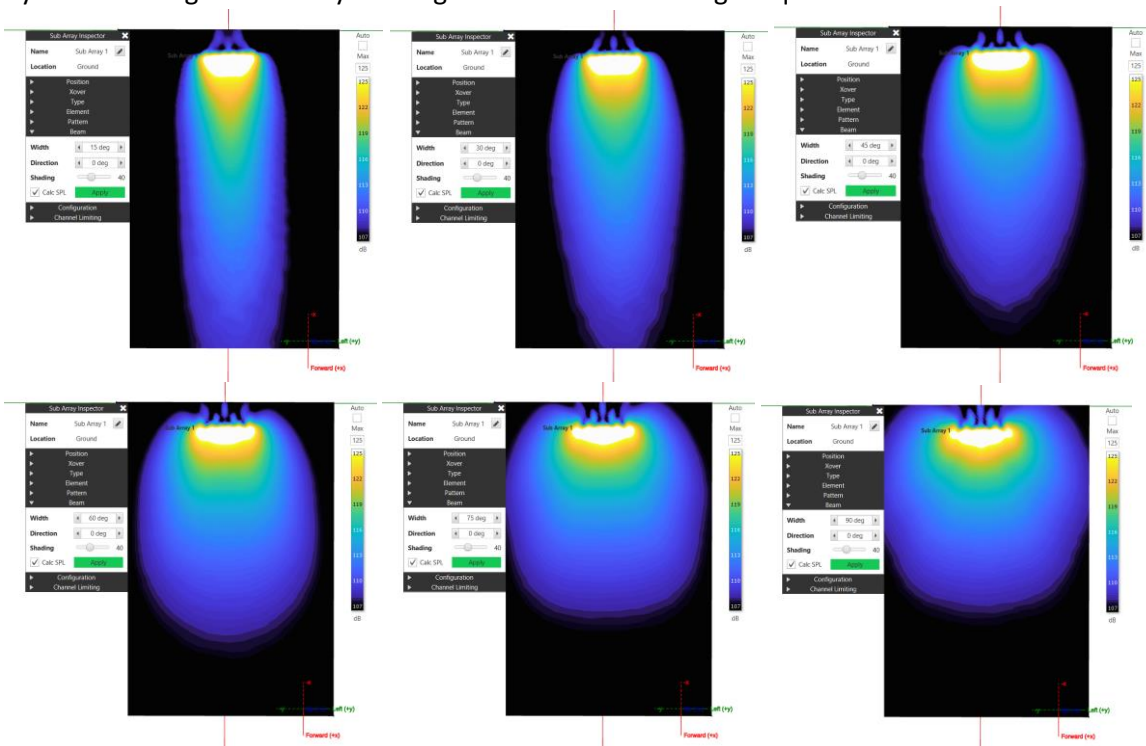
All **Spacing** properties are linked together – changing one will update the rest. The minimum distances are constrained to when subs are touching each other, ie **Gap** = 0. The **Upper Freq** depends on spacing, the number of boxes and any steering applied. The often used half wavelength constraint applies to infinite arrays and ensures no aliasing when steered 90 deg, for modest steering angles this constraint can be relaxed. Also the more columns you have the higher the upper frequency.

## Beam

Beam **Width** can be set from 1 deg to 180 although extreme values like this are unlikely to provide useful results. Setting to 1 deg will generate the narrowest beam possible from the array.

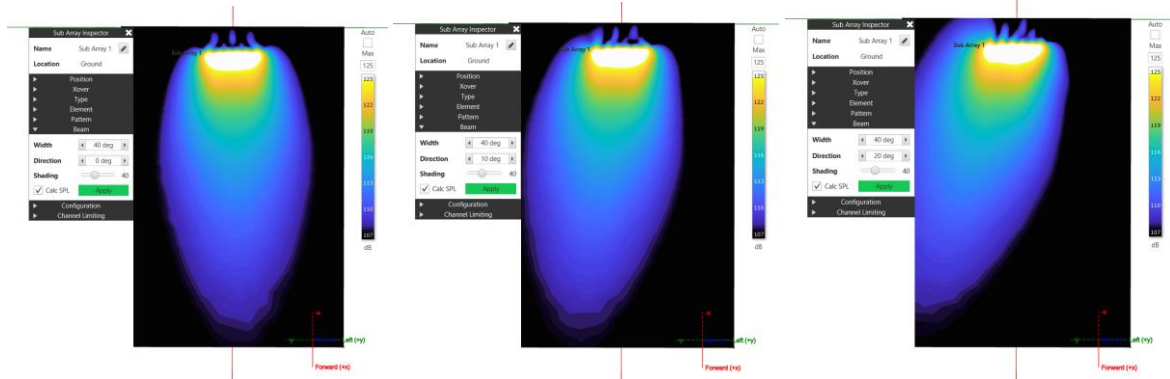


By incrementing the **Width** you can get closer to the coverage required



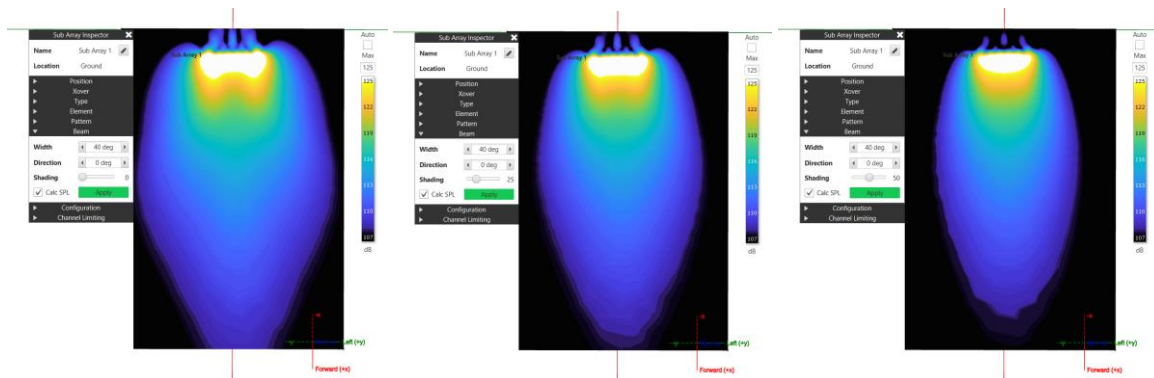
Above from 15 deg in 15 deg steps

The Beam can be steered either side by a modest amount by changing the **Direction**



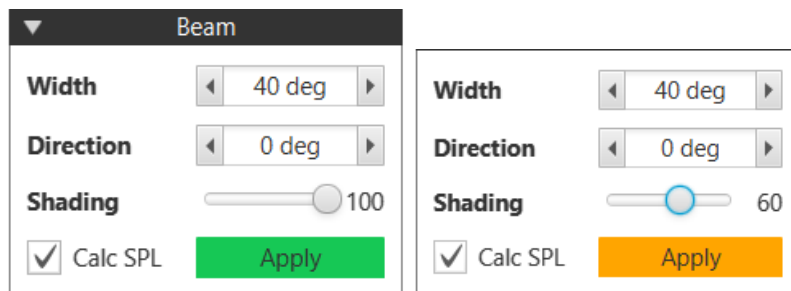
Above 0, 10 and 20 deg

Gain **Shading** controls how well the Beam conforms to an ideal Beam. The degree of shading is expressed as a percentage of the maximum, allowing you fine control over pattern shape vs max output. The default value is 40 % and has been used in all the plots so far.



Above gain Shading 0, 25 and 50 % and a 40 deg Beam

The **Apply** button will update the Configuration with the Beam parameters and if the **Calc SPL** is checked will then solo the sub array, and then update the SPL plot. If you change some Beam parameters, the Apply button will be coloured orange to indicate these changes have yet to be applied



With the Calc SPL unchecked after applying the changes then the main Calc SPL buttons will appear orange indicating that an SPL Update is required. Often you may want to see the effect of power distribution in the array with changes you make to the Beam, unchecking Calc SPL allows you to do this quickly.



## Configuration

Configuration

	Hor Aim	Level	Delay
	+ -	+ -	+ -
1	0 deg	-8.6 dB	4.9 ms
2	0 deg	-5.2 dB	3.4 ms
3	0 deg	-3.1 dB	2.1 ms
4	0 deg	-1.6 dB	1.2 ms
5	0 deg	-0.7 dB	0.5 ms
6	0 deg	-0.1 dB	0.1 ms
7	0 deg	0.0 dB	0.0 ms
8	0 deg	-0.1 dB	0.1 ms
9	0 deg	-0.7 dB	0.5 ms
10	0 deg	-1.6 dB	1.2 ms
11	0 deg	-3.1 dB	2.1 ms
12	0 deg	-5.2 dB	3.4 ms
13	0 deg	-8.6 dB	4.9 ms

**Symmetrical**

The **Configuration** allows you to see the **Level** and **delay** applied from the Pattern and allows you to manually change these values to iterate to an improved coverage. You can also change the **Horizontal** rotation each Element. Each row represents an **Element** (see above for a definition)

When the Beam Direction is 0 then a symmetrical application of EQ is applied. You can override this by either setting a non zero direction or unchecking the **Symmetrical** box at the end of the list.

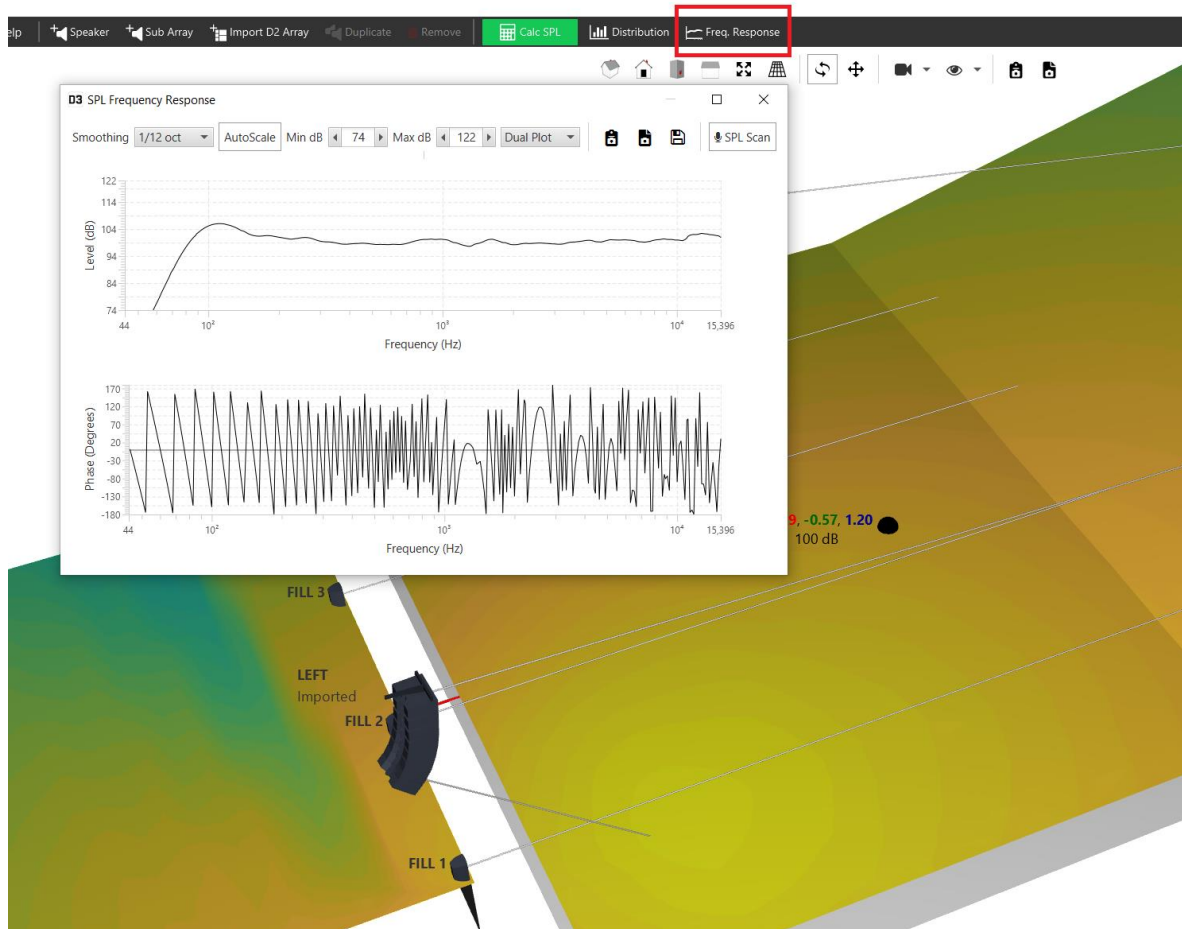
When you change the values manually then both the Apply button in the Beam section and the main D3 Calc SPL buttons go orange. Applying the Beam will overwrite any manual changes.

## Export

Via menu – Loudspeakers | Export to VU-Net

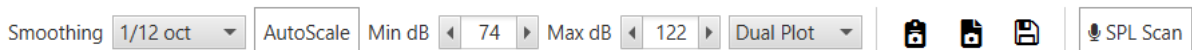
## Basic Frequency Response Tool

An early version of a tool to display the frequency response at any position on a surface is available on the main Toolbar.



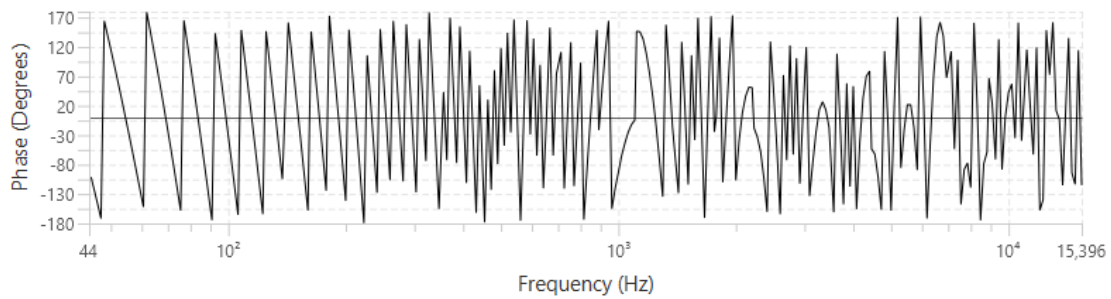
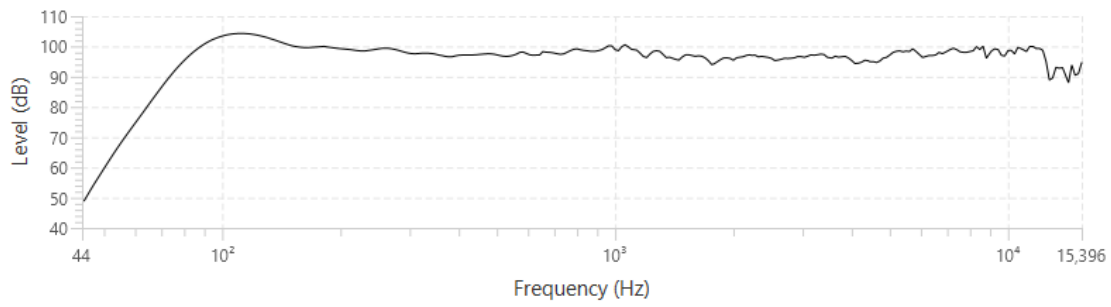
When opened SPL Scan mode is active. In this mode the nearest calculation point to the mouse position is highlighted by a black dot with the coordinates and total SPL value displayed. When the mouse is moved the position and frequency response are updated.

Clicking near the currently position will fix it there and SPL Scan mode is disabled. To select a new point then click SPL Scan and move the mouse back to the venue – the state of SPL Scan mode is indicated by the colour of the button.

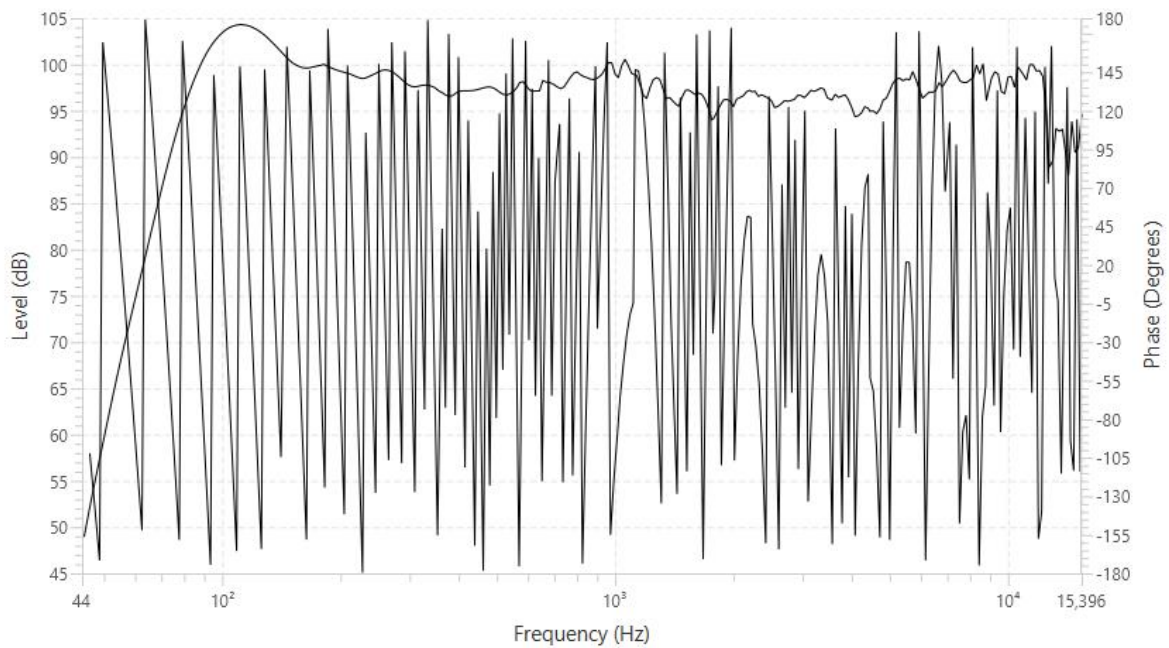


The graph Toolbar contains the expected controls for smoothing, scaling (AutoScale by default) and exporting graphics or data.

The plot type controls whether phase is displayed, either underneath in a separate plot



or overplotted with a right hand axis

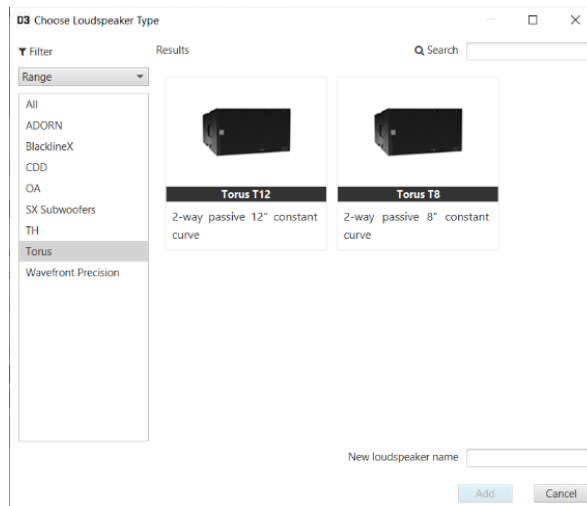
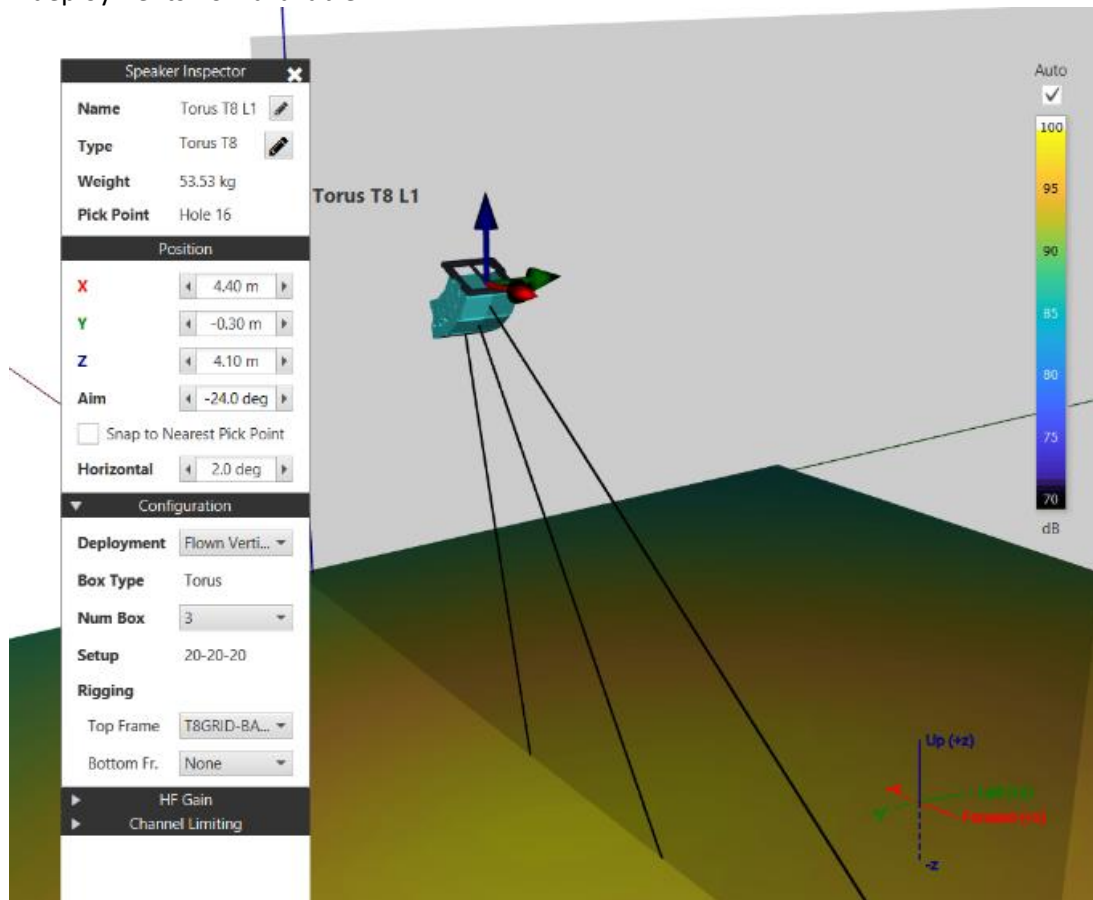


The Tool window can remain open while you make changes to speaker properties or SPL Parameters and will update with the SPL mapping.



## Torus T8

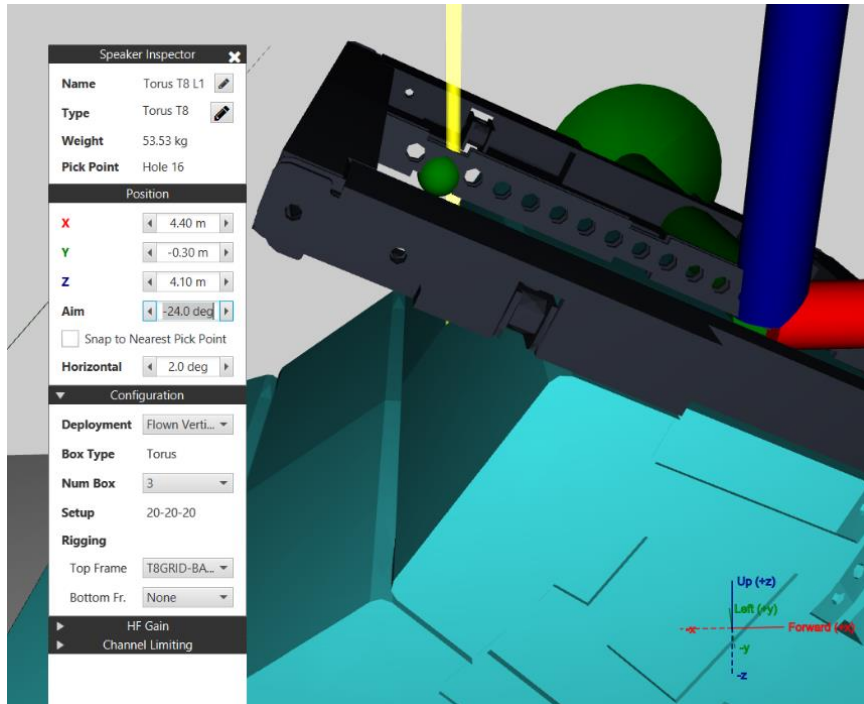
Flown deployments now available.



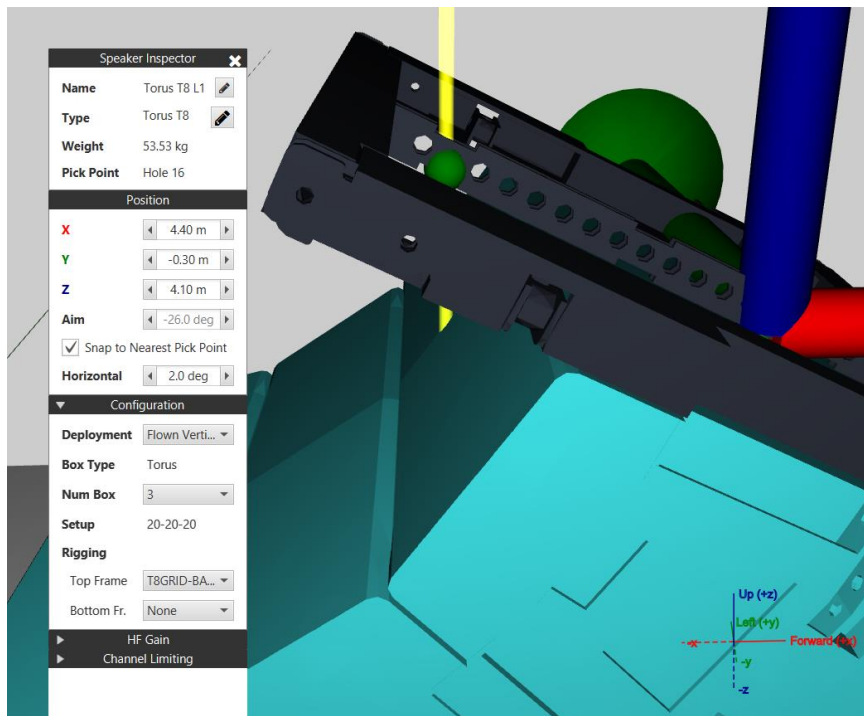
## Snap to Nearest Pin

New control in the Loudspeaker Property Inspector to optionally constrain aiming angles to those available for the pin locations in the lift bar

### COG line not passing through Pin



### Aim now snapped to nearest Pin



Any change to aim (with spinner arrows) will now move to the next pin.



## Default Speaker Insertion Heights

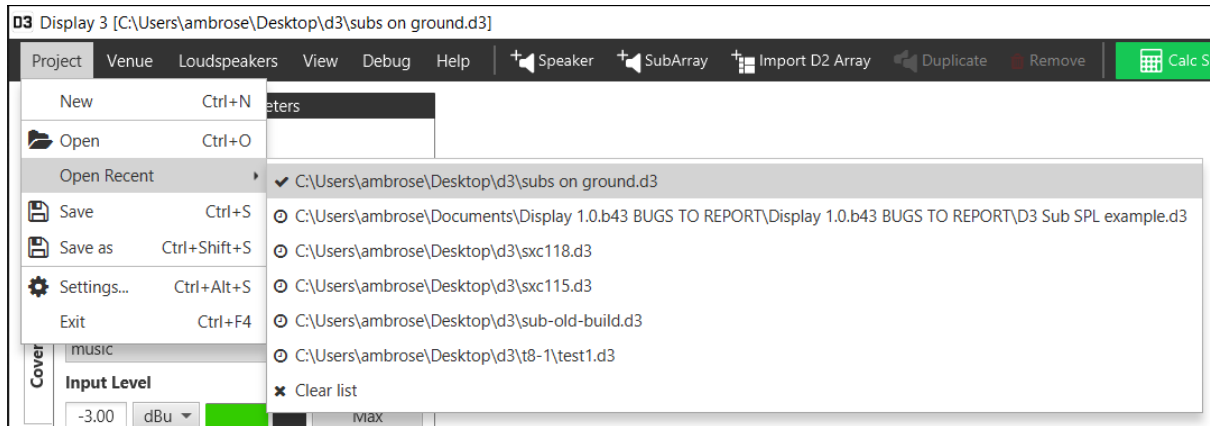
Depending on the type of loudspeaker, a user definable default height can be set Settings in the General Tab

Settings ✕

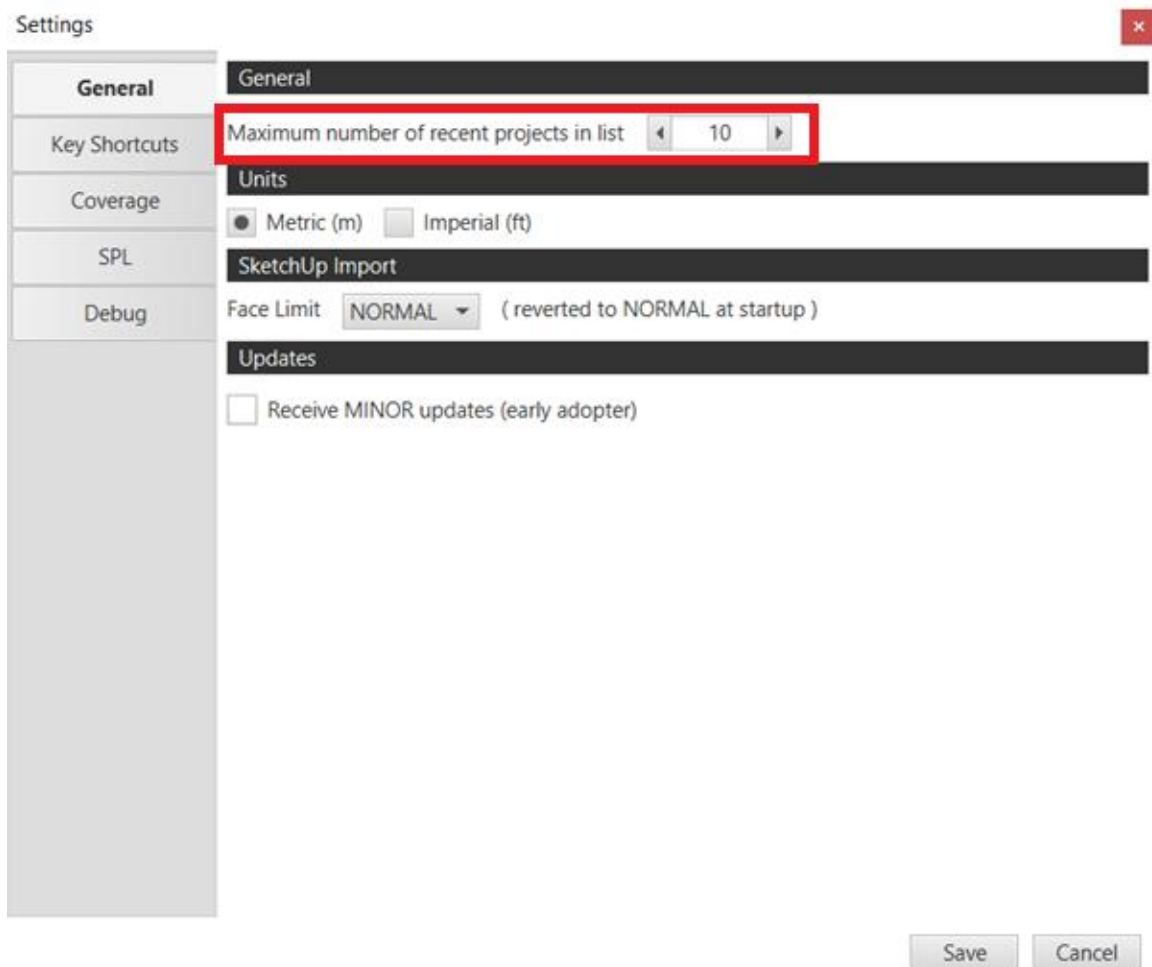
<b>General</b>	<b>General</b>
Key Shortcuts	Maximum number of recent projects in list <input type="text" value="10"/>
Coverage	<b>Units</b>
SPL	<input checked="" type="radio"/> Metric (m) <input type="radio"/> Imperial (ft)
Debug	<b>Speaker defaults</b>
	<b>Default heights for newly added speakers</b>
	Flown Array <input type="text" value="10.00 m"/>
	Flown Cluster <input type="text" value="5.00 m"/>
	Single Loudspeaker <input type="text" value="2.00 m"/>
	Sub Array <input type="text" value="0.00 m"/>
	Others <input type="text" value="0.00 m"/>
	<b>SketchUp Import</b>
	Face Limit <input type="text" value="NORMAL"/> (reverted to NORMAL at startup)
	<b>Updates</b>
	<input type="checkbox"/> Receive MINOR updates (early adopter)

## Open Recent

Recently opening projects are stored and shown in the Projects Menu and when first opening D3. You can clear the list if desired.

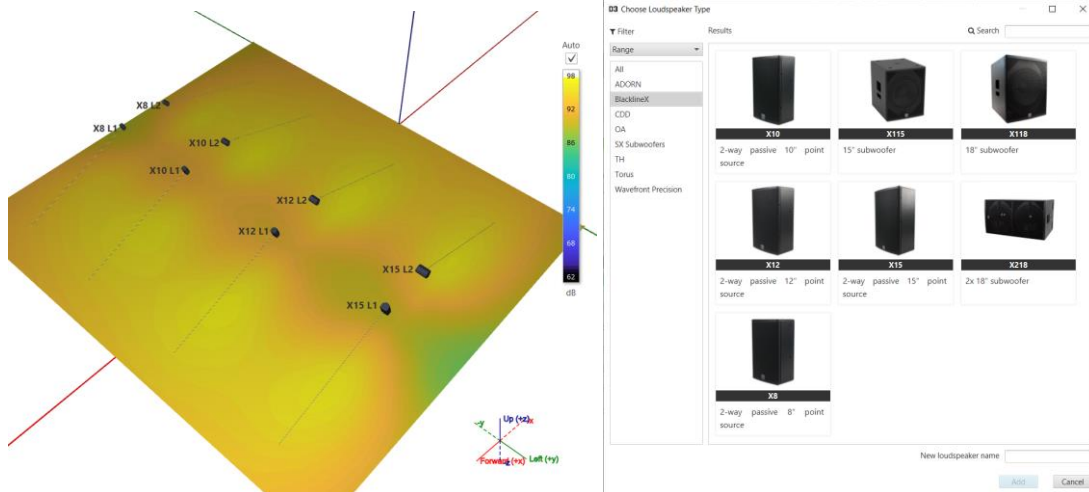


And set how many you want to appear in the list in Settings.



## BlacklineX

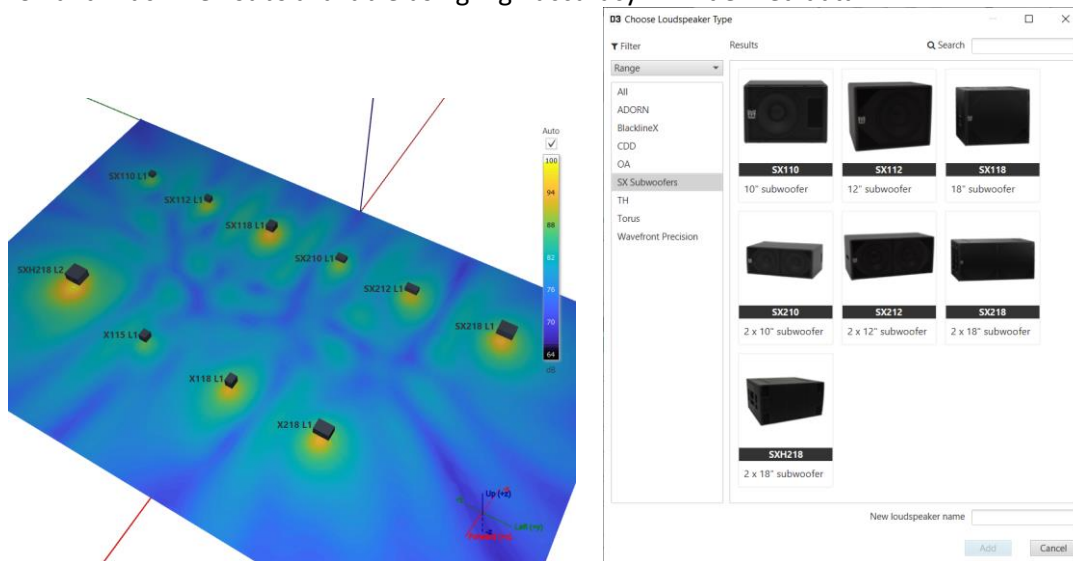
All speakers now available



Portrait and landscape easily selected from speaker configuration in speaker inspector.

## Freely Assigned Subwoofers

All SX and BlacklineX subs available using high accuracy BEM derived data.

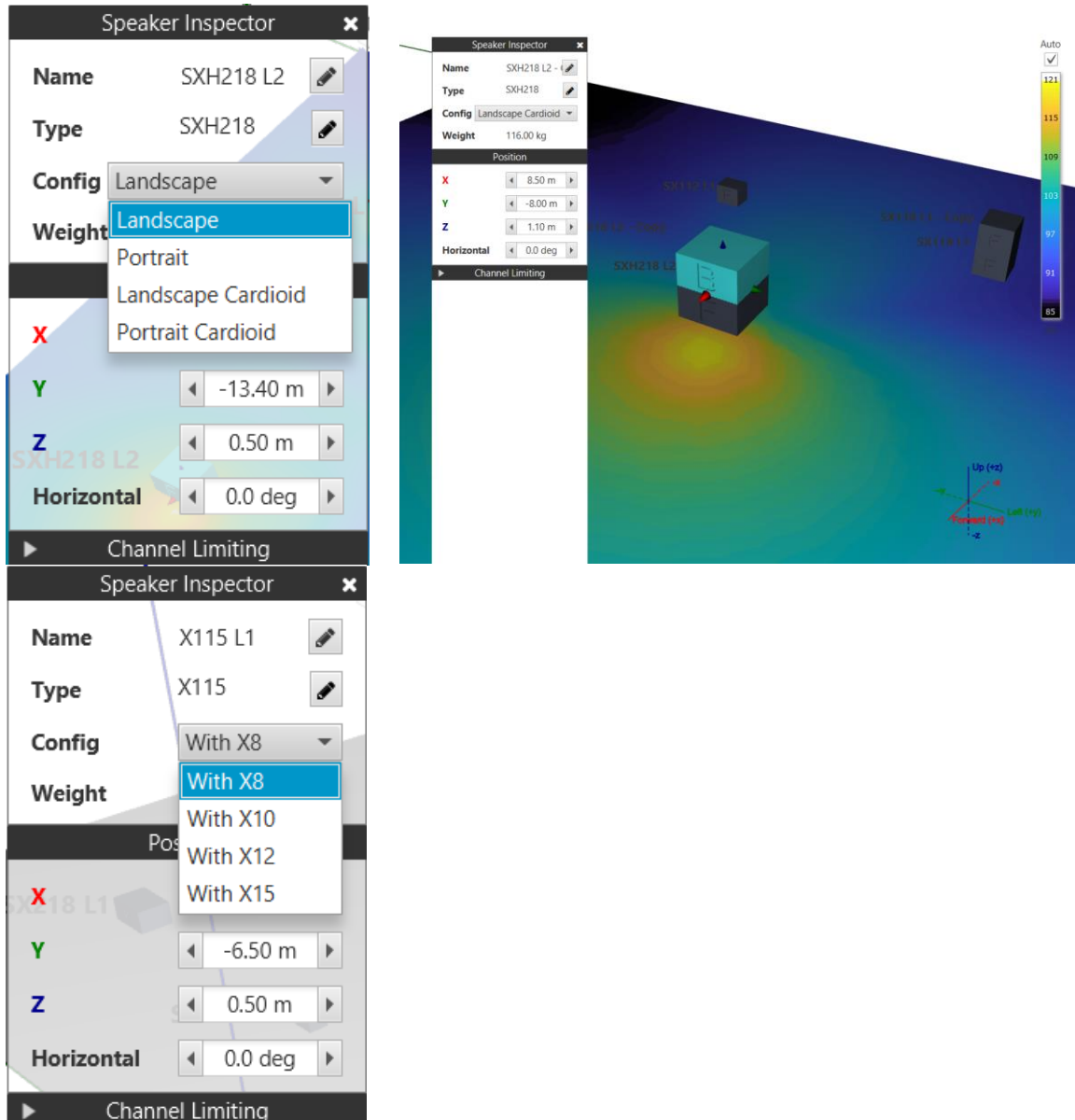


All subs are marked with Front (F) and Back(B) identifiers to help with arrays and have no aiming lines.



## Speaker Configurations

New property in speaker inspector to quickly set the configuration of boxes. This can include orientation (eg BlackLineX) and for subs both the orientation and filtering so that a cardioid setup can be quickly created. For BlacklineX configuration changes the Input EQ for partnering with specific top boxes



The configurations follow from the familiar 'Settings' spreadsheet on the Martin Audio Website



## Changes

- Vertical flowing for all Property Editors – use scroll wheel to move up and down
- ‘In place’ change of speaker type – use edit button next to speaker type to choose a new one, position and orientation are preserved.
- Clearer highlight of selected vertex when selecting insertion point for Quad face.
- Bolder group names in SPL to help make hierarchy clearer.
- Tool tip added to group button in SPL to help users understand how to move speakers within groups
- All Surface types now share a common tree in Venue context – better use of screen space.
- Unmute All Button above speaker list in SPL View
- Added SXC Cardioid Subs
- Added option to hide the SPL Mapping when in Loudspeaker context – available in visibility drop-down in 3D View Toolbar
- Added bandwidth presets – future build will enable user to save their own

## Fixes

- Manual cardioid configurations for applicable SX subs.
- Speaker delay inversion – manual sub arrays will now work.
- SPL computation for OS MKL clashes – dependent dlls now installed locally.
- Partial fix for older venue files containing CDD – venue and other speaker data is preserved but CDD types will need to be added again.
- A weighting bug

## Known Issues

- Missing system font causing substitution to a symbol type font making all text unreadable on one machine.