Conducting A Freespeak Site Survey

Introduction

The use of a Freespeak Beltpack and Site Surveyor software on a PC provides the easiest initial means of acquiring signal strength data at various locations on the site. This information forms the basis of calculating the number and locations of Active Antennas that are likely to be required.

Site Surveyor software configures a Beltpack and an Active Antenna in survey mode. Configuring an Active Antenna in survey mode avoids the need to install a matrix on site for survey-only purposes.

It is possible to configure the Active Antenna and Beltpack offsite. The laptop PC is not required on site for purposes of signal strength monitoring (although it is required for Band Monitoring).

> **Note: The Beltpack must be re-registered with a system using the system map configuration tool after it has been used with Site Surveyor. (This is because the RF carrier Masks, system ID and RPN to connect to are stored in non-volatile memory and this is incompatible with normal operation.)**
>
> **Note: The Active Antenna is automatically restored to normal operation as soon as it receives an E1 data stream from a matrix. This also has the effect of over-writing any carrier masking which was used while in site survey mode.**

System settings includes System ID, the Fixed Part Number (FPN) and the Fixed part Sub-Number (FPS). The FPN must be between 0 and 255 and the FPS must be between 0 and 15.

Some countries have regulations which prohibit the use of certain frequencies. Individual frequencies can be enabled and disabled in the RF Carriers (Binary) Group. The selection of frequencies is discussed under Synth Channels, DECT RF-Carriers, Frequencies and DECT Channels.

Quick Site Survey Procedure

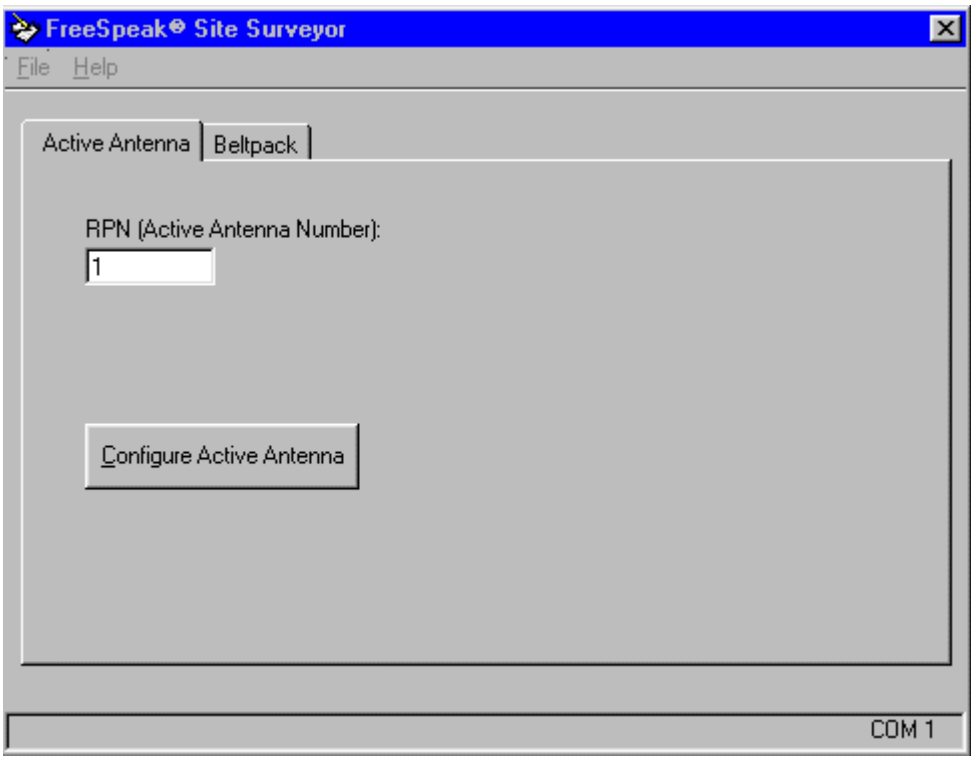
1. Connect Beltpack to PC with registration cable and power up.
2. Start Site Survey Software and configure the "site survey software settings" to match country of operation.

   !!! Failure to configure frequency correctly may result in illegal use. !!!

   See **the frequency table** and **frequency to country list** for correct values.
3. Select Beltpack TAB then select "Configure Beltpack" button.
4. Connect Antenna to PC with registration cable.
5. Connect Antenna to power source, power up and insert E1 loop back to prevent it resetting.
6. Select Antenna TAB then select "Configure Antenna" button.
7. Place antenna at test location with power source. Power cycle the beltpack holding down the up/right key to enter sight survey mode. Bottom right corner should display an "S" or "SS".
8. Starting from the Antenna walk in a direction away from the Antenna until the BP RSSI drops below 30.
9. At the point where RSSI drops on average below 30 (brief RSSI drops are acceptable at this stage), find the location on the site map and mark an X.
10. Repeat Step 8 and 9 until all possible directions from the Antenna are covered.
11. Move the antenna to the next location bearing in mind the radio signal should just overlap the previously range test to ensure no radio drops outs.
12. Repeat steps 8 to 11 covering all areas the beltpacks will be used.
13. To reset the beltpack back to normal use reregister it with the map configuration tool.
14. The antenna will reset itself when next connect to a freespeak system.

Preparing the Active Antenna

This procedure sets the Active Antenna to site survey mode. The main dialog of the Site Surveyor software is shown below.



The Site Surveyor Active Antenna Tab

1. Connect a serial cable between an Active Antenna and a COM port on the PC using a Serial Cable.

2. Ensure that the correct serial COM port is selected (displayed on the far right of the status bar). To select a different COM port, see Changing the COM Port.

3. Power up the Active Antenna using the PSU adapter.

4. Open the Site Surveyor software and ensure that the Active Antenna Tab is selected. If more than one Active Antenna is to be used as part of the Site Survey, then enter a unique Radio Fixed Part Number, between 0 and 255 in the RPN field. Attach an adhesive label to the Antenna to display this number.

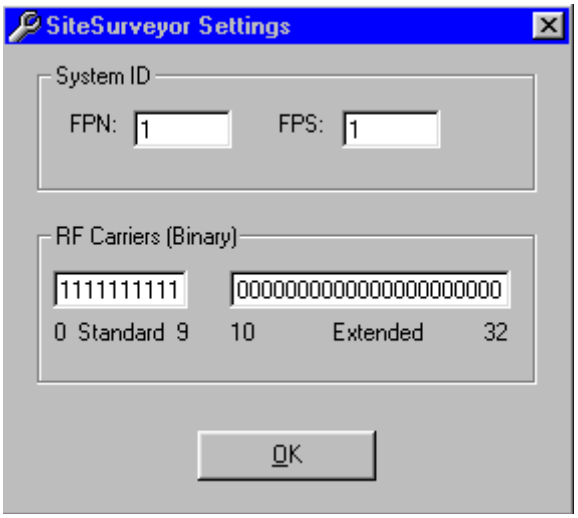
5. Click the Configure Active Antenna button. This sets up the Active Antenna in Site Survey mode which it indicates by the yellow LED flashing at 2Hz. A message dialog appears saying that the Active Antenna has been configured successfully.

The Active Antenna has now been set-up and Beltpacks can connect to it over the air. The serial cable may be removed from the Active Antenna.

Site Survey mode status is stored in non-volatile memory enabling the Active Antenna to come up in that mode after interruption of power. The only way it will revert to operational mode is when it next receives an E1 (encoded data) stream from the Cell Controller Card in the matrix.

Editing the Site Surveyor Software Settings

If you want to set up two or more separate systems, or if there is an existing FreeSpeak system in the vicinity, you will need to edit the Settings. Select Settings from the File menu to call up the Settings dialog which is shown below:



Site Surveyor Settings

On the dialog, the RF carrier masks are specified as binary strings. There are ten standard carriers and 23 extended ones. A "1" means that the carrier is used and "0" means that it is not.

These parameters are used by both the Beltpack and Active Antenna but, in each case, only in site survey mode. To edit any of these settings, use the table below.

Frequency Table

Frequency Range	RF Carrier Hex	RF Carrier in Binary
1880_1900	03, FF, 00, 00, 00	0000 0011 1111 1111 0000 0000 0000 0000 0000 0000
1900_1920	00, 00, 1F, F8, 00	0000 0000 0000 0000 0001 1111 1111 1000 0000 0000
1910_1930	00, 00, 00, 7F, E0	0000 0000 0000 0000 0000 0000 0111 1111 1110 0000
1920_1930	00, 00, 00, 03, e0	0000 0000 0000 0000 0000 0000 0000 0011 1110 0000

Frequency to Country List

1880à1900 Albania 1880-1900
1880à1900 Andorra 1880-1900
1880à1900 Angola 1880-1900
1910à1930 Argentina 1910-1930
1880à1900 Australia 1880-1900
1880à1900 Austria 1880-1900
1880à1900 Azerbaijan 1880-1900
1910à1930 Bahamas 1910-1930

1880à1900 Bahrain 1880-1900
1880à1900 Bangladesh 1880-1900

1880à1900 Belgium 1880-1900
1880à1900 Benin 1880-1900
1910à1930 Bolivia 1910-1930
1880à1900 Bosnia Herzeg.
1880-1900
1900à1920 Botswana 1900-1920
1910à1930 Brazil 1910-1930
1880à1900 Brunei 1880-1900
1880à1900 Bulgaria 1880-1900
1880à1900 Burkina Fasso 1880-1900

1880à1900 Burma 1880-1900
1880à1900 Cambodja 1880-1900
1920à1930 Canada 1920
-1930
1910à1930 Chile 1910-1930
1900à1920 China 1900-1920
1910à1930 Colombia 1910-1930
1880à1900 Congo 1880-1900
1910à1930 Costa Rica 1910-1930
1880à1900 Cote d'Ivoire 1880-1900

1880à1900 Croatia 1880-1900
1910à1930 Cuba 1910-1930
1880à1900 Czech Republ.
1880-1900
1880à1900 Cyprus 1880-1900
1880à1900 Denmark 1880-1900
1910à1930 Ecuador 1910-1930
1880à1900 Egypt 1880-1900
1910à1930 El Salvador 1910-1930

1880à1900 Estonia 1880-1900
1880à1900 Fidji 1880-1900
1880à1900 Finland 1880-1900
1880à1900 France 1880-1900
1880à1900 Georgia 1880-1900
1880à1900 Germany 1880-1900
1880à1900 Ghana 1880-1900
1880à1900 Greece 1880-1900
1910à1930 Guatamala 1910-1930

1910à1930 Haiti 1910-1930
1910à1930 Honduras 1910-1930
1880à1900 Hong Kong 1880-1900
1880à1900 Hungary 1880-1900
1880à1900 Iceland 1880-1900
1880à1900 Indonesia 1880-1900

1880à1900 Ireland 1880-1900
1880à1900 Italy 1880-1900
1880à1900 Kenya 1880-1900
1880à1900 Latvia 1880-1900
1880à1900 Lebanon 1880-1900
1880à1900 Liechtenstein
1880-1900
1880à1900 Lithuania 1880-1900
1880à1900 Luxembourg
1880-1900
1880à1900 Lybia 1880-1900
1880à1900 Macedonia 1880-1900
1880à1900 Madagascar 1880-1900

1880à1900 Malaysia 1880-1900
1880à1900 Mali 1880-1900
1880à1900 Malta 1880-1900
1880à1900 Marrocco 1880-1900
1910à1930 Mexico 1910-1930
1880à1900 Moldavia 1880-1900
1880à1900 Monaco 1880-1900
1880à1900 Namibia 1880-1900
1880à1900 Netherlands 1880-1900

1880à1900 New Zealand
1880-1900
1880à1900 Nigeria 1880-1900
1880à1900 Norway 1880-1900
1880à1900 Pakistan 1880-1900
1910à1930 Panama 1910-1930
1910à1930 Paragyuay 1910-1930

1910à1930 Peru 1910-1930
1880à1900 Philippines 1880-1900
1880à1900 Poland 1880-1900
1880à1900 Portugal 1880-1900
1910à1930 Rep Dominicana 1910-1930

1880à1900 Romania 1880-1900
1880à1900 Russia 1880-1900
1880à1900 San Marino 1880-1900
1880à1900 Senegal 1880-1900
1880à1900 Singapore 1880-1900
1880à1900 Slovak Republ. 1880-1900

1880à1900 Slovenia 1880-1900
1880à1900 South Africa 1880-1900

1880à1900 Spain 1880-1900
1880à1900 SriLanka 1880-1900
1880à1900 Swaziland 1880-1900

1880à1900 Sweden 1880-1900
1880à1900 Switzerland 1880-1900

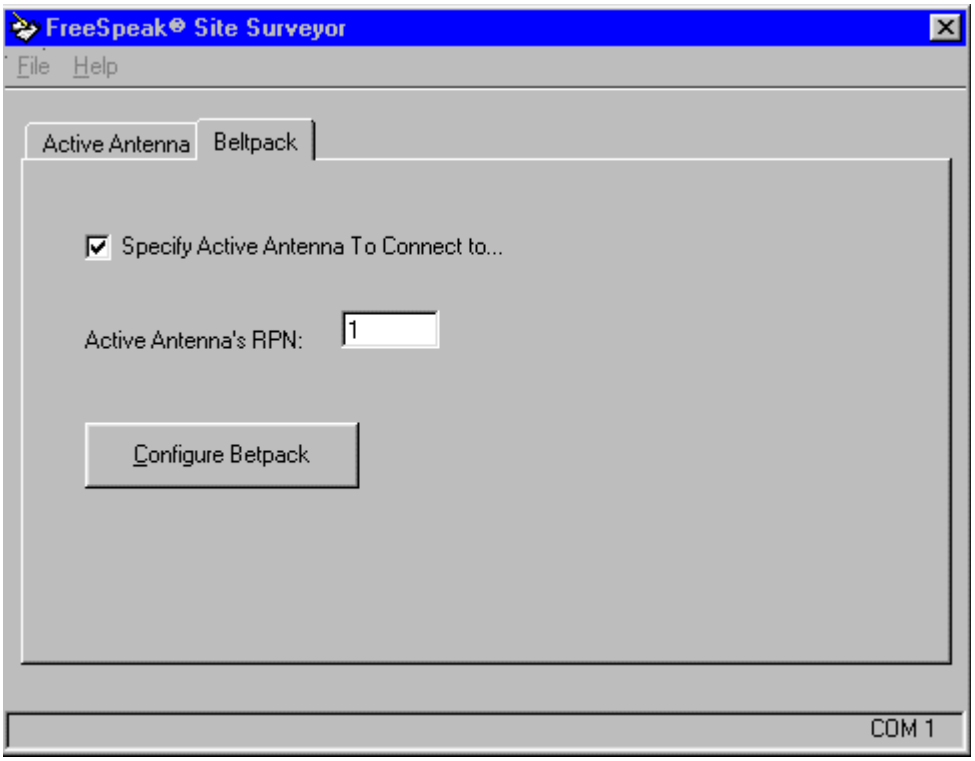
1880à1895 Taiwan 1880-1895
1900à1920 Tanzania 1900-1920
1900à1906 Thailand 1900-1906 1906-1918 in study
1880à1900 Togo 1880-1900
1880à1900 Tunisia 1880-1900
1880à1900 Turkey 1880-1900
1880à1900 Ukraine 1880-1900
1880à1900 United Kingdom 1880-1900

1920à1930 United States 1920 -1930
1910à1930 Uruguay 1910-1930
1880à1900 Vatican city 1880-1900
1880à1900 Zimbabwe 1880-1900

Preparing the Beltpack

A Beltpack needs to be configured only once (as long as the Settings in Site Surveyor are not changed). Once the Beltpack is configured, the 'Site Survey' mode can be re-entered by pressing the up/right menu key while powering up (press power key at the bottom for 3 seconds). The Beltpack will now continuously provide a readout of carrier and timeslot in use, the RFPI of the Active Antenna connected to and the Received Signal Strength Indication (RSSI).

The Beltpack tab of the Site Surveyor software is shown below. Configure the Beltpack as follows.



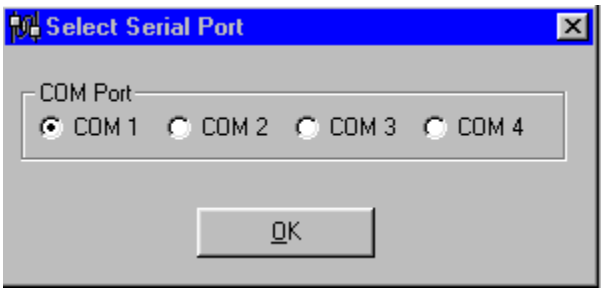
Site Surveyor Beltpack Tab

- Connect a serial cable between the Beltpack and a COM port on the PC using the Serial Cable.
- Ensure that the correct serial COM port is selected (displayed on the far right of the status bar). To select a different COM port, see Changing the COM Port.
- Click on the Beltpack tab. If you have more than one Active Antenna setup on site and wish to force connection to a specific Active Antenna, then check the 'Specify Active Antenna To Connect To...' check box. A text box will appear so you can specify the RPN of the Active Antenna to connect to.
- Power up the Beltpack in Site Survey Mode (holding the up/right menu key.).
- Click the 'Configure Beltpack' button. An information dialog box should appear after a second or so, saying that the 'Beltpack has been started successfully'. If an Active Antenna is running, then a connection should be shown on the display within a couple of seconds.

The serial cable can now be removed from the BP and it can be powered up and down as required without the need to re-connect to the laptop (unless the system ID or RF carrier settings are changed).

Changing the COM Port

Select COM Port from the File menu and the following dialog appears:



Site Surveyor COM Port Dialog

Select the COM port which is required and click OK.