



MTI RU-888-10X/11X RFID USB Dongle

MTI RFID ME<sup>TM</sup> HW GUI User Manual

Version 1.1

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MICROELECTRONICS TECHNOLOGY INC.

MTI RFID ME™ HW GUI User Manual



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## History :

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| 1.0     | Release     | 2010.12.08 |
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# 1. Getting Started

## 1.1. Introduction

This manual provides you with the information needed to install and operate the MTI RFID ME™ HW GUI. A description on how to install the RFID ME™ HW (“Dongle”) is provided in Section 2. Section 3, presents information on how to configure the RFID ME™ HW to read and write tags and discusses advanced RFID configuration settings. Section 4 describes how to read tags (scanning and inventory runs). Section 5 presents information on Advanced Tag Settings including changing EPC, Kill, Lock and advanced feature settings.

## 1.2. Contact Information

Contact “[rfid\\_support@mti.com.tw](mailto:rfid_support@mti.com.tw)” for any questions regarding RFID ME™ HW GUI and hardware support issues.



## 2. Initial Setup

### 2.1. Software Installation

- 2.1.1. Double-click “MTI RFID ME™ HW GUI.exe” in the installation disk, then click “Next” to continue the installation, or click “Cancel” to exit the setup as shown in Figure 1.

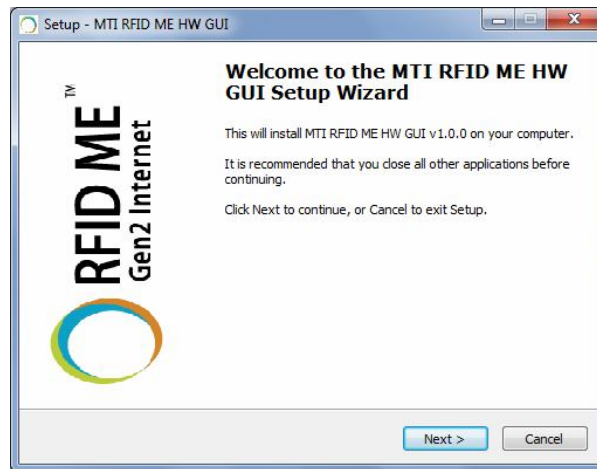


Figure 1

- 2.1.2. Read the license agreement and select “I accept the agreement” as shown in Figure 2 to accept.

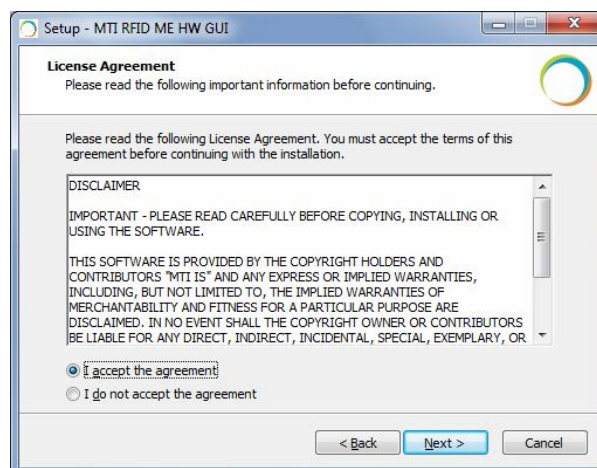


Figure 2





- 2.1.3. Select a Destination Folder. To select a different folder, click “Browse” and choose one of the available options as shown in Figure 3.

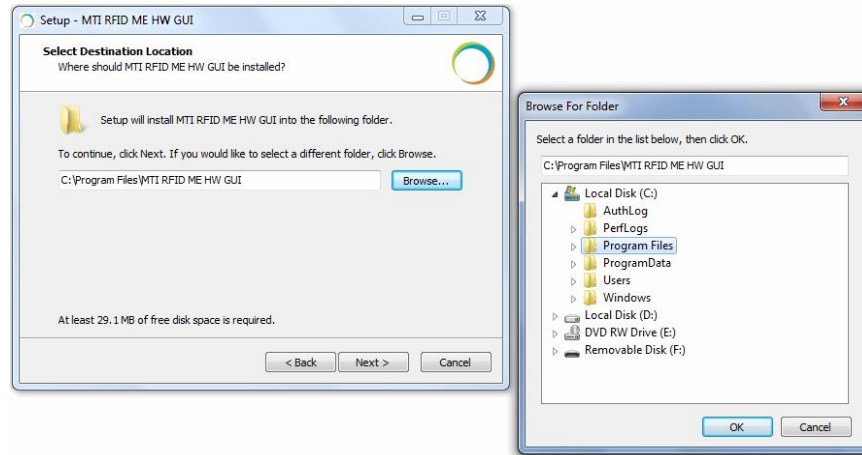


Figure 3

- 2.1.4. Select a destination for the program’s shortcut. To select a different folder, click “Browse” and choose one of the available options as shown in Figure 4.

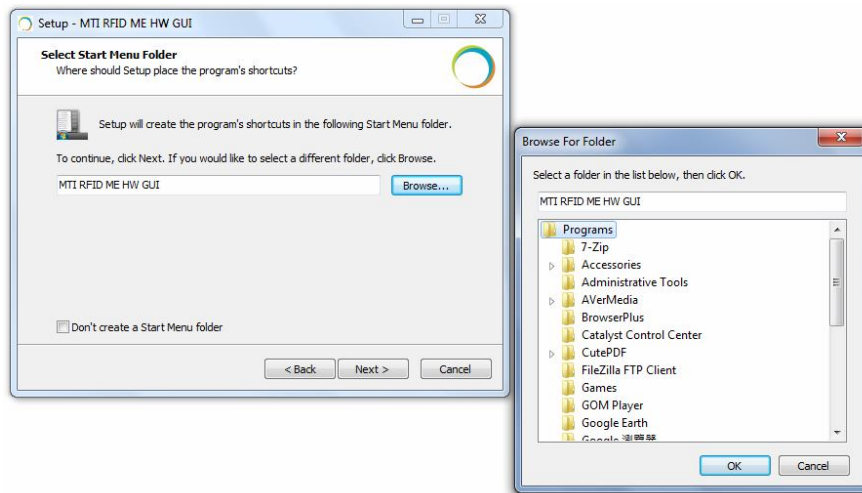


Figure 4



2.1.5. To add additional icons, “Check” desired boxes as shown in Figure 5.

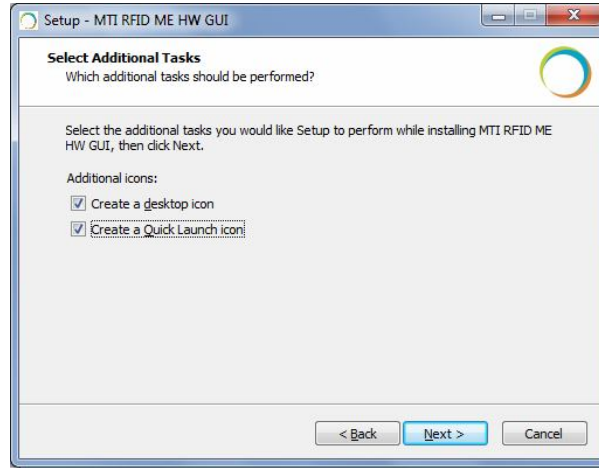


Figure 5

- “Checking” the ‘Create a desktop icon’ will generate an additional desktop icon;
- “Checking” the ‘Create a Quick Launch icon’ will generate an Additional Quick Launch icon located in the “Start” menu.

2.1.6. Press “Install” to begin software installation as shown in Figure 6.

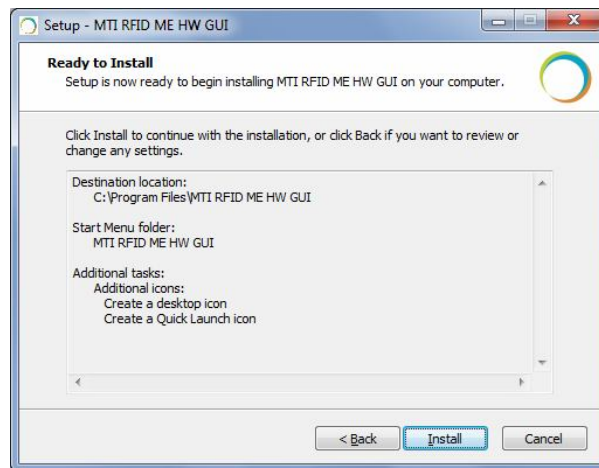


Figure 6



2.1.7. Congratulations! You have completed the RU-888-100 software installation. Press “Finish” to close the window. Select any of the installed icons to launch the MTI Reader Suite program as shown in Figure 7.

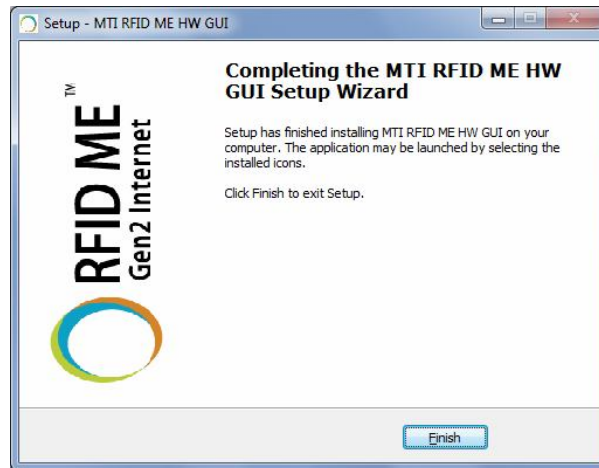


Figure 7

## 2.2. Hardware Setup

Insert USB dongle into the USB port, open the installed program, and make sure the status/state reads “Online” as shown in Figure 8.

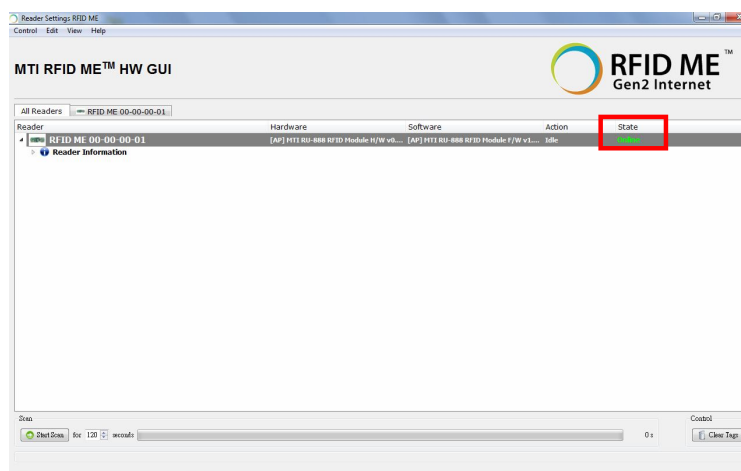


Figure 8

## 3. Reader Settings

### 3.1. Introduction

After opening MTI RFID ME™ HW GUI program, “Right Click” on the RFID ME™ to access the “Advanced Reader Settings”. This will allow you to see specific configuration settings and information of the USB Dongle, including default and recommended settings as shown in Figure 9 and Figure 10.

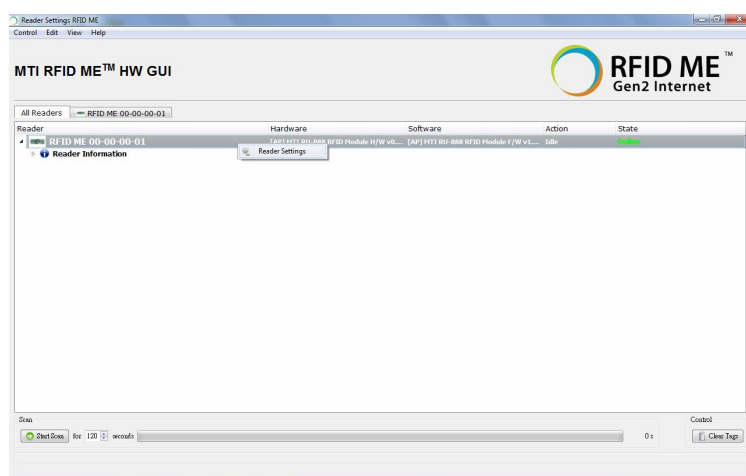


Figure 9

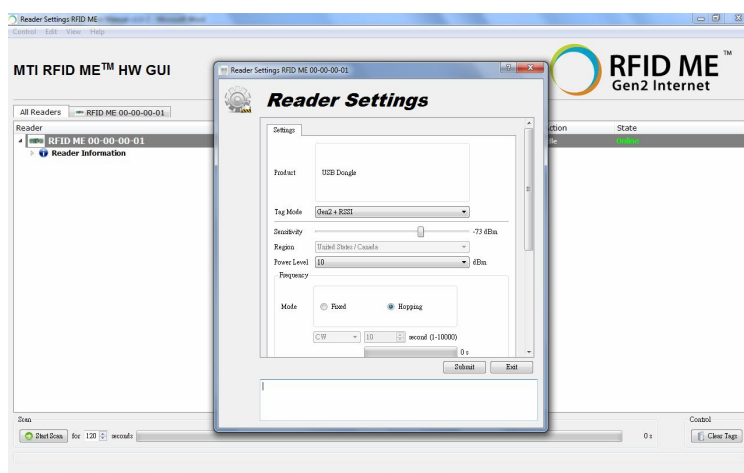


Figure 10



## 3.2. Advanced Reader Settings

### 3.2.1. Tag Mode: Gen2, Gen2+ RSSI, ISO6

- Gen2 : ISO 18000-6C Tag
- Gen2 + RSSI : ISO 18000-6C Tag and provides the Received Signal Strength Indication (RSSI), channel Q, and channel I- path readings
- ISO6B : ISO 18000-6B Tag

### 3.2.2. Region Settings

MTI RFID ME™ HW GUI program will sense and detect the correct region of your USB Dongle.

- RU-888-100 is automatically configured to US region
- RU-888-110 is automatically configured to EU region

Note: Figure 11 illustrates both regions are supported, but the User is not able to select any region, the MTI RFID ME™ HW GUI automatically selects the region.

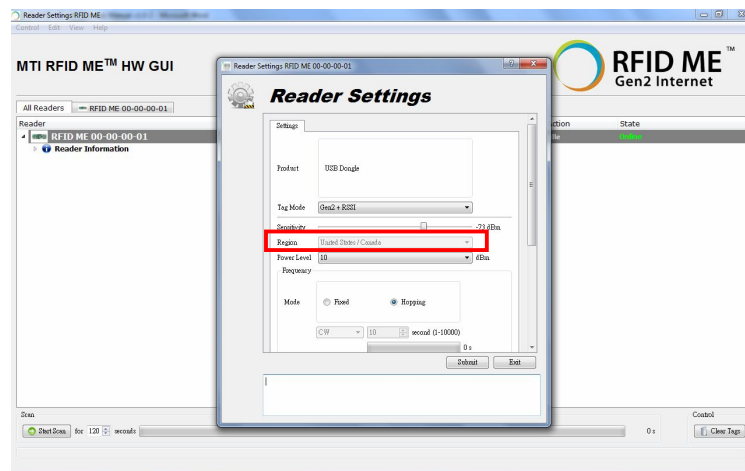


Figure 11

### 3.2.3. Transmit Power Level

- To achieve the longest reading or writing range, set the power to the maximum allowable level of +18dBm as shown in Figure 12.



- To reduce the reading or writing range and minimize energy consumption, set the power to the minimum allowable level of +10 dBm.

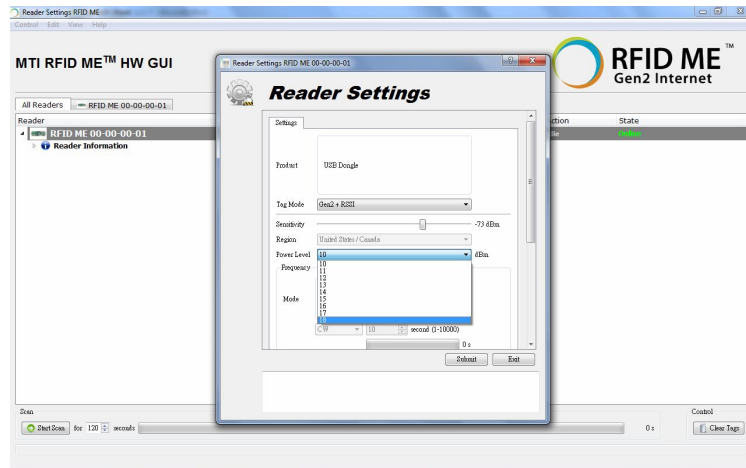


Figure 12

### 3.2.4. Frequency Setting (Fixed vs. Hopping)

- Hopping : Select frequency hopping to perform an Inventory Run (Start Scan) as shown in Figure 13.

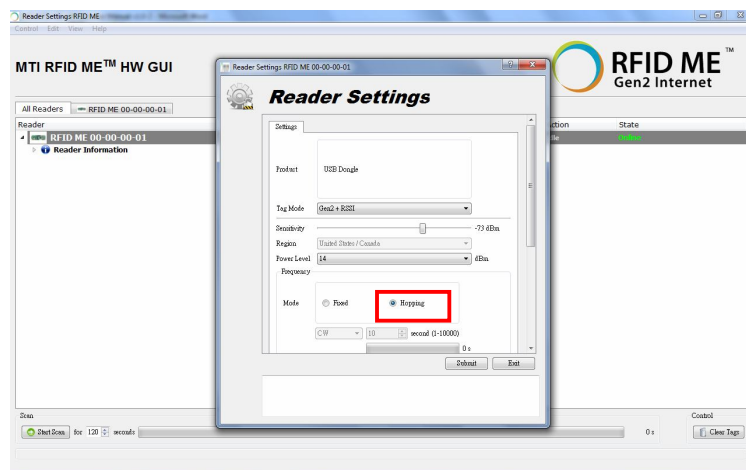


Figure 13



- Fixed Frequency : A setting typically used for testing and evaluation
- CW/Modulation/Pulse shown in Figure 14 used for engineering evaluation.
  - CW : To test Output Power Linearity for the desired frequency.
  - Modulation : To test the Mask for the desired frequency.
  - Pulse : To test ETSI 302 208 v1.3.1
- Time- only used for modulation setting

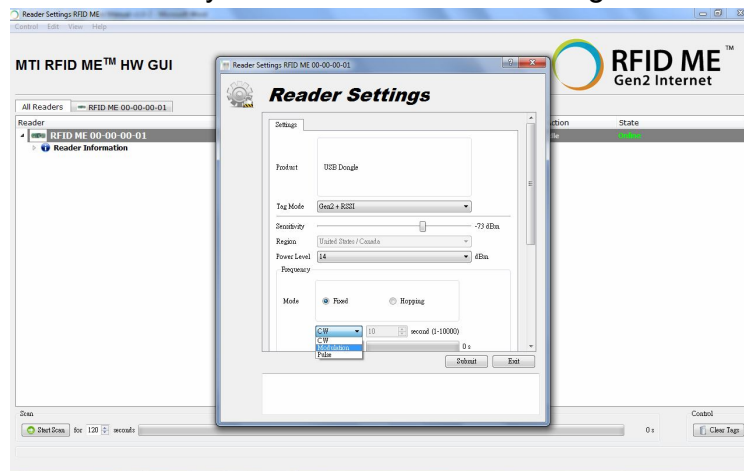


Figure 14

### 3.2.5. Gen2 Setting

Figure 15 illustrates how to change or modify the Gen2 profile of the RFID ME™ HW and EPC tag. For more details regarding definitions Gen2 settings, parameters and limits please reference the Class 1 Generation 2 UHF Air Interface Protocol Standard “Gen 2”

(<http://www.epcglobalinc.org/standards/uhf1g2>)

- MTI RFID ME HW™ GUI Default Settings
  - Link Frequency : 160KHz
  - Session : S0
  - Coding : Miller 2
  - Q\_Begin : 4

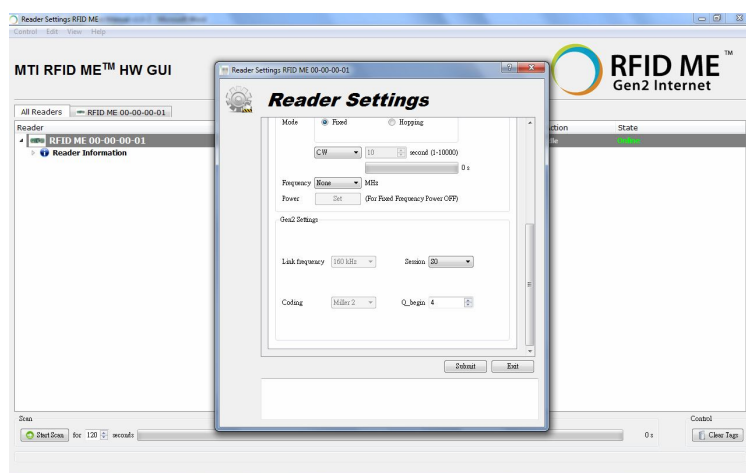


Figure 15





## 4. Inventory Run

After configuring the RFID ME HW settings as described in Section 3, you are ready to start an inventory run. Select the “Start Scan” button located in the lower left corner of the window as shown in Figure 16.

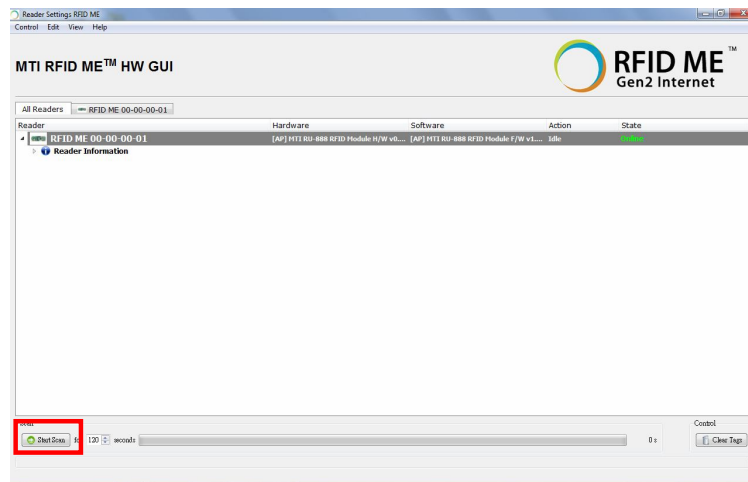


Figure 16

Figure 17 shows the results of a “Start Scan” operation and where the RFID ME™ HW is reading one tag. As illustrated below, the EPC for each of the tags and Relative Signal Strength Indicator (RSSI) is presented. In this example EPC tag 00-00-00-00-00-00-00-00-00-00-33 has a RSSI of 63%. The RSSI varies during the period of measurement based on the received signal strength.

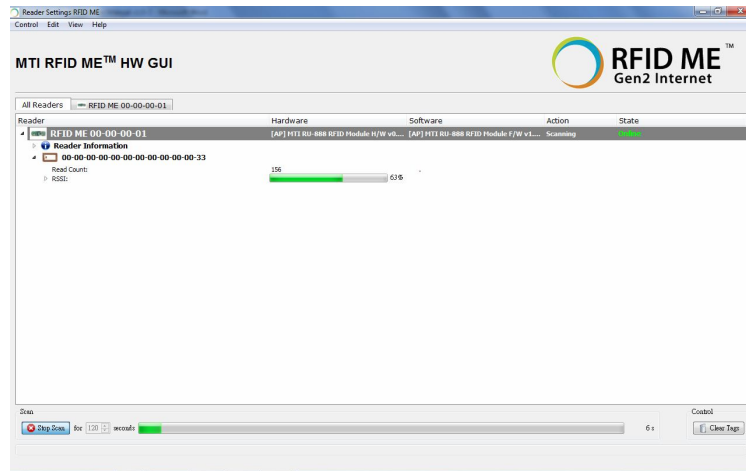


Figure 17

## 5. Tag Settings

To configure the tag (write to the tag), first stop the scan (Stop Scan), then Right Click on the EPC of the tag you want to modify, to access the “Advanced Tag Settings”. This will allow you set the parameters of the tag as shown in Figure 18 (this example has a single tag).

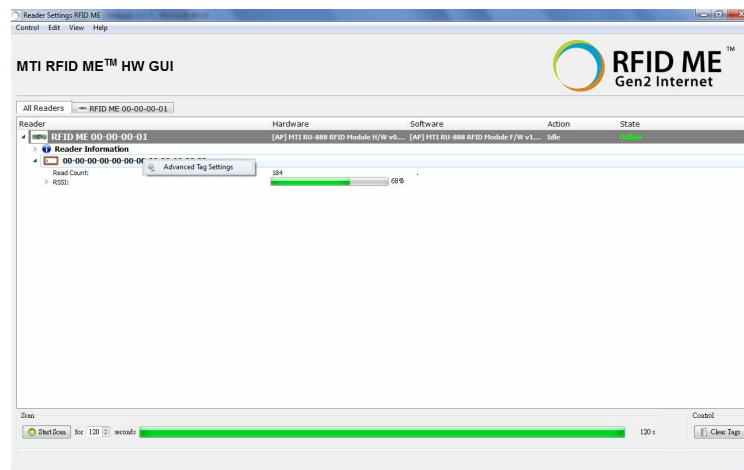


Figure 18

Next, move into the functions section, where you will be able to set tasks for your tags as described in the following points as shown in Figure 19.

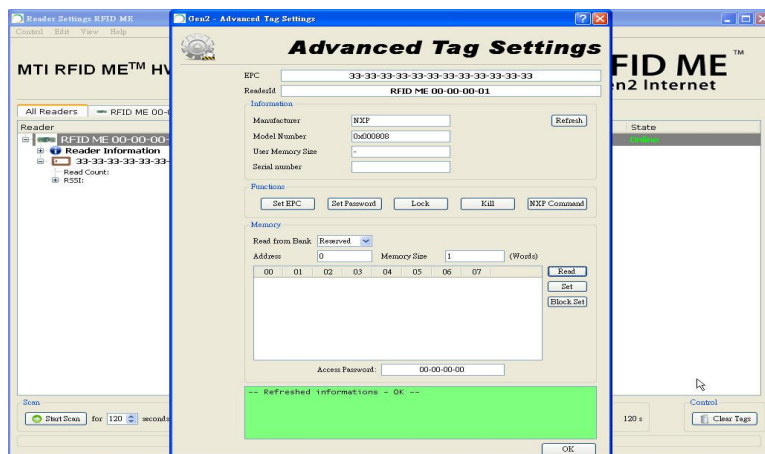


Figure 19

## 5.1. Tag Setting Function

### 5.1.1. Set EPC :

To modify or change a tag's EPC, select "New EPC" modify with a value of the new desired EPC value, then press "OK" to rewrite the EPC as shown in Figure 20.

Note: The default setting for the "Current Access Password" is 00-00-00-00. For any other "Current Access Password" settings other than 00-00-00-00, please reference the Class 1 Generation 2 UHF Air Interface Potocol Standard "Gen 2" at <http://www.epcglobalinc.org/standards/uhfc1g2>.

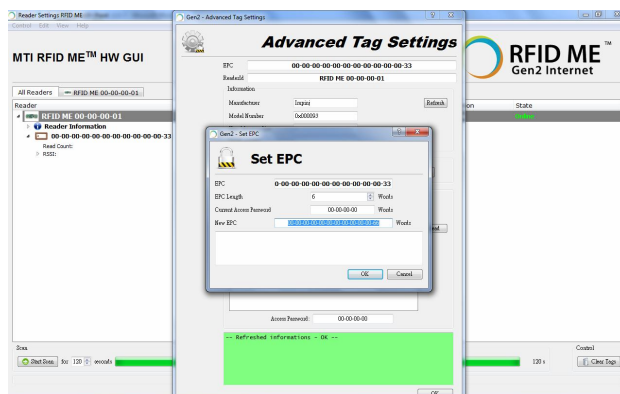


Figure 20

- EPC Tag Write Successful Message :

When the tag is re-written successfully, you will see a confirmation message response "Set EPC to New Tag value" as shown in Figure 21.

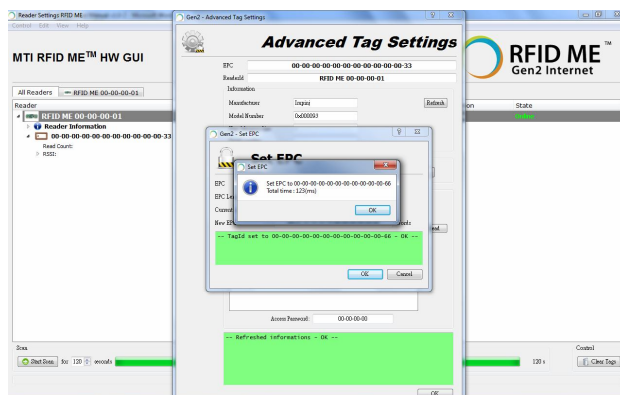


Figure 21



- EPC Tag Write Failed Message :

In the event the EPC Tag has not successfully been re-written, a failure message box like the one shown below in Figure 22 will be displayed. Simply repeat the Set EPC process over until you have successfully write the new EPC. Note: It may help to move the tag closer to the RFID ME™ HW during the re-write process, and/or increase the Transmit Output Power to a higher setting.

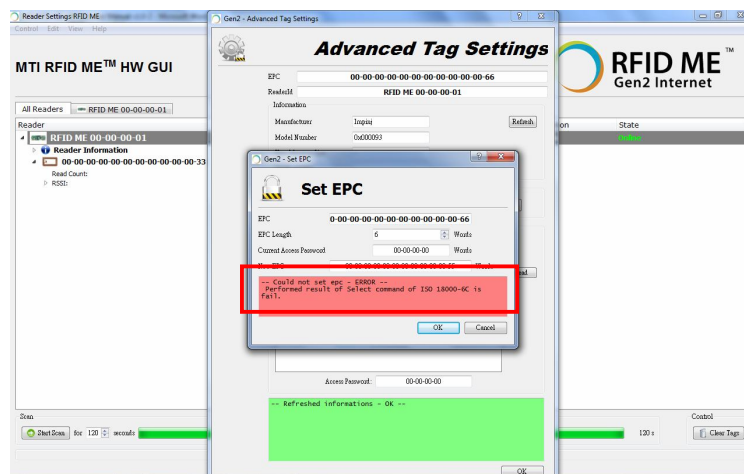


Figure 22

### 5.1.2. Set Password :

Set Kill or Access password as shown in Figure 23. The default Current Access Password is 00-00-00-00. For more detailed information regarding Password settings please reference the Class 1 Generation 2 UHF Air Interface Protocol Standard “Gen 2” at <http://www.epcglobalinc.org/standards/uhf1g2>

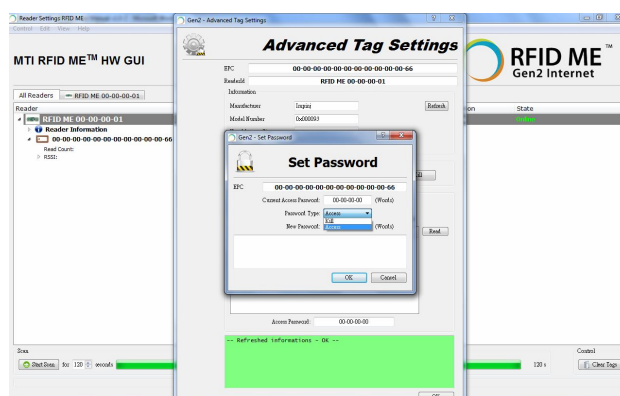


Figure 23

### 5.1.3. Lock :

To lock the desired memory bank for each action reference Figure 24. For more information regarding Lock and Associated Memory Banks please reference the Class 1 Generation 2 UHF Air Interface Protocol Standard “Gen 2” at <http://www.epcglobalinc.org/standards/uhf1g2>

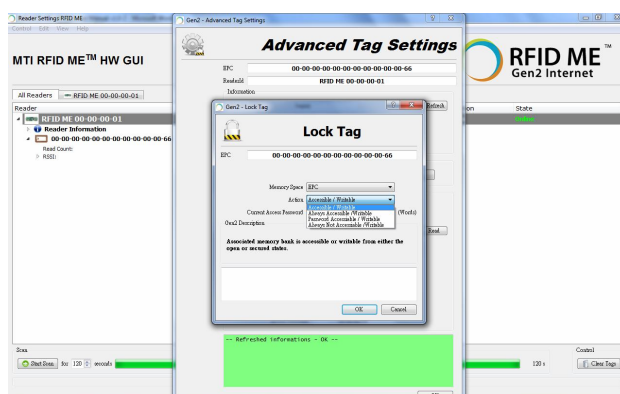


Figure 24

#### 5.1.4. Kill :

To kill a tag, typing in a kill password as shown in Figure 25. For more information about Kill and Kill Passwords please reference the Class 1 Generation 2 UHF Air Interface Protocol Standard “Gen 2” at <http://www.epcglobalinc.org/standards/uhf1g2>

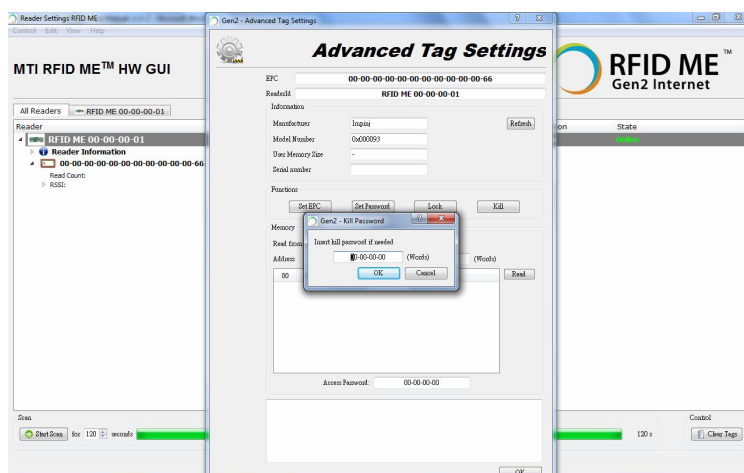


Figure 25

#### 5.1.5. NXP Command

To perform NXP command for NXP tag, select “Command” to configure with access password as shown in Figure 26. Otherwise, if you select “ChangeConfig 09-00”, you must set “Configuration” item. For more information about NXP command, please reference the SL3ICS1002/1202 UCODE G2xM and G2XL at

[http://www.nxp.com/documents/data\\_sheet/SL3ICS1002\\_1202\\_139036.pdf](http://www.nxp.com/documents/data_sheet/SL3ICS1002_1202_139036.pdf)

- NXP Command
  - Set Read Protect 02-01: Enable reliable read protection of the entire G2X memory.
  - Unset Read Protect 02-00: Reset the ReadProtect-bit and re-enables reading of the G2X memory content according the EPCglobal specification.
  - Change EAS ON 01-01: An EAS-Alarm bit set to ‘1’ the tag will reply to an EAS\_Alarm command by backscattering a 64 bit alarm code.
  - Change EAS OFF 01-00: An EAS-Alarm bit set to ‘0’ the tag will not reply to an EAS\_Alarm command by backscattering a 64 bit alarm code.



- Trigger EAS Alarm: Reply an EAS\_Alarm command by backscattering a 64 bit alarm code without the need of a Select or Query.
- ChangeConfig 09-00: Configures the additional features of the tag like Read-Protect, EAS Alarm etc.

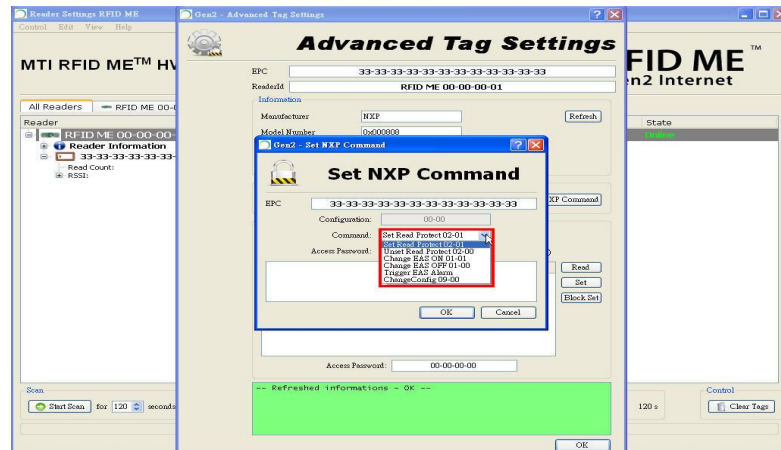


Figure 26

## 5.2. Memory Bank Setting

To read from Reserved, EPC, TID, and TID Bank select “Read” button as shown in Figure 27. Otherwise, The “BlockSet” command allows an interrogator to write multiple words in a Tag’s Reserved, EPC, TID, or User memory using a single command. The memory size will automatically be displayed. For more information about how to configure Memory Bank Settings for your use case, please reference the Class 1 Generation 2 UHF Air Interface Protocol Standard “Gen 2” at <http://www.epcglobalinc.org/standards/uhf1g2>



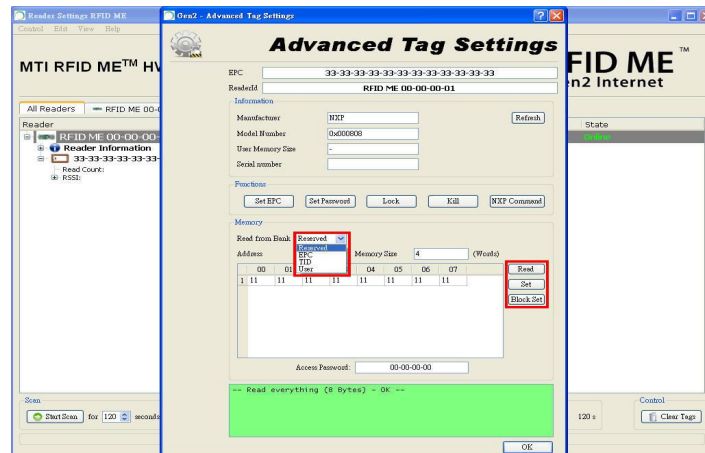


Figure 27

- Memory Bank Pass Message :

When the read memory command is successful, a confirmation message “Read everything (8 Bytes) – OK - -” as shown in Figure 28 will be displayed.

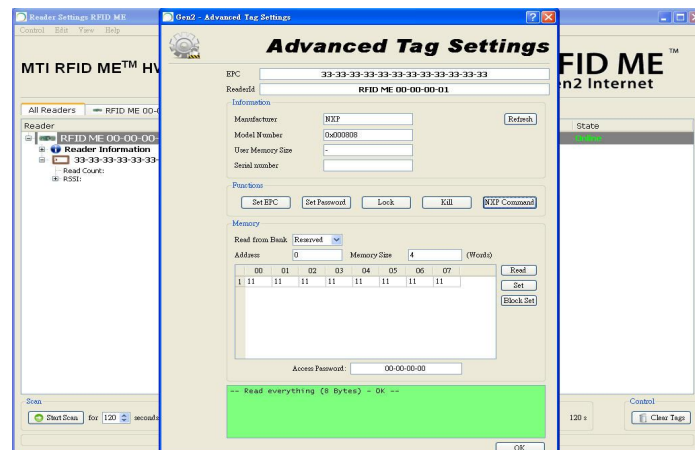


Figure 28

- Memory Bank Fail Message :

If the read memory bank process fails, a message box like the one shown below in Figure 28 will be displayed. Repeat the read memory bank process over until you successfully read the memory bank successfully.

Note: One remedy that can increase your read memory bank successfully, is to



move the tag closer to the RFID ME™ HW, or increase the Transmit Output Power to a higher setting.

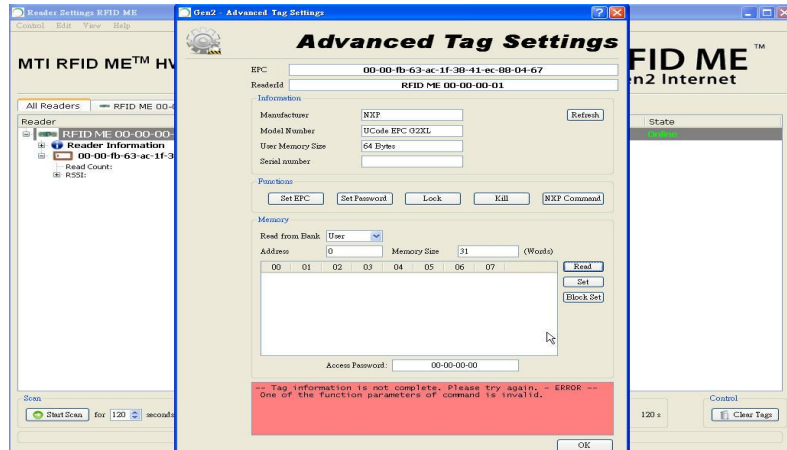


Figure 29



## 6. Troubleshooting/ FAQs

### 6.1. Initial Setup/ Software

If the software fails to install as shown in Figure 29, repeat the installation process over again, first uninstall the prior MTI RFID ME™ HW GUI installation, and then re-install again using the same steps listed in section 2.1.

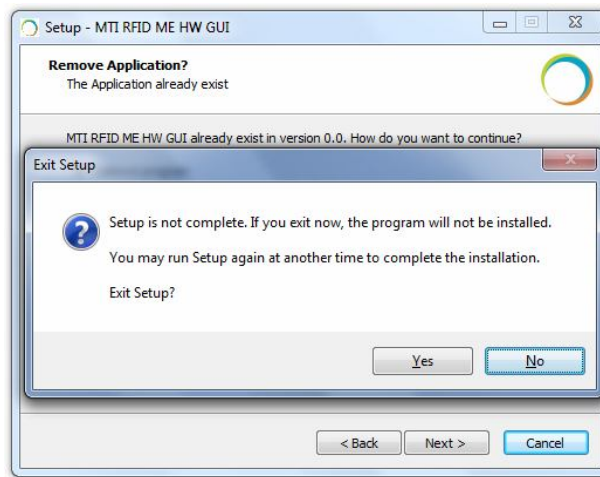


Figure 30

### 6.2. Reading Tags

If reader is “Offline” and does not identify tags, make sure the state/status of the RFID ME™ HW is “Online” reference Figure 9 which shows “Online” status).

In general, reading tags depends on a lot of different conditions, please verify that there are no metal or liquid objects surrounding the RFID module and/or near the tags (such as a metal table, or glass of water).

### 6.3. Writing Tags

If tag status displays “ERROR”, make sure the tag and reader proximity is very close (touching if necessary), and try again.