

USER MANUAL

LF Tools



Document updates

Version	Modification	Author	Date
DPD A00582 A00	Initial document	JM COLLOMBON	11 Dec 2013
DPD A00582 A01	Zebra rebranding	JM COLLOMBON	21 Sept 2015

Writers

Name	Position	Company
JM COLLOMBON	Project Engineer, RFID Solutions	Zebra Technologies

Terminology

RFID	Radio Frequency IDentification
LF	Low Frequency
SAM	Secure Authentication Module card, a small smart card used to hold cryptographic keys

Referenced documents

--	--

TABLE OF CONTENT

1.	<u>INTRODUCTION</u>	<u>3</u>
1.1.	SCOPE	3
1.2.	RFID STANDARDS AND TAGS SUPPORTED	3
2.	<u>GETTING STARTED</u>	<u>4</u>
2.1.	RFID DRIVER INSTALLATION	4
2.2.	RFID DEMO INSTALLATION	5
3.	<u>LF TOOLS</u>	<u>6</u>
3.1.	LAUNCHING	6
3.2.	FUNCTIONALITIES	6
3.2.1.	Info	6
3.2.2.	Scan	6
3.2.3.	Cont. Scan	7
3.2.4.	Read/Write	7
3.2.5.	Protocol	8

1. INTRODUCTION

1.1. Scope

This manual is a handbook for the installation and usage of RFID LF Demo Application on Zebra Technologies WAP4 devices.

WAP4 – LF – ID1



The first step is to install the RFID driver and demo app.

Then you would be able to use the WAP4 LF demo application.

This application supports many functionalities:

- Info: Gets reader information (FW version / serial number)
- Scan: Detects the tag into the RF field and displays his UID
- Cont. Scan: Performs continuous reading
- Read/Write: Reads/Writes LF tag memory
- Protocol: Allows sending protocol command to the RFID reader

The source code is available on the same ZIP package

1.2. RFID standards and tags supported

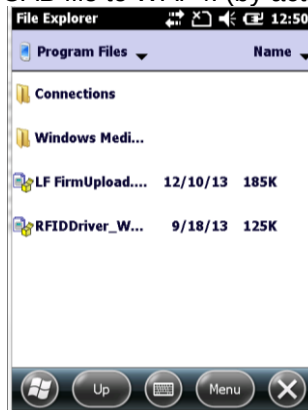
Tag	Serial number	Read block	Write block	Properties
Hitag 1	√ (4 byte)	√ (4 byte)	√ (4 byte)	64 * 4 bytes R/W
Hitag 2	√ (4 byte)	√ (4 byte)	√ (4 byte)	7 * 4 bytes R/W, PWD
Hitag S	√ (4 byte)	√ (4 byte)	√ (4 byte)	1, 8 or 64 * 4 bytes R/W
EM4x02	√ (5 byte)	-	-	5 bytes RO
EM4x05 (ISO FDXB)	√ (8 byte)	-	-	
EM4x50	√ (4 byte)	√ (4 byte)	√ (4 byte)	32 * 4 bytes R/W, PWD
EM4200	√ (5 byte)	-	-	5 bytes RO
Q5	√ (5 byte)	√ (4 byte)	√ (4 byte)	8 * 4 bytes RW, PWD
5567	√ (8 byte)			

2. GETTING STARTED

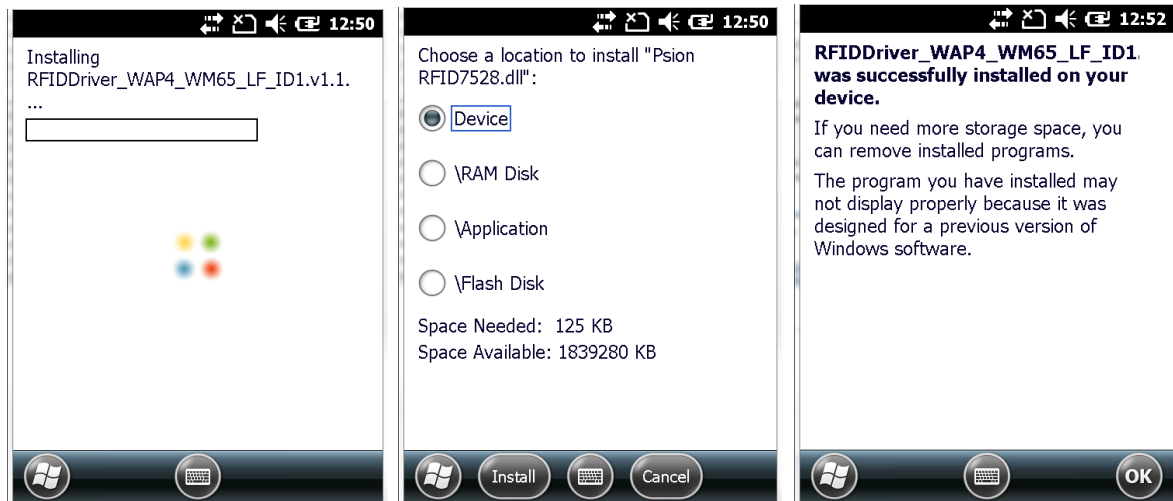
2.1. RFID driver installation

RFID Driver installation is mandatory. The driver is provided into the ZIP package as CAB file.

The first step is to copy the RFID Driver CAB file to WAP4. (by activesync, usb stick, ..)



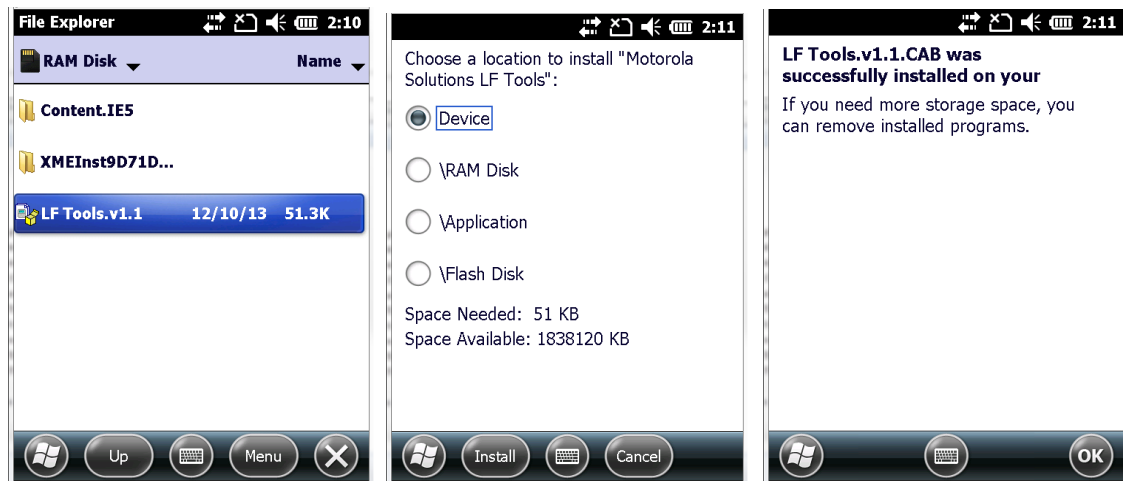
Then by double clicking on the CAB file, you should be able to install it.



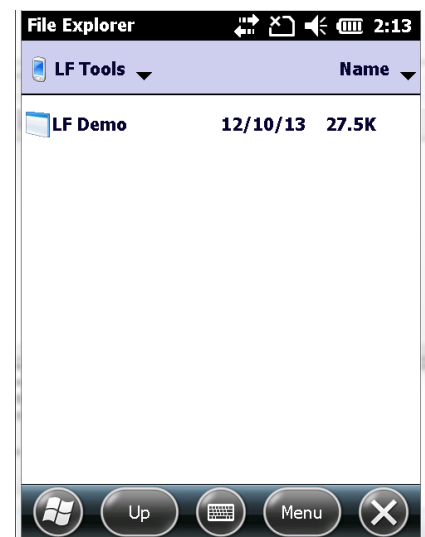
Note: An unsuccessful installation occurs when the WAP4 can't dialog with the RFID reader. The issue may result because the RFID reader is not mounted into the WAP4 OR the RFID reader is badly connected.

2.2. RFID demo installation

Install LF Tools by double clicking on the CAB file.



You will see a new folder on \Program Files called **LF Tools**



3. LF TOOLS

3.1. Launching

Go to Program, Start **LF Demo**



3.2. Functionalities

3.2.1. Info

This panel allows reading reader information.

Info button: Gets serial number and FW version

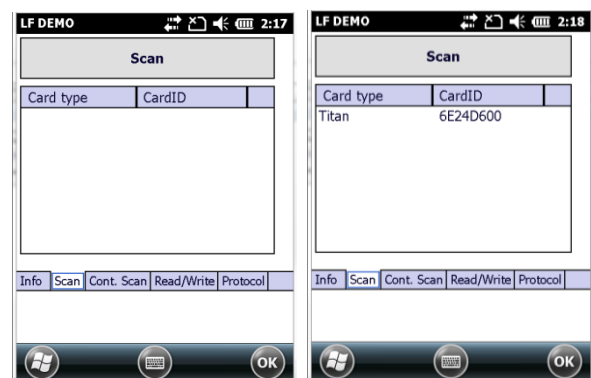
Reset: resets the reader.



3.2.2. Scan

This panel detects the tag into the RF field and displays his type and UID.

Scan button: detects the LF tag in the RF field



3.2.3. Cont. Scan

This panel performs continuous reading

Scan button: starts the continuous reading. Each tag detected will fill a line

Stop button: stops the continuous read



3.2.4. Read/Write

This panel reads/writes LF tag memory

Read button: reads the memory of the FL tag according to Offset / Nr bytestextboxes. Result is displayed on Data textbox

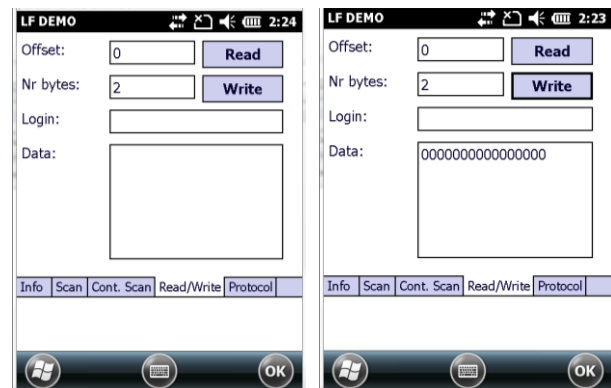
Notes:

The LF tag has to have an user memory. Please refer to LF tag datasheet for more details and LF SDK

if login field is filled, the login command will be used.

Write button: writes the memory of the FL tag according to Offset / Nr bytestextboxes. Result to write has to be filled on Data textbox.

if login field is filled, the login command will be used.



3.2.5. Protocol

This panel allows sending protocol command to the RFID reader

Send button: sends command to the reader the parameters are command and data textboxes.

Refer Reader protocol section of SDK for more details.

On command textbox, you will have one of the below commands

Set of commands

command	Description
'v'	To get module version
'rp' / 'wp'	To read / write EEPROM register
'o+' / 'o-'	To include / exclude tag type management
'!' / 'c'	To get operation mode To request continuous read mode
's'	To read a tag (single request)
'r' / 'rb' / 'w' / 'wb'	To read / write a data block of the tag
'l'	To work with a password protected tag
'x'	To reset the module
'qr' / 'qw'	To read / write the Q5 tag programmed as EM40x2 tag

On data textbox, the complementary data information of the specific command.

By example:

For select command

Command : s

Data : (empty)

Send returns T6E24D600

This is the UID of TITAN tag

For read the block 0x02 of user memory

Command : rb

Data : 02

Send returns 00000000

This is the block 0x02 of previous selected TITAN tag

The image shows two screenshots of the LF DEMO application interface. The top screenshot shows the 'Protocol' tab selected, with 'Command' set to 'v' and 'Data' empty. The bottom screenshot shows the same interface after sending the command, displaying the response: '>> v', '<< LF3025 2.7d', and 'In 19 ms'.