

PLUS
Location Systems



PLUS Tag
Model 2106

User Manual

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Regulatory & Legal Information

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Intended Use	<p>This manual examines the installation and uses of the PLUS 2106 Tag. Use this product only for the purpose it was designed for. Refer to the data sheet and user documentation for details.</p>
FCC Compliance	<p>U.S. Operation: 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. (3) Operation on board an aircraft or a satellite is prohibited. (4) Devices operating under this section may not be employed for the operation of toys. (5) Except for operation onboard a ship or a terrestrial transportation vehicle, the use of a fixed outdoor infrastructure is prohibited. A fixed infrastructure includes antennas mounted on outdoor structures, e.g., antennas mounted on the outside of a building or on a telephone pole. This outdoor infrastructure prohibition applies to intentional ultra-wideband (UWB) emitters.</p> <p>Operation in disregard of these conditions is a violation of 47 U.S.C. 301 and could subject the operator to serious legal penalties. Disassembling or modifying the unit will void both FCC compliance and PLUS[®] Location Systems warranty provisions.</p>
Manufacturer Contact Information	<p>HQ and Regulatory Responsibility: PLUS Location Systems USA, LLC 6767 Old Madison Pike NW, Suite 310 Huntsville, AL 35806 www.pluslocation.com</p>

Safety Information

Read and follow all instructions before using the **Model 2106 Tag**.

- Only attach the Tag to the monitored item per the instructions in this manual or per updates to this manual issued by PLUS.
- Never open the case on the Tag: There are no user serviceable parts or replaceable parts inside the enclosure.
- Do not leave the Tag on a heat source.
- Do not install in environments that exceed temperature and humidity requirements.
- Do not use the Tag if it has been damaged.
- **The Tag contains a coin cell Lithium Battery. Dispose of non-functioning Tags in compliance with local regulations.**

Revisions to this Document

Version	Comments	Release Date
Rev A	Initial release	10/03/2013

Introduction

The 2106 Tag is for use in active real time location. It contains two transmitters and two antennas to improve signal reception from a monitored item that can be in either a vertical or horizontal orientation.

The 2106 Tag is small, durable, and requires no maintenance since it is a sealed unit and has a long battery life.

It has been certified by U.S. FCC to comply with Part 15 of the FCC Rules subject to the conditions listed under the Regulatory Notice on pages 3 and 4 of this manual.

Figure 1-1 shows the location of the FCC identification (ID) sticker on the back side of the Tag device.

Figure 1-2 shows the Tag's FCC identification (ID) number with a sticker denoting its unique device ID.

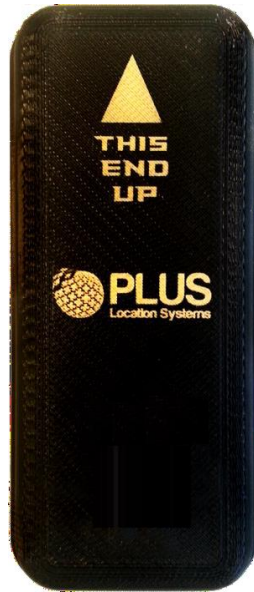


Figure 1-1 Tag FCC ID Location



Figure 1-2 FCC ID

Overview



Background

Tag tracking is accomplished by analyzing time-differences-of-arrival (TDOAs) of tag transmissions. When a tag transmits a packet, PLUS[®] Sensors that successfully receive the packet will send out information concerning the tag packet, including a precise timestamp. The difference in the timestamp between sensors gives the TDOA for that sensor pair/tag combination. At least three sensors must hear a tag in order to determine a valid position for that tag.

Model 2106 Tag

Within the PLUS[®] Real Time Location System, the 2106 Tag is used to track the position of people or objects. The tag is attached to an item, and through transmitted RF packets, sends its unique device ID and status. As the system sensors hear the tag, the tag position is determined and the position is added to its internal database. Note that the tracking system automatically discovers new tags and adds those newly discovered tags to that database.

Specifications

Dimensions (H x W x D)	108 x 46 x 10.75 millimeters 4.252 x 1.811 x 0.423 inches
Weight	37 g (1.3 oz.)
Housing Material	Impact-resistant Polycarbonate / ABS Plastic
Battery Life	6 Months @ 10Hz transmit rate (both transmitters operating)
Battery Type	CR2354 3V Lithium Coin Cell, non-replaceable
Ingress Protection	IP65 (Resists dust and jetting water – unit permanently sealed)
Compliance	FCC Part 15 FCC ID ZEH0913 RoHS
Temperature	Operating: -20°C to +55°C Storage: -30°C to +60°C
Relative Humidity	Up to 95% non-condensing
Mounting	Hook-and-Loop fastener patch (standard)
Model Number	2106

Mounting

The recommended method of attaching the 2106 Tag to clothing or equipment is by a hook-and-loop fastener patch on the back of the tag.

The following is the recommended attachment for the hook-and-loop fastener to the tag and clothing or equipment (Use fastener material long and wide enough to ensure a secure attachment to all affected items).

- Attach the hook part to the back side of the tag, being careful not to cover the FCC ID sticker.
- Attach the loop part to the clothing or equipment

Figure 2-1 below shows back side of the tag where the hook part of the fastener would be applied.

Alternate methods of attaching the Tag to an item:

- The tag may be inserted into a fabric pouch on clothing.
- The tag may be carried in a pocket.
- The tag can be attached using double-sided tape. Although this method provides a quicker and easier attachment to equipment, it does not offer as secure a method for an actively moving item as the Hook-and-Loop fastener patch system.

TAG ORIENTATION:

Although the tag has two transmitter and antennas to maximize operation in different physical orientations, there is an optimal tag mounting orientation. To maximize the Sensor reception of tag transmissions, the tag should be mounted vertically (in a “portrait” orientation). See figure 2-2 below for an example.



Figure 2-1

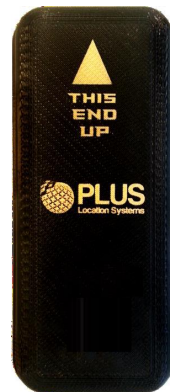


Figure 2-2