

AirSurvey 1.0



@mitaCode

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# AirSurvey User manual

AirSurvey is an easy to use tool to make WiFi coverage site surveys.

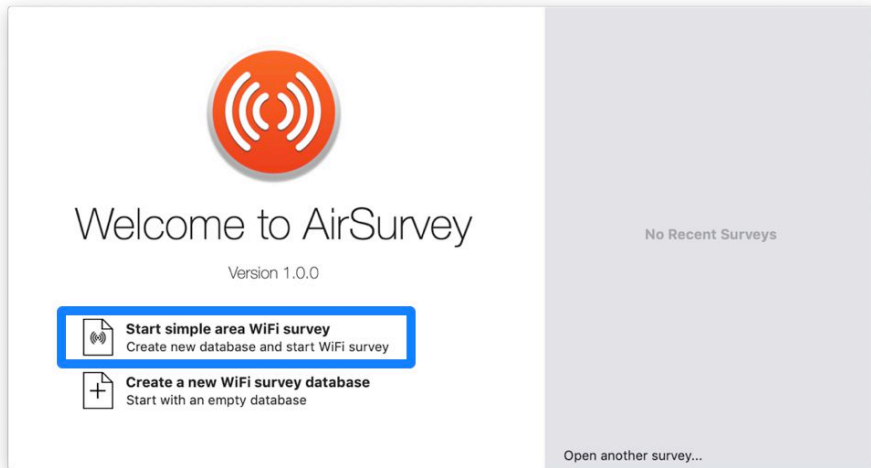
ermitaCode

[www.ermitacode.com](http://www.ermitacode.com)


## Getting Started

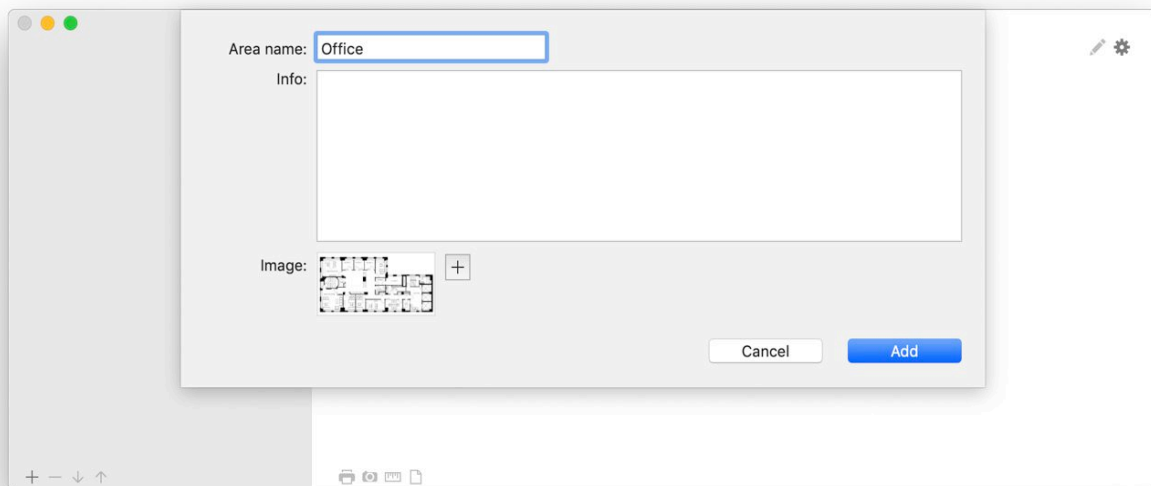
Optimal coverage in a WiFi network needs a research of the radio strength available in the zones to be provided with the wireless service. This information is obtained performing a wireless site survey, revealing dead zones and helping you to find the best locations for access points. AirSurvey is an easy to use tool to make WiFi coverage site surveys.

The first time AirView is started the Welcome window will be displayed:

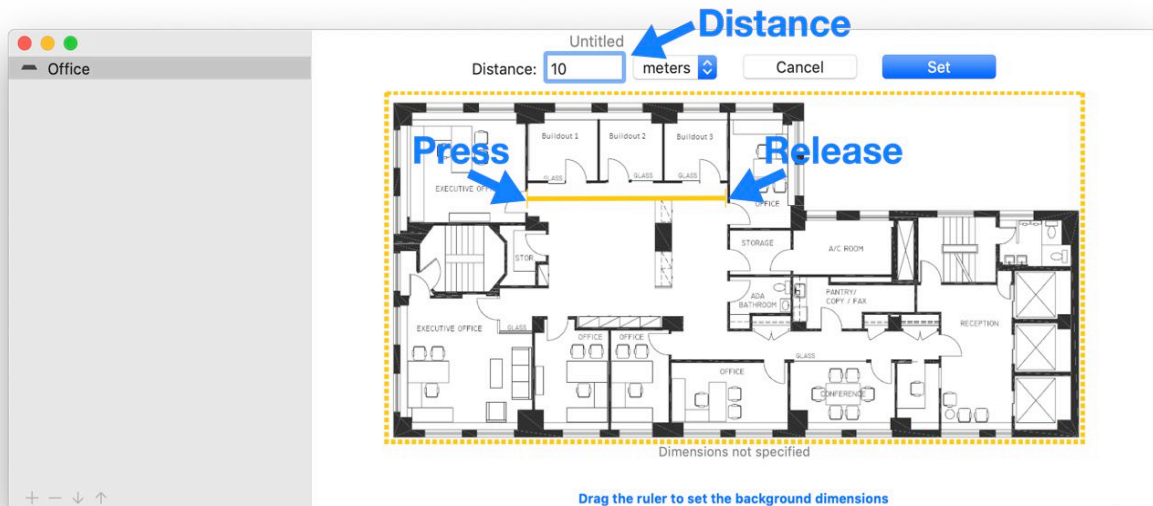


To start a site survey click on **Start simple area WiFi survey** and enter the data for the area in which the survey will take:

- The **Area name**.
- Optionally, an **Info** text.
- The **Image** that will be used as background of the area. Click the  button to select a file containing the image.



Click **Add** to create the area and set the area dimensions pressing the left button and dragging the mouse to measure a known distance on the map:



In the example, the map dimensions are set by specifying the known measure of a wall. After releasing the mouse, enter the dimension of the measure and click the **Set** button or press Return. The dimensions of the map are calculated in function of the measure and shown below the map image.

The survey mode is entered, the start survey ► button is changed to the ■ symbol and the cursor is changed to a crosshair inside the map:



Locate your actual position in the map and left click in this point to perform a WLAN scanning.

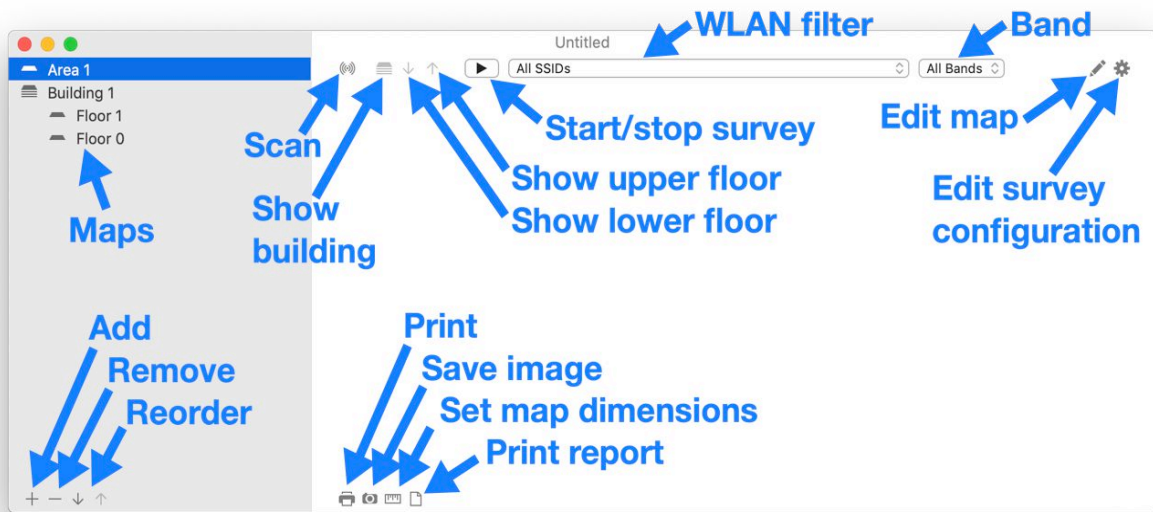
The scanned WLAN's are stored and graphically displayed in the map:



Repeat this procedure to get several samples in the survey zone and click the ■ button to finalize the survey.

# Using AirSurvey

The AirSurvey window is divided in two main areas:



The left area shows the actual survey maps. You can organize your survey using 3 types of objects:

- **Areas.** Contains a single map.
- **Buildings.** Contains one or several Floors.
- **Floors.** Contains a single map.

To create a new map object, click the **Add +** button and select the desired object type in the popup menu.

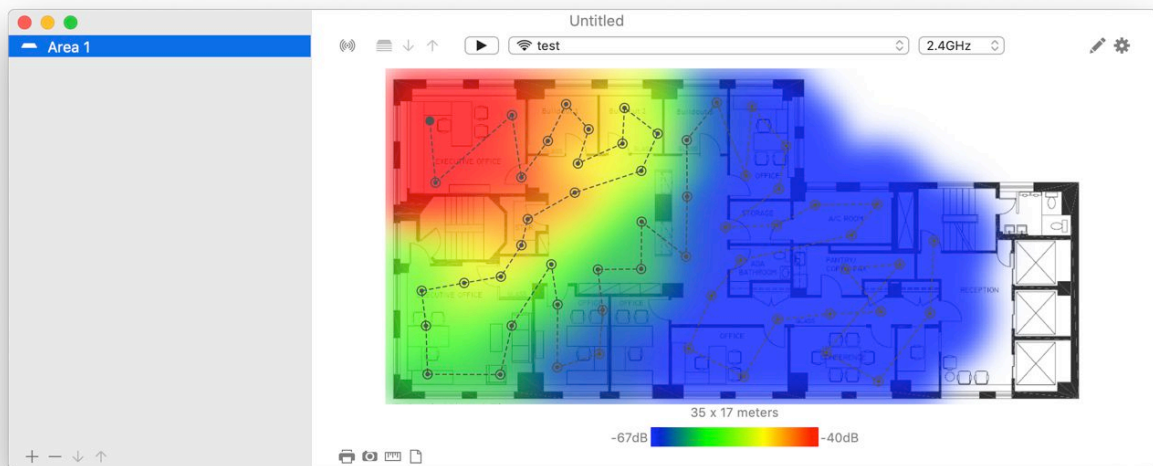
To remove a map object, select it and click the **Remove -** button.

You can reorder the map objects using the **Reorder** ↓↑ buttons located at the bottom of the map list.













Dragging the map objects in the list, it is possible:

- Reorder Areas and Buildings.
- Reorder the Floors of a Building.
- Move an Area to a Building dragging the Area and dropping it into the Building. The Area is then converted to a Floor.
- Move a Floor outside a Building. The Floor is then converted to an Area.

The right area shows the selected Area, Building or Floor heatmap:



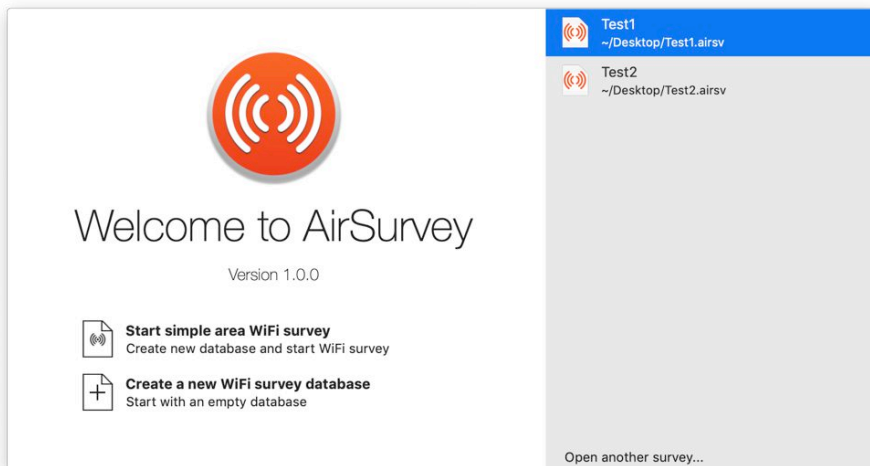
Available controls are:

-  **Scan**. Performs a WLAN scanning.
-  **Show building**. Selects the Building corresponding to the current selected Floor.
-  **Bellow/above building floor**. Selects the Floor bellow or above the current selected.
-  **Start / Stop survey**. Starts or stops the survey mode.
- **WLAN filter**. Allows selecting the WLAN to be shown in the heatmap. WLAN's are shown using these symbols:
  -  represents a SSID (Service Set Identifier).
  -  represents a BSSID (Basic Service Set Identifier).
- **Band**. Allows filtering BSSID's by frequency band.
-  **Edit map**. Edit the selected Area, Building or Floor parameters.
-  **Edit survey configuration**. Edit the global survey configuration.
-  **Print map**. Prints the current Area or Floor map.
-  **Save image**. Saves the current Area or Floor map to an image file.
-  **Set map dimensions**. Permits to establish Area and Floor map dimensions.
-  **Print survey report**. Create and print the survey report document.

## Creating Surveys

You can create a new network database:

- Using the **File>New...** menu option (keyboard shortcut ⌘N). You will be asked for the new survey name, enter a file name and click **Save**. An empty database file will be created with extension *.airsv*.
- Using the Welcome panel. The Welcome panel is shown selecting the **Window>Welcome to AirSurvey** menu option (keyboard shortcut ⇧⌘0) or clicking the AirSurvey dock icon when no survey database is open.



To create a new survey database using the Welcome panel:

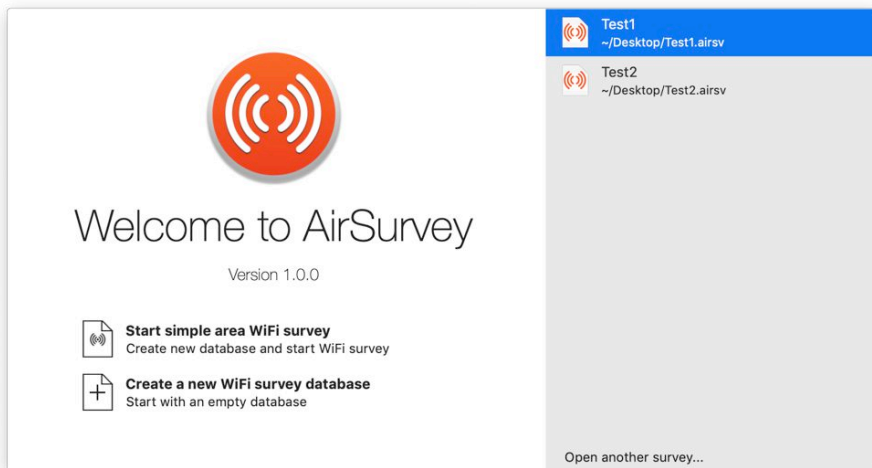
- Click the **Start simple area WiFi survey** button to create an empty database file and enter the survey mode. You will be asked for the new survey name, enter a file name and click **Create**.
- Click the **Create a new WiFi survey database** button to create an empty database file. You will be asked for the new survey name, enter a file name and click **Create**.

# Opening Surveys

Survey information is stored in database files with extension *.airsv*.

You can open a survey database:

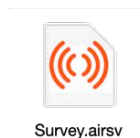
- Using the **File>Open...** menu option (keyboard shortcut ⌘O).
- Selecting a file name from the **File>Open Recent** submenu.
- Using the Welcome panel. The Welcome panel is shown selecting the **Window>Welcome to NetworkView** menu option or clicking the AirSurvey dock icon when no survey database is open.



To open a survey database using the Welcome panel:

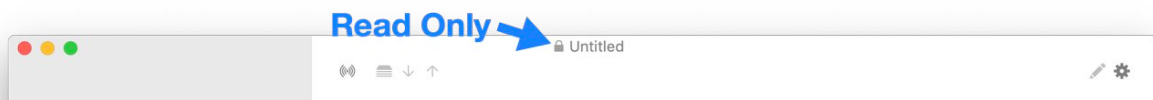
- Double click a survey database in the file list showing the recent open files.
- Using the **Open another network...** button.

You can also open a survey using the Finder. AirSurvey document files have the extension *.airsv* and are shown in the Finder with this icon:



To open the file double click the icon or left click to open the icon menu and click **Open**.

Opening read only AirSurvey documents will cause that all editing and surveying functionalities are disabled. The Read Only condition is signaled with a lock icon near the survey database name:



## Saving Surveys

AirSurvey survey databases are automatically saved when they are modified. You do not need to take any special action to save survey modifications.

You can save the current survey database contents to a different file using the **File>Save As...** main menu option (keyboard shortcut ⌘⌘S). You will be asked for the new file name, enter a name and click **Save**.

AirSurvey document files have the extension *.airsv* and are shown in the Finder with this icon:



Survey.airsv

## Maps

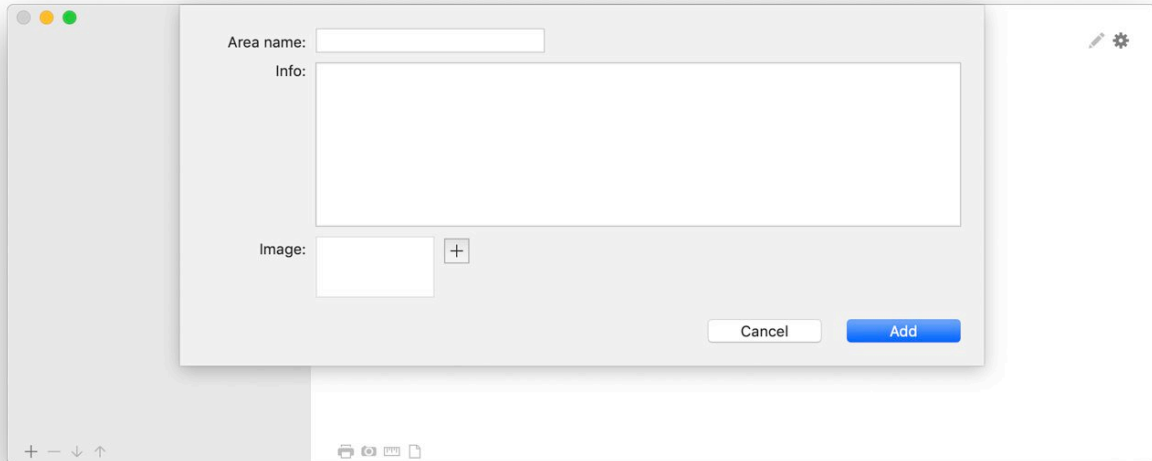
AirSurvey uses 3 types of objects to manage the maps:

- **Areas.** Contains a single map.
- **Buildings.** Contains one or several Floors.
- **Floors.** Contains a single map.


# Areas


Area objects are used to contain single map surveys. For building surveys composed by several floors you can use Building objects to group the Floor maps.

To create a new Area, click the **Add +** button and select **Area** in the popup menu or use the **Edit>Add> Area** main menu option (keyboard shortcut  $\uparrow \text{⌘} \text{A}$ ):



Enter the **Area name**, optionally enter a descriptive **Info**, click the **+** to select a map **Image** and click the **Add** button. The new Area map is then displayed and the measure mode is entered to permit you to set the Area map dimensions. The descriptive **Info** text is included in the survey report Area page.

To modify an existent Area, click the  button, double click the Area or use the **Edit>Edit...** main menu option (keyboard shortcut  $\uparrow \text{⌘} \text{E}$ ).

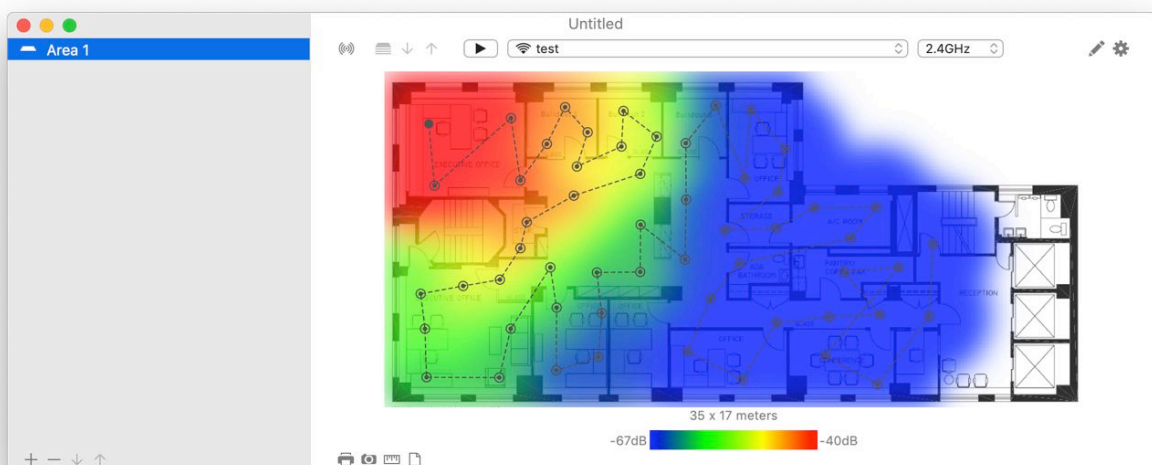
 Changing the Area **Image** will cause that all samples contained in the Area will be lost.

You can move an Area to a Building dragging the Area and dropping it into the Building. The Area is then converted to a Floor.

You can also move a Floor outside a Building and convert it in an Area.

To remove an Area, select it and click the **Remove -** button or use the **Edit>Remove...** main menu option (keyboard shortcut  $\uparrow \text{⌘} \text{⌘}$ ).

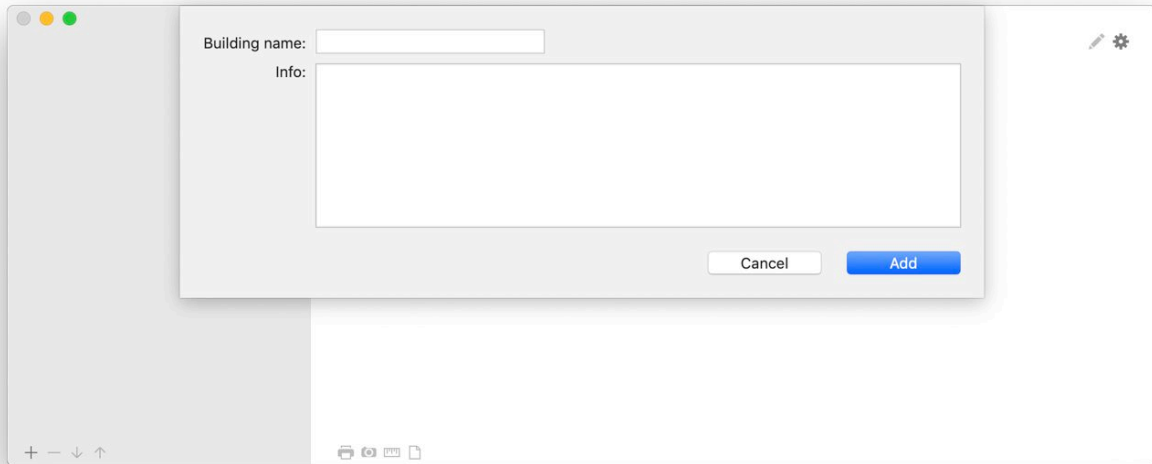
When an Area is selected, the right part of the AirSurvey window will show the Area heatmap:




# Buildings

For a building survey composed by several floors you can use a Building object as a container for the Floor maps.

To create a new Building, click the **Add+** button and select  **Building** in the popup menu or use the **Edit>Add>**  **Building** main menu option (keyboard shortcut  $\uparrow \text{⌘} \text{B}$ ):



Enter the **Building name**, optionally enter a descriptive **Info** and click the **Add** button.

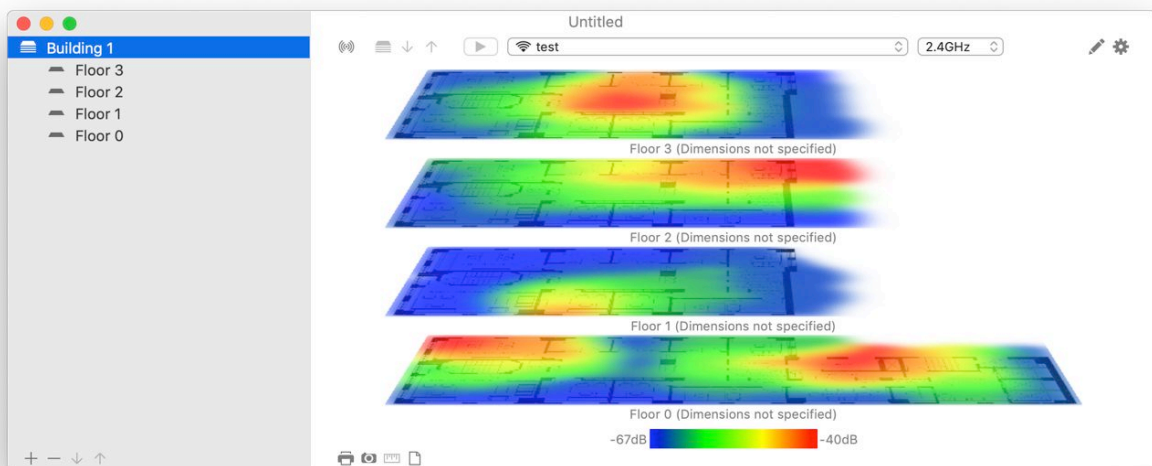
To modify an existent Building, click the  button, double click the Building in the map list or use the **Edit>Edit...** main menu option (keyboard shortcut  $\uparrow \text{⌘} \text{E}$ ).

To remove a Building, select it and click the **Remove-** button or use the **Edit>Remove...** main menu option (keyboard shortcut  $\uparrow \text{⌘} \text{⌘}$ ).



Removing a Building will cause that all contained Floors are removed.

When a Building is selected, the right part of the AirSurvey window will show the Building Floors heatmaps:

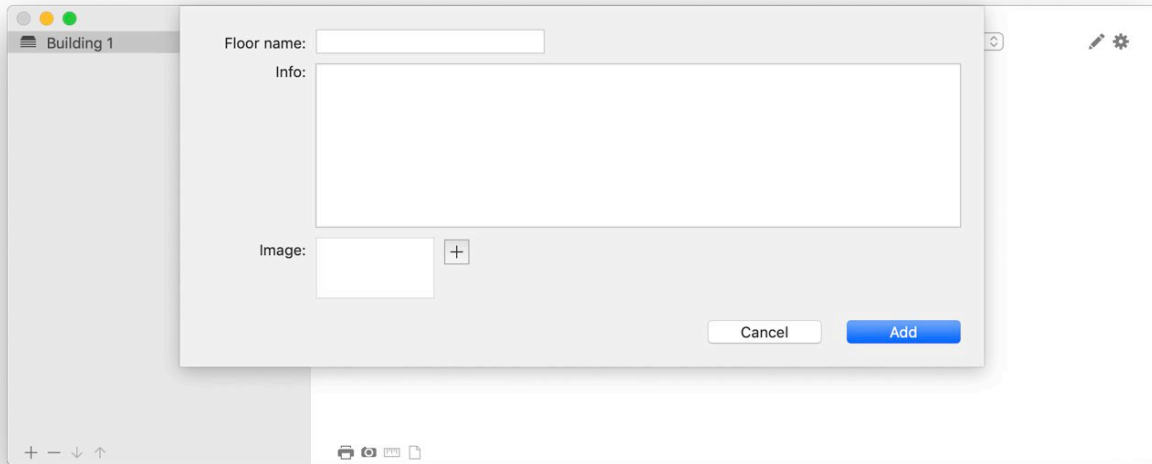


You can double click a Floor map to select select open it.


# Floors

For a building survey composed by several floors you can use a Building object as a containers for the Floor maps.

To create a new Floor, select a Building, click the **Add +** button and select **Floor** in the popup menu or use the **Edit>Add> Floor** main menu option (keyboard shortcut  $\uparrow \text{⌘} \text{F}$ ):





Enter the **Floor name**, optionally enter a descriptive **Info**, click the **+** to select a map **Image** and click the **Add** button. The new Floor map is then displayed and the measure mode is entered to permit you set the Floor map dimensions. The descriptive **Info** text is included in the survey report Floor page.

To modify an existent Floor, click the  button, double click the Floor or use the **Edit>Edit...** main menu option (keyboard shortcut  $\uparrow \text{⌘} \text{E}$ ).



Changing the Floor **Image** will cause that all samples contained in the Floor will be lost.

Dragging the Floors you can reorder them inside of the Building. You can also reorder the Floors using the **Reorder**   buttons located at the bottom of the map list.

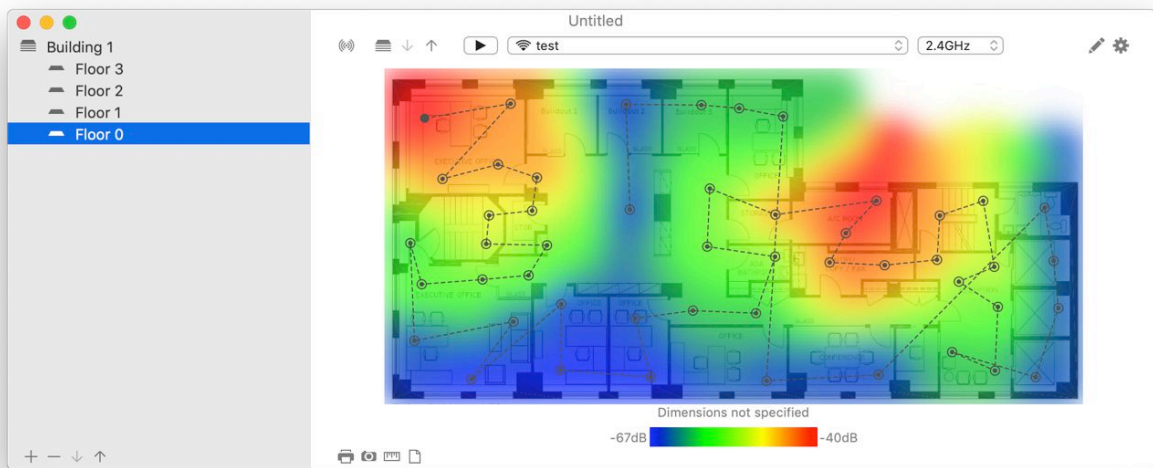
If you move an Area to a Building dragging the Area and dropping it into the Building, the Area is then converted to a Floor.

If you move a Floor outside a Building, the Floor is then converted to an Area.




You can also move a Floor to a different Building.

To remove a Floor, select it and click the **Remove -** button or use the **Edit>Remove...** main menu option (keyboard shortcut  $\uparrow \text{⌘} \text{⌘}$ ).

When a Floor is selected, the right part of the AirSurvey window will show the Floor heatmap:



You can use the following controls to navigate through the Building Floors:

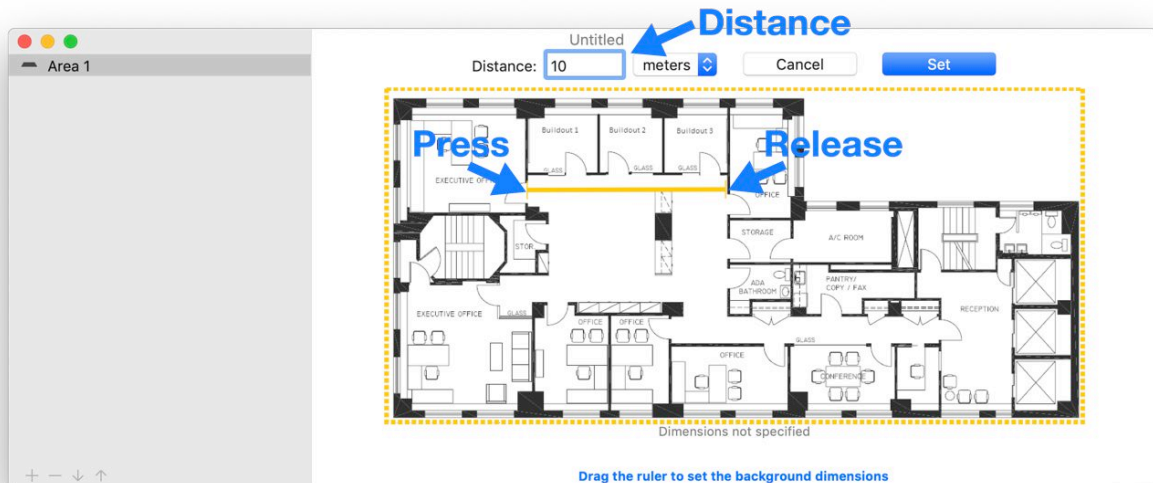
-  Selects the Building corresponding to the current selected Floor.
-   Selects the Floor below or above the current selected Floor.

## Setting Map Dimensions

Area and Floor map dimensions, in combination with the **Sample radius** parameter of the survey configuration, are used to determine the radius at which the information of the samples taken is significant.

Each time you add a new Area or Floor, the measure mode is entered to permit you set the Area or Floor map dimensions.

You can set the dimensions at any time clicking the ruler  button or using the **Edit>Set Map Dimensions...** main menu option:



Pressing the left button and drag the mouse to measure a known distance on the map. Release the mouse, enter the dimension of the measure and click the **Set** button or press Return. The dimensions of the map are calculated in function of the measure and shown below the map image.

To show/hide the map dimensions using the **View>Show Map Dimensions** main menu option.

# Survey Configuration

Click the  button or use the **File>Edit Survey Configuration...** main menu option to edit the global survey configuration:



- **RSSI threshold.** Minimum WLAN RSSI (Received Signal Strength Indicator) to display coverage in the heatmaps.
- **Sample radius.** Defines the radius at which the information of the samples taken is significant to display in the heatmaps. You can select **Auto** to dynamically adjust the radius from the sample points.

# Scanning WLANs

Click the  button to perform a WLAN scanning:





SSID/BSSID	Vendor	Band	Channel	Physical	Security	RSSI
Area1						
MiFibra-F085						
MiFibra-F085 – e6:f4:51:6a:f0:88		5GHz	64	ac	WPA2/PSK	-80
MiFibra-F085 – ec:f4:51:6a:f0:87	Arcadyan Corporation	2.4GHz	11	g/n	WPA2/PSK	-53
Area2						
MOVISTAR_31CA						
MOVISTAR_31CA – e0:41:36:b5:31:cb	MitraStar Technology Corp.	2.4GHz	11	n	WPA2/PSK	-63
MOVISTAR_31CA – e6:41:36:b5:31:d3		5GHz	36	ac	WPA2/PSK	-74
MOVISTAR_54E4 – f8:8e:85:d3:54:e5	Comtrend Corporation	2.4GHz	1	n	WPA/PSK	-60
MOVISTAR_8B60 – e2:41:36:53:8b:60		2.4GHz	11	b/g/n	WPA2/PSK	-81
MOVISTAR_9E88 – e2:41:36:02:9e:88		2.4GHz	1	b/g/n	WPA2/PSK	-62
MOVISTAR_C0E4 – cc:d4:a1:69:c0:e5	MitraStar Technology Corp.	2.4GHz	6	n	WPA2/PSK	-85
MOVISTAR_C496 – 86:aa:9c:3e:c4:9f		5GHz	112	ac	WPA2/PSK	-87
MOVISTAR_PLUS_31CA – e0:41:36:b5:31:d3	MitraStar Technology Corp.	5GHz	36	ac	WPA2/PSK	-74
ONO3373 – 50:09:59:e1:d0:82	Technicolor CH USA Inc.	2.4GHz	11	n	WPA2/PSK	-82
rdair – 20:c9:d0:1a:f0:c1	Apple, Inc.	2.4GHz	1	b/g/n	WPA2/PSK	-37
rdair5 – 20:c9:d0:1a:f0:c2	Apple, Inc.	5GHz	116	a/n	WPA2/PSK	-44
rdairAC						
rdairAC – cc:d4:a1:83:65:fb	MitraStar Technology Corp.	2.4GHz	1	n	WPA2/PSK	-64
rdairAC – cc:d4:a1:83:66:03	MitraStar Technology Corp.	5GHz	108	ac	WPA2/PSK	-68

The following information is shown:

- **SSID/BSSID** (Service Set Identifier/Basic Service Set Identifier).
- **Vendor**.
- **Channel**.
- **Physical** mode.
- **Security** mode.
- **RSSI** (Received Signal Strength Indicator).

WLAN's are shown using these symbols:

-  represents a SSID (Service Set Identifier).
-  represents a BSSID (Basic Service Set Identifier).

For example, in the previous figure:


- The SSID **rdair** contains a single BSSID **20:c9:d0:1a:f0:c1** (the SSID is emitted by 1 Access Point).
- The SSID **rdairAC** contains 2 BSSID's **cc:d4:a1:83:65:fb** and **cc:d4:a1:83:66:03** (the SSID is emitted by 2 Access Points).

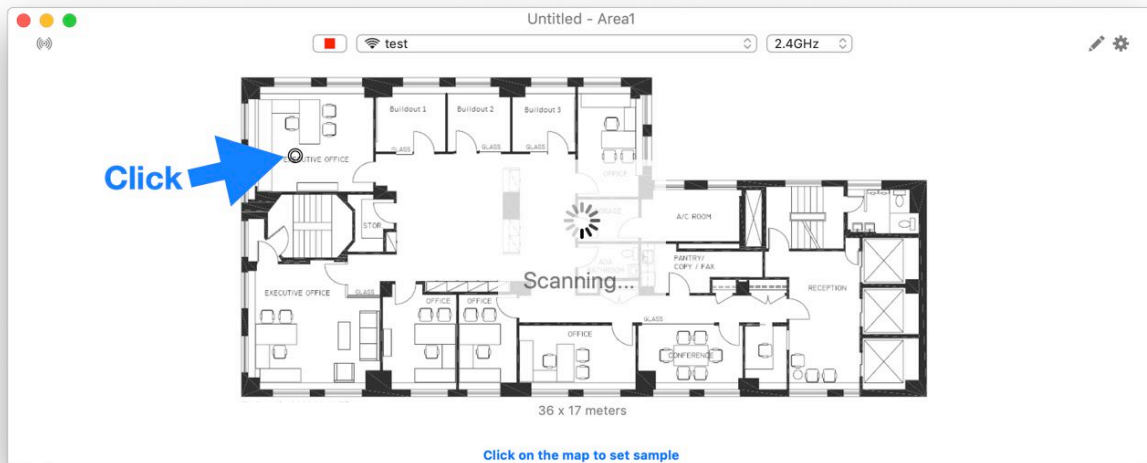
The WLAN list will be updated with new WLAN's until it is canceled.

Selecting an WLAN item and clicking **Select** will set it as a WLAN filter for displaying the heatmaps.

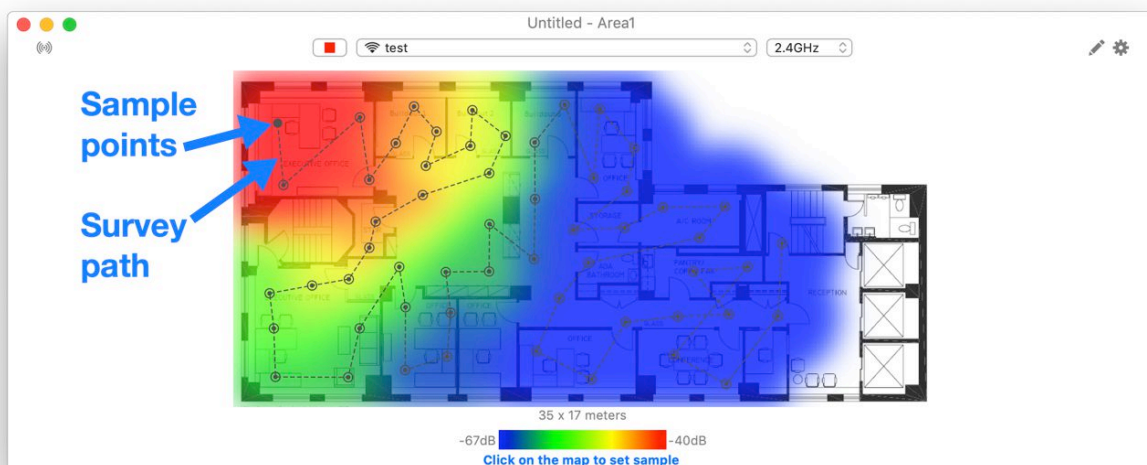
## Performing Surveys

Area and Floor surveys consist of physically traversing the areas to scan the WLAN networks present in various points of these areas. The information obtained is then graphically displayed on the map of the Area or Floor by using a heatmap. A heatmap represents by colors the RSSI (Received Signal Strength Indicator) measured at each point.

To enter survey mode, click the  button or use the **Edit>▶ Start Survey** main menu option (keyboard shortcut  $\backslash\text{⌘}S$ ). The cursor is changed to a crosshair inside the map. You can now traverse physically the Area or Floor locating your position in the map and left left click in the corresponding point in the map to perform a WLAN scanning and record the available WLAN's information:



The scanned WLAN's RSSI information is then graphically displayed in the map:



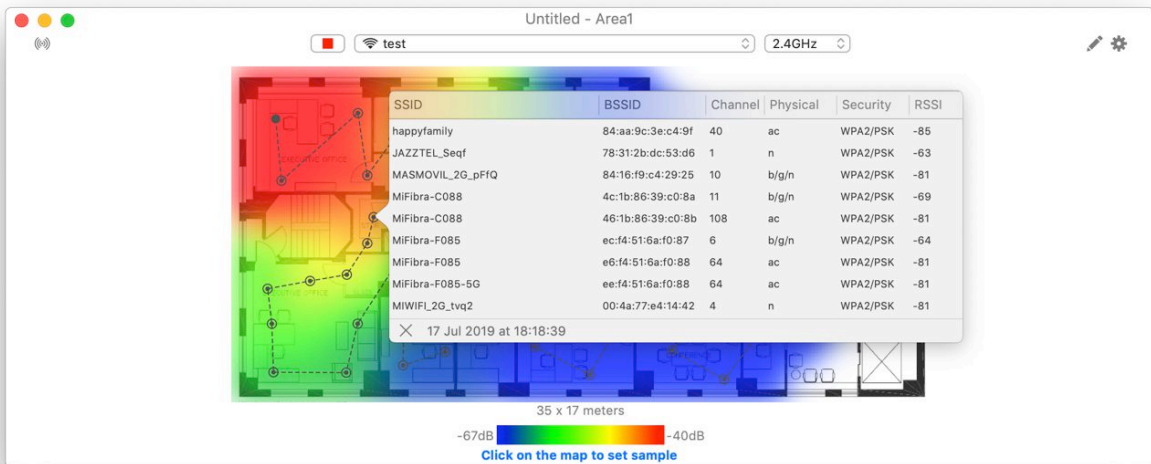
To stop survey mode, click the  button or use the **Edit>■ Stop Survey** main menu option (keyboard shortcut  $\backslash\text{⌘}X$ ).

You can show/hide the map dimensions displayed below the map using the **View>Show Map Dimensions** main menu option.

You can show/hide the sample points and survey path using the **View>Show Survey Path** main menu option.

You can show/hide the discovered Access Points using the **View>Show Access Points** main menu option.

You can obtain the WLAN's information at any point of the map right clicking on it:



The popover includes the following data:

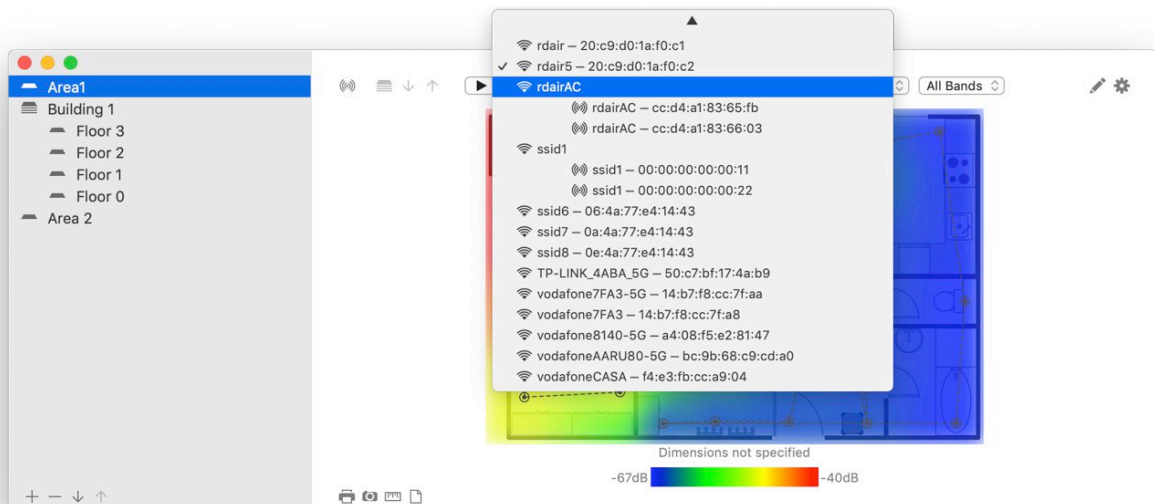
- **SSID** (Service Set Identifier).
- **BSSID** (Basic Service Set Identifier).
- **Channel**.
- **Physical** mode.
- **Security** mode.
- **RSSI** (Received Signal Strength Indicator).

If the selected point matches a sample point, the popover will show the scanned WLAN's information and at the bottom:

- The date and time the sample was taken.
- A **X** button. You can use this button to remove the sample at any time.

If the selected point does not match a sample point, the popover will show interpolated WLAN's information.

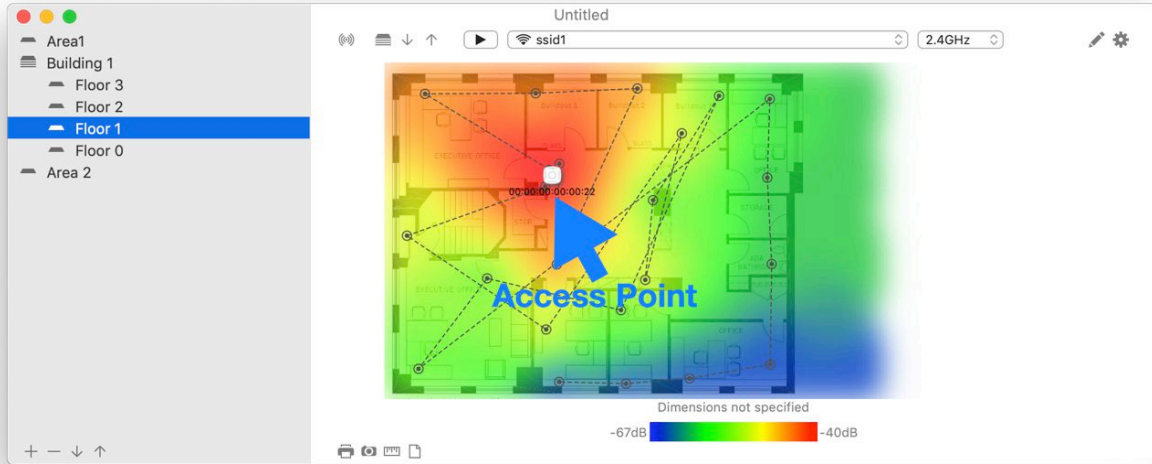
To select a SSID, a BSSID or the band to be shown in the heatmap you can use the filter popup menus located above the heatmap:



## Discovering APs

Using the information obtained in the survey, AirSurvey can automatically determine Access Point locations.

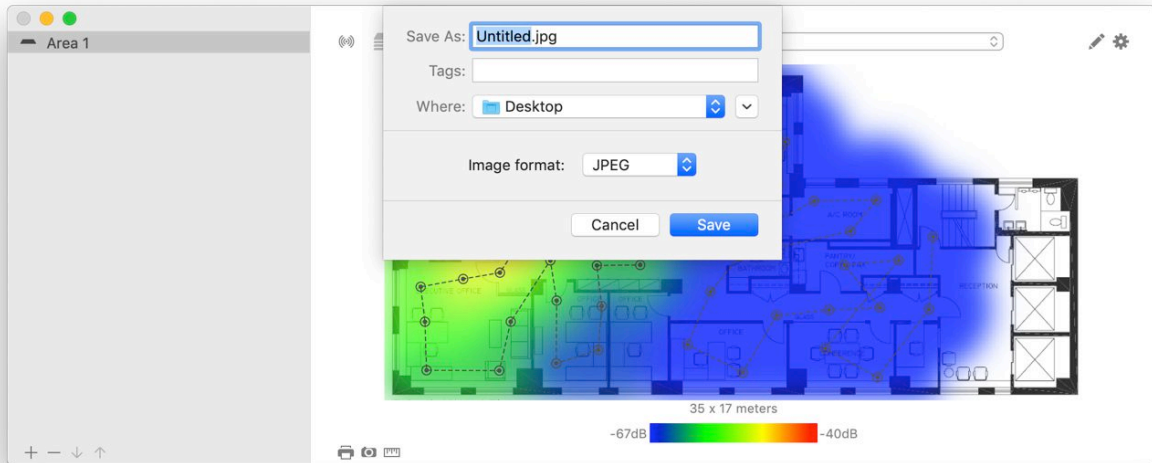
The discovered Access Points can be displayed in the heatmaps using the **View>Show Access Points** main menu option:



## Saving Map Images


You can easily include network maps in a document saving the view content in an image file and then importing it into your document. Alternatively you can copy the map image to the clipboard and paste in your document.

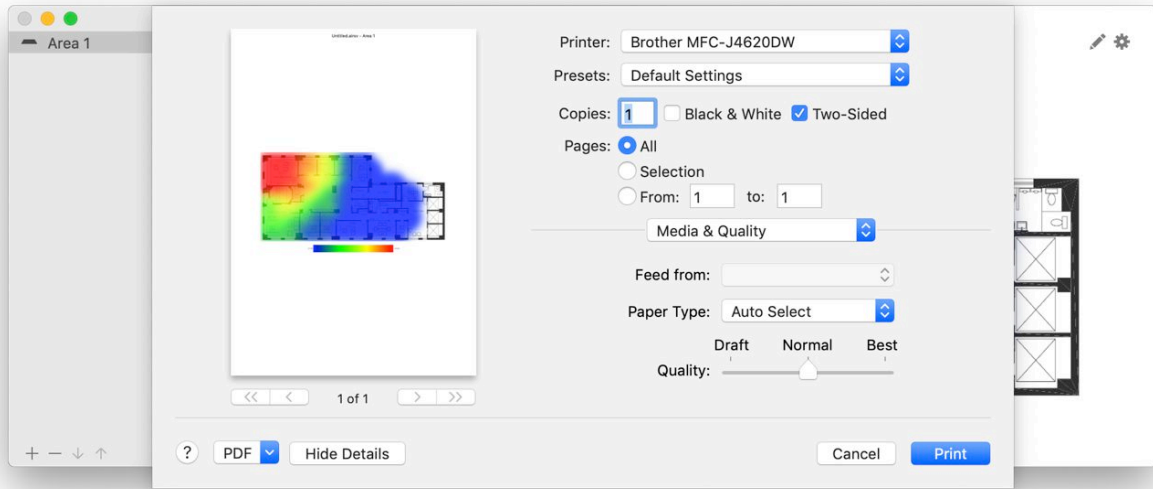
To save the map view to an image file, click  button the or use the **File>Save Image...** menu option (keyboard shortcut  $\text{⌘I}$ ).



Available image formats are JPEG, JPEG-2000, PNG, GIF and TIFF.

## Printing Maps

To print an Area or Floor map, click the  button or use the **File>Print...** menu option (keyboard shortcut ⌘P).



Select the printer and click the **Print** button or use the **PDF** menu to print to a PDF file.


## Copying to Clipboard

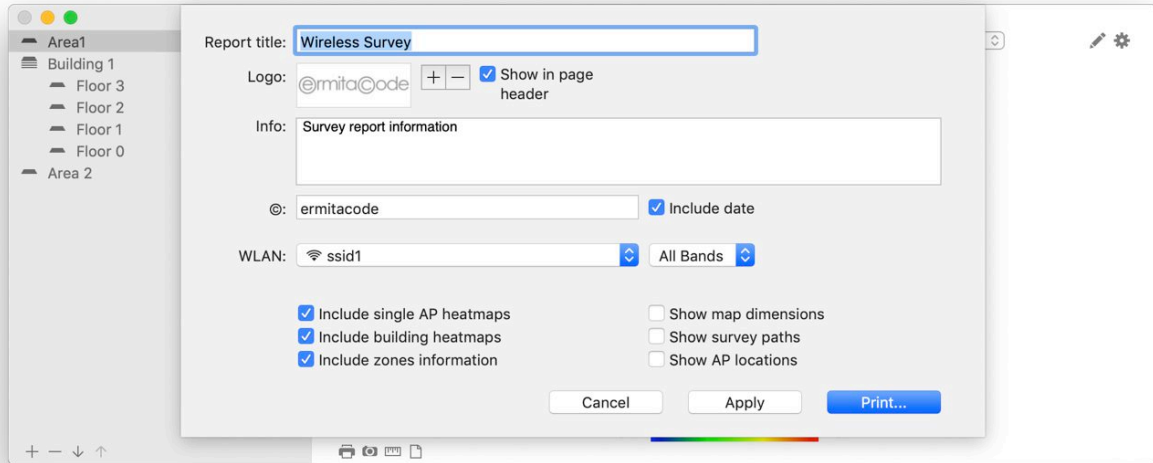
The pasteboard is a standardized mechanism for exchanging data within an application or between applications via copy and paste operations.

Use the **Edit>Copy** main menu option (shortcut ⌘C) to copy the map image to the clipboard. The image is then available to other apps and can be included in your documents. You can also save the map image to a file or print the map. The copied image has PNG format.

When the sample popover is shown, use the **Edit>Copy** main menu option (shortcut ⌘C) to copy the WLAN list to the clipboard.

# Creating Reports

Click the  button or use the **File>Print Survey Report...** main menu option (keyboard shortcut **⌘R**) to generate a report document including the survey information:

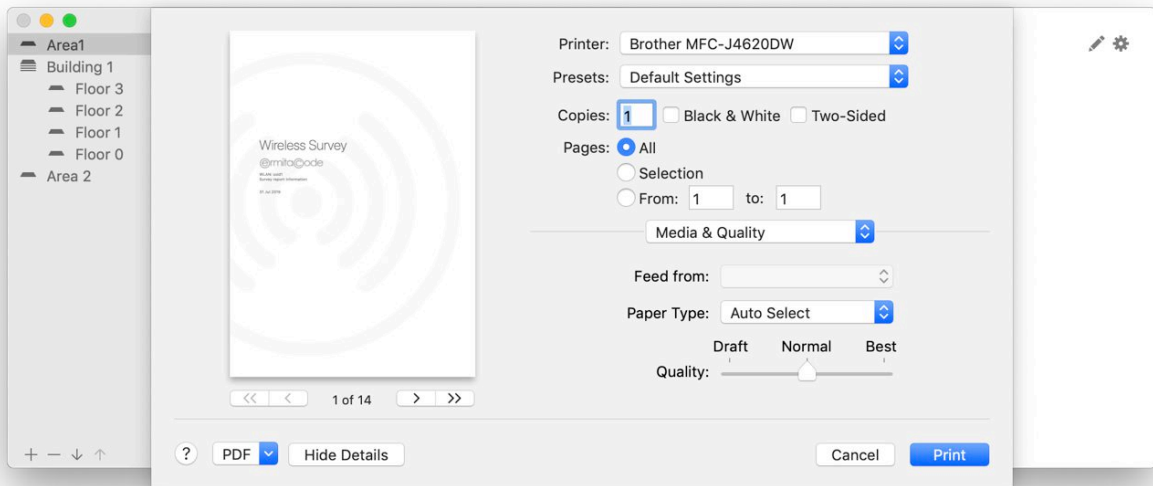


You can customize the report title, logo, information, copyright and the survey data:

- **Report title.** Title shown in the cover page and in the page header of the document.
- **Logo.** Image shown in the cover page and optionally in the page header of the document.
- **Show in page header.** This option defines if the logo image is included in the page header.
- **Info.** Text shown in the cover page below the logo.
- **©.** Copyright text shown in the page footer.
- **Include date.** This option defines if the date is included in the page footer next to the copyright text.
- **WLAN.** Use this popup menu to select the SSID or specific BSSID to be included in the report.
- **Include single AP heatmaps.** If the selected SSID contains several BSSID's (Access Points), checking this option will include a separate heatmap for each BSSID showing the coverage provided by each single AP.
- **Include building heatmaps.** Checking this option will include building heatmaps showing the coverage in all the floors in a single figure.
- **Include zones information.** Checking this option will include areas, buildings and floors information (**info** field).
- **Show map dimensions.** Checking this option will show map dimensions in the heatmaps.
- **Show survey paths.** Checking this option will show the sample points and survey paths in the heatmaps.
- **Show AP locations.** Checking this option will show the discovered Access Points in the heatmaps.

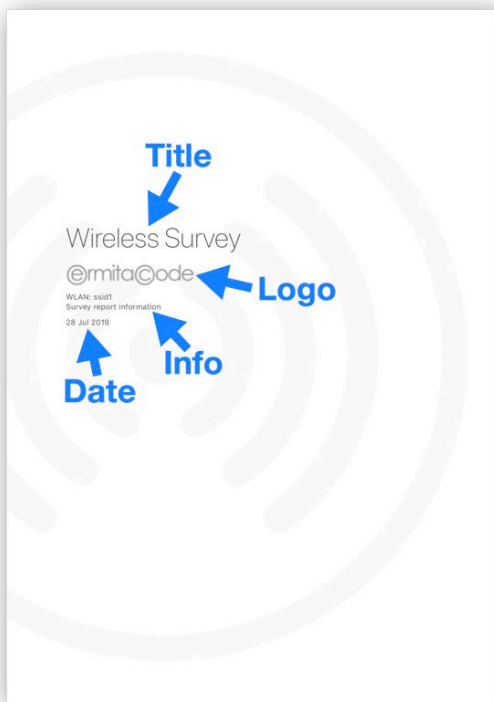
You can click the **Apply** button to save the report parameters without generating the report.

Click **Print...** to generate the report:

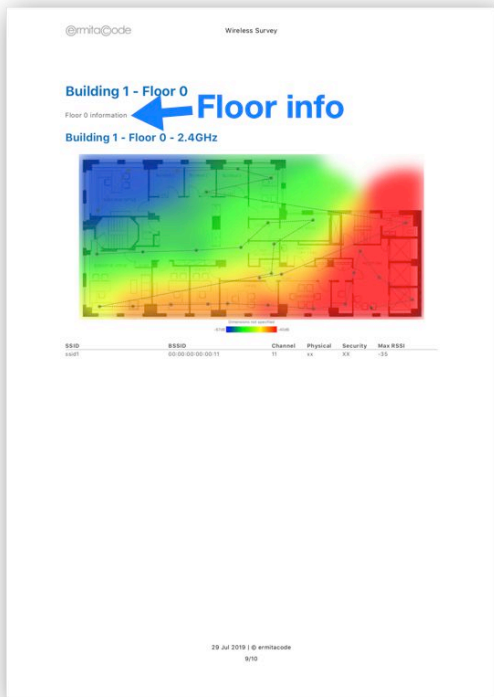
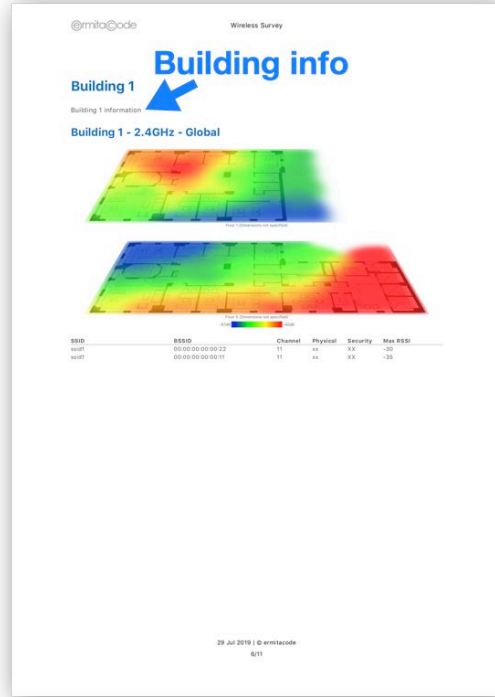
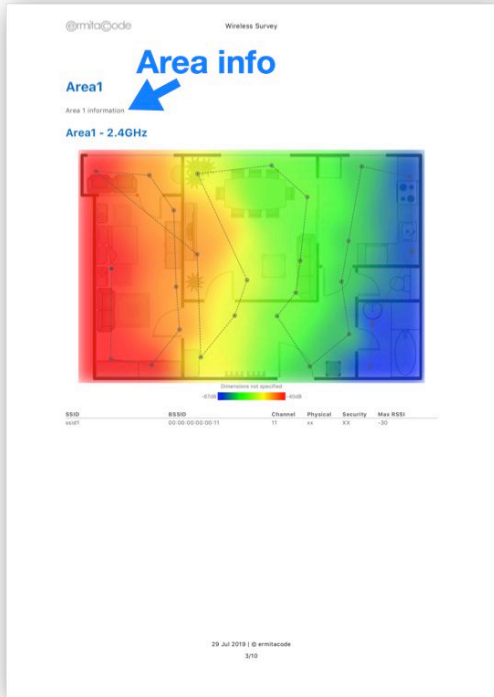


Select the printer and click the **Print** button or use the **PDF** menu to print to a PDF file.

The report includes a cover page and a contents page:



The following figures show an example of an Area, a Building and a Floor heatmap pages:



The structure of the report documents follows this scheme:

**Area1**

- Area1 - 2.4GHz - Global
- Area1 - 2.4GHz - BSSID1
- Area1 - 2.4GHz - BSSID2
- ...
- Area1 - 5GHz - Global

Area1 - 5GHz - BSSID1

Area1 - 5GHz - BSSID2

...

**Building1**

Building1 - 2.4GHz - Global

Building1 - 2.4GHz - BSSID1

Building1 - 2.4GHz - BSSID2

...

Building - 5GHz - Global

Building - 5GHz - BSSID1

Building - 5GHz - BSSID2

...

**Building1 - Floor1**

Building1 - Floor1 - 2.4GHz - Global

Building1 - Floor1- 2.4GHz - BSSID1

Building1 - Floor1- 2.4GHz - BSSID2

...

Building1 - Floor1 - 5GHz - Global

Building1 - Floor1- 5GHz - BSSID1

Building1 - Floor1- 5GHz - BSSID2

...

...