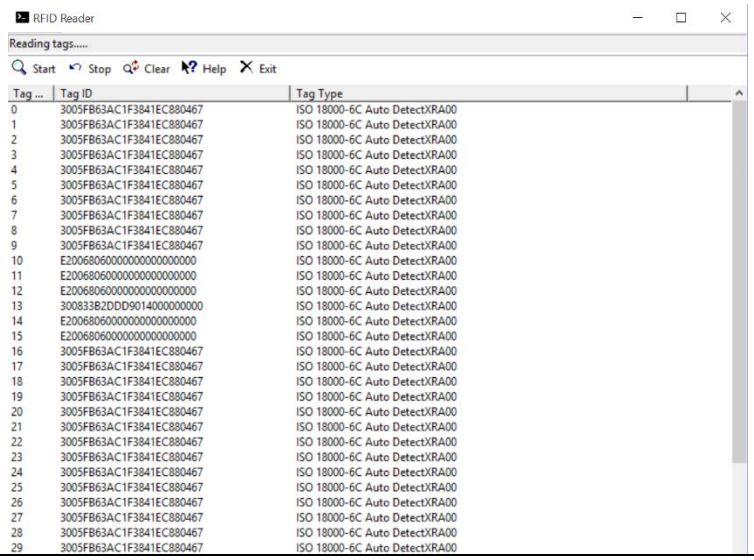
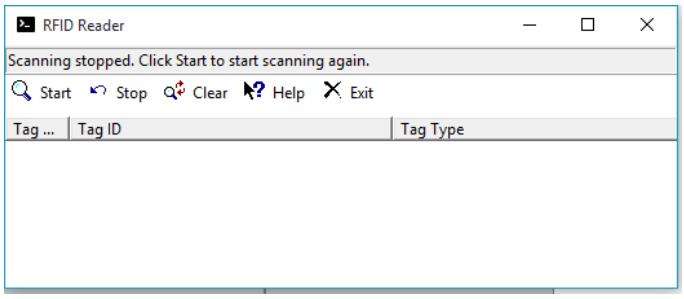
TEST DOCUMENTATION

RFID READER APPLICATION

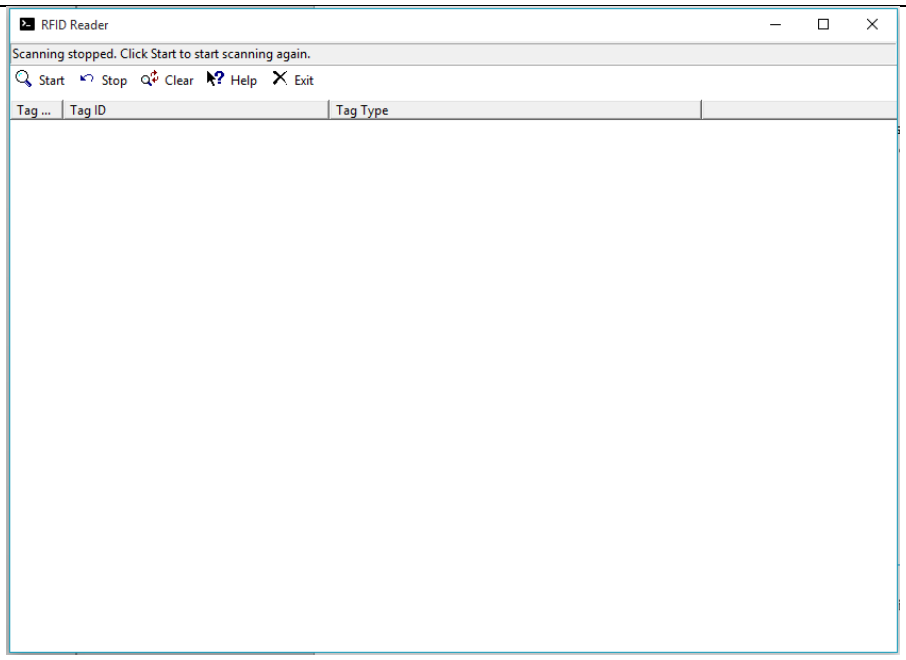
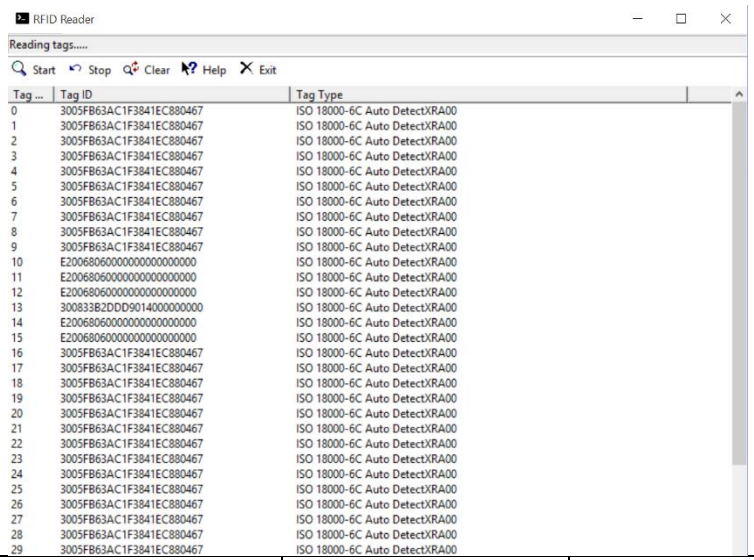
Table of Contents

1 Test Cases

Test #	Description	Test Steps	Expected Result	Pass / Fail
1	Program can detect and connect to an RFID reader.	1. Connect RFID reader to USB port. 2. Click **'Start'** to initiate the search for an RFID reader.	A message will appear indicating the program is connected to the RFID reader: `"Reader found, ready to start reading tags....."`	Pass
	Status bar displays ready message. Reader found, ready to start reading tags.....			
2	Once connected, program can scan tags and display on the screen.	1. Connect the RFID reader as in Test Case #1. 2. Swipe an RFID tag close to the RFID reader.	Tag information should be printed on the screen, including: **-Scanned tag count** **-Tag ID** **-Tag Type**	Pass
3	Tag ID and Tag Type are both displayed properly.	1. Connect the RFID reader and scan tags as in Test Case #1 and #2. 2. Observe the Tag ID and Tag Type printed on the screen.	Ensure tag information is printed correctly in the window.	Pass
4	Multiple tag types can be scanned.	1. Connect the RFID reader as in Test Case #1. 2. Swipe several RFID tags close to the RFID reader.	Multiple tag information is printed on the screen.	Pass
			Scanned tag count, Tag ID, and Tag Type are displayed. Tag information displayed correctly. Multiple tags can be scanned and printed to screen.	

<table>
<tr><td rowspan="2">5</td><td>Program can disconnect from RFID reader.</td><td>1. Connect the RFID reader as in Test Case #1.
2. Click ‘Stop’ to terminate the RFID reading session.</td><td>A message will appear indicating the program has disconnected from the RFID reader, and tags will no longer be scanned:
“Scanning stopped. Click Start to start scanning again.”</td><td>Pass</td></tr>
<tr><td colspan="4">Status bar displays stopped message:
Scanning stopped. Click Start to start scanning again.</td></tr>
<tr><td>6</td><td>Program can clear the existing tags displayed.</td><td>1. Connect the RFID reader as in Test Case #1.
2. Swipe an RFID tag close to the RFID reader. Wait for a list of tag information to be printed on the screen.
3. Click ‘Clear’ to clear the printed information.</td><td>All existing information printed on the screen should be deleted. Newly scanned tags should appear at the top of the list again.</td><td>Pass</td></tr>
<tr><td>7</td><td>Program can reconnect to a RFID reader after disconnecting.</td><td>1. Connect the RFID reader as in Test Case #1.
2. Click ‘Stop’ to terminate the RFID reading session.
3. After ensuring the session has stopped, click ‘Start’ again to initialize another scanning session.</td><td>After disconnecting from a session, a user should be able to reconnect to the RFID device to continue scanning for tags.</td><td>Pass</td></tr>
<tr><td rowspan="2">8</td><td>Program window can be resized.</td><td>1. Drag the side of the window to increase/decrease the window height/width.
2. Minimize/maximize the window.</td><td>Displayed information should persist on the screen without being repainted over.</td><td>Pass</td></tr>
<tr><td colspan="4">Before resize:
 

After resize:</td></tr>
</table>

<table>
<tr><td></td><td colspan="4"> 
</td></tr>
<tr><td rowspan="2">9</td><td>Program can scroll down to see a long list of tags.</td><td>1. Connect the RFID reader as in Test Case #1.
2. Hold an RFID tag over the scanner until the list of tag information exceeds the program window height.</td><td>A scrollbar should appear on the window, allowing the user to scroll down to see more tags.</td><td>Pass</td></tr>
<tr><td colspan="4"> 

Scrollbar appears allowing user to scroll down.</td></tr>
<tr><td>10</td><td>Program can handle stress. (Pressing start/stop repeatedly)</td><td>1. Click ‘Start’ button.
2. Click ‘Stop’ button.
3. Repeat steps 1 and 2 over and over.</td><td>Program should remain functional and be able to still run in the last current state.</td><td>Fail – Program crashes unexpectedly</td></tr>
</table>

2 Observations

While working with different types of tags, we noticed they had distinguishing properties. Some of the tags, called the EPC Class 1 Gen2 Tags, were large and did not have a reflective surface. These were able to be detected by the RFID reader from a relatively far distance (~22cm). The orientation of the tag also did not seem to affect the distance it was able to be detected from. They could also be detected when they were placed on the table adjacent to the reader, without being directly over top of it.

The tags with reflective surfaces were more restrictive with the orientation of the tag and the positioning. It was only able to be detected from a distance when the flat surface was facing the RFID reader. If the tag was turned perpendicular to the device, it was very difficult to detect the tag, and basically had to be in physical contact with the RFID reader before it could be detected. Additionally, the larger tags with more surface area had a larger distance of detection vs. tags with smaller surface area.

With both of the tag types, we also noticed that they could be read even without direct line of sight, such as through tables or other obstructions.