EXHIBIT 3

USER MANUAL

DRAFT

ioLink 1.5
Wireless System

Quick Start Installation Guide

WARNING!

In order to comply with the FCC adopted RF exposure requirements, this transmitter system will be installed by the manufactor
resaler professional. Installation of the 2 ft. parabolic dish antenna must be performed in a manner that will provide at least : **55 cm**
clearance from the front side of the dish to any personnel such as employee or member of the public

IMPORTANT INFORMATION REGARDING YOUR IOLINK 1.5 SYSTEM

FCC Regulatory Notice

This equipment complies with FCC Regulation 15.247, which specifies the license-free operation of direct sequence, spread-
spectrum wireless communications devices. This device operates in the 2.4 to 2.4835 GHz frequency band reserved for industrial,
scientific, and medical applications. Since this device generates radio frequency waves, it may interfere with other radio signals in
the same area unless the proper installation and operation procedures are followed. It has been proven in testing that this device
complies within the limits of FCC Regulations that are designed to provide reasonable protection against such interference in a
commercial environment

Warranty

ioWave Incorporated warrants that each product manufactured by ioWave shall be free from defects at the time of delivery ioWave
products are under warranty for a period of one (1) year after the date of purchase provided that installation and maintenance
procedures provided to the customer are followed properly.

If any ioWave product is found to be defective while still under warranty, ioWave will, upon examination by ioWave personnel
repair, or replace the defective product at its own expense. ioWave is not responsible for cost of labor by the customer's own
employees or contractors in identifying the problem or replacing the defective product. Any defects found due to negligence,
accident, or abuse on the customer's part shall not be covered under warranty and is not the responsibility of ioWave for its repair
and/or replacement

Proper authorization from ioWave must be obtained prior to shipping, which shall be prepaid, to return products under warranty to
ioWave's factory for repair or service. *ioWave will only accept returned goods with the proper authorization number* All products
will be returned to the customer after repair or replacement by method of delivery of ioWave's choice within the continental United
States of America If the customer desires a different method of delivery than that chosen by ioWave, or is located beyond
continental USA borders, then ioWave is not responsible for cost of return shipment

This warranty does not cover any non-ioWave component that must be used in conjunction with an ioWave product in a composite
system These components shall be covered under their own manufacturer's warranty.

This warranty shall extend only to the original purchaser of the products and is non-transferable to a third party No other
warranties, explicitly or implicitly defined, may take precedence over ioWave's with regards to any ioWave products

Use of *ioWave* Products Outside of the United States

ioWave, Inc. has not received approval or certification for the use of any of its products in countries outside of the United States.
ioWave does not recommend use of its products in such areas, and accepts no responsibility for any consequences, legal or
otherwise, resulting from the use of our products The use of ioWave products outside of the United States is solely the
responsibility of the user.

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WELCOME

We welcome you to the world of Wireless Communications. To familiarize you with your ioLink 1.5 and help you get the most out of the system, please review the enclosesd information and keep it for your refrence. You will find:

1. Quick Start Installation Guide booklet to provide you an overview of the system, installation instructions, and trouble shooting tips, to get you started

2. Installation and User Technical Reference Guide that contains detailed description of your system, instructions on how to install and use the service.

We value your investment in our system and encourage you to call us with your comments and suggestions. We look forward to serving you.

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Overview

Introduction

About the Company

ioWave specializes in the design, manufacture. sale, installation and service of equipment and turnkey systems for high-speed, short-haul, fixed position. wireless communications. *ioLink* is *ioWave*'s first generation product line which provides technology platforms for provision of point-to-point voice, video and data communication . The next generation product line will provide point-to-multipoint communications in licensed and precertified frequencies as well. In addition to product sales, the Company also provides system integration services such as design, installation and maintenance of wireless networks.

Product Portfolio Description

ioWave's *ioLink* platforms provide a family of point-to-point fixed-position. digital, wireless links which is capable of full-duplex, real-time voice, video and data transmission and reception with rates ranging from 1.54 Mbps to 20 Mbps. Several key features distinguishe the *ioLink* products from comparable products.

1. *IoLink* products are designed for modularity so the same components can be used across the entire product line so that upgrading is simple and cost-effective.

2. *IoLink* operates in the 2.4 GHz and 5.8 GHz bands, and has operational ranges of up to 40 which is within the frequency ranges designated by the Federal communications Commission (FCC) for low power radio frequency devices. Because these bands have been precertified. *ioWave's* customers are not required to purchase a license or obtain a permit from the FCC to install or operate the equipment. Thus, the system can normally be installed at the customer's premises within one day.

3. *IoLink* use spread-spectrum technology and proprietary radio frequency (RF) designs. SST is a proven technology that has been used successfully for military applications. with commercial use beginning on a significant scale in the 1990s.   The advanced. spread-spectrum platform allows the simultaneous use of the same bandwidth and spectrum by several users.

4. *IoLink* contains advanced network-management software and digital signal processing algorithms and firmware. This combination results in low power. bandwidth-efficient. and secure transmissions. Our products are SNMP-compliant, have fully

embedded network-management software, allowing the management of the *ioLink* products to be integrated with the customer's existing NMS systems.

Applications

ioWave has the versatility to handle high-speed, short haul links for any kind of voice, video, and data transmission that your business needs dictate. *ioLink 1.5* provides an ideal solution for point-to-point communications where conventional wireline connections are impractical, too costly, or unavailable. Here are a few examples of commonly used applications.

- Local bypass allows companies bypass the Local Exchange Carriers by providing direct links between customers and the Public Switched Telephone Network.
- Cell site connections allow companies to concentrate all the cell traffic to the mobile telephone switching office.
- Private networking and Intranet and Internet access for corporations, Internet service providers, and governments.
- Alternate routing and hot standby for corporations and communications service provider companies and governments to protect critical telecommunications systems against outages.
- Personal Communications Services (PCS) relocation is another application for government and corporate users. With the advent of PCS auctions, the incumbent users of the newly auctioned PCS frequencies are required to "relocate" to different frequency bands. *ioWave* offers an alternative method for low cost "relocation. "
- Specialized applications such as video-conferencing and medical imaging for universities and medical institutions that require high capacity transmission of data.

ioLink 1.5 Product Description

The *ioLink 1.5* T1 product is the initial product line offering from ioWave. This wireless system is a full-duplex Direct Sequence Spread Spectrum (DSSS) device for communications between two line-of-sight locations. It can be connected to many types of interfaces to meet your communications needs. The technologies incorporated in *ioLink 1.5* give you an efficient, minimal interference, error-resistant link to other services and a superior carrier-to-interference (C/I) performance.

Key Features

Here are some of the important features of the *ioLink 1.5*:

- Provides clear and robust communications for up to 40 miles.
- Offers quick turnaround on investment and savings on recurring leased line charges.
- Is fully compliant with Standard Network Management Protocol (SNMP) and has an SNMP agent available.
- Has full-duplex T1 (1.544 Mbps) or E1 (2.048 Mbps) capacity digital radio with DSX-1 interface.
- Is capable of voice, video, and data transmissions.
- Does not require user licensing (complies with FCC Regulation 15.247).
- Operates in pre-certified 2.4 to 2.4835 GHz range (ISM band).
- Provides Forward Error Correction (FEC).

Advantages of the System

Some of the advantages of the *ioLink 1.5* are:

- Superior performance — Provides highly reliable links for voice, video, and data transmission.
- Cost effective— Low initial outlay ensures a short payback period. No monthly recurring leased-line fees.
- Error free — Virtually immune to atmospheric interference such as rain, snow, fog, or other severe climatic conditions.
- Pre-certified — Operates in 2.4 GHz ISM (Industrial, Scientific, and Medical) band range that does not require user licensing or coordination.
- Portable — Equipment is compact, rugged, and low weight
- Fast and easy to install — Network management system, standard interfaces, and smart engineering techniques allow for quick and inexpensive installation.

ioWave's systems are virtually risk-free because:
- The bit error rate data, corrected bits, and received bit error reports constantly provide you with an indication of the health of your path. Your monthly or quarterly maintenance reviews will indicate if the noise floor increases because of a proliferation of systems in that area; the noise floor will not suddenly cut your link.
- The natural interference immunity of spread spectrum systems means that non-spread signals must be about 7 dB hotter than your wanted signal and directly on-frequency to cause a degradation in bit error rate. When the interfering carrier is not at the center frequency, the possibility of interference is decreased.

Main Components

The *ioLink 1.5* consists of three main parts, the RF unit (an outdoor unit), the modem unit (an indoor unit), and an antenna.

The RF (outdoor) unit

The RF unit is compact and weatherproof and can be located on the roof or tower, near the antennas. This unit transmits and receives signals at the designated, carrier frequency (i.e., 2.4 GHz or 5.8 GHz). The RF unit is connected to the modem unit by a siamese, flexible, 75 ohm coaxial cable, which will transmit and receive signals at the Intermediate Frequencies (IF).

The modem (indoor) unit

The modem unit is designed for indoor installation with a standard 19-inch-wide rack-mountable form factor. This unit contains the baseband processor that embodies *ioWave's* spread-spectrum platform. In addition, the *ioWave*-developed, SNMP-compliant, network-management software is fully embedded within the modem unit and permits the management of the *ioLink* products to be integrated with existing NMS systems of the network. An industry-standard interface for T1 is provided which facilitates integration to the customer-premise equipment (CPE) and to the public-switched-telephone network (PSTN).

A choice of antennas

The antennas can be directional, grid or parabolic-dish types and normally is no larger than 2 feet in diameter for most applications. Each antenna can be mounted on a roof or a tower in order to obtain a line-of-sight (LOS) link with the receiving antenna, or positioned inside a non-metallized glass window. These antennas are selected to meet the particular customer requirements. They are standard, readily available, off-the-shelf components.

Insert System component chart

One communications link consists of one *ioLink 1.5* setup (outdoor, indoor and antenna) installed at each end of the line-of-sight link, both of which can transmit and receive data signals. Once the link is established between the two units:

1. The sending user's data is fed through the modem unit where it is multiplied by a pseudo-random noise (PN) code to spread the signal and then sent to the RF unit. Then,

2. The signal is passed through a series of filters and amplifiers, and transmitted via the antenna to the other end of the link where the information goes to the receiving user's device by reversing the process used on the transmit side.

The *ioLink 1.5* provides full-duplex communications — you can transmit and receive signals simultaneously at each end of the link. Figure 1 shows a typical point-to-point link

Figure 1: Typical link setup

Installing the *ioLink 1.5*

This chapter contains the following information about setting up the *ioLink 1.5*:

- Installing the antenna, RF unit, and modem unit.
- Connecting the cables between the units.
- Aligning the antennas for maximal signal strength.

Only trained, *ioWave* certified technicians should install the *ioLink 1.5*. Professionals should construct and test any support structure to make sure the structure will safely hold the antenna (and possibly the RF unit).

IMPORTANT NOTICE! Read this entire section on installation before installing the *ioLink 1.5*.

Here is a check list of steps you need to take before installing the system.
1. Check the distance that the link will span
2. Select an antenna
3. Select the antenna mounting site
4. Estimate the length of cable needed to connect the antenna and RF unit and from the RF unit to the modem unit
5. Establish a good transmission path by checking for radio line-of-sight
6. Select the antenna support structure
7. Determine the mounting type

Refer to your Technical Reference Installation and User Guide for detailed information regarding these steps.

Installing the Antenna, RF Unit, and Modem Unit

- Determine the placement sites for each part of the link.

- Erect the support structure.

- Complete a site survey.
  - ✓ Check the support structure's wind loading requirements to make sure that it is structurally sturdy enough to hold the antenna and RF unit, and to make sure it is properly grounded.
  - ✓ Mount the antenna so it has freedom to be adjusted in direction or angle, yet able to be locked into place once it is properly aligned. The following two adjustment capabilities will make aligning the antenna much easier:

- • An antenna mount with horizontal and vertical angle adjustments, and
- • An antenna that can be moved horizontally and vertically once it is mounted.
- ✓ For now, place the antenna in its approximate position on the support structure. You can fine-tune the antenna's alignment after the link is up and running. (See below.)

- • Begin to install the individual components.
  - ✓ RF Unit
    - • Mount the RF unit being sure to place the N-type connector so it is as close as possible to the antenna. A 6' cable is provided with the antenna to connect it to the RF unit; mount the RF unit so no extra cable is needed.
    - • Use U-bolts to affix the enclosure of the RF unit to 2-4" diameter poles.
    - • Ground the enclosure independently of the support structure's ground so any lightning strikes that may hit the support structure do not damage the RF unit.

  - ✓ Modem Unit
    - • Mount the modem unit in a standard 19" equipment rack or on a tabletop.
    - • Place the unit close to a power source and where the front and back panels are easily accessible.

Connecting the Cables

IMPORTANT NOTICE: Make sure the modem unit is turned off before configuring the cables. Take care to avoid plugging the RX cable into the TX connector.

- • Install the cables after you have installed the RF unit and modem unit.
- • To ease installation, to protect the cables from harsh weather conditions, or to keep the amount of dangling wire to a minimum, you may run the cables through conduits, but it is not necessary.
- • When running the coaxial cable from the modem unit to the RF unit, it is best to keep the length as short as possible, but you may wish to leave some extra cable to allow for movement of the individual components in the future.
- • If the RF unit is mounted on a tower, affix the IF coax cable along the length of the tower by tying it to the structure.
- • Connect the modem and RF units by using the siamese coaxial cable with male F-type connectors at each end. Run these cables from the TX and RX interface jacks on the back of the modem unit to the two female F-type connectors on the RF unit. The following order is suggested to ensure proper hookup:
  - ✓ Connect the IF coax cable to the RX on the modem unit.
  - ✓ Check the impedance on the RX cable at the RF unit with an ohm meter.
  - ✓ Whichever cable has an impedance, connect it to the RX of the RF unit.

✓ Connect the open impedance to the TX of the RF unit.
✓ Connect the remaining half of the IF cable to the TX of the modem unit.
- After connecting the modem and RF units, connect the antenna to the RF unit using a low-loss coax cable fitted with male N-type connectors at each end. Attach one end of the cable to the RF unit and the other to the antenna making sure to fasten the connectors firmly to ensure proper signal transmission. Figure 6 shows the proper connections between the modem unit, RF unit, and antenna.
- Seal the connections to the RF unit with a silicon rubber compound or heat shrink tubing.

Figure 2: Proper cabling for *ioLink 1.5*

Aligning the Antennas

Precise alignment of the antennas should be done by at least two installers using communications devices, such as walkie-talkies, to coordinate their movements.

Once you have mounted the antennas in their approximate positions and have completed the cabling, you can align the antennas more precisely. To do this:

1. Connect a voltmeter to the RX interface of the modem unit while it is powered on.
2. Adjust one of the antennas until the absolute value of the meter reading is greatest. You may need to adjust the horizontal and vertical angles of the antenna and the vertical and/or horizontal displacement. Once you have adjusted the first antenna, repeat this step for the other antenna.

Each time you move an antenna, the opposite antenna has a different bearing on the Fresnel zone, so you will need to repeat this process several times to achieve the best possible signal reception. The practicality of this depends on the antenna mount and how difficult it is to adjust the antenna position on a fine scale. The more flexible the antenna mounts are, the easier it is to align them properly.

Troubleshooting Tips

Most problems you may encounter in using the system will generally occur during the initial setup and configuration phase. These problems are usually caused by incorrectly configured user equipment, or are related to the installation of the link (i.e. cables incorrectly connected, antennas not properly aligned, units not powered on... etc.). Since the site should have already gone through a rigorous checklist to test for: line-of-sight, other possible transmitters in the area, and installation issues, problems generally do not happen as a result of these conditions. Due to the rigorous nature of the site selection process, these factors should not affect link performance

The following section contains procedures for addressing any alarms or problems encountered when using the ioLink 1.5. Before consulting the following tables, there are a few simple checks that may resolve most problems and should be performed before any other steps are taken:

- Make sure the power cord to the Modem unit on each end is properly plugged into the unit as well as a working power source. Also check that the power switch is turned on.
- Check that the cabling between the Modem unit and RF unit as well as the RF unit and antenna is connected properly according to Figure 4.2.1. Furthermore, check that the cables are not damaged in any way.
- Check that all user equipment is properly cabled, working correctly, and set up for use with the ioLink 1.5.

The following trouble shooting tips provides checks and solutions and are listed in the order in which they should be performed. If a given check or solution does not solve the problem, try the next one on the list. This way, the simplest solutions are done first to avoid a lengthy troubleshooting session.

General Troubleshooting

Trouble	Checks and Solutions
When turning on the Modem unit, the power LED is dimly lit and the LCD display is blank.	• Disconnect the coaxial cable on the TX connection and turn the Modem unit back on. Once the unit powers up, reconnect the TX cable.
User cannot communicate to the other side of the link.	• Check that the units are connected properly and that the Modem unit is on. • Check that the link is established by checking the Signal Level and Filter Power under the "Status Menu" • Check that the user's equipment is connected and configured properly. • Check that the antenna is properly connected to the RF unit and that it is still correctly aligned.
Signal Level and/or Filter Power are at 000%	• Check that the units are properly connected. • Check that the other end of the link is working properly.

	• Check that the antennas are aligned and connected properly. • Check for any strong interference signals in the vicinity of the link.
The Signal Power indicator is in the acceptable range, but the link cannot establish.	• Check that the Filter Power under the "Status Menu" is a non-zero value. • Place some attenuation on the cable between the RF unit and the antenna. • Check that the antennas are properly aligned. • Check for possible sources of noise in the area of the antenna and RF unit.
The Modem unit indicates that the link is up and running, but the user's equipment cannot communicate across it.	• Check that the user's equipment is working properly at both ends of the link. • Check that all routing addresses in the user's equipment are set correctly (if applicable). • Turn on and off one or both ends of the link.
The keypad isn't working, or the LCD display and/or the LEDs don't seem to be working properly.	• Check that power is running to the unit and that it is turned on. • Check that the cable between the interface and the main board is connected properly.

Alarm Troubleshooting:

Alarm(s)	Checks/Solutions
Transmit LOS	• Check the connection between the Modem unit and the user's input device. • Check that the user's equipment is powered on.
LIU not responding	• Run the LIU Loopback Test. • Run the FEC Loopback Test. • Run the Matched Filter Test.
Firmware not responding	
FEC decoder not locked	• Check that the far-end Modem unit is working properly. • Restart the far-end Modem unit.
RX low signal power	• Check the connection between units. • Check that the far-end of the link is working properly. • Check that the antennas are aligned.
RX low symbol power	• Check that the far-end of the link is working properly.
No acquisition	• Check that the far-end of the link is working properly. • Check if the attenuation in the link has increased or if the transmission path has become obstructed. • Decrease the Symbol Threshold on the "Config Menu".
AIS	• Check that the user's equipment is working properly.

If the problem continues to persist after troubleshooting, or the specific problem does not appear in the above tables either contact tech support at *ioWave*, Inc. or consult our website which contains these and additional troubleshooting techniques for convenience.

Any problems due to component failure will be addressed as per the warranty and service agreement provided to the customer. Any product that must be returned to *ioWave* must have the proper authorization number obtained prior to shipping. See warranty and service guidelines provided with the equipment for more information.

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