# 1. Introduction

This document introduces how to setup applications and use it. Below picture shows the directory hierarchy of SDK. In this SDK, we provide demo applications, drivers, and sample source code for Windows (BCB6, C#, Java, VC++2008), WinCE 5.0 and Linux.



Figure 1 Directory hierarchy

# 2. Install

Below sections introduces the steps to setup demo applications and drivers.

# 2.1 Windows

Please follow below steps to install demo application.

- Unplug RFID HF device from USB port.
- Double-Click "RFID\_NFC\_Install.exe" under ".\Demonstration\Windows\BCB" path. And follow the steps to complete the installation.
- If you ever installed RFID HF Demo Application, the uninstall process will be launched first.





🐻 Uninstalling RF	ID NFC Demo Application and USB Driver
E A	RFID NFC Demo Application and USB Driver has been successfully uninstalled!
	Click Finish' to complete the uninstallation.
CreateInstall Free	Finish

Now, the installation process is launched.

🔏 Installing RFID	NFC Demo Application and USB Driver
10	Welcome to the RFID NFC Demo Application and USB Driver Installation!
20 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	This setup program will install RFID NFC Demo Application and USB Driver on your computer. Click Cancel if you do not want to install this application. Click Next to continue the installation.
	WARNING: This program is protected by international copyright law and treaties.
	Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties and will be prosecuted to the maximum extent of the law.
CreateInstall Free	Next > Cance

State and the strength of State of		1.
Driver will be installed.	nere RFID NFC Demo Appacation and USD	MIS
Setup will install files in the	e following folder.	
If you would like to install I different folder then click B	RFID NFC Demo Application and USB Driver in frowse and select another folder.	nto a
Destination folder		
C:\Program Files\RFID\	NFC_Demo Bro	owse
<u></u>		
Snace required: 17.11MB		
opuce required. 12.111012		
Space available: 21.49GB		
Space available: 21.49GB		
Space available: 21.49GB		





Plug-in RFID HF device into USB port. Follow the steps to install USB driver.





- 寻找新增硬包括量	
	完成尋找新增硬體精霊
	這個精靈安裝了軟體於
A Shandan	RFID NFC Device
affining	
I Internation	
	按定时限期推查。
Hillin. The	1次 [2] 23 [33] [23] [23] [33] [23] [33] [3
	《上一步(日) 完成 取消

Open device manager for double checking. In RFID category, RFID NFC Device was installed.



□ Launch demo application by double click "RFID NFC Demo" shortcut on desktop. In the main screen, the "Status" area informs you the physical link status between PC and MSR310X. The default interface is USB. If no MSR310X been found on USB port, the "interface" area will be unlocked for manual selection.



ie opgraat nooat	
Interface	Statu: Connected
	Model Type MSR3180
C 120	
Connect: Disconnect	
rmware Version 1.5 08/20/2008 10:	54:58
mware Version 1.5 08/20/2008 10: Serial Number 00000000FFFFB78[	54:58
rmware Version 1.5 08/20/2008 10: Serial Number 00000000FFFFB780 IS015693 DLL 1.5 Aug 20 2008 11	54:58
mware Version 1.5 08/20/2008 10: Serial Number 00000000FFFFB780 IS015693 DLL 1.5 Aug 20 2008 11 IS014443 DLL 1.5 Aug 20 2008 11	54:58 ) :19:14 :19:11
mware Version 1.5 08/20/2008 10: Serial Number 00000000FFFFB780 IS015693 DLL 1.5 Aug 20 2008 11 IS014443 DLL 1.5 Aug 20 2008 11 P2P DLL 1.5 Aug 20 2008 11	54:58 ) :19:14 :19:11 :19:07

# 2.2 WinCE

Using ActiveSync to transfer "RFID\_Cab.CAB" file from ".\Demonstration\WinCE" path to WinCE 5.0 based handheld device.

Operate handheld device to find the installed file. And then, double click on it for starting installation.

### 2.3 Linux

We only provide a command line application, TEST\_ap, for demonstration.

Copy "antusb.ko" and "TEST\_ap" files from ".\ Demonstration\Linux" path to Linux PC.

Open a new terminal on Linux PC.

□ Install USB driver by typing "insmod antusb.ko"

Add "alias rausb0 antusb" into "/etc/ modules.conf"

Activate USB device by typing "ifconfig rausb0 up"

Run "TEST\_ap"

# 3. Operation

# 3.1 Read Tags

□ Launch reader mode demo form by clicking "Mode"->"Reader". Then the reader mode demo form will be shown as below. The RFID protocol can be selected from "Protocol" area.

Rester Mote	(L)D 2
Configure (JSC1563) Command Quitom Block Data View Insentary ATBRF638 Ultrillight TOPA2 Protocol IF ISO-15693 IF ISO-144438 IF ISO-144438 IF Fe60e	

Choose "Inventory" page and put tags near MSR310X. Click "Start" button to finding tags continuously.

a Renders Mildre			(CIDIX
Configure   1901 5693 Command   Custom   Block Date View	ATBBRF028	Utnlig#   TOPAZ	
Start Blog Class Total Read	Total Tog Cureni Tag	Time:	
	8		

			Total Read Tags=3	Contract of the second s
Sto	P Total real	6d+29	Current Tergs +3	3,46 sec
INo.	IUD No	Read Count	Protocol	
Ŧ	E02F030000018F6	10	15015693	
2	E007C4C444267A78	9	15015693	
3	80026F6920E004	10	IS014443-A	
				1000

tsu_FastW	Clear Tatel rea	ad-358	Total Read Tags+3 Current Tags+3	40.03 sec
No	UID No:	Read Count	Protocal	1
T.	E02F030000018F6	119	15015653	
2	E007C4C444267A78	118	15015693	
3	80026F6920E004	121	ISO14443-A	

Click "Clear" button to clear tag information.

Eto Fiost W	Clear Totel rei	xd+358 in	Total Read Tags=3 Current Tags=3	40.03 sec
No	UID No:	Read Count	Protocal	*
ŧ.	E02F030000018F6	119	IBO15693	1
2	E007C4C444267A76	118	15015683	
3	80026F6920E004	121	ISO14443-A	
				×

No	UDNo	Read Count	Protocal	1
				-

**3.2 Upgrade firmware by ISP tool**Execute "ISP\_Tool.exe" under ". \Tool" path. Click "Read" as shown below.



MStar ISP Utility ¥4.4	.3.6			L	
Device Load Res	ad Auto B. P. V. Restore H	DCP Erase	Config	Connect	Dis Con
🗃 Read					•
Checksum :	Hex files Unused Bytes: © 0x00 C 0xFF	File Status Start A End A	ddr. :		
Batch File					

Click "Read" button to select MSR310X firmware under ". \Firmware" path. Select file with 128 kB file size.

MStar ISP Utility V4.4.3.6							
Device Load Read	Auto B. P. V.	Restore	HDCP	Erase	Config	Connect	Dis Con
🔓 Read			(e).		a		•
Checksum :	Hex files Unused Byte © 0x00	or OxFF		Tile Status Start A End A	ddr. :   ddr. :		
Batch File							_
Elapsed Time:	I2C : (92, B2)		USB 36	OKHz	1		





Click "Connect" to link with MSR310X. If success, flash type will be displayed.

MStar	ISP Utility	<b>74.4</b> .3.0	5							
Device	S Load	Read	Auto	. P. V.	Restore	HDCP	Erase	Config	Connect	Dis Con
Stc: D:\\ Re Re	Connect	DK_1.5_P	atch\Finnware <sup>®</sup> <b>⊡</b> Blank □ HDCP		R310X_1.5.6	i0_128k.BIN	17/31/2008	3 下午 09:59	20	
Ch □ Re	ecksum : store Da	0x27D3 ta	Key#1	i Ist im I j	_tool evice Type i	s Pm25L ¥0	20 20			8
₩ Er C	ase Devi All Chip File Area	ce	₩ Exit IS Type: SI	SP PI	- I	<u>K</u>				M
c c	Erase Are Partial Era	a 🗆	First 512 Setup	KBytes	2	Run				
Elapsed Tim	ie:		I2C : (	92, B2)		USB 360	KHz			

Click "Run" button to start downloading. You will see PASS if succeeded.





# 3.3 Upgrade firmware by DemoAP

Launch reader mode demo form by clicking "Upgrade"

Sectomary the Location	
Start	Exit

Select 64kB firmware file and click "Start" button to upgrade.

eed binary File Location	
Start .	Exit

Ipdate Firmware	
Seect Binary File Location D:\20080802_SDK_1.5_Patch\Firmware\USB\MSR310X_	1.5.60_64k.BIN
Start	Exit
	X

ieectBinaryFileLocation DN20080802_SDK_1:5_Patch\Firmware\USB\MSR310X_1:5	.60 64k.BIN
Start	Exit
start	Exit

Update Firmware		×
Select Binary File Location D:\20080802_SDK_1.5_Patch\Firmware\US	5B\M\$R310X_1.5.60_64k.BIN	
Start	Operation Success	Exit
Updating Reconnect to device. Please wait for a momer Update FW Success.	Urdate firmware success! 確定	

Update Firmware	
Seect Binary File Location D\20080802_SDK_1.5_Patch\Firmware\USB\MSR3	10×_1.5.60_64k.BIN
Start	E xit
Upcating Reconnect to device. Please wait for a moment. Upcate FW Success.	

### 3.4 Secure Demo

□ Launch secure demo form by clicking "Mode"->"Secure Demo". Then the secure demo form will be shown as below. The secure demo needs a pair of private key (for writing data) and public key (for verifying/reading data). The key pair can be generated by clicking "generate key pair" button.

MERS 1000MERS200 Security Des	an (MDS/RSA/ABS) 💿 🗊 🔯
Public / Private Key	
Generate key pair	
Select private key	
Select public key	
Write Data	
Old User PWD	
New User PWD	
Lister	mas, 16 lights (ACO+120)
Date2	max. 16 bytes (AES-126)
Lock Bata	Write
	No Error
Verify Data	
User Paseword	Varity
Datat	
Data2	No Error
Read Data	
User Password	Read
Datat	Clear No From
Data2	



Select key pair by clicking "Select private key" and "Select public key" buttons.

* MSR31000MSR3203 24	eerity Demo (MD5/RSA/ABS)	062
Public / Privato Key		
Generate key pair		
Select private key	D:\Temp'MyKey_priv.key	
Select public key	D:Temp'MyKey_pub.key	
Write Data		
Old User PWD		
New User PWD		
Lister	mas. 16 bries PAC	C9+120)
Date2	max. IE bytes (AE	15-128)
1.8.9	ck Bata Write	
	No	Error
Verify Data		
User Paseword	Verify	
Datat		
Data2	Mo	Ceror
Read Data		
User Password	Read	
Datat	Chevr. Mail	Ferne
Data2	Clear Mos	

□ Enter "Old User Password" (If the tag was never set password before, let this filed empty.), "New User Password", "Data1", "Data2" and then click "Write" button. A green text box "Write OK" means data is successfully written to MSR3200 tag. The MSR3200 tag will be locked if the "Lock Data" check box is checked. It is noted that the tag will no longer support write operation.

PS: The maximum	length of	password is eight characters	(64 bits)	).
-----------------	-----------	------------------------------	-----------	----

MERSICOMERSE	ili Se	naity Dimo (MI	SIRSA/ABS)				
Public / Private I	tey	~					
Generate key pair Select private key D:\Temp		L.					
		D:\Temp'Myt	Key_priv.key				
Select public key D:\TempMyKe			(vy_pudi.kvy				
Write Data							
Gid Liser PWD			Keep erry	pty, if password was need set			
New User PWD	New User PW0 1234 Date: 111						
Loanat			mas. 16 bytes (ACO-120)				
Date2	111	max. 16 bytes (AES-128)		es (AE5-125)			
	E.	ck Dete	Write				
				No Error			
Verify Data							
User Password			Verity				
Datel							
Data2				No Error			
Read Date							
Deer Password			Read				
Datat			Clear	No From			
Date2							

Public / Private I	Key	March Coloni Cuch				
Generate key	pair	Ê				
Select private	key	D:\Temp/My	Key_priv.key			
Select public key		D:/Temp/MyKey_pub.key				
Write Data						
Old User PWD	00000	000	hput pase	hput password		
New User PWD	12346	£78	-			
Lostat	111		mas 18 bri	es (ACO-120)		
Date2	111	133	max. 16 byd	es (AE5-128)		
	Lo	ck Date	Write	1		
			and the state of t	No Error		
Verify Data						
User Password			Verity	1		
Datel						
Data2				Notrer		
Read Data						
Dier Password		Read	1			
Datat			Clear	No Free		
Date2						

MARKI I GOOMSREE	102 Se	cenity Demo (MDS)	RSA/ABS)		
Public / Private I	Key				
Generate key pair					
Select private	key	D:\Temp/MyKe	y_priv.key		
Select public	key	D::Temp'MyKe	y_puis.key		
Write Data					1
Old User PWD	0000	1000			
New User PWD	12345678				
Lister	11.1		mas. 16 bytes		
Date2	111		max. 16 bytes	(AEE-128)	20 U
	- La	ck Bete	Write	Write OK	
				No error	
Verify Data					
User Paseword			Verity		
Datat					
Data2				Notree	
Read Data					
User Password			Read		
Datat			Clear	No Error	
Data2					

□ In order to compare the data written to tag and the data read from tag, keep "New User Password", "Data1" and "Data2" the same as in previous step. Trigger data reading and verification by clicking "Verify" button. A green text box "Verify OK" means data is successfully read from MSR3200 tag and the data is the same as written before.

MERSIONERS	000 Se	resity Demo (MDS/R	SAVABS)		
Public / Private Generate key	Key pair	j			
Select private	key key	D:\Temp'MyKey D:\Temp'MyKey	priv.key pub.key		
Write Data					
Old User PWD	0000	000	-		
New User PWD	1234	5678			
Lister	111		mas. 16 byre	s (ACO-120)	
Date2	111	11 A.	max. IE byte	a (AEE-128)	
	1.0	ck Bata	Write	Write OK	
				No error	
Verify Data	-		-	(05330072)	
User Pasewoir	12345	678	Verity	Venity CK	
Datat	111				
Data2	111			No error	
Read Date					
User Password	1		Read		
Datat			Clear	No France	
Data2					

Read data operation also enables data reading from MSR3200 tag but the data is manually verified by user. The "User Password" should be entered by user before clicking "Read" button. A green text box "Read OK" means data is successfully read from MSR3200 tag. The "Clear" button will clear "User Password".

Public / Private I	Key					
Generate key	pair	0				
Select private key Select public key		D:\Temp/MyKey_priv.key D:\Temp/MyKey_priv.key				
						Write Data
Old User PWD	0000	000				
New User PWD 1234 Datas		678	1			
		mas. 16 bytes (ACS+120)				
Date2	111	22	max. 15 byte	max. 16 bytes (AES-128)		
- N	1.0	ck Bata	Write	Write OK		
				No error		
Verify Data						
User Paseword	12345	578	Verity	Venity OK		
Datel	111			No other		
Data2	111			.no error		
Read Date	1					
User Password	1234	5678	Read	Rend OK		
Datat	111		Gear	No error		
Data2	133					

# Compliance

### **Federal Communication Commission Radio Frequency Interference Statement**

This equipment has been tested and found to comply with the limits for a Class A 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.

This device is intended only for OEM integrators under the following conditions:

The antenna must be installed such that 20 cm is maintained between the antenna and users, and

The transmitter module may not be co-located with any other transmitter or antenna.

As long as 2 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

### End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: EHA-INRD01H". The grantee's

FCC ID can be used only when all FCC compliance requirements are met.

Manual Information To the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

### **Industry Canada statement:**

This device complies with RSS-210 of the Industry Canada 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.

Ce dispositif est conforme à la norme CNR-210 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

This device is intended only for OEM integrators under the following conditions:

1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and

2) The transmitter module may not be co-located with any other transmitter or antenna. As long as 2 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes: 1) L'antenne doit être installée de telle sorte qu'une distance de 20 cm est respectée entre l'antenne et les utilisateurs, et

2) Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne. Tant que les 2 conditions ci-dessus sont remplies, des essais supplémentaires sur l'émetteur ne seront pas nécessaires. Toutefois, l'intégrateur OEM est toujours responsable des essais sur son produit final pour toutes exigences de conformité supplémentaires requis pour ce module installé.

### **IMPORTANT NOTE:**

In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the Canada authorization is no longer considered valid and the IC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate Canada authorization.

### NOTE IMPORTANTE:

Dans le cas où ces conditions ne peuvent être satisfaites (par exemple pour certaines configurations d'ordinateur portable ou de certaines co-localisation avec un autre émetteur), l'autorisation du Canada n'est plus considéré comme valide et l'ID IC ne peut pas être utilisé sur le produit final. Dans ces circonstances, l'intégrateur OEM sera chargé de réévaluer le produit final (y compris l'émetteur) et l'obtention d'une autorisation distincte au Canada.

### End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains IC: 1223A-INRD01H". Plaque signalétique du produit final Ce module émetteur est autorisé uniquement pour une utilisation dans un dispositif où l'antenne peut être installée de telle sorte qu'une distance de 20cm peut être maintenue entre l'antenne et les utilisateurs. Le produit final doit être étiqueté dans un endroit visible avec l'inscription suivante: "Contient des IC: 1223A-INRD01H".

### Manual Information To the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

Manuel d'information à l'utilisateur final

L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final quant à la façon d'installer ou de supprimer ce module RF dans le manuel de l'utilisateur du produit final qui intègre ce module.

Le manuel de l'utilisateur final doit inclure toutes les informations réglementaires requises et avertissements comme indiqué dans ce manuel.

# **EMC and RF Information for all Other Regions**

Intermec Technologies Corporation declares that this device is in compliance with the essential requirements and other relevant provisions of

R&TTE Directive (1999/5/EC).

- EN 300 330-1/-2
- EN 302 291-1/-2
- ETSI EN 301 489-1/-3
- EN 60950-1
- EN 50371

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