

# User's Guide

# ATR900

## **Spread Spectrum Frequency Hopping Radio Modem**

It is essential that all instructions contained in this manual  
are followed precisely to ensure proper operation of equipment.

## FCC Notification

This device complies with part 15 of the FCC rules. Operation is subject to the following 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 device must be operated as supplied by the manufacture. Any changes or modifications made to the device without the express written approval may void the user's authority to operate the device.

**Caution:** The ATR900 has a maximum transmitted output power of 1W. It is recommended that transmit antenna be kept at least 20cm away from nearby persons to satisfy FCC RF exposure requirements. As part of the RF Exposure assessment procedure, you should also note any additional transmitting antennas in the immediate area that, because they are co-located with yours, could cause the maximum radiated energy to exceed a safe level.

Note: 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 in a industrial 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.

**Note:** Whenever any ATR900 radio modem is placed inside an enclosure a label **must** be placed on the outside of that enclosure which includes the modem's FCC ID.

The following antennas are approved for use with ATR900 series modems.

### 900MHz Directional Antenna

Antenna model number	Manufacture	Type
TB2-900SMA	Hankook Antenna	Omni whip w/SMA connector
ACE 915	Ace	Omni whip w/SMA connector
MAX-9053	Maxrad	Omni w/N connector
YA6-900	Larsen	Yagi w/N connetor

## Using a Different Antenna

In certain circumstances it may be desirable to extend the range of the ATR900 radio modem by using an external antenna in place of the standard whip antenna. The radio modem is equipped with a standard SMA external jack. This allows the use of one of the other certified antennas provided by the manufacture – See the list on the previous page.

The use of a different antenna may radically improve the results obtained with ATR900 radio modems. It is imperative to obtain line of sight with the antennas, and changes in placement height of as few as a couple of feet may make the difference between no link and one that is solid and reliable.

These antennas allow versatility in the ATR900's deployment, extending its range and allowing it to get around obstructions.

If external directional antennas are used, FCC regulations concerning effective radiated power limitations must be followed.

**Caution: Any antenna placed outdoors must be properly grounded. It is required by FCC regulations that qualified personnel experienced in antenna installation and familiar with local codes and regulations complete the antenna installation. It is also required by FCC regulations that only approved antennas be used. Use extreme caution when installing antennae and follow all instructions included with the antennas.**

The use of external antennae subjects the radio modem to greater exposure to direct lightning strikes. It is strongly recommended that a lightning arrestor be used on all outdoor antenna installations.

Long RS232 cable runs should also be avoided in areas with increased lightning activity or static electricity unless they are properly isolated from the radio modem. Nearby lightning strikes or elevated levels of static electricity may lead to voltage spikes on the line, causing failure in the radio modem's RS232 interface. It is also recommended that the RS232 data cable not be located near high voltage power lines as this can cause interference in data communications, damage the ATR900 as well as an increase in risk of personal injury.