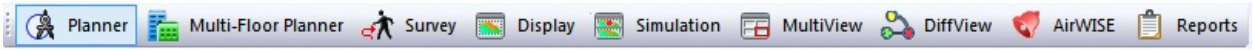
# AirMagnet Plannerの使用

## Planner User Interface

### *ナビゲーションバー*

様々な画面やユーティリティの起動パッドとして機能します。ナビゲーションバーのオプションは、ソフトウェアのライセンスによって異なります。

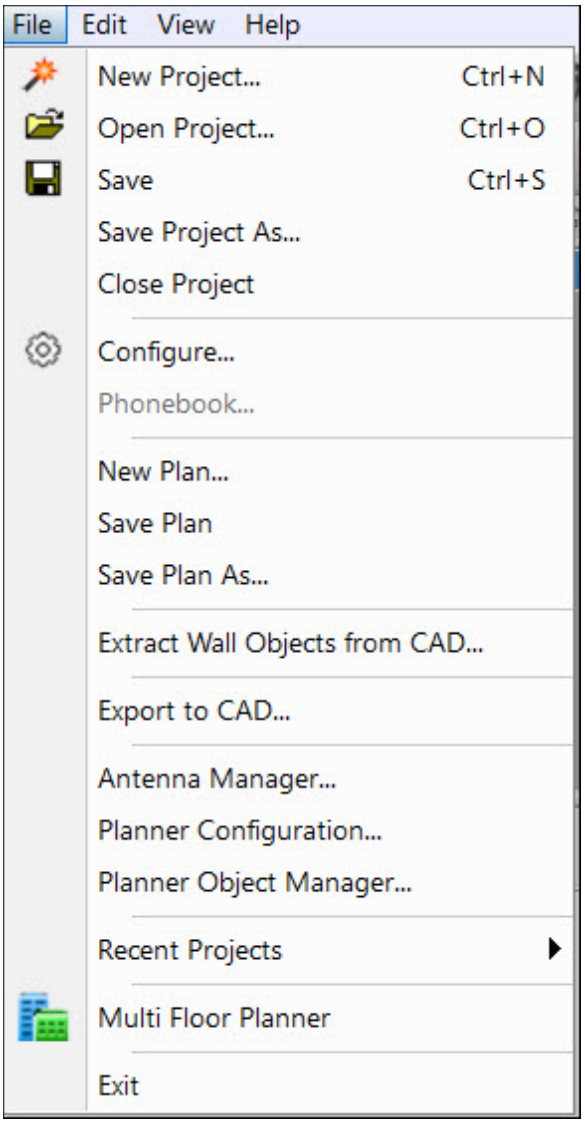



ナビゲーションバーの一部のオプションは、AirMagnet Planner を使用する際に利用できない機能を参照しています。

[Planner]をクリックして[Planner]ビューを開きます。

### *File メニューオプション*

[Planner]ビューでは、[File]メニューに以下のオプションが用意されています。

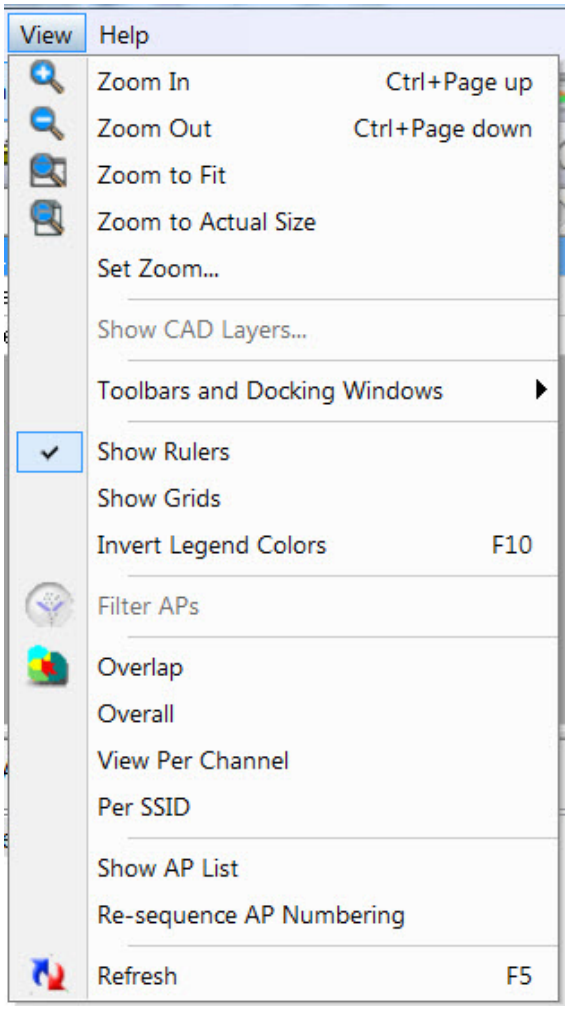



| メニューオプション | 説明 |
|---|---|
| New Project... | 新規プロジェクトウィザードウィンドウを開き、新しいプランナープロジェクトを作成することができます。 |
| Open Project... | 既存のプランナープロジェクトを開きます。 |
| Save | 現在のプロジェクトに加えた変更を保存します。 |
| Save Project As... | 現在のプロジェクトを別の名前で保存します。 |
| Close Project | 現在のプランナープロジェクトファイルを閉じます。 |
| Configure... | [Configuration]ダイアログボックスが開き、AirMagnet Planner のさまざまなパラメータを設定できます。 |
| New Plan... | 現在のプランナープロジェクトに新しいプランを作成します。 |
| Save Plan | 現在のプランをプランナープロジェクト内に保存します。 |
| Save Plan As... | 現在のプランを現在のプランナープロジェクト内で別の名前で保存します。 |
| Extract Wall Objects from CAD... | プロジェクトのCADイメージ(.dwg)をインポートした場合、このオプションを選択するとCAD図面からプランナー壁オブジェクトを作成する為のダイアログが開き、レイヤーを選択したり壁を設定したりできます。 |

| | |
|---|---|
| Export to CAD... | プロジェクトにCADイメージ(.dwg)をインポートした場合、このオプションを使用すると、APや壁データとともにイメージをエクスポートできます。 |
| Antenna Manager... | [Antenna Manager]ダイアログを開き、アンテナパターンテンプレートのカスタマイズや変更ができます。 |
| Planner Configuration... | [Planner Configuration]ダイアログを開き、Planner の表示の様々な側面をカスタマイズできます。 |
| Planner Object Manager... | [Planner Object Manager]を開き、ユーザーがプラン内の壁とエリアのタイプのリストを表示できるようにします。 |
| Recent Projects | 以前に開いたプロジェクトのリストを提供します。リストを選択するとプロジェクトが開きます。 |
| Multi Floor Planner | Multi Floor Plannerが開きます。 |
| Exit | AirMagnet Plannerを閉じます。 |

## *View メニューオプション*

[**View**]メニューには以下のオプションがあります。



| メニューオプション | 説明 |
|---|---|
| Zoom In | マップウィンドウの現在のフロアマップの表示を拡大します。ツールバーの  (Zoom In)と同じ動作をします。 |
| Zoom Out | マップウィンドウの現在のフロアマップの表示を縮小します。ツールバーの  (Zoom Out)と同じ動作をします。 |
| Zoom to Fit | 現在のフロアマップをマップウィンドウにフィットさせます。ツールバーの  (Zoom Fit)と同じ動作をします。 |
| Zoom to Actual Size |  現在のフロアマップを、実際の印刷縮尺に合わせます。 |
| Set Zoom... | [Set Zoom]ダイアログボックスが開き、マップの表示倍率を指定できます。 |
| Show CAD Layers... | CADイメージのどのレイヤーを表示するか、またイメージに複数のレイアウトがある場合はどのレイアウトを表示するかを選択できます。この機能は、[Display]ビューで画像を右クリックしたときにも利用できます。 |
| Toolbars and Docking Windows | レジェンド、ステータスバーを表示または非表示にし、ツールバーをデフォルト設定にリセットします。 |
| Show Rulers | マップウィンドウの端に沿ったルーラーを表示または非表示にします。 |
| Show Grids | |
| Invert Legend Colors | Flips the color scheme of the legend vertically. |
| Filter APs | Once APs are placed on a floorplan, this option opens the Filter AP dialog where you may create a data file that includes or excludes APs from the heatmap generation. |
| Overlap | Same as the Overlap button. Indicates signal overlap or channel interference overlap. Based on the Data Type selected, overlap will filter out all information that does not overlap, and will display only the data that does overlap. |
| Overall | Same as the Overall button. The default heatmap indicates overall signal strength coverage. |
| View Per Channel | Active when the Channel/SSID View is set to Channel. Same as Per Channel option on the Toolbar. Displays data by channel. Displays each channel in a different color. When this option is enabled, the channel list assigns different colors to the channels. |
| Per SSID | Active when the Channel/SSID View is set to SSID. Same as Per SSID option on the Toolbar. Display data by SSID. Displays each SSID in a different color. When this option is enabled, the channel list assigns different colors to the SSIDs. |
| Show AP List | Displays a list of all APs contained within the current plan. This allows you to easily manage basic settings for each AP in the list. |
| Re-Sequence AP Numbering | Re-sequences the numbering of all APs placed on the map that fit the default numbering scheme (“AP-#”) to remove numbering gaps that may have occurred during the design process. |
| Refresh | Generates or refreshes the heatmap. Requires that one or more APs be placed on floor plan. |

### *Toolbar*

The Toolbar contains frequently used tools, some of which are identical to those found in the File and View menus.

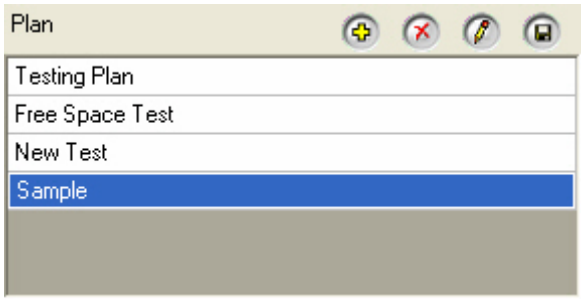
The following screen shot of the toolbar shows an undocked view. To undock the toolbar, drag the handle at the far left on the toolbar.


| Icon | Tool Name | Description |
|---|---|---|
| | Project Wizard | Create a new project. |
| | Open Project | Browse to open a project. |
| | Save | Save the open project. |
| | Configure | Opens the project configuration window. |
| | Select | Selects the cursor tool, allowing you to select and modify specific items. |
| | Zoom In | Enlarges the view of the site map. |
| | Zoom Out | Reduces the view of the site map. |
| | Zoom Fit | Fits the site map to the Map Window. |
| | Actual Size | Sets the zoom value to the actual size of the site map file. |
| | Create AP | Allows you to create and place a new AP in the map. |
| | Measure Mode | Allows you to recalibrate site dimensions to suit your location. |
| | Create Wall | Allows you to select a wall type and draw the walls of your site. |
| | Create Rectangular Attenuation Area | Allows you to select an area type (cubicle, office, etc.) and draw out a rectangular section of area. |
| | Create Arbitrary Attenuation Area | Same as rectangular area but not restricted to drawing rectangles (draws like the Create Wall tool). |
| | Create Elliptical Attenuation Area | Allows you to select an area type (cubicle, office, etc.) and draw out an elliptical area. |
| | Create Rectangular Coverage Area | Allows you to draw a rectangular coverage area. This area is used by Planner Advisor only. |
| | Create Rectangular Excluded Area | Allows you to draw a rectangular excluded area. This area is used by Planner Advisor only. |
| | Create Arbitrary Coverage Area | Allows you to draw an arbitrary coverage area. This area is used by Planner Advisor only. |

| | | |
|---|---|---|
| | Create Arbitrary Excluded Area | Allows you to draw an arbitrary excluded area. This area is used by Planner Advisor only. |
| | Create Elliptical Coverage Area | Allows you to draw an elliptical coverage area. This area is used by Planner Advisor only. |
| | Create Elliptical Excluded Area | Allows you to draw an elliptical excluded area. This area is used by Planner Advisor only. |
| | Clear All Objects | Opens a dialog allowing you to remove all placed objects, or all objects of a certain type (APs, attenuation areas, walls, etc.). |
| | Advisor | Opens the Planner Advisor tool. |
| | Refresh | Generate and refresh the heatmap |
| | Overlap | Show or hide coverage overlap in the Map Window. Available in Display view. |
| | Filtering | Filter AP data out of the Planner project. |
| | Tools | Opens the Signal and DHCP tools. |
| | Calculator | Opens the calculator tool. |

### *Project Window*

The Project Window displays all the plans contained in the current project(s).

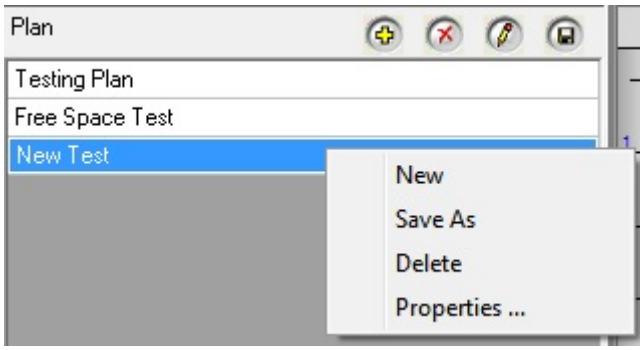



The Project Window for the Planner view contains the following components:

- **Tools**: contains buttons to add, delete, modify, and save the active plans contained in the current project file.
- **Plans**: displays the active plans contained in the current project file. The selected plan is the one displayed on the view at any given time.
- **Right-Click Pop-Up Menu**: See Right-Click Pop-Up Menu below.

### Right-Click Pop-Up Menu

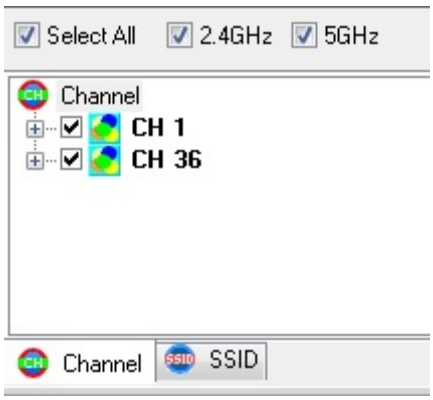
The Project Window on the Planner view also comes with a pop-up menu, which can be activated when you right-click a main entry.




| Menu Option | Description |
|---|---|
| New | Opens the plan dialog box to create a new plan. |
| Save As | Allows you to save the current plan and rename it, if desired. |
| Delete | Deletes the selected (right-clicked) item. |
| Properties... | Allows you to modify the properties of the selected plan. |

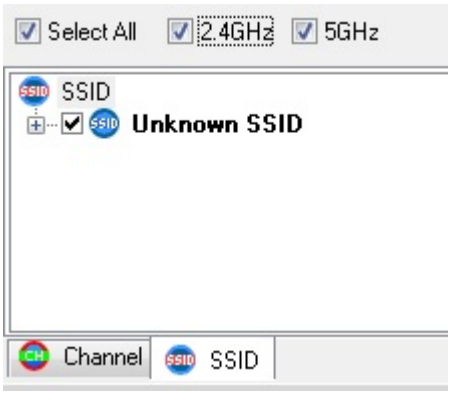
### *Channel Tab*

The image below shows the Data Window when the Channel tab is selected. By checking or unchecking specific APs or channels, you can change the display on the map to narrow the focus of your analysis.




### *SSID Tab*

The image below shows the Data Window when the SSID tab is selected. By checking and unchecking specific SSIDs or APs, you may refine your analysis just as you can from the Channel tab.

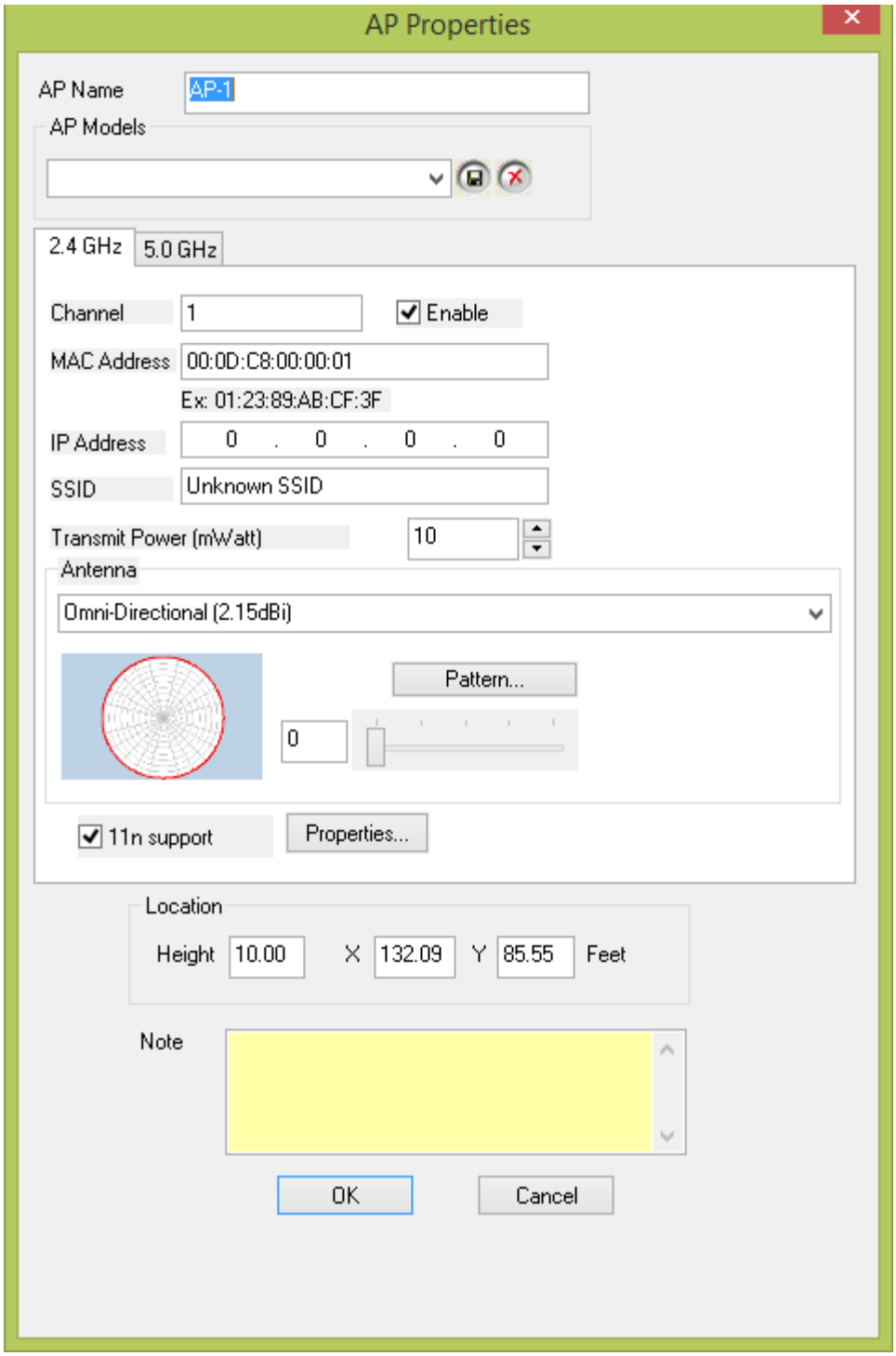


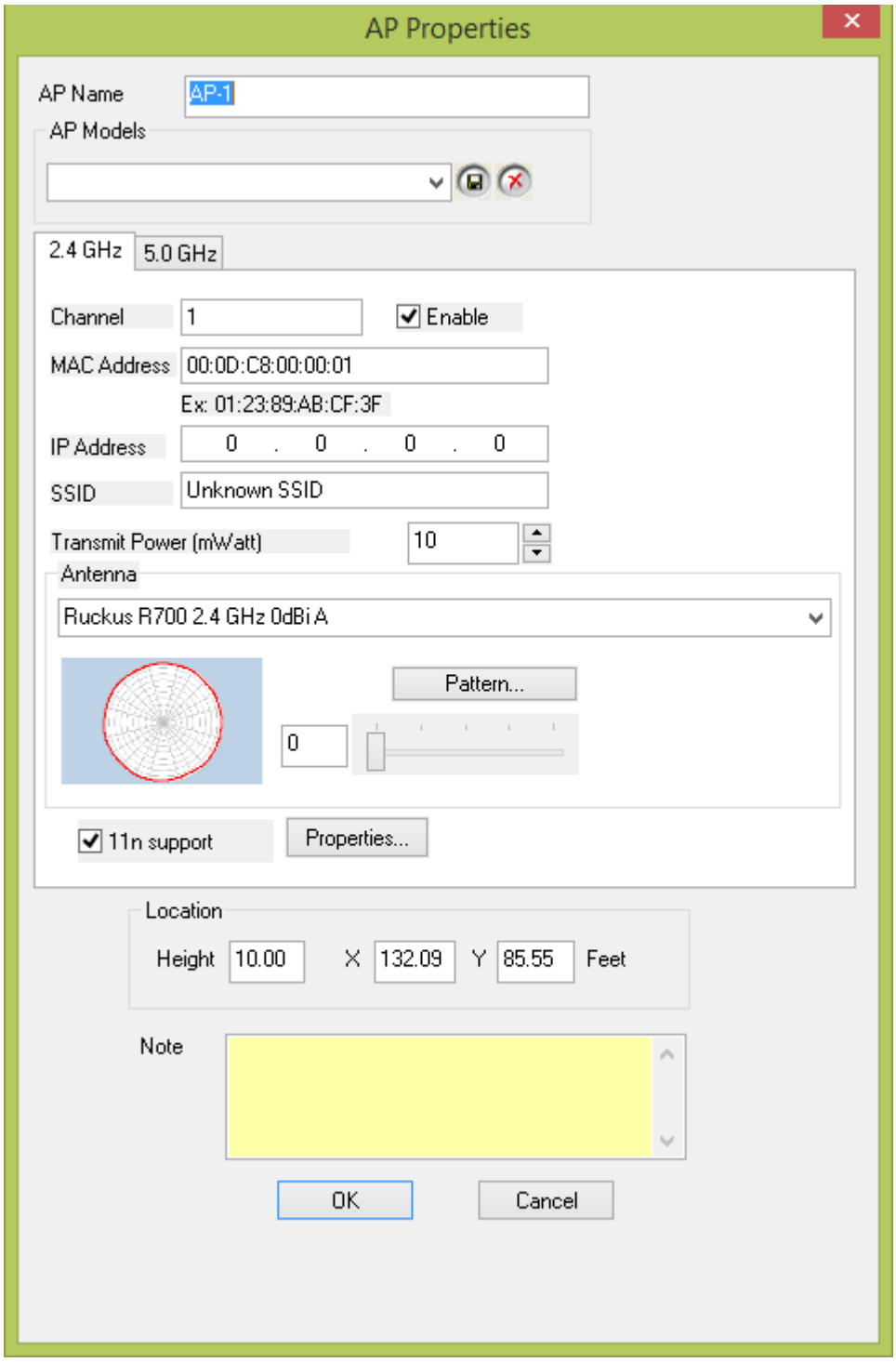

### *AP Data Properties*

AP properties (such as channel and media type) may be viewed using a few different methods, however, the properties can only be edited in the Planner view.

- In the **Planner** view, right-click an AP located on the site map and select **Properties**. This option enables the properties to be edited.
- Expand either the **SSID** or **Channel** tree in the **Data** window. Right-click an AP and select **Properties**. (Edit is available in Display view as well)
- In the **Display** view, right click an AP located on the site map and select **AP Properties**.

For a description about each property item, see Adding APs to the Plan.

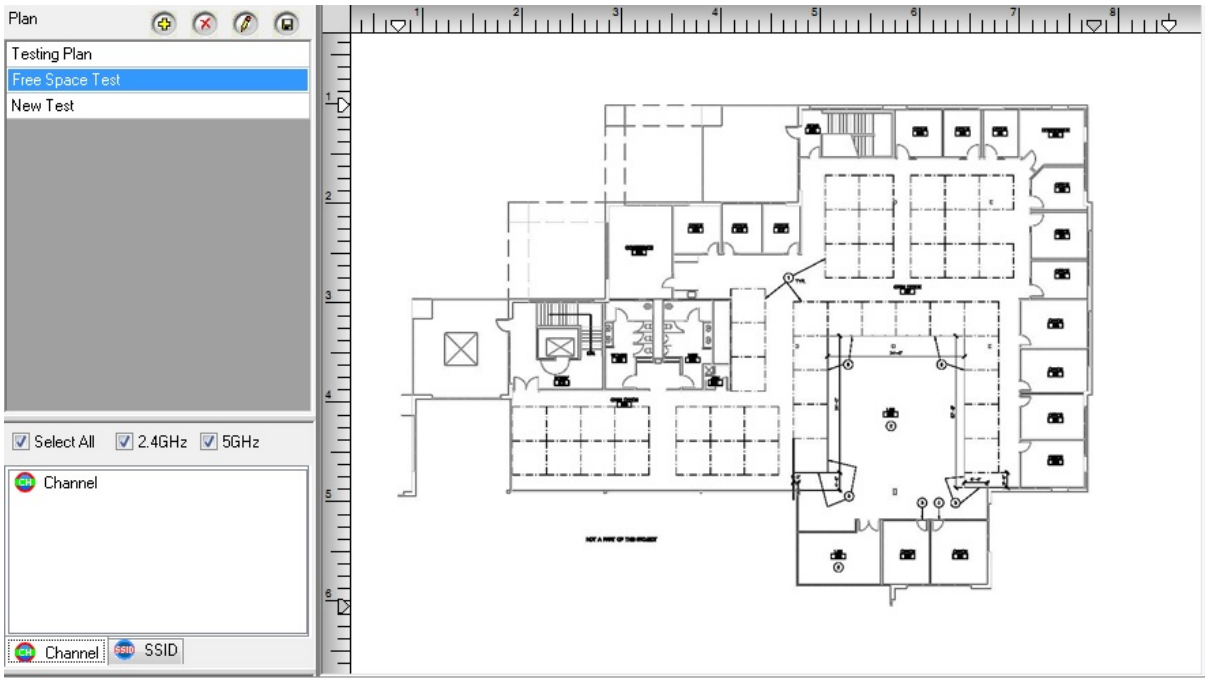

AP Properties
AP Name
AP-1
AP Models
2.4 GHz
5.0 GHz
Channel
1
Enable
MAC Address
00:0D:C8:00:00:01
Ex: 01:23:89:AB:CF:3F
IP Address
0 . 0 . 0 . 0
SSID
Unknown SSID
Transmit Power (mWatt)
10
Antenna
Omni-Directional (2.15dBi)
Pattern...
0
11n support
Properties...
Location
Height
10.00
X
132.09
Y
85.55
Feet
Note
OK
Cancel




### *Map Window*

The image below shows the Map Window on the Planner view with a site map in it. A plan will be displayed if it is selected in the Project Window; thus, if you wish to change the plan you have displayed, just select it from the list at the top left. By default, a site map will automatically open in the Map Window when you open a Planner project. Before starting a

plan, it is important to make sure that the project and/or site map matches the location you wish to project.



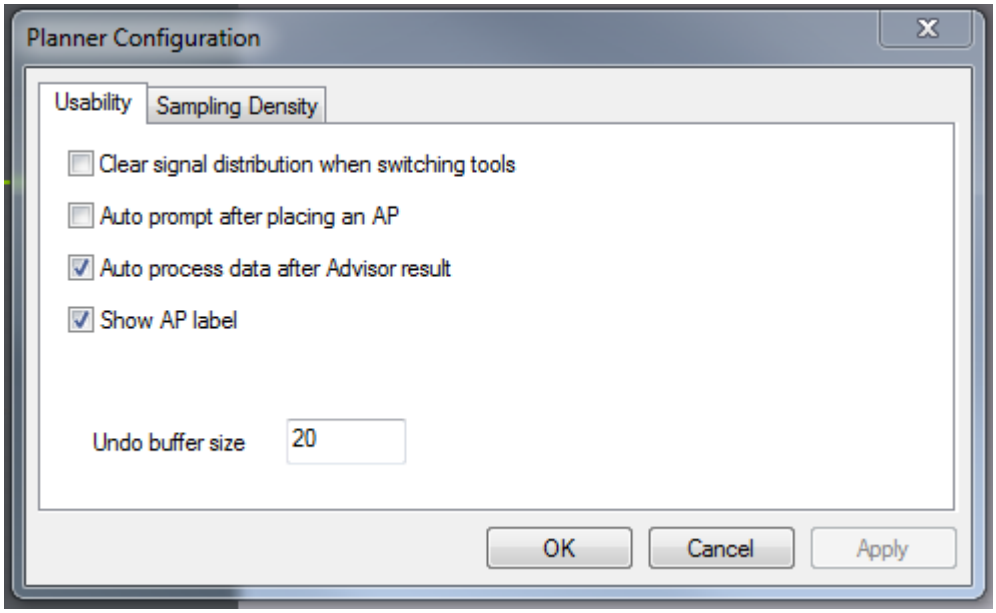

### *Planner Configuration*

The File drop-down in the menu bar contains a **Planner Configuration** selection that enables you to customize several aspects of AirMagnet Planner. The sections below describe each tab in the **Planner Configuration** menu.

- Usability
- Sampling Density

### *Usability*

The Usability tab allows you to modify several settings that alter Planner's behavior when generating and processing a site plan.

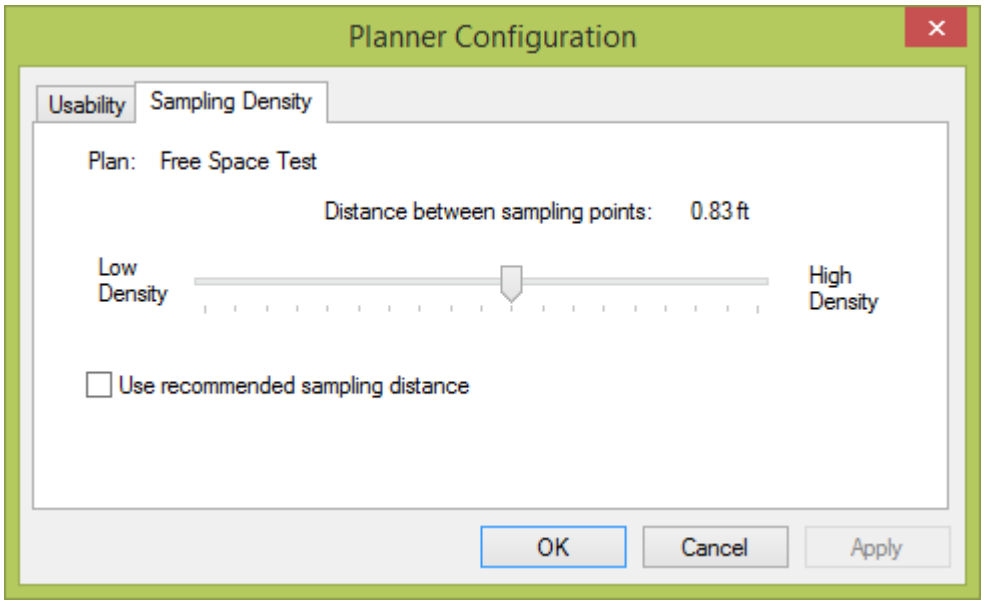



| Option | Description |
|---|---|
| Clear signal distribution when switching tools | Enabling this function causes Planner's heatmap to reset whenever the user selects a new tool from the toolbar. |
| Auto prompt after placing an AP | Enabling this option causes Planner to open the AP Properties dialog whenever a new AP is placed on the map. |
| Auto processing data after Advisor result | Enabling this causes Planner to automatically generate a signal coverage heatmap once Planner Advisor has finished processing. |
| Show AP label | Enabling this displays labels beneath placed APs. These labels contain the AP's name, media type, and channel. |
| Undo buffer size | This field allows the user to specify the number of operations that will be saved in Planner's undo buffer. By default, users can undo up to 20 operations by repeatedly pressing **Ctrl+z**; to adjust this value, simply enter the desired number. Redo is available using **Ctrl+y**. |

### *Sampling Density*

The Sampling Density tab allows you to control the precision Planner when processing signal data. As the slider approaches the "Low Density" end of the bar, processing signal data will take less time but will also be less comprehensive. Conversely, moving the slider towards "High Density" causes more detailed results that take more time to process.

You can also check the "Use recommended sampling distance" option to have Planner automatically calculate a suggested value to use. This value is generated based on the size and complexity of the site plan in use. Larger maps will have a larger recommended value to reduce processing time.

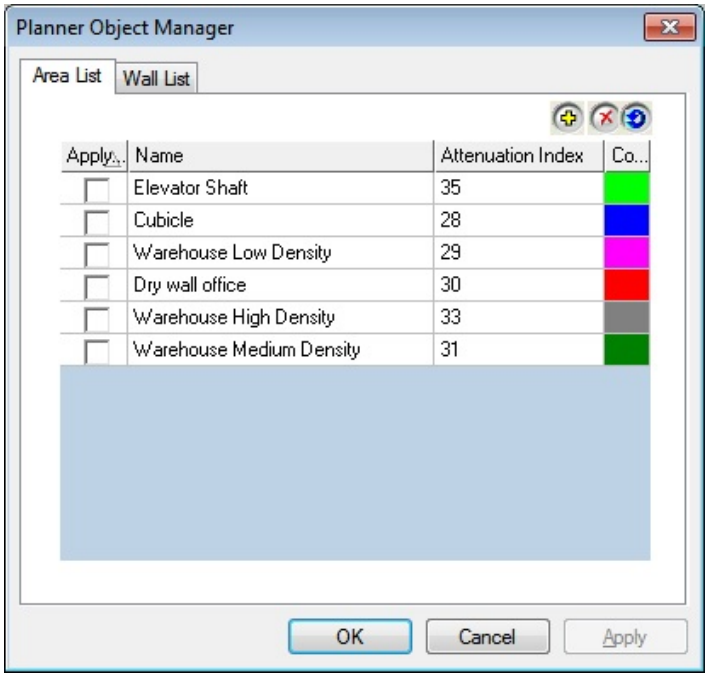



### *Wall / Area Object Manager*

*Multi Floor Planner: Wall/Area Configuration*

Modify the wall and area types available in an AirMagnet Planner project.

Click **File>Planner Object Manager** (In Multi Floor Planner: **Tools>Configure Walls/Areas**)




Clicking in any field allows the user to modify the values for each wall. The buttons at the top right allow you to create and remove walls and areas from the list (depending on active tab selection Wall or Area).

| Icon | Tool Name | Description |
|---|---|---|
|  | Add | Add a new area or wall type to the list. |
|  | Delete | Remove an existing area or wall type. |
|  | Default | Restore Planner's default list. This will reset all values and remove any custom area or wall types created. |

For a brief explanation of the dB drop, refer to dB Drop.

For information about the attenuation index, refer to Attenuation Index.

### *Attenuation Index*

An area's attenuation index refers to the rate of signal degradation experienced by RF traffic as it moves across the area. A larger value corresponds to a greater drop in signal strength; thus, an elevator shaft has a significantly higher index than a cubicle. It is important to note that while a higher attenuation index indicates a greater drop, this value is not identical to a dB drop value, nor is it a percentage.

### *dB Drop Value*

While the dB drop value of a wall works similarly to the attenuation index used for areas, the values are quite different. A wall's dB drop refers to the drop in strength a signal experiences when passing through the object. This value is measured in dB; users can enter their own wall types and easily find the dB drop for the wall. To do so, just measure signal strength on each side of the wall (using AirMagnet Survey, for example) and calculate the difference between the two sides. The resulting difference is the wall's dB drop value.

### *Working with the Antenna Manager*

AirMagnet Planner's built-in antenna manager allows you to select the type of antenna your wireless device uses. It also contains an antenna pattern modification tool that lets you match patterns that your antenna generates.

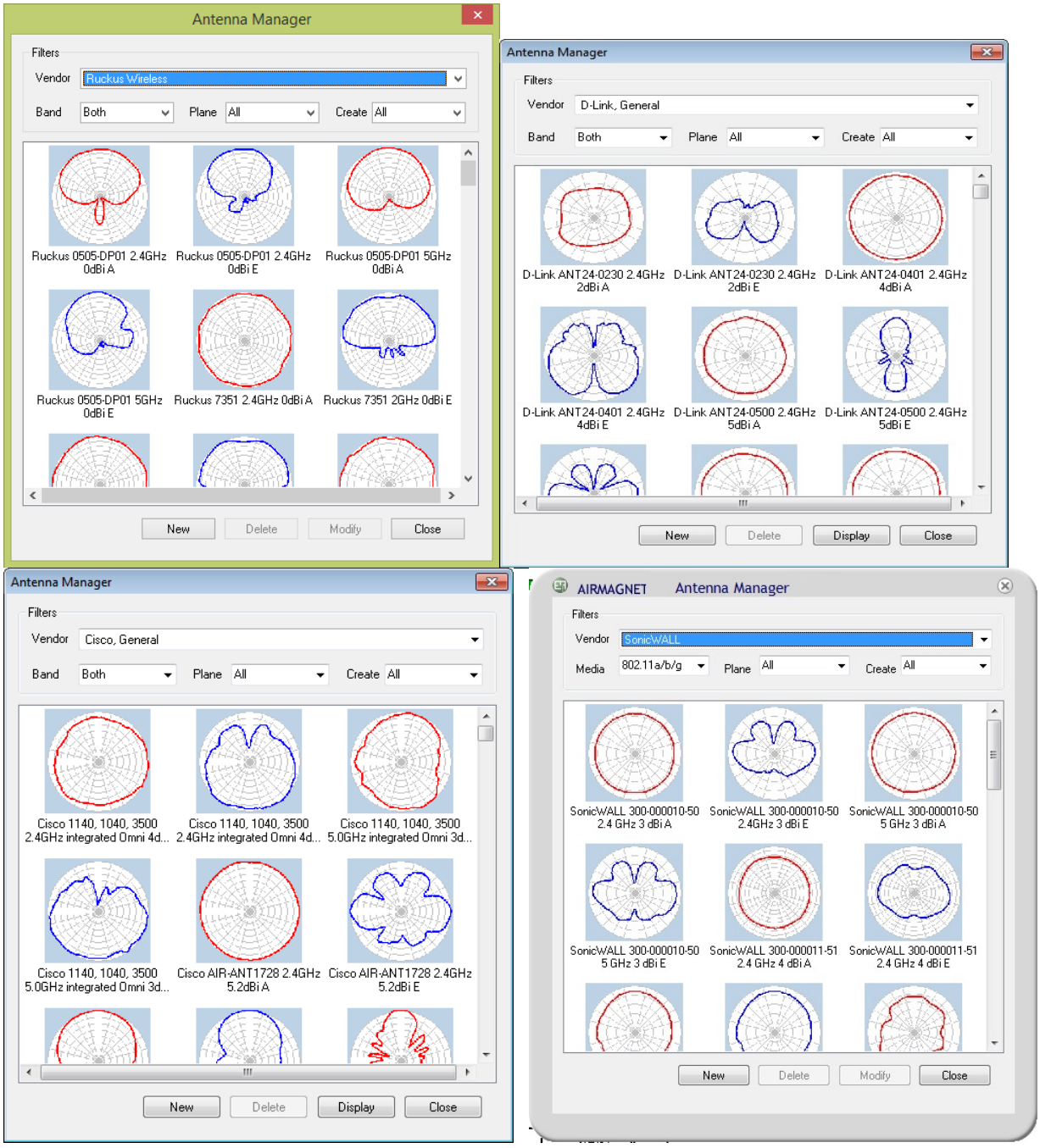
- Viewing Included Antenna Properties
- Creating a Custom Antenna Pattern

### *Viewing Included Antenna Properties*

Generally, you can find your antenna in the list of presets included with AirMagnet Planner. To view the properties of your antenna, follow the steps below.

**To view included antenna properties:**

1. Click **File>Antenna Manager....**
2. The Antenna Manager opens.




3. As shown above, there are several filter options listed at the top of the window to narrow your antenna search.

| Field | Description |
|---|---|
| Vendor | Clicking this field allows you to check the different antenna vendors you wish to display. If your network uses only antennas from a specific company, you can narrow your search accordingly. N/A. |
| Band | This list allows you to select which media type you wish to narrow your search by. |
| Plane | You may choose to view only antennas using the azimuth (top view) or |

| | |
|---|---|
| | elevation (side view) planes, or simply leave the setting at "All" to show everything. |
| Create | This field lets you specify whether the pattern you're looking for is one you customized yourself or one that came pre-defined in AirMagnet Planner. |

4. To view a built-in antenna pattern, click the antenna you wish to view and click **Display**. The Antenna Pattern dialog appears.
5. You may only alter the options you use to view this pattern in the "Tracker" box at the bottom right. The box contains three options:

- **Show Tracker:** Enables you to turn off the visible points on the field and displays only the field line. The other two options will not be available unless this box is checked.
- **Show Handle:** displays straight lines connecting the yellow points on the field, as well as the red curved fit line. These yellow points appear only on the lines radiating outward from the center of the circle, and allow you to make large changes to the field.
- **Show Assist:** displays only the blue points, which are connected by the red curved line. These blue points allow you to fine-tune the field in-between the Handle points. You may also enable Show Handle to view the final field view.

***Note:*** *You cannot modify the built-in antenna patterns. To modify the pattern, you must create your own antenna following the steps below.*

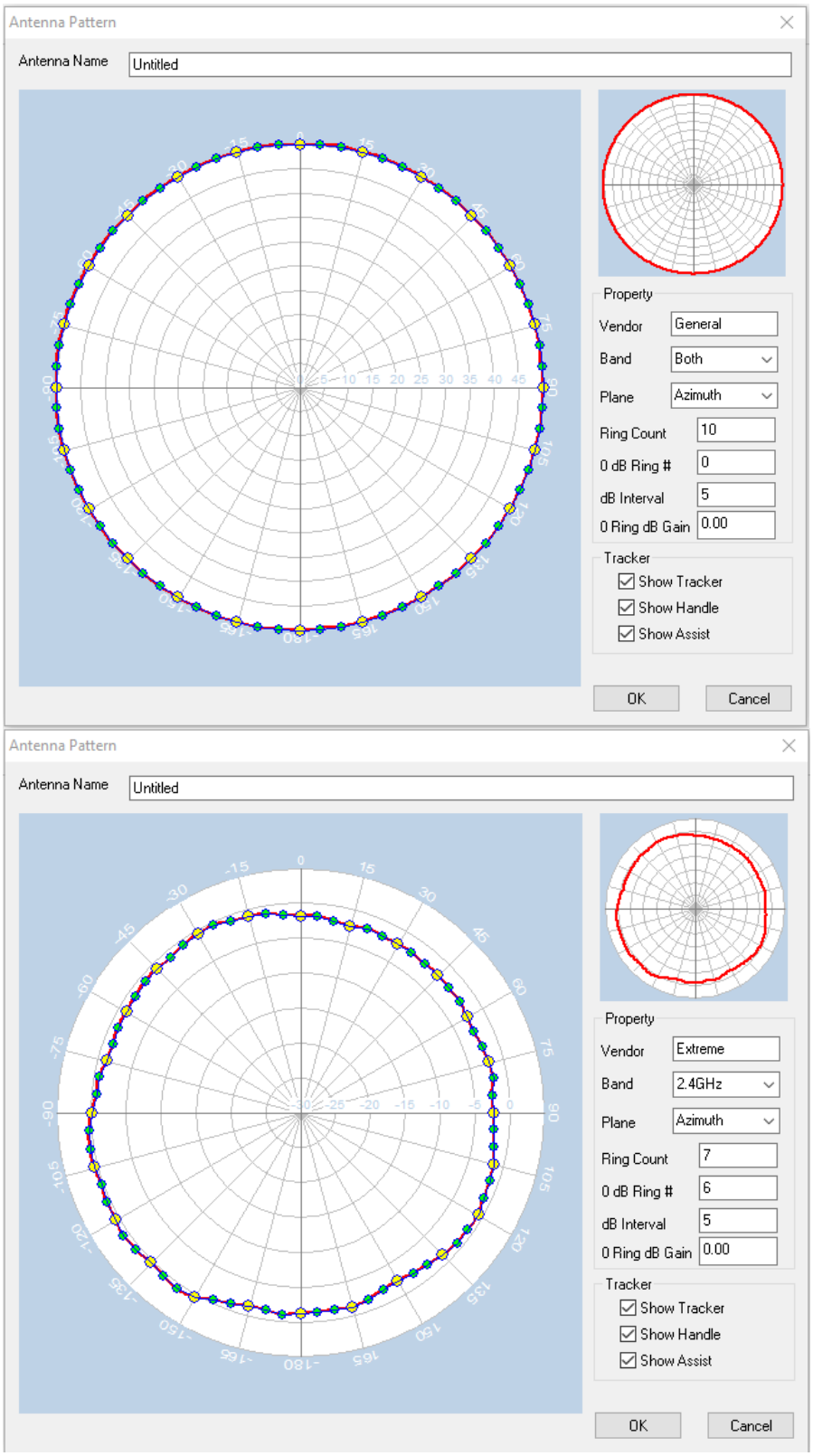
### *Creating a Custom Antenna Pattern*

If your antenna is not listed in the presets, you can create a customized antenna pattern. This enables AirMagnet Planner to accurately project the desired pattern.

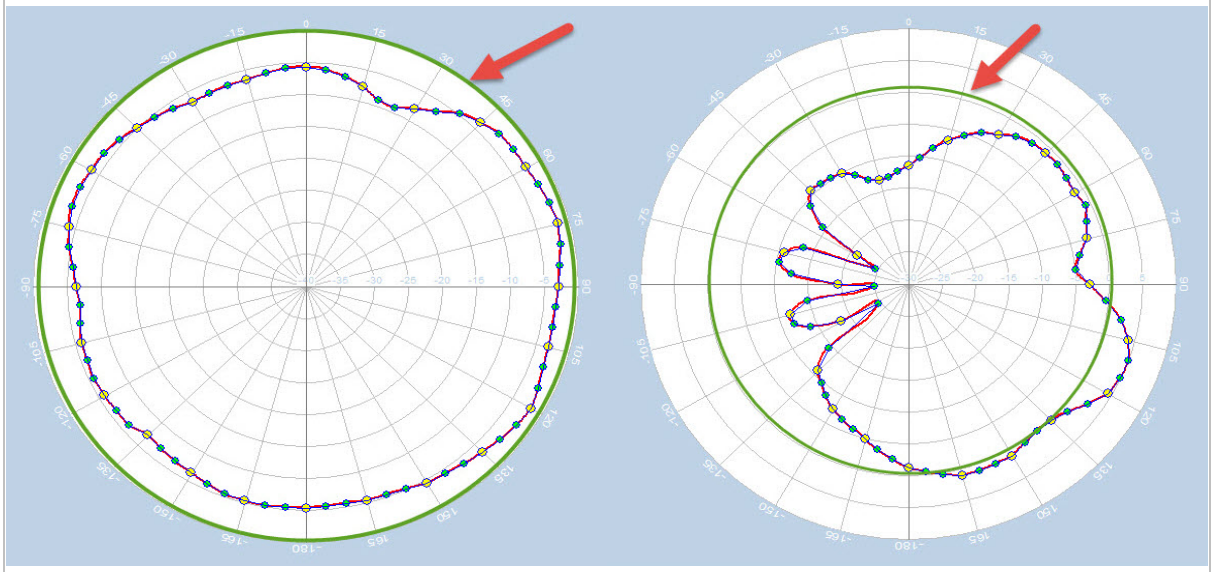
***Note:*** *You may find it easier to create a new antenna pattern by copying an existing pattern similar to the one you want. To do so, select a similar pattern shape from the list of antenna patterns in the Antenna Manager, and then click* ***New****. Antenna Manager creates the new antenna pattern based on the pattern you selected. You can then edit the pattern as needed.*

**To create a new antenna pattern:**

1. Click **File>Antenna Manager….**
2. From the Antenna Manager, click the **New** button (or locate a similar pattern and click **New**). The Antenna Pattern view appears.

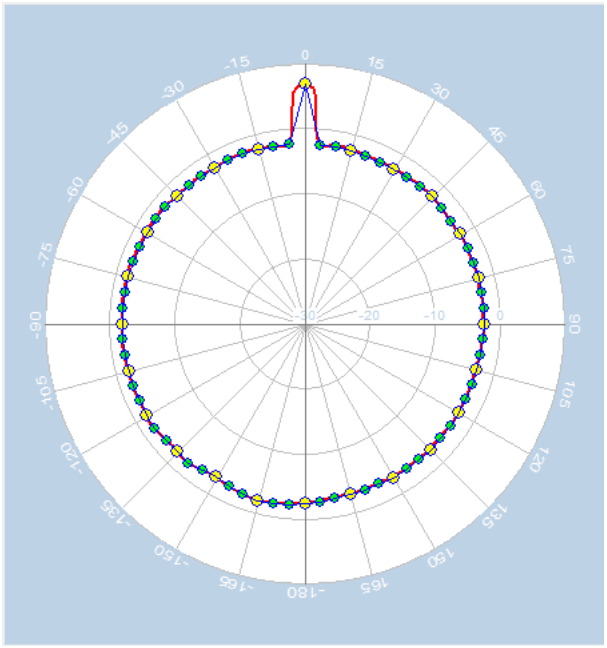



3. For the **Antenna Name**, enter a unique name for the new antenna pattern.
4. Configure the antenna properties as described in the following table:

| Field | Description |
|---|---|
| Vendor | Enter the name of your antenna's vendor. |
| Band | Select 2.4 GHz or 5 GHz. |
| Plane | You may select either the Azimuth plane (horizontal) or the Elevation plane (vertical) depending on the type of pattern you are creating. |
| Ring Count | This value alters the number of concentric circles displayed in the field diagram. Count the number of rings in the product antenna pattern diagram and enter the number here (include the outer-most ring) |
| 0 dB Ring # | Using the product antenna pattern diagram, count the number of rings from the center to the 0 dB ring and enter the value here. |
| dB Interval | Using the product antenna diagram, determine the dB interval between each ring and enter the value here. For example, if there is a 5 dB interval between each ring, the value to enter here is 5. |
| 0 Ring dB Gain | Using the product antenna diagram, if the graph reaches the peak gain at any point, enter 0. If the graph does not reach the peak gain, enter the peak gain value provided in the antenna vendor's user documentation/data sheet. This is shown in the following examples where the 0 dB ring is highlighted in bold and shown by an arrow. In the first example it is not exceeded; in the second it is.  |

5. Adjust the antenna pattern drawing by dragging the Handle and Assist points as needed. Handle points (yellow points)allow for larger changes while the Assist points (blue points) enable fine-tuning the drawing.

***Note:*** *A suggestion for drawing the antenna pattern: Obtain and open an electronic image of the product antenna pattern diagram. Size the image to the same size as the diagram (antenna drawing) in the Antenna Manager. Trace the outline of the product antenna pattern on a transparency. Overlay the transparency on the Antenna Manager. Drag the handles to conform to the trace image.*



***Note:*** *You may find it easiest to uncheck the Show Assist box to make large changes to the field. Re-check Show Assist to fine-tune the drawing.*

6. Click **OK** to save the new antenna pattern. The new antenna pattern appears as a selection in the Antenna Manager.

***Note:*** *To use the new antenna pattern, you must first place an AP on the floor plan. Double-click the AP to open its properties. Click* **Pattern** *in the* AP Properties dialog.

If you wish to delete the new pattern, select it and click **Delete**. Note that you cannot delete any of the pre-set patterns.

## Planner Projects

### *Product Features*

AirMagnet Survey provides the following main features:

- **Import site map** feature enables you to import a pre-existing map image of your building to allow you to properly plan out specifications tailor-made to your site.
- **Drawing tools** make tailoring your site map to match the office environment easy. You may select from a wide range of pre-set materials (cubicle, drywall, brick, etc.) with built-in Attenuation Indices or, for advanced users, you may also custom-build your own materials.
- **Antenna manager** comes packaged with pre-set antenna field patterns. You may also custom-generate your own pattern and adjust AP height and the direction of the field. Not available in Multi Floor Planner.
- **Report generator** generates custom reports based on your planner findings. It creates a document detailing your project that you can export, print, or email to others.

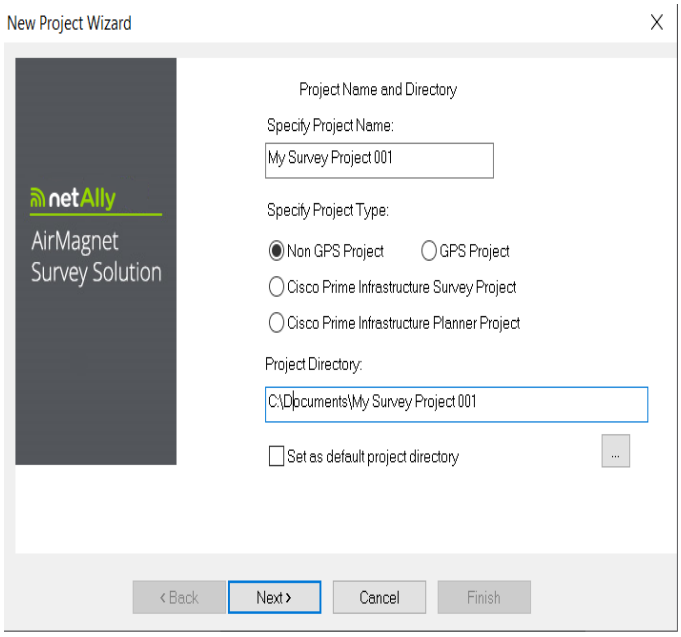
- **Adjustable Sampling density** gives you the ability to customize the degree of precision your projection uses to give better and more accurate results.
- **Two display options** enable you to view and analyze site RF data by channel or by SSID. You can easily identify WLAN deficiencies in terms of AP coverage, roaming boundary, channel allocation/interference, noise impact, etc.
- **Zoom options** allow you to zoom into a specific portion of your site to determine problem spots and how to fix them.
- **Graphical data display** with color spectrum and gradient makes it easy to understand and differentiate RF data from various sources (that is, APs or SSIDs and channels). This allows you to base your WLAN decisions on "facts" rather than "hypotheses".
- **Planner Advisor** helps you determine the ideal arrangement of APs with a few simple layout modifications. Easy-to-use Advisor tools help generate a site plan that contains as much information as possible to assist Advisor in making an accurate assessment.
- **Planner Export** lets you take an existing Cisco Prime NCS/WCS AirMagnet Planner project and import it into Cisco Prime NCS/WCS. Not available in Multi Floor Planner.

## *Creating a Planner Project*

Before starting a site plan, it is required that you create a Planner project, which involves naming the project, importing a site map, specifying some physical properties of the site, and so on. This section contains the procedures on how to create a Planner project.

**To create a new Planner project:**

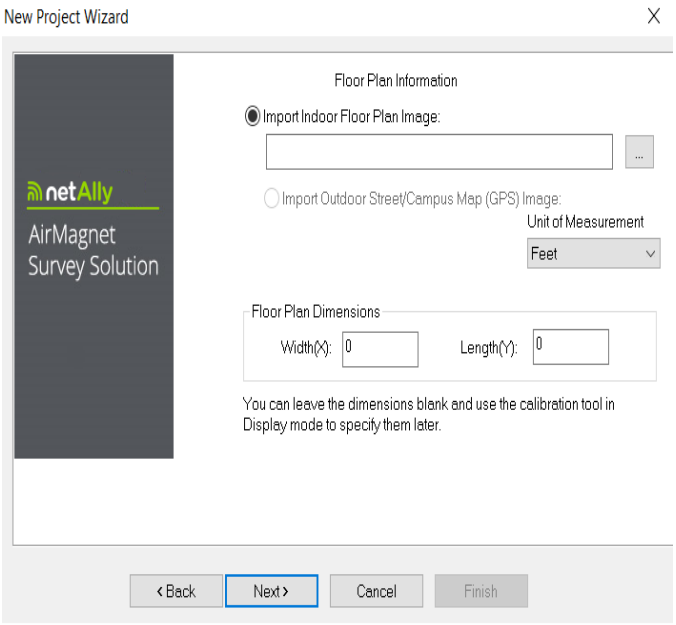
1. From the Main Menu, select **File>New Project**…. The New Project Wizard appears.




2. In **Specify Project Name**, enter a unique name for the new project. Save the project using one of the following options:

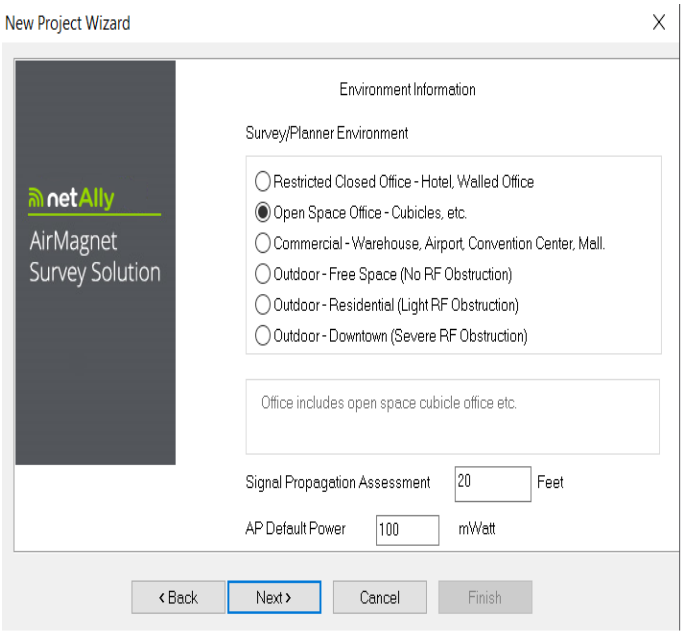
- To save the project to the default location, simply click **Next**. The New Project Wizard view refreshes.
- To save the project to a location other than the default, click **Browse** to specify a location of your choice, and then click **Next**. The New Project Wizard view refreshes.

***Note:*** *By default, AirMagnet Planner automatically saves the project to the C drive on your computer, using the name you specify.*




3. Click  (Import Site Image) to locate and import the site map of the location.
4. For the **Unit of Measurement**, select Feet or Meters. For Floor Plan Dimension, enter the Width and Length of the site map. Click **Next**.

***Note:*** *"Floor Plan Dimensions" refers to the scale (in feet or meters)of the entire image area of the floor plan (including any white space margin included in the image). If you are not sure of the dimensions, you may or may not enter the approximate values here and then recalibrate the values more accurately later. See* *Measuring and Calibrating the Floor Plan Scale**.*




5. For **Environment**, select an option that resembles the site environment you are planning for.
6. For **Signal Propagation Assessment**, do nothing (normally), since AirMagnet Planner can automatically assign the value according to the site environment you select.

***Note:*** *AirMagnet Planner assigns the Signal Propagation Assessment value based on the estimate of the distance RF signals could travel in each of these typical site environments. Normally, NetAlly recommends that you accept the default value the program assigns. However, if you want to set a value of your own, you must be aware that the value you enter will affect the way the program interpolates site data.*

7. For **AP Default Power**, do nothing (normally). Click **Next**. The New Project Wizard view refreshes.
8. In **Enter Descriptive Text**, type a brief description of the project. (Optional.)
9. Click **Finish**. The newly created Planner project will automatically appear in the Project Window, and the site map will be displayed in the Map Window.

### *Creating a Site Plan*

Now that you have imported your site map, you must draw up your planned office arrangement so you can analyze your AP setup. In this section, you will use AirMagnet Planner's drawing tools to design your ideal office and then determine how many APs you will need to realize that goal. Click on the links below to view descriptions of each section.

- Using the Wall Tool

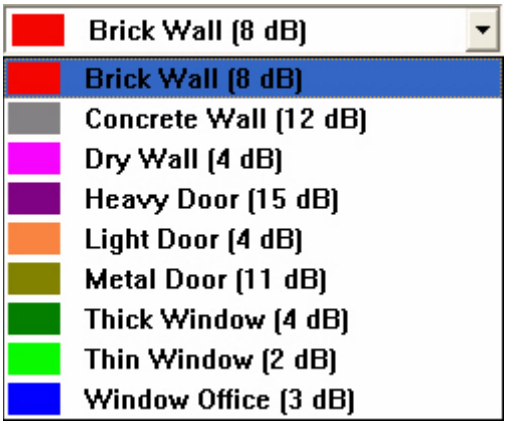
- Drawing Rectangular and Arbitrary Areas
- Adding APs to the Plan
- Using the Right-Click Menu

### *Using the Wall Tool*

You should first establish your office's walls and doors. The steps below will walk you through the process of outlining your building.

1. Select the **Create Wall** tool from the toolbar.
2. You will see a drop-down list appear in the top-right corner of the Map Window. This list contains a number of pre-set wall types that come with inherent dB drop levels (the affect these walls will have upon your wireless network). Select the wall type that you wish to place.

***Note:*** *In a Cisco Prime NCS/WCS Planner project, only Cisco NCS/WCS type walls will appear in the drop-down menu.*




3. Click the spot where you would like to start drawing the wall. Move your cursor to a corner or a point where the wall changes its angle, and click again. You can click several times along a wall, following its bends and curves. When you wish to conclude this portion of the wall, right-click, and the wall will be filled in.

***Note:*** *If you click the wrong spot while drawing your wall, press Ctrl+Z on the keyboard. This function will reverse the last click, and will continue to back up as you press it repeatedly. To cancel drawing the wall, press* ***Esc****, and the wall will be erased. Your tool will then default to the cursor.*

4. Repeat step 3 until all of your walls are filled in. You may select different wall types (windows, doors, and so on.) from the drop-down list mentioned previously.

***Note:*** *In general, you will want to draw straight walls at 45 or 90 degree angles to each other. To ensure that your drawing is straight, hold down the Shift key while lining up your wall tool. This locks the path to 45 and 90 degree angles, making drawing straight paths much easier.*

### *Using Automatic Wall Extraction*

Automatic Wall Extraction (AWE) is a Planner feature for importing walls from CAD files. This feature allows you to select what layer(s) contain walls, and automatically draw walls in Planner at those locations. This feature dramatically shortens design time when a CAD file is present. Using this method you can spend time on value-added activities (design) rather than just drawing lines.

***Note:*** *If you chose to show or hide individual layers of the CAD image, these changes are reflected in your exported CAD file. See the View Menu or Right-click Pop-up Menu.*

## When to Use AWE

Before starting a site plan, you should create a Planner project, which involves naming the project, importing a site map, specifying some physical properties of the site, and so on. This procedure is the same as for any Planner project, except that you must import a CAD drawing (extension of .dxf, .dwf) when you import your site map.

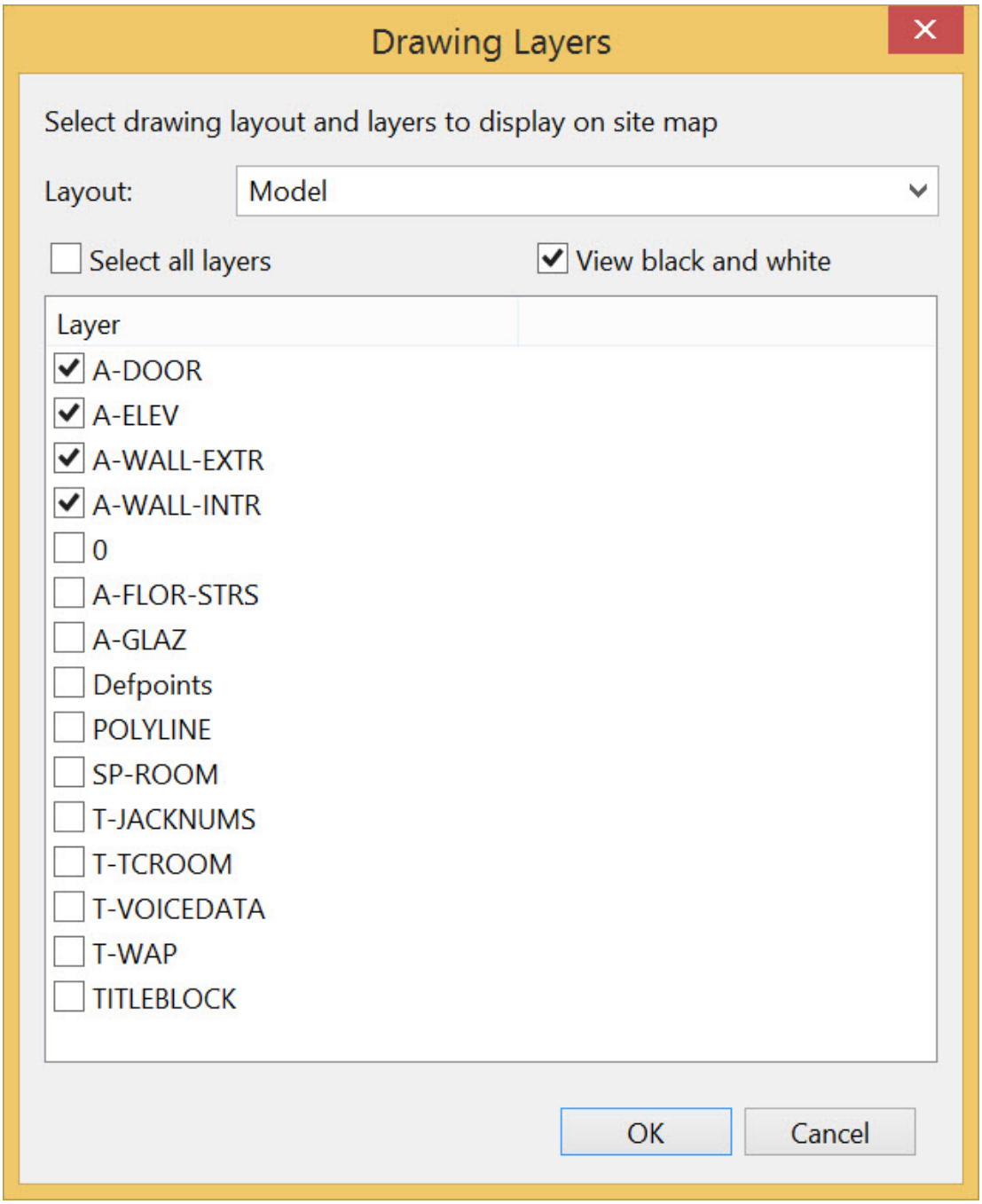
## Overview of Using AWE

1. Create a project using a CAD drawing.
2. Select the layers to use from the CAD drawing.
3. Create/modify your walls.
4. Place APs.
5. Do a Refresh to create a Heatmap.
6. Manipulate Walls and APs as desired.

## How to Use AWE

Use this feature as follows:

1. From the Main Menu of Planner or Display, select **File>New Project....** The New Project Wizard appears. For more details, refer to Creating a Planner Project.
2. If you are not already in Planner (that is, you created your new project in Display) click the **Planner** tab.
3. Select **View>Show CAD Layers**. A window similar to the following appears. This window allows you to decide which CAD layers you want to display on your map.




4. Click the **Select all layers** check box and then click it again. This clears all of the check boxes. Now click the layers that you wish to appear on your map.

Use the drop-down menu/check boxes as follows*:*

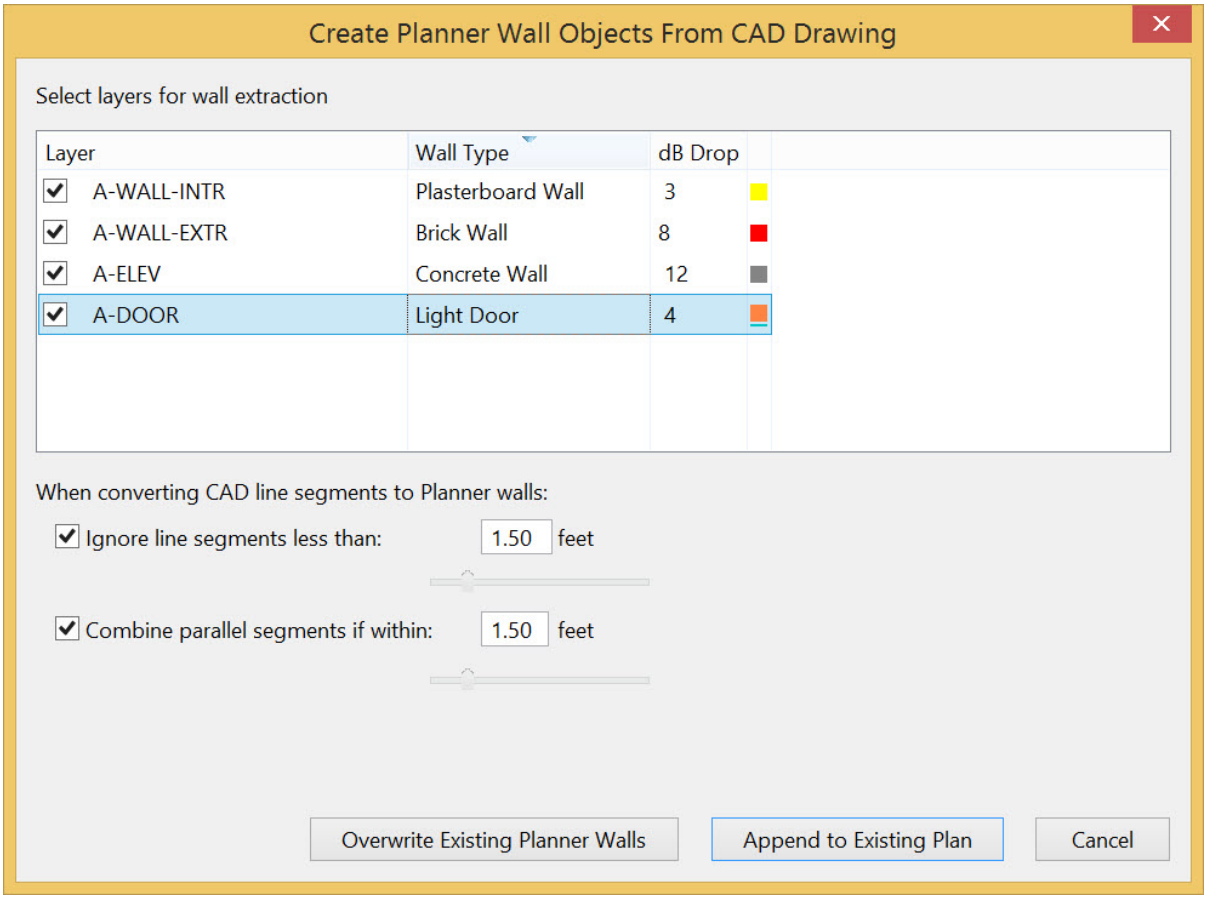
- **Layout:** Some CAD files may have multiple layouts within them. Use the Layout dropdown box to select from available layouts in the CAD file.
- **Select all Layers**: Selects/deselects all layers.

- **View black and white**: Some CAD files make use of color on various layers that may interfere with easy visibility of heatmaps. To default all layers to display in black and white, select this option

***Note:*** *There can be many layers on a CAD drawing. Try to limit your choices to those that contain elements that represent your actual walls, or those that will be valuable in working with your floorplan*

5. When you have finished selecting your layers, click **OK**.

6. Select **File>Extract Wall Objects from CAD...** A window similar to the following appears, displaying the layers that you have selected for viewing.




7. Select your layers by clicking the check boxes in the Layer column.

8. Click on the Wall Type in any row to open a drop-down menu that will allow you to select a wall type to use for that layer (the default is Brick Wall).

   The available selections are Dry Wall, Concrete Wall, Thick Wall, Metal Door, Heavy Door, Brick Wall, Light Door, Cinder Wall, Plasterboard Wall, Thin Window, Glass Wall with Metal Frame, Window Office.

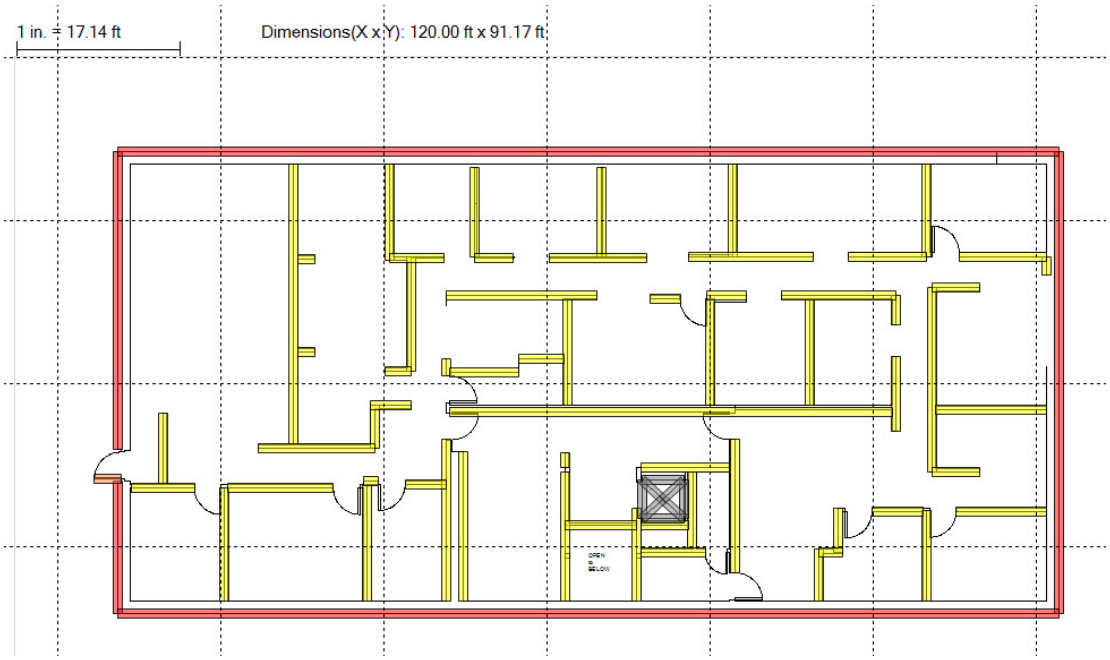
   Click **db Drop** in any row to modify the db Drop value.

9. Select or deselect the following check boxes:

- **Ignore line segments less than:** Many CAD drawings contain short line elements that don't contribute to RF propagation, but constitute a large amount of "visual noise". This option provides you with a way of reducing this visual noise.
- **Combine parallel segments if within**: Many CAD drawings represent walls with two parallel lines close to each other. If this option is disabled, you might end up with twice as many walls, doubling the attenuation.

By using these, options, you can avoid importing artifacts from CAD files that aren't true wall segments.

10. Click **Overwrite Existing Planner Walls**. A map appears, based on your selections, similar to the following. These options are for vertical and horizontal lines (not diagonal).




***Note:*** *To add additional layers, click* ***Append to Existing Plan. Be careful not to append the same layer multiple times.***

11. Select any wall or area type and right-click. A pop-up menu appears allowing you to **Delete** the wall segment or change the **Properties** of each segment. For more information refer to Using the Right-Click Menu.

12. Refer to the following sections in the *Survey Pro User Guide* for additional information on adding APs to create a heatmap or manipulating individual or group walls:

- Using the Wall Tool (designing your ideal office and determining how many APs you will need to realize that goal)
- Drawing Attenuation Areas (changing the decibel values of walls and other objects)
- Adding APs to the Plan
- 802.11 AP Options

- Using the Right-Click Menu (modifying or removing any placed objects)

13. You can also manipulate wall selection as follows:

    a. Press and hold the **Ctrl key** while selecting a wall to add it to a list of selected walls.

    b. Press and hold the **Ctrl key** and click the selected wall a second time to remove it from the selected wall list.

    c. Clicking somewhere without a wall selected will deselect all.

    d. Clicking some other type of Planner object (AP, attenuation area, and so on) deselects all walls

    e. Clicking without the **Ctrl key** on a wall that is selected or unselected makes that wall the only selected object in the list.

    f. With a group of walls selected, you can Delete, Move (as a group) and Change Properties. Resizing does not work when more than one wall is selected.

    g. If all the walls in a group do not have the same attenuation or type, the Wall Properties dialog entries for type and attenuation are blank.

    h. The Wall Properties dialog sets all to the selected attenuation value. A warning notice in the Wall Properties dialog is displayed if all walls are not the same type or attenuation. In this case, the type, "dB Drop" fields is empty.

    i. Hold the **Shift key** with the Select icon selected to create a rubber-band effect on a mouse move from the initial selection point to a point where the mouse is released. Any wall segment **COMPLETELY** inside the rubber band area are added to the selected wall list. This technique applies **only** to walls. Any other Planner items (APs, attenuation areas, and so on) within the rubber-band area will not be selected.

    j. If any walls selected before the rubber-band selection, will **NOT** be selected again unless they are within the rubber-band area. If some other object was previously selected, it will be deselected.

14. Click the  (**Refresh)** icon on the tool bar to generate a heatmap.

***Note:*** *Extracted walls can be moved, modified and deleted just like user-drawn walls.*

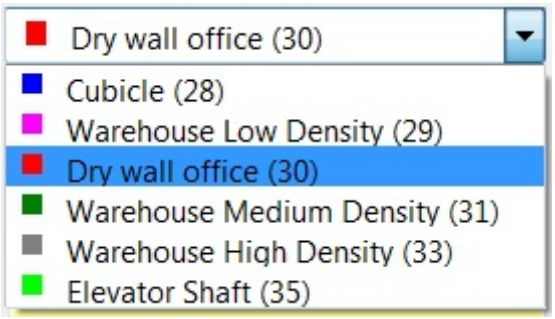
### *Drawing Attenuation Areas*

After you have completed the wall layout, you can draw out the rectangular internal layout components of your office (cubicles, offices, and so on). The steps below will guide you through the process.

***Note:*** *Both Wall and Area should not be used for the same attenuation space. For example, if you create a wall enclosing a small office, do not create an attenuation area inside the office.*

**To draw rectangular areas:**

1. Select the **Create Rectangular Attenuation Area** tool from the toolbar.
2. As with the Wall Tool, you will see a drop-down list appear in the top right corner of the map view. This list contains different rectangular areas with pre-set attenuation indices. Select the area type you wish to place.




***Note:*** *The numbers displayed above represent the built-in attenuation indices for each type of space. While this is similar to the dB value of walls, the attenuation index refers to the effect of an area on wireless coverage, whereas dB drop refers to an immediate decrease over a single spot. For more information about the attenuation index, refer to Attenuation Index.*

3. Click the corner of an area you wish to designate. Move the mouse cursor to the opposite corner and click againto draw an area.
4. Repeat step 3 for any further areas you wish to draw.

## Drawing Arbitrary Areas

The arbitrary area tool works very much like the wall tool; however, instead of drawing a wall, you are defining a region similar to that defined by the rectangular area tool. If you have a cubicle or office area that is not a perfect rectangle, this tool will allow you to define it with precision.

**To draw an arbitrary region:**

1. Select the arbitrary region tool, and then pick your material from the drop-down list (same as for the rectangular area tool).
2. Click once at the point you wish to start drawing from. Outline the area you wish to define in the same way you used the wall tool before. Right-click to stop drawing and define the area.

***Note:*** *Just as with the wall tool, hold down Shift to ensure that your lines are straight 45 and 90 degree angles from each other.*

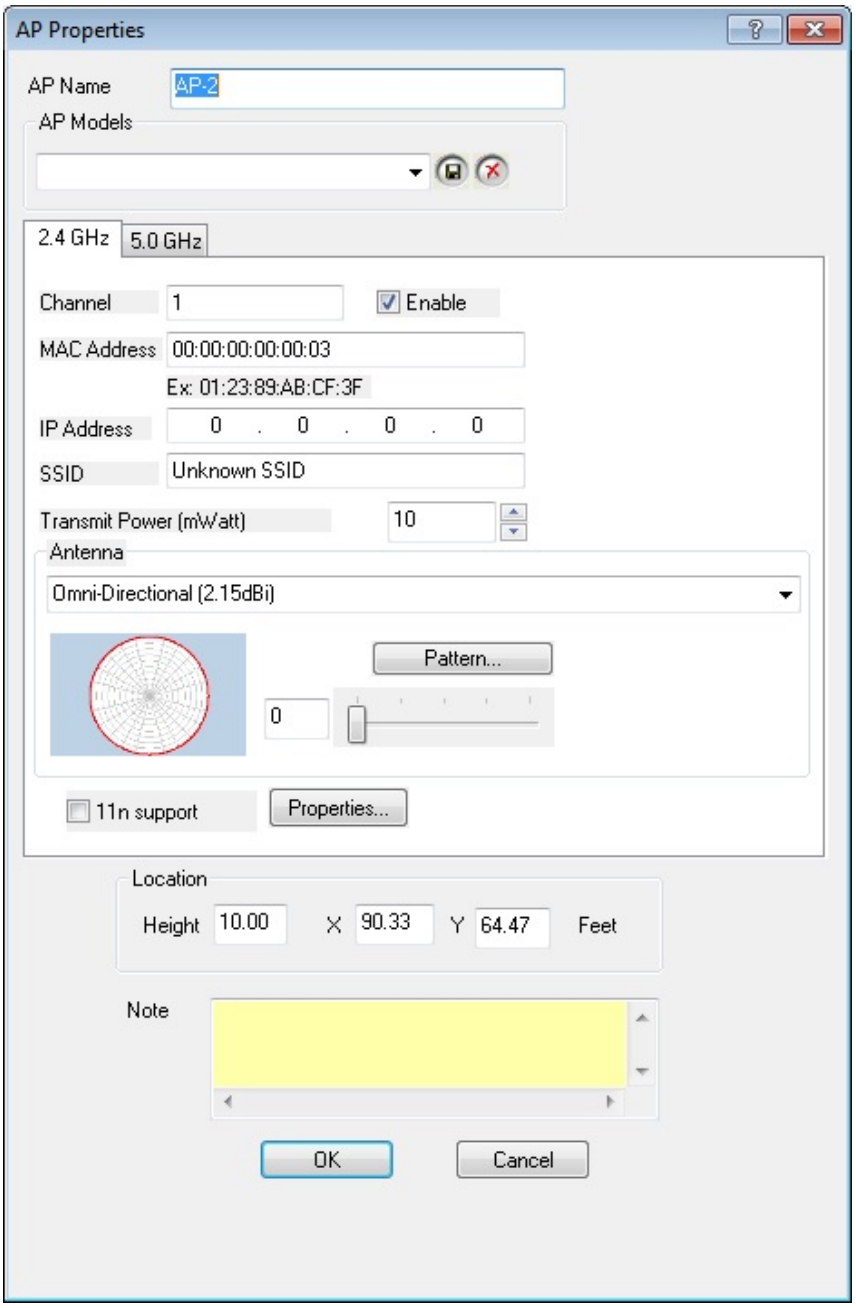
3. Repeat step 2 for any additional irregular areas.

### *Adding APs to the Plan*

After you have finished designing your office map, you can place APs where you expect to have them. Alternatively, you can just place one arbitrarily and then see what its coverage region is like so you can determine where the next one should go. This allows you to determine what number and placement of APs will give you the optimal coverage for your site.

**To place APs:**

1. Click **Create AP** on the toolbar.
2. Click the location you wish to place the AP. Place as many APs as are needed in this same manner.
3. To change back to the normal cursor, click the **Select** tool or press the **Esc** key.
4. Right-click one of the APs and select **Properties…**. The **AP Properties** dialog box appears.




5. Enter an **AP Name** for the new AP.
6. You can save this particular set of configuration properties by giving this configuration an **AP Model** name and by saving the model . This is handy to give several APs the same basic configuration later on. You can also delete an existing model by selecting the model and clicking delete .
7. The next section of the dialog box has two tabs: 2.4 GHz and 5 GHz. The two tabs control the settings for the associated media types.

***Note:*** *The following table describes the items and related descriptions also found in the AP Properties dialog in Multi Floor Planner.*

| Item | Description |
|---|---|
| Channel | Enter the channel the device operates on. |
| Enable | Check this box to enable the current tab media type. If your device operates solely on one media type, disable the tab that is not applicable. |
| MAC Address | This field will have a default value entered. You may modify this as desired to identify virtual APs. |
| Full Mac Address | Multi Floor Planner only. Auto populates the field in the event APs on different floors have the same MAC address. |
| IP Address | Enter an IP, if desired, to identify a virtual AP. Not in Multi Floor Planner. |
| SSID | Enter the SSID, if desired, to identify a virtual AP. |
| Transmit Power (mW) | Enter the number that will closely match the true transmit power setting of the AP. |
| Antenna | This section enables you to customize the type of antenna your device uses. If your device appears in the drop-down list, select it, and your device's coverage field will be shown in the diagram on the left. If it doesn't appear, you may customize your antenna pattern (refer to the Antenna Manager for more information). After selecting your antenna, you can use the slider to change its orientation with respect to its surroundings. For Multi Floor Planner Antenna Properties, refer to Viewing Multi-floor Data. |
| 11n support | AirMagnet Planner: Check this option to specify that the AP is 802.11n-capable. Refer to 802.11n AP Options for additional details. |
| Media Type | Multi Floor Planner only. Based on 2.4 or 5 GHz tab, choose the desired option. |
| Location | Enter the height (in feet) that the AP will be at. The X and Y fields refer to your device's location on the map. Specify these if your layout is in a grid format. |
| Note | Enter a description for the AP (optional). |

6. Click OK. Your AP will now be placed. Modify any others you placed earlier following this same procedure.
7. Click  (**Refresh**) to see a heatmap view of the predictive Wi-Fi signal strength coverage.
8. You may move the APs by selecting the cursor tool and dragging them where you wish. After making any changes, click **Refresh** to update the view.

***Note:*** *The AP icons placed on the site map vary in color based on their media type. 802.11a/n APs appear blue, 802.11b/g/n appear orange, and APs that utilize both mediums appear half blue and half orange.*

AirMagnet Planner maintains a list of all APs currently in use on the site plan. To access this list, click **View>Show AP List**.

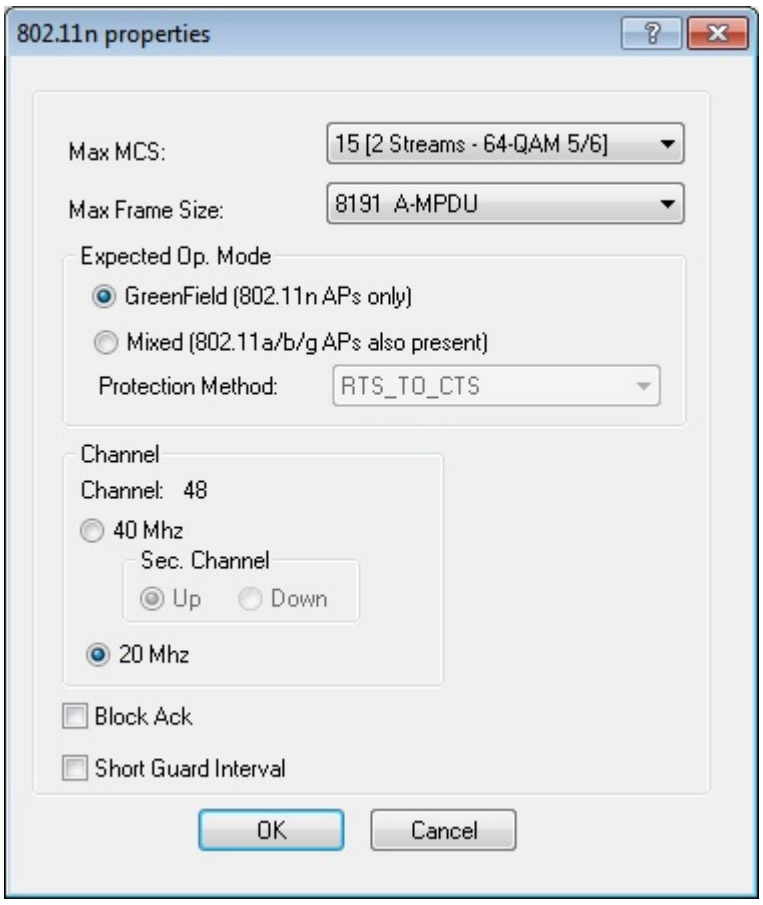
If the existing AP numbering has gaps that resulted from deleting APs during your design efforts, Survey can re-sequence the numbering of all APs placed on the map that fit the default numbering scheme ("AP-#"). Select the "Re-Sequence AP Numbering" option in the View menu to re-sequence your auto-numbered APs.

More heatmap data types are available in the Display view. For more information about Display view data types, refer to About Display view.

### *802.11 AP Options*

With 802.11n support, you can place, simulate, and assess coverage using the latest wireless standard.

1. In Planner view, right-click an AP and select **Properties**.
2. Click the desired band tab (2.4 GHz or 5 GHz).
3. Check **11n support** and click **Properties**.




See the table below for the selections that can be made in the 802.11n Properties dialog box.

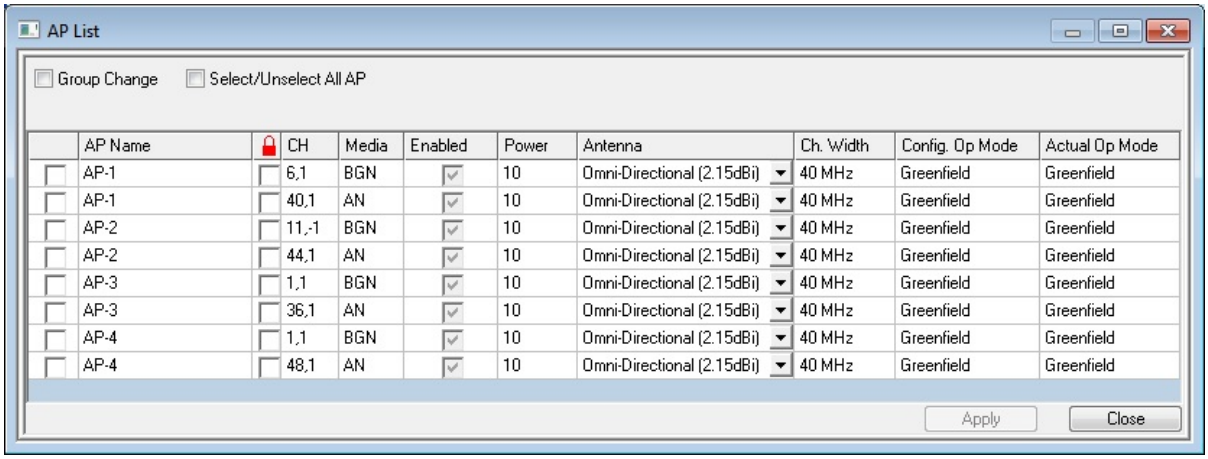
| Option | Description |
|---|---|
| Max MCS | The MCS (Modulation and Coding Scheme) is an integer value that can range from 0 to 76, although current 802.11n devices only support MCS values up to 31. The MCS selection corresponds to the maximum data transfer rate supported by the AP. |
| Max Frame Size | 802.11n devices support frame sizes up to 64 KB, as opposed to the 4 KB maximum size supported by legacy devices. This process minimizes wireless overhead in the network by reducing the number of frames |

| | |
|---|---|
| | required per transmission. |
| Expected Op. Mode | 802.11n devices have the capability of operating in what is known as Greenfield mode, which means that the deployment consists purely of 802.11n-capable devices. This is a setting that is configured on the individual AP; an 802.11n AP that is set to Greenfield mode will be unable to service legacy (802.11a/b/g) clients.<br><br>***Note:*** *After placing 802.11n APs on a Planner project, your selections for each AP's Expected Operating Mode are checked when the data is processed (that is, when you check*  *). If the system detects that you have placed a legacy device within range of an AP that is set to Greenfield mode, the AP List dialog box will appear to notify you that the Expected Operating Mode and actual operating mode do not match. In order to ensure optimal operation of 802.11n devices, you should not mix pure Greenfield devices with legacy APs.* |
| Protection Method | If the Mixed Mode option is selected, you can specify the type of protection mechanism in use on the AP. |
| Channel | 802.11n devices are capable of operating on 40 MHz channel widths, as opposed to the 20 MHz channels utilized by most standard legacy devices. To accommodate the 40 MHz width, you can set the AP to transmit over two 20 MHz channels. In this case, you can select the desired channel and then specify whether the secondary channel used is above or below the channel selected. |
| Block ACK | The 802.11n specification provides a new frame type called a Block ACK frame, which allows an AP to acknowledge blocks of multiple frames with a single ACK frame. In contrast, legacy devices are required to send an ACK frame for every frame received, resulting in significantly increased network overhead. With Block ACK capability, 802.11n devices reduce this traffic load and can consequently improve overall network performance. |
| Short Guard Interval | The Guard Interval refers to the period of time that passes between data transmissions; a shorter interval generally helps to prevent potential wireless hazards such as propagation delays, echoes, or reflections. The 802.11n specification currently provides two guard interval options: 400 ns and 800 ns. This setting can be specified using the AP's management interface. By default, most 802.11n devices are set to 800 ns. |

## *AP List*

You can quickly view a list of all APs currently placed on the site plan by clicking **View>Show AP List**. This option opens the **AP List** window.

***Note:*** *In Multi Floor Planner, the AP List table looks somewhat different although column descriptions are similar. Any differences between the two tables are noted in table descriptions.*




***Note:*** *The AP List shows two entries for each AP: one for 802.11a and one for b/g. This allows you to easily modify which media type is enabled on any given AP. The window contains several columns that provide details about the AP's properties.*

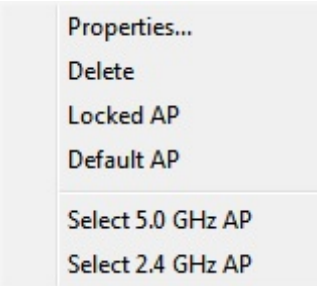
| Column | Description |
|---|---|
| Group Change | Useful for batch changing Power and Antenna settings. Select the APs to batch change. Check Group Change. Make a change to an item in the table. All selected APs of the same type are changed. |
| Select/Unselect All AP | Use this option to select all or unselect all APs. |
|  | A check in this field indicates that the AP is locked, and therefore it cannot be modified by Planner Advisor. |
| AP Name | The name of the AP. |
| Channel | The Channel that the AP is set to. |
| Media | The media type of the AP. |
| Enabled | A check in this field indicates that the AP is enabled on the plan. |
| Power | The power setting for the AP (in MiliWatts). |
| Antenna | The antenna currently used by the AP. |
| Ch. Width | The channel width in use by the AP. |
| Config Op. Mode | The Operating Mode specified in the AP's properties: **Greenfield:** for 802.11n devices only; **Mixed:** for deployments using 802.11n and legacy devices together; **Legacy**, for a pure legacy (e.g., no 802.11n devices) implementation. Multi Floor Planner also includes **Mixed VHT** that includes 802.11ac. |
| Actual Op. Mode | When the deployment is configured optimally, the Actual Op. Mode field will mirror the values in the Config Op. Mode column. As shown in the figure above, when a device's configured value conflicts with the actual setting (for example, when an AP is set to pure Greenfield mode when legacy devices are present in the environment), the Actual Op. Mode will be highlighted in red text, indicating a conflict. Not in Multi Floor Planner. |

To modify an AP's properties, just double-click it in the AP List to bring up the AP Properties window.

***Note:*** *The AP List will automatically pop up when*  *(**Refresh**) is clicked if you have 802.11n APs set to Greenfield mode in a deployment in which legacy APs are still present. This is to notify you of potential conflicts due to the Greenfield restriction; Greenfield deployments cannot have legacy devices present, since the older devices can cause reduced data rates for the wireless network.*

### *Using the Right-Click Menu*

You may modify or remove a placed object at any time by just right-clicking on it and selecting the option you desire.




***Note:*** *The Locked AP and Default AP options only appear if the user has right-clicked on an AP.*

| Option | Description |
|---|---|
| Properties... | Opens either the AP Properties or Wall/Area Properties dialog box, depending on the object selected. |
| Delete | Deletes the selected object. |
| Locked AP | Locks the selected AP. This ensures that Planner Advisor cannot modify any of the AP's properties. |
| Default AP | Specifies the properties of the selected AP as Planner's default AP settings. Any APs placed after selecting this reflect the current AP's settings. |
| Select 2.4 GHz AP or Select 5 GHz AP | Depending on whether one or two channels are enabled for the AP, this option enables you to select one. It operates the same as selecting a single channel in the **Data** window. |

### *Using Planner Advisor*

AirMagnet Planner's advisor feature helps you optimize the layout of APs on site plans. Before using the advisor:

1. Draw general areas, walls, cubicles, and other areas on the site plan.
2. Use the tools in the Toolbar to specify two types of areas to narrow advisor's focus: coverage areas and AP exclusion areas.

- AP coverage areas are represented by a blue '+'. These areas represent portions of the site plan that absolutely must have signal coverage and can contain APs.

- AP exclusion areas are represented by a red '–'. These areas are those in which APs **cannot** be placed.

| Icon | Name | Description |
|---|---|---|
|  | Create Rectangular Coverage/AP Exclusion Area | Draws a rectangular coverage or AP exclusion area on the map. |
|  | Create Arbitrary Coverage/AP Exclusion Area | Draws an arbitrary coverage or AP exclusion area on the map. This tool works well for irregularly-shaped regions (that is. areas other than cubicles, offices, and so on.). |
|  | Create Elliptical Coverage/AP Exclusion Area | Draws an elliptical coverage or AP exclusion area on the map. This tool is useful for areas that cannot be drawn easily using straight lines. |

For more information about drawing coverage and exclusion areas, see Drawing Coverage/AP Exclusion Areas.

After you finish marking the coverage and exclusion areas, use the Advisor to generate a recommended AP layout. See Generating Advisor's Layout.

### *AP Coverage and Exclusion Areas*

This section describes how to set a site plan up to help Planner Advisor reach the most accurate results possible. It is important that you lay out their coverage and AP exclusion areas properly so that Advisor can generate the optimal layout.

***Note:*** *Advisor's results depend heavily on user input; therefore, the more detailed the plan layout, the more accurate the results. The only way to perfectly determine the optimal layout for a site is to test a setup and run a site survey using the AirMagnet Survey software.*

**To draw coverage and AP exclusion areas:**

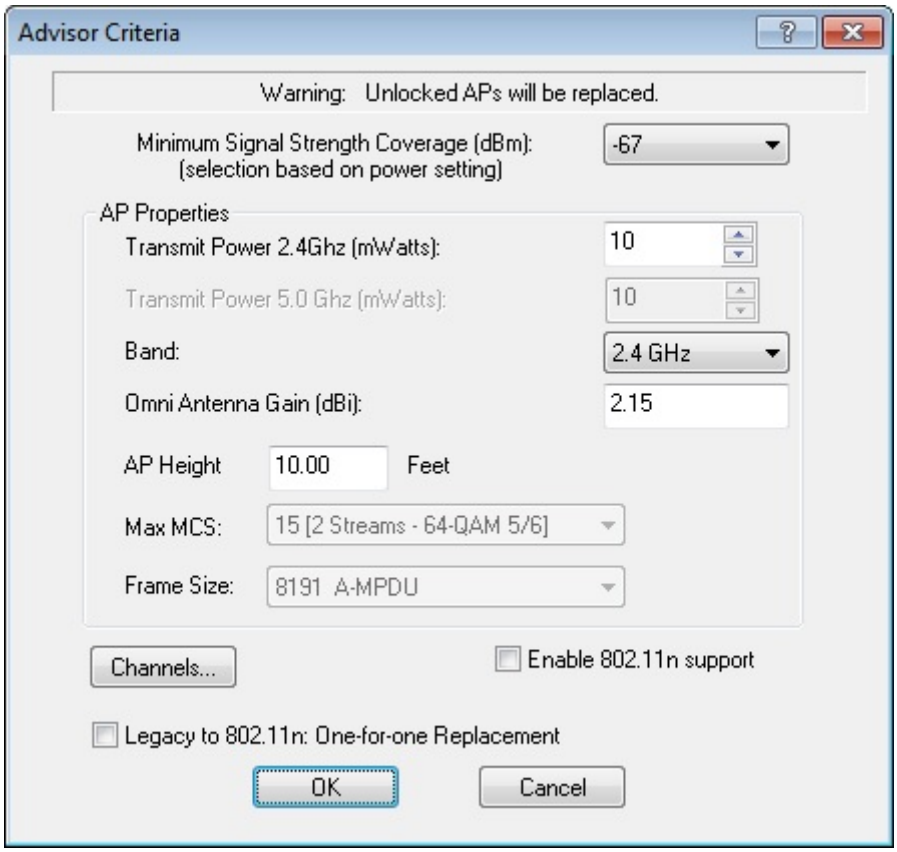
1. Select the coverage tool that will best fit the region to be drawn (rectangle, arbitrary, or ellipse). Use the tool to define the intended region in the same manner as areas are defined.
2. Repeat the process until all necessary areas are defined.
3. Repeat steps 1-2 for any AP exclusion areas as well.
4. The plan is now ready for Planner Advisor analysis.

### *Generating an Advisor Layout*

Now that the site plan has been properly defined, Planner Advisor can generate its optimal AP layout.

**To generate an Advisor Layout:**

1. Click the  (**Advisor**) button in the toolbar. The **Advisor Criteria** dialog appears.



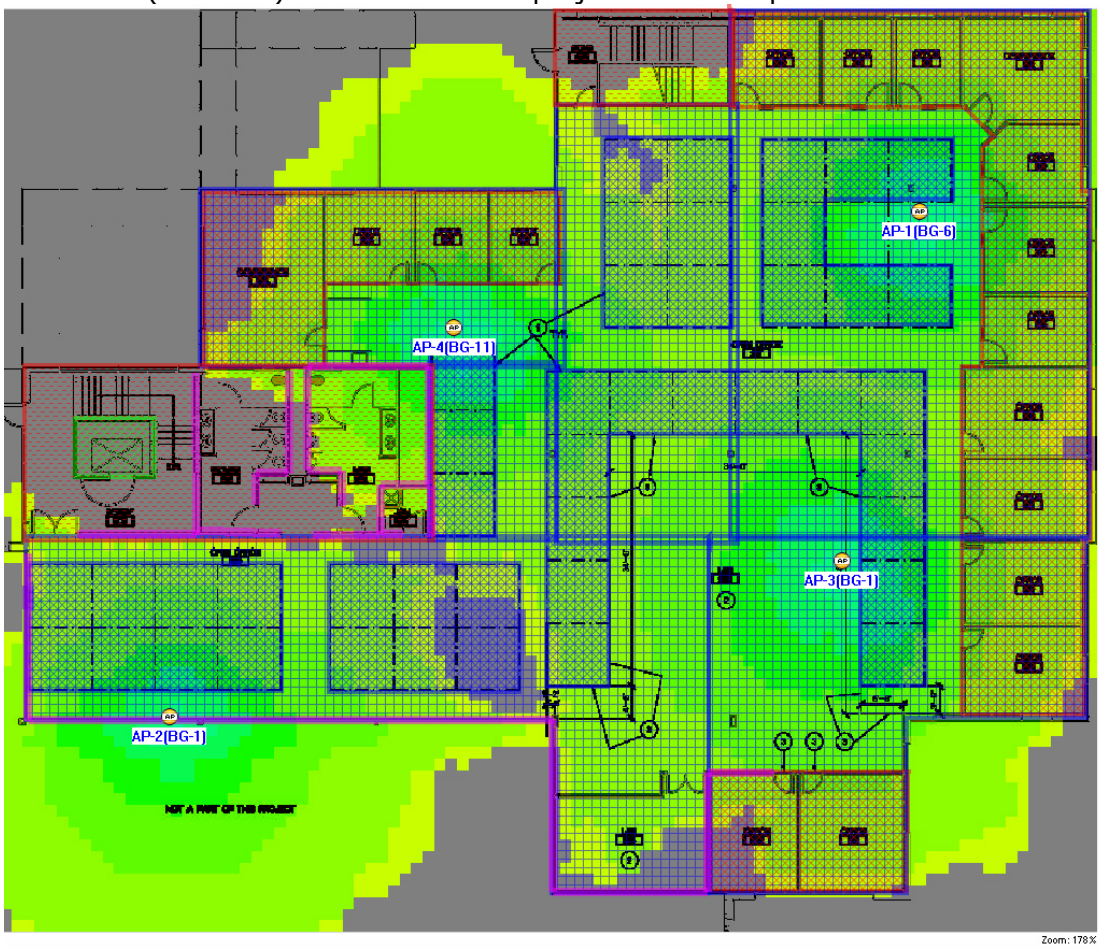

2. Make any desired changes to the dialog information.

| Field | Description |
|---|---|
| Minimum Signal Strength Coverage | This field defines the minimum strength required at any point in a coverage area. The signal strength cannot drop below this value in areas that require coverage. |
| Transmit Power | This field defines the transmit power for the APs placed by Advisor. |
| Band | This field defines the band to be used by Advisor's placed APs. |
| Omni Antenna Gain | This field defines each AP's antenna gain. Note that Advisor's APs will utilize omnidirectional antennas. |
| AP Height | The AP's height directly affects its signal coverage; APs placed at higher elevations will not cover as wide an area as those at standard ceiling height. |
| Max MCS | 802.11n Only: The Modulation Coding Scheme (MCS) is an integer value that can range from 0 to 76, although Planner only supports values up to 15. The MCS selection corresponds to the maximum data transfer rate supported by the AP. |
| Frame Size | 802.11n Only: 802.11n devices support frame sizes up to 64 KB, as opposed to the 4 KB maximum size supported by legacy devices. This process minimizes wireless overhead in the network by reducing the number of frames required per transmission. |
| Channels... | This button opens the **Channel Allocation** dialog box, which enables you to specify precisely which channels the Planner |

| | |
|---|---|
| | Advisor function can use. For more information, see more information below. Note that a minimum of three channels must be selected for each band in use. |
| Enable 802.11n Support | Check this option to allow Advisor to place 802.11n devices. Note that 802.11n support must be enabled To modify the Max MCS and Frame Size fields described above. |
| Legacy to 802.11n: One-for-one Replacement | Enabling this option ensures that Planner Advisor will replace the APs already present in a legacy site plan with 802.11n-enabled APs. |

3. Click **OK** to start the Advisor. Advisor processes the site data, tests AP locations, and then places APs on the floor plan.

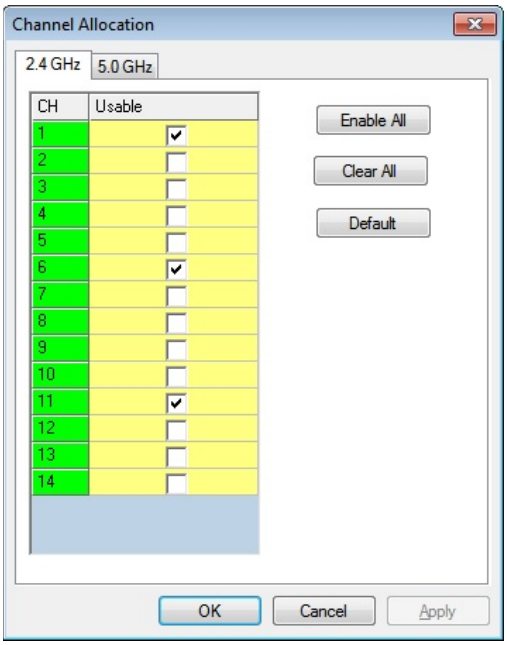
4. Click  (**Refresh**) to view the site's projected heatmap.




## Planner Advisor Channel Allocation

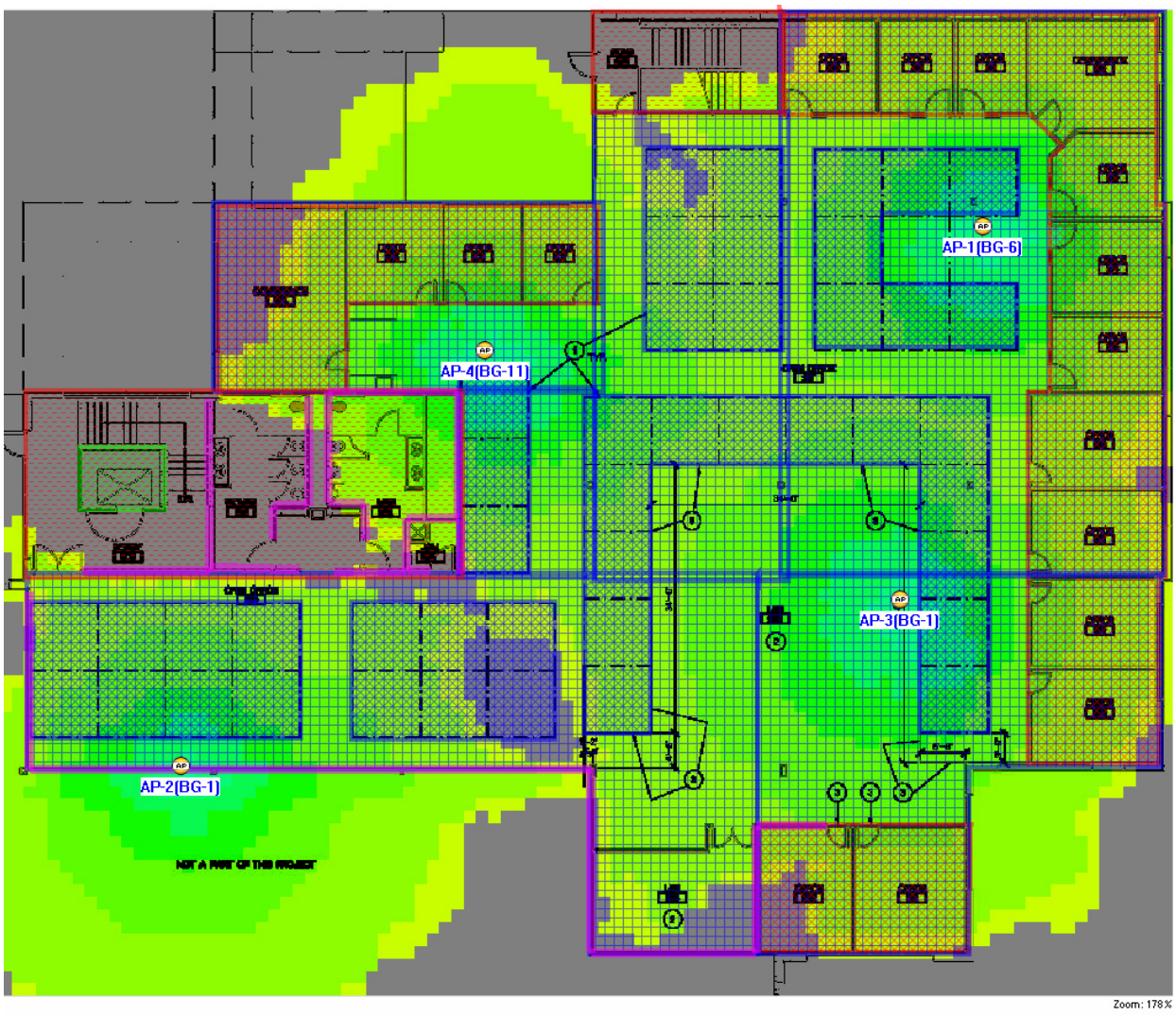
The Channel Allocation dialog box allows users to easily specify the channels available to Planner Advisor. Using this function, Planner can be customized to eliminate specific channels for regions with restricted allocations to the 2.4 and 5 GHz bands.

**Note:** To enable both 2.4 and 5 GHz bands, the **2.4/5 GHz** option must have been selected in the **Band** drop-down in the **Advisor Criteria** dialog.




The tabs at the top of the dialog box allow you to easily switch between the two major wireless bands. To specify the channels to be used, just check the "Usable" box for each desired channel. Use the Enable All and Clear All buttons to quickly check and uncheck all channels. The Default button will automatically restore Planner's default settings; as shown in the image above, channels 1, 6, and 11 are checked by default for the 2.4 GHz band. For the 5 GHz band, channels 36, 44, and 52 are automatically selected.

3. Click **OK** to close the **Channel Allocation** dialog.
4. Click **OK** to start the Advisor, which begins processing the site data and testing AP locations.
5. After the process completes, APs are placed on the plan. Click  (**Refresh**) to view the site's projected heat map.

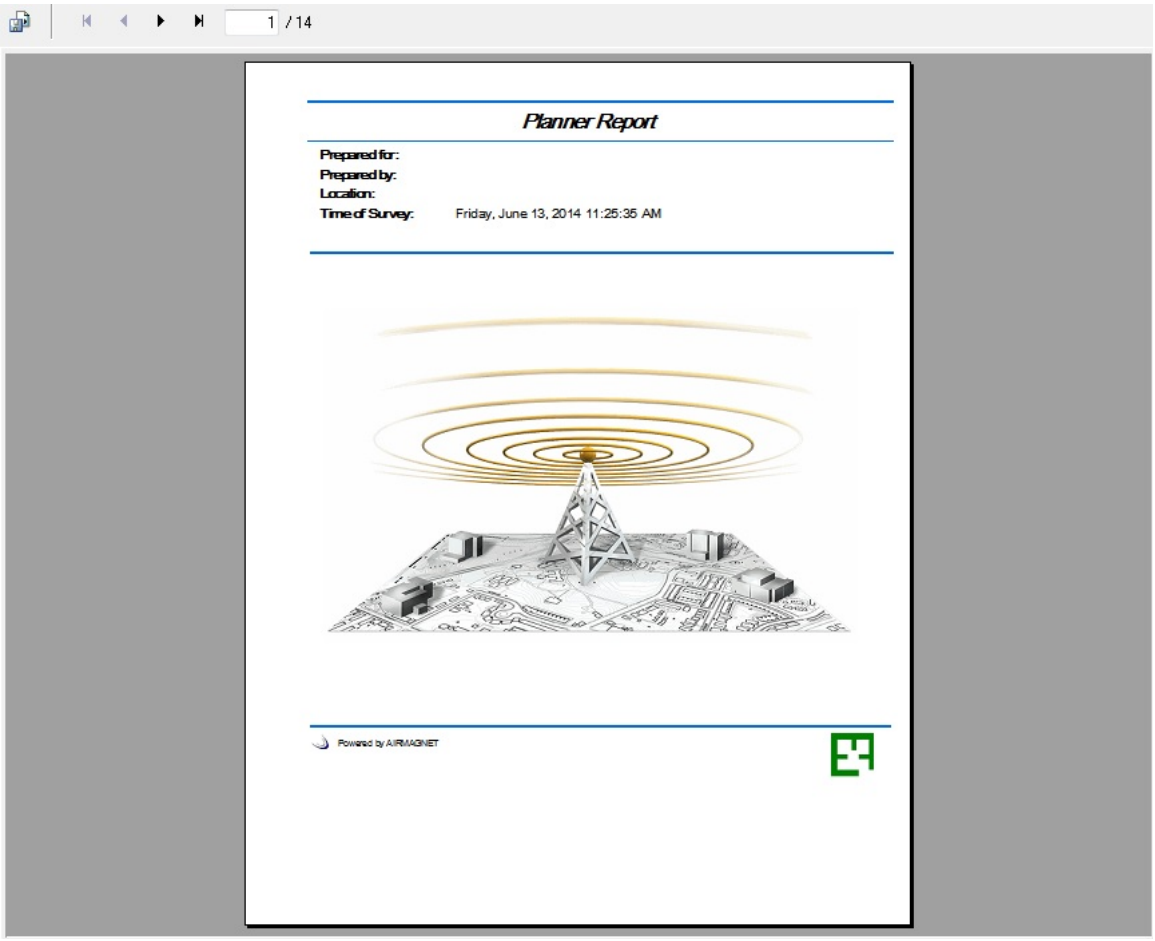



## *Viewing Planner Reports*

AirMagnet Planner's built-in reporting feature will automatically generate report data pertaining to your current site plan. This report will include screens displaying your planned signal coverage, AP locations, and a list of placed APs. The AP list also contains detailed information about each individual placed AP, including Name/MAC address, antenna type, and channel allocation.

**To generate Planner reports:**

1. After setting up your site plan, click **Reports**.
2. From the **Reports** view, select **Planner Report** in the top left.




3. Navigate through the report pages by using the arrow buttons at the top.

For more information, refer to Reports

### *Generating Advisor's Layout*

Type topic text here.

### *Export to CAD*

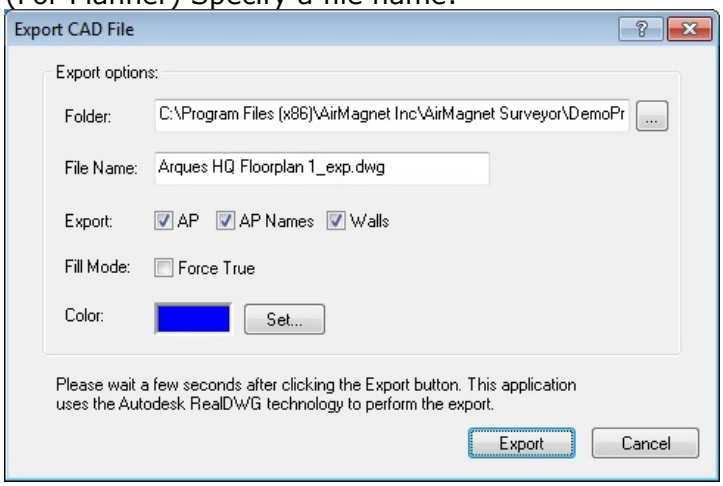
If you used a CAD image (.dwg) on your project or for any floors on a Multi Floor Planner project, the Export to CAD option lets you export the image—along with any APs and walls data that are added to the image—to a CAD (.dwg) file.

> ***Note:*** *If you chose to show or hide individual layers of the CAD image, these changes are reflected in your exported CAD file. See the View Menu or Right-click Pop-up Menu.*

**To export to CAD:**

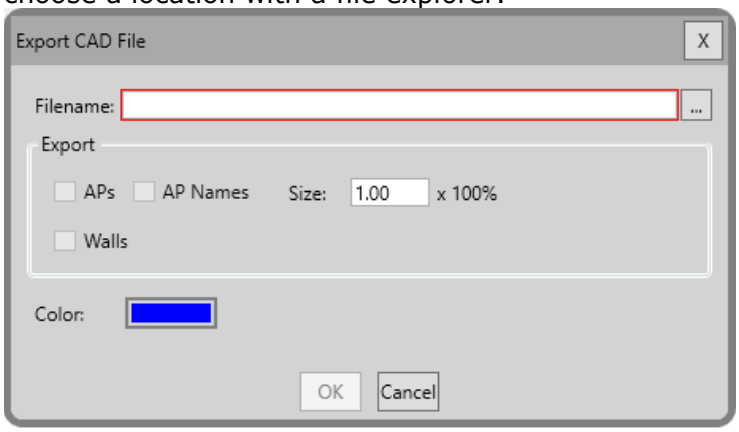
1. From the **File** menu, select **Export to CAD**. This opens the **Export to CAD** dialog.

2. (For Planner) Specify a file name:




   - Type the path to save your exported file into the **Folder** text box. You can also click the **Browse** button to the right of the text box to set the path.
   - In the **File Name** text box, use the auto-fill file name or revise the file name. The file extension must be .dwg.

3. (For Multi Floor Planner) Type the file name and path into the **File Name** text box. You can also click the **Browse** button to the right of the text box to choose a location with a file explorer.




4. Select the export options for the file.
   - AP checkbox: export the Access Point as a layer in the CAD file.
   - AP Names checkbox: export the Access Point icon names as a layer in the CAD file.
   - Walls: export the floor plan walls as a layer in the CAD file.
   - (Multi Floor Planner only) **Size** sets the size of the AP icons and names.
   - (Planner only) Fill Mode specifies whether you want the wall thickness filled or unfilled. Check **Force True** to cause the walls to be filled.

- The **Color** option sets the color of the Planner or Multi Floor Planner data.
    - In Planner, click **Set** to display a color selection dialog.
    - In Multi Floor Planner, double-click the Color box to display the color selection dialog.

5. Click **Export** to save the file. Planner or Multi Floor Planner data is saved as extra layers in the CAD file. The layers for the original CAD file are not overwritten.

***TIP:*** *Use a free CAD file viewer to review your exported file. You can check the size of AP icons, view the different layers, and see how the Planner or Multi Floor Planner data is displayed.*

## Multi Floor Planner

### *Introduction*

Multi Floor Planner allows you to view how signal propagation occurs between floors in a multi-floor building. With Multi Floor Planner, you can:

- Create a new Multi Floor Planner Building Project that consists of multiple floors.
- Create a floor plan project for each floor within the building
- Import individual AirMagnet Planner site plans for each floor.
- See predictive heatmap visualizations of how APs on one floor may propagate signal strength coverage to other floors or may produce channel interference.

Multi Floor Planner includes support for 802.11a/b/g/n/ac/ax APs for predictive visualizations of signal strength, data rates, operating mode, MCS transmit rate and channel width.