

Mifare[®] Open System Rules Programmer Manual



Licensee Training Instruction

V080215

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1. Introduction :

1-1. Mifare Card

	Sector 00		Sector 08
Block 00(00)	Manufacturer Block	Block 32 (20)	
Block 01 (01)		Block 33 (21)	
Block 02 (02)		Block 34 (22)	
Block 03 (03)	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	Block 35 (23)	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
	Sector 01		Sector 09
Block 04 (04)		Block 36 (24)	
Block 05 (05)	SOR	Block 37 (25)	
Block 06(06)		Block 38 (26)	
Block 07(07)	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	Block 39 (27)	FFFFFFFFFFFFF FF078069 FFFFFFFFFFFF
	Sector 02		Sector 10
Block 08 (08)		Block 40 (28)	
Block 09 (09)		Block 41 (29)	
Block 10 (0A)		Block 42 (2A)	
Block 11 (0B)	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	Block 43 (2B)	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
	Sector 03		Sector 11
Block 12 (0C)		Block 44 (2C)	
Block 13 (0D)		Block 45 (2D)	
Block 14 (0E)		Block 46 (2E)	
Block 15 (0F)	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	Block 47 (2F)	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
	Sector 04		Sector 12
Block 16 (10)	Sector 04	Block 48 (30)	Sector 12
Block 16 (10) Block 17 (11)	Sector 04	Block 48 (30) Block 49 (31)	Sector 12
Block 16 (10) Block 17 (11) Block 18 (12)	Sector 04	Block 48 (30) Block 49 (31) Block 50 (32)	Sector 12
Block 16 (10) Block 17 (11) Block 18 (12) Block 19 (13)	Sector 04 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	Block 48 (30) Block 49 (31) Block 50 (32) Block 51 (33)	Sector 12 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
Block 16 (10) Block 17 (11) Block 18 (12) Block 19 (13)	Sector 04 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	Block 48 (30) Block 49 (31) Block 50 (32) Block 51 (33)	Sector 12 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
Block 16 (10) Block 17 (11) Block 18 (12) Block 19 (13) Block 20 (14)	Sector 04 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	Block 48 (30) Block 49 (31) Block 50 (32) Block 51 (33) Block 52 (34)	Sector 12 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
Block 16 (10) Block 17 (11) Block 18 (12) Block 19 (13) Block 20 (14) Block 21 (15)	Sector 04 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	Block 48 (30) Block 49 (31) Block 50 (32) Block 51 (33) Block 52 (34) Block 53 (35)	Sector 12 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
Block 16 (10) Block 17 (11) Block 18 (12) Block 19 (13) Block 20 (14) Block 21 (15) Block 22 (16)	Sector 04 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	Block 48 (30) Block 49 (31) Block 50 (32) Block 51 (33) Block 52 (34) Block 53 (35) Block 54 (36)	Sector 12 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
Block 16 (10) Block 17 (11) Block 18 (12) Block 19 (13) Block 20 (14) Block 21 (15) Block 22 (16) Block 23 (17)	Sector 04 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	Block 48 (30) Block 49 (31) Block 50 (32) Block 51 (33) Block 52 (34) Block 53 (35) Block 54 (36) Block 55 (37)	Sector 12 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
Block 16 (10) Block 17 (11) Block 18 (12) Block 19 (13) Block 20 (14) Block 21 (15) Block 22 (16) Block 23 (17)	Sector 04 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	Block 48 (30) Block 49 (31) Block 50 (32) Block 51 (33) Block 52 (34) Block 53 (35) Block 54 (36) Block 55 (37)	Sector 12 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
Block 16 (10) Block 17 (11) Block 18 (12) Block 19 (13) Block 20 (14) Block 21 (15) Block 22 (16) Block 23 (17) Block 24 (18)	Sector 04 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	Block 48 (30) Block 49 (31) Block 50 (32) Block 51 (33) Block 52 (34) Block 53 (35) Block 54 (36) Block 55 (37) Block 56 (38)	Sector 12 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
Block 16 (10) Block 17 (11) Block 18 (12) Block 19 (13) Block 20 (14) Block 21 (15) Block 22 (16) Block 23 (17) Block 24 (18) Block 25 (19)	Sector 04 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	Block 48 (30) Block 49 (31) Block 50 (32) Block 51 (33) Block 52 (34) Block 53 (35) Block 54 (36) Block 55 (37) Block 56 (38) Block 57 (39)	Sector 12 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
Block 16 (10) Block 17 (11) Block 18 (12) Block 19 (13) Block 20 (14) Block 21 (15) Block 22 (16) Block 23 (17) Block 24 (18) Block 25 (19) Block 26 (1A)	Sector 04 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	Block 48 (30) Block 49 (31) Block 50 (32) Block 51 (33) Block 52 (34) Block 53 (35) Block 54 (36) Block 55 (37) Block 56 (38) Block 57 (39) Block 58 (3A)	Sector 12 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
Block 16 (10) Block 17 (11) Block 18 (12) Block 19 (13) Block 20 (14) Block 21 (15) Block 22 (16) Block 23 (17) Block 24 (18) Block 25 (19) Block 26 (1A) Block 27 (1B)	Sector 04	Block 48 (30) Block 49 (31) Block 50 (32) Block 51 (33) Block 52 (34) Block 53 (35) Block 53 (35) Block 55 (37) Block 55 (38) Block 56 (38) Block 57 (39) Block 58 (3A)	Sector 12 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
Block 16 (10) Block 17 (11) Block 18 (12) Block 19 (13) Block 20 (14) Block 21 (15) Block 22 (16) Block 23 (17) Block 23 (17) Block 24 (18) Block 25 (19) Block 26 (1A) Block 27 (1B)	Sector 04	Block 48 (30) Block 49 (31) Block 50 (32) Block 51 (33) Block 51 (33) Block 52 (34) Block 53 (35) Block 53 (35) Block 54 (36) Block 55 (37) Block 56 (38) Block 57 (39) Block 58 (3A) Block 59 (3B)	Sector 12 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
Block 16 (10) Block 17 (11) Block 18 (12) Block 19 (13) Block 20 (14) Block 21 (15) Block 22 (16) Block 23 (17) Block 23 (17) Block 24 (18) Block 25 (19) Block 26 (1A) Block 27 (1B) Block 28 (1C)	Sector 04 FFFFFFFFFFFFFFFFFF078069FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	Block 48 (30) Block 49 (31) Block 50 (32) Block 51 (33) Block 51 (33) Block 52 (34) Block 53 (35) Block 54 (36) Block 55 (37) Block 55 (37) Block 56 (38) Block 57 (39) Block 58 (3A) Block 59 (3B)	Sector 12 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
Block 16 (10) Block 17 (11) Block 18 (12) Block 19 (13) Block 20 (14) Block 20 (14) Block 21 (15) Block 22 (16) Block 23 (17) Block 23 (17) Block 24 (18) Block 25 (19) Block 26 (1A) Block 26 (1A) Block 28 (1C) Block 29 (1D)	Sector 04 FFFFFFFFFFFFFFFFF78069FFFFFFFFFFFF Sector 05 FFFFFFFFFFFFFFFFFF78069FFFFFFFFFFFFF Sector 06 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	Block 48 (30) Block 49 (31) Block 50 (32) Block 51 (33) Block 52 (34) Block 53 (35) Block 54 (36) Block 55 (37) Block 56 (38) Block 57 (39) Block 58 (3A) Block 59 (3B) Block 60 (3C) Block 61 (3D)	Sector 12 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
Block 16 (10) Block 17 (11) Block 18 (12) Block 19 (13) Block 20 (14) Block 21 (15) Block 22 (16) Block 23 (17) Block 23 (17) Block 24 (18) Block 25 (19) Block 25 (19) Block 26 (1A) Block 27 (1B) Block 28 (1C) Block 29 (1D) Block 30 (1E)	Sector 04 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	Block 48 (30) Block 49 (31) Block 50 (32) Block 51 (33) Block 51 (33) Block 52 (34) Block 53 (35) Block 54 (36) Block 55 (37) Block 55 (37) Block 55 (38) Block 57 (39) Block 58 (3A) Block 59 (3B) Block 60 (3C) Block 61 (3D) Block 61 (3D)	Sector 12 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

1-1-1. Manufacturer Block:

This is the first data block (block 0) of the first sector (sector 00). It contains the IC manufacturer data. Due to security and system requirements this block is protected and un-writable by the IC manufacture at producing process.

1-1-2. Data Blocks:

All sectors contain 3 blocks of 16 bytes for storing data (Sector 0 contains only two data blocks and read-only manufacturer block). The data blocks can be configured by the trailer configure as

- Read/Write blocks, for example: literal sentence or contact-less access control.
- Value blocks, for example: electronic wallet applications, where additional commands like increasing and decreasing for direct control of the stored value are provided.

1-1-3. Trailer Blocks:

Each sector has a trailer block containing the access conditions for the four blocks of sector, which are stored in bytes 6~9. The trailer configure also specify the type of the data blocks. However, SOYAL has arranged two most common-used configure for programming mifare system.

Default (FF078069):

Key A Read/Decrease, Key A Write/Increase

A: Decrement B: Increment:

Key A Read/Decrease, Key B Write/Increase

Sector 00		
Block 00 (00)	Manufacturer Block	
Block 01 (01)	(Data Block)	Trailer Block
Block 02 (02)	(Data Block)	
Block 03 (03)	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	
	· · · · · · · · · · · · · · · · · · ·	

		•	
	Key A	Trailer Config	Key B
Trailer Block	0~5 bytes	6~9 bytes	10~15 btes
	FFFFFFFFFFF	FF078069	FFFFFFFFFFF

Sector 02		
Block 08 (08)	(Data Block)	
Block 09 (09)	(Data Block)	Trailer Block
Block 10 (0A)	(Data Block)	▲
Block 11 (0B)	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	

1-2. AR-737P:

The AR-737P is the smartest programmer in contact-less Mifare® Smart Card System. It is designed to improve read/write performance of contact-less Mifare® applications. Choosing AR-737P is the royal road to hasten and simplify the integrated software development.

1-2-1. Features:

- Supports single instruction auto CRC8 check and auto backup/restore function.
- Supports RS-232 or USB 2.0 interface (USB Driver should be installed at first)
- Controllable via software (Mifare Key and SOR Tools softwares)
- Built-in temperate Key A/B and default Key A/B buffers.
- Supports SORmifare protocol with high-security and user-friendly interface.

1-2-2. Applications:

- Hotel, Motel, Sea House and Retailing Industries.
- Parking, Pre-payment, Ticketing.
- Access Control System.
- Electronic Wallet
- Customer License Control.

1-2-3. SOR – SOYAL Open system Rules

a. Introduction of SOR

SOYAL Open system Rules (SOR) is the protocol that SOYAL developed based on MIFARE[®] MF1 IC S50, complying ISO14443A standard, in order to offer an exclusive interface which guarantees absolute security of various applications for our partners. Before using SOYAL open system rules, users are required to get an individual distribution license from SOYAL.

Although MIFARE[®] MF1 IC S50 offered two alternate keys to increase the security classification, there are still some risks of personal careless and man-made betrayal. However, SOYAL Open System Rule only not provide one way, Authorization Media, to protect the Key A and Key B from divulging, but also give a multi-comparison and Organization Layers to keep your system from above mentioned affairs happening.

- b. Advantages of SOR
- Unbreakable security protected by Key A/B
- Off-line value-stored function
- Friendly user interface
- 6-layer management structures

c. Authorization Media – SIM, CIM, UIM

There three types of cards – SIM, CIM, and UIM, which are seperatly used for issuing new cards (either authorization cards or end-user cards) or launching new programmers. Based on different authorized permissions, each of them plays different roles in SOR system. The detailed functions are tabled as below :

Туре	Name	Appearance	Function Description
Authorization			Master Card with the highest
Card			authority
	0.14	SOYAL	Contains both CIM&UIM's functions
	51171		○ Allow issuing SIM/CIM/UIM & readers
		SIM	of sub-layer (Sub-layer of LAM
			excluded)
			○ Allow issuing LAMS of the same
		<u>еоулл</u> ®	layer
	CI M	SOVAL	○ Allow modifying LAMs of the same
		CIM	layer including ID, value and expiry
			date
			O Allow launching & modifying
	UIM	SOYAL	readers of the same layer
End-user		mifare	© End-user card contains multiple
Card		Ulin low cost contactless memory Card IC	applications such as stored-value,
	LAM	E en monering differe effe	consuming and access control,etc
		A blank card in	
		general.	

d. Organization Layers

The 6-layer managing structure is exclusively designed for SOYAL's partners (or main distributors) to extend their business up to six layers in maximum. SOR, as the foundation of the system, is default positioned at top of all layers, and SOYAL's partners (or main distributors) are going to be positioned on Layer 1. Similarly, those who are distributors of SOYAL's partners are going to be positioned on Layer 2 by their suppliers.

SOR					
Layer 1	Layer 2	Layer 3	Layer 4	Layer 5	Layer 6
1 ~ 60000	0 ~60000	0 ~ 250	0 ~ 250	0 ~ 250	0 ~ 250
SOYAL's Distributors Sub-layer of distributors					



Figure 1, Organization Layers-1

Figure 2, Organization Layers-2

e. SOR in Mifare Card

In the SOR System, we have already taken the sector 01 for our default functions, such as: authorization, layer-management, off-line operation commends... etc..

Otherwise, we also use the sector 14 and 15 for last five transaction logs tracking.

AR-737P			
RF Frequency		13.56MHz (SORmifare)	
Power Requirement		5VDC (USB powered)	
Power Consumption		<1.5W	
Communication RS-232		AR-737PDX <mark>2</mark> N21	
Interface	USB	AR-737PDX <mark>8</mark> N21	
Doud Data	RS-232	9600 bps (N, 8, 1)	
Baud Rate	USB	USB 2.0 (Virtual COM Port)	
F arrier and		-10°C ~ +75°C	
Environment		0-95% non-condensing	
		□ ISO14443A	
Compliance (Op	tional)	□ ISO15693	
		□ ISO14443A/B+15693	
Proximity Readir	ng Range	Up to 60mm for ISO Card	
		Mifare 1 (IC50)	
Supported Tags		Mifare Ultra Light (L10)	
		Mifare Pro (IC70)	
Indicator		A bi-color LED and a beeper	
Color		Dark Pearl Gray	
Dimensions (mm	ı)	113(L)*71(W)*36(H)	
Weight (g)		150±10	
Housing Materia	I	ABS	
Others		SOR Supported	

1-2-5. Product Details

- User guide *1
- Soyal Mifare Open System Rules Programmer Manual *1
- AR-737P device *1
- Soyal SIM Card *3 ; Soyal CIM Card *3 ; Soyal UIM Card *3
- SOYAL Software CD which included Mifare Key of SOYAL Tools and USB interface driver

P.S. If you were purchased the AR-737PDX8N21 (USB Interface), you should install its USB driver before you use it. (Regarding the note of install, please refer to the appendix)

• Hexagonal Wrench *1 ; Hexagonal Screw *2

2. <u>"Mifare Key" Operation</u>

Soval Open System Rules (Version 2.05)			1	.0
Read/Write Unit Selection			-Device i	Kev Status-
c AR721 H/W/D c COR010/020 c		Sectorect	Divid	Null
C AR737P/U C AR821EF/829E C	on	Comm Port	Divid	
c TSL-0061/63/66 c	<u> </u>	A. Count Park		D Null
c AR727H / 747H c c		Eacoword Changle	D I had	
Launch	9,A-F)]		D Null	Null
C STM C Setup Device Key Buffer	KeyA to 00	✓ KeyB to None ✓	Divid	D Null
C Setup Media Trailer Block	KeyA	КеуВ	D Nell	Not
C Store in SIM/CIM/UIM Data Block	Config D	efault (FF078069)	D Net	Null
C From SIM/CIM/UIM >> Device K	By O. Source Block	1 v Dest 00 v	D Not	Null
C From SIM/CIM/UIM >> TMP Buff	er Key Indey (Alread	v in Device) Do v Iron A	Divid	
C Device C From TMP Buffer >> SIM/CIM/UI	A Device TMP Bulle		D Not	Nol
From IMP Buffer >> Media Traile	L BIOCK Device IMP DUIG	Preoution	DNd	
Media	Device		DINU	D Nell
Layer 101 0 0 0 0 0	Layer 101 0	0 0 0	D Null	D Nol
(LAM) 11 12 15 14 15 10	□ Date Limit	Check Open System Rules	D Null	D Nuli
UserID [Site User] 1+ 1+	Time Zone Check	F Auto Decrement Medium	DNU	Null
Value Block 0	Minus Value proved	E		E TKB
ID/Mask Sector 02 😾 Read KEY 00 -	Enable Global Media	C Load Lift Data from Medium	THO DU	flor Ctobie
	License Sector 01 -	Auto Deduct Value	□ Null	ner otatus
Datevnime Sector 103			D Null	
Eormat Media Date / Mask	LAN NOOR	Esunch Device	D Null	•
·	Global Addr		D Null	<u> </u>
Launch Media	Name Block 00	Name Access Key 00 -		_
CIM Function Assign: 🗖 Update Literate Liter	r 🗖 Updale Upri D	E Updite Value E	U date Date	/Trime-
		Ald Coller Will Redorf Hanaler (19) Ericht		
status				
			R	

- 1. Select the device you're going to read or write
- 2. Show device on/off-line and card type (SIM / UIM / CIM/ LAM) and its serial number
- 3. Select communication port / Login device / Change login password (Default value: 112344)
- 5. Select the card or device will be written in. However, SIM/UIM/CIM option only will be selected while launch the sub-layer's SIM/UIM/CIM.
- 6. Key A / Key B setting area which is HEX (0~9 and A~F) and allow each Key to contain 12 characters.
- 7. Cards' functions setting area (layer setting, card number, storage value, expiry date, Global access management)
- 8. Reader setting area (layer setting, support *SOR* or not, layer setting, check card's date, increase / decrease value, Global access management
- AR-737P's temporary area can save the blocks' data from SIM/UIM/CIM for e.g. writing a new Key A/B into a new medium, which all data in this area will be lost while device power-off. (Total 4 sets)
- 10. Status: Response message

Login Mifare Key

8 Soyal Open System Rules (Vernion 2.03)				
Card Write Unit Selection Connect to Device © AR721 HW/D C C © AR721 H/SECOM C C C AR721 H / SECOM C C C AR727 H / SECOM C C C AR727 H / 747H C C	Orrice Key Status Null			
Launch KEY A/B Operation [12 DSteff all No. 10 KeyB to None C SIM © Setup Device Key Buffer C 100 KeyB None C CIM C Setup Media Trailer Block KeyB KeyB KeyB C UM C Store in SIM/CIM/UIM Data Block KeyB Config [Trailer] Default (FF078069) V C UAM C From SIM/CIM/UIM >> Device Key Config [Trailer] Default (FF078069) V C UAM C From SIM/CIM/UIM >> Device Key Config [Trailer] Default (FF078069) V C UAM C From SIM/CIM/UIM >> TMP Buffer C From TMP Buffer >> SIM/CIM/UM Key Index (Already in Device) OI V Key A V C Device C From TMP Buffer >> Media trailer Block Device TMP Buffer OI V Execution	F Null F Null F Null F Null			
Met Login and Change Login Password Creation Password La Password (8 Digitals Hex) Creation D QK Control Password D QK Cancel D QK Cancel D QK Cancel D QK Cancel Date/Time Sector Q Write KEY Date/Time Sector Q Conserver Status C				

- 1. Click "Comm Port Select" to select communication type (RS-232, USP or TCP/IP) as shown on <u>a.</u>
- 2. Click "Password Change" in order to change the password if necessary as shown on **b**.



4. When the value of "Card Type" shows from <u>Off Line</u> to <u>No Media</u> and gives a beep sound, and the message "<u>Device Login OK</u>" is given by "Status" column means the programmer is connecting to the PC as shown on <u>c.</u>

Setup Master Code into Key A/B

Before writing the master code into the Key A and Key B positions of the Media's (SIM, CIM, UIM) Trailer Block, we need to set up device key buffer first as follows:

<mark>8</mark> Soyal Open	System Rules (Version 2.03)			
Read/Write	Unit Selection	О.		<u>C</u> onnect to Device
AR737U C AR72111		с. с	0. SIM Car	Comm Port Select
© AR727H	/747H O.	ō.	E1C88E86	Password Change
⊢Launch	- KEY A/B Operation [12 Dig	rais (0-9 A-E)]		
⊖ SIM	Setup Device Key Buffer	k	<eya td="" to="" 💌<="" 🔟=""><td>KeyB to 01 💌</td></eya>	KeyB to 01 💌
© CIM	C Setup Media Trailer Block	J. d.	<eya ***********<="" td=""><td>KeyB **********</td></eya>	KeyB **********
O UIM	C Store in SIM/CIM/UIM Data		Config [Trailer] Default	(FF078069)
C LAM	C From SIM/CIM/UIM >> De	VICE KEY 1P Buffer S	Source Block 01	- Dest. 02 -
 Device 	C From TMP Buffer >> SIM/C	XIM/UIM K	Key Index (Already in D	evice) 00 🔽 Key A 🔽
	○ From TMP Buffer >> Media	a Trailer Block D)evice TMP Buffer	<u>Execution</u>

- 1. Select your Read / Write device AR737U as shown on a.
- 2. Place SIM on the device as shown on b.
- Select "Setup Device Key Buffer" and fill out the value "00" at Key A and "01" at Key B as shown on <u>c.</u>
- 4. Set up the master code as Key A and Key B in 12 digits (0-9, A-F) respectively as shown on <u>d.</u>

Launch T	┌ KEY A/B Operation [12 Digitals (0-9,A-F)]-	
C SIM	C Setup Device Key Buffer	KeyA to 00 🛃 KeyB to 01 🚽
C CIM	C Setup Main Trailer Block	KeyA *************** KeyB **********
с им	Store in SIM/CIM/UIM Data Block Second Dimensional Company	Config [Trailer] A:Decrement B:Increment
C LAM	C From SIM/CIM/UIM >> TMP Buffer	Source Block 01 💽 Dest. 16 💌
Oevice	C From TMP Buffer >> SIM/CIM/UIM	Key Index (Already in Device) Intervention
	C From TMP Buffer >> Media Trailer Block	Device TMP Buffer

Launch	⊢ KEY A/B Operation [12 Digitals (0-9,A-F)]-	
C SIM	C Setup Device Key Buffer	KeyA to 💿 🗾 KeyB to 🛛 🚽
C CIM	C Setup Nedia Trailer Block	КеуА **************
© UIM	Store in SIM/CIM/UIM Data Block Second District Market Store	Config [Trailer] Default (FF078069)
C LAM	© From SIM/CIM/UIM >> TMP Buffer	Source Block 01 🔽 Dest. 17 💌
Oevice	C From TMP Buffer >> SIM/CIM/UIM	Key Index (Already in Device) International Key A 🔽
	C From TMP Buffer >> Media Trailer Block	Device TMP Buffer

- 5. Select "Store in SIM/CIM/UIM Data Block" as shown on e.
- Set up "Config (Trailer)" in "<u>A:Decrement B:Increment</u>" and "Dest." in the value "<u>16</u>" as shown on <u>f.</u>

7. Press "Execution" as shown on g.

8. Again, "Config (Trailer)" in "<u>Defualt (FF078069)</u>" and "Dest." In the value "17" as shown on <u>h.</u>, and press "Execution" as shown on <u>g.</u>

9. Repeat Step 6-8 as mentioned above for setting up other SIM, CIM &

UIM cards

3) Launch LAM:

3.1. Save Key A and Key B into the Device Key

Place SIM or CIM on the programmer to read out its master code and save the code into the **Device Key** of the device. Therefore we can issue the LAM. And the steps are as follow:



1. Place SIM on the programmer as shown on a.

Launch C SIM C CIM C UIM C LAM © Device	 KEY A/B Operation [12 Digitals (0-9,A-F)] — Setup Device Key Buffer Setup Medi Trailer Block Store in SIM/CIM/UIM Data Block From SIM/CIM/UIM >> Device Key From SIM/CIM/UIM >> TMP Buffer From TMP Buffer >> SIM/CIM/UIM From TMP Buffer >> Media Trailer Block 	Key/Co 00 V KeyB to 01 V KeyA KeyB Config [Trailed Default (FF078069) V Source Block 16 Dest. 02 V Key Index (Already in Device) 00 V KCAV
-Device K 00:04 01:04	ey Status Null Null	

- 2. Select "From SIM/CIM/UIM >> Device Key" as shown on b.
- 3. Give value "00" and "01" in KeyA and KeyB respectively as shown on c.
- 4. Give value "16" in "Source Block" as shown on d. and press "Execution" e.
- 5. Then, "Device Key Status" should be changed as shown on <u>f.</u>

3.2. Save 16th and 17th Data Blocks into the TEM Buffer

Place SIM or CIM on the programmer to read its master code then save the code into the **TMP Buffer** of the device, so that LAM can be formatted by the mentioned data as follows:



- 1. Select "From SIM/CIM/UIM >> TMP Buffer" as shown on a.
- Give the value "<u>16</u>" in "Source Block" and "<u>0</u>" in "Device TMP Buffer" as shown on <u>b.</u>
- Press "Execution" as shown on <u>c.</u>, then "TMP Buffer Status" should be changed as shown on <u>e.</u>
- Again, give the value "<u>17</u>" in "Source Block" and "<u>1</u>" in "Device TMP Buffer" as shown on <u>f.</u>
- 5. Remove the SIM/CIM from the programmer, and place a new card on the programmer.

3.3. Start to format Media as below:

Place either SIM or CIM on AR-737P, and then start to program the new card.



3.3.1 Format a new media:

A new media's (for example: a new mifare card) default value is to use the Key A as master code to read or write data into the media. In order to make it easier to program the new media, SOYAL sets this default value at the 32nd key (initial key) of device for user. **Please sequentially press the RUN button to format all other new cards.**

Format new medium	to LAM (Co	nfig Tr	iler Blo	ck with 1	(MI	Block the	t from SIM/C	IM)	×
Used Sector	Sc	urce TN	1P xx			Hee Key	АВ Туре	lse Key a	t
🔽 Sector:00	• 0	O 1	0.2	03		KeyA	C KeyB	32 💌	
E Sector:01(LLB)	• 0	O 1	0 2	03		KeyA	C KeyB	32 💌	
🔽 Sector:02	• 0	O 1	0.2	03		KeyA	C KeyB	32 💌	
🔽 Sector:03	• 0	C 1	0.2	03		KeyA	C KeyB	32 💌	
🔽 Sector:04	• 0	C 1	0 2	03		KeyA	C KeyB	32 💌	
🔽 Sector:05	• 0	C 1	0 2	03		KeyA	C KeyB	32 💌	
🔽 Sector:06	• 0	O 1	0 2	03		KeyA	C KeyB	32 💌	
🔽 Sector:07	• 0	O 1	0 2	03		KeyA	C KeyB	32 💌	
🔽 Sector:08	• 0	C 1	0 2	03		KeyA	C KeyB	32 💌	
🔽 Sector:09	• 0	O 1	0 2	О З		KeyA	C KeyB	32 💌	
🔽 Sector:10	• 0	C 1	0 2	03		KeyA	C KeyB	32 💌	
🔽 Sector:11	• 0	O 1	0 2	О З		KeyA	© KeyB	32 💌	
🔽 Sector:12	• 0	O 1	0 2	03		KeyA	C KeyB	32 💌	
🔽 Sector:13	• 0	O 1	02	О З		KeyA	C KeyB	32 💌	
🔽 Sector:14	0.0	• 1	02	03		KeyA	C KeyB	32 💌	
🔽 Sector:15	0.0	• 1	02	03		KeyA	C KeyB	32 💌	
	<u>r</u> un					<u>E</u> XIT			

	New M	ledia	
Sector	Write-in source	Authorized	The Authorized
		by	Key is from
00 12	TEM 00	KovA	32 nd Key of device
00 - 13	(KeyA-Read; KeyB-Write)		(Default Value)
11 15	TEM 01	KovA	32 nd Key of device
14 - 15	(KeyA-Rread: KeyA-Write)	Key A	(Default Value)

After you format all new cards, please set the USER ID as shown on \underline{a} , then press "LAUNCH MEDIA" and the status should be changed to be "LAM" as shown on \underline{b} .



1) Launch Device:

4.1. Select which device you want to program. For example, **AR-721H** as shown on <u>a.</u>

wad Mile Unit Col	- ctich			-Device Key Status
AR721 H/W/D	C CDR010/020	с.	Sonnect	
AR737P/U	C AR821EF/829E	c 0	TLINE T Comm Port	
TSL-0061/63/66	с	с	Str. Countr Fort	
AR727H / 747H	с	c	Eassword Change	
aunch	A/B Operation [12 Digital	ls (0-9,A-F)]		
SIM C Set	up Device Key Buffer	NeyA to	00 - KeyB to None -	
CIM C Set	up Media Trailer Block	KeyA .	KeyB	
C Sto	re in SIM/CIM/UIM Data B	Rock	Default (FF078069)	
C Fro	m SIM/CIN/OIM D	e Kev		
C Fro	m SIM/(.omm.ronts < r	b		
Device C Fro	m TMP Communicatio			
r Fro		COM2 CLOWS CLOW		
ledia	C TCP/IP	192 .168 . 1 .188 Port 162	1	
ayer 101	0			
.AM)	12	04	6	Null Null
serID [Site:User]		QK	Cancel	
alue Block		L Winte Verde allowed	R	I TKB
)/Mask Sector	02 - Read KEY 00	D - Enable Global Media	Load Lift Data from Medium	TMP Buffer Status
ata/Tima Sactor	03 - Write KEY 0	1 License Sector 01	Auto Deduct Value	□ Null
ater time Sector 1	NO T WING KET 10	LAN Node	-8%	D Null
Eormat Medi	a 🚺 🙆 Date / Mas	sk Orak di Autor 1000 1000	Launch Device	D Null
JIM Function	s 🛛 🗂 Launch Med	dia Name Block 00	Name Access Key	Null
M Function Assign	P Update License	Layer 🛛 Update User ID	다. Update Value 다.	Update Date/Time

4.2. Re-select the COM PORT as shown on **b**.

4.3. If the connection between device and computer is OK, you would see two places showing the successful connecting as follow:

4.3.1 Device ON/OFF Line status:

No Med	um	
4.3.2 Status	row:	
Status	: Device Logi	n OK !

4.4. Place either SIM or UIM





4.4.1. To Change Device layer, and press launch Device as shown on a.

4.4.2. Please select "Check Open System Rules" as shown on b.

4.4.3. If you want to use the store-value function, you could also select the Auto Decrement Medium and designate to decrease how much value would be deducted at each time as shown on **C**.

Device
Layer 101 0 0 0 0 0
Date Limit
Time Zone Check Kuto Decrement Medium
Minus Value allowed
🗖 Enable Global Media 🛛 🗖 Load Lift Data from Medium
License Sector 01 🚽 Auto Deduct Value 1
LAN Node 1 Launch Device
Global Addr 000 000 001
Name Block 00 Name Access Key 00

4.5. Save the "Key A" into AR-721H:



3

2) Launch Sub-layer's authorized cards

5.1 Quit Mifare Key program and re-connect to your 737P

c AR737P/U C AR821EF/829E 1 Off Line C Comm Port Null 1 c TSL-0061/63/66 c C AR727H / 747H c C Comm Port Null 1 c AR727H / 747H c c C Comm Port Null 1 Launch KEY A/B Operation [12 Digitals (0-9,A-F)] KeyA to 00 KeyB to None Null 1 C CIM C Setup Media Trailer Block KeyA KeyA KeyB Null 1 Null 1 c CIM Setup Media Trailer Block KeyA Config Coult Null 1 Null 1 c CIM From SIM/CIM/UIM Data Block Config Coult From SIM/CIM/UIM >> Device Key Null 1 Null 1 c Device From TMP Communication Port COM1 C COM2 C COM1 Null 1 Null 1 Layer 101 0 QK Qancel Null 1 1	AR721 H/	W/D C		c		S. Connect	C Device I	Key Status
TSL-0061/63/66 c c c c c c c null c AR727H / 747H c c c c c c null c aunch KEY A/B Operation [12 Digitals (0-9,A-F)] KeyA to 00 KeyB to None null c Saunch KEY A/B Operation [12 Digitals (0-9,A-F)] KeyA to 00 KeyB to None null c Saunch KEY A/B Operation [12 Digitals (0-9,A-F)] KeyA to 00 KeyB to None null c Saunch KeyA media Trailer Block KeyA KeyA KeyB null c Store in SIM/CIM/UIM Data Block Config rout (FF078069) Null Null c CLM From SIM/CIM/UIM >> Device Key Config rout (FF078069) Null Null null c Store in SIM/CIM/UIM >> Device Key Communication Port COM1 COM4 COM4 COM4 Null	AR737P/		R821EE/829E	1	Off Line	2	I Null	Null
AR727H / 747H C AR727H / 747H C Null I aunch KEY A/B Operation [12 Digitals (0-9,A-F)] KeyA to 00 KeyB to Null I Status Setup Device Key Buffer KeyA to 00 KeyB to Null I Status Status Status Status Status Null I Null I Status Status Status Status Status Status Null I Null	TSL-0061	/63/66 C	10210170200	- <u>-</u>		Comm Bort	Null	Null
.aunch KEY A/B Operation [12 Digitals (0-9,A-F)] C Situ C Setup Device Key Buffer KeyA to 00 KeyB to None C Situ C Setup Media Trailer Block KeyA KeyA None Null Null <td< td=""><td>AR727H /</td><td>747H C</td><td></td><td>C</td><td></td><td>assword Charide</td><td>Null</td><td>Null</td></td<>	AR727H /	747H C		C		assword Charide	Null	Null
Addiction REY AVB Operatority [12:Digitals (0-9,AFF)] Revelopment and the provide of the pr	aunah	VEV NR ON	ration (12 Disital	10.0 A EV1			Null	D Null
Setup Device Key Builer Setup Media Trailer Block KeyA KeyA KeyB Null Nul		C Setup Daw	ration [12 Digitals	(0-9,A-F)] KevA	to 00 - Ke	evB to None	Null	Null
Common Null Config Average Null Image: State of the s	- CILA	C Setup Medi	a Trailer Block	KouA			2 D Null	D Null
Config		C Store in SI	WCIM/LIM Data Bi	ock		зур		Null
C From SIM/ Communication Port Image: Null Image: Nul	SUAM .	C From SIM/C	CIM/UIM >> Device	e Key	La naue (EEU	(8009)		Null
Communication Port Communication Port Communication Port From TMP COM1 COM2 COM4 COM5 COM6 Null I India TCP/IP 192.168.1 188 Port 1621 Null I Null I Awy L1 L2 QK Cancel Null I Null I SerID [Site:User] QK Cancel Null I Null I alue Block V Enable Global Media Load Lift Data from Medium IMP Buffer SI OMask Sector 02 Read KEY 01 License Sector 01 Auto Deduct Value I Permat Media Date / Mask Global Addr 000 000 001 Null Null	LAM	C From SIM/	Comm Port Selector			*		D Null
From TMP COM1 COM2 COM4 COM5 COM6 Null I India TCP/IP 192,168,1 188 Port 1621 Null I I Null I I Null I I I I I I I I I I I I I I I I I I I <td< td=""><td></td><td>C From TMP</td><td>Communication</td><td>Port</td><td>_</td><td>×</td><td></td><td>D Null</td></td<>		C From TMP	Communication	Port	_	×		D Null
fedia TCP/IP 192,168,1,188 Port 1621 Null Nul		C From TMP	C COM1 C	COM2 C COM8	€ COM4 € COM4	6 COM6	Null	D Null
ayer 101 0 AM) L1 L2 SerID [Site User] alue Block D/Mask Sector 02 Read KEY 00 T ate/Time Sector 03 Write KEY 01 T Lonse Sector 01 Auto Deduct Value 1 LAN Node 1 LAN Node 1 LAN Node 1 LAN Node 1 LAN Node 1 LAN Node 1 Null Auto Deduct Value 1 Auto Deduct Value 1 A	ledia		C TCP/IP	192.168.1.188 P	ort 1621			D Null
AM) E1 E2 SerID [Site User] QK Cancel alue Block Enable Global Media Load Lift Data from Medium MMask Sector 02 Read KEY 00 Minus Value Block Enable Global Media Load Lift Data from Medium Multi Minus Value Block Image: Sector Color C	ayer	101 0					D Null	D Null
SerID [Site:User] QK Cancel Invite In	_AM)	11 12				1		
alue Block	serID [Site	User]		QK	Cancel	ľ		
O/Mask Sector 02 • Read KEY 00 • Enable Global Media Load Lift Data from Medium ate/Time Sector 03 • Write KEY 01 • Load Lift Data from Medium TMP Buffer St • Load Lift Data from Medium License Sector 01 • Auto Deduct Value 1 • Eormat Media • Date / Mask Global Addr 000 000 001	alue Block				internet in the second			
ate/Time Sector 03 • Write KEY 01 • License Sector 01 • Auto Deduct Value 1 Null Permat Media Date / Mask Global Addr 000 000 001 • Null	Maral Car		Dead KEY	E Enable Global	Modia Eloadi	lift Data from Madium		
Anter/Time Sector 03 White KEY 01 Lan Node LA	Jimask Set		Read KET 100			duct Value 1	- TMP Bu	ffer Status
Launch Device INull Global Addr 000 000 001	ate/Time S	ector 03 -	Write KEY [01				D Null	
Global Addr 000 001	Eorn	nat Media	Date / Mask	LAN Node	[] 	Launch Device	D Null	
				Global Addr	000 000 001		D Null	
🐉 UIM Functions 🗂 Launch Media Name Block 00 🔹 Name Access Key 00 🔹	UMIL C	Functions	Launch Med	8 Name Block	00 · Name A	ccess Key 00 🔹		
M Function Assign: 🗖 Update Liberse Laver 🗖 Update User (D) 🗖 Update Valge, 🗖 Update Date/Time	MEunction	Assian: r	Update License L	aver 🗖 Update User	(D) 🗖 Lipdete	Value E		

5.2. Put your SIM or CIM upon your 737P



5.3. Put your Sub-layer's authorized cards on your AR-737P, and select which kind of card you're going to launch.

SIM	CIM	UIM
CIM CIM UIM LAM	CIM CIM UIM LAM	 Launch SIM CIM UIM LAM
© Device	C Device	© Device

5.4 Key-in your Sub-layer's layer's code a. at L2. and launch it. b.



5.5 Launch CIM for a security guard

- 5.5.1 Quit the Mifare Keya software and re-launch it.
- 5.5.2 Re-connect to your 737P and put your SIM or CIM on it.
- 5.5.3 Put a new CIM card on your 737P.

CIM	
-Launch	
O UIM	
O LAM	
O Device	

5.5.4 Security Card:

You may want to create some special card with limited functions for security guards' using. You could make it by choosing following options.

CIM Function Assign:	🗖 Update License Layer	🗖 Update User ID	🗆 Update Value	🔽 Update Date/Time
----------------------	------------------------	------------------	----------------	--------------------

5.5.5 Key-in your Sub-layer's layer code at L2. Then launch it as same as 5.4.

3) Launch Sub-layer's AR-737P (Programmer)

6.1. Quit Mifare Key program and re-connect to the Sub-layer's 737P.

lead/write	Unit Selection			1	_		r	- evice l	Kev Status-
AP721 HA	14//D C	CDR010/020	C	00		Sonr	nect	Null	□ Null
AR737P/L	J	A 821E F/029E	C	On	Line	T Comm	Port	E Noll	D Noll
151-0001	/03/00 0		C					Null	D Null
AR727H /	747H C		c			Bassword C	2	D Null	D Null
aunch	KEY AVB O	peration [12 Digita	ls (0-9,A-F)]				<u> </u>	D Null	D Null
SIM .	· Setup De	vice Key Buffer		KeyA to 00) 🚽 Key	B to No	one 💌	D Null	D Null
MID	C Setup Me	dia Trailer Block		KeyA .	····· Key	/B			
1.000	C Store in S	IM/CIM/UIM Data B	Block	Config	Frault (FF07)	3069)	-		D Null
20020100	C From SIM	/CIM/UIM >> Devi	ce Kev	Comig	a constant a constant a				
	C From SIM	Ve Comm Port Selector					_ H I		
	C From TMF	Communicati	on Port				× 1		
	C From TMF	P C COM1	COM2 CO	OM8 COM4	• COM5	C COMB			
ledia		C TCP/IP	192 .168 . 1	.188 Port 1621					
ayer 🗌	101 0	[
_AM)			25.22	_		1	c		
serID (Site	User1	-	QK		<u>C</u> ancel		ľ		
alue Block					100				
	1		E Feat	la Clabel Madia	Elandli	ft Data from M	la dium		E IND
J/Mask Sec	ctor 02 -	Read KEY 10		le Global Media	1 Load Li	it Data from W	edium	TMP Bu	ffer Status
ate/Time S	iector 03 💌	Write KEY 0	1 I License	Sector 01 -		uct value			
The Form	nat Média	Date / Ma	sk LAN No	de 1		Launch De	мсе		
-			Global /	vddr 000 000	001				
🛃 💷 🕹	Functions	Launch Me	dia Name E	lock 00	Name Ace	cess Key 0	0 •		
	020302268	- Inches Inches			F Lipdate		E Upo		
- I Function	Assign	In UDDATE HIGHNER	110 Y 12						

6.2. Put your SIM or UIM on the Sub-layer's 737P



ิค	2	
U	.0	

-La	unch
0	SIM
0	CIM
C	UIM
C	LAM
۰	Device

6.4. Designate Sub-layer's AR-737 to support SOR functions

Device Layer 101 101	0 0 0 0			
🗖 Date Limit	Check Open System Rules			
Time Zone Check	Auto Decrement Medium			
Minus Value allowed	☑			
Enable Global Media	Load Lift Data from Medium			
License Sector 01 -	Auto Deduct Value 1			
LAN Node	Launch Device			
Global Addr 000 000 0	01			
Name Block 00	Name Access Key 00 -			

6.5. Launch AR-737P for a security guard

- 6.5.1. Quit Mifare Key program and re-connect to the security guard's 737P
- 6.5.2. Put Sub-layer's SIM or UIM on the security guard's 737P
- 6.5.3. Notice about the layer code and check SOR as shown on <u>a.</u> and <u>b</u>, then only designate a security guard's 737P to program the date of limit. <u>C.</u> Finally, Launch Device <u>d.</u>.



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How to change the Key A/Key B and re-format the LAM card into new Key A/Key B?

Setp1: Reset the Key A/B and save at another Data Block

- a Select Key A/B Operation as shown on <u>1.</u>
- c Please save the <u>A:Decrement B:Increment of Config</u> [Trailer] at Data Block18 as shown as shown on <u>3.</u> And then put authorized cards and press the Execution <u>4. and</u>
- d Please save the Config [Trailer] in <u>Default (FF078069)</u> value at Data Block20 as shown on <u>5.</u> Then press the Execution <u>6.</u>

C SIM C CIM C UIM C UIM C LAM C Device	KEY A/B Operation [12 Digitals (0-9,A-F)] Setup Device Key Buffer Setup Media Trailer Block Store in SIM/CIM/UIM Data Block From SIM/CIM/UIM >> Device Key From SIM/CIM/UIM >> TMP Buffer FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	KeyA_to 00 V KeyB to 01 V KeyA KeyA KeyB KeyB KeyA Config [Trailer] A:Decrement V Source Block 01 V Dest. 18 Key Index (Already in Device) 00 V Key A V FFFF MP Buffer V Execution
Launch	┌ KEY A/B Operation [12 Digitals (0-9,A-P)	
© SIM © CIM	C Setup Device Key Buffer C Setup Media Trailer Block	KeyA to 00 V KeyB to 01 V KeyA KeyB
C UIM C LAM	Store in SIM/CIM/UIM Data Block From SIM/CIM/UIM >> Device Key From SIM/CIM/UIM >> TMP Buffer	Config [Trailer]Default (FF078069)5.Source Block01Dest.20
 Device 	C From TMP Buffer >> SIM/CIM/UIM C From TMP Buffer >> Media Trailer Block	Key Index (Already in Device) 00 V Key A V Device TMP Buffer 0 Execution

Setp2: Save old Key A/B to Device Key Status:

- a Select Key A/B Operation: From SIM/CIM/UIM to Device Key as shown as <u>1.</u>
- b Put one authorized card , like SIM, on the programmer AR-737P.
- c Select Key A save to Device Key 00 and select Key B save to Device Key 01 as shown on 2.
- d Save the source Key A/B from Data Block 16 as shown on 3.
- e Press the Execution <u>4.</u>, and then the Device Key Status will save the Key A/B of Data Block 16 as shown as <u>5.</u>

└	KEY A/B Operation [12 Digitals (0-9,A-F)]-	2
⊂ SIM	Setup Device Key Buffer	KeyA to 00 💌 KeyB to 01 💌
◯ CIM	Setup Media Trailer Block	КеуА ******** КеуВ ********
O UIM	C Store in SIM/CIM/UIM Data Block	Config [Trailer] Default (FF078069)
C LAM	From SIM/CIM/UIM >> Device Ker	3 Source Block 16 Dest 02
, DAM	○ From SIM/CIM/UIM >> TMP Buffer	Key Index (Already in Device)
Oevice	C From TMP Buffer >> SIM/CIM/UIM	
	C From TMP Buffer >> Media Trailer Block	Device TMP Buffer

Device Key Status	
🔽 00:0K 🔲 Null	
🔽 01:OK 🔲 Null	

Setp3: Save new Configure [Trailer] (included the new Key A/B) to TMP Buffer Status:

- a Select Key A/B Operation: From SIM/CIM/UIM to TMP Buffer as shown as <u>1.</u>
- b Select the Source Block 18 as shown on 2.
- c Select the content of Data Block 18 and save as Device TMP Buffer 0 as shown on <u>3</u>.
- d Press the Execution <u>4.</u>, and then the TMP Buffer Status will save the content of Data Block 18 as shown as <u>5.</u>

C SIM C CIM C UIM C LAM C Device	KEY A/B Operation [12 Digitals (0-9,A-F)]- Setup Device Key Buffer Setup Media Trailer Block Store in SIM/CIM/UIM Data Block From SIM/CIM/UIM >> Device Key From SIM/CIM/UIM >> TMP Buffer From TMP Buffer >> SIM/CIM/UIM From TMP Buffer >> Media Trailer Block	KeyA to 00 KeyB to 01 ✓ KeyA ********* KeyB ************************************
	9 Buffer Status — 19 DK 5 ult	

- e Select the Source Block 18 as shown on 6.
- f Select the content of Data Block 20 save to Device TMP Buffer 1 as shown on 7.
- g Press the Execution <u>8.</u>, and then the TMP Buffer Status will show the content of Data Block 18 as shown as <u>9.</u>

Launch	┌ KEY A/B Operation [12 Digitals (0-9,A-F)]	
⊖ SIM	Setup Device Key Buffer	KeyA to 00 👻 KeyB to 01 👻
C CIM	Setup Media Trailer Block	KeyA ******** KeyB ********
C UIM	C Store in SIM/CIM/UIM Data Block	Config [Trailer] Default (FF078069)
O LAM	C From SIM/CIM/UIM >> Device Key 6	Source Block 20 🔽 Dest. 02 🔽
C Device		Key Index (Already in Device) 00 - Key A -
· Device	C From TMP Buffer >> Media Trailer Block	Device TMP Buffer 17 T
TMP Buff	fer Status	
№ 00:0K		
№ 01:0K	9	

Setp4: Reformat the LAM card

a • Press Format button at Media area as follows:



b · Content of LAM card

The content of whole New LAM Card before being formation:

Sector	Write-in source	Authorized to program by	The Authorized Key is from	
00 – 13	TEM 00 (Block 16)	KovA	32 nd Key of device	
	(KA-R;KB-W)	Key A	(Default Value)	
14 – 15	TEM 01 (Block 17)	KovA	32 nd Key of device	
	(KA-R; KA-W)	Key A	(Default Value)	

The content of New LAM Card after being formation:

Sector	Write-in source	Authorized to program by	The Authorized Key is from	
00 – 13 (KA-R;KB-W) (New Key A/B)	TEM 00 (Block 18)		01 Key of device	
	(KA-R;KB-W)	Key B		
	(New Key A/B)		(Default value)	
14 – 15	TEM 01 (Block 20)	00 Koy of dovio		
	(KA-R; KA-W)	Key A		
	(New Key A)			

- c For having designated LAM's Config [Trailer] of Sector 00 to 13 as <u>A:Decrement B:Increment</u> at the first time. In other words, the LAM card can only be programmed or written by previous Key B (as shown on <u>1</u>.) that has been saved at Device Key 01 (as shown on <u>2</u>.). In the same time, LAM card will be programmed or written with the new Key A/B and new Config [Trailer] of TMP Buffer 0 (as shown on <u>3</u>.).
- d Solution For having designated Config [Trailer] of Sector 14 to 15 as <u>Default</u> (FF078069) at the begining. In the other worlds, the LAM card can only be programmed or written by previous Key A (as shown on <u>4.</u>) that has been saved at <u>Device Key 00</u> (as shown on <u>5.</u>). In the same time, LAM card will be programmed or written with the new Key A/B and its new Config [Trailer] of TMP Buffer 1 (as shown on <u>6.</u>).

Format new medium to LAM (Config Trailer Block with TMP Block that from SIM/CIM)								
Used Sector	So	ource TN	ИР хх		Use Key	АВ Туре	Use Key a	it
Sector:00(OK)	• 0	C 1	C 2	C 3	C KeyA	KeyB	01 💌	
🗖 Sector:01(LLB)	• 0	O 1	C 2	03	C KeyA	KeyB	01 -	
Sector:02(OK)	• 0	C 1	C 2	С 3	C KeyA	KeyB	01 💌	
Sector:03(OK)	• 0	C 1	C 2	С 3	C KeyA	KeyB	01 💌	
Sector:04(OK)	3 💿 0	C 1	C 2	C 3	C KeyA	KeyB	01 💌	
Sector:05(OK)	• 0	C 1	C 2	C 3	C KeyA	KeyB	01 💌	
Sector:06(OK)	• 0	C 1	C 2	С 3	C KeyA	KeyB	01 💌	
Sector:07(OK)	• 0	C 1	C.2	03	C KeyA	KeyB	01 💌	L
Sector:08(OK)	• 0	C 1	C 2	С 3	C KeyA	KeyB	01 💌	
Sector:09(OK)	• 0	C 1	C 2	С 3	C KeyA	KeyB	01 💌	
Sector:10(OK)	• 0	C 1	C 2	С 3	C KeyA		01 💌	
Sector:11(OK)	• 0	C 1	C 2	03	C KeyA	KeyB	01 💌	
Sector:12(0K)	© 0	C 1	C 2	03	C KeyA	KeyB	01 💌	
Sector:13(OK)	• 0	O(1	C 2	0.3	C KeyA	KeyB	01 💌	
Sector:14(OK)	00	• 1	C 2	C 3	 KeyA 	C KeyB	00 💽	
Sector:15(OK)	CO	• 1	C 2	03	4 • KeyA	C KeyB	00 -	-

e • Press the Run button to reformat the LAM card.

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