User Manual
SiteWERX Base Station, Wired

1 June 2009

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1. Scope

This document provides user information for the SiteWERX Base Station. Information is included regarding safety, technical features, installation, and operating constraints

1.1 Safety Instructions

a. Read the manual carefully before use.

b. The Base Station shall be installed according to the installation instructions.

c. The Base Station is for indoor use only.

d. Ensure that power is OFF during installation procedures.

e. All maintenance and servicing should be performed or supervised by qualified service personnel.

f. To satisfy RF exposure requirements, this device and its antenna must operate with a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

1.2 Contact Information

This product is manufactured by:

WirelessWERX, Inc.
100 Chaparral Court, Suite 100
Anaheim, CA 92808
Phone: 714-685-9776
Fax: 714-685-9270

2. Description

The SiteWERX Location system consists of System Management software residing on a networked PC, a SiteWERX Base Station (SBS), and one or more SiteWERX Location Nodes (SLN's).

The SBS and SLN's form a communication chain (scatternet) using Bluetooth radios. The SBS maintains a communication link with the Management Console, allowing the system to be managed by a PC. Mobile devices, such as cell phones and PDAs, running the SiteWERX Mobile Client (SMC) software are able to communicate with an SLN to receive location and real-time messages, reference Figure 1.

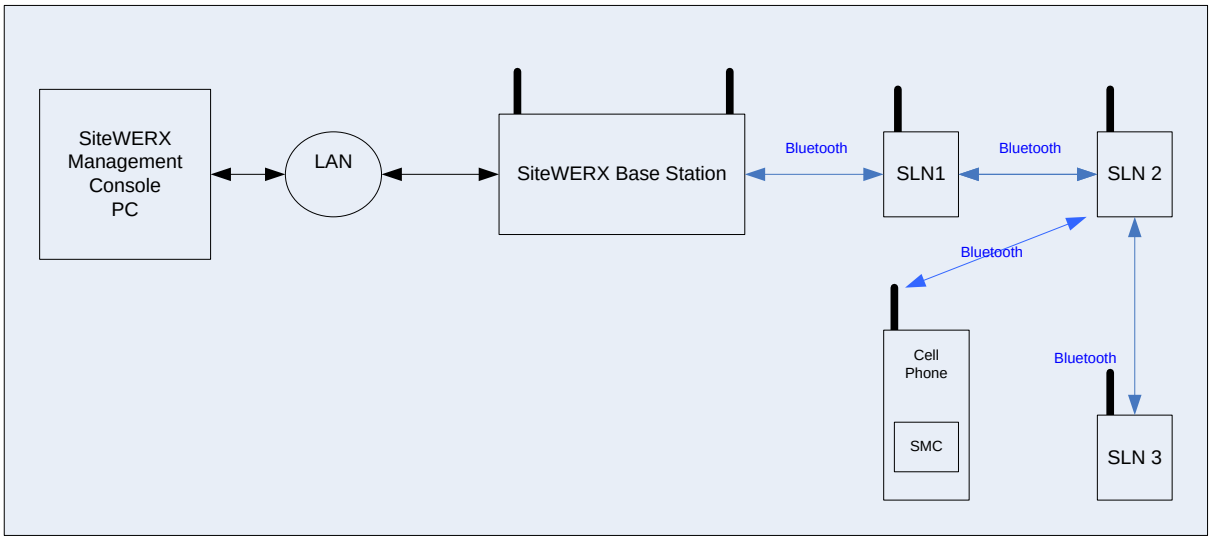

Figure 1 SiteWERX Location System

2.1 SiteWERX Base Station

The SBS has the following functional capabilities:

a) Operate as a Bluetooth device in accordance with the Bluetooth 2.0 + EDR
b) Establish wireless links with other Bluetooth devices in proximities of 1 to 10 meters
c) Transmit area-specific information to other Bluetooth devices in support of precision location
d) Transmit information to, and receive information from other Bluetooth devices in support of system administration, status and diagnostics
e) Transmit Real-Time Alerts
f) Establish Ethernet link with System Management Console

2.2 Architecture

The SBS consists of a Bluetooth Module for Bluetooth operations, a Bluetooth antenna, a LAN module, and Ethernet interface for communications with the SiteWERX System Controller. A functional block diagram of the SiteWERX Base Station is shown in Figure 2

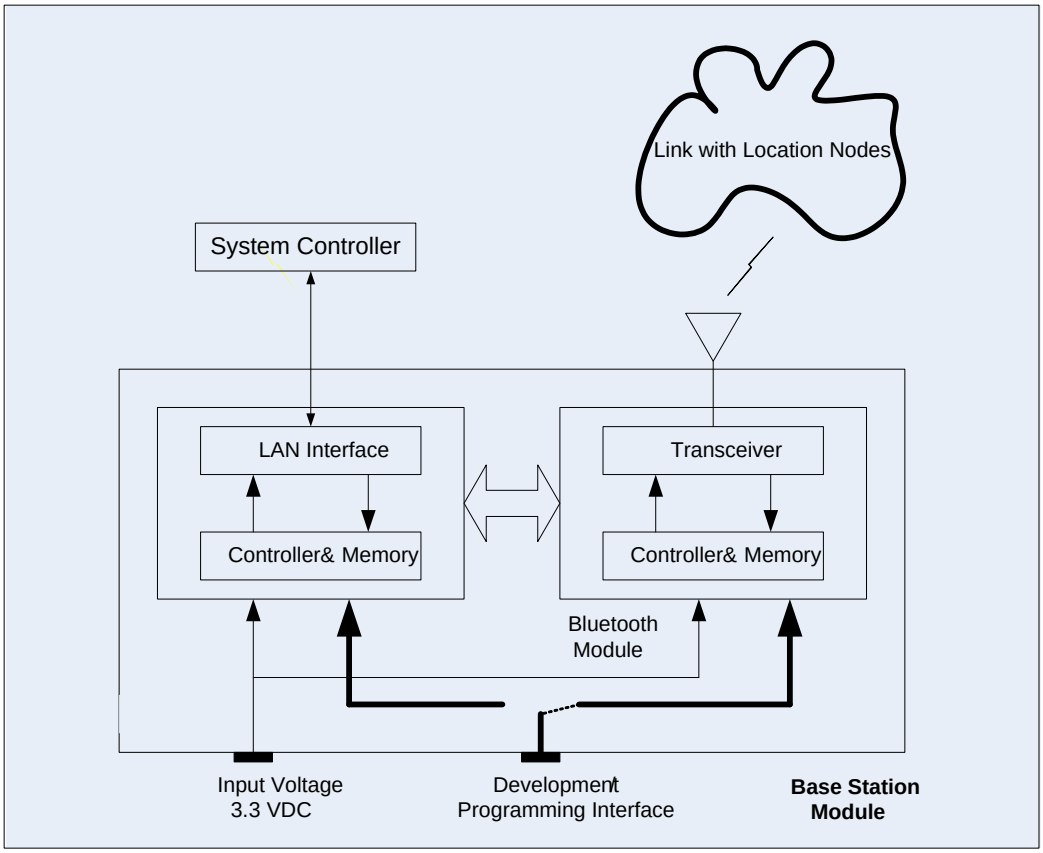

Figure 2. SiteWERX Base Station Block Diagram

2.2.1 Bluetooth Module

The SLN has a CSR BlueCore4-External radio to provide the operating parameters and protocols required by the Bluetooth 2.0 + EDR Core Specification.

2.2.1.1 Radio Characteristics, Basic Data Rate

Receiver	Typical	Bluetooth Spec	Unit
Sensitivity @ 0.1% BER	- 83	≤ - 70	dBm

Transmitter	Typical	Bluetooth Spec	Unit
Max RF Transmit Power	+ 4	- 6 to + 4	dBm

2.2.1.2 Radio Characteristics, Enhanced Data Rate

Receiver	Typical	Bluetooth Spec	Unit
Sensitivity @ 0.1% BER	- 83	≤ - 70	dBm

Transmitter	Typical	Bluetooth Spec	Unit
Max RF Transmit Power	+ 4	- 6 to + 4	dBm

2.2.2 LAN module

The SBS LAN module manages the Ethernet interface with the System Controller.

SBS Data Rates:
1, 2, 5.5, 11, 6, 9, 12, 18, 24, 36, 48, 54 Mbps

The SBS LAN module connects to the Ethernet through a RJ45 connector.

2.2.3 Voltage and Operating Current

The SBS module operates with an input of 3.3 VDC and a max current ≤ 700 mA .

2.2.4 Antenna

The SBS Module has an antenna for the transmission and reception of Bluetooth Radio-Frequency (RF) Signals. The antenna shall be a Roving Networks dipole antenna, ANT-2.4-CW_RCT-SS, or equivalent.

The SBS antenna has a nominal impedance of 50 ohms, linear polarization, and a near omni-directional radiation pattern in azimuth. The maximum gain is 2.89dBi, reference Figure 3.

The SBS antenna is capable of transmitting a constant 1.0 watt.

The SBS antenna has a right angle, reverse polarity SMA connector.

The SBS antenna is adjustable and normally operates with the primary axis aligned with the local vertical.

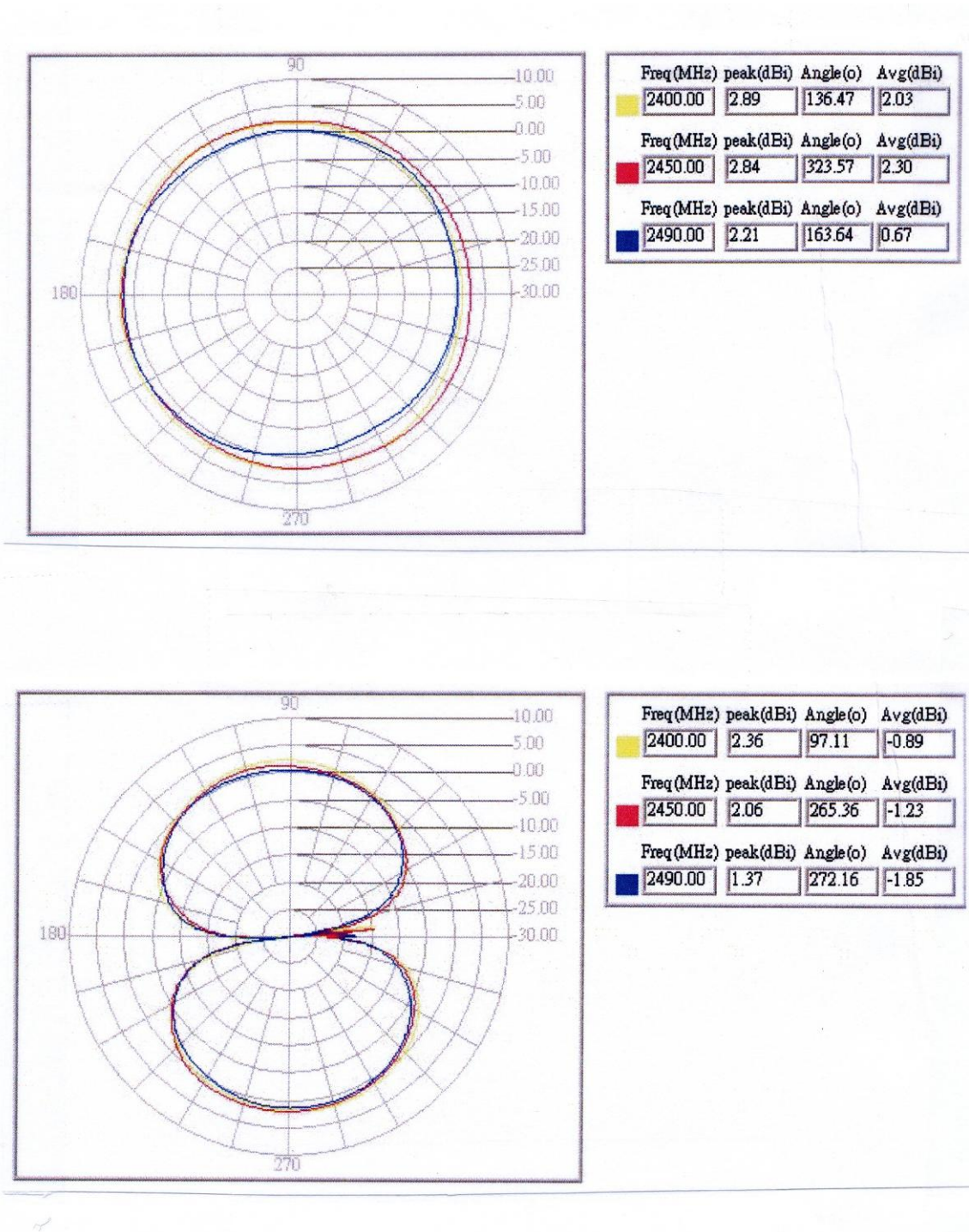

Figure 3 SBS Antenna Pattern

2.2.5 Power Supply

The SBS module operates from an external AC/DC power supply to provide a regulated DC voltage of 3.3 VDC at 2.18 Amps, and consumes a maximum of 7.2 Watts.

2.2.6 Power-On Indicator

The SBS has a RED LED indicator that is illuminated when power is enabled.

2.2.7 Development/Programming Interface

The SBS has a four-wire serial peripheral interface (SPI). The SPI is used for real-time debugging / development, and is connected to a PC parallel port via connector and cable assembly made by WirelessWERX.

The development / programming interface is designed to permit the following connections:

PC connect to Ethernet module only

PC connect to Bluetooth module only

Bluetooth module to Ethernet module, No connection to PC

2.3 Construction and Packaging

The SBS modules, and related circuit elements are assembled on a single PCB. The PCB shall be enclosed in a Bud Industries Plastibox, PT-11754, with the following (nominal) dimensions:

Length	4 inches
Width	5.5 inches
Height	1.5 inches

The SBS Bluetooth module RF output is brought to the edge of the PCB and terminated in bulkhead type, SMA connector that penetrates the enclosure and permits the connect/disconnect of the SBS antenna external to the enclosure.

2.4 Environment

The SiteWERX allowable environments for SBS operating and storage are as follows:

Operating Temperature	-40 to +70 C
Storage Temperature	-40 to +85 C
Operating Humidity	5% to 80% RH, non-condensing

3. Constraints

This equipment 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.

Operation with non-approved equipment is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

4. Declaration of Conformity

TRADE NAME	Network Bridge
MODEL NUMBER	SBS03
RESPONSIBLE PARTY (IN USA)	WirelessWERX, Inc.
ADDRESS	100 S. Chaparral Court, Suite 100: Anaheim, CA
TELEPHONE	714-685-9776

This equipment 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 the unit does cause harmful interference to radio or television reception, please refer to your user manual for instructions on correcting the problem.

5. Reference Documentation

Bluetooth 2.0 + Enhanced Data Rate (EDR)
BlueCore4-External DataBook
Dipole Antenna Datasheet

5.1 Acronyms/Abbreviations

AC	Alternating Current
BIST	Built In Self Test
CM	Cellular Module
dBi	Decibels referenced to an isotropic radiator operating at the same frequency
dBm	Decibels referenced to One milliWatt
DC	direct current
EDR	Enhanced Data Rate
EEPROM	Electrically Erasable Programmable Read Only Memory
GPS	Global Positioning System
I/O	Input /Output
mA	milliAmperes
PCB	Printed Circuit Board
SBS	SiteWERX Base Station
SLN	SiteWERX Location Node
SPS	SiteWERX Power Supply
UART	Universal Asynchronous Receiver/Transmitter
USB	Universal Serial Bus
VAC	Volts, Alternating Current
VDC	Volts, Direct Current