

RFID Manager Demo Software Manual

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1 RFID Manager Connection

This software is mainly used for function demonstration and test of the reader, supporting connection using network port and serial port.

1.1 Main Interface of the Program

Upon opening, the user is presented with the following interface:

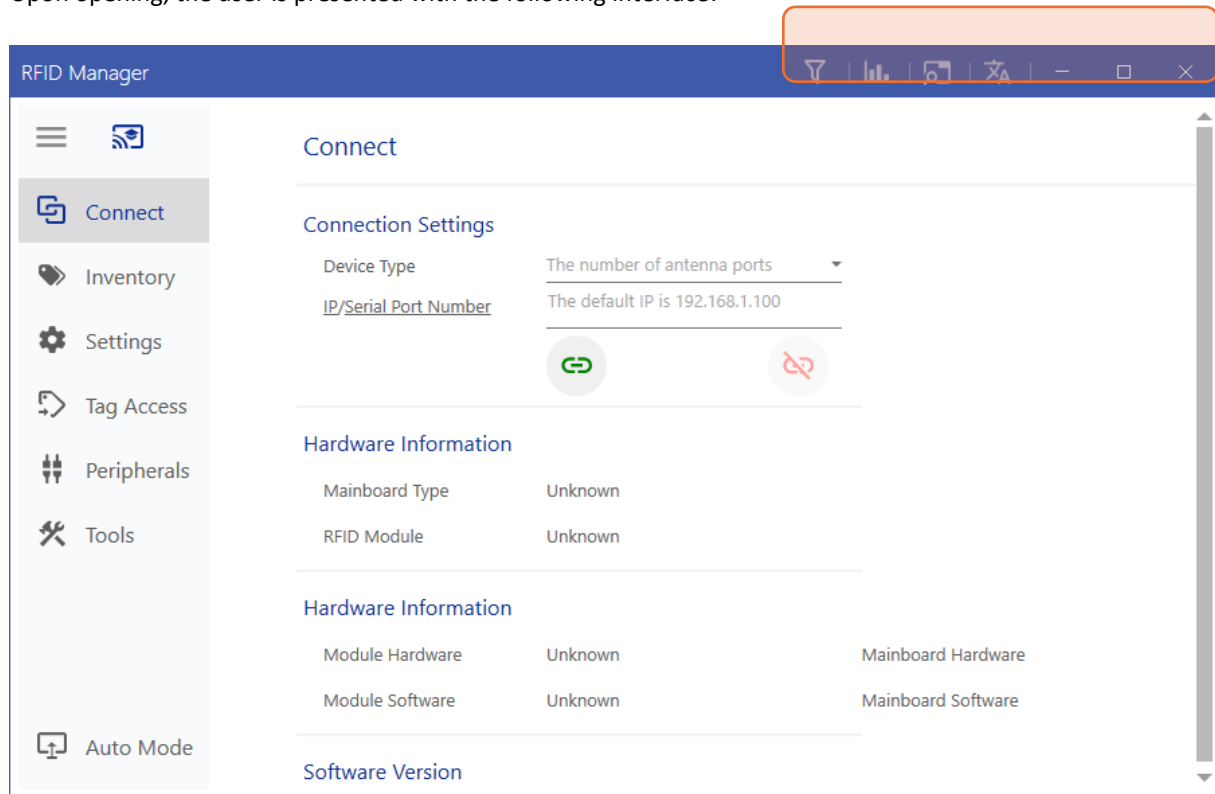


Figure 1: Interface on start of program

The **functions** in the upper right corner are “Label Filtering”, “Count Statistics”, “Command Debugging”, “Language Switching” (EN-CN), “Minimize”, “Maximize”, “Close”.

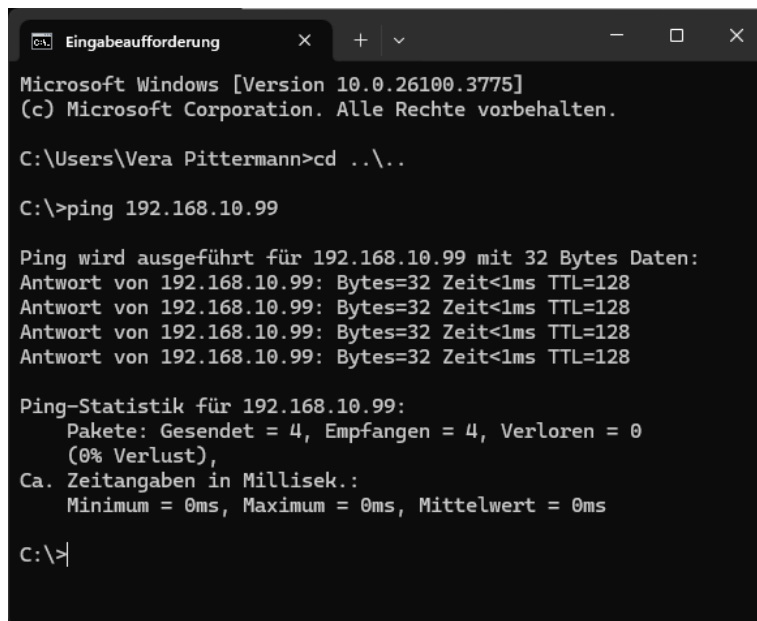
1.2 Reader Connection

1.2.1 Network Port

The default IP address of the reader is 192.168.1.100, the default gateway is 192.168.1.254, the sub-net mask is 255.255.255.0.

The IP address of the computer connecting with the reader must be in the same network segment as the reader. To check if a connection can be established, you may use any terminal (e.g. Command Prompt for Windows) and type “ping 192.168.1.100”, press the Enter key and check if the connection is smooth (as shown below).

If the connection doesn’t work, check if the IP address of the reader has been changed previously, if not, press the device reset button for 4 seconds.



```

Microsoft Windows [Version 10.0.26100.3775]
(c) Microsoft Corporation. Alle Rechte vorbehalten.

C:\Users\Vera Pittermann>cd ..\..

C:\>ping 192.168.10.99

Ping wird ausgeführt für 192.168.10.99 mit 32 Bytes Daten:
Antwort von 192.168.10.99: Bytes=32 Zeit<1ms TTL=128
Antwort von 192.168.10.99: Bytes=32 Zeit<1ms TTL=128
Antwort von 192.168.10.99: Bytes=32 Zeit<1ms TTL=128
Antwort von 192.168.10.99: Bytes=32 Zeit<1ms TTL=128

Ping-Statistik für 192.168.10.99:
    Pakete: Gesendet = 4, Empfangen = 4, Verloren = 0
    (0% Verlust),
    Ca. Zeitangaben in Millisek.:
        Minimum = 0ms, Maximum = 0ms, Mittelwert = 0ms

C:\>

```

Figure 2: Successful ping to reader (here 192.168.10.99)

To connect with the reader using the software, follow these steps:

1. select the number of available antenna **ports** (not the number of connected antennas),
2. type in the correct IP **address** of the reader and
3. click on the green **“Connect Reader”** button.
4. When the reader is connected, you can see the relevant **information** such as hardware information of the reader device.

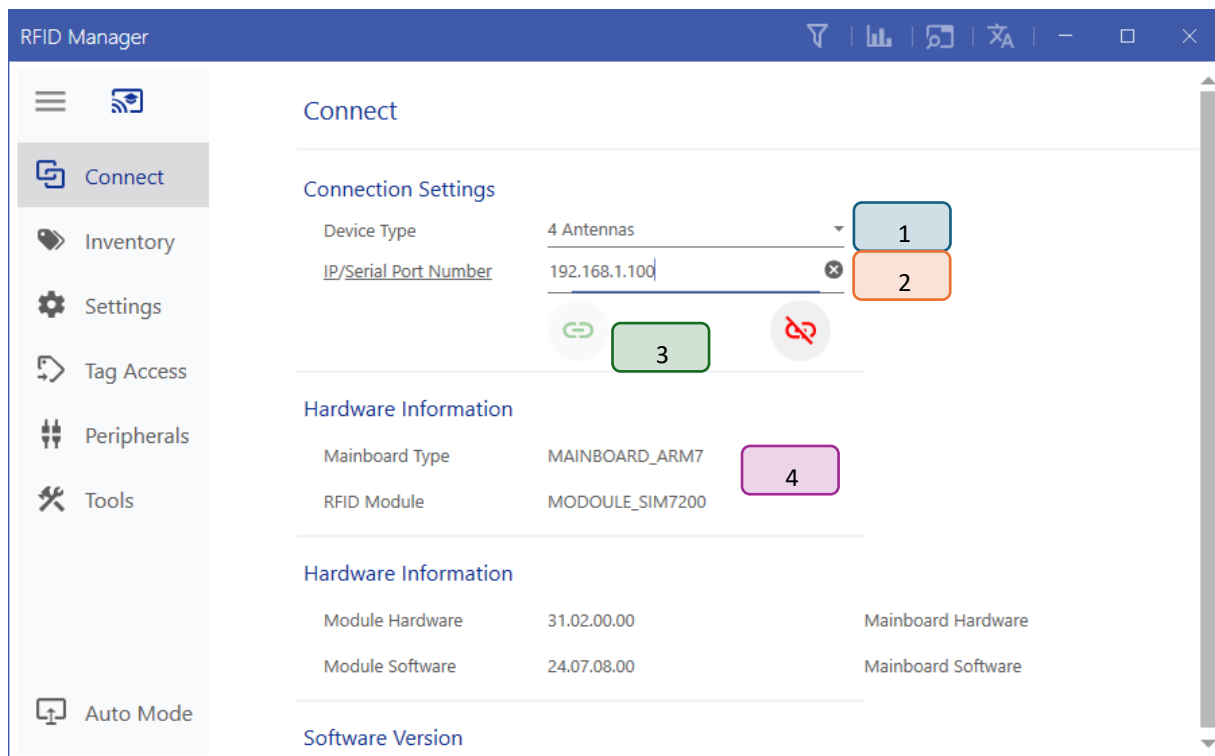


Figure 3: Connect with reader using the software

1.2.2 Serial Port

Connect the reader device with the computer. It may be necessary to install the needed drivers manually. The latest drivers can be downloaded from the website of the manufacturer:

<https://ftdichip.com/drivers/d2xx-drivers/>

Alternatively, use the Setup file in the folder “Drivers” in this SDK.

Once the reader is connected to the computer, choose the correct serial port address, which can be found in the Device Manager under “ports”.

To connect with the reader using the software:

1. select the number of available antenna **ports** (not the number of connected antennas),
2. type in the correct serial **address** of the reader and
3. click on the green “**Connect Reader**” button.
4. When the reader is connected, you can see the relevant **information** such as hardware information of the reader device.

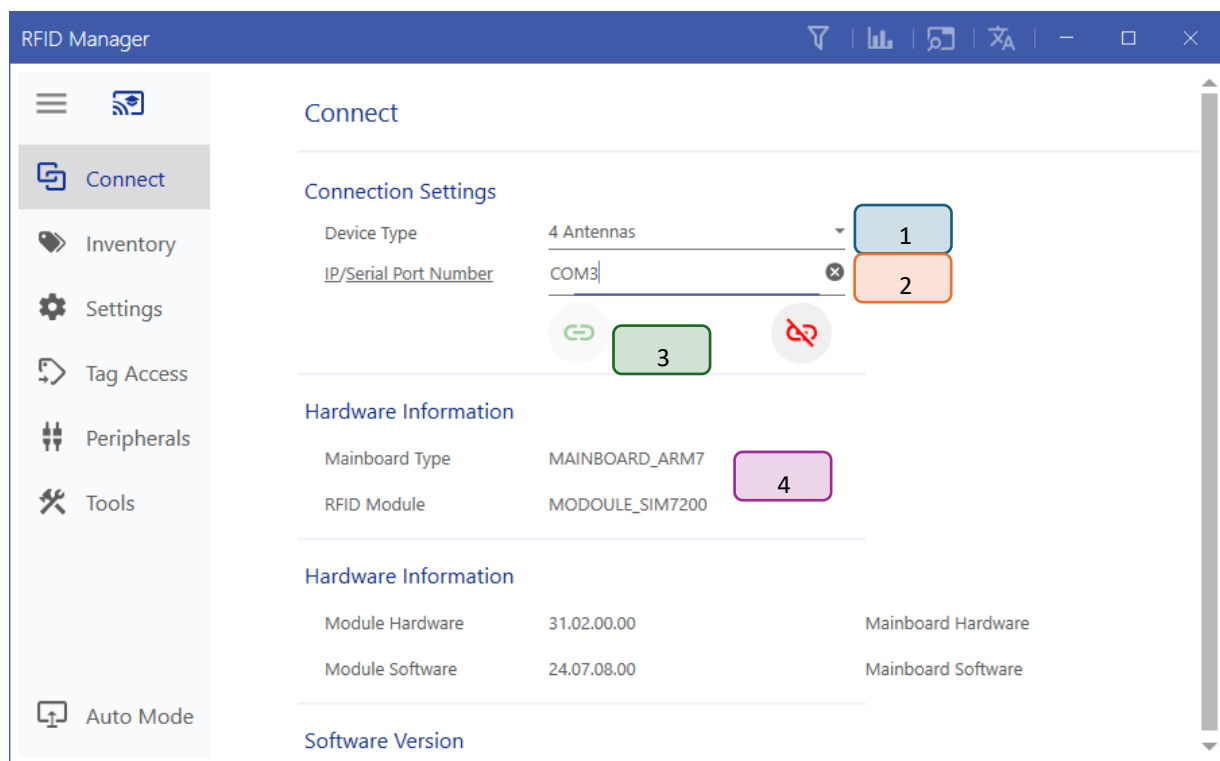


Figure 4: Connect with reader using software

2 RFID Manager Inventory

2.1 Inventory Interface

After successfully connecting the reader, click “Inventory” in the left menu bar.

Along the top there are 3 **statistics** (“number of labels”, “label count times” and “time spent”) and 4 **action** buttons (“start count”, “stop count”, “empty list” and “export list”).

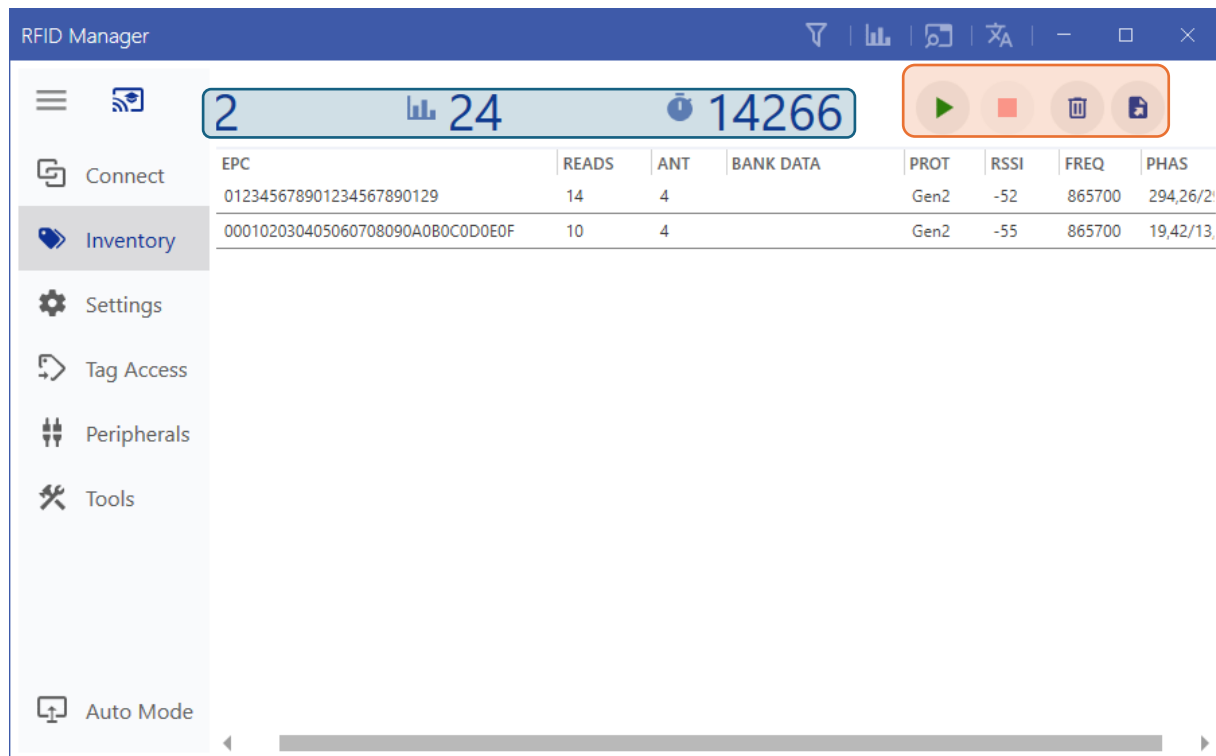


Figure 5: Inventory interface with example read

In case inventory does not work, please set the connected antenna in “Settings” (see 3.1).

2.2 Tag Filtering

Click on the “label filter” button in the upper right corner to open the interface for tag filtering.

1. Select the memory bank with the filter criterion.
2. Select the filter rule (match or unmatched the filter)
3. Enter the start address in the memory bank.
4. Select the format of the mask (hexadecimal or binary).
5. Enter the filter mask.
6. Check the box, where the filter should be enabled (inventory or tag access).

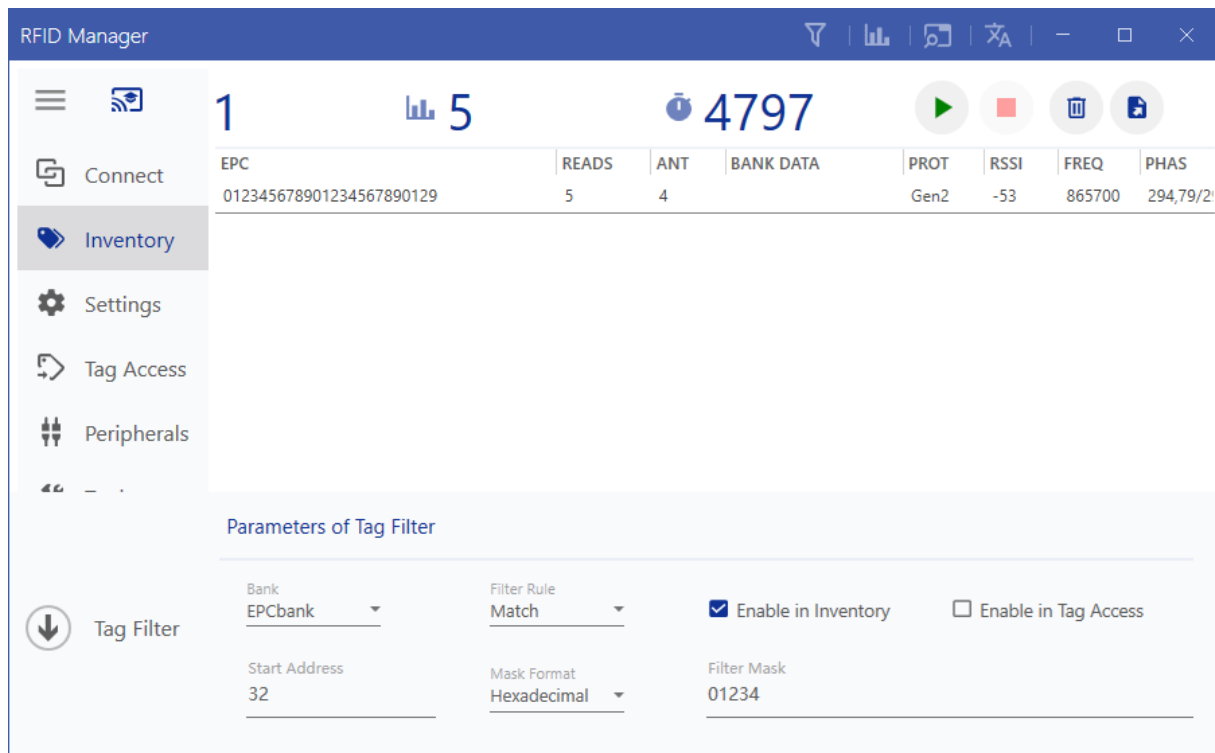


Figure 6: Inventory tag filter

2.3 Inventory Statistics

After an inventory has been performed, click on the “count statistics” button in the upper right corner to open the interface for count statistics



Figure 7: Inventory statistics

2.4 Command Debugging

Command debugging is turned off by default. This function can be enabled in the debugger interface which opens by clicking on the button “Command debugging” in the top right corner.

Afterwards, the sent instructions are printed.

The screenshot displays the RFID Manager software interface. The top bar includes a filter icon, a bar chart icon, a document icon, a search icon, and window controls. The main area shows a sidebar with navigation options: Connect, Inventory (selected), Settings, Tag Access, and Peripherals. The central panel displays a table with two rows of data. The first row has EPC: 012345678901234567890129, READS: 7, ANT: 4, BANK DATA, PROT: Gen2, RSSI: -53, FREQ: 866900, and PHAS: 317,81/3. The second row has EPC: 000102030405060708090A0B0C0D0E0F, READS: 7, ANT: 4, BANK DATA, PROT: Gen2, RSSI: -55, FREQ: 866900, and PHAS: 44,74/41. Below the table, there is a toggle switch for 'Enable Communication Protocol Debug' which is turned on. A text box labeled 'Communication Protocol Data' shows a list of log entries with timestamps and hex data, such as '2025.04.22 09:46:44.030--host to reader:FF 00 65 1D 6A'.

EPC	READS	ANT	BANK DATA	PROT	RSSI	FREQ	PHAS
012345678901234567890129	7	4		Gen2	-53	866900	317,81/3
000102030405060708090A0B0C0D0E0F	7	4		Gen2	-55	866900	44,74/41

☒ Enable Communication Protocol Debug

Communication Protocol Data

- 2025.04.22 09:46:44.030--host to reader:FF 00 65 1D 6A
- 22.04.2025 09:46:44--reader to host:FF 10 65 00 00 00 0D 35 A4 00 0D 37 FC 00 0D 3A 54 00 0D 3C AC D5 4A
- 2025.04.22 09:46:44.038--host to reader:FF 02 6A 01 00 2E 4E
- 22.04.2025 09:46:44--reader to host:FF 03 6A 00 00 01 00 01 3E 45
- 2025.04.22 09:46:44.048--host to reader:FF 02 6A 01 00 2E 4E

Figure 8: Inventory command debugging

3 RFID Manager System Setup

Click on the “Settings” button in the menu bar on the left to open the reader settings menu.

3.1 Antenna Setup

The Antenna Setup can be found in the first tab of the reader settings.

To get the current settings of the reader, click on the button “Get”.

To change the settings, double click on the parameter that shall be changed (read power or write power), check the box “in use” for the modified antenna power and click on the button “Set” to permanently save the settings.

If reader operations such as inventory do not work, check the corresponding box to the connected antenna and click the button “Set”. Inventory will work, even if the state remains “Unconnected” as shown in Figure 9.

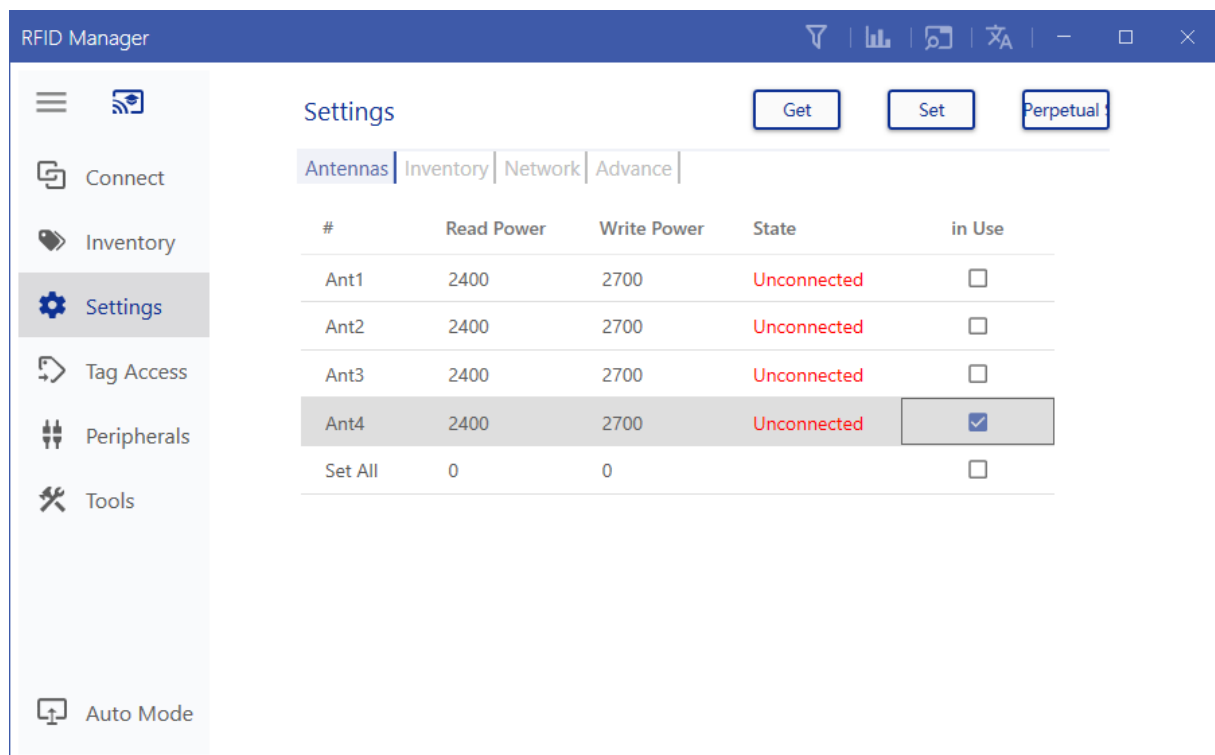


Figure 9: Antenna settings

3.2 Inventory Settings

The Inventory Settings can be found in the second tab of the reader settings.

After modification of the parameters, click the button “Set” to save the settings. Only the common parameters of inventory will be saved permanently.

3.2.1 Additional Data

When additional data shall be read while taking inventory, toggle the switch for additional data to enable this function. Up to 64 bytes of data can be read this way.

Select the bank from which to read the data (Reserve, EPC, TID or User-Bank).

Input the starting address, which defines the block from which the read shall be started.

Input the number of blocks that shall be read (max. 64).

Input the access password if needed. No password is required to read from EPC, TID and User bank, however the data will not be read if an incorrect password is provided.

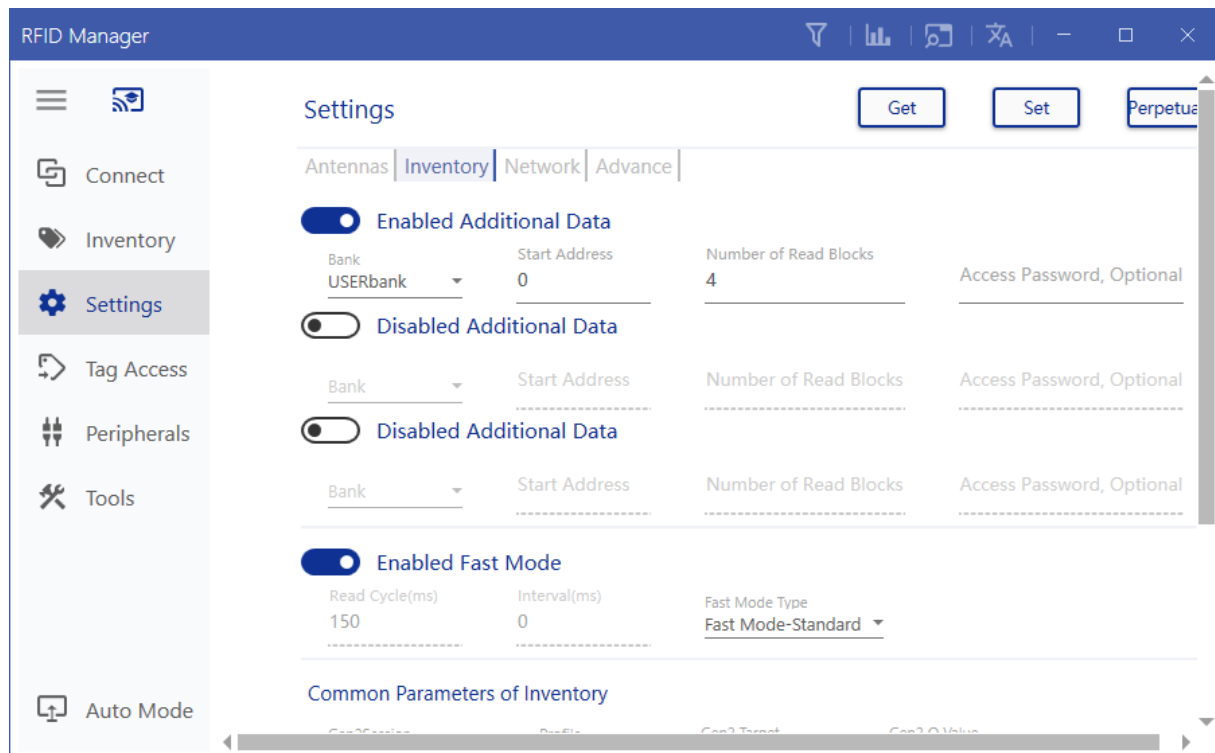


Figure 10: Inventory settings for reading additional data

3.2.2 Fast Mode

Read period and read interval only work in non-fast mode. Toggle the switch to disable the fast mode.

The read period indicates how long the reader reads at a time and the read interval indicates the time difference between two reads.

Fast mode is divided into “fast mode – Standard”, “fast mode – distance priority” and “fast mode – read times priority”. In standard fast mode, the common parameters of inventory below can be modified by the user. The other two fast modes cannot be modified.

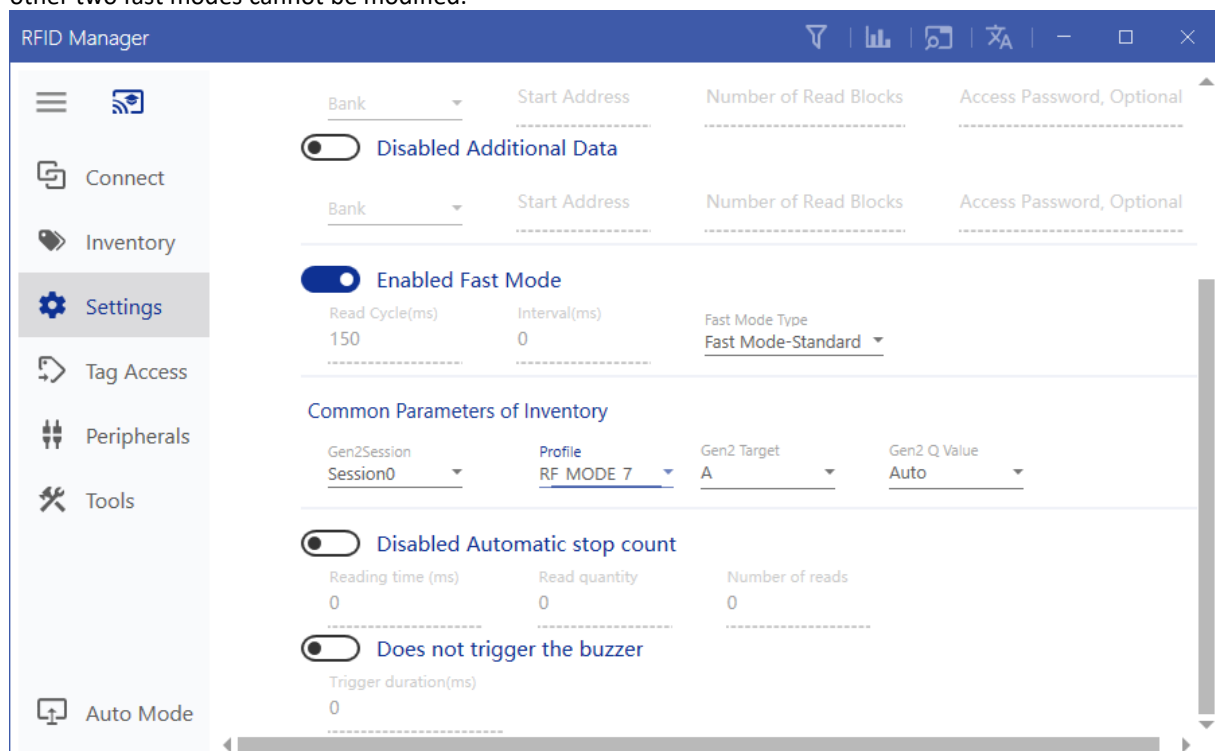


Figure 11: Inventory settings for fast mode, the common parameters of inventory and automatic stop

3.2.3 Common Parameters of Inventory

The common parameters are parameters of the Gen2 protocol, including Gen2 Session, Profile, Gen2 Target and Gen2 Q Value. The permanent save button in the inventory setting can only save these four parameters.

3.2.4 Automatically Stop Counting

After the counting interface reaches the specified conditions, it will automatically stop counting.

3.3 Network Settings

In the network settings tab it is possible to change the IP address, subnet mask and gateway of the device. After saving the network settings, the reader will restart and you need to reconnect to the reader using the new IP address.

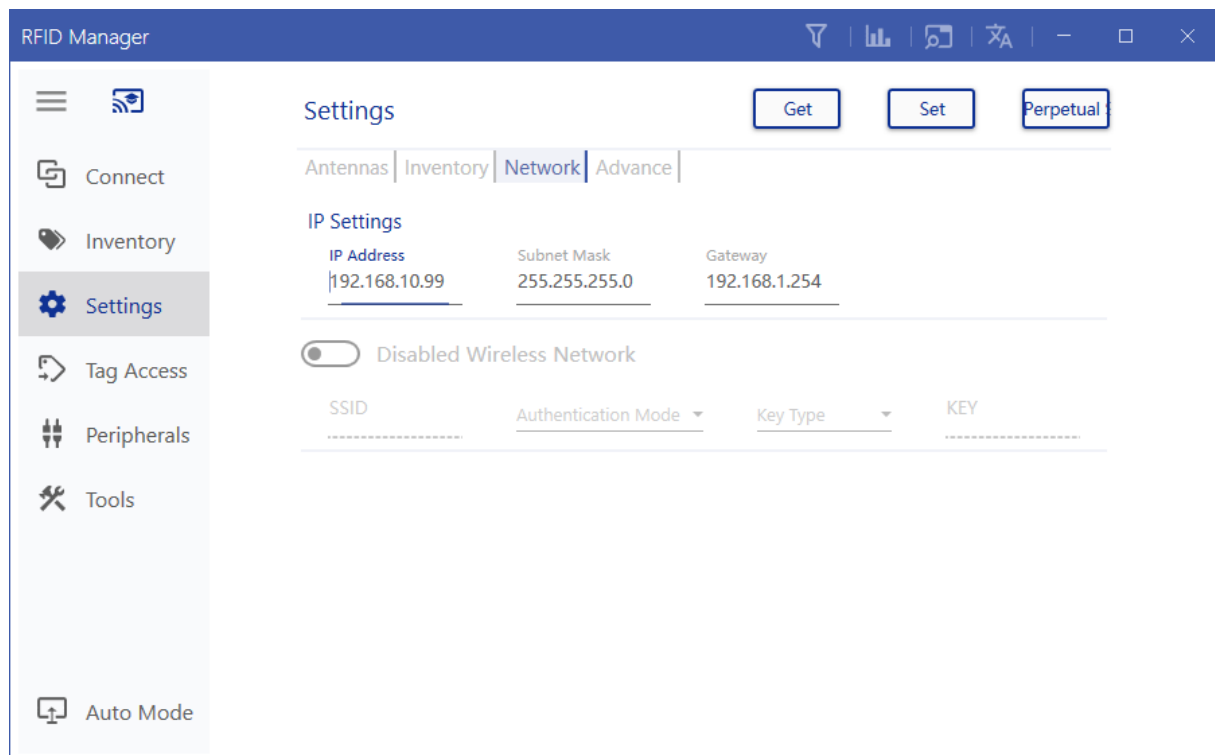


Figure 12: Network settings

3.4 Advanced Settings

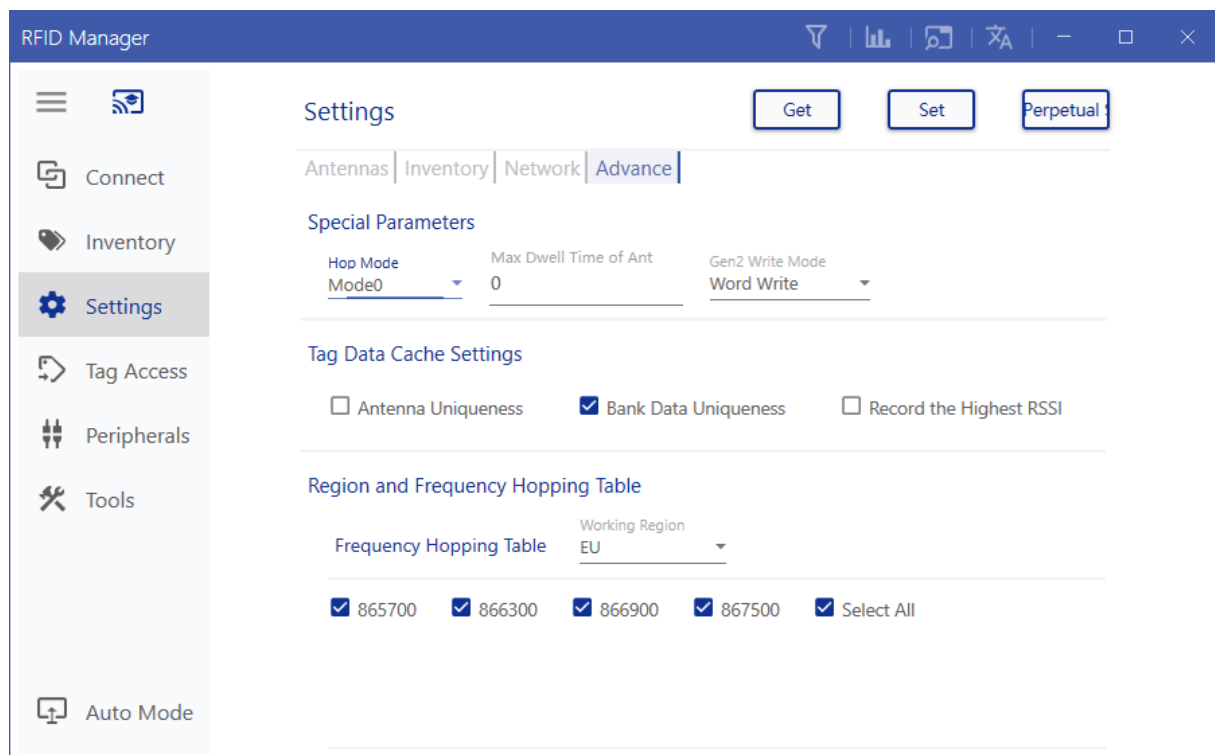


Figure 13: Advanced settings

3.4.1 Special Parameters

Hop Mode is not available for this device.

Antenna dwell time describes the maximum working time of a single antenna in milliseconds. In fast mode, if the antenna does not read a tag, it will immediately switch to the next antenna. In non-fast mode, the antenna will work up to the maximum time and then switch.

Gen2 Write Mode can either be “word write” or “block write”, the default is “word write” but some older tags may not support this mode.

3.4.2 Tag Data Cache Settings

To distinguish labels, three options are available: Antenna number as unique identification (“Antenna Uniqueness”), bank data as unique identification (“Bank Data Uniqueness”) and highest RSSI (“Record the Highest RSSI”).

3.4.3 Region and Frequency Hopping Table

Due to different frequency band control rules of different countries and regions, it is necessary to select the appropriate frequency band. Using the dropdown menu for “Frequency Hopping Table”, select the correct region. After setting the region, click “Get” to display the currently selected frequency points. Change as needed. Region and frequency points can be permanently saved.

4 Tag Operations

Tag operation supports the following five operations: “read bank”, “write bank”, “write EPC”, “lock tag” and “destroy tag”.

4.1 Tag Reading

Select “Read Bank” as **operation type**, the correct **antenna** and if needed the **access password**. Select the **bank** to be read, the **start address** and the **number of blocks/bytes** to read. Finally click on “Execute” and the read information from the tag will be displayed at the bottom.

The screenshot shows the 'Tag Access' window in the RFID Manager software. The interface includes a sidebar on the left with options: Connect, Inventory, Settings, Tag Access (selected), Peripherals, Tools, and Auto Mode. The main area is titled 'Tag Access' and contains several sections:

- Operation Common Parameters:** Includes 'Operation Type' (Read Bank), 'Antenna' (1), 'Access Password, Optional' (empty), and 'Kill Password, Optional' (empty).
- Read and Write Operation Parameters:** Includes 'Bank' (TIDbank), 'Start Address' (0), and 'Block Count, Not Required for Write Operations' (2).
- Lock Operation Parameters:** Includes 'Lock Target' (Access Password) and 'Lock Type' (empty).
- Operation Result/Data to Write:** A text box containing the hexadecimal value 'E2C19CB1'.

An 'Execute' button is located in the top right corner of the main area.

Figure 14: Example for reading the first two bytes of the TID bank of a tag

4.2 Tag Writing

Select “Write Bank” as **operation type**, the correct **antenna** and if needed the **access password**. Select the **bank** to be written and the **start address** and enter the **data** to be written in the field at the bottom. Finally click on “Execute”. Note that the TID bank cannot be written.

The screenshot shows the 'Tag Access' window in the RFID Manager software. The left sidebar contains icons for Connect, Inventory, Settings, Tag Access (selected), Peripherals, and Tools, along with an 'Auto Mode' button at the bottom. The main area is titled 'Tag Access' and features an 'Execute' button in the top right corner. The configuration is divided into three sections: 'Operation Common Parameters' with 'Operation Type' set to 'Write Bank', 'Antenna' set to '1', and 'Access Password,Optional'; 'Read and Write Operation Parameters' with 'Bank' set to 'USERbank' and 'Start Address' set to '0'; and 'Lock Operation Parameters' with 'Lock Target' set to 'Access Password' and 'Lock Type' set to 'Access Password'. A text box labeled 'Operation Result/Data to Write' contains the value '123456'.

Figure 15: Example for writing to the User bank of a tag

4.3 Lock the tag

There are three lock operations: “unlock”, “temporary lock” and “permanent lock”. When a bank is locked, an access password is required to read or write the bank.

Select “Lock Tag” as **operation type**, the correct **antenna** and the **access password**. Select the **bank** to be locked and select the **lock operation**. Finally click on “Execute”.

The screenshot shows the 'Tag Access' window in the RFID Manager software, configured for locking a bank. The left sidebar is identical to Figure 15. The main area shows the 'Tag Access' window with the 'Execute' button. The configuration is divided into three sections: 'Operation Common Parameters' with 'Operation Type' set to 'Lock Tag', 'Antenna' set to '1', and 'Access Password,Optional'; 'Read and Write Operation Parameters' with 'Bank' set to 'Reservebank'; and 'Lock Operation Parameters' with 'Lock Target' set to 'Access Password' and 'Lock Type' set to 'Temporary Lock'. The 'Operation Result/Data to Write' text box is empty.

Figure 16: Example for temporarily locking the Reserve bank of a tag

4.4 Kill Tag

When a tag is killed, it cannot be used again.

Select “Lock Tag” as **operation type**, the correct **antenna** and the **kill password**. Then click on “Execute”.

RFID Manager

Tag Access

Execute

Operation Common Parameters

Operation Type: Kill Tag, Antenna: 1, Access Password, Optional: , Kill Password, Optional: FFFFFFFF

Read and Write Operation Parameters

Bank: Reservebank, Start Address: , Block Count, Not Required for Write Operations:

Lock Operation Parameters

Lock Target: Access Password, Lock Type: Temporary Lock

Operation Result/Data to Write

Figure 17: Example for killing a tag

5 Peripheral Interface

GPI and GPO are universal input/output interfaces. You can only get GPI interfaces and GPO interfaces can only be set.

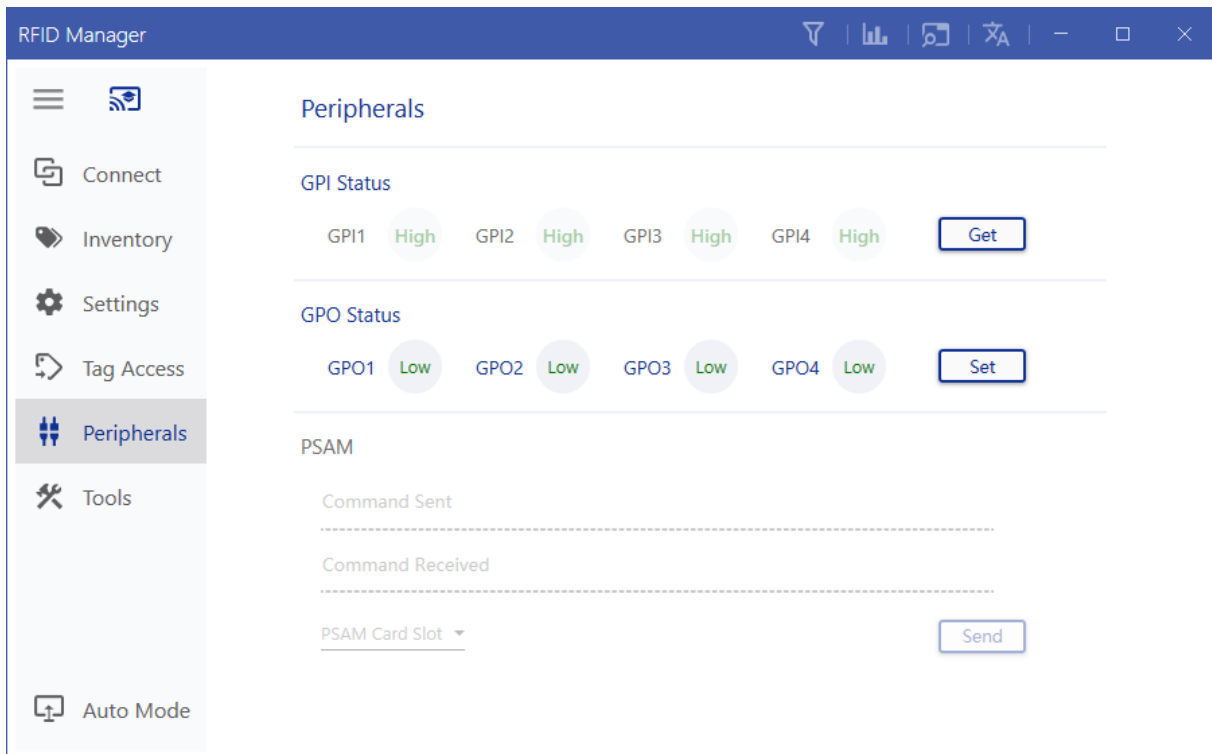


Figure 18: Peripherals tab

6 Tools

6.1 Firmware Upgrade

There are two types of firmware: module firmware and communication board firmware. Upgrade the module firmware using the serial port and the communication board firmware through the network port.

Enter the address of the **serial port or network address** and click **"Browse"** to select the new firmware file. Click on **"Update"** to upload the new firmware and wait till it has finished. Finally disconnect the reader from power and reconnect.

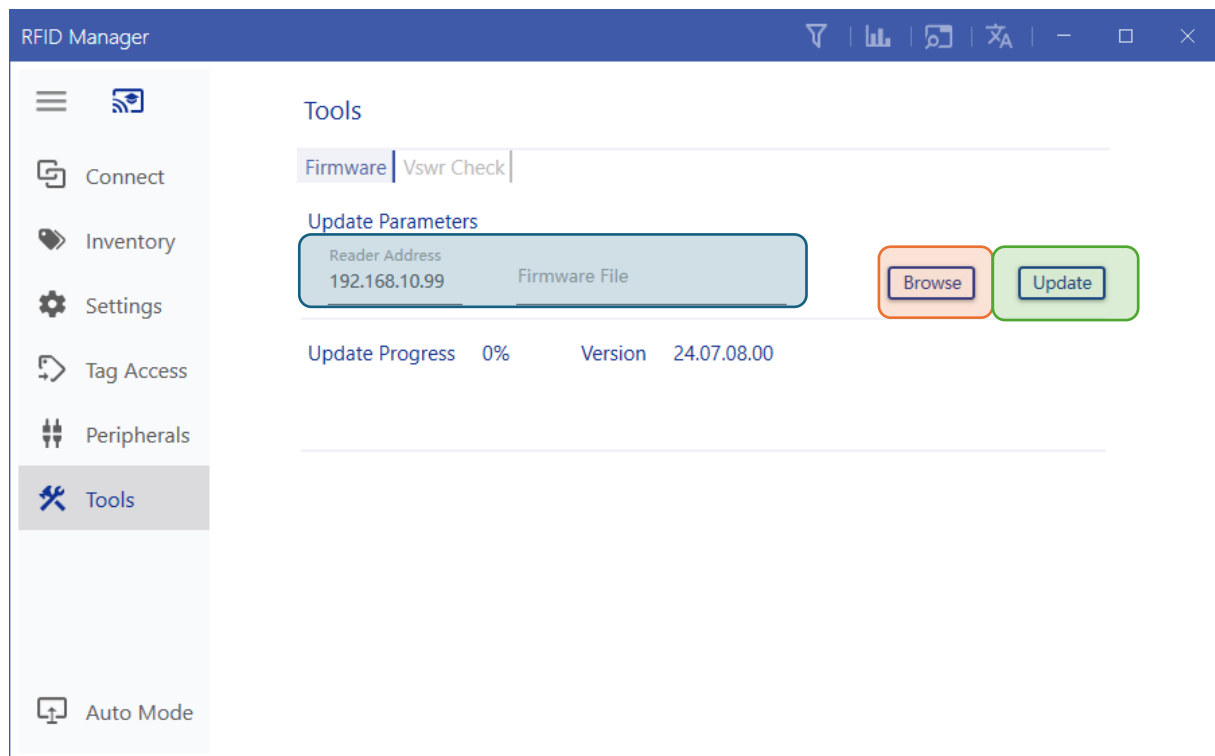


Figure 19: Firmware upgrade tab

6.2 Standing Wave Detection

The standing wave ratio test can detect antenna performance. 0-1.5 is good performance, 1.5-2 is average performance and everything above 2 is poor performance.

Input the **antenna number** and the **tx power**, then click on **"Get"**, the result will be displayed below.

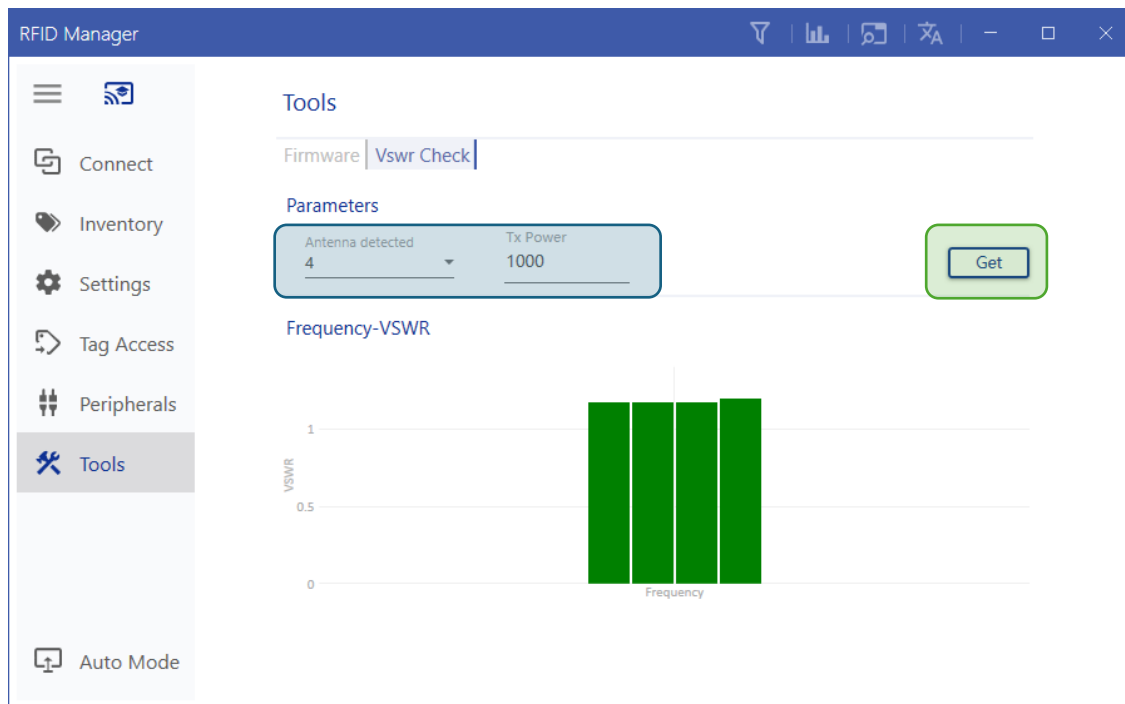


Figure 20: Standing Wave Detection