

**MODEL WN900RFID-A**

**DUAL CHANNEL RF/ID READER**

**USER MANUAL**

© 1997 WaveNet International Inc. All rights reserved.

WaveNet International Inc. reserves the right to amend the contents of this guide at any time to reflect product development and product improvements.

### Regulations and Approvals

This equipment has 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. The equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the proper instructions, may cause harmful interference to radio communications.

Operation of this equipment in a residential area will cause harmful interference, in which case the user will be required to correct the interference at the user's own expense. All external cables must be shielded to ensure compliance with the Class A FCC limits.

In situations where the user elects to install WaveNet specified equipment including high gain antenna kits, the user will be responsible for adhering to all pertinent FCC, fire and safety/building code regulations pertaining to the installation.

*WARNING:* Changes or modifications to the equipment, not expressly approved by WaveNet International Inc. could void the user's authority to operate the equipment and void the warranty.

For more information on regulatory approvals, contact your local WaveNet representative.

### **RF EXPOSURE WARNING**

In order to ensure user safety and to satisfy RF exposure requirements for mobile transmitting devices, a minimum separation distance of 50 cm. (20 inches) must be maintained between the transmitting device and the user (or other nearby persons) during device operation. Operation at smaller separation distances is not recommended.

### **ANTENNA GAIN**

The maximum gain of an antenna connected to the Model WN900RFID-A must not exceed 9.5dbi

## Technical Description

The Dual Channel RF/ID Reader is designed to read AAR (Association of American Railroads) transponder tags operating in the frequency range 902 - 904mhz and 909.75 – 921.75 mhz. The maximum R.F. power output measured at the transmitter is 1 Watt.

The RF module is composed of an RF oscillator, RF amplifier, a homodyne receiver and a video amplifier. The RF module is responsible for transmitting and receiving radio energy. This energy is transmitted through the antenna and the RF energy reflected by the tag is also received by the same antenna.

The RF module transmits a single frequency of RF energy and receives that same frequency after it is reflected by the tag. The homodyne receiver is used to separate the transmitted continuous wave energy from the information reflected by the tag. The reflected energy from the tag is encoded into 20 and 40 Khz signals which modulate the RF energy reflected by the tag.

## Installation

The Model WN900RFID-A is a completely self-contained AEI (Automatic Equipment Identification) tag reader. The module should be installed in a sealed enclosure and connected to a directional antenna having a gain of no greater than 9.5 dbi using low loss 50 ohm cable.

The module requires a power source of 12 to 16 volts at 1 amp. (max). and communicates with an external controller on a RS-232 serial channel. Power and serial input/output signals are available on connector J11:

<u>Pin no.</u>	<u>Signal</u>
1	+12v
2	+12v
3	+12v
4	n/c
5	Transmit data
6	Gnd
7	Receive data
8	Gnd
9	Gnd
10	Gnd

The power/communication cable must be shielded and a ferrite block (part no. Steward S28A2025-0A0) should be installed close to J11 for FCC/IC compliance.

If Wheel sensors and Track switch sensors are to be connected, use only WaveNet supplied shielded and filtered cables.