



Location Tag User Guide



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Record of Changes

Version	Date	Title or Brief Description	Entered By
1.0	12/1/2004	Initial Release	Chris Carver
1.1	12/10/2004	FCC Regulatory addition	Abdul Kassim
1.2	1/24/2005	Updated LED/Button Features and illustrations	Abdul Kassim

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Class B Statement – Notice to Users. 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 communication. 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 the 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.

Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission rules.

Regulatory Approvals

FCC The Location Tag product complies with the FCC Part 2, Part 15, FCC Part 24, Part 90, and Industry Canada requirements.

The Location Tag product complies with Part 15 of the FCC rules. Operation is subject to the following two 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.

FCC ID: NJILT10R
IC ID: 2971B-LT10R



Table of Contents

About this Product	vi
Technical Assistance	vi
Caution!	1
Overview of the Location Tag	2
Standard Features	2
Wireless Networks	2
Global Positioning System	3
RF Exposure Safety	4
Using the Location Tag:	5
Turn On and Off	5
Sending a Position Report	6
Radio Specifications	7
GPS Specifications	7
Battery Specifications	7
Environmental Specifications	7
Physical Specifications	7



About this Product

Welcome to the *Location TagTM User Guide*. This manual is intended for use by end users. This manual covers the Location Tag data and exception reporting over the ReFlex network. This product is designed to provide discrete position reports, it is not designed, or intended to be used, for continuous tracking applications. The Location Tag stores the most recent 400 position reports, and can transmit these on demand.

The Location Tag product operates on a rechargeable battery without an external antenna, or an external power supply. The Location Tag was designed for use in portable applications that require occasional position reports, or monitoring capability.

CSI Wireless recommends that you spend some time reading this manual to learn about the special features of this product.

Technical Assistance

If you have a problem and cannot find the information you need, please contact CSI Wireless Location Tag customer support at (403) 640-6720 x480.



Caution!

Please follow these guidelines when using the Location Tag. Damage caused by the improper use of the device is the liability of the end user alone.

The device is designed for personal use but is not intended for direct contact with the body. Persons with pacemakers must keep the Location Tag at least 8 inches (21 centimeters) from the pacemaker when the Location Tag is turned on.

Do not use the device in areas where the use of cell-phones is restricted such as in hospitals or airplanes. If the device causes interference simply moving the device away should rectify the problem.

The Location Tag contains no user serviceable or replaceable parts. Non-functioning units must be returned to an authorized service center for repair or replacement.

The Location Tag is water-resistant and floats, but it is not waterproof. Even though it is water-resistant, it is recommended that it be used where it is relatively dry and not subjected to submersion.

Overview of the Location Tag

The Location Tag is has two user buttons. One of the buttons is for Power button, represented by the symbol [$\ominus$] on the button. The other button, colored Grey, is the Locate button. This button is used to send a position report, or to set a geo-fence.

A “geo-fence” is a virtual circular fence, created by a user-defined point. When a vehicle or user enters or exits the area, an automatic alert is sent with the date and time the Location Tag crossed the geo-fence. The geo-fence can be used for such purposes as to confirm a departure, to trigger an alarm and to report unauthorized movement. Through the Location Tag web enabled services other “geo-fences” can be set to report arrival at a destination, or delivery of cargo.

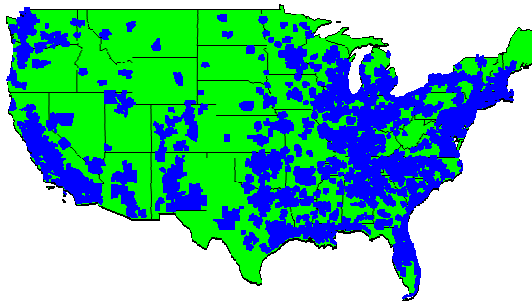
Standard Features

The Location Tag locator integrates a GPS receiver and a two way transiever that is specifically designed to provide maximum in building penetration and battery life. The Location Tag will normally last 14 days, without a battery charge.

When ON and moving the Location Tag will log it's position every 1.5 minutes (90 seconds), and saves total of 400 reports. That's the equivalent of having a history (heading, speed and location) of the last 10 hours of driving, or movement, stored on the device.

Wireless Networks

Any asset tracking or management system depends on the network to provide coverage in the area of usage. The Location Tag has some of the best in building coverage and connectivity percentages in areas where coverage is available. The network is not everywhere, it is focused primarily on Metropolitan areas and major population areas around North America as shown in the following diagram.



The Network stores the administrative information about the Location Tag and provides it's location, anywhere it roams in North America. An important feature of the Location Tag is the ability to move across state/provincial borders and network borders, a feature that is described as “roaming.”



Whenever the Location Tag locator has a new position or status to report, it contacts the network and transmits the message regardless of roaming status.

Global Positioning System

The Global Positioning System (GPS) is a satellite-based navigation system operated and maintained by the U.S. Department of Defense. GPS consists of a constellation of 24 satellites providing worldwide, 24-hour, three-dimensional (3D) coverage. Although originally conceived for military needs, GPS has a broad array of civilian applications including timing, surveying, fleet management, marine, land, aviation, and vehicle navigation. GPS is the most accurate technology available for navigation. As a satellite-based system, GPS is immune from the limitations of land-based systems, which have limited coverage and whose accuracy varies with geographic location and, even under ideal conditions, cannot compare with GPS. By computing the distance to GPS satellites orbiting the earth, a GPS receiver can calculate an accurate position. This process is called satellite ranging. GPS receivers can also provide precise time, speed, and course measurements that are important for vehicle mobile positioning and communications applications.

The Location Tag locator includes an advanced eGPS receiver, which provides the position, course, speed and time information required for asset management applications and more. The Location Tag's eGPS receiver features a twelve-channel digital signal processor (DSP) which operates at the GPS L1 frequency (1575.42 MHz) and processes the Coarse/Acquisition (C/A) code portion of the GPS signal and integrates that information with network data.

How does it work? Upon activation, the GPS receiver scans for GPS satellite signals. The Location Tag must locate and receive signals from at least four satellites to be able to determine its location. Without eGPS, this process of locating the satellites, receiving the data and achieving a position fix can take several minutes. This delay can be problematic for many users and, in some cases, would make the Location Tag impossible to use.

With eGPS, the wireless network fills in the missing information for the GPS receiver. This can occur when GPS satellite transmissions are blocked by buildings or natural obstructions such as heavy tree cover. eGPS allows Location Tag to operate more quickly and under adverse RF conditions. A network of GPS receivers across the United States is used to obtain the most up-to-date ephemeris data from all which allows the receiver to quickly locate the four satellites and process the data contained in their signals.

The most obvious advantage of eGPS is the significant improvement in battery life that is achieved. Where normal GPS receivers would last hours, the eGPS receiver in the Location Tag can last for days. Most users will find they only need to recharge the Location Tag about every 12 days.



RF Exposure Safety

For RF Safety reasons, it is recommended that there is a 20 cm separation between unit and the body of the user.

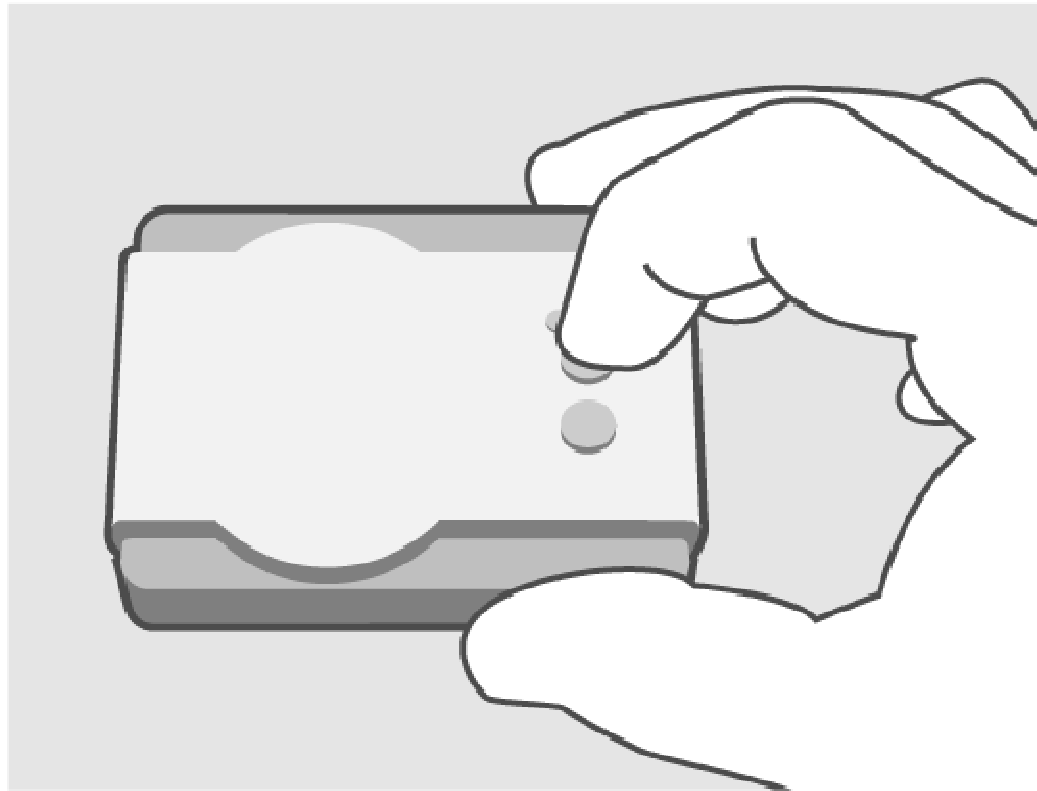
Using the Location Tag:

Turn On and Off

- To turn ON the Location Tag, press the Power button [⊖] and hold for 2 seconds or more. Both LEDs will immediately be solid GREEN for 5 seconds and then turn off. Thereafter the Status LED will blink RED. When the Location Tag is registered on to the network the Status LED will blink GREEN.

If the Battery is less than 40% charge the Power LED will blink AMBER.

If the battery is less than 10 % the Power LED will blink fast AMBER.

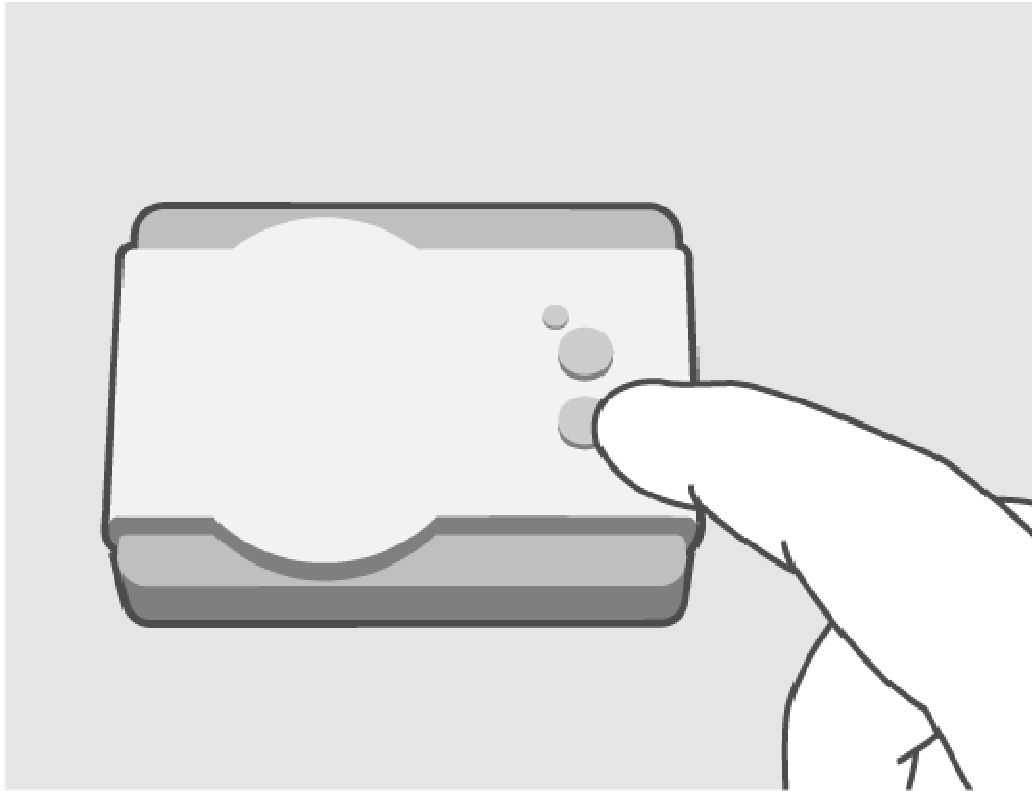


- Plugging in the charger will cause the Power LED to be solid AMBER when charging, and turn ON solid GREEN when the Location Tag is fully charged.
- To turn the Location Tag OFF, press and hold the Power button [⊖] for 5 seconds or more. The power LED will flash AMBER to indicate that the Location Tag is powering down, and will then turn OFF.

- To test battery status: press the Power button [⊖] for < 2 seconds. The LED color blink pattern and color indicates the battery status:
 - Solid Green - Fully Charged
 - Flashing Green - >35% Charged
 - Flashing Amber - <35% Charged
 - Fast Flash Amber - <10% Battery is discharged

Sending a Position Report

- When the Location Tag is ON and communicating it can send a position report.
- Press the Status button [⊙] and hold for < 2 seconds. The Status LED will immediately fast blink GREEN for 6 seconds, and proceed to GREEN on for 0.25 seconds every 2.25 seconds.





Specifications

Radio Specifications

ReFLEX

Rx: 929-932
935-942 MHz
Tx: 896-902 MHz

Type Approvals

FCC Part 15, FCC Part 24
Industry Canada

GPS Specifications

General

L1 (1575.42 MHz) frequency

Accuracy

Horizontal: < 10 meters (50%)
Altitude: < 18 meters (50%)

Battery Specifications

General

Li-Ion 1000 mAh
12 days average life

Environmental Specifications

Temperature

Operating: -20°C to + 60°C
Storage: -40°C to + 85°C
Charging 0°C to + 40°C

Humidity

5% to 95% RH
non-condensing @ +40°C

Casing

Outdoor Use, NEMA 3R
Water and dust-resistant per IP
32 standard

Vibration

SAE 1455, Figure A1
2g, 18Hz to 2000 Hz

Drop Test

1 meter drop on any axis

Physical Specifications

Housing

ABS plastic with co-molded
Rubber

Size

3.25" x 2.30" x.95"

Weight

104 grams (with Battery)