



## **IsoLynx II UWB Tracking Tag**

### **IL0301 - User Manual**

**March 2016**

Table of Contents

Introduction..... 3

Regulatory Information for the United States..... 3

    FCC Notice (For US Customers): FCC ID: 2AHCQ-IL0301 Model: IL0301 ..... 3

Hardware & Specifications ..... 4

    IsoLynx Tracking Tags ..... 4

    USB Tag Charger ..... 4

Charging the IsoLynx Tags..... 5

Mounting On American Football Shoulder Pads ..... 5

Removing the Player Tracking Tags..... 6

IsoLynx Tag Hardware Specifications ..... 6

    Main System Components..... 6

    RF Characteristics..... 6

    Mechanical ..... 6

## Introduction

The IsoLynx Tracking Tag (IL0301) is a small, battery-powered RFID device that produces ultra-wideband pulses that are used to generate real-time location and movement data. IsoLynx tags are fixed to athletes, equipment, and other objects of interest and transmit UWB "pings" to reference nodes placed around the venue. Its small size and low power consumption make the IsoLynx tag an ideal UWB tracking apparatus for large venues and multiplayer sporting events. The IsoLynx tags also allow for remote activation, easy attachment/removal, convenient USB charging, and have an onboard LED indicator for real-time feedback of tag state.

## Regulatory Information for the United States

### FCC Notice (For US Customers):

FCC ID: 2AHCQ-IL0301  
Model: IL0301

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.
2. This device must accept any interference received, including interference that may cause undesired operation.

**Note:** 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/television technician for help.

Changes and modifications not expressly approved by IsoLynx LLC can void your authority to operate this equipment under Federal Communications Commissions rules.

## Hardware & Specifications

### IsoLynx Tracking Tags

The battery-powered tracking tags transmit UWB pings at up to 80Hz to allow for real-time location calculation. Tag pulse rates can be programmed for rates between 0.1Hz and 80Hz depending on their use or the number of other active tags in the venue. Tags remain in sleep mode when not in use and can be activated or deactivated remotely by using a master reference node.

**Tag Top**



**Tag Bottom**



### USB Tag Charger

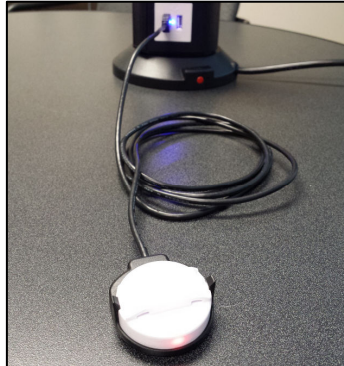
The IsoLynx tags come equipped with a portable USB charger for convenient, on-site charging and storage. The tag fits securely into the tag charger dock, which can be connected to any compatible USB charger station.



## Charging the IsoLynx Tags

To ensure reliability and longevity, all tags should be fully charged before and after their use. The tags can be charged quickly using the charging dock and any compatible USB power station. Charging takes approximately 2-3 hours.

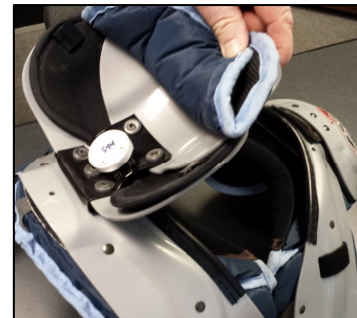
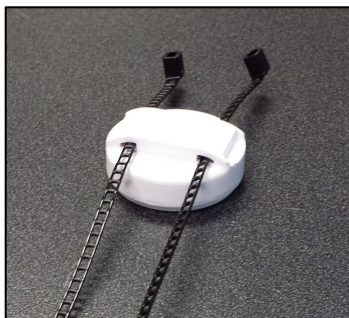
1. Secure the tag inside the charging dock so the metal pins on both devices are aligned
2. Plug the charging dock into any compatible USB power source
3. Ensure the tag's LED lights up a solid red. This indicates the tag is charging.



## Mounting On American Football Shoulder Pads

One use for IsoLynx Tracking Tags is collecting data from American football games. The steps below detail how the tags should be attached to a set of shoulder pads. Ideally, each set of pads will contain two tracking tags—one on each shoulder.

1. Feed two plastic zip ties through the guide holes on the top of the tag.
2. Find a location within the shoulder pads where the ties can be securely fastened.
3. Ensure the tag stays upright and the arrow faces the front of the pads for proper orientation.
4. Pull the zip ties tightly and cut the excess ends to ensure a snug and comfortable fit.
5. Ensure the tag is fastened securely to prevent it from coming loose during game-play.



## Removing the Player Tracking Tags

The IsoLynx tags are designed to be easily removed and powered-down after use. To remove the IsoLynx tags after a game, complete the following steps:

1. Detach the player tracking tags from the athlete pads/jersey. This may require a pair of scissors depending on how they were attached before the game.
2. Recharge the batteries while inactive to prepare for the next use
3. Inspect all the hardware for visible damage before storing the system away after an event.

## IsoLynx Tag Hardware Specifications

### Main System Components

Microcontroller: Onboard ARM Processor

Accelerometer/Gyroscope/Magnetometer: Onboard 9-Axis Accelerometer/Gyroscope/Magnetometer

Battery: 3.7V 300mAh - Rechargeable in Application

Operating Voltage: 3.0V

Operating Current: 5mA (nominal)

Temperature Range: -40 - 85C

### RF Characteristics

UWB IEEE802.15.4-2011 UWB Channel: 5

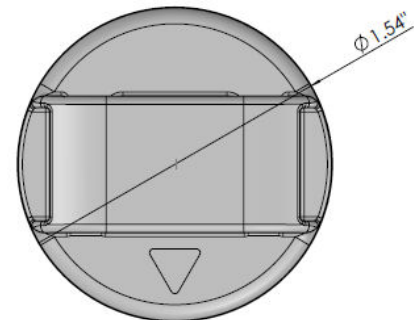
Bandwidth (Values in GHz):

|                  |                              |        |
|------------------|------------------------------|--------|
| <b>fM</b>        | The highest emission peak    | 6.2862 |
| <b>fL</b>        | 10 dB below the highest peak | 6.1384 |
| <b>fH</b>        | 10 dB above the highest peak | 6.8247 |
| <b>Bandwidth</b> | Calculated: (fH - fL)        | 0.6863 |

Antenna: 0 dBi Omnidirectional

Locate Precision: 10cm

Locate Rate: 0.1Hz - 80Hz



### Mechanical

Weight: 19 grams

Diameter: 1.54"

Height: 0.64"

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