



“Poolside Service at the Touch of a Button”

Installation Guide

Rev A



“Poolside Service at the Touch of a Button”

Installation Guide

Rev. A

Notice

This guide is provided for informational use only. Every effort was made to ensure accuracy of information in this guide at the time of printing. BarMate reserves the right to provide updates to content information not available at the time this guide was printed.

Changes or modifications to the BarMate System not expressly approved by BarMate could void the user's authority to operate the equipment.

Copyright

2008 BarMate Ltd. All rights reserved. BarMate and its logo are trademarks of BarMate. All other trademarks and registered trademarks are the property of their respective owners. No part of this guide may be reproduced manually or electronically without written permission from BarMate.

Trademarks

BarMate is a trademark or registered trademark of BarMate in the United States, European Union and/or other countries.

Federal Communications Commission (FCC) Notice

The BarMate system complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The Service Request Device (SRD) and the Service Area Manager (SAM) have been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The Gateway has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a

particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CE Compliance

The BarMate System has been designed and tested to be CE compliant under the R&TTE Directive.



Important Safety Instructions

When installing/using this product, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

1. Read and understand all instructions.
2. Do not use the Gateway near water.
3. Clean only with dry cloth.
4. Do not locate the antenna near overhead light or power circuits, or where it can fall into such power lines or circuits. When installing the antenna, take extreme care to avoid touching such power lines or circuits, as contact with them can be fatal.
5. Refer all servicing to qualified service personnel. Servicing is required when the equipment has been damaged in any way and does not operate normally.

SAVE THESE INSTRUCTIONS

Symbols

Failure to comply with safety precautions in this guide violates the intended use of this product. The following safety symbols appear in this guide:



GENERAL HAZARD

This symbol represents a general warning or caution.

About This Guide

Purpose and scope

The purpose of this guide is to introduce the BarMate system and to help you successfully setup and install this product. The scope of this guide describes the BarMate System, components, and capabilities, and provides instruction for installing, setting up, operating, and verifying installation and operation of the system once installed.

Audience

This guide is intended for trained BarMate Installers. It is assumed that installers have been trained, and have a basic understanding of the BarMate System and installation process when installing a system.

Organization

The following table is a roadmap to using this guide efficiently.

Refer to...	To...
Chapter 1, The BarMate Overview	Understand the BarMate System and how it functions
Chapter 2, Installation	Install the BarMate system components
Chapter 3, Management Centre Setup and Operation	Setup and operate the BarMate software. This section also describes how to upload and configure maps, calibrate a SAM, and configure an SRD.
Appendix A, BarMate Site Survey	See an example survey
Appendix B, Specifications	Understand cable wiring and pinouts
Acronyms	See a list of the acronyms used in this guide and the words they represent.

Related information

Use this guide in conjunction with a completed BarMate site survey. The site survey form is located on page 4 of this guide.

Conventions

The following table describes typographical and icon conventions used throughout this guide.

Description	Example
A switch you press on a device appears in this TYPEFACE .	Press the START switch.
Text you must enter exactly as shown appears in this <code>typeface</code> .	Type a : \set .exe in the dialog box.
A greater than symbol (>) indicates choosing a submenu from a menu.	On the status bar, choose Start > Settings >Network Connections .
A plus sign (+) indicates simultaneous keystrokes.	Press Ctrl+s.
A comma (,) indicates consecutive keystrokes.	Press Alt+f, s
An arrow represents a tip or conveys related information.	

Contents

Chapter 1 BarMate Overview	4
About BarMate.....	4
How BarMate works.....	4
System description.....	4
Technical description of system components	4
BarMate software	4
Chapter 2 Installation	4
Site survey overview.....	4
Installation overview.....	4
Required tools	4
Before installation.....	4
BarMate system contents	4
Installation guidelines	4
Installing Gateway.....	4
Installing the BarMate software.....	4
Launching the Management Centre Application	4
Installing the Solar Panel	4
Mounting an Antenna Array	4
Assembling a linear antenna array	4
Assembling a square array	4
Mounting a COM Antenna	4
Installing a SAM	4
Installing the battery	4
Mounting the SAM	4

Connecting the Antenna Array, COM Antenna, and Solar Panel	4
Installing SRDs	4
SRD orientation	4
SRD attachments	4
Disconnecting an SRD from a Bracket Mount	4
Chapter 3 Management Centre Setup and Operations	4
Setting up the Management Centre	4
Setting up maps	4
About map files	4
Uploading and configuring maps	4
Configuring the SAM	4
Identifying the SAM in the BarMate software	4
Configuring an SRD for calibration	4
Calibrating the SAM	4
Reconfiguring the SRD for operation	4
Overview of the Management Centre Application Interface	4
Map tab	4
Service Requests tab	4
Waiter Config tab	4
MC Config tab	4
SAM Config tab	4
SRD Config	4
Messages tab	4
Settings tab	4
Appendix A BarMate Site Survey Example	4
Appendix B: Square Array Drawing Specification	4
Acronyms	4

Chapter 1 BarMate Overview

This chapter provides an overview of the BarMate system. Topics discussed in this chapter include the following:

- **About BarMate on page 4**
- **How BarMate works below**
- **System description on page 4**
 - **Technical description of system componentson page 4**
 - **BarMate software on page 4**

About BarMate

BarMate is a wireless system that allows guests to request bar service with the press of a button. The wireless device sends a request for service signal to a nearby bar. Service is then provided by a waiter/waitress. After providing prompt service, the waiter/waitress clears the signal indicating the guest has been served.

The BarMate system is designed to be scalable, flexible, and accurate for any resort environment.

How BarMate works

To request service, a guest presses a button on a Service Request Device (SRD), which sends a signal to the Management Centre (MC) or the Master Management Centre (MMC), usually located at the bar or refreshment area to request service. The Management Centre consists of a Gateway and a touchscreen personal computer (PC) running BarMate software. A Waiter will identify the location of the guest using the BarMate software, and promptly respond to the guest requesting service. An LED will illuminate on the SRD to help identify the guest requesting service. After responding to a guests request for service, the Waiter clears the signal on the SRD to indicate the guest has received the requested service. Clearing the signal will switch the LED on the SRD off and send relevant service data (date and time service request was fulfilled) to the Management Centre.

Wireless communications between the SRD and the Gateway are managed by the Service Area Manager (SAM), inconspicuous devices located between the SRDs and the MC to manage wireless communication traffic between devices and assist with identifying the guests' location.

System description

The following diagram illustrates the BarMate System. A description of system components follows.

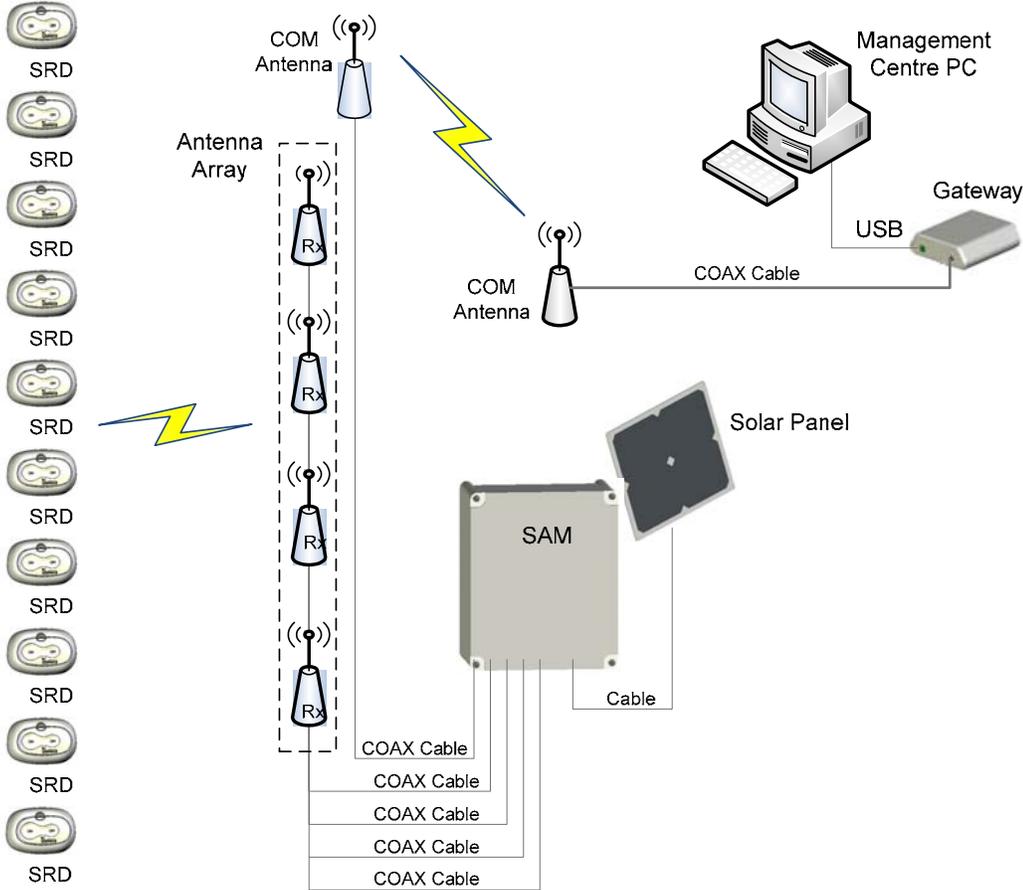


Figure 1: System Block Diagram.

Technical description of system components

The BarMate system sends and receives data using multiple devices. Each device is described below.

Service Request Device (SRD) – A push button device that Transmits (TX) and Receives (RX) a signal to and from the Service Area Manager (SAM). An LED (Light Emitted Device) illuminates on the SRD, indicating service request. The illuminated LED identifies the guest requesting service and also lets the guest know the SRD is active. This is a battery powered, wireless device that attaches to a surface, typically on a sun lounger.

Service Area Manager (SAM) – A device that manages service requests from SRDs. The SAM transmits and receives signals to and from SRDs using the Antenna Array. The SAM also uses a COM antenna to transmit and receive signals between the SAM and the Gateway. The SAM is powered with a battery that can be recharged using a solar panel and cable. For environmental protection against outdoor elements, the SAM shell (box casing) is a NEMA 4 rated enclosure.

Antenna Array – Composed of four antennas that connect to a SAM. The array transmits and receives signals between SRDs and a SAM. The array locates the SRD requesting service by triangulation.

COM Antennas – Connect to the SAM and to the Gateway (one antenna for each device) by coaxial cable. The COM antennas transmit and receive signals between the Gateway and the SAM.

Solar Panel – Connects to the SAM to recharge the battery.

Gateway – Communicates wirelessly with one or more SAMs using a COM antenna. The Gateway is part of the Management Centre (MC) and connects to the MC computer using a USB cable. The COM antenna attaches to the Gateway with a coaxial cable.

Management Centre (MC) – Composed of a Gateway and a touchscreen computer running the BarMate software. The MC is usually located in the bar area, and provides the

interface between the BarMate system and the site's wait staff. A site may have multiple MCs. The MC computer connects to the Gateway with a USB cable.

Master Management Center (MMC) – Like the MC, the MMC is composed of a Gateway and a touchscreen computer running the BarMate software. At sites that have multiple MCs, the MMC routes messages between MCs as required. The MMC can also function as an interface between the BarMate System and the site's wait staff.

BarMate software

The BarMate software runs on the MC or MMC computer. The BarMate software enables waiters to identify the location of guests requesting service and to indicate when the guest has been served. The BarMate software enables Administrators to manage and assign waiters at specific MC locations.

Chapter 2 Installation

This chapter describes how to install the BarMate system. Topics discussed in this chapter include the following:

- **Site survey overview on page 4**
- **Installation overview on page 4**
 - **Required toolson page 4**
 - **Error! Reference source not found.Before installationon page 4**
- **BarMate system contents on page 4**
- **Installation guidelines on page 4**
- **Installing Gatewayon page 4**
- **Installing the BarMate software on page 4**
- **Launching the Management Centre Application on page 4**
- **Installing the Solar Panel on page 4**
- **Mounting an Antenna Array on page 4**
 - **Assembling a linear antenna array on page 4**
 - **Assembling a square array on page 4**
- **Mounting a COM Antenna on page 4**
- **Installing a SAM on page 4**

- **Installing the battery on page 4**
- **Mounting the SAM on page 4**
- **Connecting the Antenna Array, COM Antenna, and Solar Panel on page 4**
- **Installing SRDs on page 4**
- **Disconnecting an SRD from a Bracket Mount on page 4**

Site survey overview

Before the BarMate system is installed, a site survey should be completed by BarMate-trained personnel. The site survey involves examining the installation site, and determining the number of BarMate devices needed, where the devices should be located, and how they should be mounted.

For example, the site survey should identify the number of SRDs, SAMs, solar panels, Gateways, and MCs needed for a particular site. Also, the survey should identify the type of antenna arrays (square or linear) needed, and the cable lengths necessary to connect devices. The survey should also note where each device will be mounted and the hardware and tools necessary to mount the device.

Information from the site survey should be recorded on the site survey form located on page 4 of this guide. If more space is needed to record information, additional pages can be stapled to the site survey form.



Note: BarMate devices, such as SRDs, solar panels, and antennas, include mounting brackets and screws. However, depending on the requirements of a particular site, additional hardware and tools may be required. Any additional hardware and tools required for installation should be noted on the site survey.

Installation overview

Each installation of the BarMate system will be based on the BarMate site survey (see “Site survey overview” on page 4 and the site survey form on page 4).

This guide describes installation of a basic system. Refer to the completed site survey form for the number of SAMs, SRDs, and Gateways to be installed at a specific site. The site survey also specifies the cable lengths required between components and the approximate location where components should be installed.



Note: The BarMate system is for industry/commercial use, and installation of the system requires specific knowledge and training. For these reasons, the BarMate system should only be installed by personnel who have been trained by BarMate to install the system.

Required tools

Installation of the BarMate system requires the following tools:



Note: Depending on the requirements of a particular site, additional tools and hardware may be required. Any additional tools or hardware should be noted on the site survey.

- Screw driver
- Drill
- Electrical tape
- Wire splicer
- Refer to the site survey for additional tools and hardware that may be needed for a specific site.

Before installation

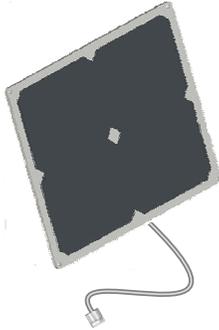
Before you begin installing the BarMate system, complete the following tasks:

- Make sure you have a completed site survey.
- Use the completed site survey to verify that you have the items required for installation (for example, the correct number of BarMate system components, any additional mounting hardware and tools).

BarMate system contents

The BarMate system includes the following components. See the site survey for quantities and installation plan for a specific site.

Solar Panel Assembly



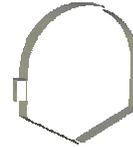
(1) Solar Panel with Power Cable



(1) Solar Panel Mount and 4 screws



(1) Small Mounting Bracket and (4) screws



(2) Hose Clamps



(1) Power Extension Cable with Cable-to-Cable connectors



(1) Pole Mount and (4) screws

SAM



(1) SAM with cover and (4) screws



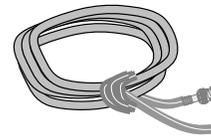
(1) Battery



(4) Mounting Bracket and screws

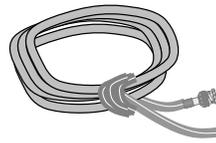


(1) COM Antenna, (1) Heavy-duty steel bracket, (2) U-bolts



(1) Coaxial cable (See site survey for cable lengths)

Antenna Array



Square Array may include:

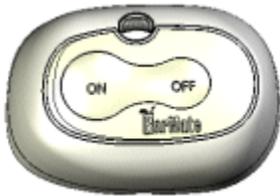
- (1) Mast
- (4) Horizontal Tubes
- (2) Plexi-glass plates with 1/4 - 20 bolts, washers, and nuts

(4) Antennas and
(2) brackets per
antenna

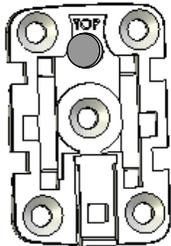
(4) Coaxial cables
(See site survey for
cable lengths)

See site survey for Square Array
& Appendix B Drawing
Specification

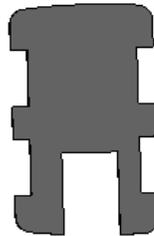
SRD (see site survey for details)



(1) SRD



SRD Mounting Bracket
with (4) screws



SRD Mounting
Adhesive



Tie-Wraps
(2 per SRD)

Gateway and related components



(1) Gateway



(1) USB Cable
Assembly



(1) COM Antenna
(1) Heavy-duty steel
bracket
(2) U-bolts



(1) Coaxial cable
(See site survey for
cable lengths)

Installation guidelines

When installing the BarMate system, some devices should be mounted and powered on before others. The following guidelines indicate the order in which devices should be mounted or powered.

- Mount the solar panels, antenna array, and COM antennas before connecting them to their respective devices.
- Power up the Gateway, launch the Management Centre (MC) application, and then power up the SAM. Powering up the devices in this order allows the SRDs to be registered into the system. If a SAM is powered up before the Gateway and the MC application are started, the SAM will have to be powered down, and then repowered in order for the SRDs to be registered in the system.
- If there are multiple SAMs, power up the SAM closest to an active Gateway first. When a SAM is powered up, it must be in range of an active Gateway or another active SAM that is in range of an active Gateway.
- Before powering all the SRDs (snapping them into their mounting brackets), calibrate the SAM with a single SRD. After the SAM is calibrated, the other SRDs can be powered on. For more information about calibrating, see “Configuring the SAM” on page 4.

Installing Gateway

Generally, the Gateway will be located next to the Management Centre PC. Refer to the site survey for the exact location. Also, the Gateway's COM antenna should be mounted before it is connected to the Gateway.



CAUTION:

The Gateway can be damaged if it gets wet. Do not place liquids on this device or allow liquids to accidentally spill on this device.

To install Gateway

- 1 Place the Gateway near the PC to which it will be connected. It is recommended that the Gateway is placed in an elevated position with a good line of sight to at least one SAM.
- 2 Connect the coaxial cable to the N-Female connector on the COM Antenna. Connect the other end of the cable to the TNC connector on the Gateway.
- 3 Connect one end of the USB cable to the USB port on the computer. Connect the other end to the USB-B port on Gateway.

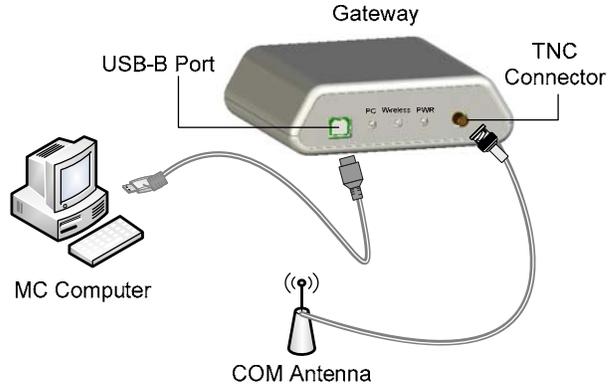


Figure 2: Gateway connections.

- 4 Verify that the LEDs illuminate green to indicate successful connection and communications.

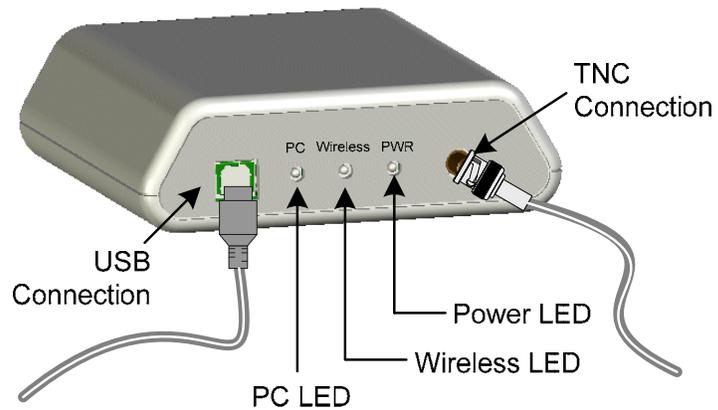


Figure 3: Gateway LEDs and connections.

- **PC LED:** Illuminates green to indicate successful communications between Gateway and PC.
- **Wireless LED:** Illuminates green to indicate successful wireless communications.
- **Power LED:** Illuminates green to indicate Gateway is on.

Installing the BarMate software

The following procedure describes how to install the BarMate software from a CD.

To install the BarMate software

- 1 Insert the BarMate CD into the Master Management Centre computer's disk drive.
- 2 From the Windows Start key, select **Run**.
- 3 In the Run dialog box, type `D:\BarMateSetup.exe` and click **OK**.

The setup utility begins to install the BarMate Management Centre (MC) application. An icon is placed on the desktop and a BarMate menu option is inserted on the Windows Start menu.

Launching the Management Centre Application

After the BarMate software is installed, you can launch the Management Centre application.

To launch the Management Centre application

- 1 Click the BarMate icon on the desktop, or click the Windows **Start** menu and select **Programs > BarMate**.

A prompt displays asking if you want to configure the Management Centre.

- 2 Select one of the following options:
 - a. To configure the Management Centre at a later time, click **No**. The Management Centre's Map tab displays.
 - b. To configure the Management Centre now, click **Yes**. See "Setting up the Management Centre" on page 4.

Installing the Solar Panel

If specified in the site survey, a solar panel can be used to recharge the battery in the SAM. Solar panels should be mounted before they are connected to a SAM.

To install a solar panel

- 1 Assemble the Solar Panel and mounting assembly:
 - a. Attach the solar panel to the Large Panel Mount with the 4 screws.

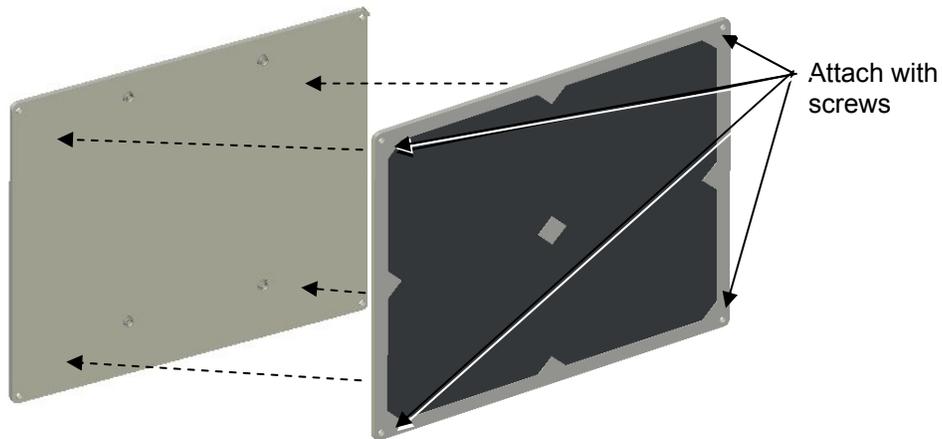


Figure 4: Solar panel and large panel mount.

- b. Attach Small Mount to rear of Solar Panel Assembly with 4 screws.

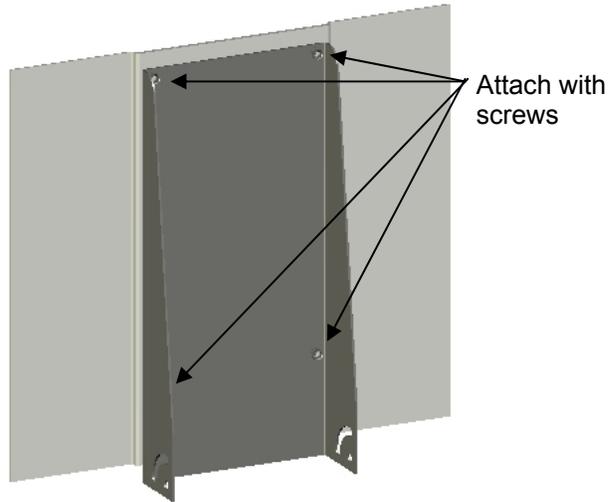


Figure 5: Solar panel assembly and small mount.

- c. Attach Solar Panel Assembly to the Small Post Mount with 4 screws.

▶ **Note:** Tighten screws to secure panel, while allowing ability to adjust solar panel when Solar Panel Assembly is secured to a fixed object, such as a pole, wall, or roof.

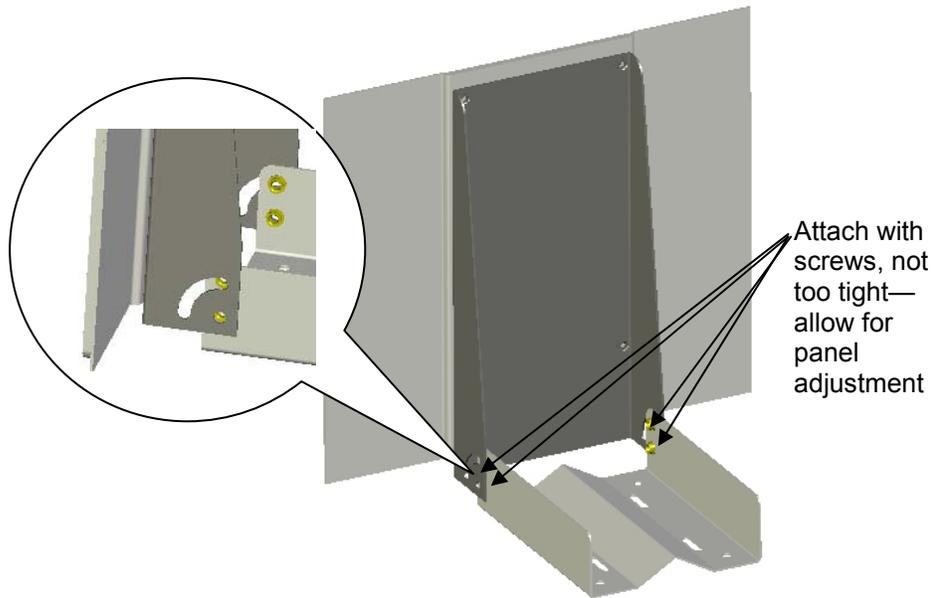


Figure 6: Solar panel assembly and small post mount

- 2 Mount the Solar Panel Assembly to a fixed object such as a pole, roof, or wall.

▶ **Note:** Solar Panel should be located and angled to receive a minimum of 6 hours of direct sunlight (see BarMate site survey).

- 3 Secure Solar Panel Assembly and post mount to pole using 2 hose clamps.

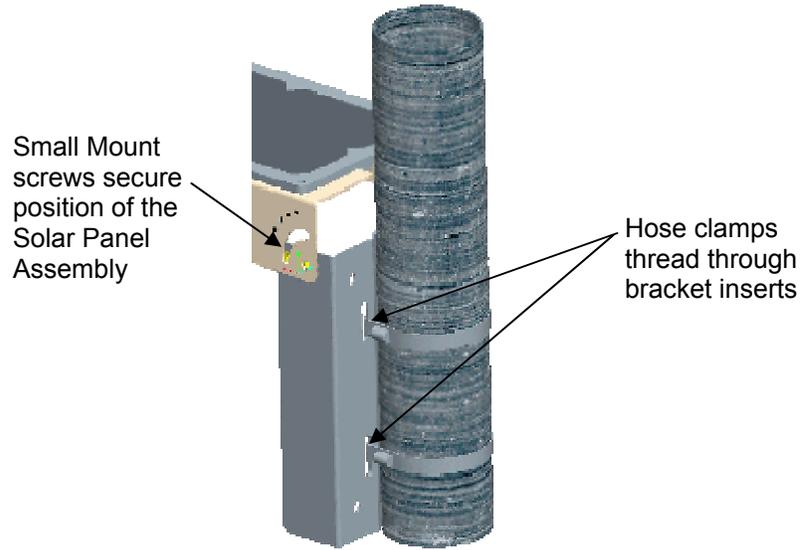


Figure 7: Small post mount attached to pole.

- 4 Adjust Solar Panel to have an unobstructed view of the sun, and tighten Small Mount screws to secure Solar Panel Assembly in position.

Mounting an Antenna Array

The antenna array is composed of four antennas that connect to a SAM. There are two types of arrays: a Linear Array and Square Array. (See **Error! Reference source not found.**) Refer to the site survey for guidance on the type of array to install.

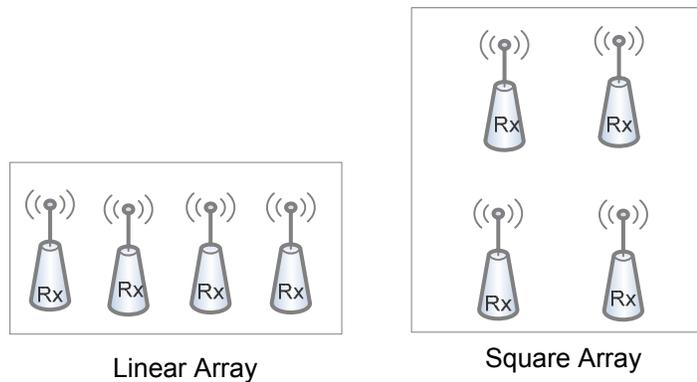


Figure 8: Linear and Square Arrays.

The antenna array should be connected to the SAM only after the SAM and the antennas have been mounted. The following procedures describe how to assemble both a linear and a square array.

Assembling a linear antenna array

The site survey should indicate where and how the antennas will be mounted. The following procedure describes how to assemble a linear antenna array.

To assemble a Linear Array

- 1 Attach Antenna enclosures to surface with brackets in a straight line. Refer to site survey for distance between antennas.
- 2 Attach coaxial cable to the antenna enclosure and dress cable as described in site survey.

- 3 After the SAM is mounted and operational, connect the antennas in the array to the SAM. See “Installing a SAM” on page 4.

Assembling a square array

The site survey should indicate where and how the array is to be mounted. The following procedure describes how to assemble a square antenna array.

To assemble a Square Array

- 1 Attach four 4-hole corner brackets to Mast (long, grooved aluminium pole).
- 2 Create a “X” with (1) long and (2) shorter horizontal tubes. The smaller #8 tapped holes face outside of the “X”.



Note: The shorter horizontal tubes have large holes for connecting to the Mast and smaller #8 tapped holes for connecting Antenna Enclosures.

- 3 Place a plexi-glass plate on top of the “X” and one plexi-glass plate underneath of the “X”.

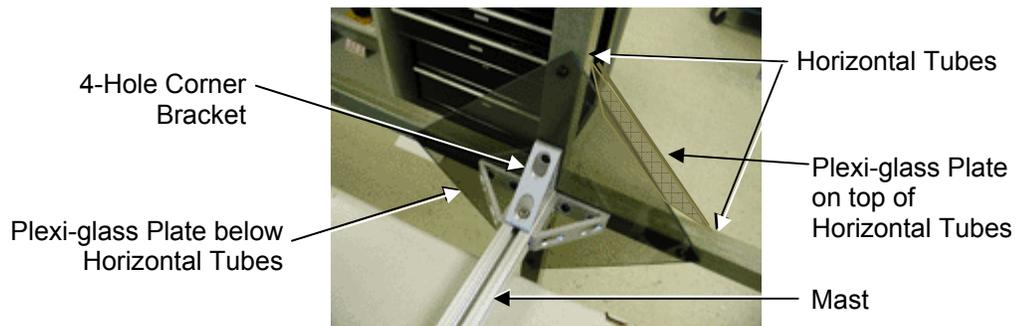


Figure 9: Plexi-glass plates, mast, and horizontal tubes.

- 4 Attach horizontal-plexi-glass assembly to corner brackets on Mast subassembly using ¼-20 bolts, washers, and nuts.

- 5 Use brackets on antenna enclosures to attach RX antenna enclosures to each end point on the “X”; attach the TX antenna enclosure at a to-be-determined point specified by the site survey.

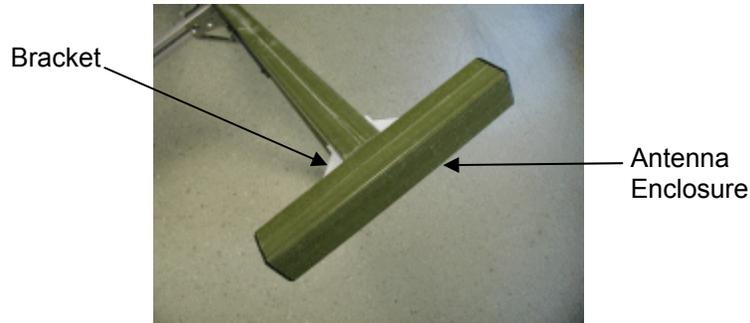


Figure 10: Antenna enclosure and brackets.



Note: When the Antenna Array is fully assembled and mounted, the antenna enclosures should be perpendicular to the ground with the SMA connector pointing downward towards the ground.

- 6 Attach coaxial cable to the SMA jack on the antenna enclosure.
- 7 Use cable clamps to dress cables underneath horizontal tube to centre of Mast, and then run cable down the groove in the vertical Mast and out to the SAM.



Note: Each antenna must have an unobstructed view of the SRD. If an object, such as a structure or tree, is between the components it may interrupt wireless communications (see BarMate site survey).

- 8 After the SAM is mounted and operational, connect the antennas in the array to the SAM. See “Installing a SAM” on page 4.

Mounting a COM Antenna

The SAM and Gateway each require their own COM Antenna. A COM antenna can be mounted on a pole or a flat surface. The included U-bolts allow installation on poles up to 2.0 inches in diameter. Additional hardware may be needed to mount the COM antenna to a flat surface. See the BarMate site survey to determine where the COM antenna should be mounted and what hardware is needed. The following procedure describes how to mount the antenna to a pole.



Note: The COM Antennas for the Gateway and SAM should be mounted before they are attached to their respective devices. Also, the Gateway and SAM should be installed and operational before they are connected to their COM Antennas.

To mount the COM Antenna

- 1 Use two U-bolts to attach the mounting bracket to the pole.
- 2 Remove the mounting nut and washer from the base of the antenna. See Figure 11 on page 4.

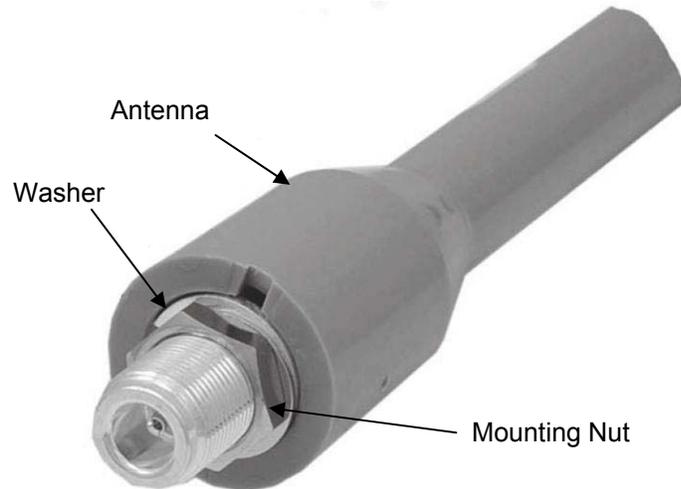


Figure 11: COM antenna base.

- 3 Insert antenna into mounting bracket and secure with washer and antenna mounting nut. Do not over tighten.

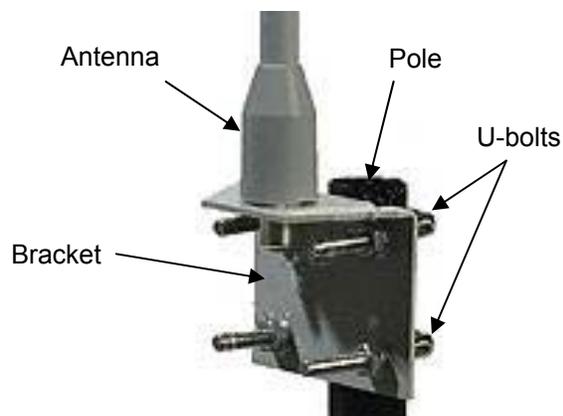


Figure 12: COM antenna and mounting bracket.

- 4 After the COM antennas are mounted and their associated devices (SAM and Gateway) are installed and operational, connect the COM antennas to their respective devices. For information about installing the devices, see “Installing Gateway” on page 4 and “Installing a SAM” on page 4.

Installing a SAM

Each SAM is connected to an Antenna Array (four antennas), a COM Antenna, and a solar panel. Each of these items should be mounted before they are connected to the SAM.

Installing the SAM involves the following tasks:

- Installing a battery
- Mounting the SAM
- Connecting the Antenna Array, COM Antenna, and Solar Panel.



Note: Installing the SAM involves powering on the device. However, you should power up the Gateway and launch the Management Centre application before powering on the SAM. Powering up the devices in this order allows the SRDs to be registered into the system. If a SAM is powered up before the Gateway and Management Centre application are started, the SAM will have to be powered down, and then repowered in order for the SRDs to be registered in the system.

If there are multiple SAMs, power up the SAM closest to an active Gateway first. When a SAM is powered up, it must be in range of an active Gateway.

Each time a SAM is powered on, a prompt will display in the Management Centre asking you to configure the SAM now or later. See “Configuring the SAM” on page 4.

Installing the battery

To prevent damage during shipping, the SAM is shipped without its battery in place. The following procedure describes how to install the battery.



CAUTION:

The Management Centre (Gateway and computer) must be powered and set-up before power is applied to the SAM.

To install the battery

- 1 Remove the four screws from the SAM cover; and then remove the cover.
- 2 Remove the two screws that secure the battery bracket.

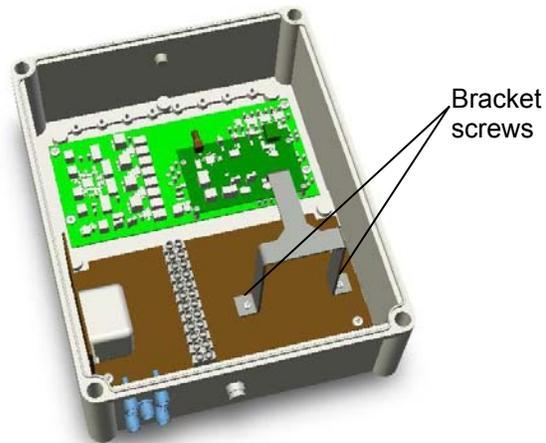


Figure 13: Battery bracket and screws inside SAM.

- 3 Insert the 12V Power Up battery (P/NPUBP-7-12 or equivalent).
- 4 Connect the red (positive) battery cable to the red fast-on connector on the battery. Connect the black

(negative) battery cable to the black fast-on connector on the battery.

- 5 Replace the battery bracket and secure with the two bracket screws.

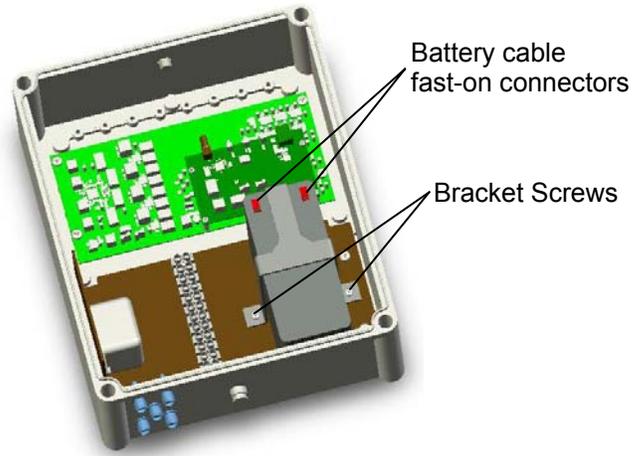


Figure 14: Battery installed in SAM.

- 6 Make sure the Management Centre (Gateway, computer, and software) are running, and then, on the small PC Board in the SAM, switch the power to **ON**.

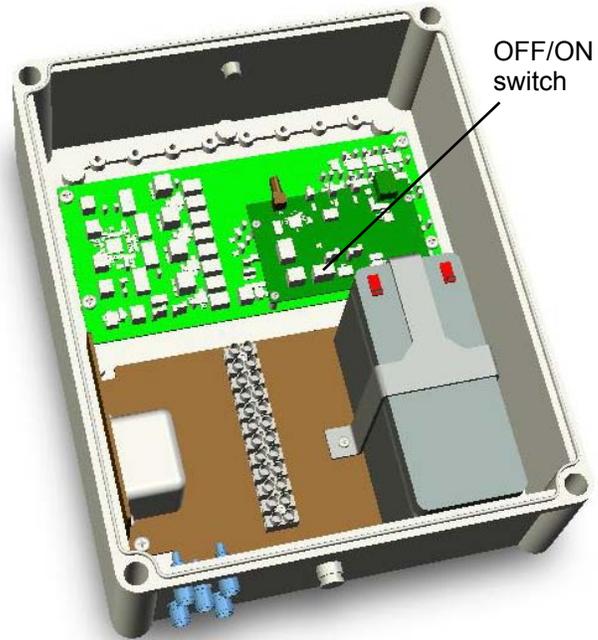


Figure 15: On/Off switch inside SAM.

- 7 Replace SAM cover and secure with four cover screws.

Mounting the SAM

The SAM can be mounted using the included brackets. The following procedure describes how to attach the brackets and mount the SAM.

To attach mounting bracket

- 1 Attach the three mounting brackets to sides and bottom boss locations on the back of the SAM.

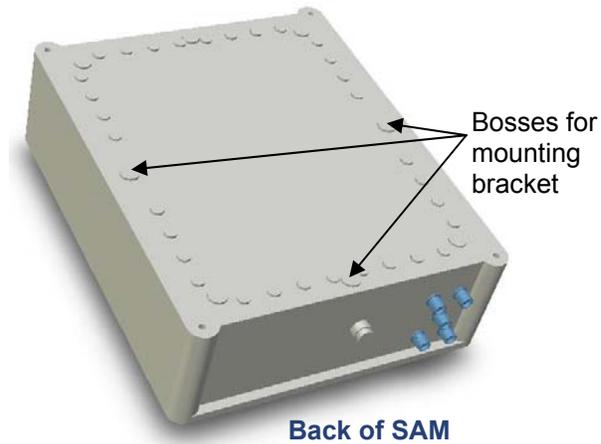


Figure 16: Bosses on the SAM cover.

- 2 Mount SAM to fixed object (refer to BarMate site survey for location and object).

Connecting the Antenna Array, COM Antenna, and Solar Panel

The antenna array, COM antenna, and solar panel should be mounted before they are attached to the SAM. The site survey should indicate the cable lengths needed to connect the antennas and solar panel to the SAM. The following procedure describes how to connect the antennas and solar panel to the SAM.

To connect SAM to Antenna Array, COM Antenna, and Solar Panel

- 1 For the antenna array, use an RG58 coaxial cable and connect one end to the SMA port on one of the RX antennas. Connect the other end to one of the RX connectors on bottom of the SAM. Repeat this for each of the four antennas in the array.
- 2 For the COM antenna, use a coaxial cable and connect one end to the N-Female connector on the COM antenna. Connect the other end to the COM (TNC) port on bottom of the SAM. The TNC port is located in the middle of the four RX ports.

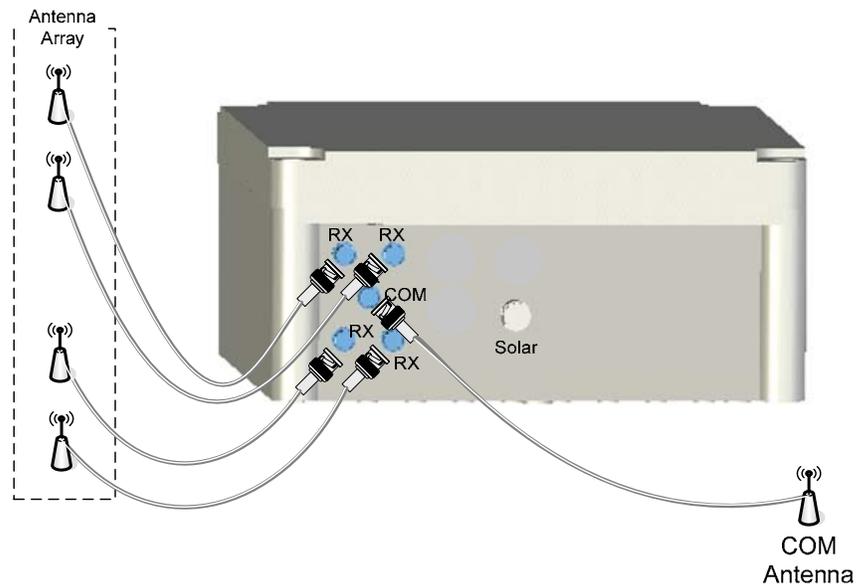


Figure 17: Antenna connections on the bottom of the SAM.

- 3 Connect one end of the solar panel cable to the Mini-Con-X Solar port on the SAM. The other end of the cable is attached to the solar panel. The SAM is now fully powered.

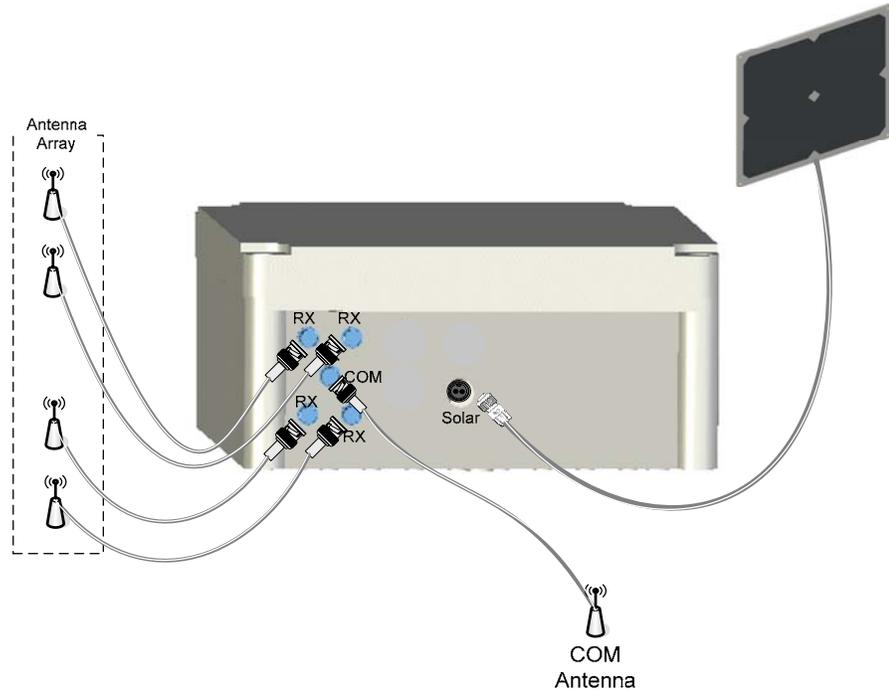


Figure 18: Antenna and solar panel connections on SAM.

- 4 The SAM must be configured before it can function. See “Configuring the SAM” on page 4.

Installing SRDs

The SRD contains an internal battery that is magnetically activated when the SRD is attached to the Bracket Mount. The internal SRD battery is not replaceable. To protect internal electronics, the SRD case is hermetically sealed.

**CAUTION:**

Trying to open the SRD case will likely break the device, and the device will no longer be water resistant.

SRD orientation

The SRD includes an internal antenna, which must be in a vertical position when the SRD is mounted to a surface. The SRD must also be oriented so that the LED is located on top so that servers are able to quickly identify a service request. See Figure 19.

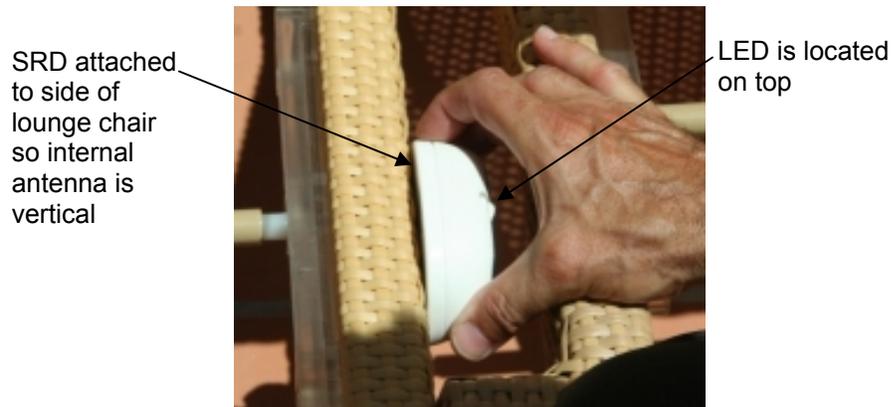


Figure 19: Orientation of SRD when installed.

SRD attachments

The SRD can be mounted to a surface using an adhesive, screws, or zip ties, or a combination of these attachments.

To install and mount the SRD

- 1 Identify a mounting surface that allows the SRD to be mounted in a vertical orientation.

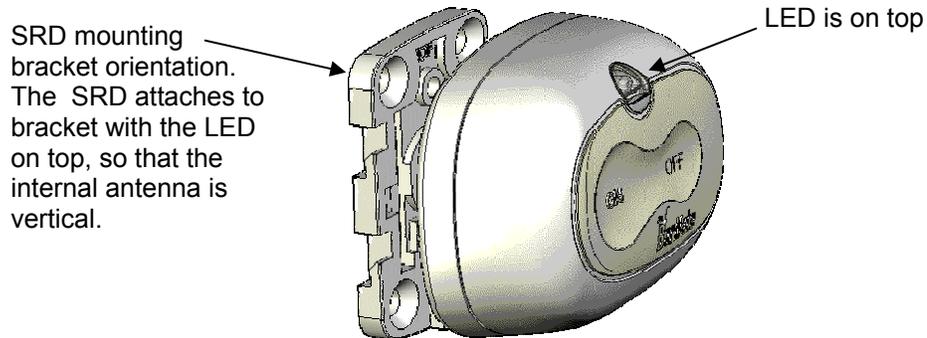


Figure 20: SRD and mounting plate.

- 2 Attach to surface identified in site survey:
 - If an adhesive is used, attach adhesive to bottom of SRD Mounting Bracket.
 - If Tie-Wraps are used, wrap SRD mounting plate with tie wrap, inserting tie wrap through plate glides.
 - If attaching SRD to a round pole, insert screw to screw hole in middle of SRD mounting bracket. The screw will prevent the SRD from rotating around the pole.



Note: If the adhesive is used for attachment, verify the surface is clean and dry.

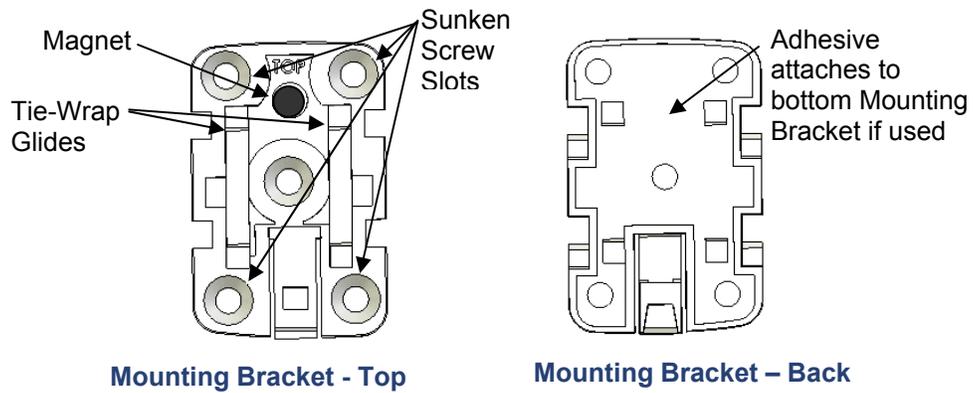


Figure 21: SRD mounting bracket.

- 3 Attach the SRD Mounting Bracket to a surface using screws.

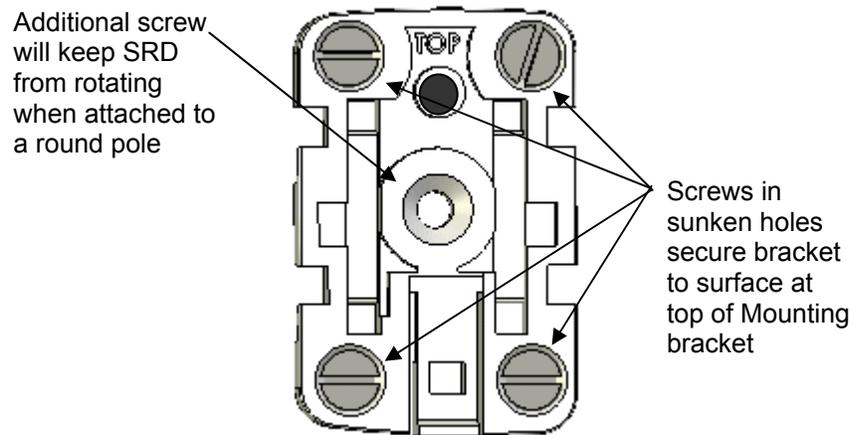


Figure 22: SRD mounting bracket and screws.

- 4 Place the SRD on mounted bracket; observe orientation of SRD and mounting bracket.



CAUTION:

Snapping an SRD into its mounting bracket powers on the device. Before powering the SRDs, the SAM must be calibrated with one SRD. After calibrating the SAM, then snap all SRDs into their brackets. Calibration is an open question at the moment – TBC!!!

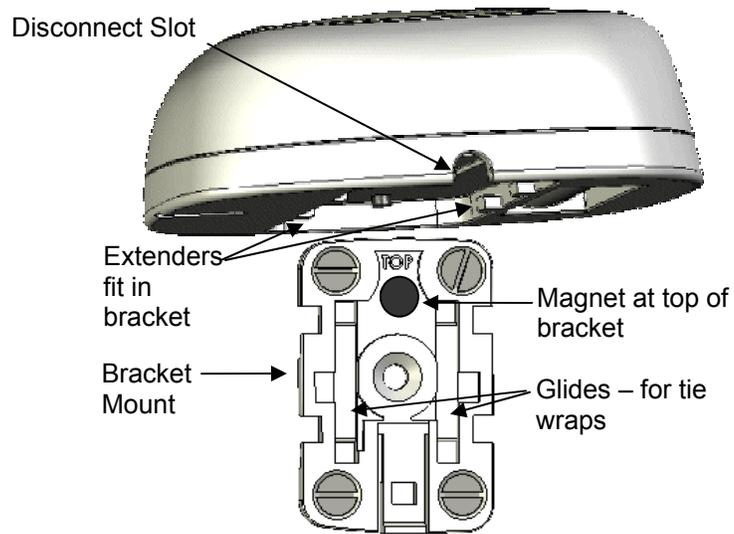


Figure 23: Connecting the SRD to its mounting bracket.

- 5 Slide SRD extenders on glides until they snap in place, locking the SRD to the mounting bracket.

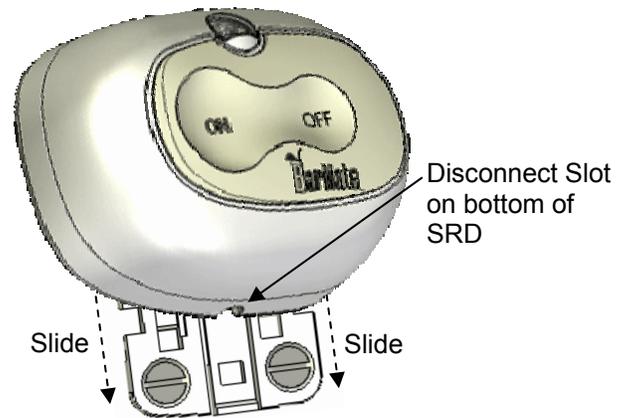


Figure 24: Sliding the SRD onto the mounting bracket.

- 6 To verify that the battery is activated; press the **ON** button. The LED flashes indicating the battery is active. To turn off the LED, press the **OFF** button.

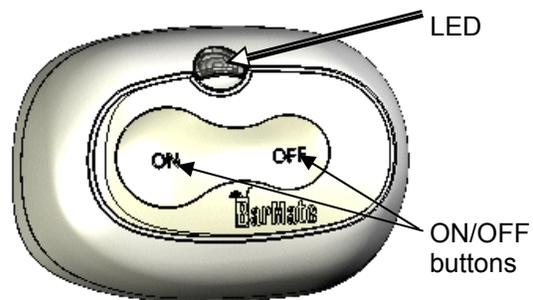


Figure 25: Mounted SRD.

Disconnecting an SRD from a Bracket Mount

Removing an SRD from its Bracket Mount for remounting or replacement is easy using proper tools.

A slotted screwdriver with a 1/8" tip.

To remove an SRD from its Bracket Mount

- 1 Insert the screwdriver into the Disconnect Slot on the side of the SRD.

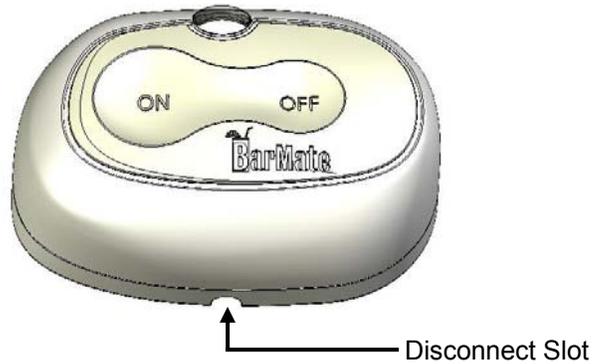


Figure 26: Disconnect slot on the SRD.

- 2 Insert screwdriver and apply slight forward pressure towards the SRD with the screwdriver, while sliding the SRD upward.

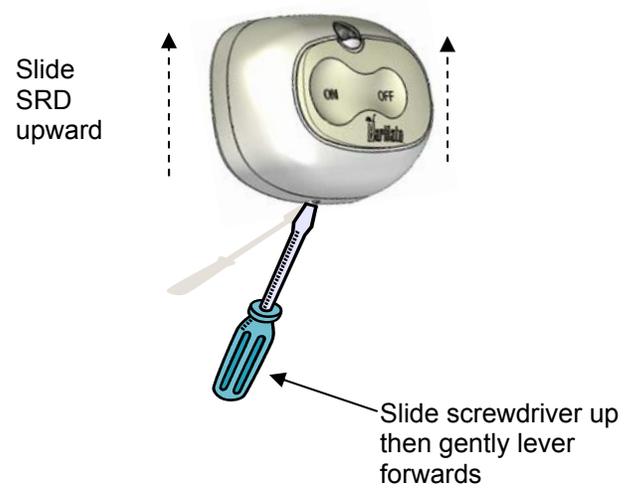


Figure 27: Disconnecting an SRD.

Chapter 3 Management Centre Setup and Operations

The purpose of this section is to provide a basic description of the BarMate Management Centre including how it operates and how to set it up. Topics discussed in this section are as follows:

- **Setting up the Management on page 4**
- **Setting up maps on page 4**
 - **About map files on page 4**
 - **Uploading and configuring maps on page 4**
- **Configuring the SAM on page 4**
 - **Identifying the SAM in the BarMate software on page 4**
 - **Configuring an SRD for calibration on page 4**
 - **Calibrating the SAM on page 4**
 - **Reconfiguring the SRD for operation on page 4**
- **Overview of the Management Centre Application Interface on page 4**
 - **Map tab on page 4**
 - **Service Requests tab on page 44**

- **Waiter Config tab on page 4**
- **MC Config tab on page 4**
- **SAM Config tab on page 4**
- **SRD Config on page 4**
- **Messages tab on page 4**
- **Settings tab on page 4**

Setting up the Management Centre

Configuring a Management Centre can be done when the system is launched for the first time or any time thereafter.

- 1 Launch the Management Centre application. See “Launching the Management Centre Application” on page 4.
- 2 Click the **MC Config** tab and click **Edit**.

The Management Centre Setup prompt displays.

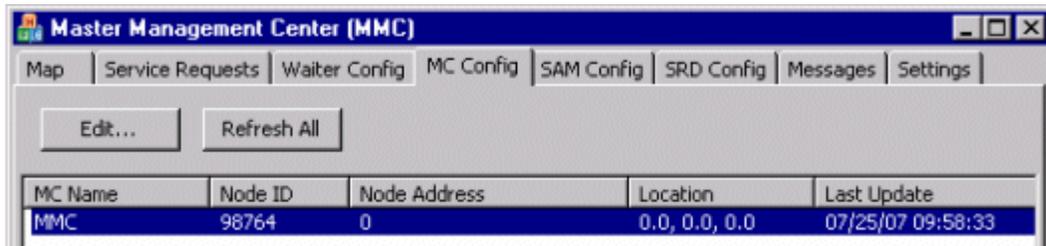
Figure 28: Management Centre Setup prompt.

- 3 In the Name box, enter a name for the Master Management Centre, for example, MMC for Master Management Centre, and click **OK**.

A Node ID is automatically assigned. The location for the Management Centre cannot be entered until maps are entered into the system. The main Management Centre work area displays.

The MC Config tab displays a list of all registered Management Centres in the system and information about each system.

The following example shows that one Management Centre is setup. It shows that the MMC is registered; however, it is not fully configured as its Node Address and Location have not been defined.



MC Name	Node ID	Node Address	Location	Last Update
MMC	98764	0	0.0, 0.0, 0.0	07/25/07 09:58:33

Figure 29: MC Config tab.

This completes the Management Centre setup. SAMs may now be connected to power and register into the system correctly.

Setting up maps

About map files

Map configuration includes uploading a map into the Management and identifying a Management Centres' Node Address and Location. Map file types include .jpeg/jpg, .gif, .bmp, and .png.

Map files may be stored anywhere on the Master Management computer. We suggest that maps be stored in a Maps folder for easy management and browsing.

Uploading and configuring maps

The Management Centre can manage multiple maps. For example, you may want to include a map of the entire resort as well as additional maps that provide a close-up of specific areas.

To configure a map

- 1 Click the **Settings** tab in the Master Management Centre (MMC) and the Settings window displays.

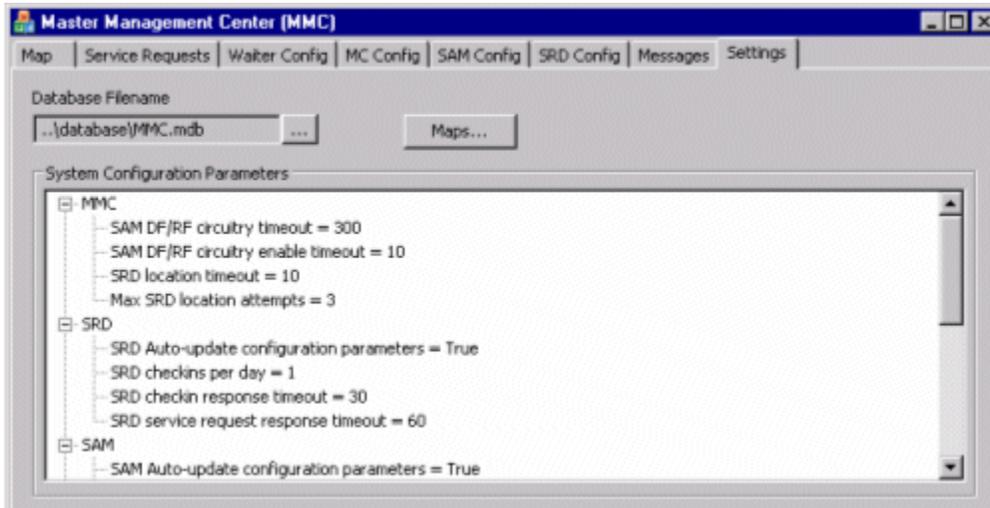


Figure 30: Settings tab.

- 2 Click the **Maps...** button and the Maps Configuration window displays.

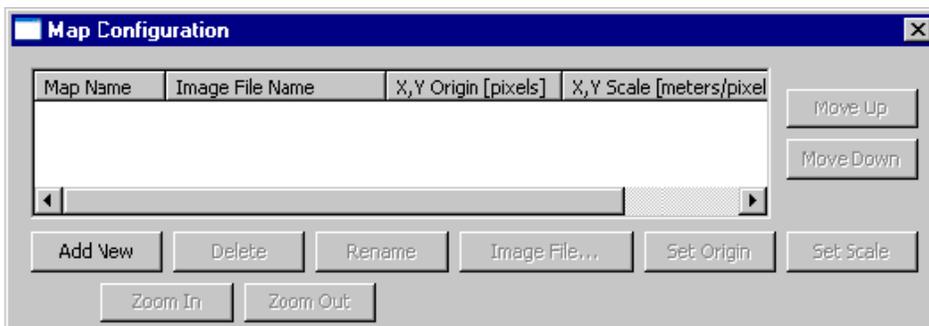


Figure 31: Map Configuration window.

- 3 Click **Add New**, and a prompt asks you to enter a new map name.
- 4 Enter a meaningful map name, for example, Parking Lot, and click **OK**. The Map Configuration window displays with the new map entry.

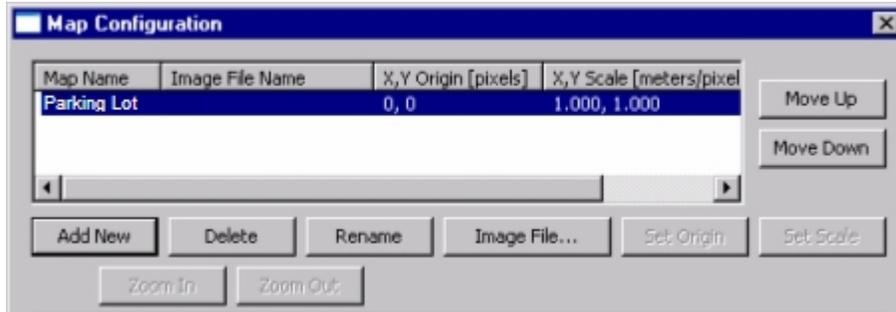


Figure 32: Map Configuration window with new entry.

- 5 Select a Map and click **Image File...** An Open window displays.
- 6 Browse and select the appropriate map, and then click **Open**.

The map is now associated with the Map name.

- 7 Select a map and it displays in the Map Configuration window. The following example, illustrates a parking lot map.

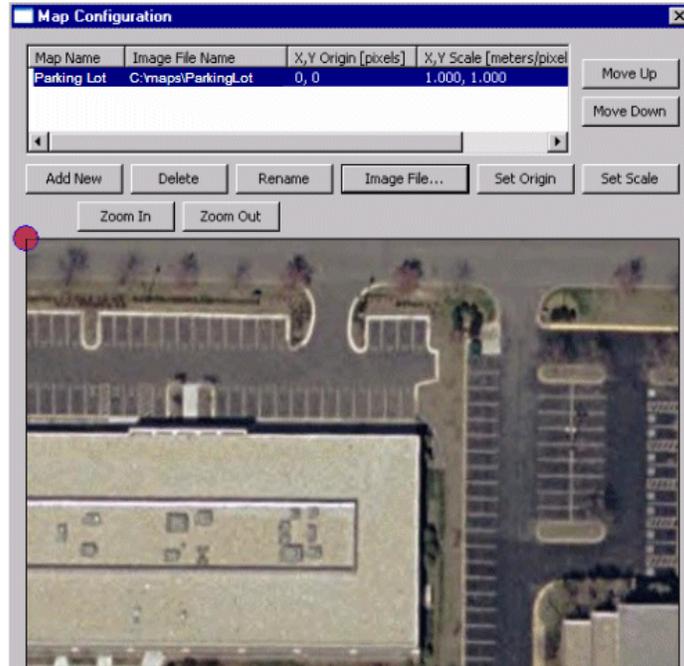


Figure 33: Map Configuration window showing selected map.

- 8 Set the location and scale of the origin.
 - a. Use the mouse to pan the image until you see the origin location (location of Management Centre) on the map.
 - b. Click **Set Origin**. A dialog prompts you to select a point on the map to identify the system origin (location coordinates).
 - c. Click **OK**, and then click the Origin location on the map.

A red dot appears on the map (where you clicked) indicating the Origin, the location of the Management Centre.

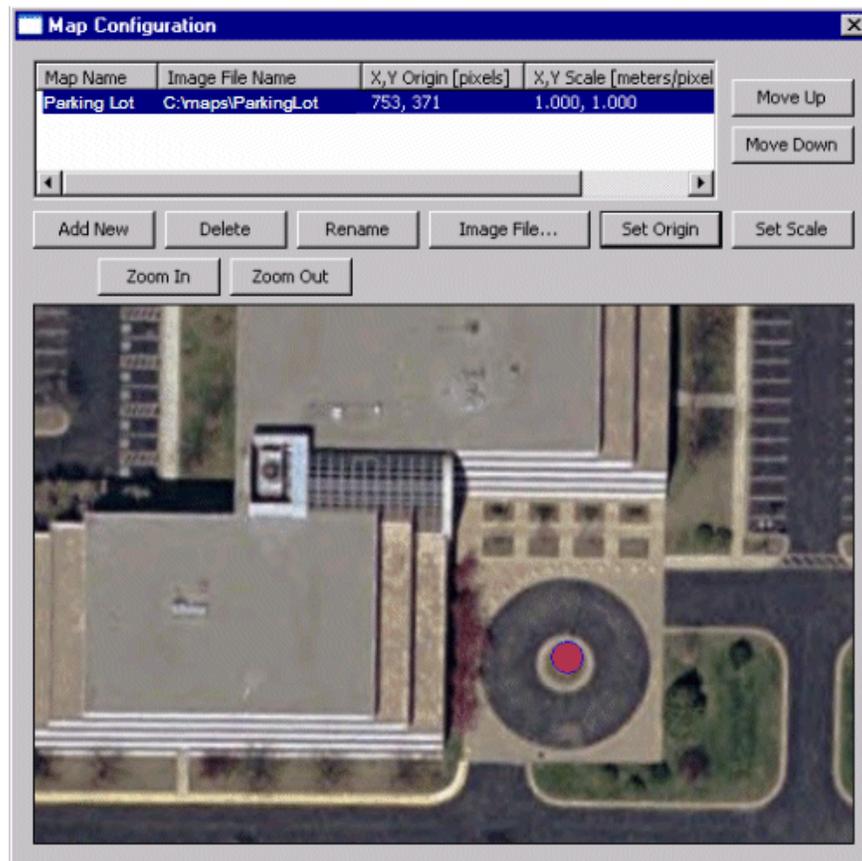


Figure 34: Map Configuration window showing origin location.

- d. Click **Set Scale**.
- e. Specify the scale in meters per pixel for coordinates X and Y, be sure to separate each coordinate with a comma, and then click **OK**.

The following example shows a scale of 1 pixel per meter for coordinates X and Y. Notice coordinates are separated by a comma (,).

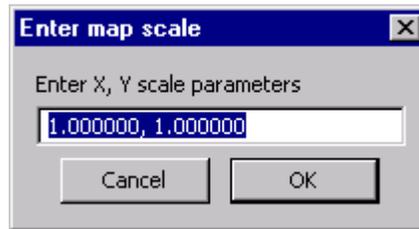


Figure 35: Enter map scale window.

9 The Map is now configured.

If multiple maps are configured in the system, the map at the top of the list will always display when the Management Centre is launched.

10 Select a map and click **Move Up** or **Move Down** to specify the map that will display when the application launches.

11 Click **X** in the upper, right corner to close the window.

- 12 Click the **Map** tab. The Map tab also displays when the Management Centre is launched and will display the primary map.

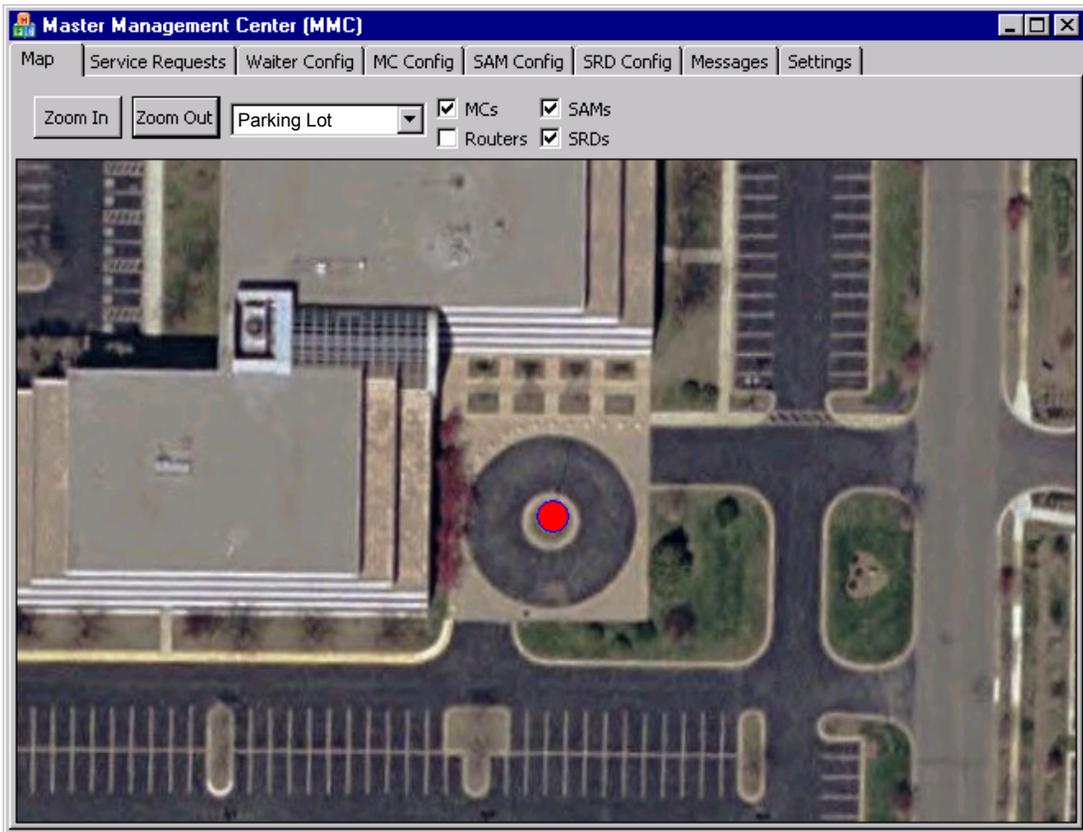


Figure 36: Master Management Centre window showing primary map.

Maps are now uploaded into the Management Centre.

Configuring the SAM

After the SAM and SRDs have been mounted, the SAM must be configured to be fully operational. To configure the SAM the following tasks must be completed:

- 1 Identify the SAM in the BarMate software
- 2 Configure an SRD to calibrate the SAM
- 3 Calibrate SAM
- 4 Reconfigure the SRD for operation

Each task is described in the following sections.



Note: Each time a SAM is powered on, a dialog will display in the Management Centre prompting you to configure the SAM now or later.

Identifying the SAM in the BarMate software

For the SAM to be operational, you must identify the device on the map in the BarMate software.

To identify the SAM

- 1 Click the **SAM Config** tab, and then select and edit the desired Node ID.
- 2 Next, you'll need to locate the SAMs XY coordinates. This button displays a map enabling you to click on the map using the mouse to identify its location. The XY coordinates are automatically calculated by the system.

Configuring an SRD for calibration

An SRD must be configured to the radio frequency (RF) appropriate for calibrating the SAM.

To configure an SRD for calibration

- 1 Click the **Settings** tab, and then select **SRD service request response timeout**.

- 2 Change the SRD service request response timeout value to **0** (zero). The default value is 60.
- 3 Click the **Message** tab, and then select the appropriate SRD.
- 4 In the Test Commands group, select **SRD RF On**.
- 5 Cycle the SRD's power.

SRD re-registers with the Management Control Centre. The SRD is now set to the proper RF for calibrating the SAM.
- 6 See "Calibrating the SAM" on page 4.



Note: After calibration is complete, the RF and SRD service request response timeout values must be set back to their original values.

Calibrating the SAM

After configuring an SRD for calibration, you can calibrate the SAM. Calibrating the SAM is a two-person task in which one installer trains the SAM using a transmitting SRD. Another installer collects calibration data points at the Master Management Centre (MMC).

To Calibrate a SAM

As an installer with the transmitting SRD moves around the circumference of the SAM, the installer will stop at specific increments (for example, every 20 meters) and the SRD will automatically send a signal to the SAM. SAM collects the data points to learn the SRD's position.

Calibration data is collected at the MMC after identifying the SAM Node ID. By specifying the *Polar Coordinates* (Angle and Distance), each time a data point is identified (a signal received from the transmitting SRD), you collect the calibration data. After collecting the calibration data, you clear one of the coordinates, usually the Y box, so that you can collect another data point. The installer with the SRD then moves, maintaining a fixed radial distance from the SRD, and stops so that the MMC can collect another calibration data point. This process is repeated until each

data point around the SAM is collected. This process is also repeated for the location of each SRD.

If there is no response after collecting a data point (an inactive data point textbox) or if a message, "Timeout Occurred," displays, simply re-enter the coordinates. In some cases, the installer with the SRD may also need to adjust their position so that the SAM is able to capture the coordinates.

After completing the circumference, calculate and save the parameters. This saves and updates the database with the SAM calibration.

Reconfiguring the SRD for operation

After the SAM is calibrated, the SRD's parameters must be reset back to their original values.

To reconfigure the SRD for operation

- 1 Click the **Settings** tab, and then select **SRD service request response timeout**.
- 2 Change the SRD service request response timeout value to **60**.
- 3 Click the **Message** tab, and then select the appropriate SRD.
- 4 In the Test Commands group, select **SRD RF Off**.
- 5 Cycle the SRD's power.

SRD re-registers with the Management Control Centre. The SRD is now set to the proper RF to operate in the BarMate system.

Overview of the Management Centre Application Interface

The Master Management Centre manages all elements of the BarMate system. It manages setup and configuration of components; adding and updating system components, for example expanding an existing system to add new maps, Management Centres, SAMs, and SRDs. It also manages day-to-day operations.

When the application is launched the Map tab displays and the primary map displays in the Map window.

The following sections describe the functionality that each tab provides and the primary user of those functions.

Map tab

This tab displays a map of the service area (see Figure 37 on page 4) and can identify the location of BarMate components. The text box identifies which map displays in the Map window. (Multiple service area maps may be installed on a system to provide clear resolution of a service area.) The arrow is a pull-down menu that lists service area map selections. The check boxes display the location of BarMate components — MCs, SAMs, and SRDs (routers are not currently used). The primary users of this tab are Administrators and Waiters to locate components, specifically the location of SRDs (guests requesting service).



Note: Identifying a primary map (the map that appears in the map window when the application is launched) is performed in the MC Config tab.

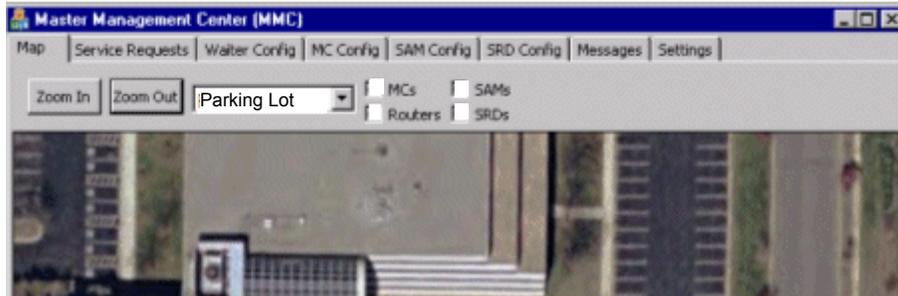


Figure 37: Description of Map tab.

To view BarMate components on a resort map

- 1 Click the text box drop-down menu arrow and select the desired map to display in the map window.
- 2 Click the **Zoom in** or **Zoom out** buttons for optimal resolution of the service area map.
- 3 Click the check boxes to select or deselect components that display on the map: **MCs** (Management Centres), **SAMs** (Service Area Managers), and **SRDs** (Service Request Devices) on the map. Deselecting a check box will remove it from the service area map displaying in the map window.

Service Requests tab

This tab manages service requests. Each state of a request illuminates a different colour to indicate a pending request, the device location, when the request is assigned, when a request is satisfied, and when a request is cancelled. The primary users of this tab are Waiters and Administrative personnel.

Request ID	Status	Request Time	Assigned Waiter	Assignment Time	Fulfilment Time	SRD ID	Location
38	Fulfilled	08/02/07 14:12:53	1	08/02/07 14:12:57	08/02/07 14:12:58	25	0.0, 0.0
37	Fulfilled	08/02/07 14:12:46	1	08/02/07 14:12:49	08/02/07 14:12:50	25	0.0, 0.0
36	Fulfilled	08/02/07 14:12:23	1	08/02/07 14:12:38	08/02/07 14:12:27	25	0.0, 0.0
35	Fulfilled	08/02/07 14:11:39	1	08/02/07 14:12:34	08/02/07 14:12:05	25	0.0, 0.0
34	Cancelled	08/01/07 15:10:33	0		08/01/07 15:13:32	25	0.0, 0.0
33	Cancelled	08/01/07 15:04:21	0		08/01/07 15:04:25	25	0.0, 0.0
32	Cancelled	08/01/07 14:52:12	0		08/01/07 14:52:16	25	0.0, 0.0

Figure 38: Description of Service Requests tab.

To manage service requests

- Click the **Show on Map** button to display the location of the device/guest.
- Click the **Assign Waiter** button and identify waiter taking ownership / responding to the service request.
- After attending guest,
 - Press **OFF** on the SRD to clear the server request.
 - Click the **Cancel Request** button to cancel a request for service without deleting the record (service request).
- Click the **Delete Record** button to delete the database record of request from the system.

Waiter Config tab

This tab manages waiters: logs waiters who are on duty in and out, and provides the ability to add or remove waiters to an MC. The MC that a waiter is logged in on determines the area to which a waiter is assigned. For example, if a waiter logs into MC "A", the waiter is assigned to area "A". The primary users of this tab are Administrators.

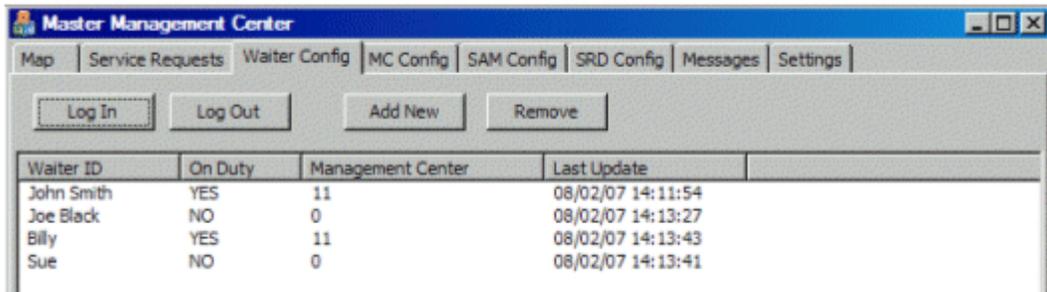


Figure 39: Description of Waiter Config tab.

To manage waiters

- Select the appropriate name or ID and click **Log In** to sign into the BarMate system.
- Select the appropriate name or ID and click **Log Out** to sign out of the BarMate system.
- Click the **Add New** button and enter a new name or ID to add a new waiter to this MC.
- Select the name or ID to be removed and click **Remove** to remove a waiter from this MC.

MC Config tab

Provides a list of all Management Centres (MC) configured in the system. The window displays the location of MCs; buttons provide configuration management of MCs.

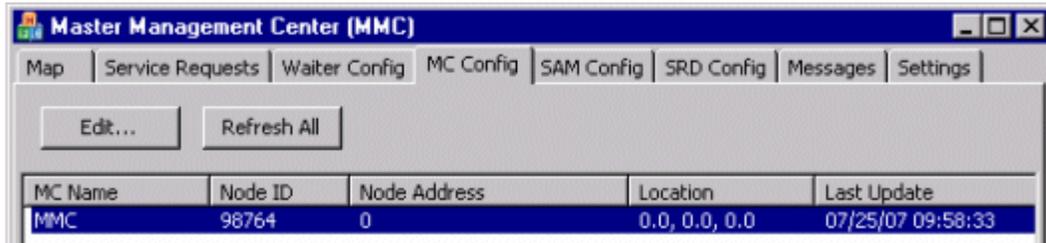
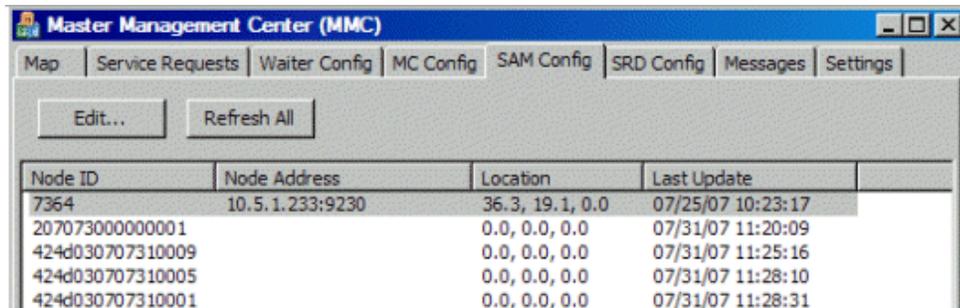


Figure 40: Description of MC Config tab.

- Edit button allows you to edit and update map configurations.
- Refresh All” button is useful for Secondary MCs (non Master). This button clears the local database of all MCs and creates a new list of all MCs from the Master MC. This is useful if the Master MC and a Secondary MC are out of sync.

SAM Config tab

This tab provides a list and pertinent information about all SAMs configured in the system. The window displays the Node ID, Node Address, Location, and last configuration update of each SAM in the BarMate system. Buttons provide configuration management of individual SAMs. The primary users of this tab are BarMate Installers and BarMate Service personnel.



Node ID	Node Address	Location	Last Update
7364	10.5.1.233:9230	36.3, 19.1, 0.0	07/25/07 10:23:17
207073000000001		0.0, 0.0, 0.0	07/31/07 11:20:09
424d030707310009		0.0, 0.0, 0.0	07/31/07 11:25:16
424d030707310005		0.0, 0.0, 0.0	07/31/07 11:28:10
424d030707310001		0.0, 0.0, 0.0	07/31/07 11:28:31

Figure 41: Description of SAM Config tab.

- **Edit** button – allows you to edit and update a specific SAM configuration.
- **Refresh All** button – useful for clearing and updating the local database of all SAMs. It will create a fresh, new list of all SAMs in the system. This is useful if the Master MC and a Secondary MC are out of sync.

SRD Config

This tab provides a list of all SRDs in the system. The window displays the Node ID, Node Address, and the date last SRD registered into the BarMate system. The primary users of this tab are BarMate Installers and BarMate Service personnel.

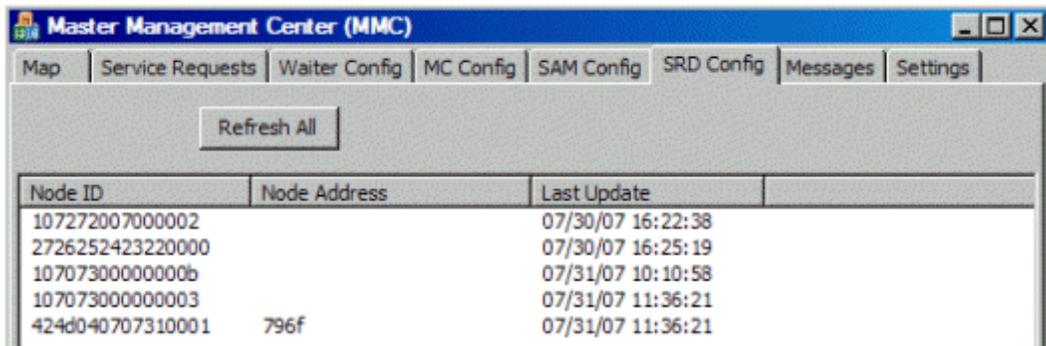


Figure 42: SRD Config tab description.

The **Refresh All** button – clears and updates the local database of all SRDs. It will also create a fresh, new list of SRDs in the system. This is useful if the Master MC and a Secondary MC are out of sync.

Messages tab

This tab is used for troubleshooting purposes. The Message window provides internal status and troubleshooting information exchanged between a Gateway and MC. The primary users of this tab are BarMate Installers and BarMate Service personnel.

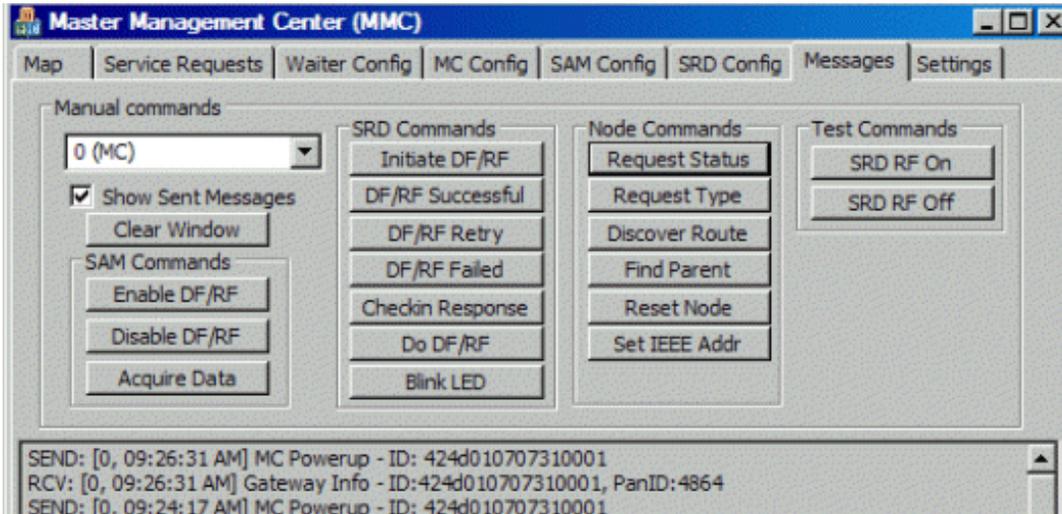


Figure 43: Description of Messages tab.

Settings tab

This tab provides the ability to add and configure new maps to the system and to configure various parameters related to system operation. The primary users of this tab are BarMate Installers and BarMate Service personnel.

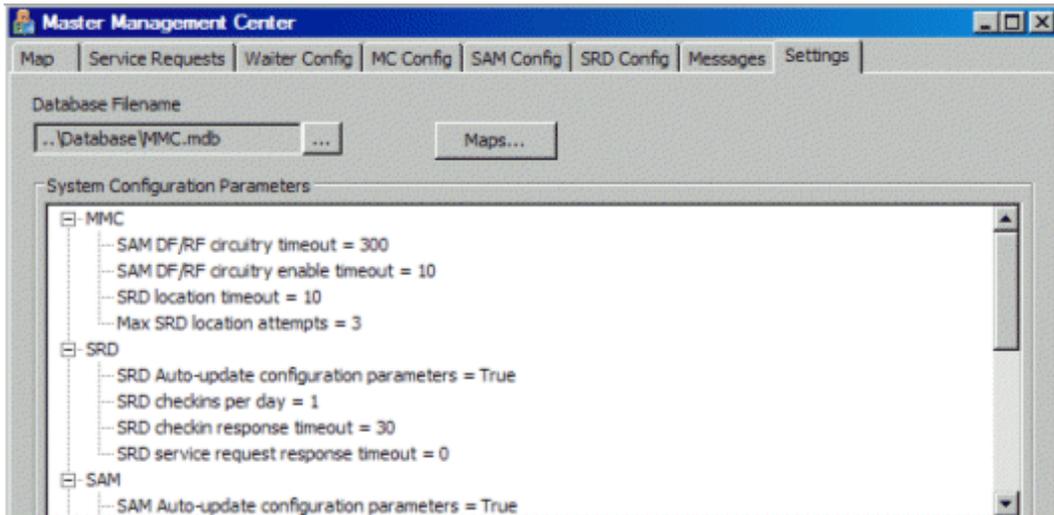


Figure 44: Description of Settings tab.

Appendix A BarMate Site Survey Example

This appendix provides an example BarMate site survey that is used to support installation. This appendix is for reference purposes only.



BarMate Site Survey Form

Antenna Arrays

No. of Arrays: _____

Location	Mounting Surface	Configuration <input type="checkbox"/> Linear <input type="checkbox"/> Square	Cable Length (SAM to Antennae - 4 RX)		Space between Antennae
			RX1: _____ RX2: _____ RX3: _____ RX4: _____	Pole Mast Height (Square Array only): _____	
		<input type="checkbox"/> Linear <input type="checkbox"/> Square	RX1: _____ RX2: _____ RX3: _____ RX4: _____	Pole Mast Height (Square Array only): _____	
		<input type="checkbox"/> Linear <input type="checkbox"/> Square	RX1: _____ RX2: _____ RX3: _____ RX4: _____	Pole Mast Height (Square Array only): _____	
		<input type="checkbox"/> Linear <input type="checkbox"/> Square	RX1: _____ RX2: _____ RX3: _____ RX4: _____	Pole Mast Height (Square Array only): _____	
		<input type="checkbox"/> Linear <input type="checkbox"/> Square	RX1: _____ RX2: _____ RX3: _____ RX4: _____	Pole Mast Height (Square Array only): _____	
		<input type="checkbox"/> Linear <input type="checkbox"/> Square	RX1: _____ RX2: _____ RX3: _____ RX4: _____	Pole Mast Height (Square Array only): _____	

Comments: _____

SRDs*

Location	Mounting Object, Location & Surface (for example, lounge chair armrest, drilling required; see detailed photos)	Mounting Device (more than one attachment may be used) <input type="checkbox"/> Adhesive <input type="checkbox"/> Bracket <input type="checkbox"/> ZipTie	No. of SRDs
		<input type="checkbox"/> Adhesive <input type="checkbox"/> Bracket <input type="checkbox"/> ZipTie	
		<input type="checkbox"/> Adhesive <input type="checkbox"/> Bracket <input type="checkbox"/> ZipTie	
		<input type="checkbox"/> Adhesive <input type="checkbox"/> Bracket <input type="checkbox"/> ZipTie	
		<input type="checkbox"/> Adhesive <input type="checkbox"/> Bracket <input type="checkbox"/> ZipTie	
		<input type="checkbox"/> Adhesive <input type="checkbox"/> Bracket <input type="checkbox"/> ZipTie	
		<input type="checkbox"/> Adhesive <input type="checkbox"/> Bracket <input type="checkbox"/> ZipTie	

Comments: _____

*All SRDs must be installed with antenna in vertical position.
Consider protection of SRD when identifying mounting surface (for example, if lounge chairs are stacked).

MCCs (Gateway and PC)*

No. of MCCs: _____

MC Location	PC Surface (PC all-in-one 19" screen) Desk <input type="checkbox"/> Wall Mount <input type="checkbox"/> Fixed <input type="checkbox"/> Tilted	Gateway Surface (desk, wall, etc.)	Method of Mounting Gateway <input type="checkbox"/> Adhesive <input type="checkbox"/> Velcro <input type="checkbox"/> None	Gateway COM Antenna	
				Location/Mounting	Cable Length (Gateway to Antenna)
	Desk <input type="checkbox"/> Wall Mount <input type="checkbox"/> Fixed <input type="checkbox"/> Tilted		<input type="checkbox"/> Adhesive <input type="checkbox"/> Velcro <input type="checkbox"/> None		
	Desk <input type="checkbox"/> Wall Mount <input type="checkbox"/> Fixed <input type="checkbox"/> Tilted		<input type="checkbox"/> Adhesive <input type="checkbox"/> Velcro <input type="checkbox"/> None		
	Desk <input type="checkbox"/> Wall Mount <input type="checkbox"/> Fixed <input type="checkbox"/> Tilted		<input type="checkbox"/> Adhesive <input type="checkbox"/> Velcro <input type="checkbox"/> None		
	Desk <input type="checkbox"/> Wall Mount <input type="checkbox"/> Fixed <input type="checkbox"/> Tilted		<input type="checkbox"/> Adhesive <input type="checkbox"/> Velcro <input type="checkbox"/> None		

Comments: _____

*USB cable connecting PC and Gateway is 3 meters. If distance between devices is greater distance, it must be specified on this survey.

Figure 46: Site Survey Example, page 2.

Appendix B: Square Array Drawing Specification

This section provides a Drawing Specification that illustrates construction of a Square Array.

Acronyms

CE – Conformité Européenne (European Conformity)

COAX – Coaxial Cable

FCC – Federal Communications Commission

LED – Light Emitted Device

MC – Management Centre

MMC – Master Management Centre

NEMA – National Electrical Manufacturers Association

PC – Personal Computer

SAM – Service Area Manager

SRD – Service Request Device

TX – Transmit

RX – Receive

USB – Universal Serial Bus



BarMate Ltd ▪ Trafalgar House ▪ Grenville Place ▪ London ▪ NW7 3SA ▪ UK

Copyright BarMate 2008 ▪ Printed March 2008 ▪ Revision A