



***Wireless Tracking and Locating in Real Time***

## **WISER Redundant Radio Localization & Tracking (RRLT) System**

### **Quick Start Guide** ***Version 1.1***

#### **CONFIDENTIAL DOCUMENT**

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## Introduction

WISER's RRLT Locator System leverages new advances in Ultra-Wide Band technologies to deliver low cost/high accuracy real-time localization. The WISER RRLT solution consists of a mesh network where each node of the mesh consists of a 2-way WISER USB Dongle. Each Dongle may act interchangeably as either a mesh antenna or a roaming device that may be tracked within the mesh. The WISER USB Dongle is the first product of a suite of products designed to allow real time tracking and locating of objects equipped with a WISER USB Dongle. The following manual provides instructions on how to get started quickly with a demonstration of the system.

## Parts

Your evaluation kit will include:

1. one or more WISER USB Dongles (in this example, 5)
2. USB Batteries (optional)
3. USB Power Adaptors (optional)
4. USB Extension Cable (optional)

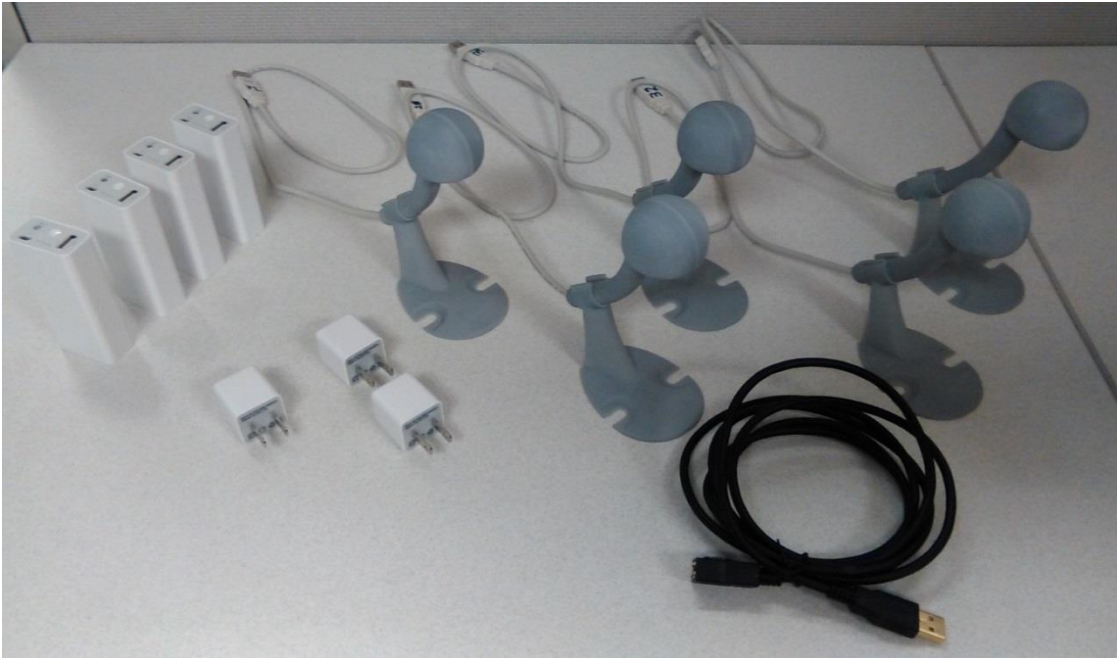
Users may alternatively purchase your own USB Batteries and Power Adaptors, however, it is required that these accessories comply with the emission limits per the Federal Communications Commission (Section 15.27(a)).

The image below shows an example of the items that may be included.

## Physical Setup

This setup assumes you have a base station/laptop or desktop and five WISER Dongles, four to serve as mesh antennas with one of those plugged into the base station laptop, and the fifth to serve as a tracking device. Identify an area that you wish to do tracking within, for example a room or office. It is helpful to have an image of a floorplan (to scale) of the area pre-loaded onto your desktop/laptop computer. This is later used for the software program. If no map is provided, there is a default map that can be used.

Four of the WISER Dongles will be in a stationary position, and the fifth one will be called the “Roaming Device.”

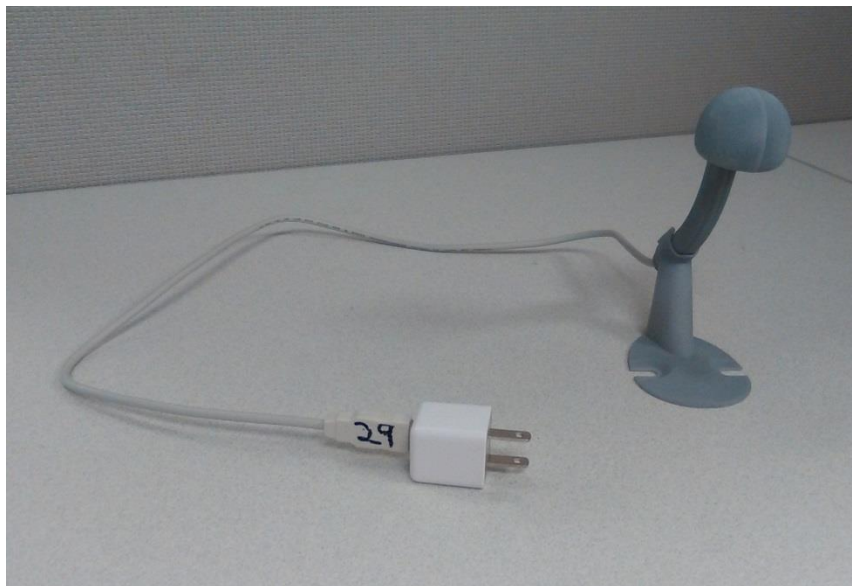


You will first want to plug in three of the WISER Dongles either into a power adaptor or USB Battery. Then, you will place them throughout the space where you will conduct the object tracking and locating demonstration. Note that operating distance varies indoors, depending on the density of large objects and walls. The spacing of the dongles may be much farther apart in large open spaces with direct line-of-sight between the dongles. Plug the fourth dongle into your base station computer. Typically spacing of no more than 50 feet indoors yields the best performance. Outdoors, spacing can usually be much larger with an upper bound of 750 feet.

*Word of caution: Some USB Batteries intelligently sense the power draw and turn off automatically if there is not enough of a power draw. The USB Wiser Devices use very little power, so some USB batteries may shutoff prematurely. If the user is using their own battery, make sure to choose a battery that remains on at least a minute after plugging in the device.*

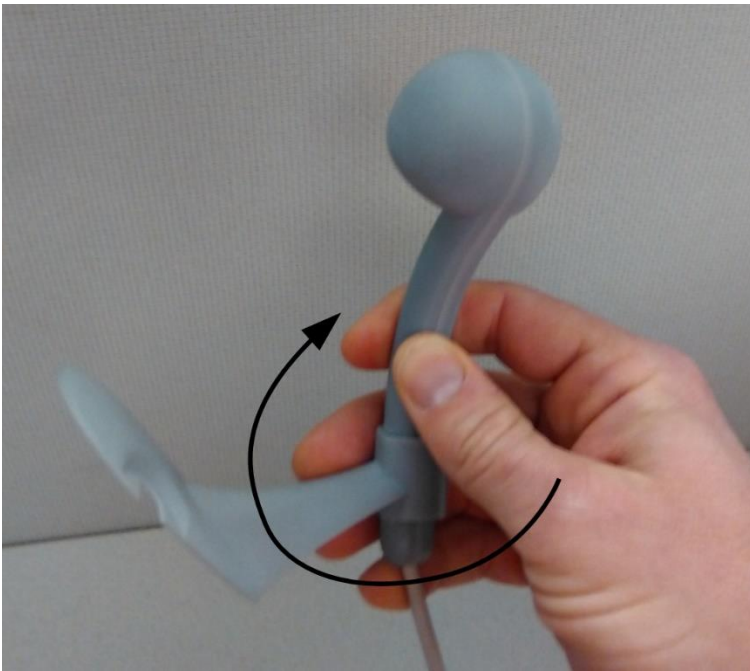
The WISER USB Dongles can be powered in three different ways: 1) plugged into computer, laptop or similar device, 2) plugged into a USB battery, or 3) plugged into the power adaptor.

The pictures below show the Wiser Dongle plugged into a USB battery, and into a standard DC power adaptor.



## Temporarily Attaching to Wall

The Wiser Dongles can also be temporarily attached to the wall as well. For best performance the devices need to be oriented the same way. To achieve this, one can rotate stem of the device 180 degrees relative to the base as shown in the picture.



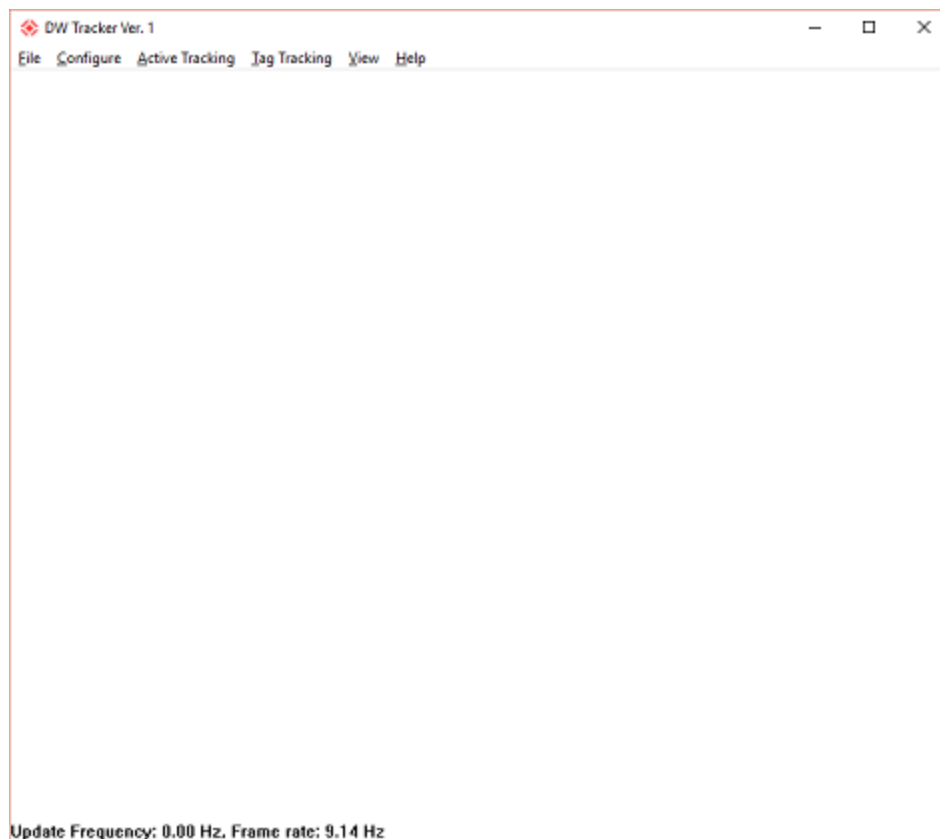
Then, the device can be attached to a wall as per the picture.



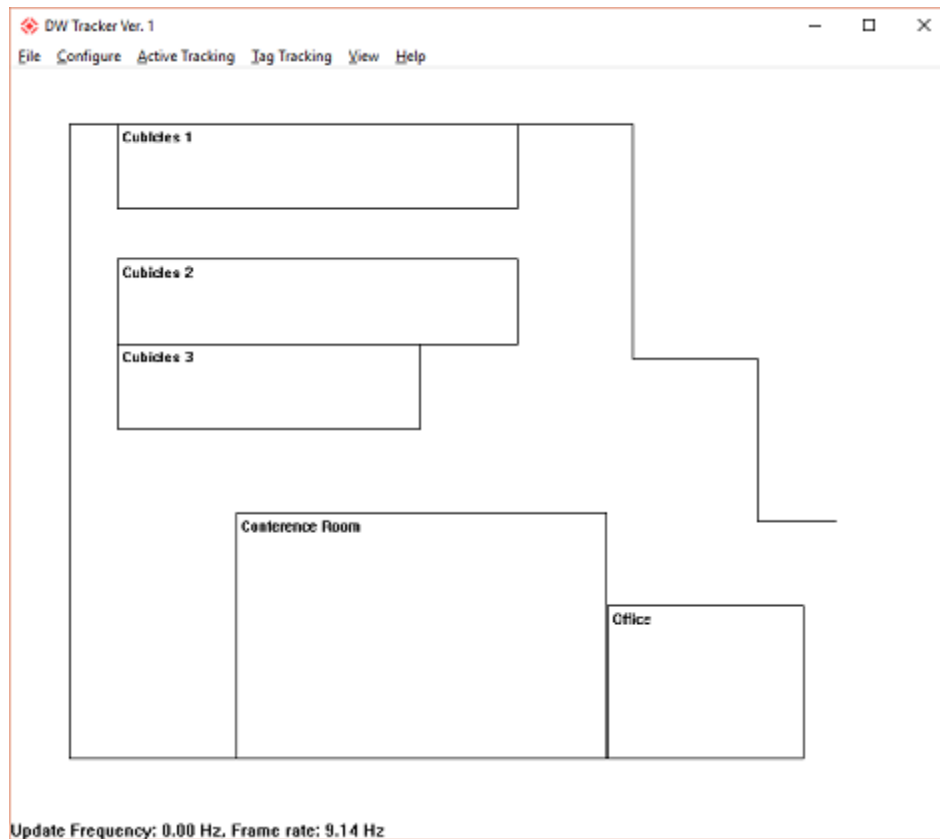
## Software Guide

The demo version of the WISER Tracker software can be downloaded from the WISER website at <http://wisersystems.com/demotracker>. The software runs on a Windows machine (Windows 10, Windows 8, Windows 7, Vista, etc.)

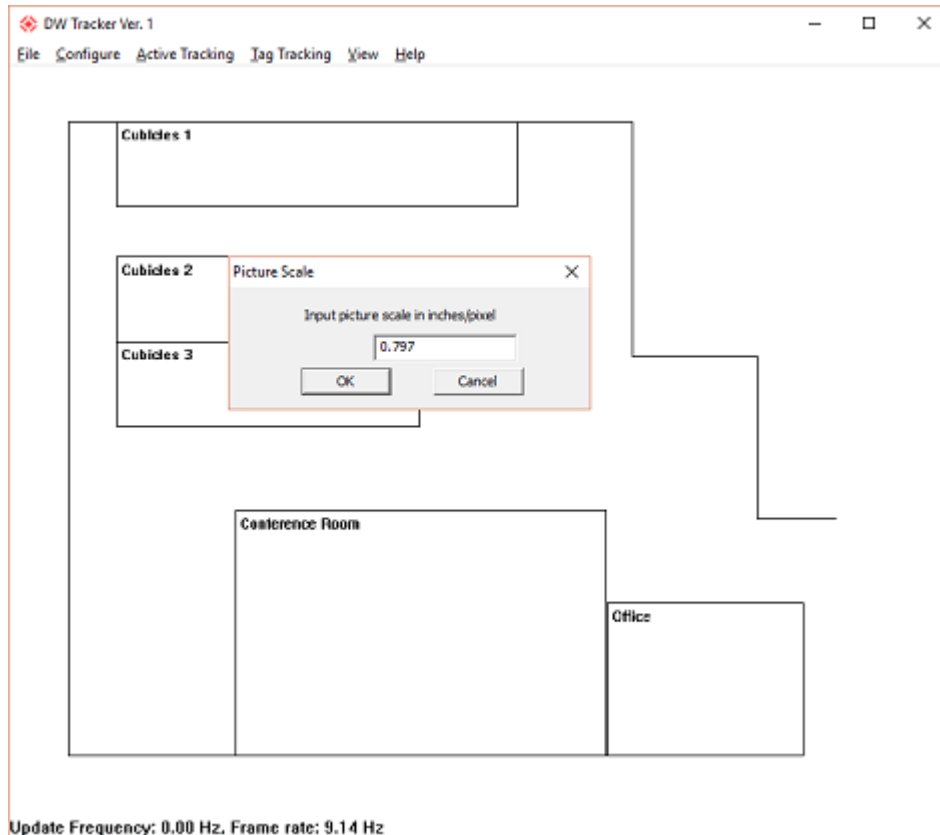
1) Download and install the program. Then, open the WISER Tracker Demo application. The following window will open:



2) Next, click on the menu item: *Configure* → *Load Layout Picture*. Select floorplan image and load. Older versions of Windows OS may not accept either PNG or jpg. BMP formats should always work. If you do not already have an image map available, you can choose “*DefaultDistanceMap\_0\_75.BMP*” For this example, we used the map from an office suite, but your image will be different.



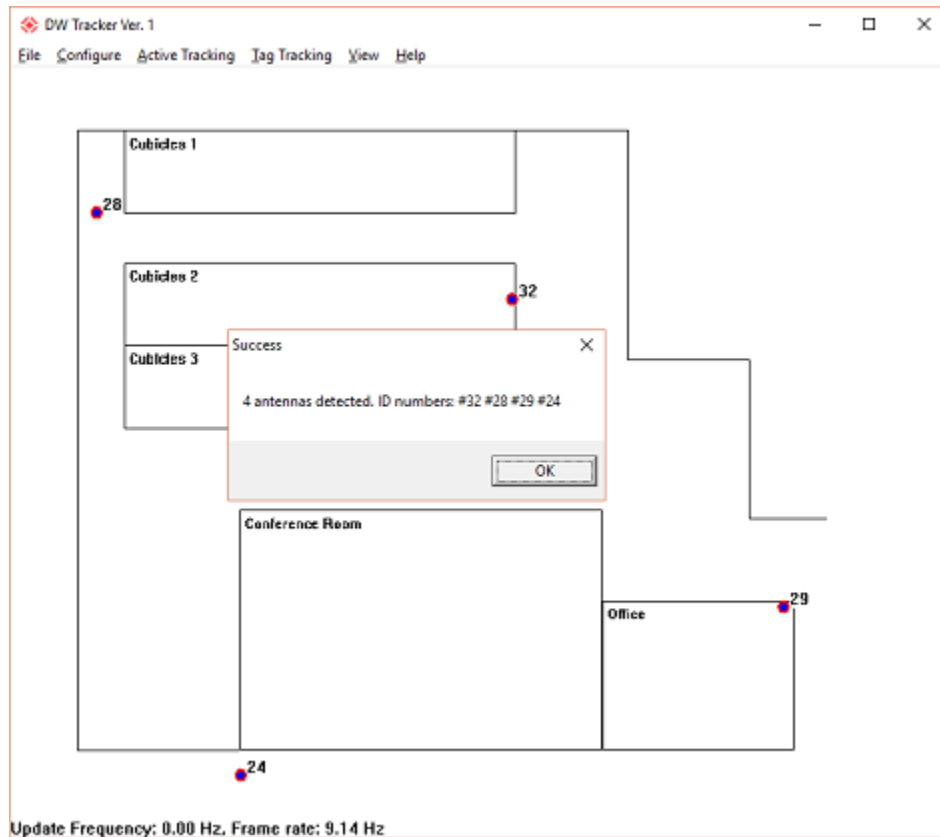
3) Menu: *Configure* → *Set Picture Scale*. For a scaled map to be accurately represented in the program, you must set the number of inches per pixel of the image. For example, if the image map is 100 pixels x 100 pixels, and you know the entire length of the map is 900 inches, then the number of inches per pixel is simply:  $900 \text{ inches} / 100 \text{ pixels} = 9 \text{ inches/pixel}$ . For the *DefaultDistanceMap\_0\_75.BMP* image, the value is 0.75 inches per pixel. However, if you use your own image map, you will need to calculate the associated picture scale.





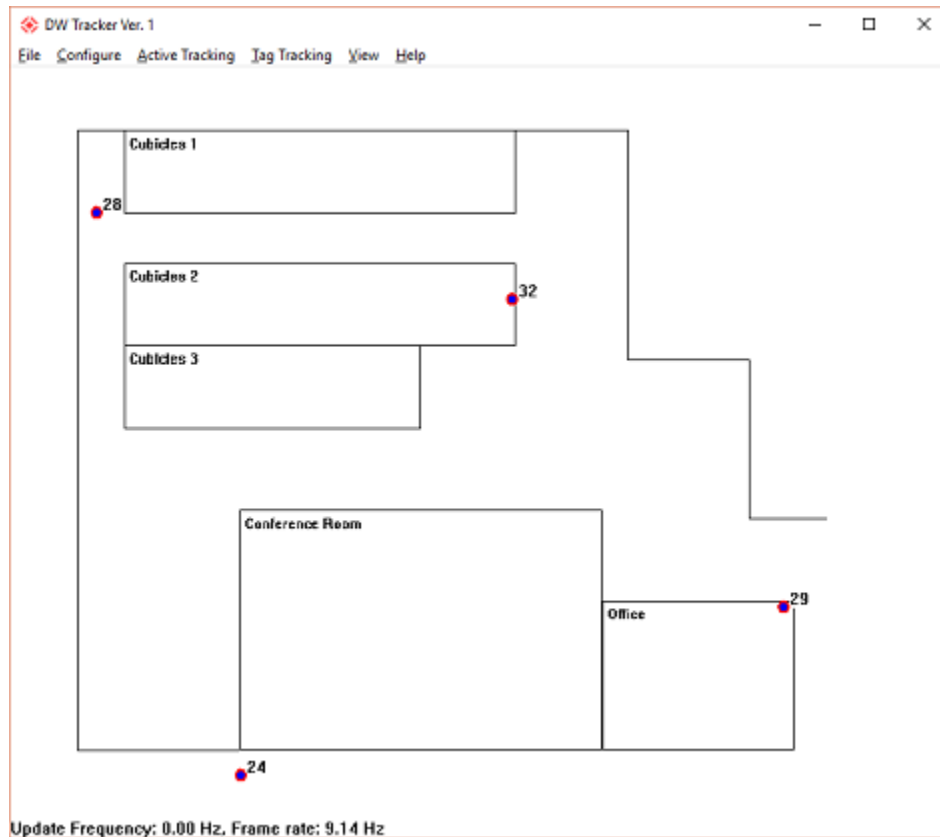
- 4) Plug two or three of the WISER Dongles into the batteries (or power adaptors) and place throughout the room. Pay careful attention to the device # and where it is located. Device numbers will be located on a tag near the base of the USB cable. Placing the devices high with no visible obstructions around or near it will improve the overall performance of the system.
- 5) Make sure one WISER Dongle is plugged into the computer that has the WISER application running. Placing the device high with no visible obstructions around or near it will improve the overall performance of the system. Note: in addition you need have at least one WISER Dongle that is not yet plugged in or powered. That one device as we will see later is referred to as the “Roaming Device”.

6) Menu: *Configure* → *Initialize Antennas*. If all is successful, you will receive a message that says “x# antennas detected. ID numbers: ...” Verify that all the USB devices are detected and the ID numbers match.



If there is a failure, you will receive a different message. To troubleshoot, make sure all the devices are powered and that at least one device is in communication range with at least one other device. If you run into any problems, refer to the Tech Support tab on the WISER website at [www.wisersystems.com](http://www.wisersystems.com) or contact [support@wisersystems.com](mailto:support@wisersystems.com) to work out any issues.

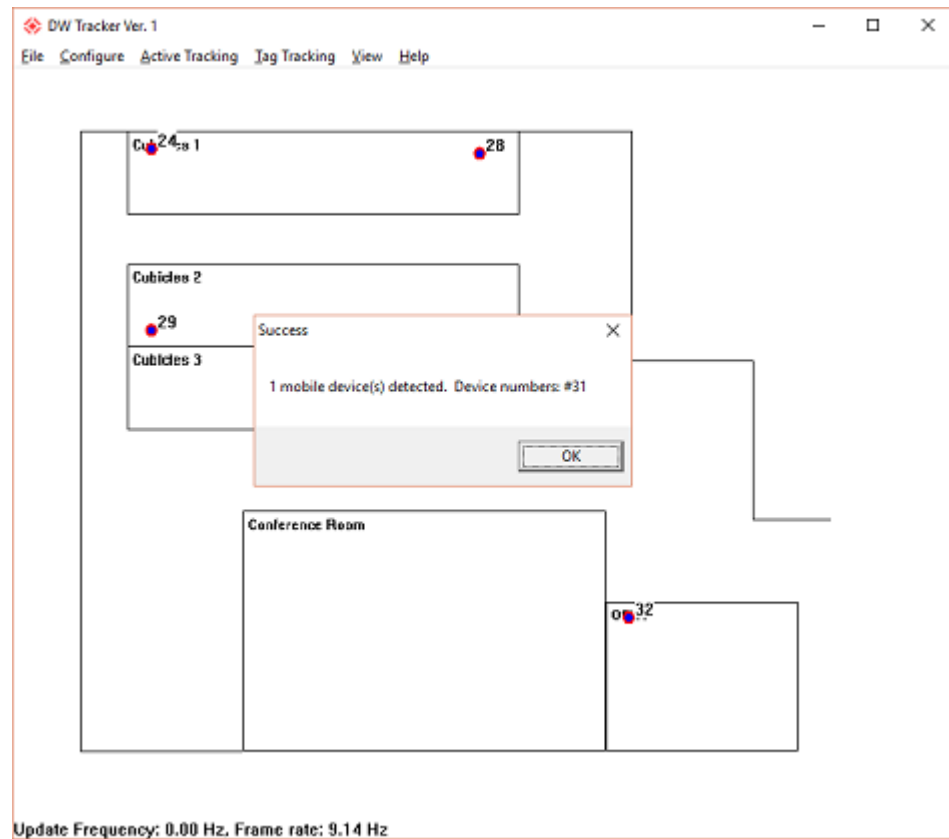
7) Dots with red and blue should now appear on your map in the application. Using the mouse, left click and hold on the dots and move them to the location that reflects their position in the office suite. Do this for all the dots.



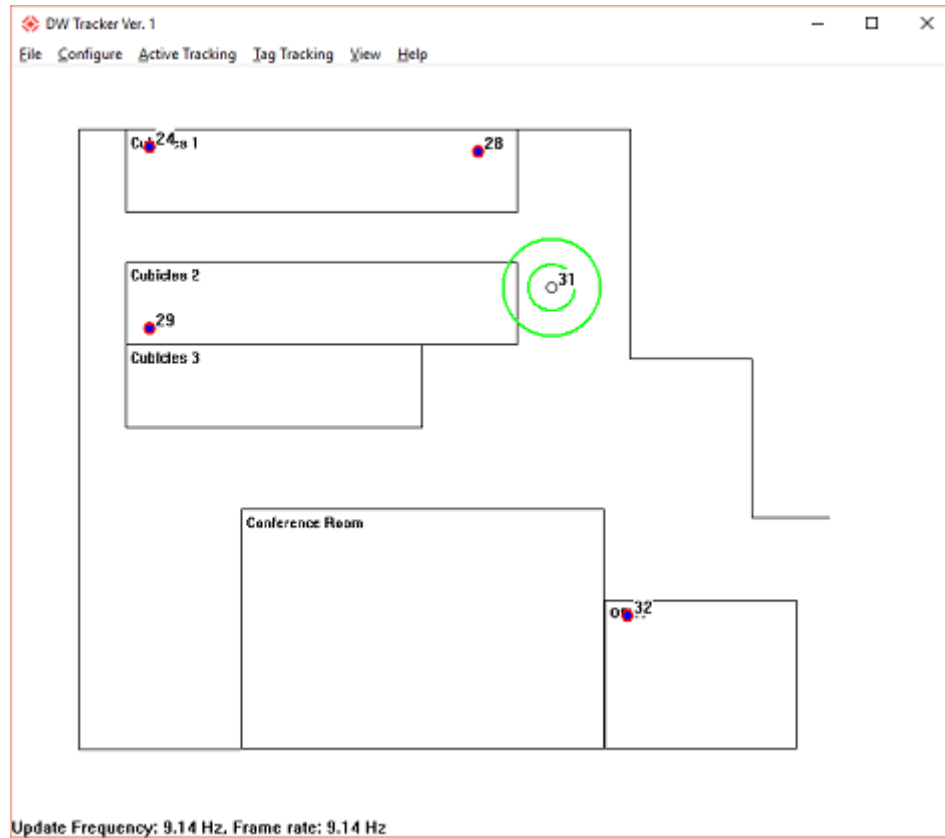
8) At this point, save the setup by going to the Menu: *Save Setup*. If you ever close the program, you can load this setup and bypass steps 2 through 7.

9) Plug one or more WISER USB devices into batteries which will be the “tracked” device. Note that this device needs to be unplugged whenever you initialize antennas (menu: *Configure* → *Initialize Antennas*). Otherwise, the system will mistakenly assume it is one of the fixed antennas of the system.

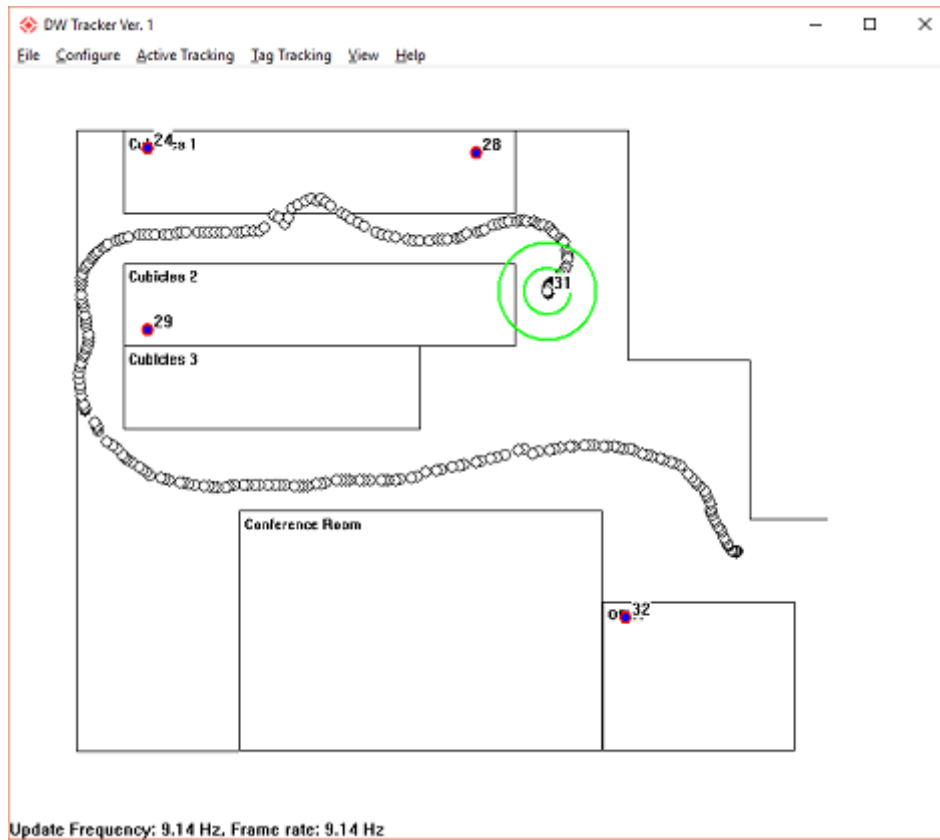
10) Menu: *Active Tracking* → *Initialize for Active Tracking*. If successful, you will receive the following message “x# mobile device(s) detected. Device numbers: ...” Verify that ID numbers of the devices match the message.



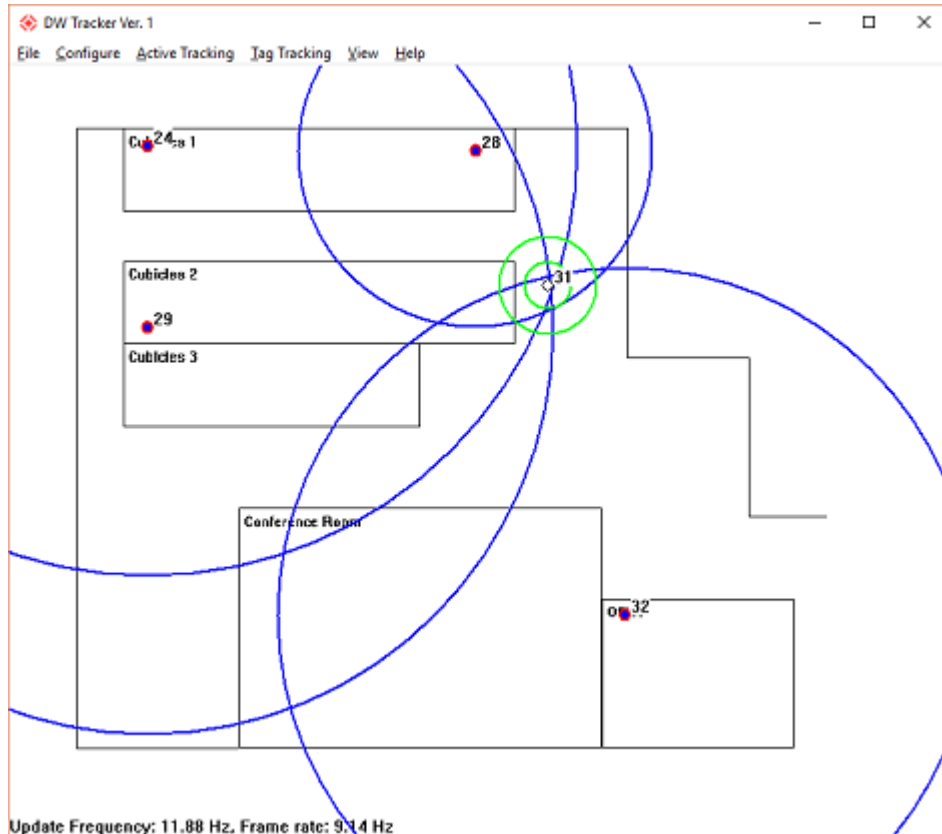
11) Menu: *Active Tracking* → *Run Active Tracking*. This will start the tracking.



12) Under menu item: *View* → *Toggle Tracking*, the path of the tracking can be turned on and off.



13) Under menu item: View → Toggle Circles, circles showing the distance measured from the antennas devices and the tracking devices are shown. For improved accuracy, this mode can be used to better position the devices for more precision.



14) When tracking is done, go to menu item: *Active Tracking* → *Stop Tracking* to stop tracking.

## For Developers, Software API

Developers can also take advantage of an API library to customize solutions for their own particular application. The API allows developers to integrate the WISER Dongles into their existing software solutions. The USB Driver is a standard HID driver and will work with most all operating systems (MAC, Linux, Windows, etc.).

The Software Developer Kit is available upon request on our website <http://www.wisersystems.com>

## Disclaimer

Demo Kit is sold as is. No support is included or implied in the purchase of the demo kit. Support is available upon request at additional cost. Please see the end of this manual for company contact information.

## FCC Regulations

Per Section 15.21 of the Federal Communications Commission, any changes or modifications not approved by WISERsystems, Inc. could void the user's authority to operate the equipment.

### *FCC Notice*

*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*

*Changes and Modifications not expressly approved by WISERsystems, Inc. can void your authority to operate this equipment under Federal Communications Commission (FCC) rules.*

## Contact Information

For additional questions and support, contact Wiser Systems, Inc at:

Email: [support@wisersystems.com](mailto:support@wisersystems.com)

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