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MICROELECTRONICS TECHNOLOGY INC.

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NOTE: APPROVALS ON THIS PAGE SIGNIFY APPROVAL OF ENTIRE PROCEDURE.

MTI RFID RU-859 Module
Quick Guide

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REVISED   HISTORY

DWG NO.   APPROVED BY

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Federal Communication Commission Interference Statement

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.

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.

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.

IMPORTANT NOTE:
FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 25cm between the radiator & your body.

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

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Chapter 1
Introduction

1.1 Purpose

This document provides information and procedures on installation, setup, and use of MTI RFID RU-859 Module.

1.2 Trademarks

The product described in this book is a licensed product of Microelectronics Technology Inc.

Microsoft, Windows 95, Windows 98, Windows Millennium Edition, Windows NT, Windows 2000, Windows XP, and MS-DOS are registered trademarks of the Microsoft Corporation.

Intel is a trademark of Intel Cooperation.

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Chapter 2
Product Introduction

2.1 Product and Accessories

■ MTI RFID RU-859 Module

■ Developer Kit (Model Number: TF-RU-859-01, optional)

■ DC 5V 1.5A Power Supply / Power Adapter (optional)

■ Antenna and cable (optional)

2.2 Power Supply

Required DC 5V 1.5A.

2.3 Channels and Frequencies

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	915.75	10	918.75	20	911.25	30	918.25	40	923.75
1	915.25	11	917.75	21	911.75	31	916.25	41	908.25
2	903.25	12	905.25	22	903.75	32	910.25	42	925.75
3	926.75	13	904.75	23	908.75	33	910.75	43	912.75
4	926.25	14	925.25	24	905.75	34	907.75	44	924.25
5	904.25	15	921.75	25	912.25	35	924.75	45	921.25
6	927.25	16	914.75	26	906.25	36	909.75	46	920.75
7	920.25	17	906.75	27	917.25	37	919.75	47	922.75
8	919.25	18	913.75	28	914.25	38	916.75	48	902.75
9	909.25	19	922.25	29	907.25	39	913.25	49	923.25

Figure 1   Channel and Frequency Table

2.4 Interfaces

Antenna Port 2 ————— Antenna Port 1
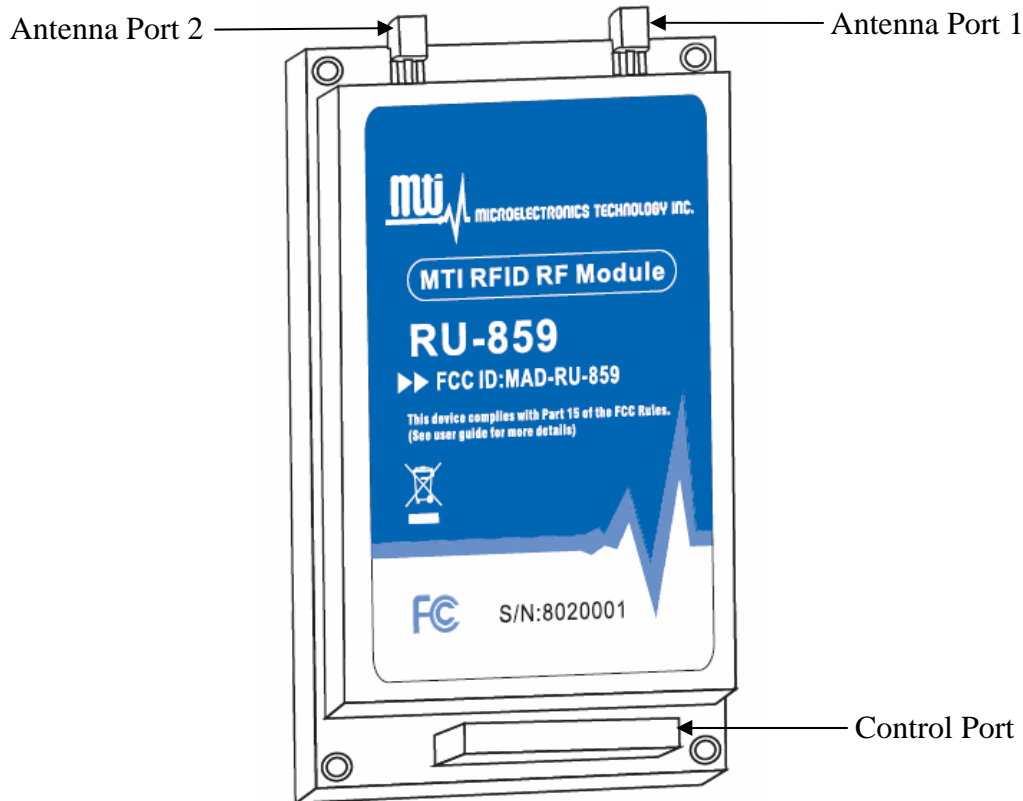
Control Port

Figure 2   Interfaces

■ Antenna Ports

● Standard Female MMCX Connector.

■ Control Port

● 2x15pins 1.27mm Male Box Header

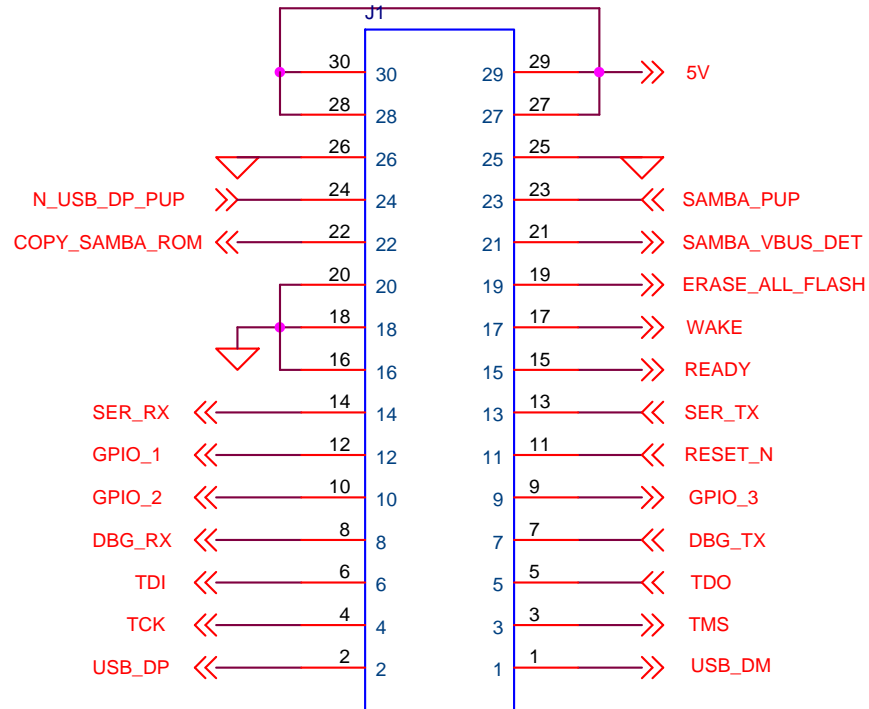(Manufacturer: Cherng Weei, Part Number: B613-M2GC-D055-30)

● Pin Assignment

	J1	
30	30	
28	28	
26	26	
N_USB_DP_PUP 24	24	23 SAMBA_PUP
COPY_SAMBA_ROM 22	22	21 SAMBA_VBUS_DET
20	20	19 ERASE_ALL_FLASH
18	18	17 WAKE
16	16	15 READY
SER_RX 14	14	13 SER_TX
GPIO_1 12	12	11 RESET_N
GPIO_2 10	10	9 GPIO_3
DBG_RX 8	8	7 DBG_TX
TDI 6	6	5 TDO
TCK 4	4	3 TMS
USB_DP 2	2	1 USB_DM

29 29 5V 27 27 25 25

Figure 3   Pin Assignment

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● Pin Explanation

Signal Name	Pin Number	Type	Function Description
Consumer			
5V	27,28,29,30	Power	Voltage Regulator Power Supply Input
GND	16,18,20,25,26	Ground	Ground
RESET_N	11	Input	Module Reset
USB_DM	1	Analog	USB Device Port Data -
USB_DP	2	Analog	USB Device Port Data +
SAMBA_VBUS_DET	21	Input	Detect USB Host Connection
N_USB_DP_PUP	24	Output	USB Data + Pull Up
SER_TX	13	Output	UART Serial Transmit Data
SET_RX	14	Input	UART Serial Receive Data
READY	15	Output	UART Serial Request To Send
WAKE	17	Input	UART Serial Clear To Send
DBG_TX	7	Output	UART Debug Transmit Data
DBG_RX	8	Input	UART Debug Receive Data
GPIO_1	12	I/O	General Purpose Input/Output
GPIO_2	10	I/O	General Purpose Input/Output
GPIO_3	9	I/O	General Purpose Input/Output
Engineering (optional)			
TMS	3	Input	JTAG Test Mode Select
TCK	4	Input	JTAG Test Clock
TDO	5	Output	JTAG Test Data Output
TDI	6	Input	JTAG Test Data Input
ERASE_ALL_FLASH	19	Input	Flash and NVM Configuration Bits Erase Command
COPY_SAMBA_ROM	22	Input	Recover SAM-BA Boot from ROM memory
SAMBA_PUP	23	Input	SAM-BA Pull Up

Figure 4   Pin Assignment Explanations

Chapter 3
Installation

Before starting installation, please uninstall any prior version of Intel RFID Tracer from your system.

3.1 Install Procedure

Step 1:   Open folder "Software\Tracer (GUI)\current release\".

Step 2:   Run the file Setup.exe.

Step 3:   The setup program will check for and optional install the C++ runtime libraries and the .Net 2.0 Framework.

Step 4:   The setup program will then prompt for the desired installation directory. The default will be [Program Files]\Intel\RFID.

Step 5:   The setup is completed by clicking on the Install button. The program files are copied to disk, and a link to RFID Tracer Folder is added to the user desktop.

Step 6:   After the installation is completed, the RFID Tracer program may be started by opening the RFID Tracer Folder and double clicking on the RFID Tracer.exe icon.

3.2 Uninstall Procedure

Step 1:   Open the Control Panel and select "Add or Remove Programs".

Step 2:   Select the entry for Intel RFID Tracer and click the "Change / Remove" button.

Step 3:   Click the prompt to remove the application.

Chapter 4
Reading Tags

The following procedure explains how to install and operate RU-859 Module with RFID Tracer on your PC.

4.1 Setup

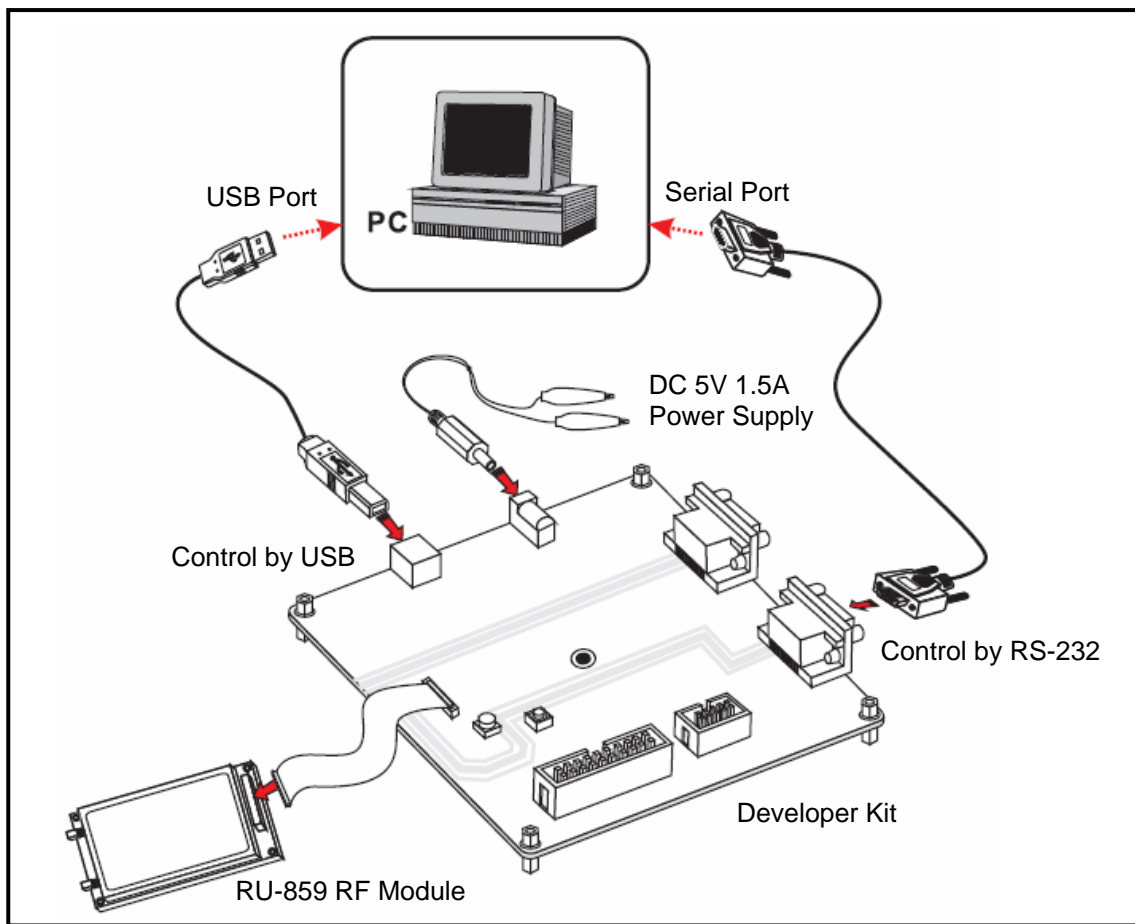Connect RU-859 module to accessories, as shown in Figure 5.

USB Port

Serial Port

PC

DC 5V 1.5A
Power Supply

Control by USB

Control by RS-232

Developer Kit

RU-859 RF Module

Figure 5   Setup

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4.2 Open RFID Tracer

Step 1:   Start RFID Tracer by double clicking on the RFID Tracer.exe. icon

Step 2:   When start RFID Tracer with RU-859 module at first time, you might need to install USB2.0 driver for communication. You could find the USB driver zipped at folder "Software\Drivers and SDK\Linux\", or "Software\Drivers and SDK\Windows\", depend on your operation system.

4.3 Select Antenna Port

Step 1:   Select the Configure Reader menu item or click on the wrench icon on the tool bar, as shown in Figure 6.
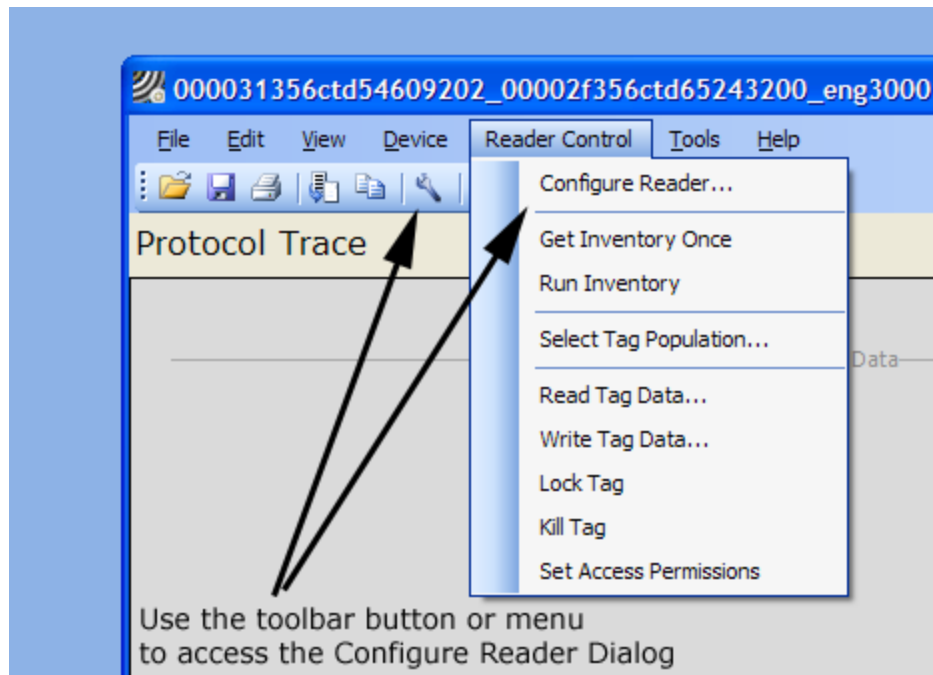

Figure 6   Reader Configuration Dialog

Step 2:   Select "Antenna Ports" listed on the left-hand side selection bar, as shown in Figure 7.
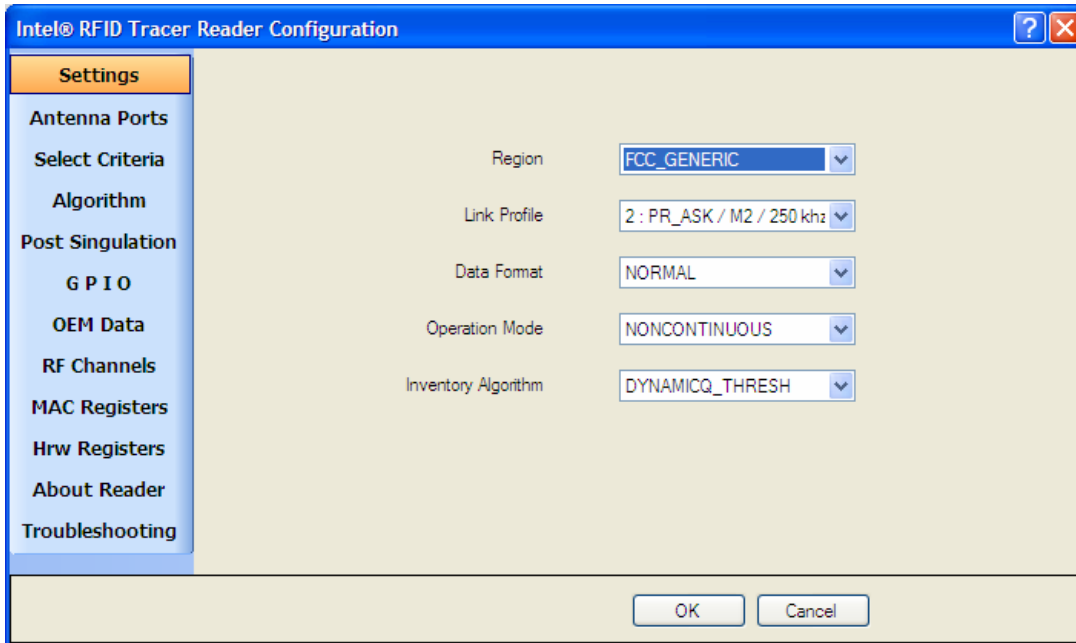

Figure 7   Reader Configuration Panel

Step 3:   The Antenna Ports page is used to configure the reader's sixteen logical antenna ports. As Figure 8 shows, the screen has a grid which displays the current antenna configuration.
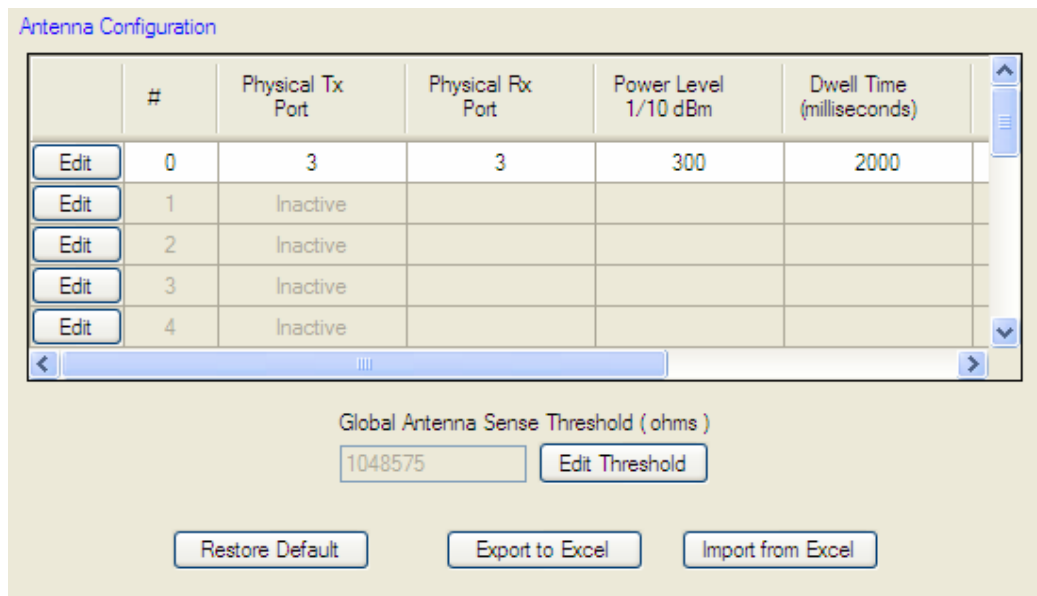

Figure 8   Antenna Configuration

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Step 4: To change the setting for a logical antenna, click on the edit button in the first column of the grid. This will bring up the dialog box shown in Figure 9.
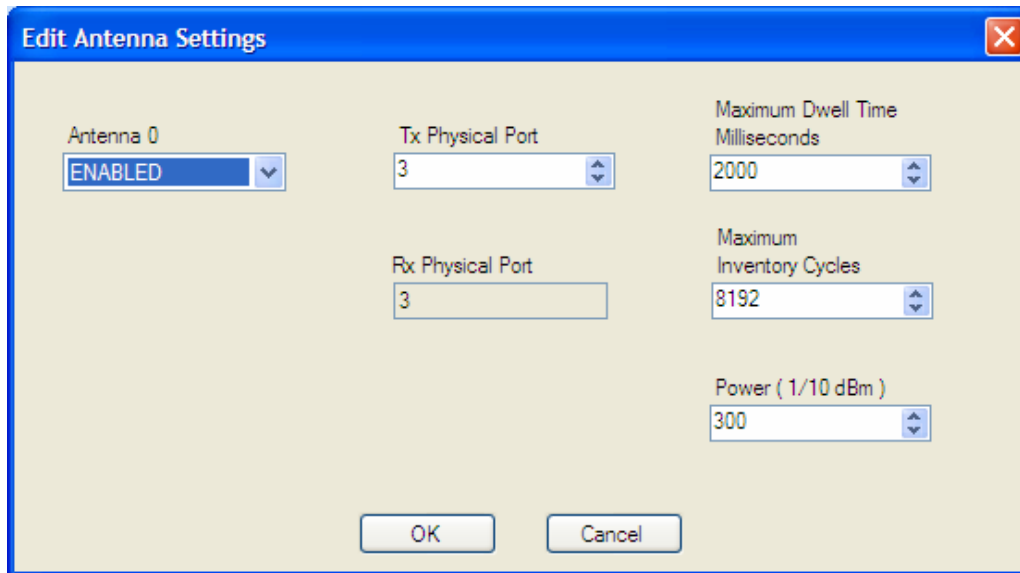

Figure 9   Antenna Logical Settings

Step 5: If using antenna port 1, then configure Tx Physical Port indicating the physical connector with 1 or 3. If using antenna port 2, then configure Tx Physical Port with 0 or 2.

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4.4 To Read Tags

Step 1:   Click "Run Inventory" at Control Panel, as shown in Figure 10.
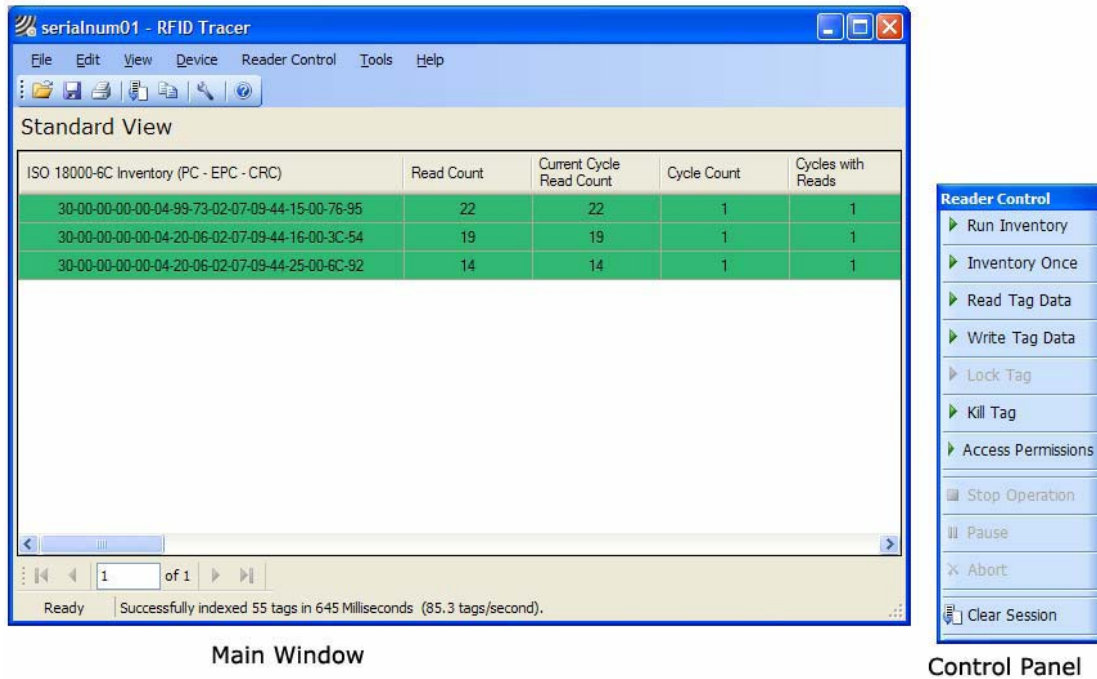

Figure 10   Main Window and Control Panel

Step 2:   Select views that allow users examine RFID data from a number of different perspectives, as shown in Figure 11. Views are selected from the View menu of the main window. The live data views display data as the packets arrive from the module with a minimal amount of processing. Figure 12 shows the three live data views supported by RFID Tracer application.
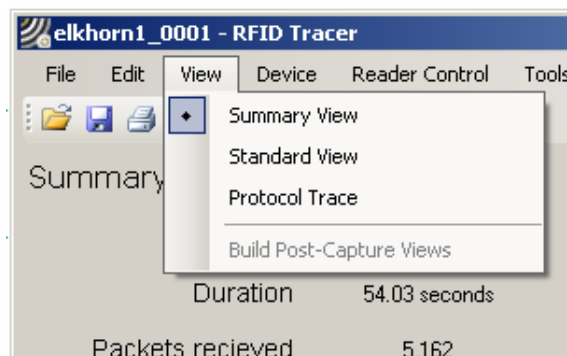

Figure 11   View Menu

View Name	Contents
Summary View	Overview statistics about the current session, currently executing command and reporting time slice.
Standard View	A list of unique tag singulations (tag id inventoried) in the session and a count of the number of times the id was read (inventoried).
Protocol Trace	A graphical view of the packet data for the current (active) command broken out by the packet fields.

Figure 12   Live Data Views

Step 3:   The module reads tags and displays the tags in the Main Window.

4.5 To Stop Reading Tags

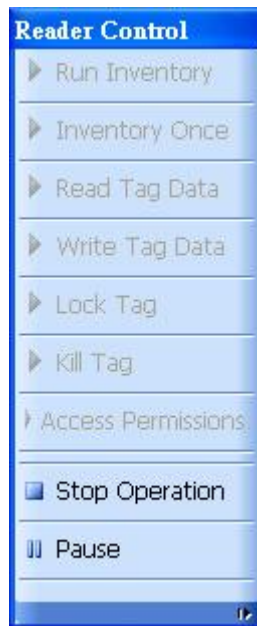*Step1:*   Click "Stop Operation" in Control Panel, as shown in Figure 13.

Figure 13   Stop Operation