MTI RFID ME User Manual

Version 1.6

July 9, 2014

MICROELECTRONICS TECHNOLOGY INC.

Federal Communication Commission Interference Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two 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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.   These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.   However, there is no guarantee that interference will not occur in a particular installation.   If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that
  to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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Radiation Exposure Statement:

The product comply with the FCC portable RF exposure limit set forth for an uncontrolled environment and are safe for intended operation as described in this manual. The further RF exposure reduction can be achieved if the product can be kept as far as possible from the user body or set the device to lower output power if such function is available.

The USB dongle transmitter is approved for use in typical laptop computers. To comply with FCC RF exposure requirements, it should not be used in other devices or certain laptop and tablet computer configurations where the USB connectors on the host computer are unable to provide or ensure the necessary operating configurations intended for the device and its users or bystanders to satisfy RF exposure compliance requirements.

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History

Version	Description	Time
1.0	Release	2010.12.08
1.1	Release	2011.04.21
1.2	Release	2011.12.09
1.3	Release	2011.12.23
1.4	Release	2011.12.30
1.5	Update	2012.04.26
1.6	1. Update figures to MTI RFID ME v1.0.20. 2. Add support RFID module section. 3. Modify and correct descriptions.	2014.06.09

Contact Information：

Microelectronics Technology, Inc.

No. 1 Innovation Road II,

Hsinchu Science Park,

Hsinchu 300, Taiwan, R.O.C.

http://www.mti.com.tw

Index

1. Getting Started

1.1. Introduction

This manual provides you with the information needed to install and operate the MTI RFID ME. A description on how to install the MTI RFID ME is provided in Section 2. Section 3, presents information on how to configure the MTI RFID ME 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. Support Module

This user manual can be referred for below RFID reader modules.

Index	RFID Module	Index	RFID Module
1	RU-827	5	RU-888
2	RU-862	6	RU-835
3	RU-865		
4	RU-865-P		

1.3. Contact Information

Contact "rfid_support@mti.com.tw" for any questions regarding MTI RFID ME and hardware support issues.

2. Setup

2.1. Software Installation

2.1.1. Double-click "MTI RFID ME.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.
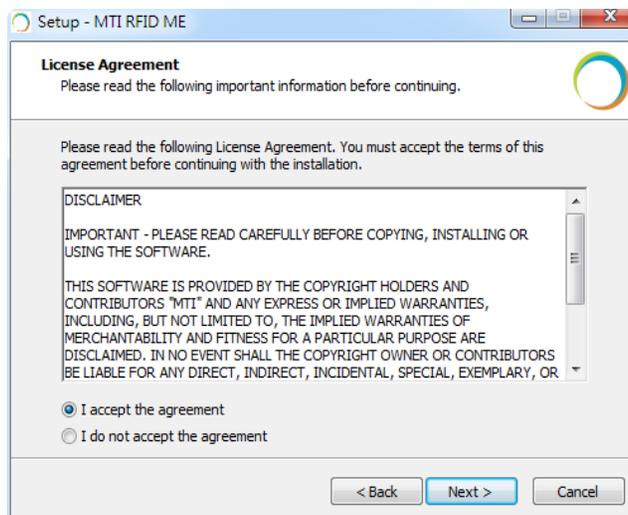

Figure 2

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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.
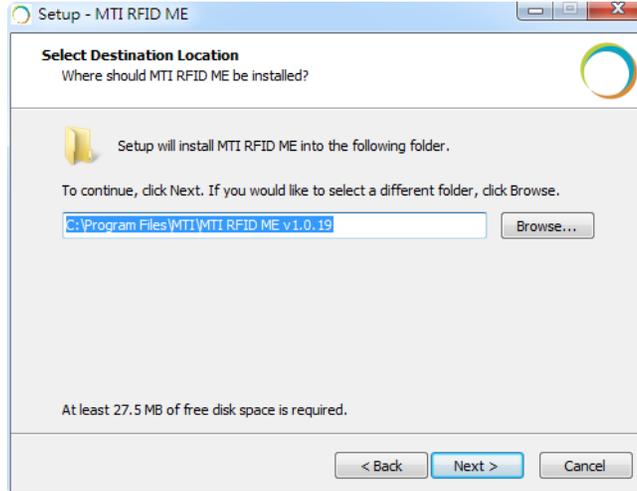
Figure 3

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.
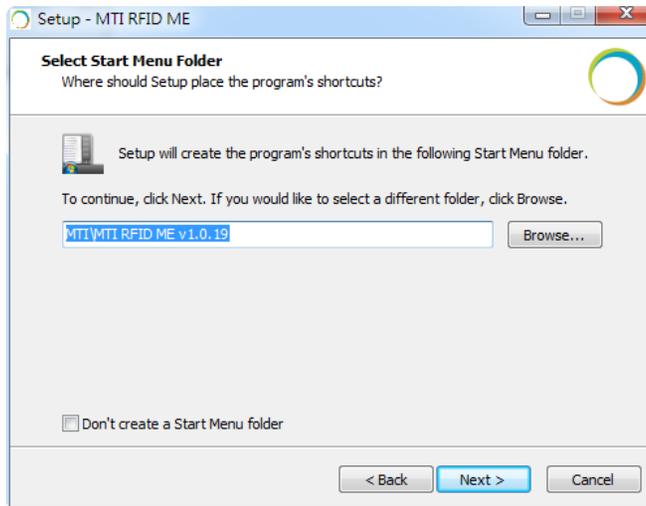

Figure 4

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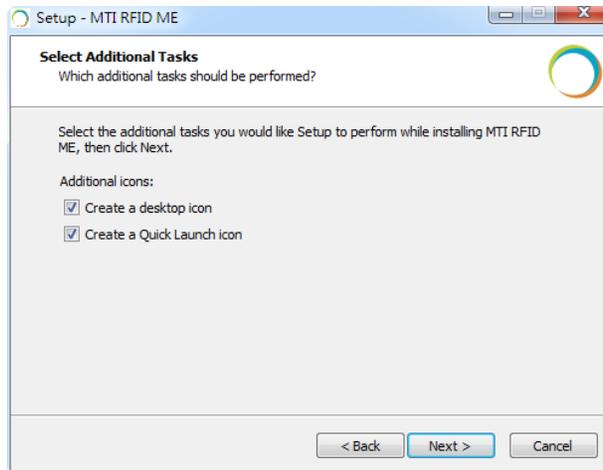2.1.5. To add additional icons, "Check" desired boxes as shown in Figure 5.

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.

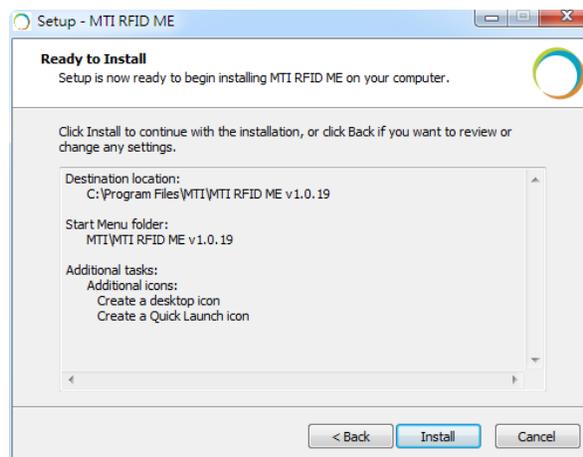2.1.6. Press "Install" to begin software installation as shown in Figure 6.

Figure 6

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2.1.7. Congratulations! You have completed the MTI RFID ME 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.
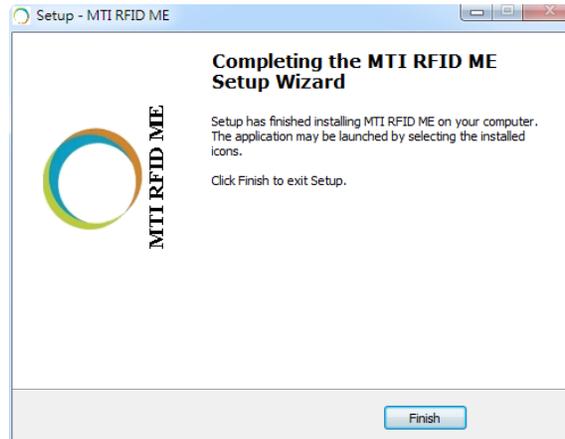

Figure 7

2.1.8. For those whom running on Windows 7 platform, please do the setup as following:

1) Right click on the short cut of MTI RFID ME HW GUI in "Start" menu and select "Properties".

2) Click on the tab "Compatibility" and select "Window XP Service Pack 3" in the pull down menu of "Compatibility Mode".

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2.2. Start MTI RFID ME

Insert RFID reader into the USB port, launch the installed MTI RFID ME, and make sure the "State" column reads "Online" as shown in Figure 8.

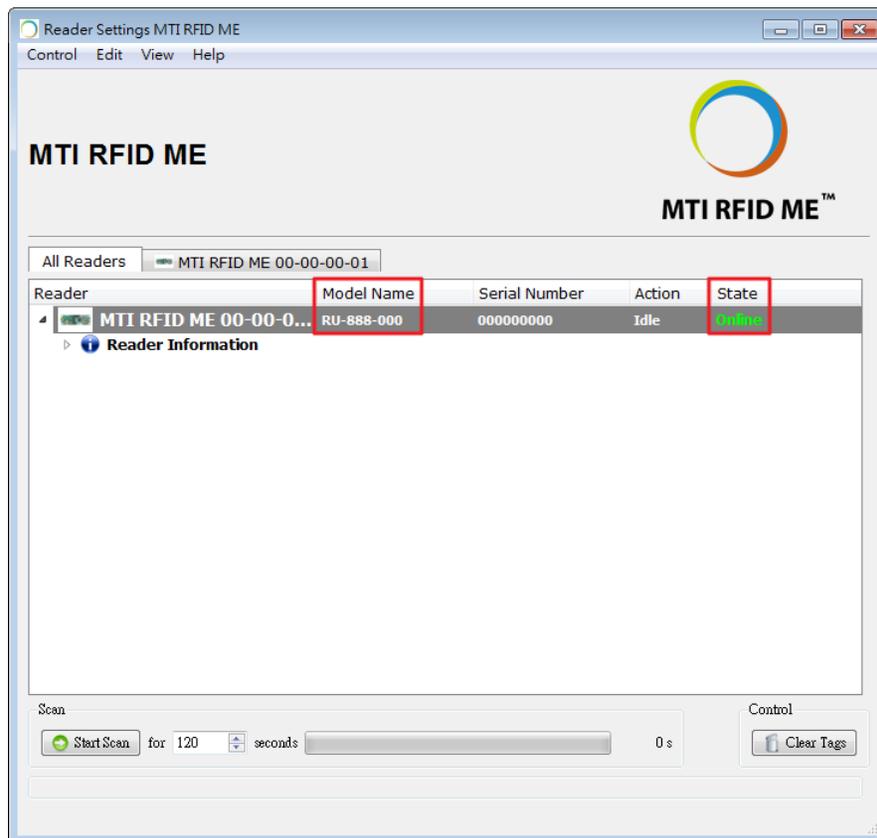The module name is described in the "Model Name" column as below.

Figure 8

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3. Reader Settings

3.1. Introduction

Right click the reader information that shows on the GUI of MTI RFID ME then click "Reader Settings" to access the "Advanced Reader Settings" page. This page shows specific configuration settings and information of the reader, including default and recommended settings as shown in Figure 9 and Figure 10.
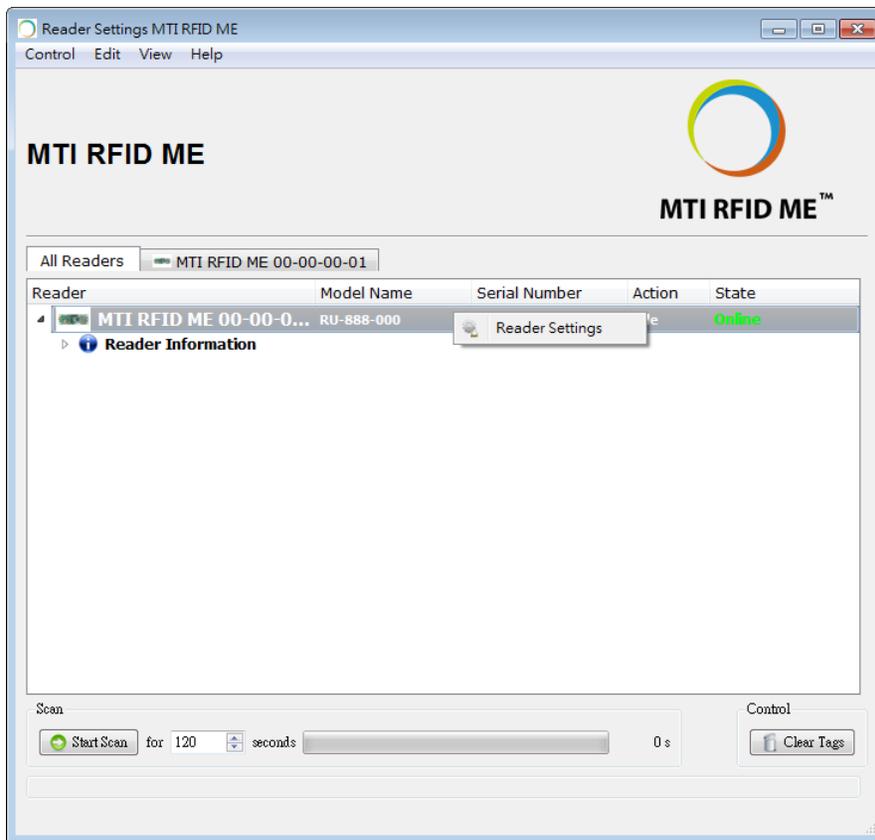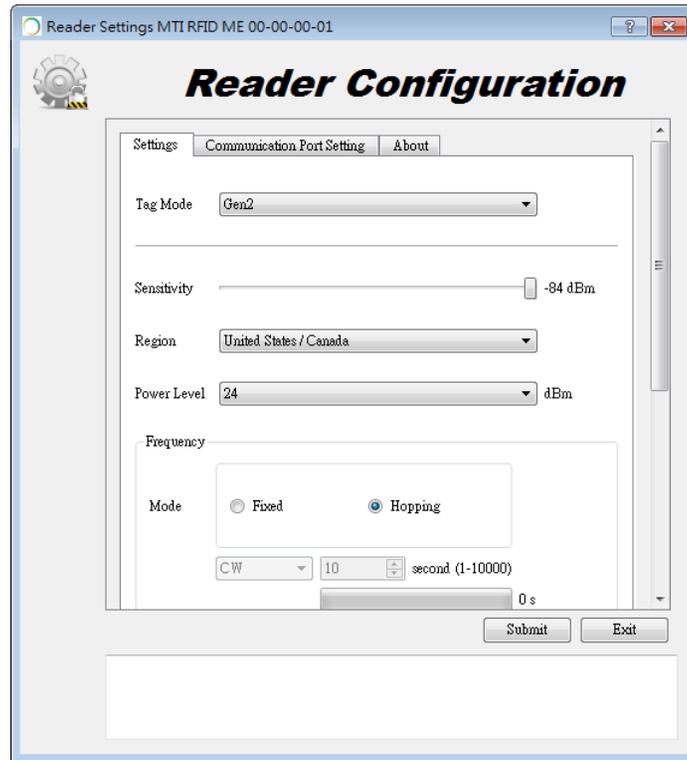

Figure 9

Figure 10

3.2. Advanced Reader Settings

3.2.1.　　Tag Mode: Gen2, Gen2+ RSSI

● 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

3.2.2. Region Settings

MTI RFID ME program can sense and detect the correct region of RFID reader.
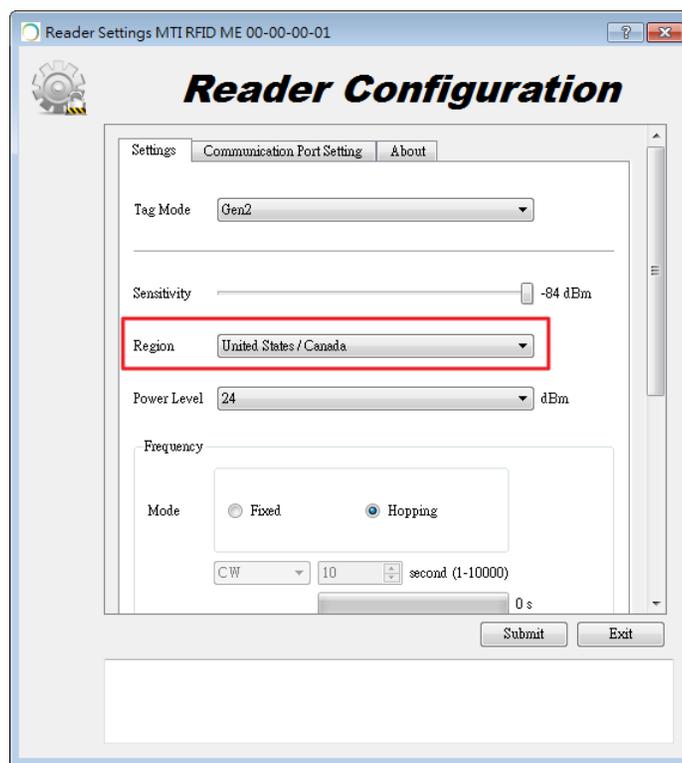

Figure 11

FOR COUNTRY CODE SELECTION USAGE

Note: The country code selection is for non-US model only and is not available to all US model. Per FCC regulation, all WiFi product marketed in US must fixed to US operation channels only.

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3.2.3.   Transmit Power Level

● To achieve the longest reading or writing range, set the power to the maximum allowable level of +24dBm 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.
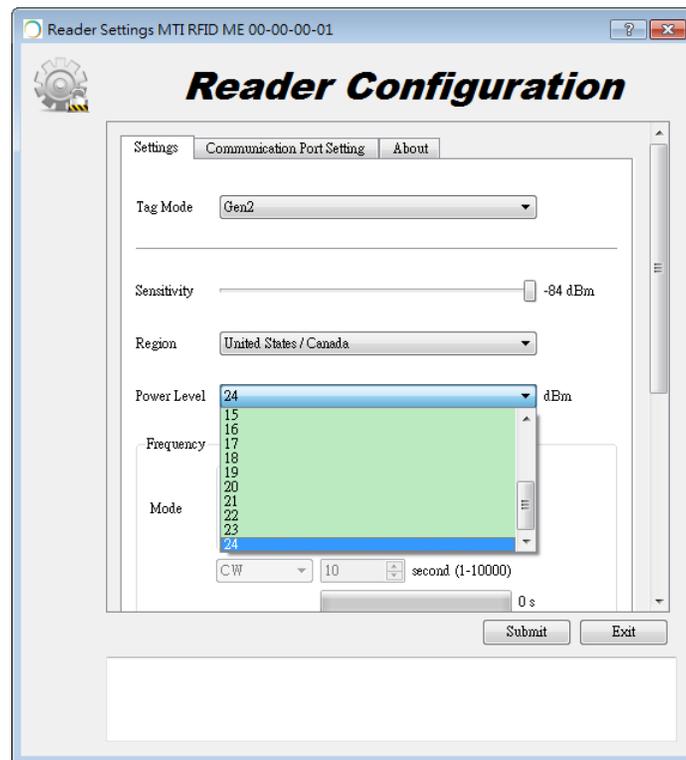

Figure 12

3.2.4.   Frequency Setting

● Hopping mode : Select frequency mode to "Hopping" to perform inventory scanning in general.
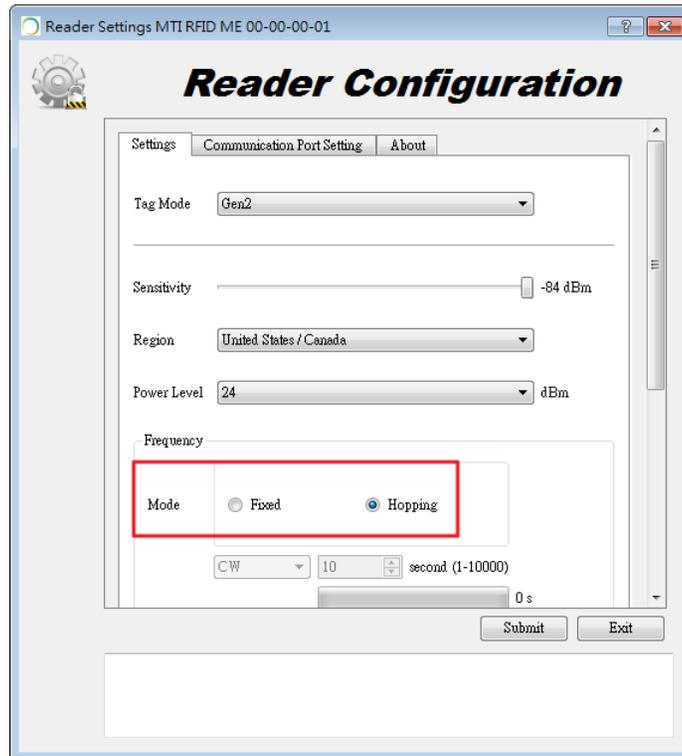
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Figure 13

● Fixed mode：Select frequency mode to "Fixed" to perform test and evaluation in

general.

● CW/Modulation/Pulse：These three settings only can be set when frequency mode is
set to "Fixed". The settings used for engineering evaluation.

◆CW：To test output power linearity at the assigned frequency.

◆Modulation：To test the spectrum mask at the assigned frequency.

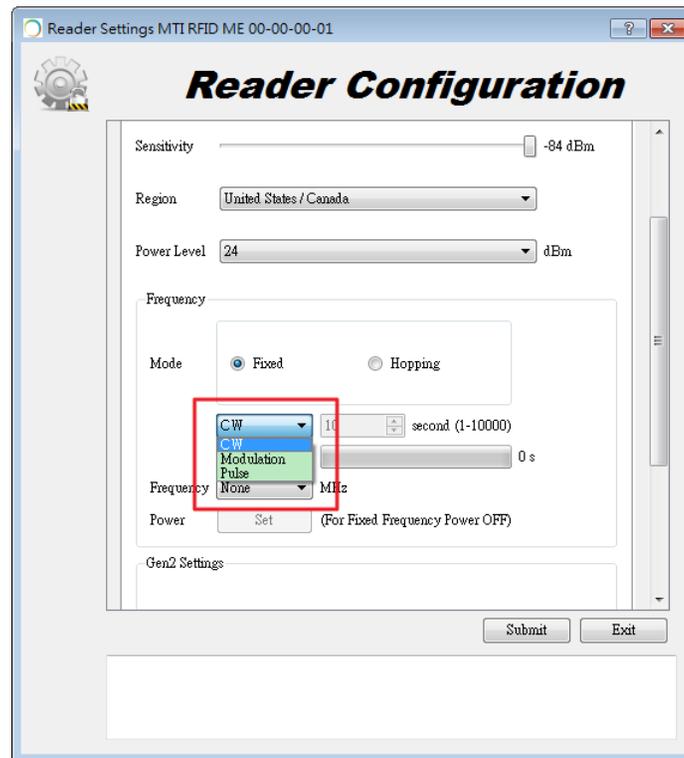◆Pulse：To test ETSI standard 302 208 v1.3.1.

Figure 14

3.2.5. Gen2 Setting

Figure 15 illustrates how to change or modify the Gen2 profile of the MTI RFID ME 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/uhfc1g2)

● MTI RFID ME HW GUI Default Settings

◆ Link frequency：160KHz

◆ Session：S0

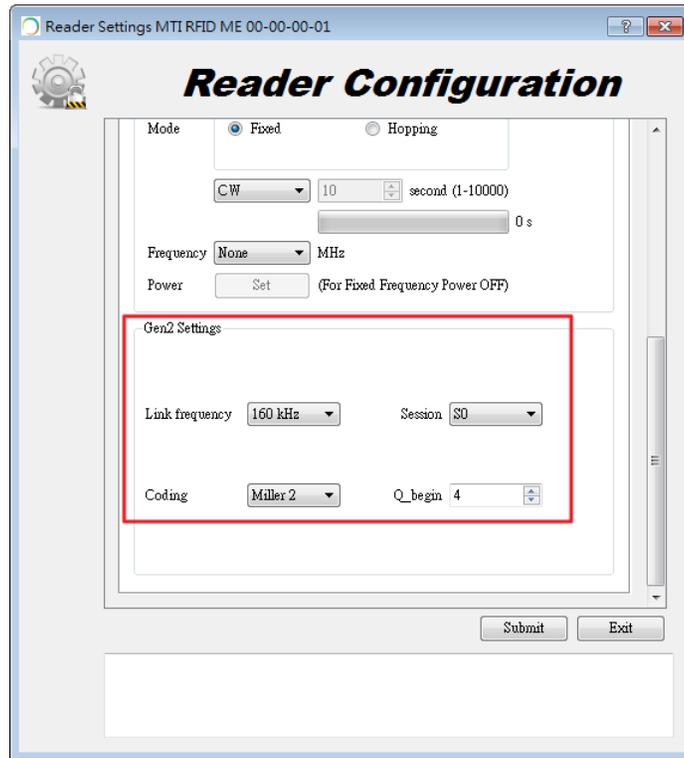◆ Coding：Miller 2

◆ Q_begin：4

Figure 15

4. Inventory Run

After configuring the MTI RFID ME settings as described in section 3, you are ready to start an inventory run.　Click the "Start Scan" button located in the lower left corner of the window as shown in Figure 16.
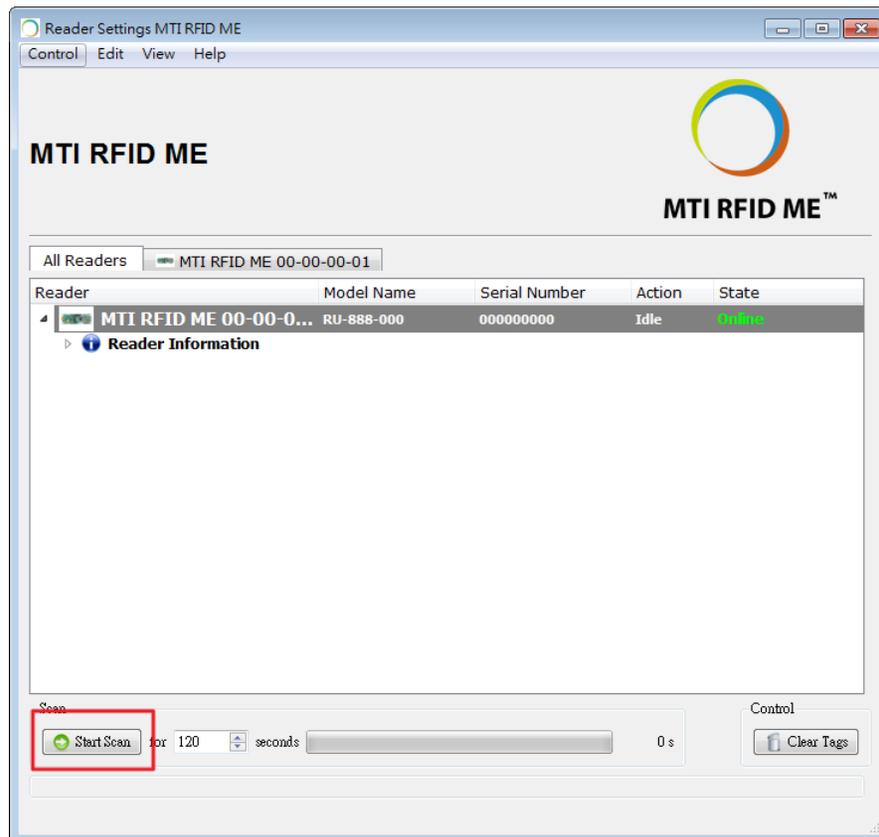

Figure 16

Figure 17 shows an example of a "Start Scan" operation and where the MTI RFID ME is reading two tags.
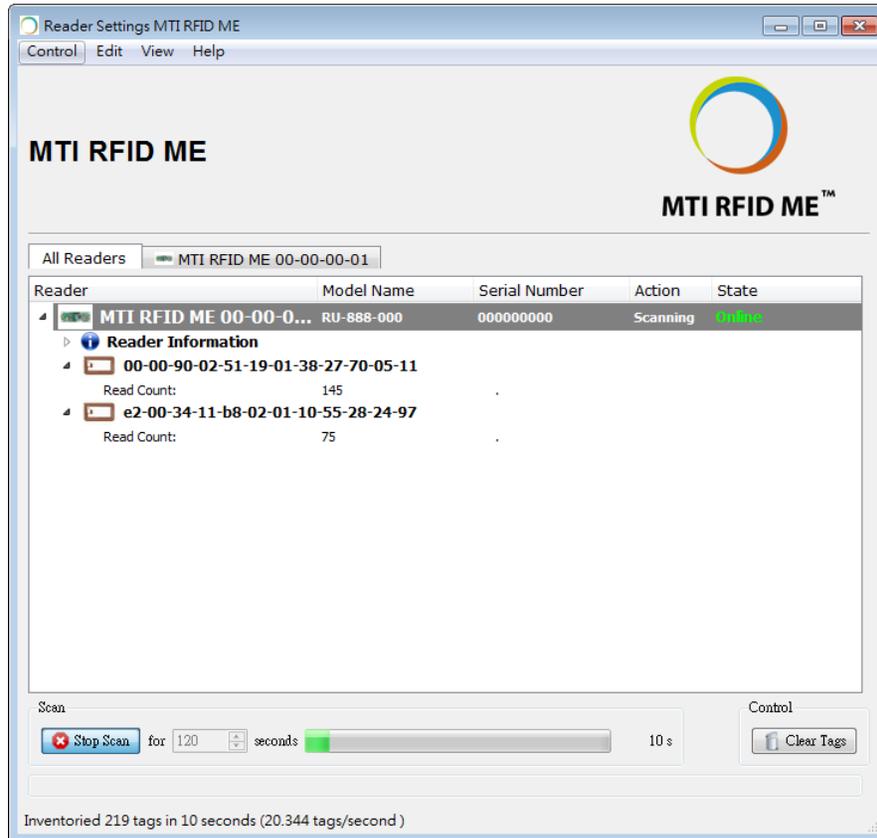

Figure 17

5. Tag Settings

Please stop scan before configure tag. Right click on the EPC of the tag that want to modify then click the "Advanced Tag Settings" as shown in Figure 18. User can configure tag in "Advanced Tag Settings" page as shown in Figure 19.
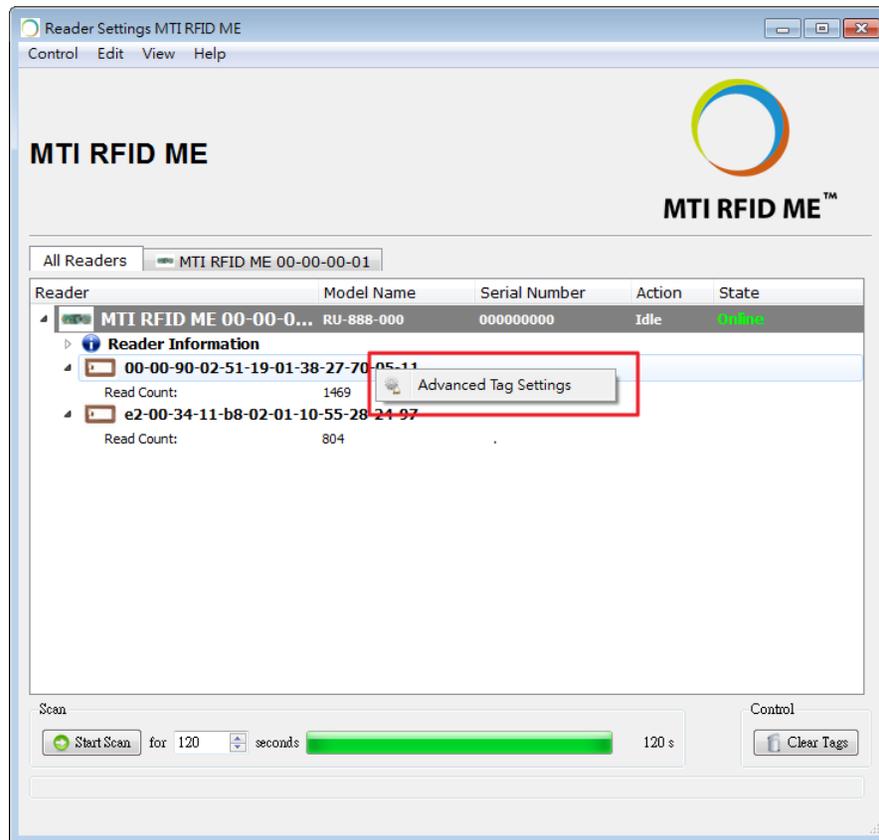

Figure 18

Figure 19

5.1. Tag Setting Function

5.1.1. Set EPC

Click "Set EPC" button then enter setting window to modify or change a tag's EPC. The EPC, EPC length and access password can be set in this window.

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

Figure 20

- EPC Write Successful

  MTI RFID ME will alert a confirmation message to show the EPC information is set successfully.
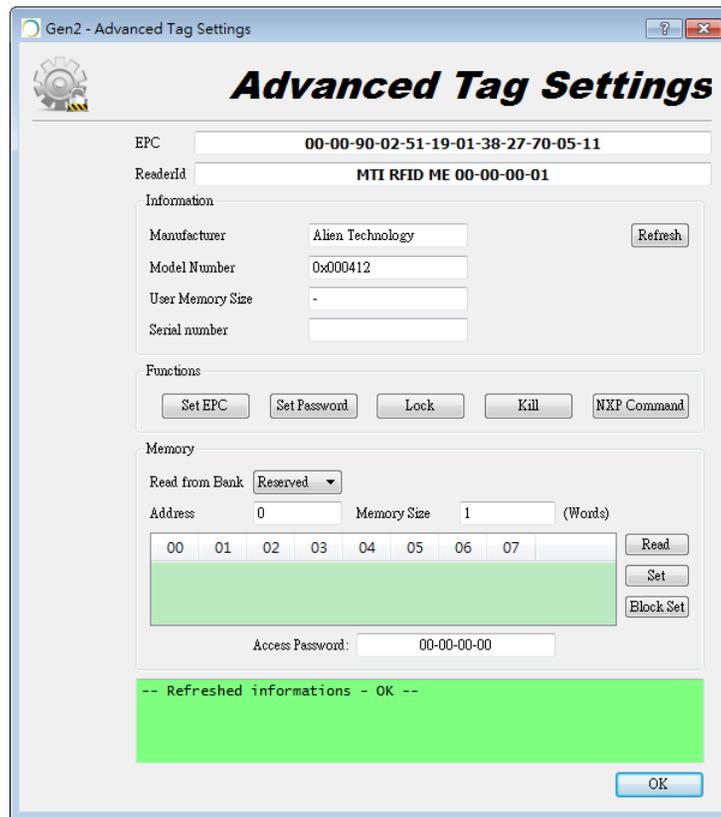
Figure 21

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- EPC Write Failed

  MTI RFID ME will alert a confirmation message to show the EPC information is set unsuccessfully. Repeat the EPC setting process maybe can resolve write failed problem due to RF status is not stable.

  Note: It may get some improvement to change position of the tag or increase/ decrease power level.
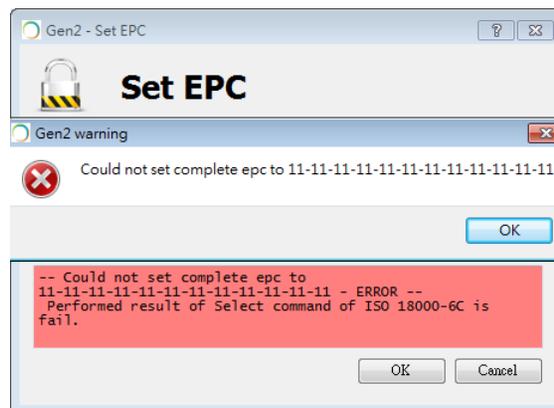
Figure 22

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5.1.2. Set Password

Click "Set Password" button then enter setting window to change the password of tag. The default "Current Access Password" is 00-00-00-00. For more detailed information regarding password settings please refer to the Class 1 Generation 2 UHF Air Interface Protocol Standard "Gen 2" at http://www.epcglobalinc.org/standards/uhfc1g2

Figure 23

5.1.3. Lock

Click "Lock" button then enter setting window to change access/write authority of the specific memory bank. For more information regarding lock and associated memory banks please refer to Class 1 Generation 2 UHF Air Interface Protocol Standard "Gen 2" at http://www.epcglobalinc.org/standards/uhfc1g2

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Figure 24

5.1.4. Kill

Click "Kill" button then enter setting window to kill a tag with kill password. For more information about kill and kill password please refer to Class 1 Generation 2 UHF Air Interface Protocol Standard "Gen 2" at http://www.epcglobalinc.org/standards/uhfc1g2

Figure 25

5.1.5. NXP Command

Click "NXP Command" button then enter setting window to execute command for NXP tag. Moreover, "Configuration" must be set if select "ChangeConfig 09-00". For more information about NXP command, please refer to SL3ICS1002/1202 UCODE G2xM and G2XL at 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.

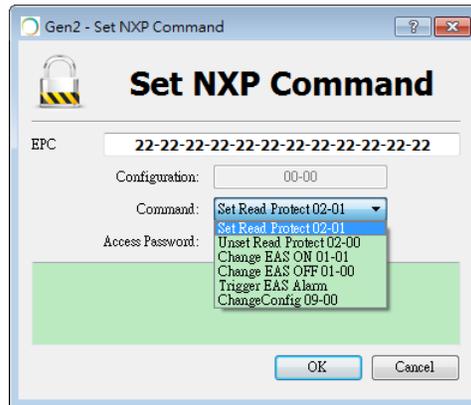◆ ChangeConfig 09-00: Configures the additional features of the tag like Read-Protect, EAS Alarm etc.

Figure 26

5.2. Memory Bank

There are four memory banks can be operated that are "Reserved", "EPC", "TID" and "User" in MTI RFID ME. User can read/ write a specified memory block by click "Read", "Set" and "Block Set". For more information about how to configure memory bank for your use case, please refer to Class 1 Generation 2 UHF Air Interface Protocol Standard "Gen 2" at
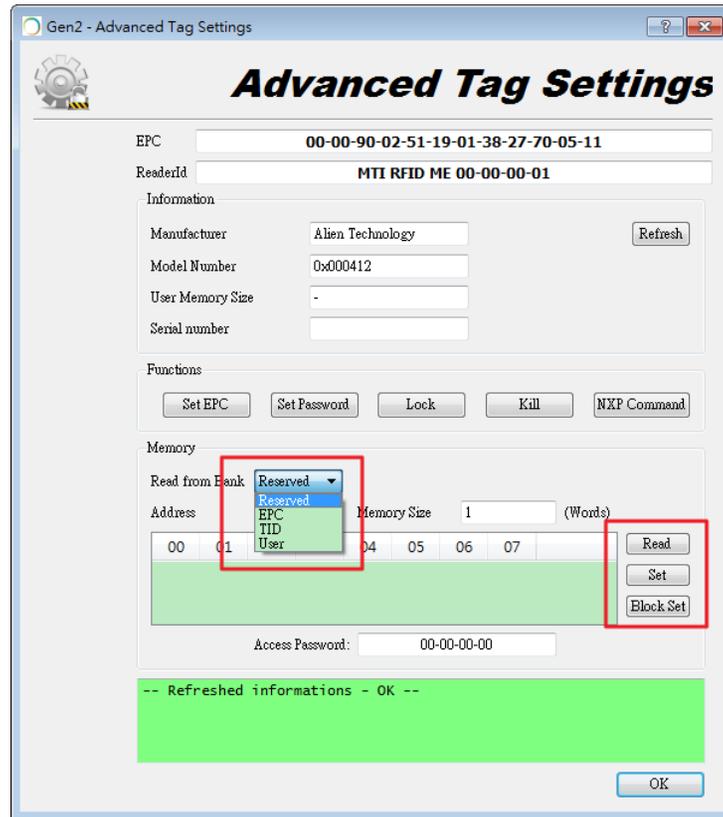
http://www.epcglobalinc.org/standards/uhfc1g2

Figure 27

6. Troubleshooting/ FAQs

6.1. Initial Setup/ Software

If the software fails to install as shown in Figure 28, repeat the installation process over again, first uninstall the prior MTI RFID ME installation, and then re-install again using the same steps listed in section 2.1.
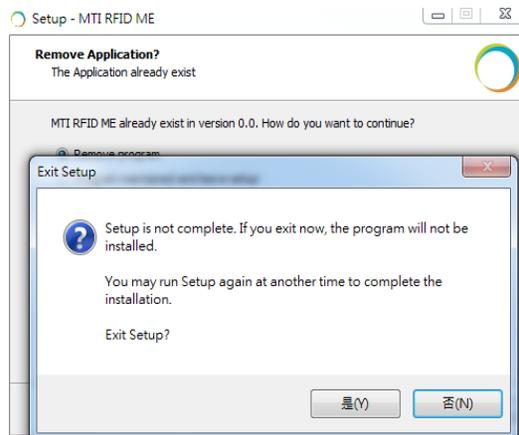

Figure 28

6.2. Reading Tags

If reader is "Offline" and does not identify tags, make sure the state/status of the MTI RFID ME 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 reader 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.