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BC91/005010
BC91/005011
BC91/005012
BC91/005013
BC91/005014

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Distribution (Check all appropriate):
 Precyse Only Project Team Only Customer and Supplier

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Regulatory Information/disclaimers

Installation and use of this Wireless Radio device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment. The Manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, of the substitution or attachment. Manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government regulations arising from failing to comply with these guidelines.

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.

Instructions concerning human exposure to radio frequency electromagnetic fields:

To comply with FCC Section 1.307 (b) (1) for human exposure to radio frequency electromagnetic fields, implement the following instruction:

A distance of at least 20cm. between the equipment and all persons should be maintained during the operation of the equipment.

The FCC Wants You to Know

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:

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

FCC Warning

Modifications not expressly approved by the manufacturer could void the user authority to operate the equipment under FCC Rules.

“This device 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.”

Abstract

This document describes the iLocate system hardware:
Beacon, Precyse part # BC91/005010, BC91/005011, BC91/005012 BC91/005013,
BC91/005014 referred to as 915 Micro Beacon.

Product description

Micro Beacon:

The Micro Beacon is used to define a location zone. It is based on a microcontroller and 4 RF transceivers.

It uses the iLocate proprietary protocol which provides a 2 way, half duplex communication with the base station and to transmit its ID to the SATs.

BC91/005010, BC91/005012, BC91/005014 are powered by an internal 3.6V battery pack.
BC91/005011, BC91/005013 are powered by an external AC to 12Vdc adaptor.

Technical Data Sheet – 915 Micro Beacon

Compatibility:

Micro Beacon, 915MHz, versions:
BC91/005010, BC91/005011, BC91/005014 (Internal antenna).
BC91/005012, BC91/005013 (External antenna)

Performance:

Read range: up to 500 m. (Within line of sight)

Write range: up to 500 m. (Within line of sight)

Read rate: 250 Kbps.

Write rate: 250 Kbps.

Communication:

Frequency: 905.00 to 917.00 MHz ISM license free band

Modulation: 2-FSK

Channel spacing: 800 KHz

Deviation: 190 KHz

EIRP: Up to 19dBm, digitally controlled

Communication protocol: Precyse N3

Transmission: Event base and on demand (TOM/SOM)

External interfaces: None

Electrical:

Power supply: 3.6Vdc, 100mA BC91/005010, BC91/005012, BC91/005014
12Vdc max 2.0A BC91/005011, BC91/005013

Safety: CE, UL compatible BC91/005010, BC91/005011, BC91/005012, BC91/005013
Class I, Division 1, Groups A,B,C,D -20°C to +50°C, T4: BC91/005014

Environmental:

Size: L120xW90xH50mm

Operating temperature: -20°C to +75°C

Humidity: 90% non-condensing

Enclosure: IP65

Antenna

External antenna:

Manufacturer: Antenna factor

Part number: ANT-916-CW-RH-SMA

Gain: 0dBi

Internal antenna:

Manufacturer: Antenna factor

Part number: SPLATCH 916-SP2

Gain: 0dBi (Peak)

Schematics

Schematics will be provided on demand and under non-disclosure agreement.

System test configuration

Beacon

The unit was configured for normal operation. In this mode the beacon transmits its ID packet continuously, with 3.2% duty cycle.

For intermodulation tests, the unit was configured to transmit on all 4 channels simultaneously.

The unit transmission channels were set to 0 (905.0MHz), 8 (911.4MHz) and 15 (917.0MHz).

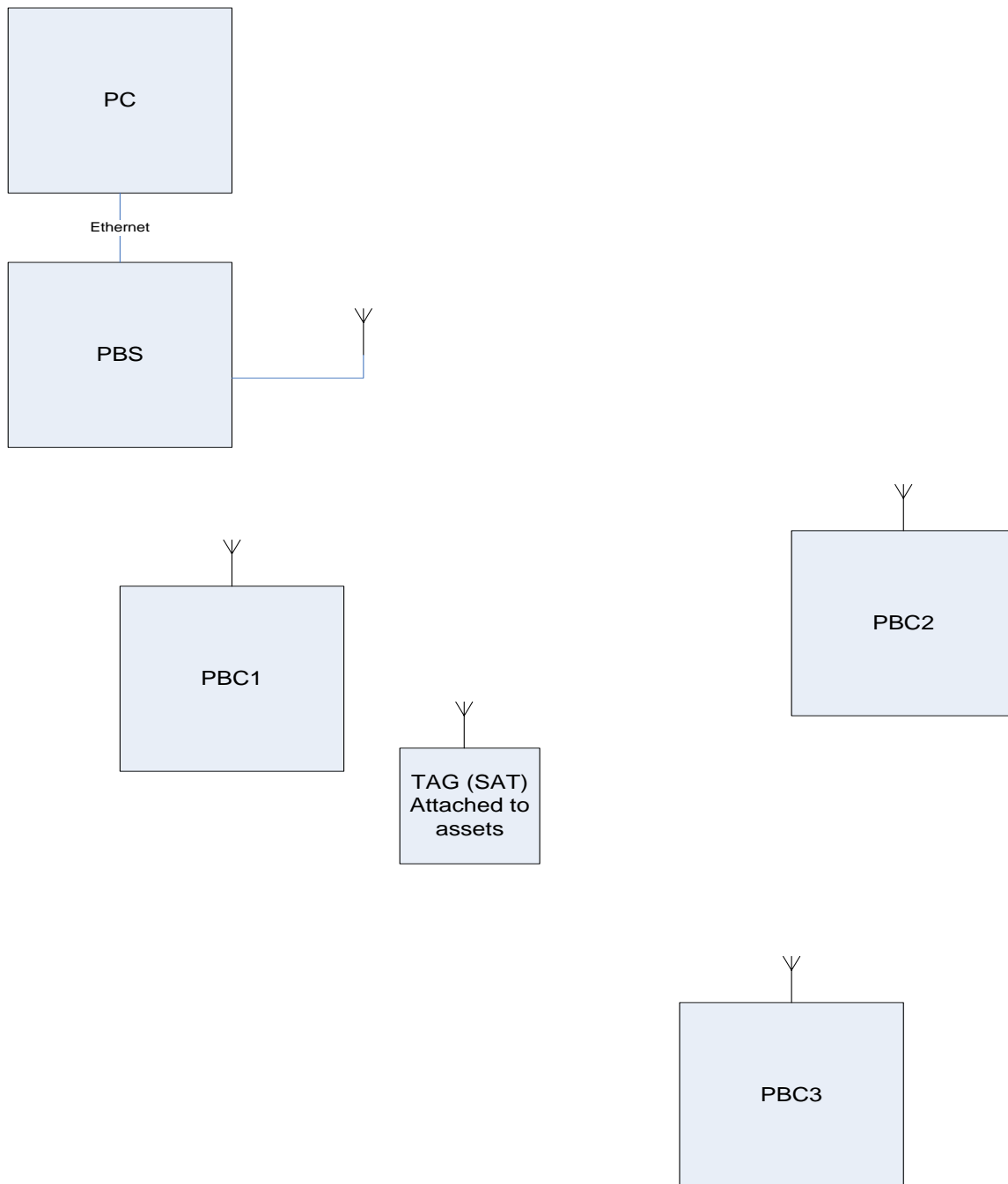
Method of operation

The PBC has 4 independent transceivers. The transceivers cannot operate as MIMO or phase array (beam shaping).

All the transceivers are connected to a single low power microprocessor unit. Each transceiver in the unit transmits its identification packet at 20% or lower duty cycle. Each transceiver operates at a different 800 KHz wide channel (905.0, 905.8, 906.6 etc). One of the channels (One which has the best reception from the base station) acts as a communication channel to the base station.

This unit's function is to provide location information to the mobile agents (tags). Upon packet reception, the tag transmits its signal strength (RSSI) and ID to the base station and its location can be calculated using various algorithms.

iLocate system block diagram



Unit definitions:

Base station, referred to as PBS: A radio device that transmits data to and from the tag (SAT) to a personal computer (PC), also provides synchronization signal. The unit is powered by a DC power supply. Relevant model is BS91103000.

Beacon, referred to as PBC: A radio device that defines a location. Location detection can be realized through one or more PBCs.

Tag (SAT): A radio device that is used to track and monitor assets. It communicates with the PBS and can detect the PBC signals. Relevant models are SA91/004xxx.

Marketing and installation

1. EUTs with external antenna are provided with **ANT-916-CW-RH-SMA** from **Linx Technologies** already connected. These EUTs are tested in factory with these antennae. Replacement with other antenna is prohibited.
2. EUT intended use and application: The PBC are used as radio beacons for the iLocate system. By transmitting a constant signal, it allows the tags to identify their location. The EUT is installed either indoors or outdoors (inside an appropriate sealed environment box). The installation requirements are proper site planning, infrastructure (DC supply, mechanical mounting, clearance around it), sealed box (Per Precyse tech requirements, an IP65 or equivalent box uninterrupted power supply where required, etc).
3. The professional installer is required to operate the iLocate system and ensure the link between the system and the EUTs. Furthermore, optimization is done on clients' site. Therefore, installation of EUT is done by a professional installer from Precyse Technologies professional services or by its authorized resellers and it cannot be done by an average technician. For additional information refer to our website: <http://www.precysetech.com/index.php?id=4>
4. General use of iLocate system is business solutions. Please refer to our website under services: <http://www.precysetech.com/index.php?id=4>
5. From the sections above the EUT cannot be sold to the general public. It is sold by Precyse Technologies and installed by Precyse Technologies professional services or by authorized resellers as part of the iLocate system.