

MODEL: AFL2-EM-RFID-KIT

EM RFID reader, 125K Hz, w/o LED indicator, for AFL2-W07A/08A/10A/W10A/12A/15A/W15B/17A/W19A Series, IEI Assembly Only, R10

User Manual



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Revision

Date	Version	Changes
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Introduction

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1.1 AFL2-EM-RFID-KIT01 Overview



Figure 1-1: AFL2-EM-RFID-KIT01

The AFL2-EM-RFID-KIT01 is an RFID reader for Low Frequency (LF) RFID systems and is compliant with ISO 11784 and ISO 11785 industrial standards. The AFL2-EM-RFID-KIT01 also comes with a utility and a software development kit (SDK) for configuring reader module and writing/reading tags.

1.1.1 AFL2-EM-RFID-KIT01 Features

The AFL2-EM-RFID-KIT01 has the following features

- 125 KHz radio frequency industrial RFID reading module
- Supports standard protocol ISO 11784 and ISO 11785
- Supports the following EM transponders:
 - O EM4100
 - O EM4450
 - O EM4305
- Single power supply and low power consumption
- Keyboard data entry
- Various interfaces to main system
 - O 115.2 Kbps maximum serial communication speeds
 - O USB



1.2 Technical Specifications

The specifications for the Intel based embedded systems are listed below.

	AFL2-EM-RFID-KIT01
Support Protocol	ISO 11784, ISO 11785 (EM4305/EM4450 R/W)
RF Frequency	125 KHz
Interface	RS-232 serial port or USB
UART	RS-232
USB	USB 2.0 full speed with 3.3 V or 5 V logic levels
RFID ASIC	EM4095
Processor	AT90USB162 and ATMEGA64
Power Consumption	5V @ 150 mA
Storage Temperature	-10ºC ~ 70ºC
Operating Temperature	0°C ~ 50°C
Operating Humidity	10% ~ 85% RH
Driver Support	Windows XP
	Windows XPE

Table 1-1: Technical Specifications





Connectors

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2.1 AFL2-EM-RFID-KIT01 RFID Reader

The following sections describe the relevant components and jumpers on the RFID reader module.

2.1.1 AFL2-EM-RFID-KIT01 Layout

Figure 2-1 shows the on-board peripheral connectors and rear panel LEDs.



Figure 2-1: Connector and Jumper Locations



Figure 2-2: LED Locations (Solder Side)

2.1.2 Peripheral Interface Connectors

Table 2-1 shows a list of the peripheral interface connectors on the AFL2-EM-RFID-KIT01. Detailed descriptions of these connectors can be found below.

Connector	Туре	Label
Antenna connector	2-pin	J3
Buzzer connector	2-pin	J2
RS-232 and USB connector	6-pin header	J4

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AFL2-EM-RFID-KIT01

Connector	Туре	Label
Function active LED (solder side)	LED	D1
Power LED (solder side)	LED	D2

Table 2-1: Peripheral Interface Connectors and Indicators

2.2 Internal Peripheral Connectors

This section has complete descriptions of all the internal peripheral connectors on the AFL2-EM-RFID-KIT01.

2.2.1 Antenna Connector

CN Location:	See Figure 2-1
CN Type:	2-pin
CN Label:	J 3

The Antenna Connector connects to the 125 KHz antenna.

2.2.2 Buzzer Connector

CN Label:	J 2
CN Type:	2-pin
CN Location:	See Figure 2-3
CN Pinouts:	See Table 2-2

The 2-pin buzzer connector is connected to a buzzer.



Figure 2-3: Buzzer Connector Location

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Pin No.	Description
1	GND
2	MIC+

2.2.3 RS-232 and USB Connector

CN Label:	J 4
CN Type:	6-pin header
CN Location:	See Figure 2-4
CN Pinouts:	See Table 2-3

The 6-pin RS-232 and USB connector is connected to a RS-232 and USB Y cable.



Figure 2-4: RS-232 and USB Connector Locations

Pin No.	Description	
1	GND	
2	USBDM	
3	USBDP	
4	+5V	
5	RXD	
6	ТХД	

Table 2-3: RS-232 and USB Connector Pinouts

2.2.4 LED Indicators

CN Label:	D1 and D2 (Solder Side)
CN Type:	On-board LED

There are two LED indicators located on the solder side of the AFL2-EM-RFID-KIT01 module to indicate the power status and activation status.





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Unpacking



3.1 Anti-static Precautions



Static electricity can destroy certain electronics. Make sure to follow the ESD precautions to prevent damage to the product, and injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the AFL2-EM-RFID-KIT01-R10. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the AFL2-EM-RFID-KIT01-R10 or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- *Wear an anti-static wristband*: Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- Self-grounding: Touch any grounded conducting material before handling the board. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- Use an anti-static pad: When configuring the AFL2-EM-RFID-KIT01-R10, place it on an antic-static pad. This reduces the possibility of ESD damaging the AFL2-EM-RFID-KIT01-R10.

3.2 Packing List



If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the IEI reseller or vendor the AFL2-EM-RFID-KIT01-R10 was purchased from or contact an IEI sales representative directly by sending an email to <u>sales@iei.com.tw</u>.

The AFL2-EM-RFID-KIT01-R10 is shipped with the following components:

Quantity	Item	Image
1	AFL2-EM-RFID-KIT01-R10	
1	Utility CD	

Table 3-1: Package List Contents







Software Application



4.1 Chapter Overview

This chapter describes the use of the IRFR-210 module control program. The IRFD-210 Tools is a program providing end user interface to help the user to communicate with 125 kHz operating frequency transponders using IRFD-210.

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The IRFD-210 Tools provides almost complete command set to control the IRFD-210 reader and communicate with the following EM transponders:

- EM4100
- EM4450
- EM4305

4.2 System Requirement

IEI IRFD-210 Tools can be installed in the following OS:

- Windows 2000
- Windows XP

4.3 IEI IRFD-210 Tool Support Library

- VC ++
- Visual Base .Net

4.4 Software Interface

The IRFD-210 Tools window is shown following. There are two main functions on the tool bar, each contains several function commands:

- File
 - O Open Device: open IRFD-210
 - O Exit: exit IRFD-210 Tools
- Tag Selection
 - O EM4100
 - O EM4450
 - O EM4305





Figure 4-1: Software Interface

4.4.1 Open IRFD-210

To start using the IEI IRFD-210 Tools with the IRFD-210 reader, follow the steps below.

- Step 1: Click **Open Device** from the **File** drop-down menu.
- Step 2: The following window appears. Select a device type (USB or RS-232). Select a connected COM port (COM1 -- COM255).

IRFR_210_OPEN
Device Type
• USB C R5232
COM Port COM1 💌
Cancel

Figure 4-2: Open IRFD-210

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4.5 EM4100

The IRFD-210 is capable of reading EM4100 tag UID. To read EM4100 tag, follow the steps below.

- Step 1: Click **EM4100** from the list of the **Tag Selection** tool.
- Step 2: Place a single EM4100 tag on the IRFD-210.
- Step 3: Click the **IRFR_4100ID** button.
- Step 4: To continuously read EM4100 UID, click the **Start** button.

EM4100	×
START IRFR_4100ID Clear	
Status	

Figure 4-3: EM4100

4.6 EM4450

EM4450					×
Memory Map					
Block number	Contents	Mode	Value	<u>^</u>	Read Block
1	Protection word	(RW)			
2	Control word	(RW)			Selective Read
3	User word0	(RW)			Read Ctl Word
4	User word1	(RW)			
5	User word2	(RW)			Write Block
6	User word3	(RW)			
7	User word4	(RW)			Set Ctl Word
8	User word5	(RW)			Neur
9	User word6	(RW)			New Password
10	User word7	(RW)			Login
11	User word8	(RW)		~	Login
Message					Reset Tag
				~	
				×	
<				>	

Figure 4-4: EM4450

4.6.1 Setup

- Step 1: Click EM4450 from the list of the Tag Selection tool.
- Step 2: Place a single EM4450 tag on the IRFD-210.

4.6.2 Read Block

To read a single block, the user should:

- Step 1: Select one block from the Memory Map list.
- Step 2: Click the **Read Block** button.

4.6.3 Write Block

To write a block, the user should:

Step 1: Select one block from the Memory Map list.

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- Step 2: Click the **Write Block** button.
- Step 3: Enter a value for the new block.
- Step 4: Click the **OK** button.

Write Block Value	
Enter Write	Block Value
0000000	
MSByte	LSByte
ОК	Cancel

Figure 4-5: Write Block Value



The Write Block command can only be used for reading or writing (RW) blocks.



4.6.4 Login

The Login command is used to access protected memory areas. The login status is visible in the Login Status window under the Login command button. To login, the user should:

- Step 1: Click the Login button.
- Step 2: Enter a current password value.
- Step 3: Click the **OK** button.

Enter Current Password value:		
0000000		
LSByte		
Canaal		
Cancer		

Figure 4-6: Login – Enter Password

4.6.5 Selective Read

The Selective Read command is used to read blocks that are defined between First Block Read value and Last Block Read value.

- Step 1: Click the **Selective Read** button.
- Step 2: Enter the First and Last Block values. Possible values are: 1<= First Block value <= Last Block value <= 33.
- Step 3: Click the **OK** button.

4.6.6 Set Control Word

The Set Control Word command is used to set the Control Word located in the Block 2. When clicking the Set Control Word button, the actual content of the Control Word is read first. To set control word, the user should:

- Step 1: Click the **Set Control Word** button.
- Step 2: The Set Control Word window appears. Change the settings of the Control Word.
- Step 3: Click the **Set** button to exit.

Set Control Word		
20 First Block Read (Bits 7-0) 33 Last Block Read (Bits 15-8) Password Check (Bit 16)		
🗖 Read After Write (Bit 17)		
0000 User Available (Bits 13-18)		
Set Cancel		

Figure 4-7: Set Control Word

4.6.7 Read Control Word

The Read Control Word command reads values of the First Block Read and Last Block Read in the Control Word and then reads blocks which are between these values.

4.6.8 New Password

The New Password command is used to change the password. To change the password, the user should:

- Step 1: Click the **New Password** button.
- Step 2: Enter the current password.
- Step 3: Enter a new password.
- Step 4: Click the **OK** button.

Set Password Value	×	
Current Password Value = 00000000		
New Password Value =		
0000000		
OK Cancel		

Figure 4-8: Set Password

4.6.9 Reset Tag

The Reset Tag command returns tag from any mode to the Standard Read Mode in which the tag sends data continuously, word by word from the memory section defined between the First Block Read and Last Block Read in the Control Word.



4.7 EM4305

EM4305		
Memory Map	Tag Features in Tag Memory	
Block number Contents Mode Valu	e Customer Code Unique ID Number	
1 Device type/ User f (RW)		
2 UID/ User free (RW)	Resonant Capacitor Chip Type	
3 User free (RW)		
4 Configuration word (RW)		
5 User free (RW)	Read Tag Feature	
6 User free (RW)	Current Teg Configuration	
7 User free (RW)	Country Code Netters UD Code	
8 User free (RW)	Country Code National ID Code	
9 User free (RW)		
	Data Block Reserved Animal Flag	
Configuration Read Block Write Block P	rotection	
Login New Password Disable No Logged In Read Tag Conf		
Message	Bead/ Write EEPBOM Memory	
READER_Set_Configuration OK.		
National ID Code		
Data Block		
Reserved		
Animal Flag		
<	Read Write Lock Initialize	

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Figure 4-9: EM4305

4.7.1 Setup

- Step 1: Click **EM4305** from the list of the **Tag Selection** tool.
- Step 2: Place a single EM4305 tag on the IRFD-210.

4.7.2 Configuration

Before using any command it is necessary to ensure that the reader and EM4305 transponder have the same configuration. To configure both the reader and transponder, please use the Configuration command. After entering the EM4305 frame, the reader is configured to Biphase RF/32 downlink communication automatically, i.e. the default EM4305 downlink communication configuration. To configure EM4305, the user should:

Step 1: Click the **Configuration** button in main window for EM4305 transponder.

- Step 2: Choose Configuration mode, Code/Data Rate and Last Word Read (LWR). For example; both EM4305 and Reader configuration, Bi/32, and LWR=8.
- Step 3: Click the **Set** button.

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Step 4: If the configuration command proceeds successfully the Configuration window closes automatically. Otherwise, the configuration needs to be repeated or canceled until successful. Further guide assumes the reader and the tag configuration matches.



Figure 4-10: EM4305 Configuration

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4.7.3 Read Block

- Step 1: Click one block from the Memory Map list.
- Step 2: Click the **Read Block** button.
- Step 3: Click the **OK** button.

4.7.4 Write Block

- Step 1: Click one block from the Memory Map list.
- Step 2: Click the Write Block button.
- Step 3: Enter the block value.
- Step 4: Click the OK button.



The Write Block command can only be used for Read/Write (RW) Block.

4.7.5 Login

Sending Login command is necessary before sending any password protected command. The status of Login command is visible in Login Status window under the Login button. To login, the user should:

- Step 1: Click the Login button.
- Step 2: Enter a current password value.
- Step 3: Click the **OK** button.

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Figure 4-11: Login – Enter Password

4.7.6 New Password



Before changing the password values the transponder has to be in Logged state (see Login described above).

The New Password command is used to change the password. To change the password, the user should:

- Step 1: Click the **New Password** button. If the Login Status is in Not logged state, use Login command to log-in.
- Step 2: Enter the current password.
- Step 3: Enter a new password.
- Step 4: Click the **OK** button.

4.7.7 Protection

Protection command protects Blocks in the transponder memory from being written. After clicking on Protection button the reader sends a command to read current value of the Protection Word. The already protected Blocks are ticked and they have gray color.



The bits in Protection word that are stored in the Protection words (Block 14 and 15) are one time programmable (OTP) which means that once they have been set they can not be reset any more.

- Step 1: Click the **Protection** button.
- Step 2: Tick the blocks which you would like protect.
- Step 3: Click the **Set** button in Set Protection Bits window.
- Step 4: Click the **Yes** button in Warning window.

Set Protection Bits	
Set Protection bits	
 Chip Type / User free block 0 UID/ User free block 1 Password User free block 3 Configuration word User free block 5 User free block 6 User free block 7 User free block 8 User free block 9 User free block 10 	
User free block 11 User free block 12 User free block 13 Protection words	Setting Protection X Are you sure? The bits are One Time Programmable only.
Set Cancel	確定取消

Figure 4-12: Set Protection Bits

4.7.8 Disable

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The Disable command is accepted in the case the Disable bit in Tag Special Bits is set to 1 (see Configuration -> EM4305 Special bits selection). When this command is detected, EM4305 or EM4205 tag stops all operations until power-up. If the Disable command is not accepted (Disable bit is set to 0), EM4305 or EM4205 tag returns in Default Read mode.

Within the EM4305 frame, the FDXB and Initialize FDXB indices provide the controls to read and configure the EM4205 or EM4305 tag into the Animal mode (FDXB).

4.7.9 Read Tag Memory

To read tag memory, click the **Read Tag Feature** button. After clicking **Read Tag Feature**, the application software detects the presence of the tags in the RF field. The data is displayed in appropriate panels.

Memory Map Tag Features in Tag Memory Block number Contents Mode Value 1 Device type/User f [RW] 512 973093054 2 UID/User free [RW] 512 973093054 3 User free [RW] 512 973093054 4 Configuration word [RW] 512 973093054 5 User free [RW] 6 User free [RW] 6 User free [RW] 6 Current Tag Configuration 7 User free [RW] 6 Current Tag Configuration 8 User free [RW] 6 Disable Protection Configuration Read Block Write Block Protection Data Block Reserved Animal File 6 Output Block Protection (word 14) = 00000000.1 Protection (word 15) = 00000000.1 7 Fail. Read Chip Information OK. Reserved National ID Code 7 Fail. Read Chip Uid OK. Animal Flag Data Block Data Block	M4305					E		
Block number Contents Mode Value Customer Code Unique ID Numb 1 Device type/ User f [RW] 512 973093054 2 UID/ User free [RW] 512 973093054 3 User free [RW] 1 Resonant Capacitor Chip Type 4 Configuration word [RW] Read Tag Feature 6 User free [RW] Image: Courter trag Configuration 7 User free [RW] Image: Courter trag Configuration 8 User free [RW] Image: Courter trag Configuration 9 User free [RW] Image: Courter trag Configuration 10 Read Block Protection Image: Courter trag	Memory Map					Tag Features in Tag Memory		
1 Device type/ User f [RW] 2 UID/ User free [RW] 3 User free [RW] 4 Configuration word [RW] 5 User free [RW] 6 User free [RW] 7 User free [RW] 8 User free [RW] 9 User free [RW] 9 User free [RW] 0 State [RW] 0 State [RW] 0 State [RW] 1 User free [RW] 9 User free [RW] 9 User free [RW] 1 Configuration Read Block Write Block Protection Protection Message No Logged In Read Tag Configuration OK. Protection (word 14] = 00000000.1 Protection (word 15] = 00000000.1 Fail. Fail. Read Chip Information OK. Read Chip Uid OK. Animal Flag	Block number	Contents	Mode	Value		Customer Code Unique ID Number		
2 UID/ User free [RW] 3 User free [RW] 4 Configuration word [RW] 5 User free [RW] 6 User free [RW] 7 User free [RW] 8 User free [RW] 9 User free [RW] 9 User free [RW] 0 User free [RW] 9 User free [RW] <	1	Device type/ User f	(RW)			512 973093054		
3 User free [RW] 4 Configuration word [RW] 5 User free [RW] 6 User free [RW] 7 User free [RW] 8 User free [RW] 9 User free [RW] 0 User free [RW]	2	UID/ User free	(RW)			Resonant Canacitor Chip Type		
4 Configuration word (RW) 5 User free (RW) 6 User free (RW) 7 User free (RW) 8 User free (RW) 9 User free (RW) 9 User free (RW) 10 To the free (RW) 11 To the free (RW) 9 User free (RW) 9 User free (RW) 10 To the free (RW) 11 To the free (RW) 12 To the free (RW) 9 User free (RW) 9	3	User free	(RW)			unused EM4305		
5 User free [RW] Read Tag Feature 6 User free [RW] Current Tag Configuration 7 User free [RW] Current Tag Configuration 8 User free [RW] Country Code National ID Code 9 User free [RW] Country Code National ID Code 10 10 Country Code National ID Code F 10 11 Country Code National ID Code F 10 11 Country Code National ID Code F 11 11 Country Code National ID Code F 12 12 12 F D 13 13 Country Code National ID Code F D 14 100000000.1 F F F D 15 00000000.1 F F Data Block F 16 14 00000000.1 F F D D 17 15 00000000.1 F D D D D D D D D D D D D	4	Configuration word	(RW)					
6 User free [RW] 7 User free [RW] 8 User free [RW] 9 User free [RW] Configuration Read Block Write Block Protection Login New Password Disable No Logged In Read Tag Configuration Message Read Configuration OK. Protection (word 14) = 00000000.1 Read/ Write EEPROM Memory Fail. Fail. Fail. Fail. Read Chip Information OK. Read Chip Uid OK. No Animal Flag Data Block	5	User free	(RW)			Read Tag Feature		
7 User free [RW] 8 User free [RW] 9 User free [RW] 10 Iteration Read Block Configuration Read Block Write Block Protection Login New Password Disable No Logged In Read/ Write EEPROM Memory Message Read Configuration OK. Protection (word 14) = 00000000.1 Read/ Write EEPROM Memory Fail. Fail. Fail. Read Chip Information OK. Reserved Read Chip Uid OK. Animal Flag Data Block Reserved	6	User free	(RW)					
8 User free [RW] 9 User free [RW] Configuration Read Block Write Block Protection Login New Password Disable No Logged In Data Block Reserved Animal FI Message Read Configuration OK. Protection (word 14) = 00000000.1 Read/ Write EEPROM Memory Protection (word 15) = 00000000.1 National ID Code National ID Code Fail. Read Chip Information OK. Reserved Animal Flag	7	User free	(RW)			Current Tag Configuration		
9 User free [RW] Image: Configuration Read Block Write Block Protection Login New Password Disable No Logged In Read Tag Configuration OK. Message Read Configuration OK. Protection (word 14) = 00000000.1 Read/ Write EEPROM Memory Protection (word 15) = 00000000.1 Protection (word 15) = 00000000.1 Protection (word 15) = 00000000.1 Fail. Read Chip Information OK. Reserved Data Block Read Chip Uid OK. Animal Flag Data Block	8	User free	(RW)			Country Code National ID Code		
Configuration Read Block Write Block Protection Login New Password Disable No Logged In Message Read Configuration OK. Protection (word 14) = 00000000.1 Protection (word 15) = 00000000.1 Country Code National ID Code Fail. Fail. Data Block Reserved Read Chip Information OK. Read Chip Uid OK. Animal Flag Data Block	9	User free	(RW)		~	F F		
Configuration Read Block Write Block Protection Login New Password Disable No Logged In Read Tag Co Message Read Configuration OK. Read/ Write EEPROM Memory Country Code National ID Code Protection (word 14) = 00000000.1 Protection (word 15) = 00000000.1 National ID Code Data Block Reserved Fail. Read Chip Information OK. Reserved Animal Flag Animal Flag			/5/18	1		Data Block Reserved Animal Flag		
Login New Password Disable No Logged In Read Tag Co Message Read/Write EEPROM Memory Country Code Read/Write EEPROM Memory Read Configuration OK. Protection (word 14) = 00000000.1 National ID Code National ID Code Fail. Fail. Read Chip Information OK. Reserved Animal Flag	Configuration Read Block Write Block Protection				F F			
Message Read/ Write EEPROM Memory Read Configuration OK. Country Code Protection (word 14) = 00000000.1 National ID Code Fail ^{~~} . Data Block Fail. Read Chip Information OK. Read Chip Uid OK. Animal Flag	Login	New Password Dis	able	No Logged In		Read Tag Conf		
Read Configuration OK. Protection (word 14) = 00000000.1 Protection (word 15) = 00000000.1 Fail . Fail. Read Chip Information OK. Read Chip Uid OK.	Message					Bead/ Write EEPBOM Memory		
Protection (word 14) = 00000000.1 Protection (word 15) = 00000000.1 Fail . National ID Code Fail. Data Block Read Chip Information OK. Reserved Read Chip Uid OK. Animal Flag	Read Configura	ation OK.			^	Country Code		
Protection [word 15] = 00000000.1 National ID Code Fail	Protection (word 14) = 00000000.1							
Fail . Fail. . Read Chip Information OK. . Read Chip Uid OK. .	Protection (word 15) = 00000000.					National ID Code		
Read Chip Information OK. Read Chip Uid OK.	Fall .					Data Block		
Read Chip Uid OK.	Bead Chin Information OK.					Reserved		
	Read Chip Uid OK.				Animal Flag			
Read Write Lock Initiali					_	Read Write Lock Initialize		

Figure 4-13: Read Tag Feature

4.7.10 Initialize Tag Value

The initialize tag value, enter the desired tag data. Then, click the **Write** button within the Initialize section.

EM4305										
I	Memory Map			Tag Features in Tag Memory						
[Block number	Contents		Mode Value			Customer Code	Unique ID Number		
	1	Device type/ U	ser f	(RW)			512	973093054		
	2	UID/ User free		(RW)			Resonant Capa	citor Chip Type		
	3	User free		(RW)			unused	EM4305		
	4	Configuration v	/ord	(RW)			anasca	Em1303		
	5	User free		(RW)	7BACEC00			Read Tag Feature		
	6	User free		(RW)	F9E975EA		Current Ten Cor	figuration		
	7	User free		(RW)	W) 1B761B0F		Current lag Configuration			
	8	User free		(RW)	8040201E		Country Code National ID Code			
	9 User free			(RW)		~	laaa la	30922000029		
Configuration Read Block Write Block Protection				Data Block Reserved Animal Flag 1 00835 1						
	Login	Login New Password Disable No Logged In				Bead Tag Conf				
Ļ	vlessage						-Bead/ Write FF	PBOM Memory		
	Value in Block 5	is:7BACEC00				~	Country Code	999		
Read Data. Value in Block 6 is : E9E975EA						National ID Cod	e 80922000029			
Read Data.						Data Black	1			
Value in Block 7 is : 1B761B0F							1			
Read Data.						Reserved	00835			
Value in Block 8 is : 8040201E					Animal Flag	1				
						~	Dood Write			
						>				

Figure 4-14:InitializeTag Value





IRFD-210 Tool Library



A.1 IRFD-210-API

IRFR_200_API	<pre>int IRFR_200_OPEN(int i_DeviceType,int i_ComPort);</pre>
IRFR_200_API	int IRFR_200_4100ID(unsigned char *ID);
IRFR_200_API	int IRFR_200_4450_READ(char addr1,char addr2 ,unsigned char*Data);
IRFR_200_API	int IRFR_200_4450_WRITE(char addr,unsigned char *data);
IRFR_200_API	int IRFR_200_4450_LOGIN(unsigned char *data);
IRFR_200_API	int IRFR_200_4450_READCONTROL(unsigned char *data);
IRFR_200_API	int IRFR_200_4450_READWORD(unsigned char *data);
IRFR_200_API	int IRFR_200_4450_SETCONTROLWORD(unsigned char *data);
IRFR_200_API	int IRFR_200_4450_SETPASSWORD(unsigned char *curPass,unsigned char *newPass);
IRFR_200_API	int IRFR_200_4450_RESETTAG();
IRFR_200_API	int IRFR_200_4305_READ(UCHAR addr,unsigned char *data);
IRFR_200_API	int IRFR_200_4305_WRITE(char addr,unsigned char *data);
IRFR_200_API	int IRFR_200_4305_LOGIN(unsigned char *data);
IRFR_200_API	int IRFR_200_4305_SETPASSWORD(unsigned char *curPass,unsigned char *newPass);
IRFR_200_API	int IRFR_200_4305_ENPASSWORD(unsigned char *newPass);
IRFR_200_API	int IRFR_200_4305_SETPROTECTION(unsigned char *data);
IRFR_200_API	int IRFR_200_4305_READCONFIG(unsigned char *data);
IRFR_200_API	int IRFR_200_4305_SETCONFIG(unsigned char *data);
IRFR_200_API	int IRFR_200_4305_READCHIPINFO(unsigned char *data);
IRFR_200_API	int IRFR_200_4305_READCHIPID(unsigned char *data);
IRFR_200_API	int IRFR_200_4305_READTAGID(unsigned char *data);
IRFR_200_API	int IRFR_200_4305_DISABLE();
IRFR_200_API	int IRFR_200_CLOSE();

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Enntegration Corp.

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Hazardous Materials Disclosure



B.1 Hazardous Materials Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated "Environmentally Friendly Use Period" (EFUP). This is an estimate of the number of years that these substances would "not leak out or undergo abrupt change." This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.



I El Integration Corp.

AFL2-EM-RFID-KIT01

Part Name	Toxic or Hazardous Substances and Elements								
	Lead Mercury Cadmium Hexavalent Polybrominated Polybrominated								
	(Pb)	(Hg)	(Cd)	Chromium	Biphenyls	Diphenyl			
				(CR(VI))	(PBB)	Ethers			
						(PBDE)			
Housing	х	0	0	0	0	Х			
Display	Х	0	0	0	0	Х			
Printed Circuit	х	0	0	0	0	х			
Board									
Metal	х	0	0	0	0	0			
Fasteners									
Cable X O O O X						х			
Assembly									
Fan Assembly	an Assembly X O O O O X								
Power Supply	х	0	0	0	0	х			
Assemblies									
Battery O O O O O O						0			
O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is									
below the limit requirement in SJ/T11363-2006									
X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for									

this part is above the limit requirement in SJ/T11363-2006

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符 合中国 RoHS 标准规定的限量要求。

本产品上会附有"环境友好使用期限"的标签,此期限是估算这些物质"不会有泄漏或突变"的 年限。本产品可能包含有较短的环境友好使用期限的可替换元件,像是电池或灯管,这些 元件将会单独标示出来。

部件名称	有毒有害物质或元素							
	铅 汞 镉 六价铬 多溴联苯 多溴二							
	(Pb)	(Hg)	(Cd)	(CR(VI))	(PBB)	醚		
						(PBDE)		
壳体	х	0	0	0	0	х		
显示	х	0	0	0	0	х		
印刷电路板	х	0	0	0	0	х		
金属螺帽	х	0	0	0	0	0		
电缆组装	х	0	0	0	0	х		
风扇组装	х	0	0	0	0	х		
电力供应组装	х	0	0	0	0	х		
电池	0	0	0	0	0	0		
O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。								
X:表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。								