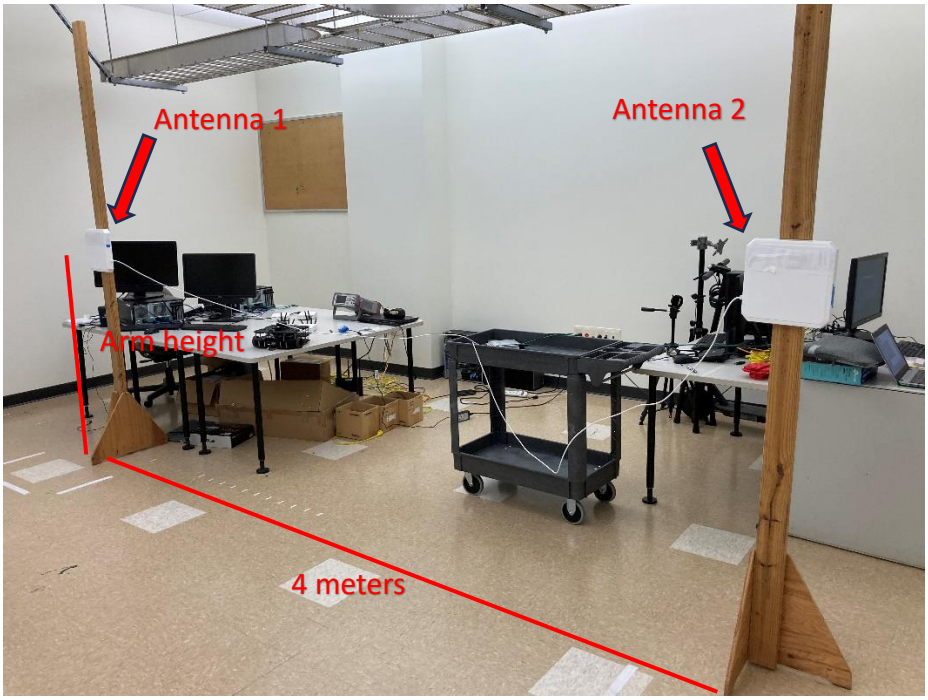
Testing Summary

This report summarizes the testing setting, equipment, and procedure. Discussions on how to maximize the performance of the system and how to determine the active zone of antenna are also included in the report.

Testing Environment:

To simulate a clinic environment where two antennas need to be mounted on wall, separated by 4 meters and at the height of the participant's arm height, we have the setting shown below.



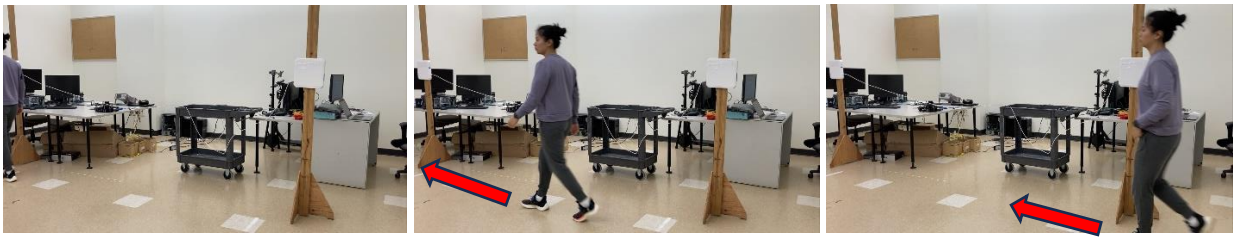
Testing Equipment:

Armband and tag. There are many sample tags that come with the RFID reader purchase. The green tag shown below is one of them. The armband here is a regular cell phone armband used for running. Insert the tag into armband's pocket and position it on participant's upper arm. Make sure that the tagged arm is the closer arm to the antenna. A photo of a participant wearing an armband with a tag is shown below.

Testing Case:

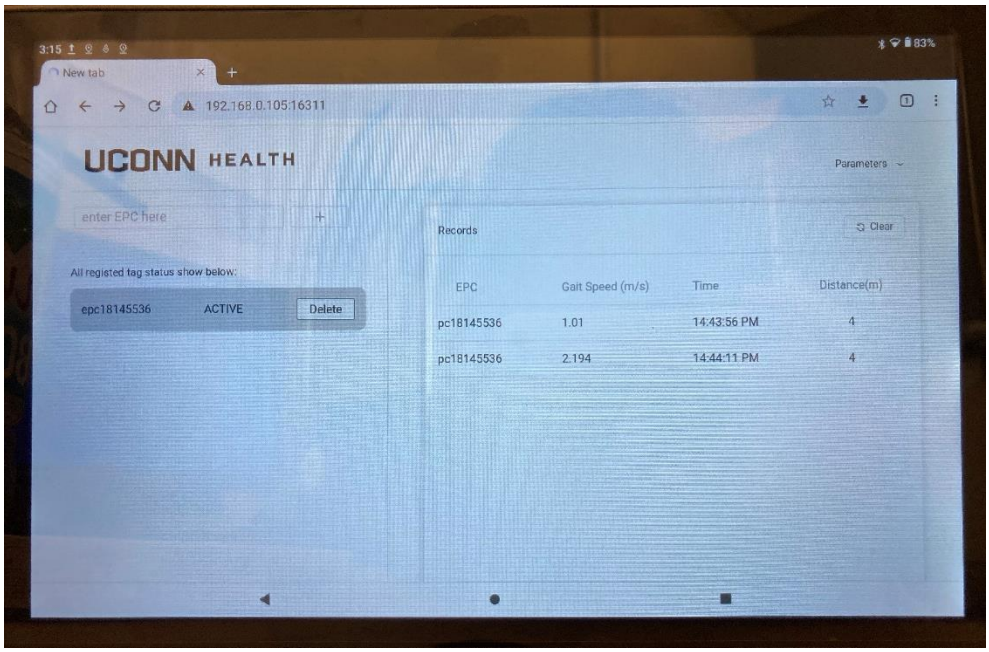
Two test cases are demonstrated here.

Case one: walking.



Case two: running.

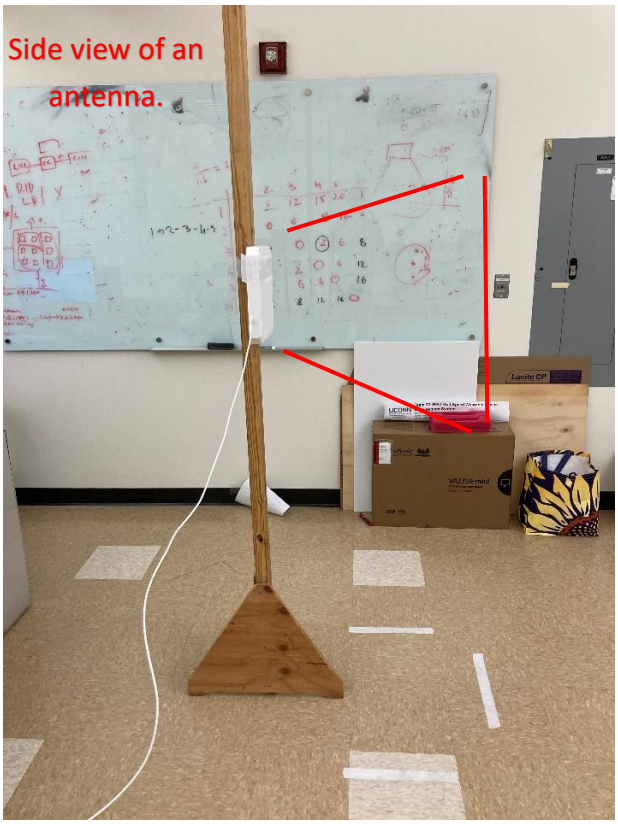
The result of two test cases is shown in the tablet's application page (presented in the photo below). The walking speed is 1.01 m/s and running speed is 2.194 m/s.

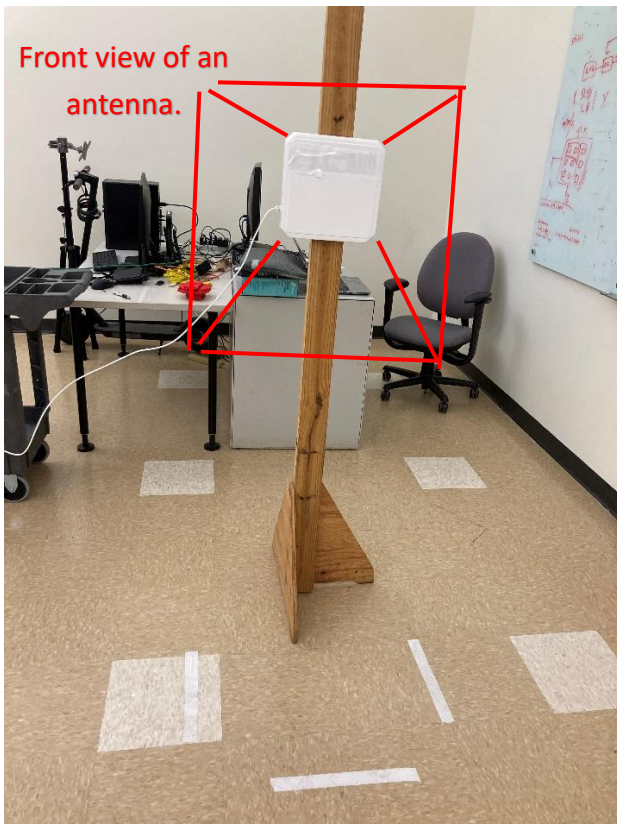


Discussion: Antenna active zone.

In an RFID system, the RFID antenna continually emits radio waves in all directions. When a tag falls within the broadcast range, it absorbs the radio wave energy and transmits a small signal back to the antenna. The reader, which is connected to the antenna, intercepts this signal and transforms it into data that developers can use to create applications. For successful scanning by an antenna, it requires a tag locating within active area. For current configuration, antenna's receiver sensitivity is set to -50, equivalent to 30 dBm and transmitter power is set to 15 dBm. The active zone is highlighted in red in the photo below.

There is no official document to show the calculation on the active zone's area. To determine an active zone, one needs to hold a tag and move away from the antenna. Gradually approach the antenna until the tag indicator change color from grey to green on the application webpage.


Side view of an
antenna.


Front view of an
antenna.