

XMODEM DOWNLOAD

Level / Version : 040

Date : 05/06/ 2003

Reference / Référence : WM CUS GEN CTI 002

Level / Indice	Date/ Date	History of the evolution / Historique des évolutions	Writer / Rédacteur
001	03/05/2001	First issue	Yannick RENAULT
011	24/07/2001	Modifications for 421_09gm.2c	Yannick RENAULT
020	22/11/2001	Modifications for 430a_09gm.2c, 2c2 and 3a with the V1.13 downloader version.	Yannick RENAULT
021	07/03/2002	Modifications for 431 and 430c software family.	Yannick RENAULT
022	23/05/2002	Modifications for 432 and 430g software family.	Yannick RENAULT
030	30/05/2002	Precision for the "Bad file message "	Yannick RENAULT
031	20/06/2002	New products references	Yannick RENAULT
032	03/09/2002	Modifications for 433 and 534 software family.	Yannick RENAULT
040	05/06/2003	New naming of files for X40 software versions and chapter "III.3.2/ Link between "X4xx.yyy.dwl" files and options" has been erased from document.	Yannick RENAULT

	Name / Nom	Function / Fonction	Date/ Date	Signature/ Signature
Written by / Rédigé par	Y.RENAULT	Technical Support	21/06/01	APPROVED
Checked by / Vérifié par	F.RIOU- KERANGAL	GPL Group Leader	21/06/01	APPROVED
Checked by / Vérifié par	E.BUREAU	Software Manager	21/06/01	APPROVED
Approved by / Approuvé par	L.PARVY	Applications Engineering Manager	21/06/01	APPROVED

Contents / Sommaire

I/ FLASH MEMORY STRUCTURE

II/ XModem download interface 5

II.1/	Download protocol.....	5
II.2/	Download procedure and V24 recommendation.....	5
III.2.1/	Connection	5
III.2.2/	Terminal configuration.....	5
III.2.3/	Global behaviour	6

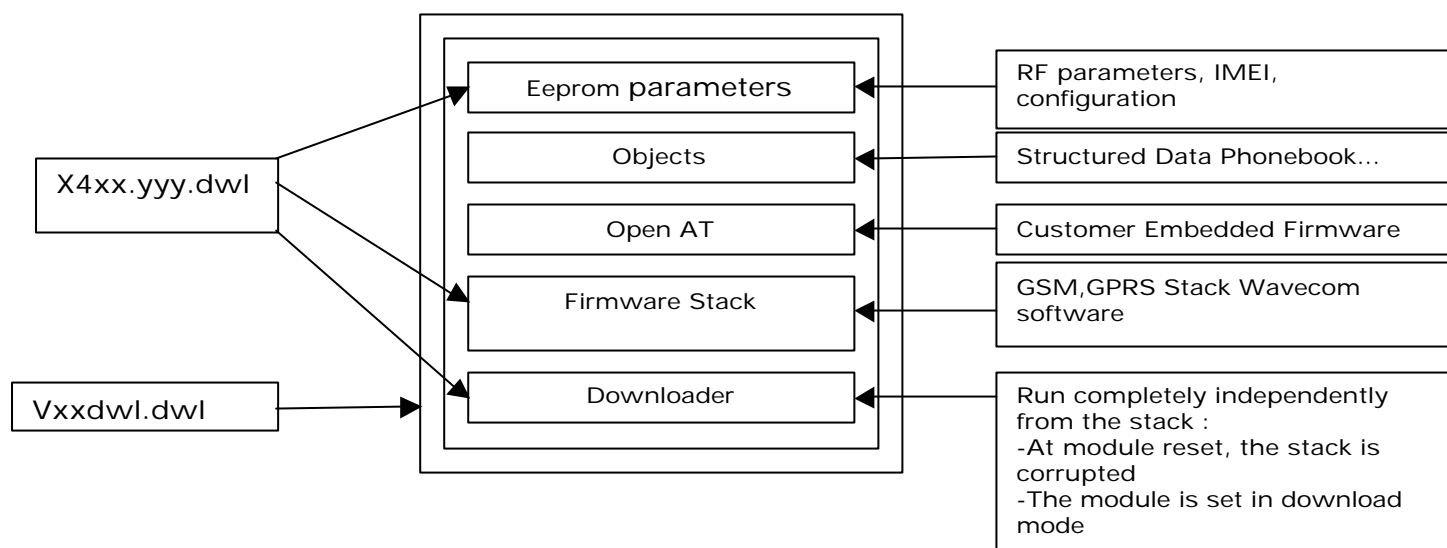
III/ Download procedure..... 7

III.1/	Introduction	7
III.1.1/	Dwl upgrade.....	7
III.1.2/	Firmware upgrade.....	7
III.2/	How to download the dwl.dwl file.....	8
III.2.1/	Configure the speed of the module at the highest baudrate (115200, by default the WISMO is configured at 9600bps):	8
III.2.2/	Match the baudrate on the WISMO and the Terminal emulator:	8
III.2.3/	Transmission of the dwl.dwl file.....	9
III.3/	How to download the X640.Q2406B.dwl file.	10
III.3.1/	Process.....	10

IV / Link between software and downloader versions

V/ Compatibility between Q2200A, Q23xxA, P31xx , Q24xx softwares

I/ FLASH MEMORY STRUCTURE



This scheme shows the different layers :

EEPROM parameters : contains all module's datas: calibration parameters radio, ADC, number of IMEI , features etc.. It include also a backup of these datas in a mirror field (8Ko) which allows to restore them.

Objects : contains structured datas used by firmware. For example : Phonebook, SMS...

Open AT : reserved for customer applications using Open AT which based only since Q23xxA technology.

Firmware Stack : collect loaded softwares (L1C, RTK, GSM stack , GPRS, AT, MMI, etc).

Dwl.dwl : downloader : This file verify the firmware stack checksum.

II/ XModem download interface

II.1/ Download protocol

The applicable protocol for firmware downloading is XModem (XModem128-CHKS or XModem 1K-CHKS). This allows almost any data terminal to download a file into the WISMO.

The actual version uses only 128 bytes packets with a checksum.

The very next generation will be 1Kbytes (1024) packets compliant allowing increased velocity (XMODEM 1K). Just note that the **hardware flow control is obligatory (RTS and CTS signals) since XModem 1K protocol.**

The XModem 1K-CHKS is supported with V1.13 downloader version.

II.2/ Download procedure and V24 recommendation

II.2.1/ Connection

First **connect** the module and the terminal using **the right data cable (RS232 compatible : this cable is contained in the demo board packaging) .**

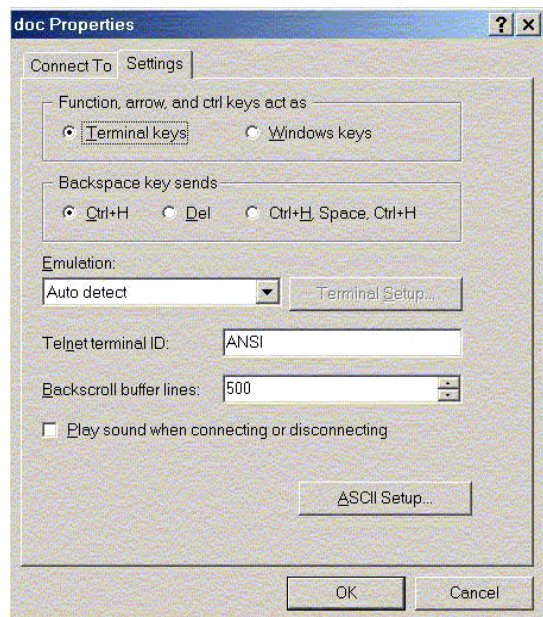
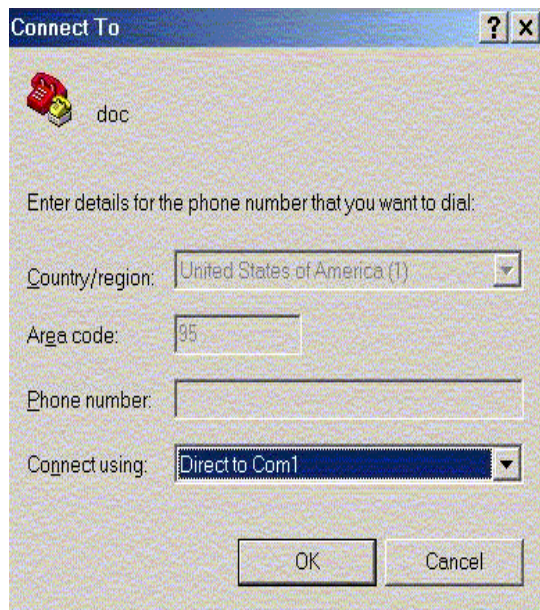
The compulsory signals are:

- TX : Transmit Data
- RX : Receive Data
- GND : ground
 - ⇒ It is also strongly recommended to use the following signal:
 - RTS : Request To send
 - CTS : Clear To Send

⇒ the other RS232 signals are optional.

II.2.2/ Terminal configuration

We take as example the HyperTerminal from Windows
Global properties of the HyperTerminal program:



II.2.3/ Global behaviour

Trough a HyperTerminal window, the user is able to send data to the WISMO by sending the character "A" (uppercase) until it is echoed by the WISMO.

Send the AT command **"AT+WDWL"** to switch the WISMO on download mode.

The module sends **" +WDWL : 0 "** : to inform that it turns in download mode.

Start sending files using XModem protocol to the WISMO.

Notice that the XModem protocol specifies that the receiver initiates the communication by sending a character. The user may not see this character, because it is a control character. If the transmitter is not ready, a new start character is repeated by the module every second.

At the end of the file transmission, the user can start sending a new file, using the same process without perform a hardware reset.

When there is no more file to be downloaded, the user exits the download mode by sending the AT command **"AT+CFUN=1 "**.

The user receives **"OK"** if the speed and format configuration that are set in EEPROM are the same that the one used for download.

WARNING: in the general case the EEPROM settings saved in the modules before the download will be overwritten thus, among other things.

III/ Download procedure

III.1/ Introduction

For a software version you've got two files.

For example, if you want to upgrade a Quik Q2406B with 640_09gg.v10, you have at your disposal a zip file that contains two dwl files:

X640-Q2406B.zip: which contains:

- **X640-Q2406B.dwl** : which is the new **firmware** to be downloaded
- **Vxx.yy.dwl.dwl** : which is the downloader with its version.

PS: downloader has only to be downloaded to upgrade the downloader

In order to know the compatibility between software and downloader you can see in annexe a list giving the link between software and downloader version

III.1.1/ Dwl upgrade

- The **dwl.dwl** is the **downloader** itself. Before upgrading the firmware, you'd better upgrade the downloader. So begin downloading the dwl.dwl file, reboot the module and then send the Xyyy.dwl file from your terminal.
- The secured downloader version V1.13 is available since the software versions 430a_09gm.2C , 430a_09gm.2C2 and 430a_09gm.3a.
The feature introduced by this downloader version is to create a local copy in RAM of the downloader as long as the last packet is not full downloaded. After this operation the new downloader is placed in FLASH memory (activated) and the old version is deleted.
- The downloader V1.13, is the same for Q2200A, Q23xx , Q24xx or P31XX products.
Nevertheless the firmware is different.
=> see in ANNEX 2 for more informations and examples.

III.1.2/ Firmware upgrade

- the **X640-Q2406B.dwl** contains the firmware (GSM stack).

III.2/ How to download the dwl.dwl file

WARNING: the "downloader download " is a fussy operation
To know the software and downloader version type :

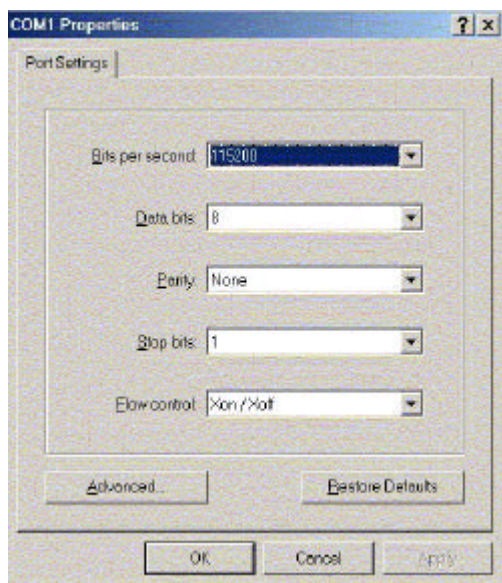
- AT+I3 (or AT+CGMR) gives the software version
- AT+WDWL? gives the downloader version
- ⇒ So with the list in annex, it will be easy to know if the downloader must be upgraded or not.

III.2.1/ Configure the speed of the module at the highest baudrate (115200, by default the WISMO is configured at 9600bps):

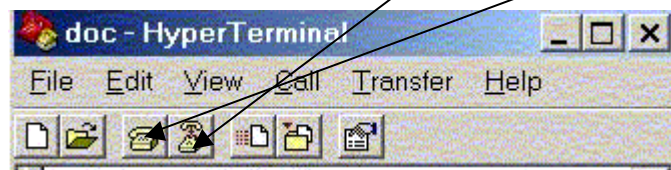
AT+IPR=115200
OK

III.2.2/ Match the baudrate on the WISMO and the Terminal emulator:

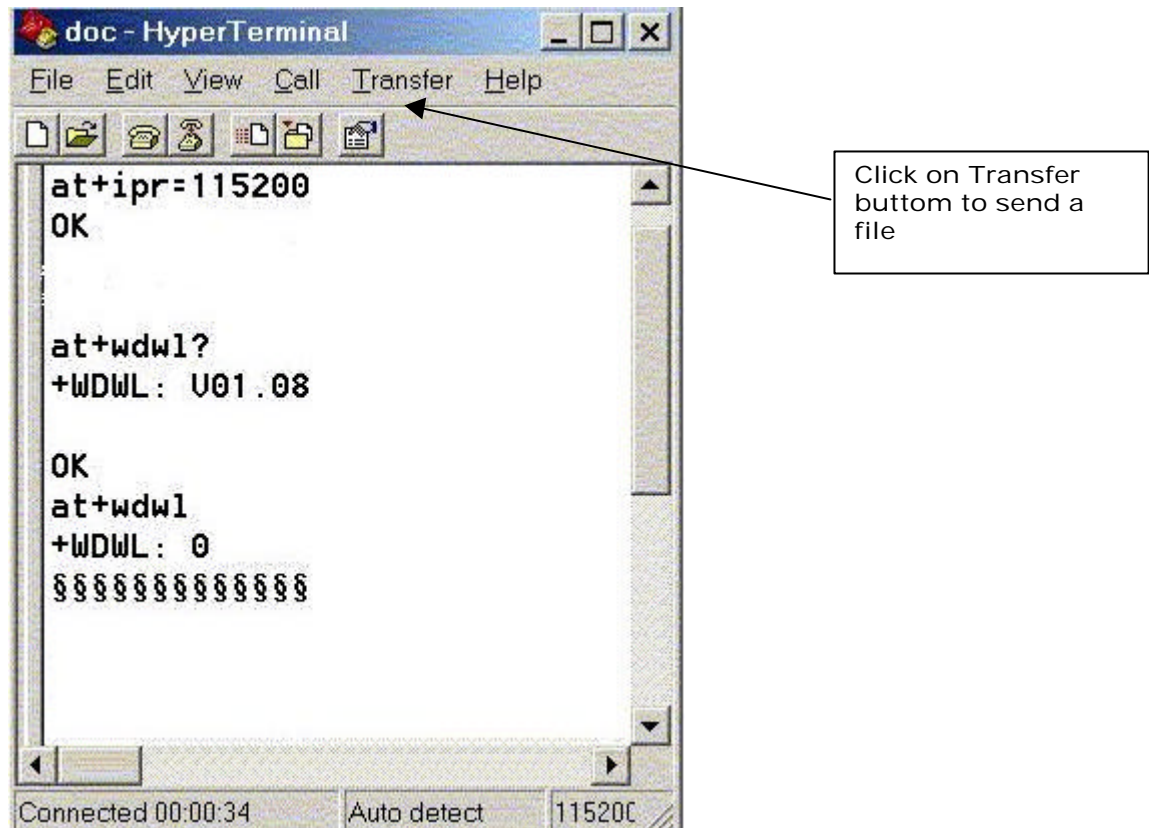
Example with HyperTerminal from Windows



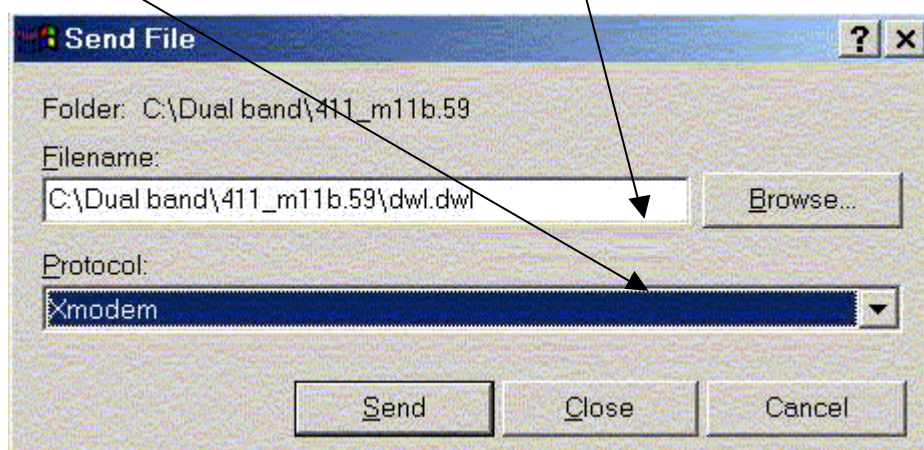
After clicking on OK you must disconnect and reconnect the communication with the HyperTerminal.



III.2.3/ Transmission of the dwl.dwl file



When the "dummy" characters appear: click on **Transfer** (on the HyperTerminal) and choose **"Send File"**, you visualize this window and **define the path** of the file to download and **select XModem protocol**:



After clicking on **"Send"** button, your file is in the download process.
At 115200 bps this operation should last about 15sec.

Xmodem file send for doc

Sending: C:\Dual band\411_m11b.59\dw1.dwl

Packet: 153 Error checking: Checksum

Retries: 0 Total retries: 0

Last error:

File: 17k of 64K

Elapsed: 00:00:04 Remaining: 00:00:11 Throughput: 4160 cps

Cancel cps/bps

If you want to check if the downloader has been well upgraded: AT+WDWL? gives the downloaded version.

At the end of the download, execute an **AT+CFUN=1** (or hard reset).

This command is used to leave the download mode properly and restart in command mode.

The **"OK"** may not be received if the used speed on the terminal is not the same than the one programmed in the EEPROM.

Response of the GSM to application: **OK**

III.3/ How to download the X640.Q2406B.dwl file.

III.3.1/ Process

This file contains the Firmware.

The procedure to download this file is exactly the same as for " the dw

To synthesize:

- **Check the baudrate : AT+IPR?**
- **Increase the baudrate (115200bps) in case it has not be done before**
- **Send the files using XModem protocol.**
- **Check the software version: AT+I3 or AT+CGMR**
- **Reset the WISMO module : AT+CFUN=1**

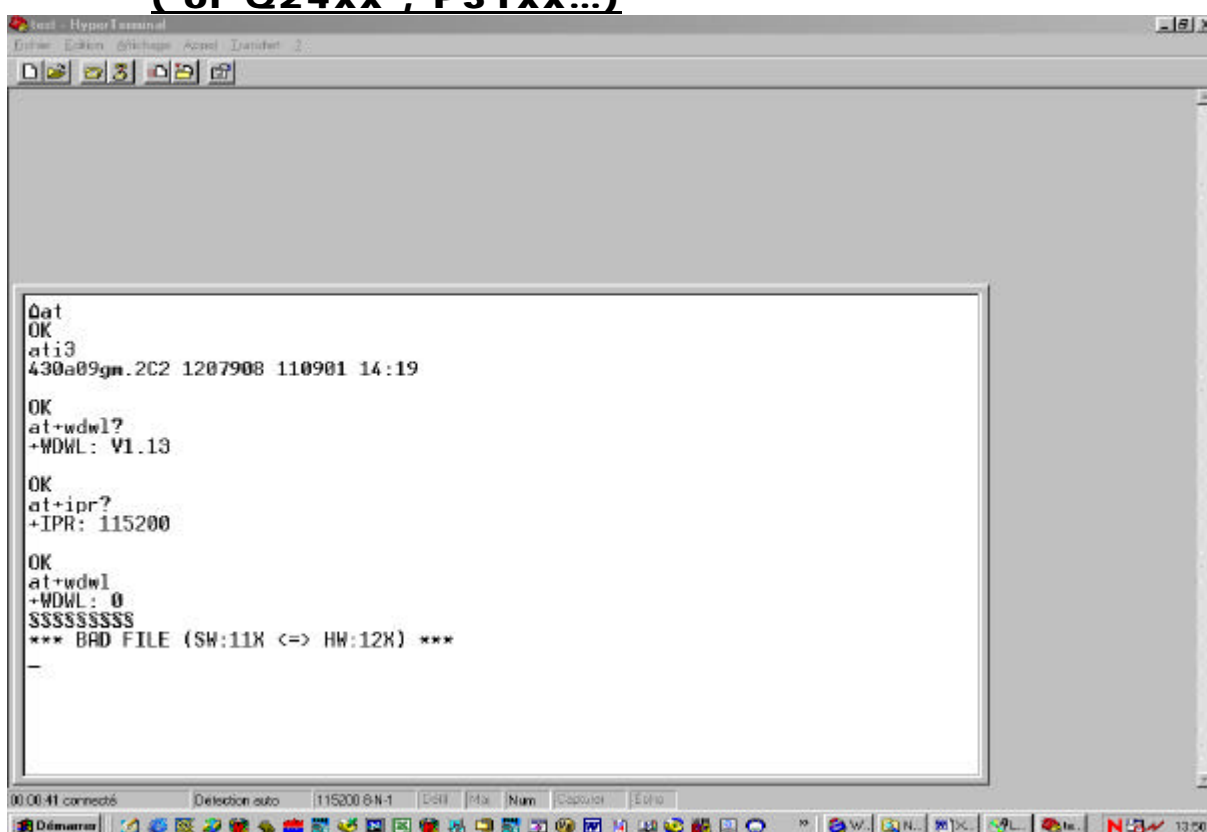
IV/ Link between software and downloader versions

SOFTWARE	DOWNLOADER	COMMENTS
400_m11b.54	V1.01	<ul style="list-style-type: none"> - Add version number Vxx.xx at the end of interrupt vector (fixed address) - Add AT command AT+WDWL?, returning the version number - Always check link between Boot pin and CTS, allowing to download through SPI even when the Binary code is correct - Change speed, while waiting 'a', each time a wrong character is received, until the right speed is found. - Always reset after download of a downloader, in or to avoid e2p parameter format conflicts.
401_m11b.55	V1.03	<ul style="list-style-type: none"> - Do not change speed when receiving \n - Add length test - Modify BOOT_CTS link detection - Add +WDWL before version number
402_m11b.56 402am11b.56 402bm11b.56	V1.04	<ul style="list-style-type: none"> - Correct E2P crashes of parameters
410_m11b.58 410am11b.58	V1.08	<ul style="list-style-type: none"> - Change version - First version of object download - Clear only sectors that need to be cleared - Send +WDWL instead of +DWL before starting to download
411_m11b.59 411_am11b.59 421_09gm.xx	V1.09	<ul style="list-style-type: none"> - Set all GPIO to input state : compatible V1.08
430a_09gm.xx 430c_09gm.xx 431_09gm.xx	V1.13	<ul style="list-style-type: none"> - Compatible V1.09 - XMODEM 1K handled - Hard/soft matching - Downloader mode selection by DSR pin & Boot_pin bound - Handles 4Mbytes Flash Memory and 512 Kbytes RAM
430g_09gm.xx	V1.14	<ul style="list-style-type: none"> - Compatible V1.13 - After a AT+WDWL command you can stop download procedure by an AT command
534_09gm.xx 534a_09gm.xx	V1.16	<ul style="list-style-type: none"> - Compatible V1.14
432_09gm.xx 433_09gm.xx	V1.17	<ul style="list-style-type: none"> - Compatible V1.14 - New release of E2P handler for 4Mbytes Flash

X.40 versions	V1.19	- Compatible V1.18
----------------------	--------------	--------------------

V/ Compatibility between softwares

1- Download of Q2200A firmware into Q23xx module: (or Q24xx , P31xx...)



As the window shows, it is impossible to download a "Q2200A software" into a the 430_09gm.2c2 version and the V1.13 downloader version)

Just 3 seconds after the beginning of the download, transfer is stopped and the "BAD FILE..." message is displayed (hard / soft matching).

So , the SW and HW references correspond to the "OneC chip" version (Philips). The SW:11X refers to the WISMO2C software , the HW: 12X indication refers to the OneC version. (12X for Q23xxA and P31xx based products)

2- Download of Q23xxA firmware into Q2200A module:

You can't download a Q23xxA software into a WISMO Quik Q2200A.
You will have the inversed scenario : ***** BAD FILE (SW:12X ⇔ HW:11X) *****

This message is displayed only at 115200bps.

PS: you have the same scenarios with Q2403A or P31xx...