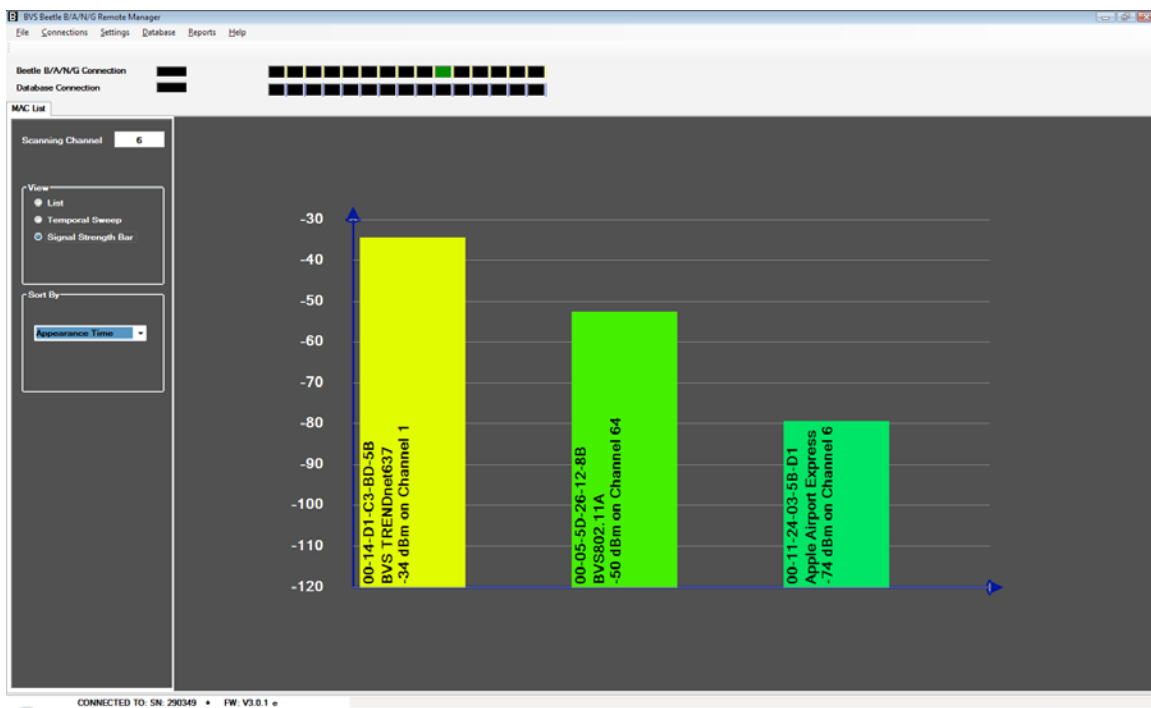




Beetle-BANG Manual version 1.0



Beetle-BANG Beetle-BANG Remote Manager User's Manual

Hardware Installation.....	2
Introduction.....	3
Installation.....	3
System Requirements.....	4
Registration Code.....	4
Quick Start.....	4
Hardware Requirements.....	5
Opening A Connection.....	5
Connection Status.....	7
MAC List Mode.....	8
List Mode.....	8
List Display Fields.....	9
Temporal Sweep Display.....	10
Signal Strength Bars.....	11
Choosing Channels.....	11
Channel Presets.....	12
Databases.....	13
Reports.....	14

HARDWARE INSTALLATION

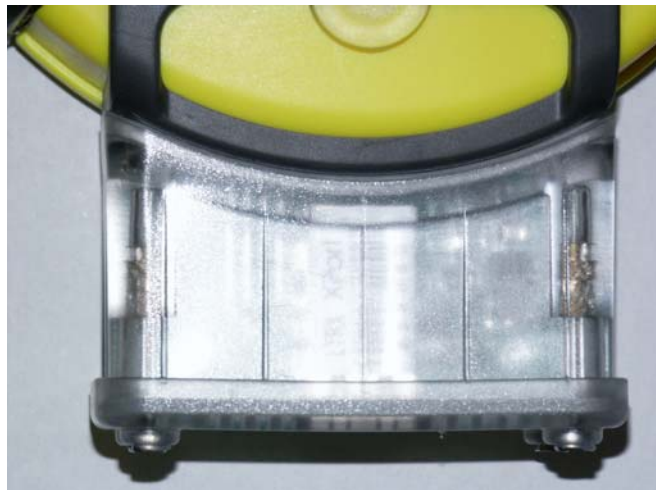
Your Beetle-BANG will come from the factory with Beetle-BANG Remote Manager hardware already installed if you ordered it that way or if you ordered Beetle-BANG Remote Manager software with your Beetle-BANG hardware. Refer to your Beetle-BANG manual for basic disassembly of your unit. If your Beetle-BANG is not already configured to take advantage of Beetle-BANG Remote Manager's Ethernet communications, follow these simple steps below:

Remove clips holding in port cover from bottom



Connect the dongle hardware cable only to this **PORT**

Now install the dongle to the bottom of the unit



BVS Beetle-BANG Remote Manager Software User Manual

INTRODUCTION

The Beetle-BANG Remote Manager (RM) runs on a Windows-based PC (XP/Vista) that is connected to a BVS Beetle-BANG system remotely. This connection is made through TCP/IP.

Through this connection, a Beetle-BANG can be controlled. The Beetle-BANG can be set to any mode and settings available. Data can be monitored in real-time and stored in a relational database for later viewing and reporting.

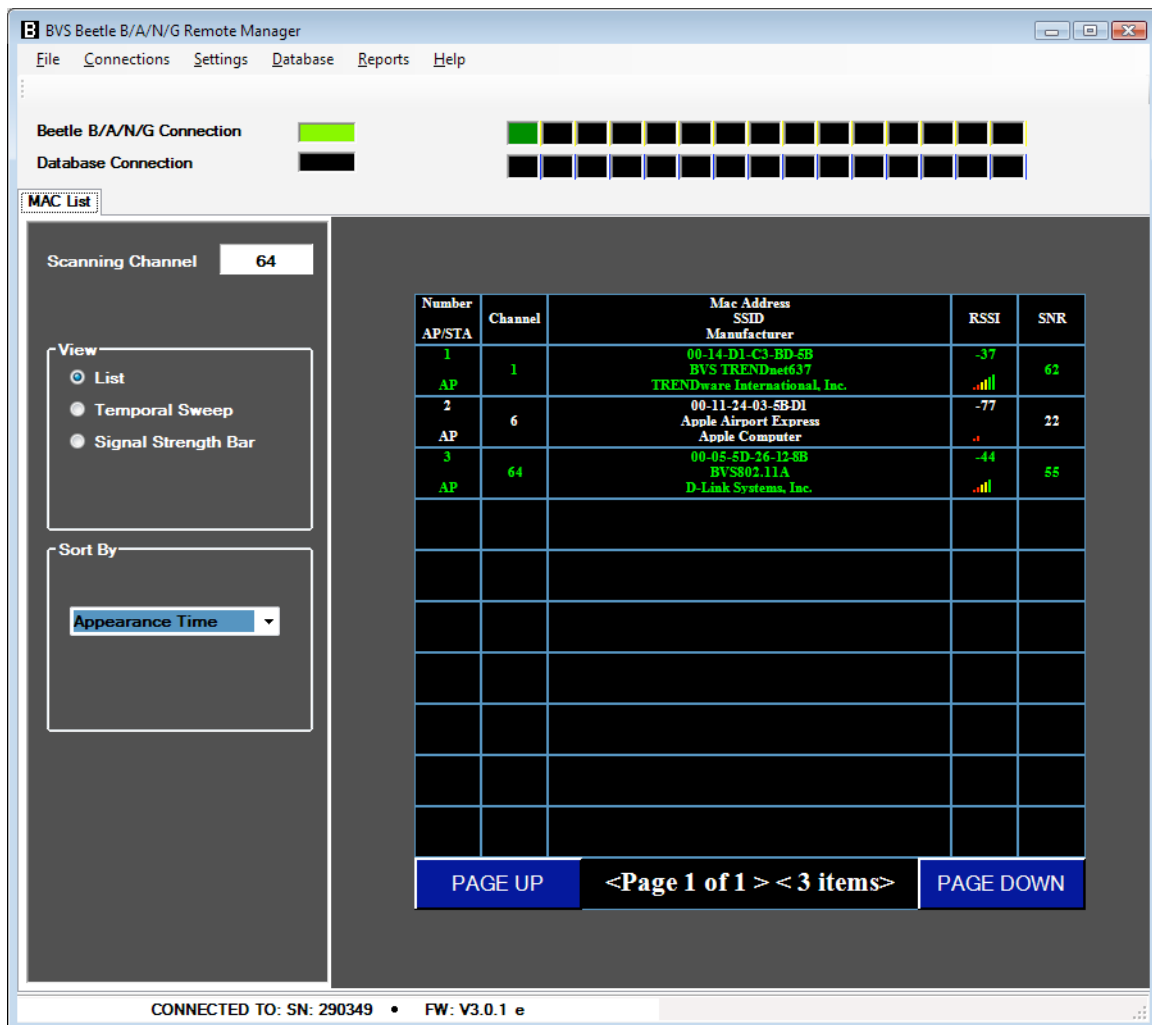


Figure 1 - Beetle-BANG Remote Manager

INSTALLATION

Two applications are needed to use the complete functionality of the Beetle-BANG Remote Manager. One is the RM software and the other is SQL Server Express, a free application from Microsoft.

The Beetle-BANG Remote Manager software can be installed from the software CD. .NET Framework needs to be installed on the computer in order for RM to function correctly. This framework is already installed on all computers loaded with Windows Vista*. If the RM will not run, install the framework from the CD or from www.microsoft.com.

When using databases to generate reports, SQL Server 2005 must be installed on the computer. SQL Server Express 2005 is located on the CD and may also be found at www.microsoft.com. SQL Server is the database engine through which the RM creates/adds and reports on data from the BAGN.

SYSTEM REQUIREMENTS

Below is the minimum system requirements needed to run the full Beetle-BANG Remote Manager system.

Supported Operating Systems:	Windows Vista; Windows XP Service Pack 2
Processor Speed:	2 GHz
Memory:	512 MB
Hard Drive Space:	1GB

REGISTRATION CODE

The first time that Beetle-BANG Remote Manager is run, a dialog box will show up asking for the registration code. This code is located on the paperwork you received from the factory. Each unit has its own registration code that is unique to the serial number.

This registration code is tied to the serial number of the Beetle-BANG hardware. The code will be verified upon connection to the hardware.

The Beetle-BANG Remote Manager must be connected to the Beetle-BANG unit when running the application in order to verify the registration code.. The Beetle-BANG Remote Manager asks the hardware for its serial number. If it is not talking to the hardware, the registration code cannot be verified and the application disabled.

QUICK START

DEVICE CONNECTION

In order to receive data from the Beetle-BANG, you must first make a connection through the network. See “Opening a Connection” below for details on this process.

DATABASE CONNECTION

In order to begin saving data to a database and have the ability to generate reports, you must first create the database and then open it. Please see “Opening a Database” below for instructions on how to do this.

DEVICE INTERFACE

HARDWARE REQUIREMENTS

In order to connect to a Beetle-BANG unit, the hardware must be configured with the optional Ethernet adapter and installed per the instructions. The Beetle-BANG must also be powered by A/C when using this adapter.

OPENING A CONNECTION

The screenshot shows a Windows-style dialog box titled "Connection Center". The main heading is "Is Beetle B/A/N/G on LAN or Internet?".

On the left, under "INTERNET STEP 1:", it says: "If your Beetle will be accessed at a remote location not on your LAN, connection will be made over the Internet. Enter the IP address of the gateway/router which the Beetle will access."

Below that, under "INTERNET STEP 2:", it says: "Enter the port number which will allow you to access the Beetle through the router. The Beetle must be configured for this port using the configuration utility. Your network administrator must also enable access through the router on the port specified."

On the right, under "LAN STEP 1:", it says: "Search for Beetles or simply enter the IP address and port (usually 10001) of the Beetle if known."

Below the LAN STEP 1 instructions is a section titled "Search for Beetle B/A/N/G's on LAN". It contains a button "Search for Beetle B/A/N/G's", a large empty rectangular box, a button "Select Highlighted Entry", and a row of four input fields containing "0", "0", "0", and "0" separated by dots. Below this is a button "Set IP Address of Highlighted Entry".

At the bottom is a section titled "Connect To Beetle B/A/N/G". It contains two rows of input fields. The first row is labeled "IP Address" and contains four input fields with "0", "0", "0", and "0" separated by dots, followed by a "Connect" button. The second row is labeled "Port" and contains a single input field with "10001".

At the very bottom center is a "Cancel" button.

FIGURE 2 – Opening a connection to a Beetle-BANG device.

VIA LAN

If you are connecting to a Beetle-BANG through an internal network (LAN), you simply need to know the IP address that has been assigned to the Ethernet adapter connected to the device. The port is typically 10001 and does not have to be changed.

If you are unsure of the IP address but know the MAC address of the adapter (usually visible through the casing of the adapter), a search can be made for devices. Clicking on the search button will list (after 5 seconds or so) any MAC addresses the Beetle-BANG Remote Manager thinks may possibly be a BANG.

Choosing the correct MAC address will place the IP address in the lower box.

Make sure that the IP address matches the subnet of your network or you will not be able to make a successful connection. If not, please use the “Set IP Address” option.

Click 'CONNECT' after populating the IP address box and the port. After a few seconds you will see the top band of LED's begin to blink in sequence if a connection has been made.

MAC List mode will be entered and the default channels will be scanned.

If it is necessary to change the IP address of the Beetle-BANG, (for instance, if the address is not on the right subnet) select the MAC address in question and choose “Set IP Address”. After doing this, search for MAC addresses again to verify that the address has changed.

VIA INTERNET

If connecting to a Beetle-BANG which is outside your local network, you need to find out the IP address of the router which provides access to the hardware. Typically the router will have to be configured to forward requests on port 10001 to the IP address of the Beetle-BANG device. Please see the instructions for your router.

Entering the IP address of your router (make sure it is a static IP address and not dynamically addressed), use port 10001. If the router is configured correctly, you should be able to connect to the BANG through this port.

After clicking 'CONNECT' and waiting a few seconds, you will see the top band of LED's begin to blink in sequence if a connection has been made.

MAC List mode will be entered and the default channels will be scanned.

If it is necessary to change the IP address of the Beetle-BANG, (for instance, if the address is not on the right subnet) select the MAC address in question and choose “Set

IP Address”. After doing this, search for MAC addresses again to verify that the address has changed.

CONNECTION STATUS

Choosing the ‘Status’ option from the Connection menu will provide basic information after having connected to the Beetle-BANG unit. Information such as serial number and firmware version of the Beetle-BANG will be provided.

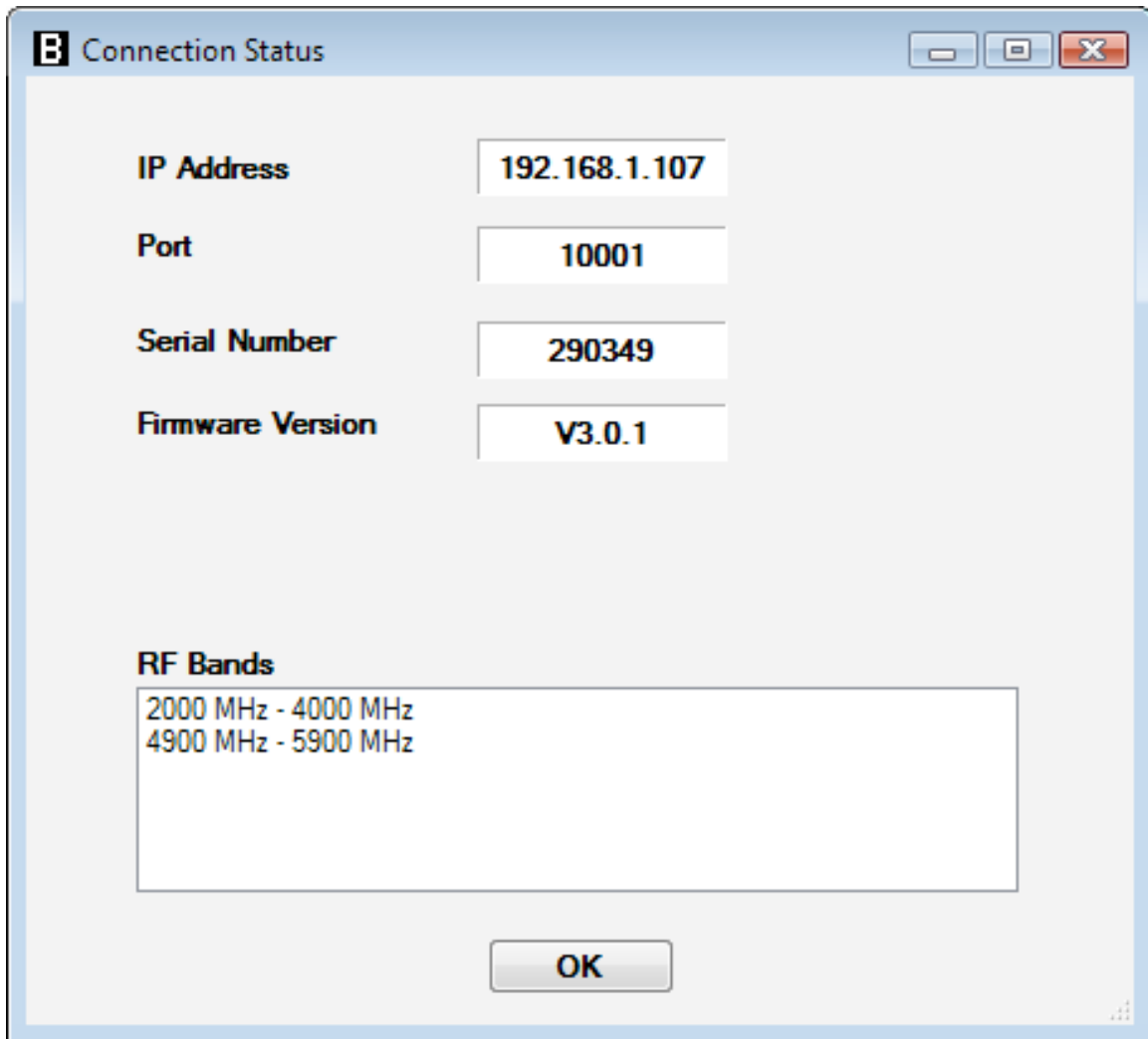


FIGURE 3 – Connection Status

MAC LIST MODE

MAC List mode will scan previously selected channels in the 802.11abg bands (2.4GHz and 5 GHz). Packets received from different wireless MAC addresses will begin to display on the screen.

LIST MODE

List mode shows all of the MAC addresses seen in the order they were received by default. The list can be sorted by RSSI, channel, etc. If there are more than 10 items in the list, using the 'PAGE UP' and 'PAGE DOWN' buttons will navigate through the list.

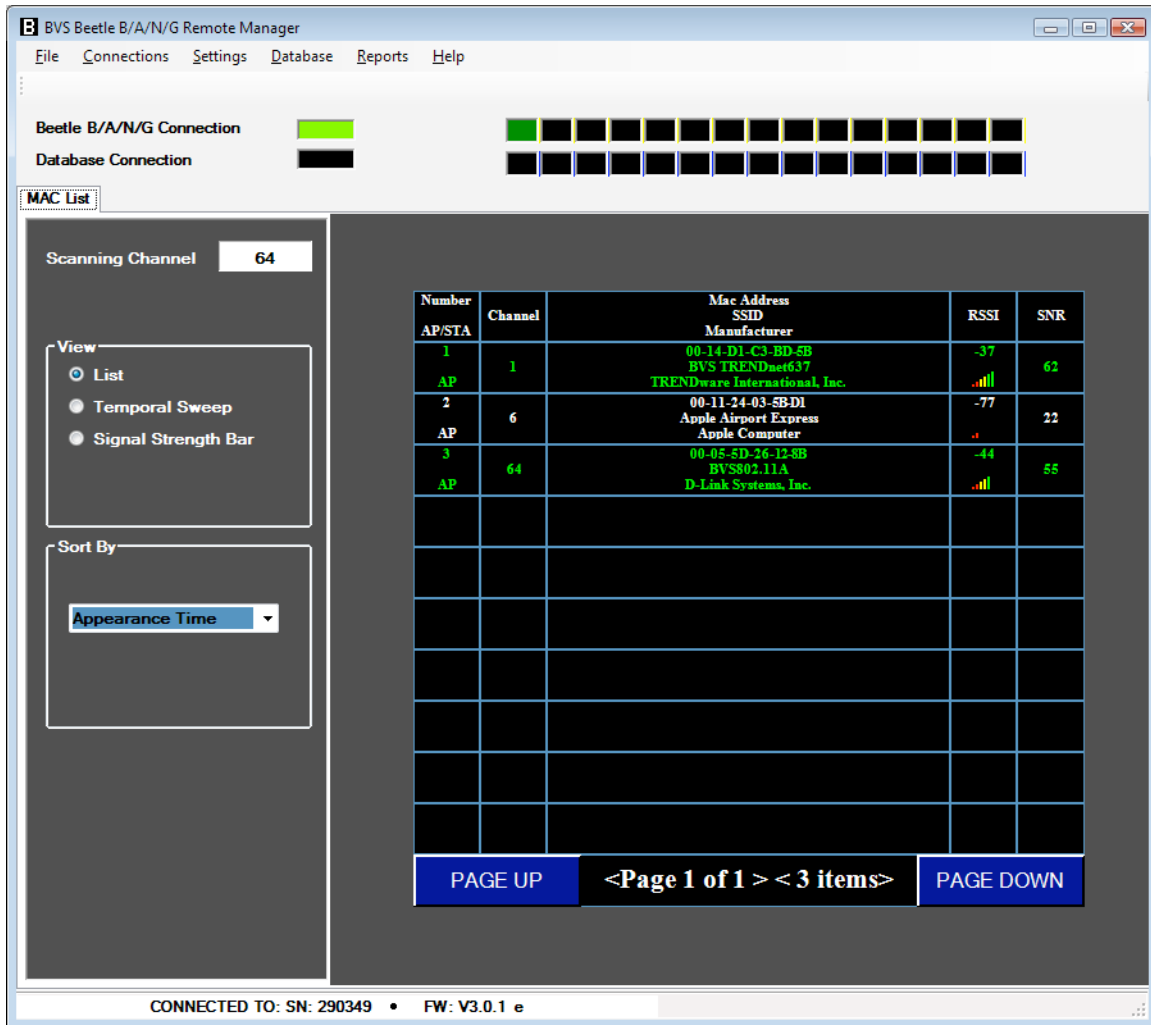


FIGURE 4 – MAC List Mode

There are three selectable displays in this mode that are chosen from the radio buttons on the left-hand side of the screen. These are the list display, the temporal sweep display, and the signal strength bar display.

LIST DISPLAY FIELDS

- **CHANNEL** – Channel that MAC address is transceiving on.
- **MAC Address** – 12 character identifier of hardware.
- **SSID** – Service Set ID.
- **Manufacturer** – Manufacturer of equipment.
- **RSSI** – Received signal strength indicator in dBm.
- **S/N** – Signal/Noise ratio

TEMPORAL SWEEP DISPLAY

Temporal sweep mode will show the RSSI values of devices over time. A white line will timestamp every minute or so and appear on the graph. Each device will have it's own color up to 10 devices.

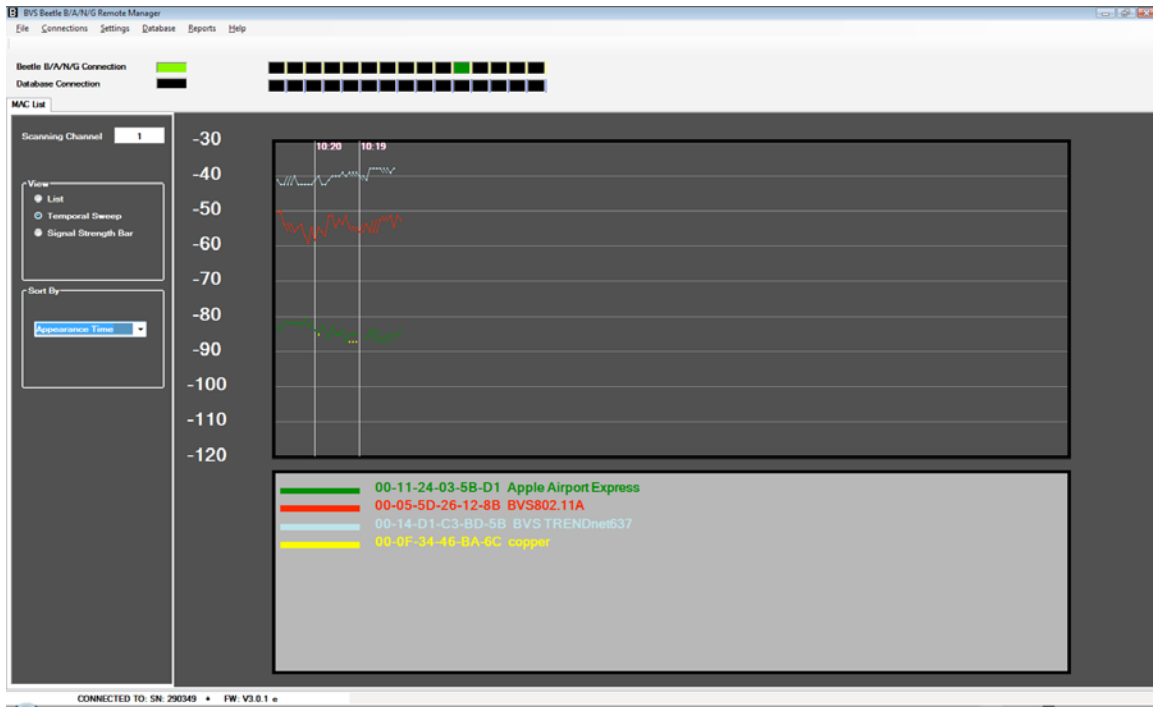


FIGURE 5 – Temporal Sweep Display

SIGNAL STRENGTH BARS

The signal strength bars display will show the MAC addresses seen as a bar graph with the latest RSSI values. Some of the identifying information will be displayed inside of the bar.

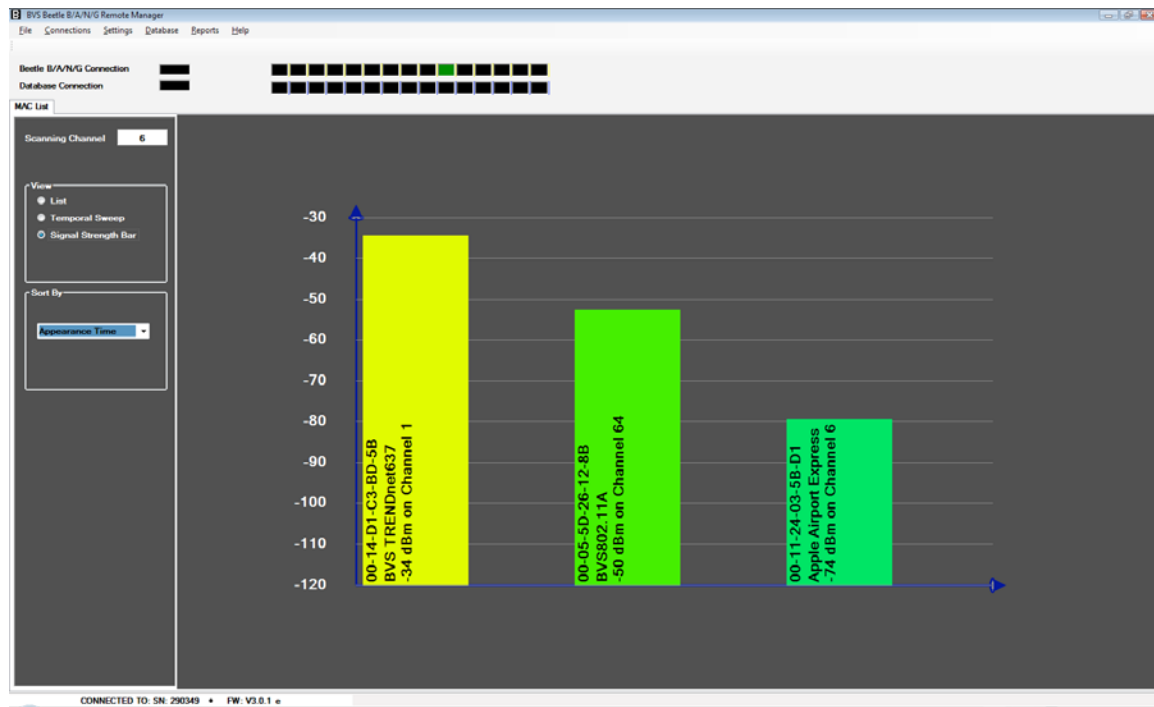


FIGURE 6 – Signal Strength Bars

NOTE: Each channel will typically be scanned for 2 seconds. Therefore, if for example you have all 14 802.11bg channels selected, it will take approximately 30 seconds to complete a scan.

CHOOSING CHANNELS

Select the 'Channel' option from the Settings menu. A popup dialog will appear and various channels may be selected by checking them. Use the buttons to select or deselect ranges of channels. After you are satisfied, exit the dialog. The new channel list will be scanned.



FIGURE 7 – Choosing Channels

DATABASES

The data being viewed can be stored for later retrieval in a database. This data is then stored into relational tables that can be formatted into reports on the information. The following options can be found in the 'Database' menu.

CREATION

Choose a filename for your database. Database files can be up to 4GB in size. As the database approaches this size, it will be necessary to create another database.

All appropriate tables will be created here. A popup box will tell you if the database has been successfully created. If you receive an 'Access Denied' error, the current user does not have permission through either Windows or SQL Server to create the database. If this happens, you must check on these permissions.

OPENING

After a database has been created, it can be opened to collect data or to generate reports on existing data. Choose from the list of databases found to be registered with SQL Server.

If the database has been successfully created, the second set of LED's on the top panel will begin to blink in sequence.

CLOSING

When switching databases or deciding to stop collecting data, simply choose this option to close the database.

REPORTS

After sufficient data has been collected, a variety of reports can be generated to view the history of the information in MAC list mode or spectrum mode. The options for these reports are in the 'Report' menu and can only be accessed after a database has been opened.

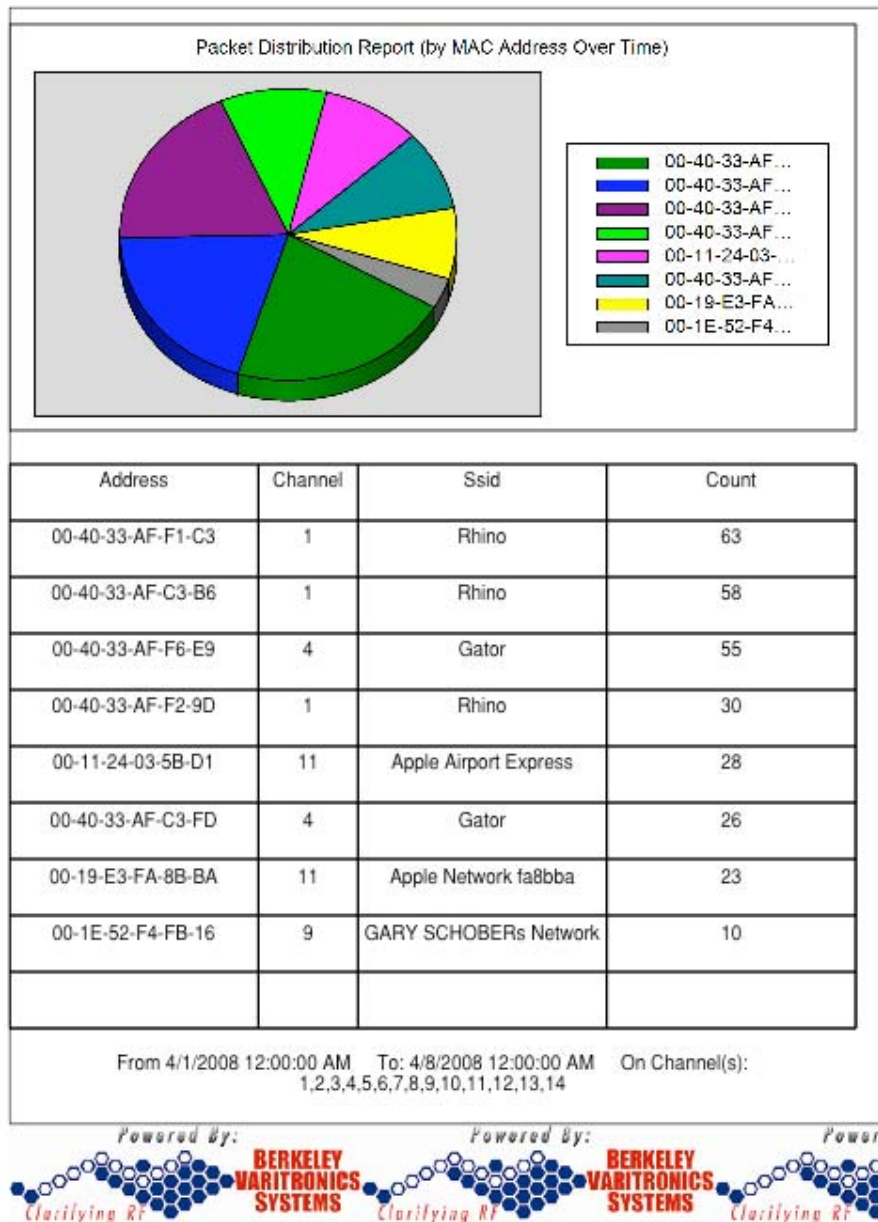


FIGURE 11– Sample Report

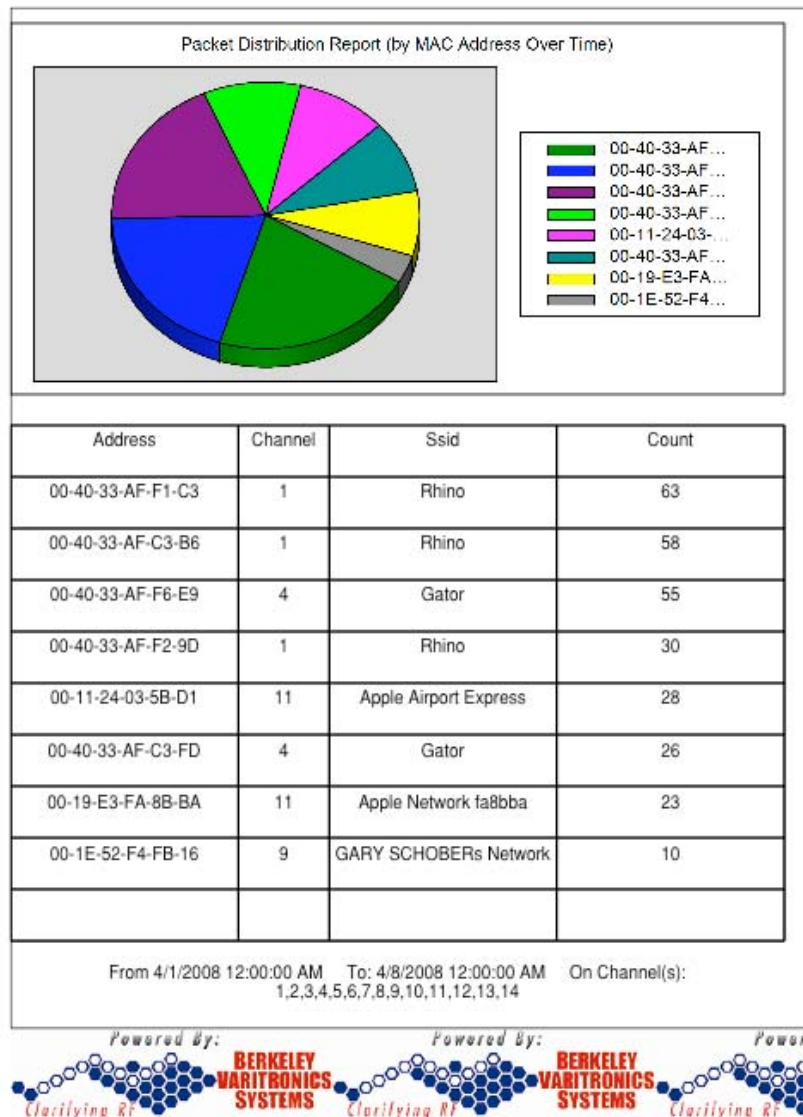


FIGURE 12– Sample Report

ENTRY FIELDS

FROM/TO DATES

Here the range of data can be selected. Choose times in which you would like to see the data. Make sure to select a data range when data has been collected.

CHANNEL SELECTION

Channels can be selected similar to when choosing channels in real-time mode. Press the button to popup the channel selection dialog. The resulting list of channels will appear in the text box. DO NOT manually enter the channel list in the text box.

RSSI THRESHOLD

Here you can select to view only data above a certain RSSI level and eliminate data below this level.

MAC LIST

PACKET DISTRIBUTION

This report will show a pie chart and list of packets seen for each MAC address over the time period selected and above the RSSI threshold.

Only packets in the channel list selected will be seen.

RSSI OVER TIME

This report will show RSSI over time for each MAC address. Here significant dropoffs can be spotted.

SPECTRUM

CHANNEL POWER OVER TIME

In this report, the channel power reported over the time period will be graphed.

OUTPUT

SAVE TO PDF

Any report can be saved to Adobe Reader format (PDF). Simply click on the disk icon in the report.

SAVE TO EXCEL

Any report can be saved to MS* Excel format (XLS) as well. Click on the disk icon in the report.

PRINT

Each report can be printed. Click on the page preview to make sure that the report properly fits on the page and to determine if the report needs to be switched between landscape and portrait.