GLOBAL AUDIO SOLUTIONS



USER MANUAL

SUBMAP

Version 3.0.0 · macOS and Windows

Global Audio Solutions

October 2026

CONTENTS

1. INTRODUCTION 3
- 1.1 What it calculates 3
- 1.2 New in version 3.0.0 3
- 1.3 Requirements 4

2. INSTALLATION 5
- 2.1 Mac 5
- 2.2 Windows 5
- 2.3 Updating 7
- 2.4 Uninstalling 7
- 2.5 From the source code 7

3. FIRST STEPS 8

4. THE MAIN WINDOW 9

5. DSP CHANNELS 10

6. SETTING UP A LOUDSPEAKER: THE CHANNEL EDITOR 11
- 6.1 Loudspeaker type 11
- 6.2 HPF and LPF filters 12
- 6.3 All APF, All FIR and Mute all 12
- 6.4 The cabinet table 13
- 6.5 FIR filters per cabinet 13

7. AUTOMATIC CONFIGURATIONS 15

8. PREDICTION 16
- 8.1 Resolution and frequency 16
- 8.2 Prediction area 16
- 8.3 Map tools 16

9. MEASUREMENT 18

10. MICROPHONES 19

11. DESIGN FUNCTIONS 20
- 11.1 Coverage Calculator 20
- 11.2 Front Fill / Line Design 20
- 11.3 Low-Mid Control 21
- 11.4 Autosplay 23

12. DRAWING 24

13. AURALIZATION 25

14. ENVIRONMENT 27

15. CONNECTING TO RITA 28
- 15.1 Connection settings 28
- 15.2 Importing a DSP from RiTA 28
- 15.3 Sending microphones to RiTA 29

16. MANAGING PROJECTS 30
- 16.1 File 30
- 16.2 Project 30

17. PDF REPORT 31

18. APPEARANCE AND OTHER SETTINGS 32
- 18.1 Theme 32
- 18.2 Side panel 32
- 18.3 Language 32
- 18.4 Updates 32
- 18.5 About Submap 32

19. QUICK REFERENCE 33
- 19.1 Keyboard shortcuts 33
- 19.2 Menus 33

1. INTRODUCTION

Submap is the application by **Global Audio Solutions** for predicting the low and mid frequency coverage of a sound reinforcement system: line arrays, subwoofers and individual loudspeakers, with the same prediction engine, the same filters and the same integration with **RiTA** as the MATLAB version it comes from.

This manual covers Submap 3.0.0: the classic window with the prediction map, the DSP channel panel on the right and the microphone strip along the bottom. Each chapter corresponds to one part of the window or to one dialog, with its fields explained one by one.

1.1 WHAT IT CALCULATES

- The sound pressure at every point of the defined area, on a horizontal plane at microphone height, summing the contribution of every cabinet of every active channel with its gain, polarity, delay and directivity.
- The response (magnitude and phase) at up to four microphones, and their impulse response, ready to export or to send to RiTA.
- Design tools that start from that same prediction: the coverage of a loudspeaker, front fill lines, low-mid control (Low-Mid Control) and the optimum angle of each cabinet of a line array (Autosplay).

1.2 NEW IN VERSION 3.0.0

- MATLAB and MATLAB Runtime are no longer needed: Submap is a standalone application for Windows and macOS, with its own installer on Windows.
- The interface in five languages (English, Spanish, Portuguese, French and Chinese), changed at once from Settings → Language.
- Connection to RiTA: it imports the DSP of RiTA's outputs and sends RiTA the microphones' impulse responses.
- In the channel editor: Mute all, the total splay of a line array or the angle of an arc, an FIR per cabinet at 48 or 96 kHz, and every FIR loaded at once.
- A PDF tuning report, in the chosen language.
- Notice of new versions from Help → Check for Updates...

1.3 REQUIREMENTS

COMPUTER	SYSTEM	DOWNLOAD
Mac with Apple Silicon (M1 or later)	macOS 13 Ventura or later	Submap-3.0.0-macOS-Apple-Silicon.pkg
Mac with an Intel processor	macOS 12 Monterey or later	Submap-3.0.0-macOS-Intel.pkg
PC	Windows 10 or 11, 64-bit	Submap Setup.exe

- Python, MATLAB or any other program is not needed.
- A network connection to the computer running RiTA is optional, and is only needed to import a DSP or to send microphones to it.
- An internet connection is optional, and is only used to check for updates.

2. INSTALLATION

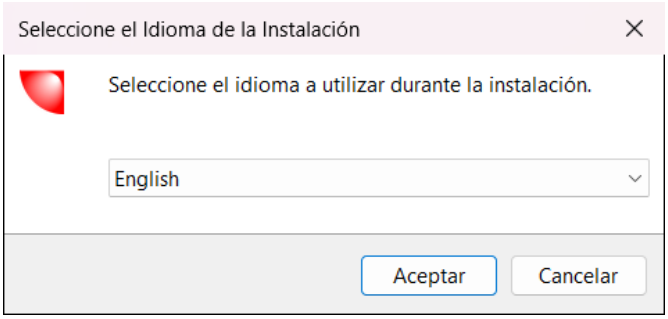
Download the installer for your computer (table in section 1.3). If Submap 3 was already installed, the installer puts the new version in its place: nothing needs uninstalling first.

2.1 MAC

1. Double-click the installer (.pkg).
2. If macOS warns that it cannot verify the developer, press OK and go to System Settings > Privacy & Security. The installer's notice is at the bottom: press Open Anyway and confirm with your password or Touch ID.
3. Follow the steps: Introduction and Install. It will ask for the computer's password.
4. When it finishes, press Close. Submap is left in Applications > GlobalAudioSolutions > Submap.
5. Open Submap with a double click.

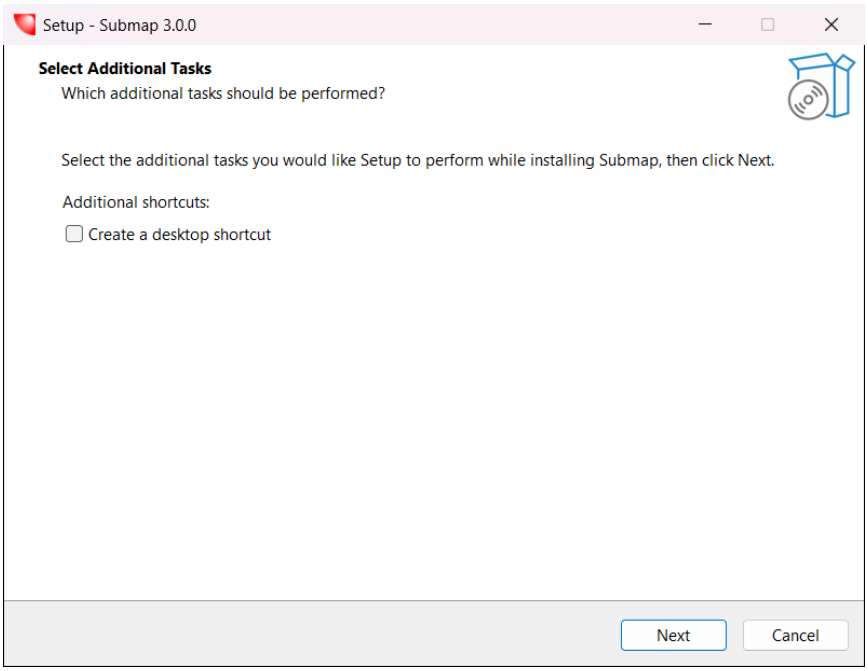
2.2 WINDOWS

1. Double-click Submap Setup.exe.
2. If “Windows protected your PC” appears, press More info and then Run anyway. Windows will ask for permission to make changes to the computer: press Yes.
3. Choose the language of the installation (English, Spanish, French or Portuguese) and press OK.



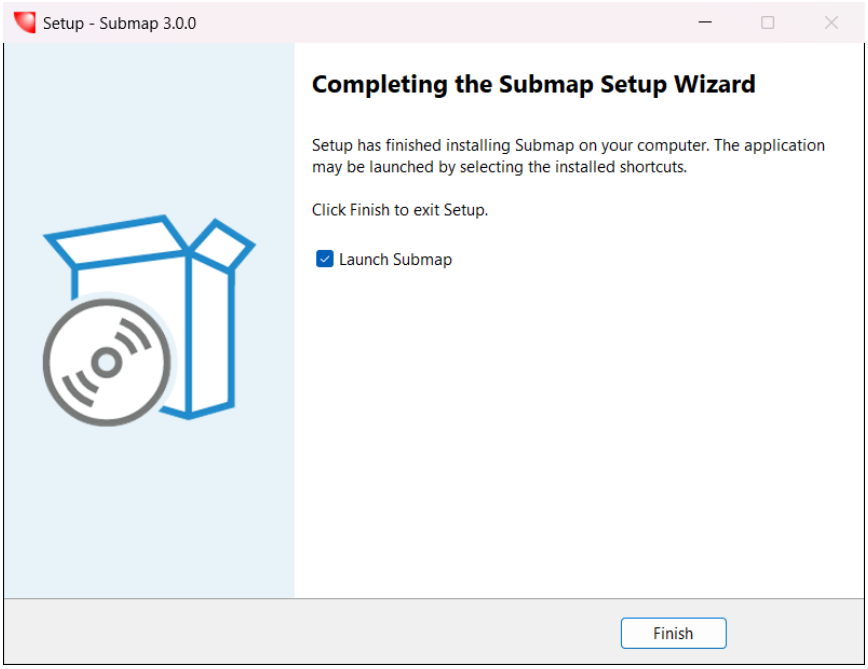
The language of the installation.

4. For an icon on the desktop, tick “Create a desktop shortcut”. Press Next and Install.



Additional tasks.

5. Press Finish. With “Launch Submap” ticked, the application opens at once.



Installation finished.

Submap is left in the Start menu and in C:\Program Files\GlobalAudioSolutions\Submap. Projects (.submap) carry its icon and open with a double click.

> **The installer's language is not Submap's.** Submap opens in English the first time, and its language is chosen in Settings → Language.

2.3 UPDATING

Help → Check for Updates… says whether there is a newer version and leads to its download (chapter “Help and updates”). On Windows, run the new installer: it installs over the earlier version and, if Submap is open, asks to close it. On Mac, run the new installer too, with Submap closed. Projects and settings (language, theme, recent projects, connection to RiTA) are kept.

2.4 UNINSTALLING

- Mac: drag the folder Applications > GlobalAudioSolutions > Submap to the Trash.
- Windows: Settings > Apps > Submap > Uninstall.

> **Uninstalling does not delete your projects or your settings.** Projects stay where you saved them, and when Submap is installed again it remembers the language, the theme and the recent projects.

2.5 FROM THE SOURCE CODE

Those working with the code can open Submap from Anaconda or Spyder: open **run_submap.py** in Spyder and press **Run**. Submap opens in a window of its own, with the project's own Python 3.13, with no need to install or change anything in Anaconda.

3. FIRST STEPS

Submap always opens with an empty project: the ten DSP channels with no loudspeaker, the four microphones switched off and the default prediction area. From there, set up a new project or open a saved one with File → Open Project...

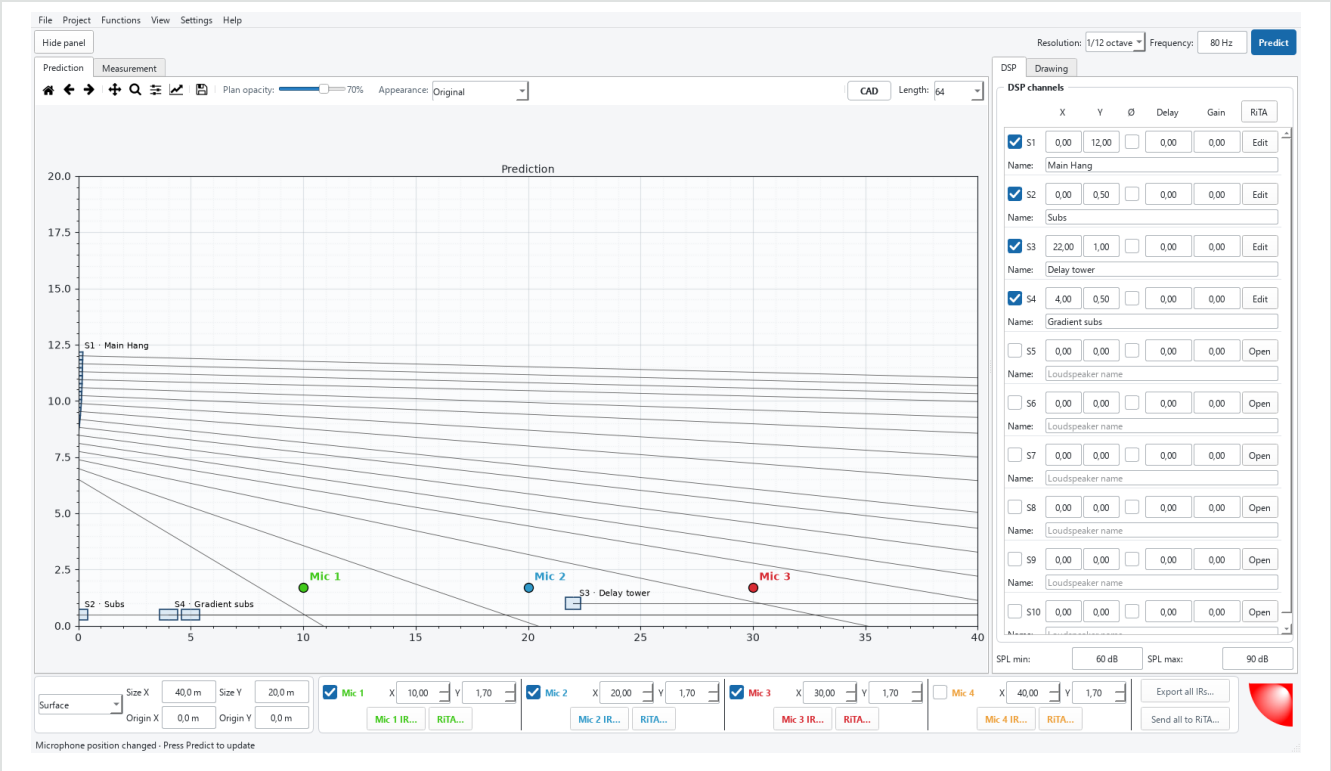
The first time, Submap opens in English; the language is changed in Settings → Language (see Appearance and other settings).

The usual path is this:

1. Set up a DSP channel with its Open button: kind of loudspeaker, file, cabinets and filters.
2. Place the microphones in the strip at the bottom, or by dragging them on the map.
3. Choose the frequency and the resolution and press Predict.
4. Look at the map in Prediction and at each microphone's response in Measurement.
5. Save the project with File → Save Project, and get the report with File → Export Report...

4. THE MAIN WINDOW

The whole application lives in a single window, divided into these areas:



The main window, set up with a line array, two subwoofers, a delay tower and three active microphones.

AREA	WHAT IT DOES
Menu bar	File, Project, Functions, View, Settings and Help: opening and saving projects, automatic configurations, design tools, preferences and updates.
Top bar	Resolution and centre Frequency of the map, and the Predict button that starts the calculation.
Prediction / Measurement tabs	The prediction map or the response measured at the microphones (magnitude and phase).
Map toolbar	Home, undo/redo view, pan, zoom, subplot settings, save image, opacity and appearance of the imported plan, and the CAD grid.
DSP / Drawing panel	On the right: the list of the ten channels (DSP tab) or the audience lines of the drawing (Drawing tab). It is hidden with Ctrl+D.
Microphone strip	Along the bottom: the prediction area and the four microphones, with their buttons to export and to send to RiTA.
Status bar	The application's latest message: what has been calculated, what still needs updating or what has failed.

5. DSP CHANNELS

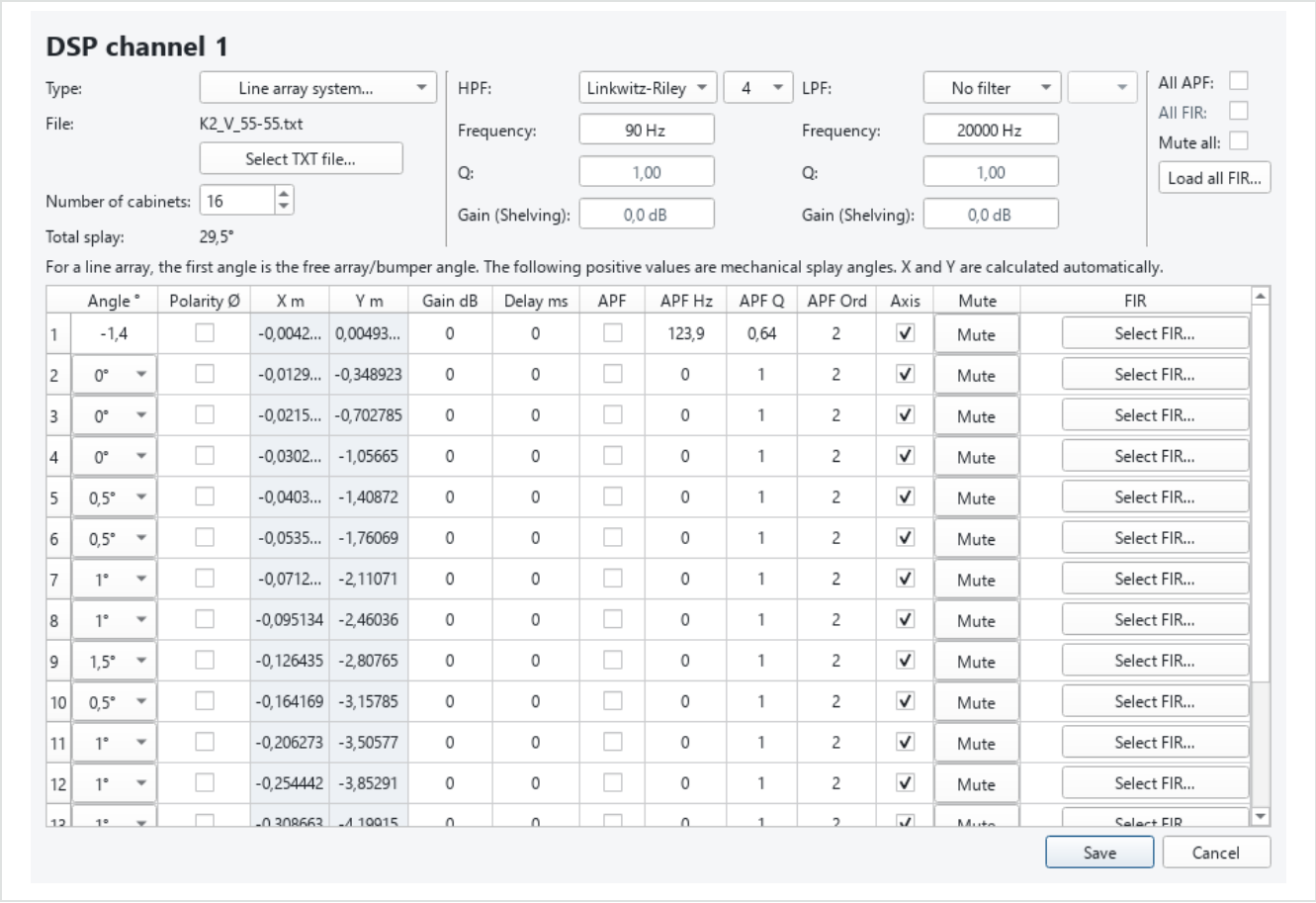
The right-hand panel, DSP tab, lists the ten channels of the project (S1 to S10). Each row controls the position and level of the channel as a whole; the loudspeaker, its filters and its cabinets are set up in its editor, with the Open or Edit button.

FIELD	WHAT IT IS
Sx checkbox	Includes the channel in the prediction. A channel with no loudspeaker can be ticked, but it does not enter the calculation until it has one.
X, Y	Position of the channel in metres, on the plane of the map.
Ø	Inverts the polarity of the whole channel.
Delay	Delay of the channel, in milliseconds.
Gain	Gain of the channel, in dB.
RiTA button	Above the list, next to Gain: opens the RiTA DSP importer for all the channels at once (see Connecting to RiTA).
Open / Edit	Opens the channel editor. It reads Open if the channel has no loudspeaker, and Edit once it has one.
Name	The name shown on the map; if left blank, the loudspeaker's file name is used.

> Changes made in this row (position, delay, gain, polarity, name) are applied at once; those made in the channel editor are stored on pressing Save.

6. SETTING UP A LOUDSPEAKER: THE CHANNEL EDITOR

The **Open** or **Edit** button of a channel opens its editor: the type of loudspeaker, its crossover filters and the table with each cabinet.



Editor of a line array channel: 16 cabinets with their angle, gain, delay and all-pass filter, loaded from a real TXT file.

6.1 LOUDSPEAKER TYPE

TYPE	WHAT IT IS
Omnidirectional subwoofer	A subwoofer with no directivity of its own; it needs no TXT file.
Gradient subwoofer	A subwoofer in a gradient configuration (several cabinets with relative polarity and delay); it needs no file either.
Individual loudspeaker...	A single loudspeaker, loaded from a TXT directivity file.
Line array system...	A line array, loaded from a TXT file; its cabinets hang one from another and Submap works out their X/Y coordinates from the angle.

The **Select TXT file...** button loads the loudspeaker's directivity file. **Number of cabinets** sets how many rows the table below has, up to 20.

Total splay and Arc angle

Under **Number of cabinets:**, a line array shows **Total splay:** — the sum of the splay angles between its cabinets, leaving out the first angle (that of the grid or bumper). It is the same figure Low-Mid Control works with, and it updates as the angles in the table are edited.

A channel laid out with Functions → Arc shows **Arc angle:** instead, with the opening angle of the arc, followed by "(electronic)" when the arc is an electronic one. Any other layout shows neither of the two.

6.2 HPF AND LPF FILTERS

On either side of the loudspeaker type are the high-pass and low-pass filters of the channel, the same ones RiTA uses:

TYPE	ORDERS
No filter	—
Butterworth	1 to 8
Linkwitz-Riley	2, 4, 6 or 8
Bessel	1 to 8
Elliptic	1 to 8, with Q as the ripple
Chebyshev I	1 to 8, with Q as the ripple
Chebyshev II	1 to 8, with Q as the attenuation
APF	1 or 2, with its own Q
Shelving	with its own gain

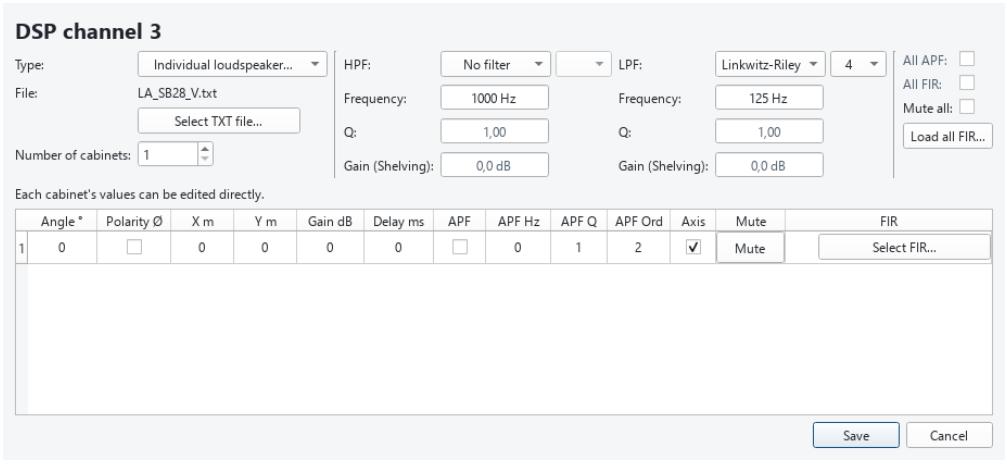
Each side has its Frequency, its Q (enabled only for the filters that use it) and its Gain (Shelving only).

6.3 ALL APF, ALL FIR AND MUTE ALL

All APF: and **All FIR:** switch the all-pass filter or the FIR of every cabinet in the table on or off at once, without touching their values.

Mute all:, below them, is off by default. Switching it on mutes every cabinet of the channel, and switching it off unmutes them all. It appears partly checked when only some of the cabinets are muted.

6.4 THE CABINET TABLE



Editor of a channel with a single individual loudspeaker: one row in the cabinet table.

COLUMN	WHAT IT IS
Angle °	Angle of the cabinet. In a line array, the first row is the free angle of the array/bumper and the following ones are the mechanical splays between consecutive cabinets.
Polarity Ø	Inverts the polarity of that cabinet.
X m, Y m	Position of the cabinet. In a line array they are worked out from the angle; in an individual loudspeaker they can be edited.
Gain dB, Delay ms	The cabinet's own gain and delay.
APF	Switches on the all-pass filter of that cabinet.
APF Hz, APF Q, APF Ord	Frequency, Q and order (1 or 2) of the all-pass filter.
Axis	Draws the axis of the cabinet on the map.
Mute	Leaves the cabinet out of the prediction without deleting it.
FIR	Selects a file of FIR coefficients for that cabinet, with Select FIR...

6.5 FIR FILTERS PER CABINET

The **Select FIR...** button of a row loads a TXT or CSV file of coefficients for that cabinet. Such a file does not state its sample rate, so the file type chosen in the file dialog does: **FIR filter, 48 kHz (*.txt *.csv)** or **FIR filter, 96 kHz (*.txt *.csv)**.

SAMPLE RATE	COEFFICIENTS	HOW IT IS EVALUATED
48 kHz	Up to 32 768	At the prediction's own frequencies.
96 kHz	Up to 65 536	At the prediction's own frequencies, up to 24 kHz; nothing is resampled.

Once loaded, the button shows the file name and its tooltip gives the file and its sample rate. The PDF report marks a FIR at 96 kHz.

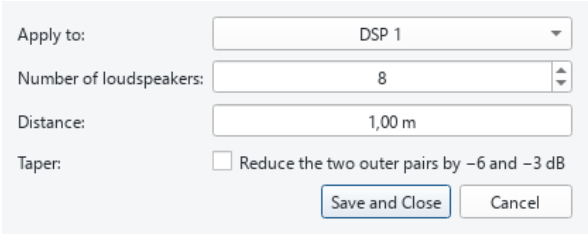
Load all FIR…

The **Load all FIR…** button picks several FIR files in one go, with the same 48 kHz and 96 kHz file types. The files are sorted by name, reading numbers as numbers (FIR 2 comes before FIR 10), and given to the cabinets from the first row downwards.

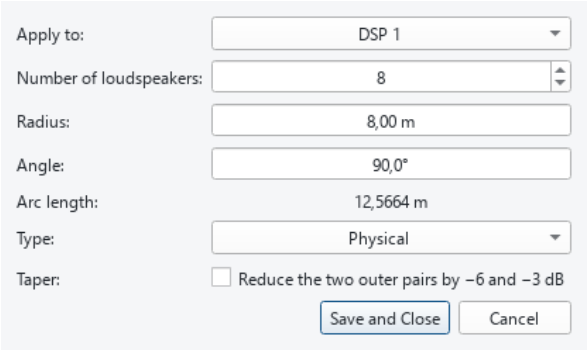
> When the number of files and the number of cabinets differ, Submap says so in a message.

7. AUTOMATIC CONFIGURATIONS

The **Functions** menu offers five automatic layouts from Submap MATLAB, each with its shortcut (Ctrl+1 to Ctrl+5). All five spread a number of cabinets over the chosen channel and work out their X/Y; none of them touches the filters or the loaded loudspeaker.



Line: cabinets in a straight line, a fixed distance apart.



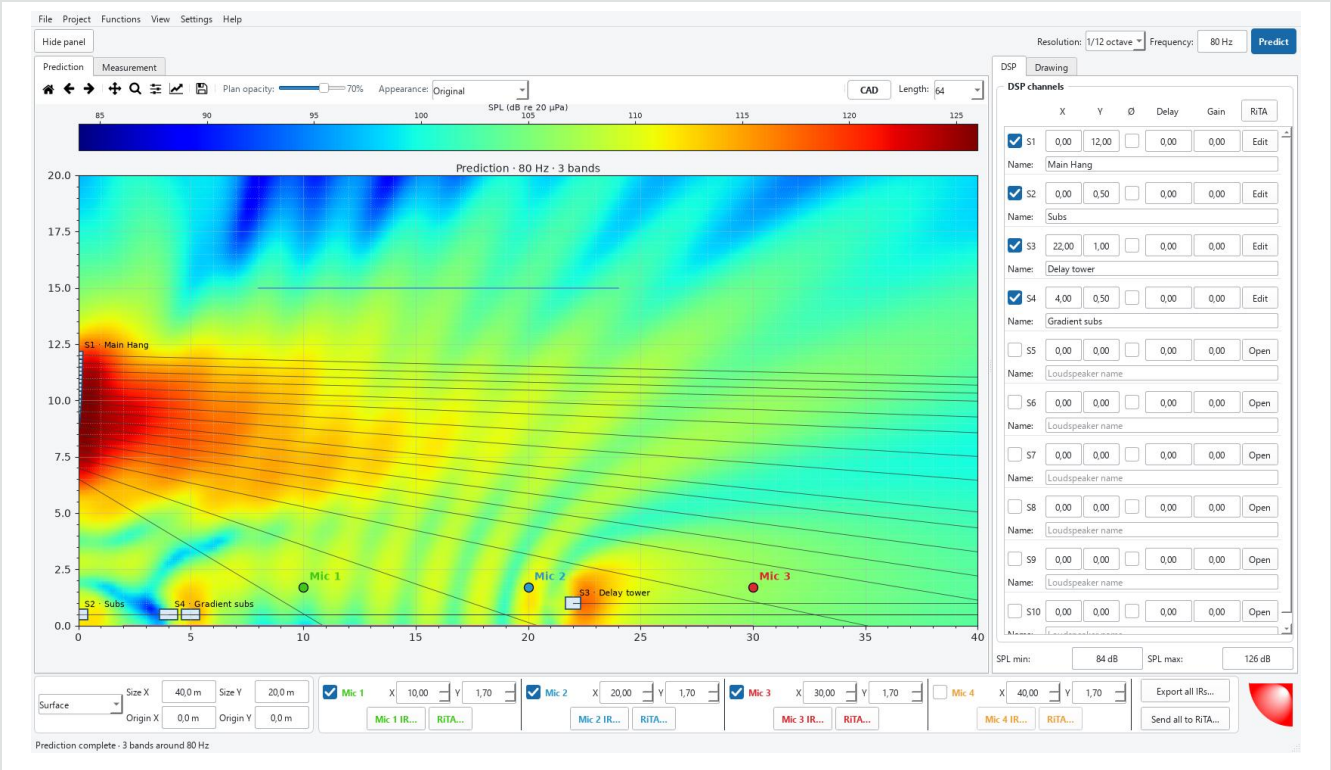
Arc: cabinets spread along an arc, physical or electronic.

CONFIGURATION	ITS OWN FIELDS
Line	Distance between consecutive cabinets.
Arc	Radius, total Angle of the arc (with its arc length worked out) and Type: Physical (the cabinets turn) or Electronic (they stay parallel).
Gradient	Distance between cabinets, for a gradient subwoofer.
End Fired	Distance between cabinets, for a row of end-fired subwoofers.
WFS	Distance between cabinets, for a wave field synthesis array.

They all share **Apply to** (the target DSP channel), **Number of loudspeakers** and **Taper** (it lowers the two outermost pairs by 6 and 3 dB). The **Save and Close** button applies the layout to the channel.

8. PREDICTION

The Predict button, in the top bar, calculates the map and the response of the active microphones at the same time.



The same project, with the prediction calculated at 80 Hz.

8.1 RESOLUTION AND FREQUENCY

FIELD	WHAT IT IS
Resolution	The bandwidth averaged at each point: 1, 1/3, 1/6, 1/12 or 1/24 octave.
Frequency	The centre frequency of the map, in Hz.
SPL min / SPL max	The ends of the colour scale; Submap sets them by itself after calculating, but they can be fixed by hand.

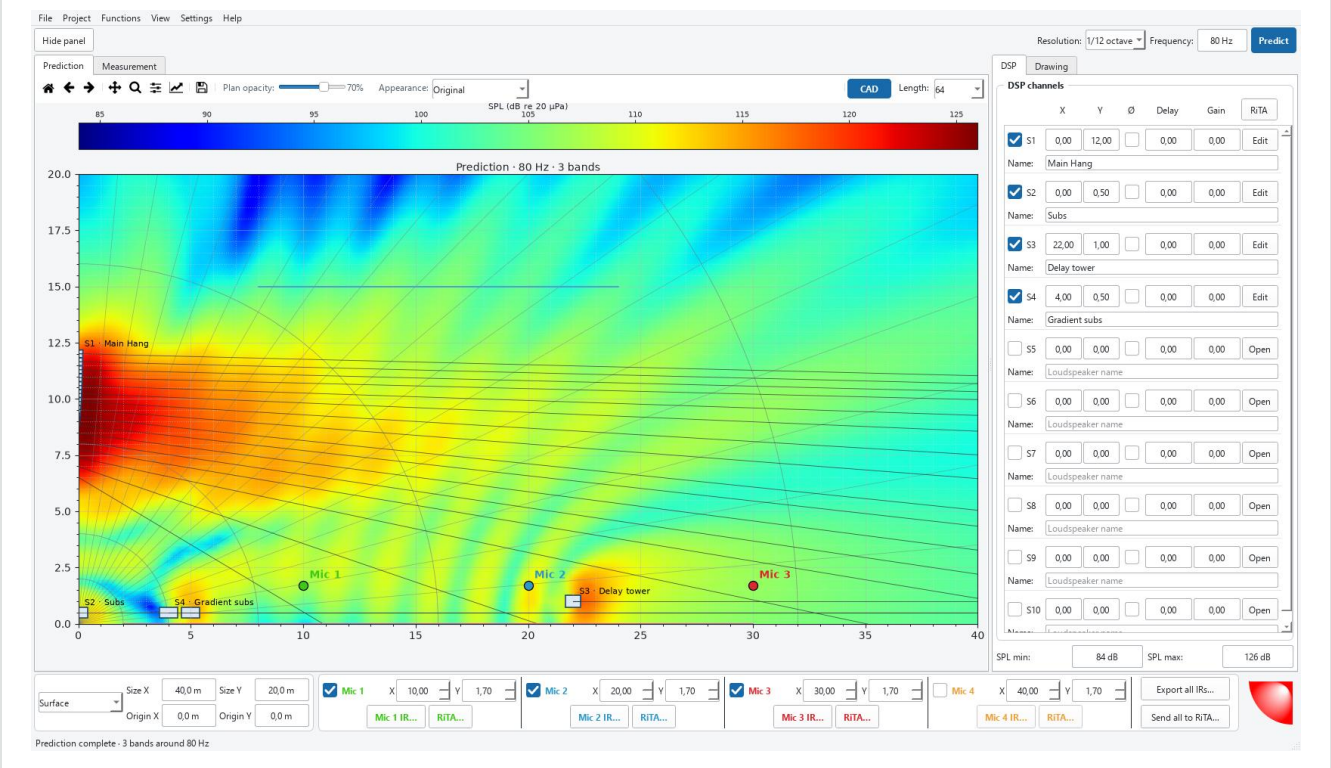
8.2 PREDICTION AREA

In the bottom left corner: Size X and Size Y are the width and height of the area, in metres; Origin X and Origin Y are the corner where it starts. The drop-down list on the left switches between a continuous colour surface and one in 3 dB bands.

8.3 MAP TOOLS

TOOL	WHAT IT DOES
Home	Returns to the full view of the area.

TOOL	WHAT IT DOES
Arrows	Undo or redo a previous pan or zoom.
Pan	Drags the view.
Zoom	Zooms in by dragging a rectangle.
Axes settings	The margins of the subplot.
Save	Exports the map as an image.
Plan opacity	Transparency of the imported plan (File → Import Graphics…).
Appearance	How the plan is treated: as it is, with its white background removed, or adapted to the contrast of the theme.
CAD	Overlays a polar grid centred on the origin (0, 0), with the radius chosen in Length.



The map with the CAD grid switched on, radius 64 m.

9. MEASUREMENT

The Measurement tab, next to Prediction, shows the magnitude and phase calculated at each active microphone, aligned to its first arrival.



Magnitude and phase of the three active microphones, with 1/24 octave smoothing.

Magnitude smoothing and **Phase smoothing**, at the top, smooth the drawing only (between 1/48 and 1/3 octave, or none): they do not change the calculated response, the impulse response or the auralization. The toolbar is the same as the map's (home, zoom, save image...).

10. MICROPHONES

The bottom strip holds the four virtual microphones of the project. They can also be dragged directly on the map.

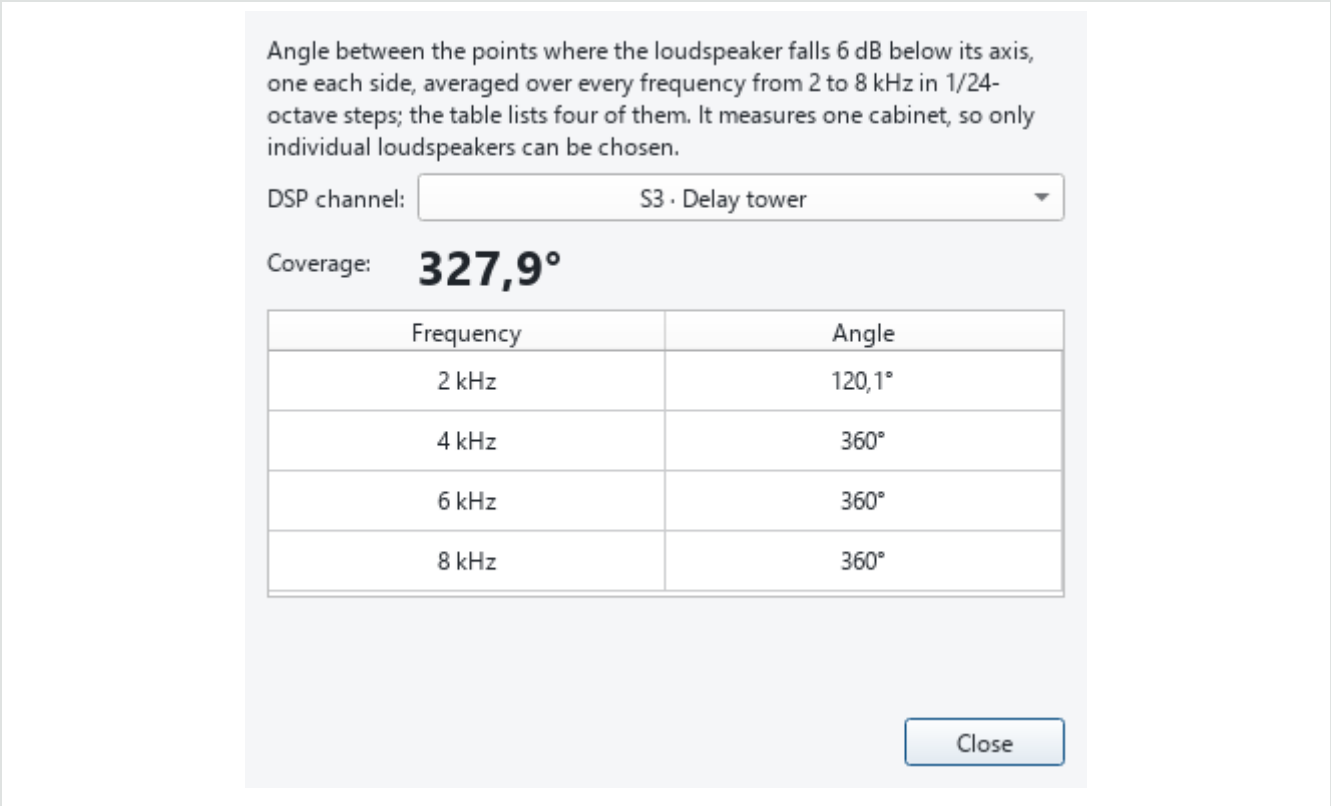
CONTROL	WHAT IT IS
Mic n checkbox	Switches the microphone on in the prediction.
X, Y	Position of the microphone, in metres.
Mic n IR…	Exports the impulse response of that microphone, as TXT (compatible with RiTA, not normalised) or as a 24-bit mono WAV.
RiTA…	Sends the response of that microphone to a RiTA engine (see Connecting to RiTA).
Export all IRs…	Exports the responses of all the active microphones in one go, numbered from a common name and folder.
Send all to RiTA…	Sends the responses of all the active microphones to RiTA in one go.

11. DESIGN FUNCTIONS

The Functions menu gathers four tools that start from the prediction to design the system, not just to look at it.

11.1 COVERAGE CALCULATOR

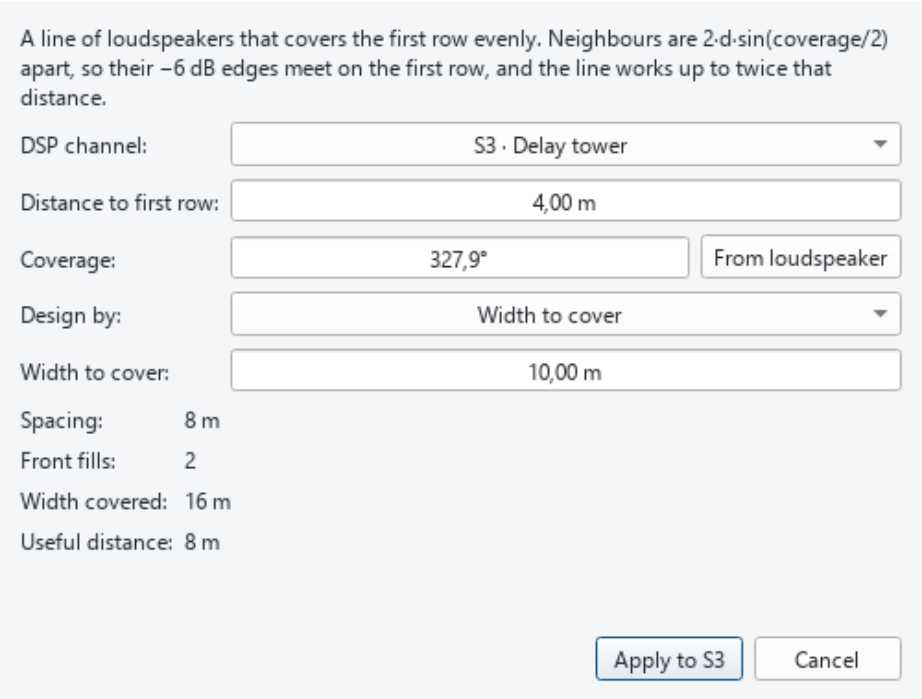
It measures the coverage of an individual loudspeaker: the angle between the points where the level falls 6 dB below its axis, one on each side, averaged between 2 and 8 kHz in 1/24 octave steps. It only accepts individual loudspeaker channels, because it measures a single cabinet.



Calculated coverage of an individual channel: 327.9° on average, with the detail per band.

11.2 FRONT FILL / LINE DESIGN

It designs a line of loudspeakers that covers the first row of the audience evenly. Neighbours are spaced 2·d·sin(coverage/2) apart, so that their −6 dB edges meet exactly at the first row; the line remains useful up to twice that distance.

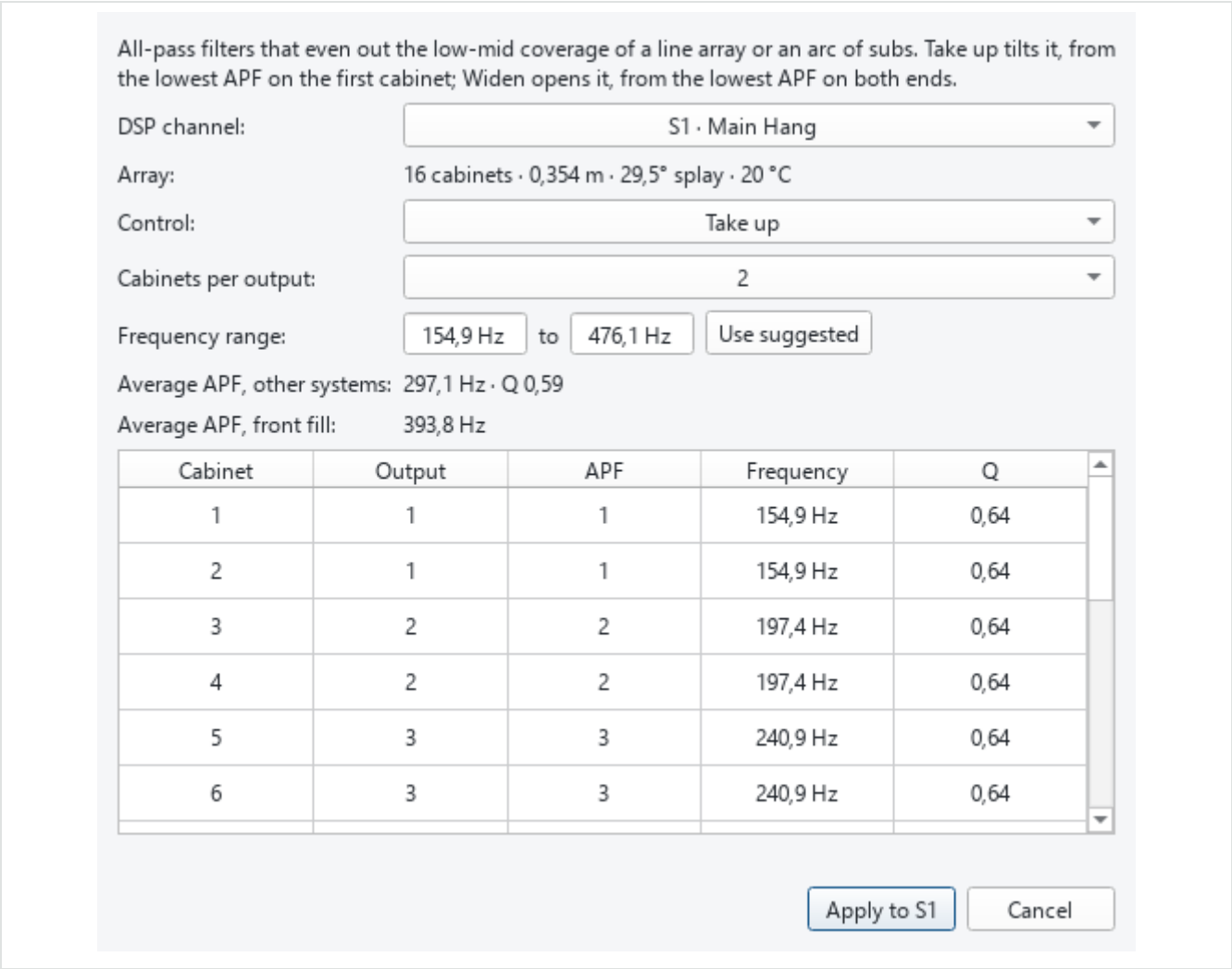


Ten metres of first row covered with two front fills, from the measured coverage of the loudspeaker.

FIELD	WHAT IT IS
DSP channel	The individual channel that will receive the line.
Distance to first row	Distance between the front fills and the first row.
Coverage	Coverage of one front fill; From loudspeaker fills it in with the value calculated in Coverage Calculator.
Design by	Width to cover (starting from a width) or Number of cabinets (starting from a fixed number).
Spacing, Front fills, Width covered, Useful distance	The result of the design.

11.3 LOW-MID CONTROL

It calculates the all-pass filters that even out the low-mid coverage of a line array or of a subwoofer arc, and applies them to its cabinets. Take up tilts the coverage upwards, starting with the lowest filter on the first cabinet; Widen opens it out, starting with the lowest filter on the two cabinets at the ends.



Low-Mid Control on a 16-cabinet line array: suggested range and one filter per cabinet.

The **Use suggested** button fills in the frequency range recommended for the array, worked out from its cabinets, its splay and the air temperature (Settings → Environment).

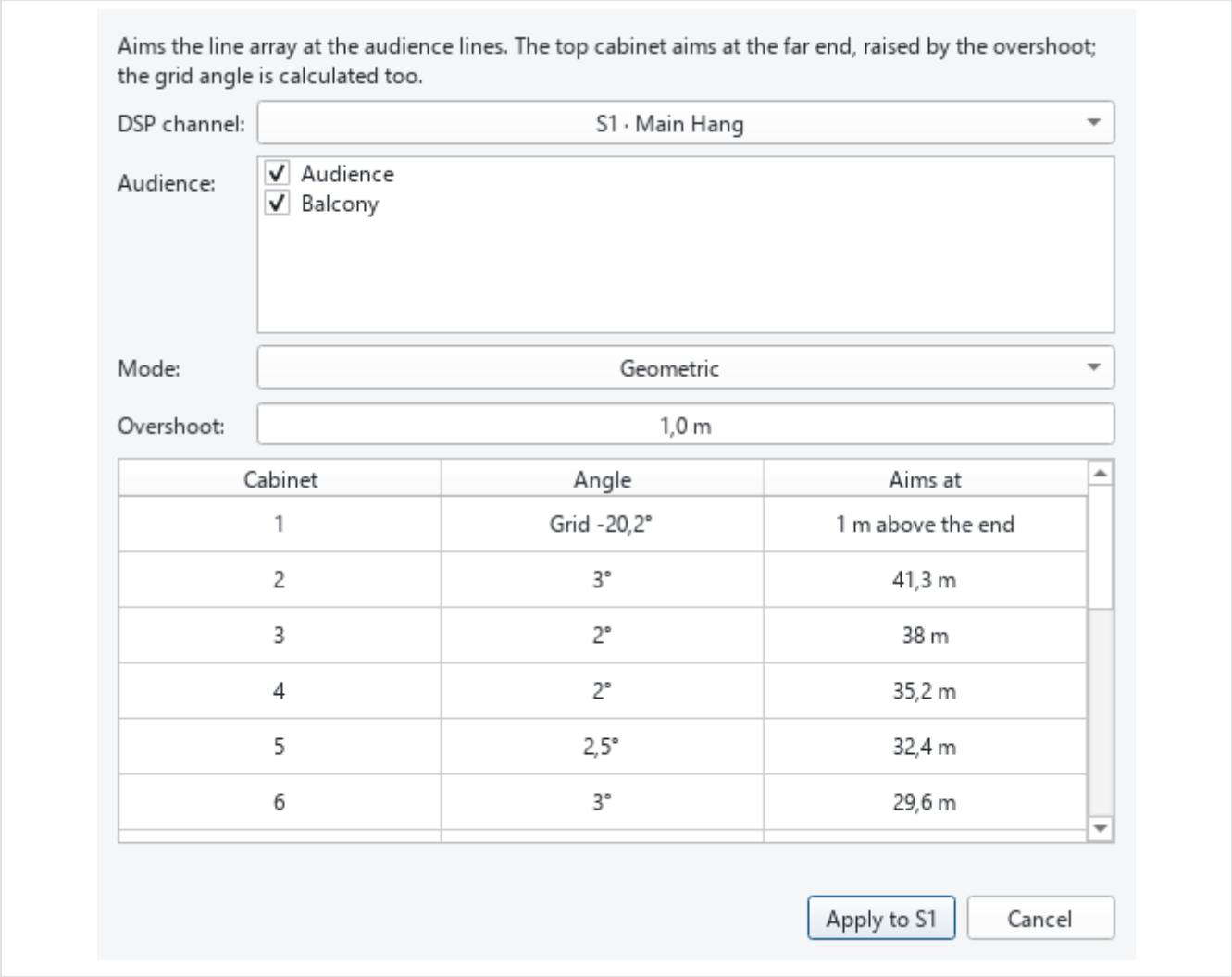
Below the range, Low-Mid Control gives two filters for what cannot take a filter per cabinet:

VALUE	WHAT IT IS
Average APF, other systems	A single all-pass filter (frequency and Q) that stands for all those in the table, for a system that cannot take one per cabinet. It is fitted to the phase of the sum of them all between 80 and 1000 Hz; if the range goes past 1 kHz, the value itself says it needs reviewing.
Average APF, front fill	The all-pass filter frequency for the front fills: the mean of the filters' frequencies, averaged with the upper end of the range for Take up and with the lower end for Widen.

> **They are for information.** Submap does not apply them to any channel: they are copied by hand into the processor or the channel they belong to. They are the same values LMC GAS gives.

11.4 AUTOSPLAY

It calculates the angle of each cabinet of a line array so that it covers one or more audience lines drawn in the Drawing tab, and previews it on the map before applying it.



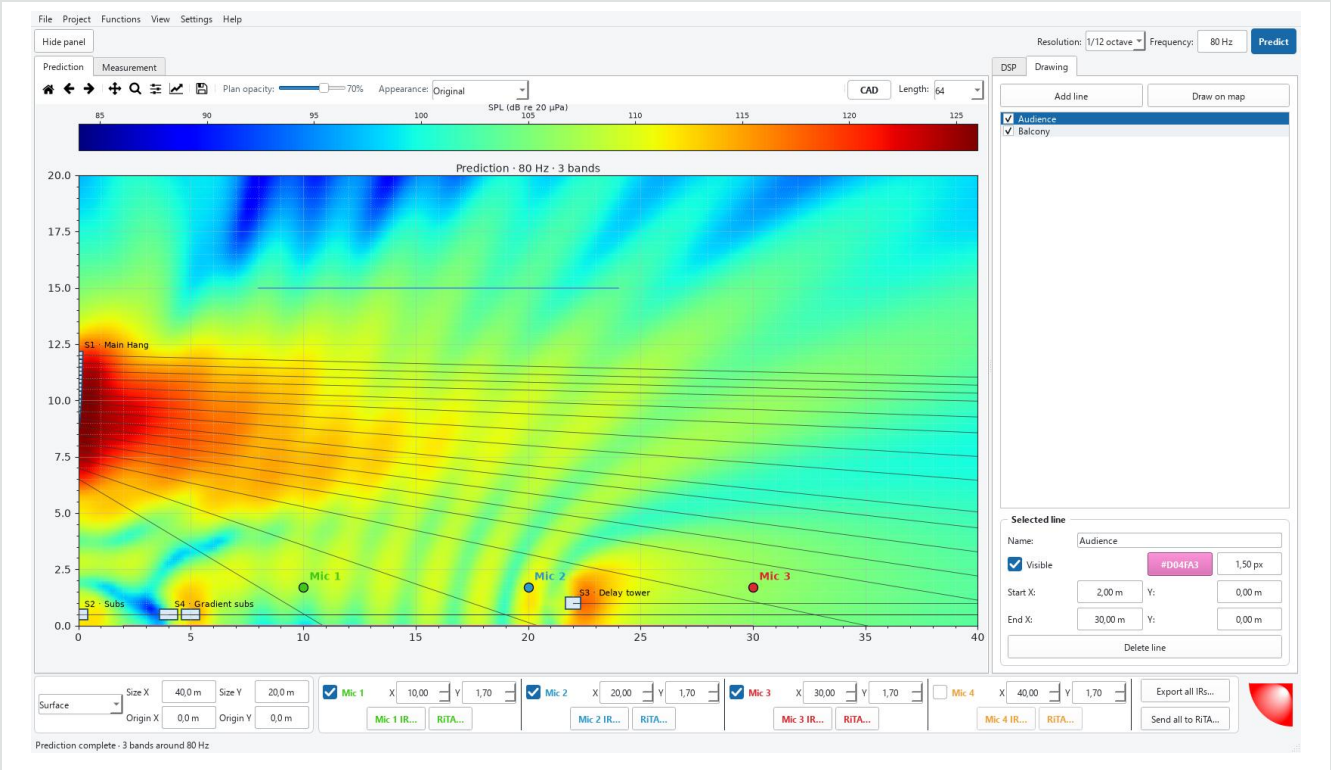
Geometric Autosplay of a line array over two audience lines (stalls and balcony).

MODE	WHAT IT DOES
Geometric	Spreads the cabinets to cover the audience from start to end, by geometry.
Uniform SPL	In addition, it adjusts the splays to even out the level along the audience, within the SPL range and with the Front-to-back drop that is allowed.
1/2, 1/2 + 1/3	They split the array into halves, or into halves and thirds, like the classic manual methods.

The top cabinet aims at the end of the audience, raised by the **Overshoot**; the grid angle (the first row of the table) is calculated together with the rest.

12. DRAWING

The Drawing tab, in the right-hand panel, keeps the lines drawn on the map: audience, balconies, walls… Autosplay and the map itself use them directly.

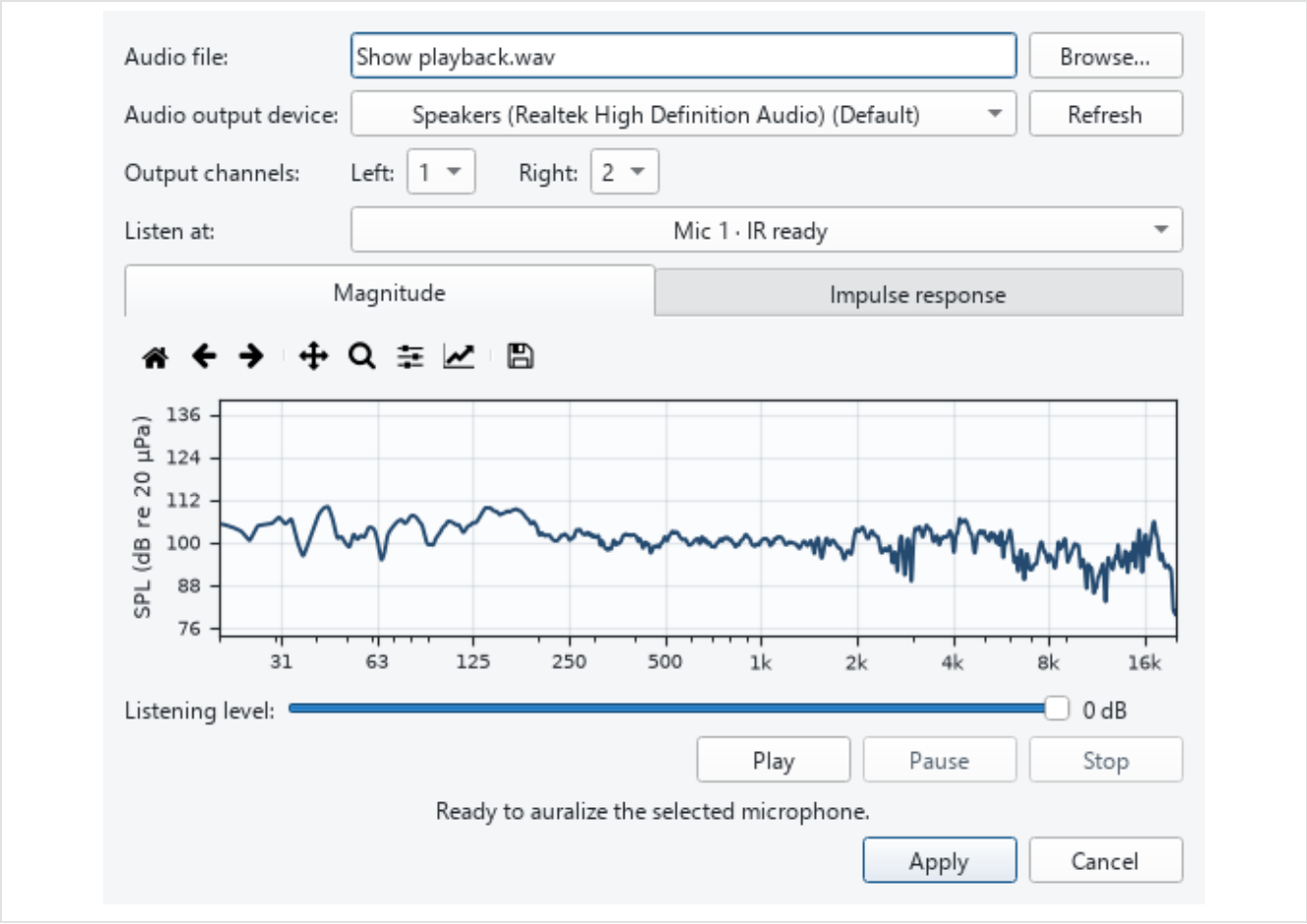


Two audience lines, "Audience" and "Balcony", with the first one selected and its colour editable.

CONTROL	WHAT IT IS
Add line	Creates a new line, with default coordinates.
Draw on map	Marks the start and the end of the line with two clicks on the map.
List of lines	Each line, with its visibility checkbox; click a line to select it.
Name, Visible	Name of the line and whether it is drawn on the map.
Color, width	The colour (with the picker) and the width of the stroke, in pixels.
Start X/Y, End X/Y	The coordinates of its two ends, in metres.
Delete line	Deletes the selected line.

13. AURALIZATION

Functions → **Auralization…** plays an audio file through the response calculated at a microphone: how that point of the audience would really sound.



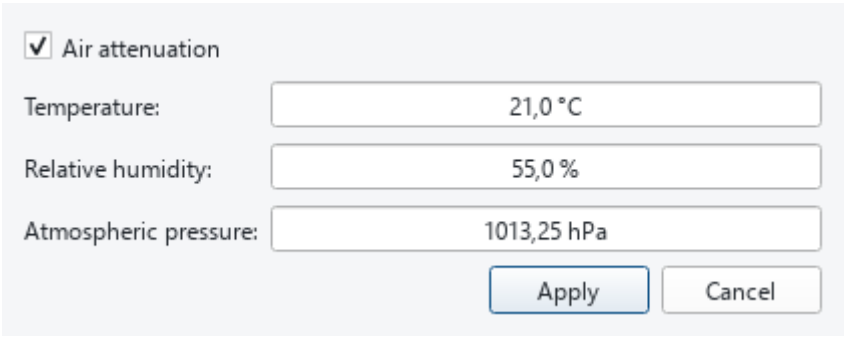
Auralization ready to play, with the magnitude of the chosen microphone.

FIELD	WHAT IT IS
Audio file	The file to play (WAV, FLAC, MP3, AAC, OGG or AIFF); it is chosen with Browse…
Audio output device	The output sound card.
Output channels: Left, Right	The physical channels of that card through which it plays.
Listen at	The microphone whose response is applied; a prediction must have been run first.
Listening level	The playback level, in dB, without affecting the prediction.
Play, Pause, Stop	Control the playback.

> The chosen file, device and channels are remembered on this computer; they are not stored in the project.

14. ENVIRONMENT

Settings → **Environment…** sets the air conditions the prediction uses to calculate its attenuation.



Air attenuation switched on, at 21 °C and 55 % relative humidity.

FIELD	WHAT IT IS
Air attenuation	Whether or not air absorption is included in the prediction.
Temperature	Air temperature, in °C.
Relative humidity	Relative humidity, in %.
Atmospheric pressure	Atmospheric pressure, in hPa.

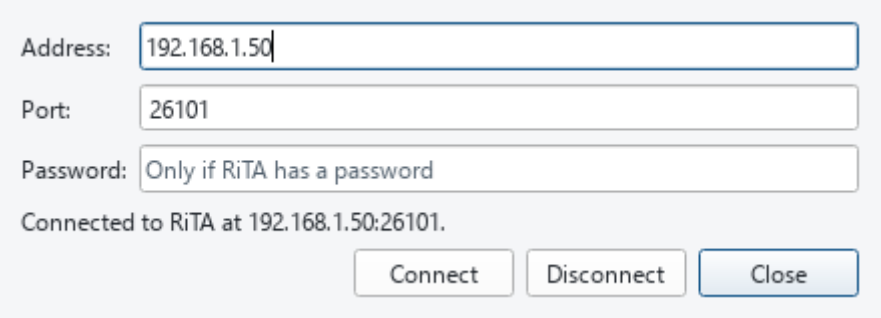
The temperature is also used by Low-Mid Control to work out its suggested frequency range.

15. CONNECTING TO RITA

Submap connects to RiTA through its API, on the same computer or over the network, to import the DSP of an output exactly as it is and to send it the microphone responses.

15.1 CONNECTION SETTINGS

Settings → **RiTA Connection…**



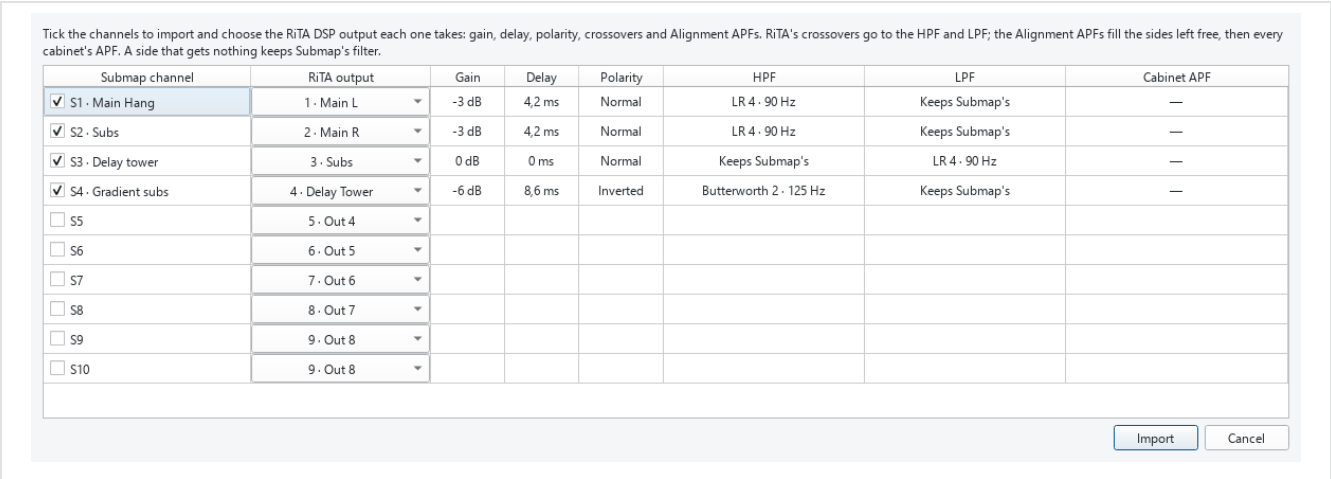
Connected to RiTA at its local network address, on the default port.

FIELD	WHAT IT IS
Address	Address of the computer running RiTA.
Port	First port of the RiTA API, the one shown in its Tools → API window.
Password	Only if the RiTA API has a password; it is not kept between sessions.
Connect / Disconnect	Open or close the connection.

> In RiTA, the API has to be enabled in Tools → API before connecting.

15.2 IMPORTING A DSP FROM RITA

The RiTA button, above the channel list of the DSP panel, opens the importer: a single window in which to tick which Submap channels receive data and from which RiTA output, bringing in at once the gain, the delay, the polarity, the crossover filters and the alignment all-pass filters.



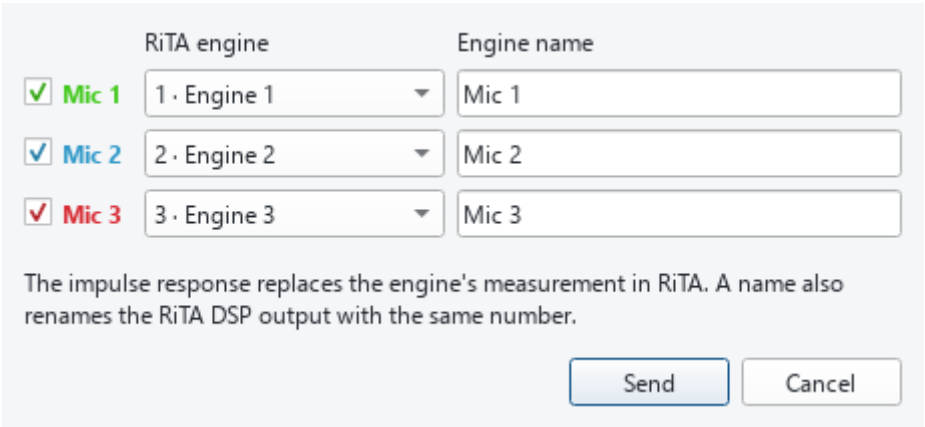
Four channels ticked for import, each from its own RiTA output, with the values already calculated.

COLUMN	WHAT IT IS
Submap channel	The Submap channel that receives the import; its checkbox ticks or unticks it.
RiTA output	The RiTA output it comes from.
Gain, Delay, Polarity	Exactly as that output has them in RiTA.
HPF, LPF	What each side receives: the RiTA crossover if there is one, or an alignment all-pass filter if the crossover does not fit; a side with nothing keeps the filter the channel already had.
Cabinet APF	The all-pass filter applied to each cabinet of the channel, when the HPF and the LPF have already taken those of RiTA.

The **Import** button copies the ticked channels in one go.

15.3 SENDING MICROPHONES TO RITA

The RiTA button of a microphone, or Send all to RiTA… in the bottom strip, opens this dialog to choose which RiTA engine each response goes to.



Three microphones, each to its own RiTA engine.

Each row has the target RiTA engine (**RiTA engine**) and the name it arrives with (**Engine name**), which also renames that output in RiTA. The response replaces the measurement of that engine.

16. MANAGING PROJECTS

16.1 FILE

OPTION	WHAT IT DOES
Open Project...	Opens a saved .submap project.
Save Project / Save Project As...	Saves the current project, or saves it under another name.
Recent Projects	The most recently opened projects, and Clear Recent Projects to empty the list.
Export Report...	Generates the PDF report of the project (see the next chapter).
Import Graphics...	Places a PNG or JPG plan under the map, fitted to the prediction area; it is stored inside the project.
Remove Graphics	Removes the imported plan.
Quit	Closes Submap.

16.2 PROJECT

OPTION	WHAT IT DOES
New Project	Empties the current project, as when Submap is first opened.
New Window	Opens another Submap window, independent of the current one.
Import Legacy MATLAB Project...	Recovers the configuration (not the saved prediction) of a .fig session of the MATLAB Submap.

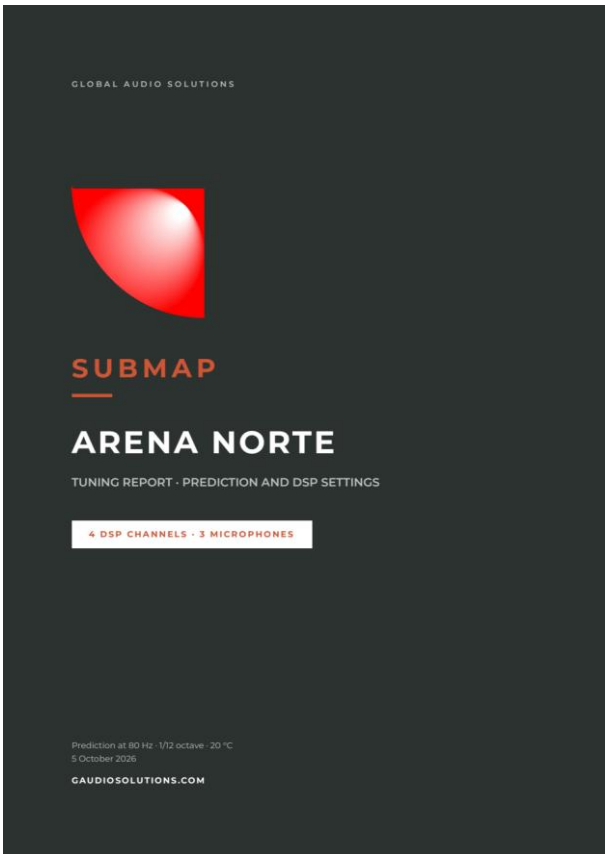
> A project is saved with the .submap extension, with the loudspeaker of each channel embedded in it: the file is self-contained and does not depend on where the original TXT files are. Nor does it depend on the language: a project opens the same whichever language Submap is set to.

17. PDF REPORT

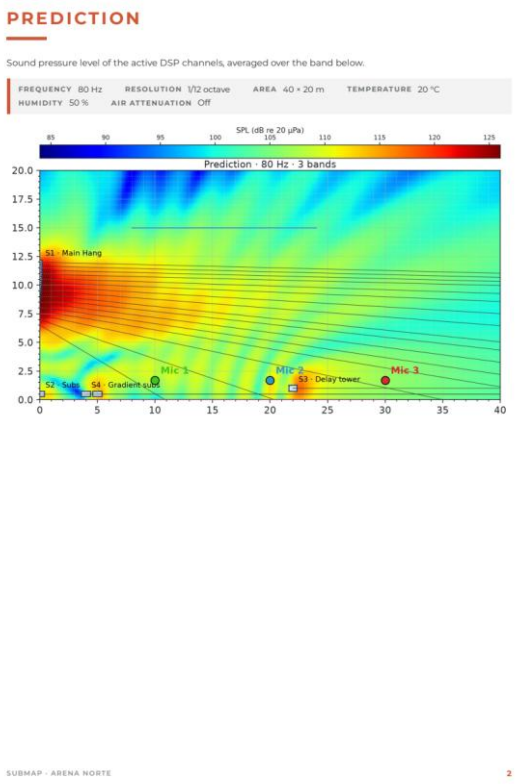
File → **Export Report…** generates a PDF report with the map, the microphones and the complete DSP of each active channel, in the same style as this manual.

If the project has not been predicted yet, Submap predicts it first with the current settings and generates the report straight afterwards, with no further steps.

The report is written in the language chosen in Settings → Language.



Cover of the report.



Prediction page, with the map at the calculated frequency.

PAGE	WHAT IT CONTAINS
Cover	Name of the project, date, and how many channels and microphones go into the report.
Prediction	The prediction map, with the frequency, the resolution, the area and the air conditions.
Microphones	Position of each active microphone and its magnitude/phase, if they have been calculated.
One section per channel	Its loudspeaker, position, filters and, if it is a line array, the angle of each cabinet. A cabinet FIR at 96 kHz is marked as such.

18. APPEARANCE AND OTHER SETTINGS

18.1 THEME

Settings → Theme switches between **Light** and **Dark**; the screenshots in this manual use the light theme.

18.2 SIDE PANEL

View → **Side panel** (or Ctrl+D) hides or shows the right-hand panel (DSP channels and Drawing), to leave more room for the map.

18.3 LANGUAGE

Settings → **Language** chooses the language of the interface: English, Español, Português, Français or 中文. The change is immediate, with no need to restart, and it is remembered for the next sessions. The first time, Submap opens in English.

- Technical terms are not translated: dB, Hz, DSP, APF, FIR and the names of the filters read the same in every language.
- The PDF report is written in the chosen language.
- Projects do not depend on the language: a .submap file opens the same in any of them.

18.4 UPDATES

Help → **Check for Updates...** asks whether a newer version of Submap exists, and always gives an answer:

ANSWER	WHAT SUBMAP SHOWS
A newer version	The new version and what is new in it, with three buttons: Download, Later and Do not notify me about this version.
Up to date	A message confirming that the installed version is the latest one.
Could not check	A message saying that the check could not be made, for instance with no Internet connection.

Download opens the download page in the web browser: Submap does not download or install anything by itself, and it sends no data.

Help → **Check for Updates at Startup**, ticked by default, makes the same check a couple of seconds after Submap starts. It is silent: it only shows a message when there is a new version that has not been skipped.

18.5 ABOUT SUBMAP

Help → **About Submap** shows the version of the application (3.0.0).

19. QUICK REFERENCE

19.1 KEYBOARD SHORTCUTS

SHORTCUT	ACTION
Ctrl+1	Functions → Line
Ctrl+2	Functions → Arc
Ctrl+3	Functions → Gradient
Ctrl+4	Functions → End Fired
Ctrl+5	Functions → WFS
Ctrl+6	Functions → Front Fill/Line Design...
Ctrl+7	Functions → Coverage Calculator...
Ctrl+8	Functions → Autosplay...
Ctrl+9	Functions → Low-Mid Control...
Ctrl+D	View → Side panel

19.2 MENUS

MENU	OPTIONS
File	Open Project..., Save Project, Save Project As..., Recent Projects, Export Report..., Import Graphics..., Remove Graphics, Quit
Project	New Project, New Window, Import Legacy MATLAB Project...
Functions	Line, Arc, Gradient, End Fired, WFS, Front Fill/Line Design..., Coverage Calculator..., Autosplay..., Low-Mid Control..., Auralization...
View	Side panel
Settings	Theme (Light/Dark), Language, Environment..., RiTA Connection..., Test Track (disabled for now)
Help	About Submap, Check for Updates..., Check for Updates at Startup