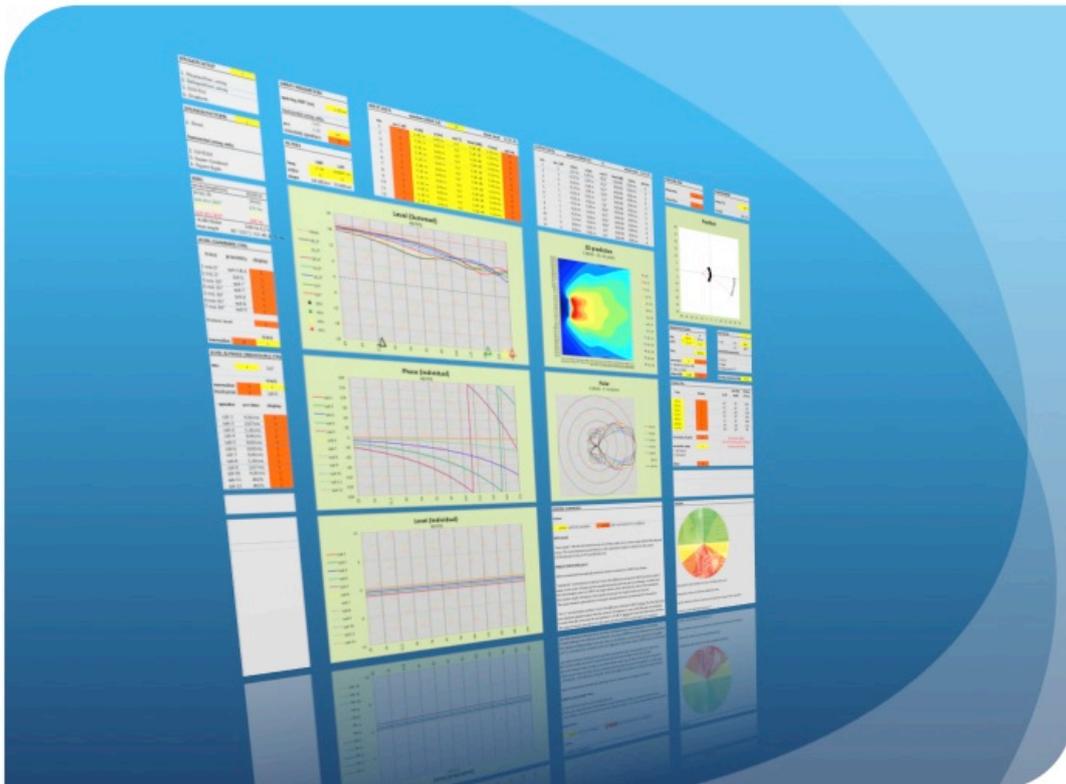


S.A.D. (Subwoofer Array Designer)

V1.4 addendum





Merlijn van Veen

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Design • Optimization • Engineering • Education

This calculator is inspired and endorsed by

Mauricio “Magu” Ramirez

&

Bob “6o6” McCarthy

Thanks for your support and input!





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S o u n d C o n s u l t a n t
Design • Optimization • Engineering • Education

Changes

- Behavior of the “orientate speakers” parameter now affects both arced (speaker setup 1) and straight arrays (speaker setup 2).

New features:

- Export to Meyer Sound MAPP Online Pro™.



Oriente speakers

ARRAY PARAMETERS		
spacing 180° (m)		1,00 m
horizontal array only		
	FAR	
arc	2,00	60°
orientate speakers		0

In previous versions of the Subwoofer Array Designer calculator when modeling physical horizontal arrays (speaker setup no 1) the speakers would be automatically pointed outwards according to the arc parameter.

The option “orientate speakers” would allow you to orientate (rotate) the speakers in straight arrays (speaker setup no 2) like they would have been in a physical horizontal array.

Unfortunately in real life the logistics of creating actual physical horizontal arrays is quite cumbersome. Rotation requires some sort of protractor, a tape measure or string attached at one end to the “virtual” point of origin behind the array that most likely lies under or behind the stage.

Since most “omnidirectional” subwoofers are immune, within reason, to rotation, the orientation of the speakers can be skipped. This leaves us with lateral en longitudinal displacement. The former can be set with a tape measure from speaker to speaker and the latter can be set in relation to e.g. the stage edge.

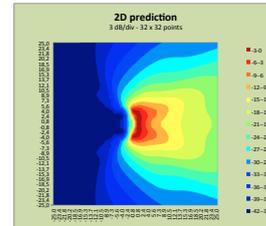
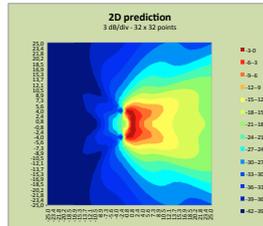
By default “orientate speakers” is turned of for both physical horizontal and straight arrays (speaker setups no 1 & 2). In other words the speakers will be pointing forward or 0 degrees. This change in behavior shouldn’t affect normal use of the calculator in most cases.

Cardioid sources however are much more sensitive to orientation (rotation) and the “orientate speakers” option should be taken into account!

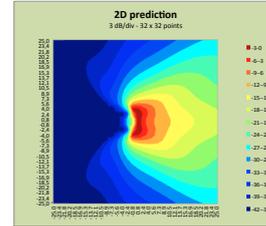
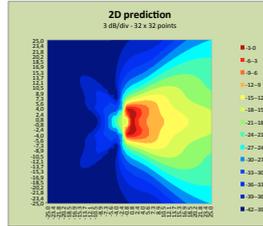
physical horizontal array – cardioid sources

Frequency orientation turned off orientation turned on

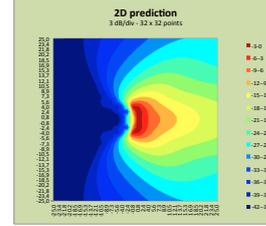
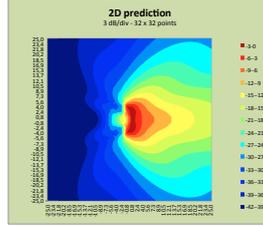
100 Hz



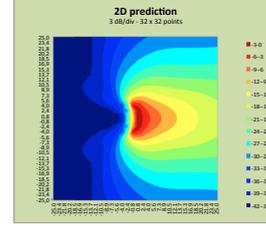
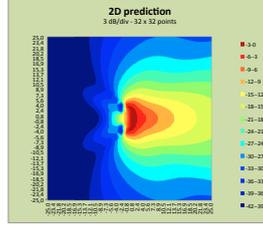
80 Hz



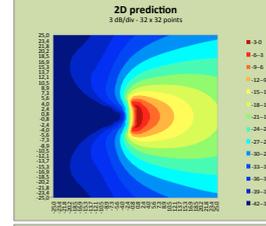
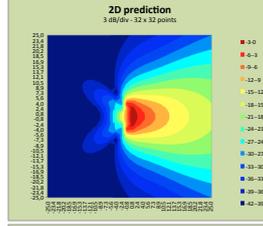
63 Hz



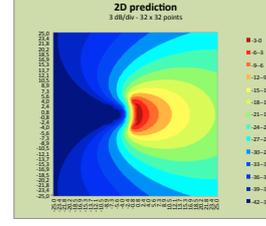
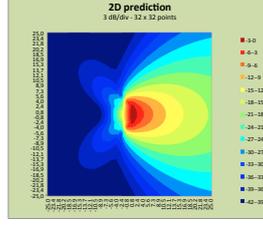
50 Hz



40 Hz

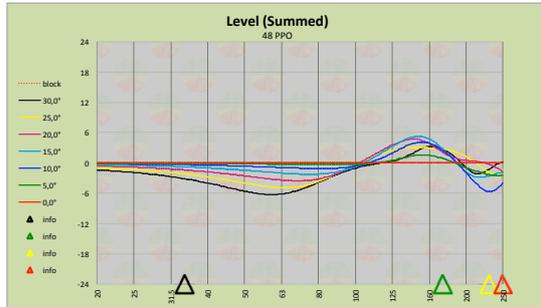


32 Hz

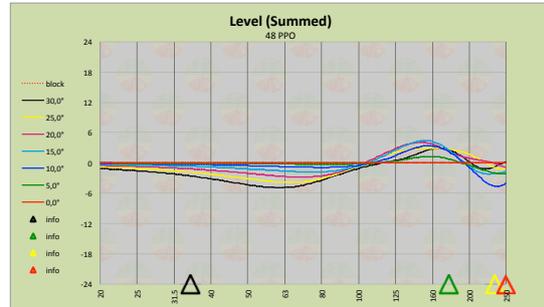




orientation turned off



orientation turned on



Both SPL and level plots show that cardioid sources without orientation (rotation) send less energy toward the edges of the intended coverage angle.



Export to Meyer Sound MAPP Online Pro™

This new feature allows the user to export data from Subwoofer Array Designer into the proprietary prediction software¹ of Meyer Sound. Enabling modeling with part actual (anechoic chamber) and part BEM (Boundary Element Modeling) modeled speaker data². Allowing for much greater accuracy.

What is exported:

- speakers
- processing (gain, delay and polarity)
- microphones
- prediction plane size
- x and y shift (minimum x and minimum y)
- temperature

There are two ways to export the data:

- manual copy paste without macros (S.A.D._V1.4.xlsx)
- macro (S.A.D._V1.4.xlsm)

Both ways provide a XML (Extensible Markup Language) file that can be opened in MAPP Online Pro.

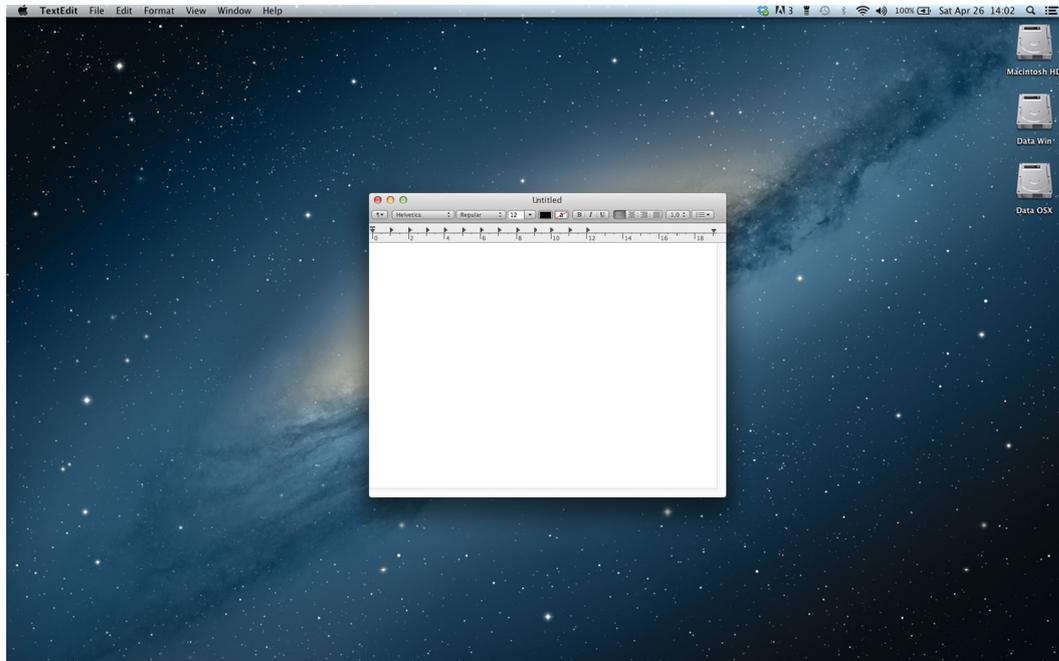
¹ <http://www.meyersound.com/products/mapponline/pro/>

² http://www.meyersound.com/support/papers/LF_polar_data/



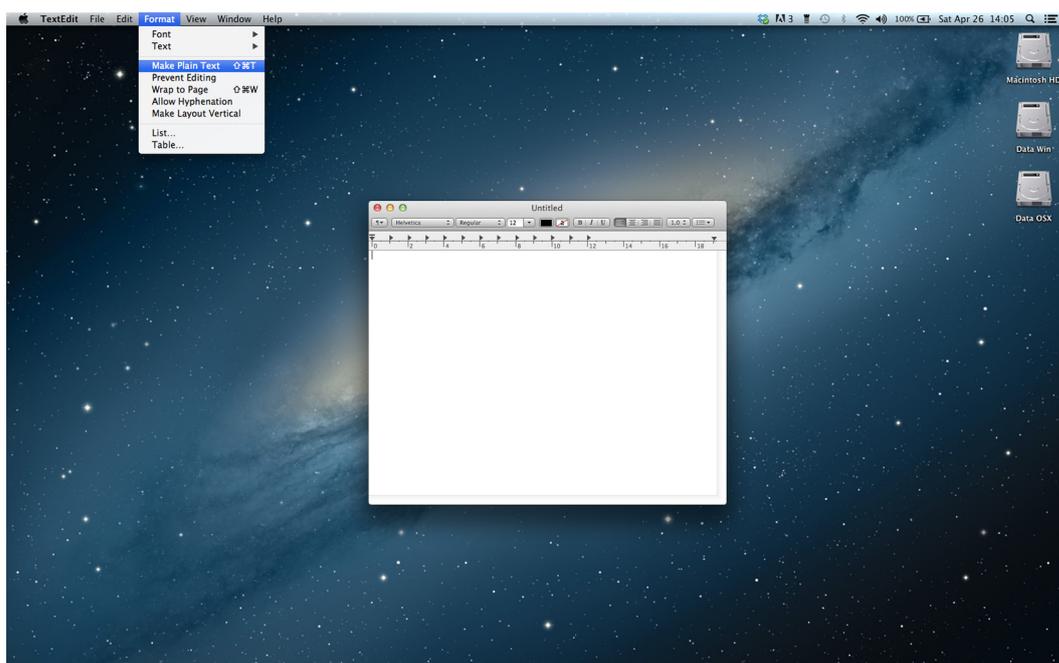
Step 3 (Apple OS X) – create new text document

Open TextEdit application and create a new document.



Step 4 – make plain text

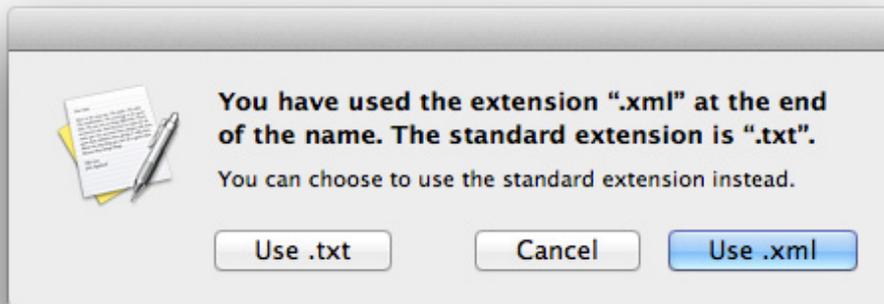
Format the document as plain text. **This is a very important step otherwise MAPP Online Pro won't parse the file.**



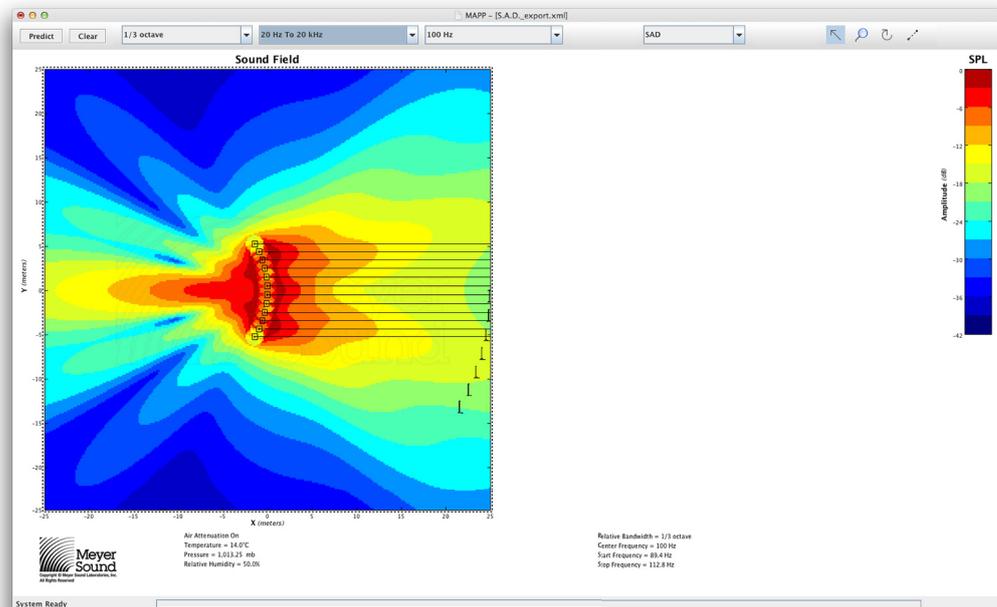


Step 7 – extension warning

If you receive an extension warning choose “Use .xml”



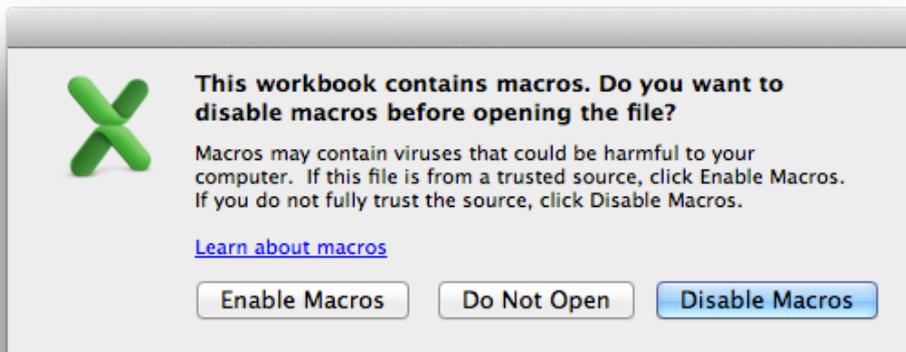
Step 8 – open the xml file in MAPP Online Pro



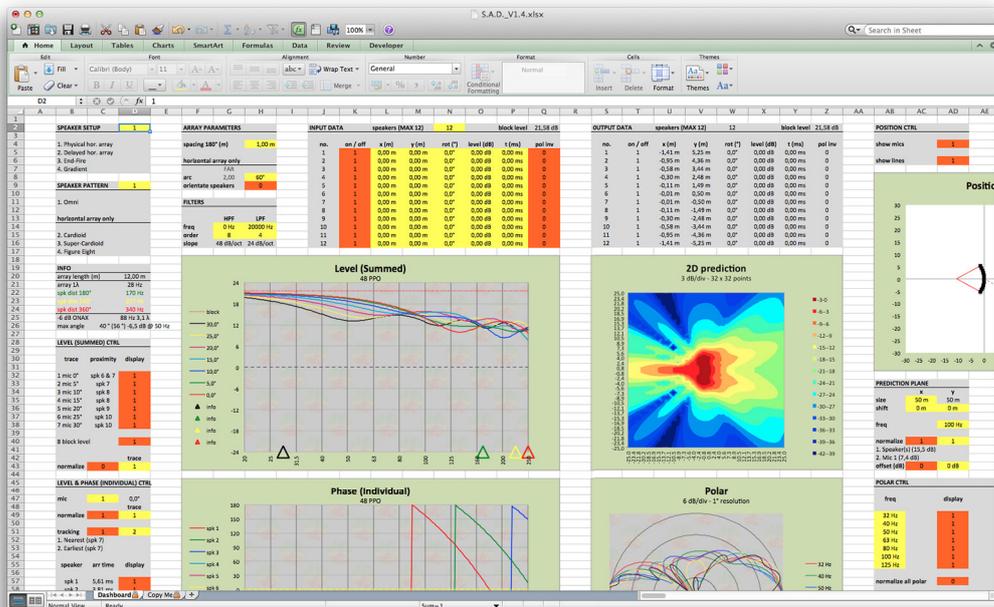
method 2 - macro (S.A.D._V1.4.xlsm)

Step 1 – enable macros

If you receive a warning upon opening the calculator choose “Enable Macros”

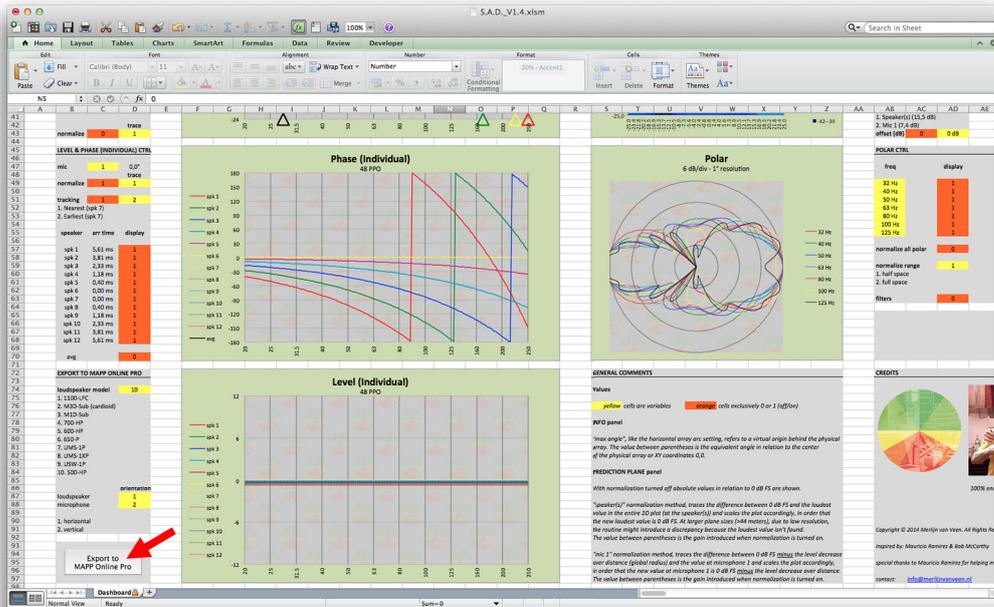


Step 2 – create your array

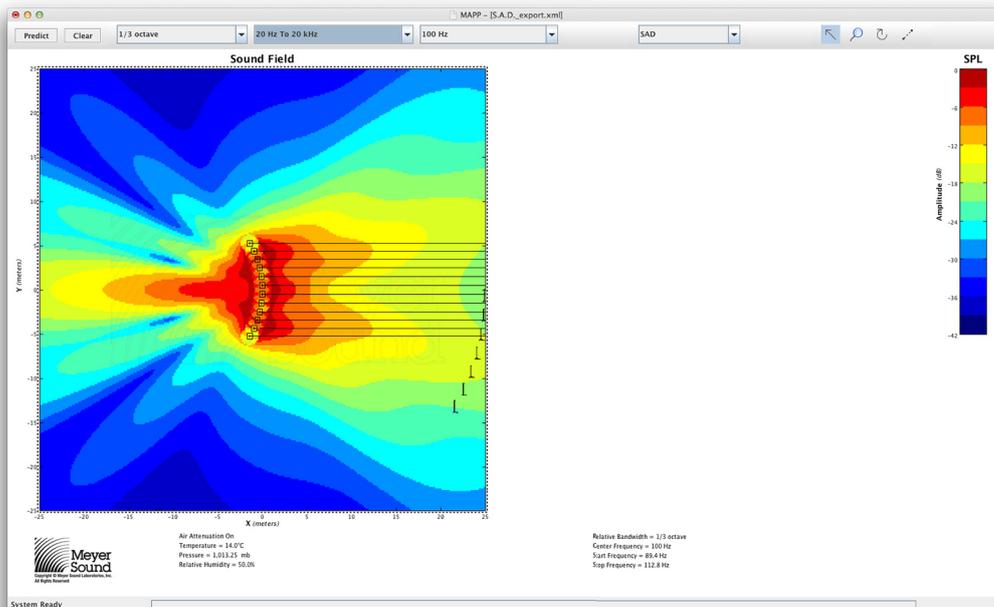


Step 3 – click on “Export to MAPP Online Pro” button

Click on the “Export to MAPP Online Pro” button in the bottom left corner. This will create a XML file called “S.A.D._export.xml” in the same directory as the calculator.



Step 4 – open the xml file in MAPP Online Pro





MAPP Online Pro specific parameters

EXPORT TO MAPP ONLINE PRO	
loudspeaker model	10
1. 1100-LFC	
2. M3D-Sub (cardioid)	
3. M1D-Sub	
4. 700-HP	
5. 600-HP	
6. 650-P	
7. UMS-1P	
8. UMS-1XP	
9. USW-1P	
10. 500-HP	
	orientation
loudspeaker	1
microphone	2
1. horizontal	
2. vertical	

In the export to MAPP Online Pro panel you can choose from 10 speakers including one cardioid.

Orientation allows you to select horizontal (plan view) or vertical (section view) for both loudspeakers and microphones.