

## XMODEM DOWNLOAD

Level / Version : 032

Date : 03/09/ 2002

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

	Name / Nom	Function / Fonction	Date/ Date	Signature/ Signature
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## 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

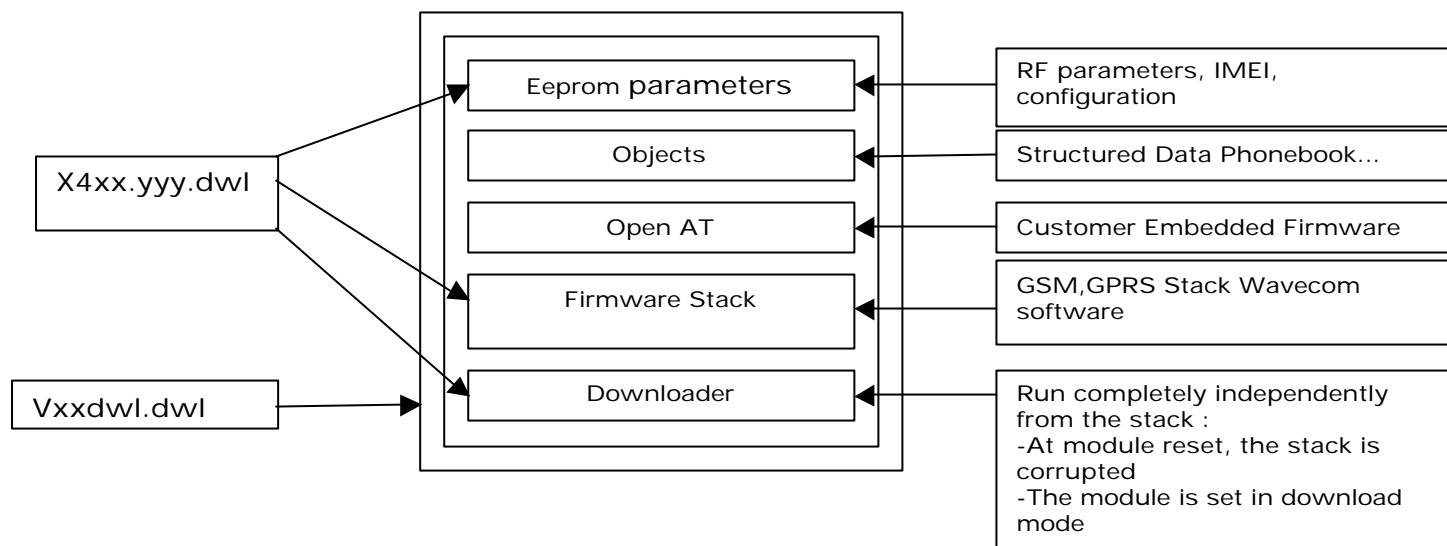
### III/ Download procedure..... 7

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 X4xx.yyy.dwl file. ....	10
III.3.1/	Process .....	10
III.3.2/	Link between "X4xx.yyy.dwl" files and options .....	11

### IV/ Link between software and downloader versions

### V/ Compatibility between Q2200A, Q23xxA, P31xx , Q2403A 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) .**

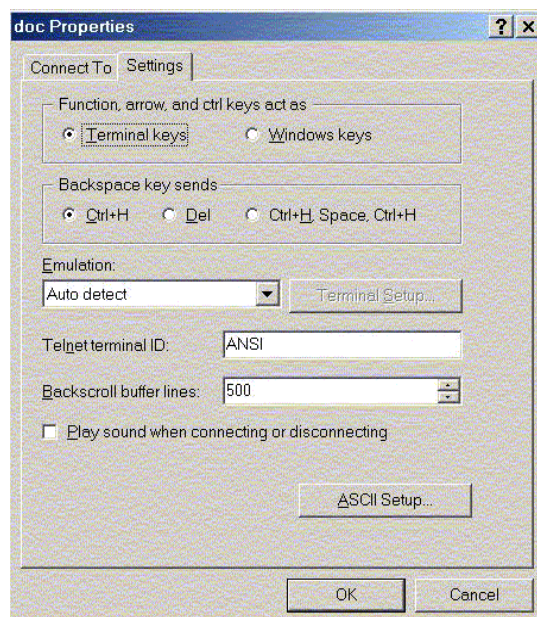
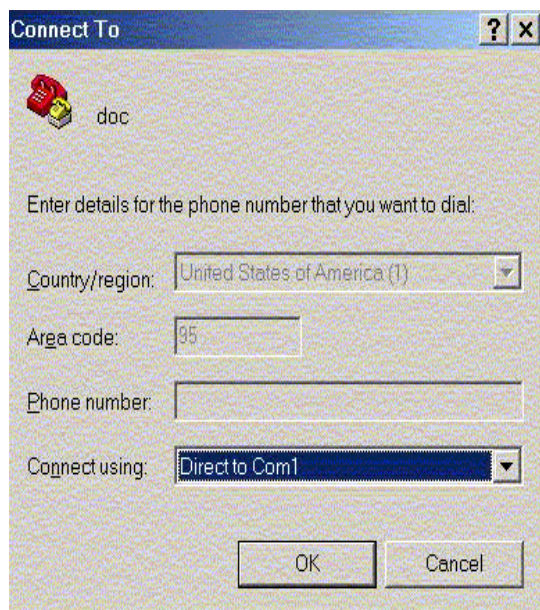
The compulsory signals are:

- 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 Integra M21x0A with 411-m11b.59, you have at your disposal a zip file that contains two dwl files:

**X411G0919.zip**: which contains:

- **X411G0919.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 Xyyyy.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, Q23xxA , Q2403A or P31XX products.  
Nevertheless the firmware is different.  
**=> see in ANNEX 2 for more informations and examples.**

#### III.1.2/ Firmware upgrade

- the **X411G0919.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 :

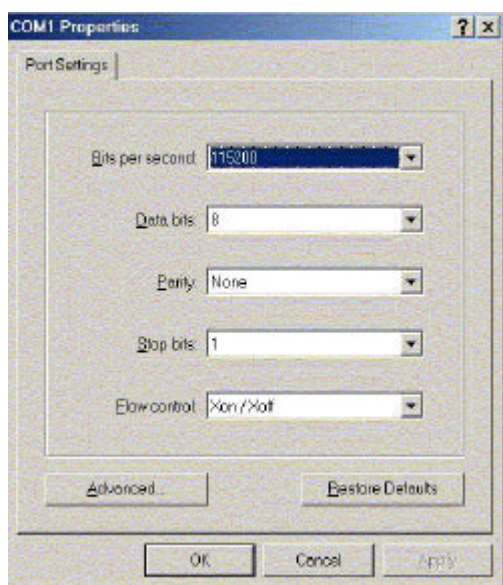
- AT+CGMR gives the software version
  - AT+WDWL? gives the downloader version
- ⇒ So with the list in annex, it will be easy to know if the downloader must be upgraded or not.

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

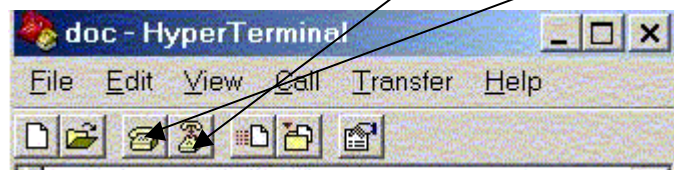
**AT+IPR=115200**  
**OK**

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

Example with HyperTerminal from Windows

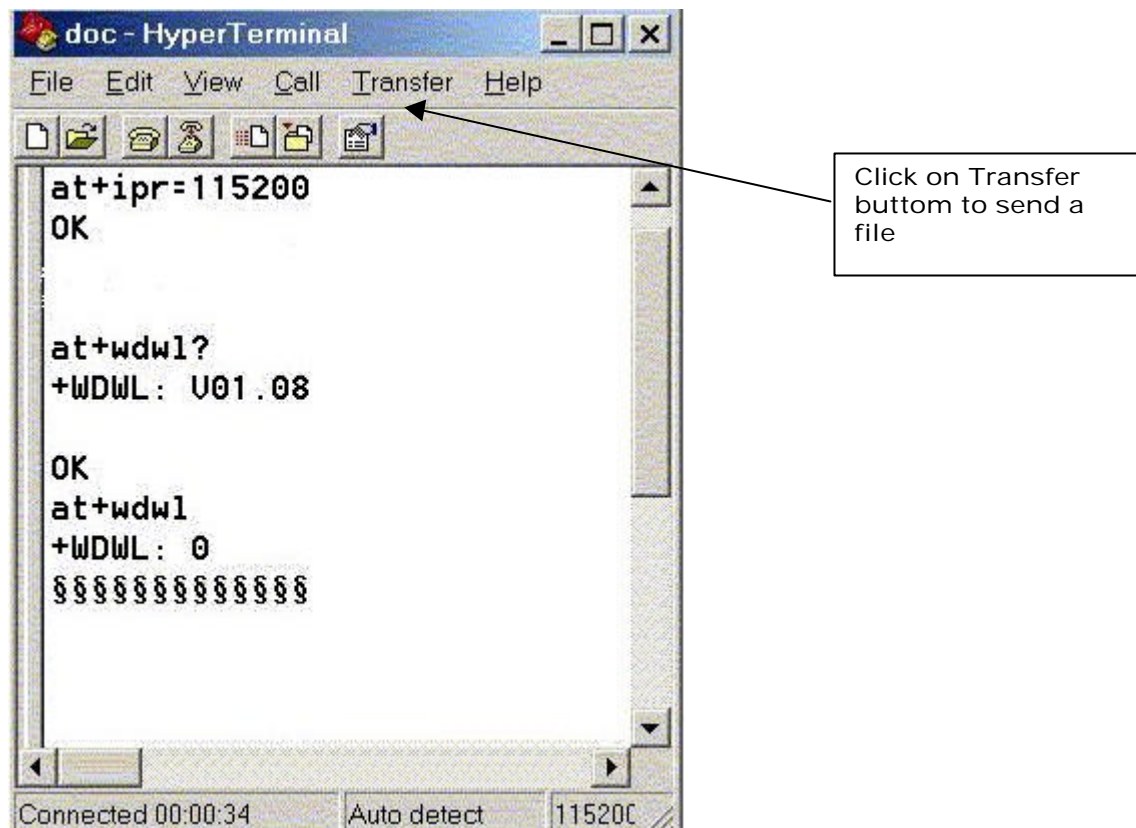


After clicking on OK you must disconnect and reconnect the communication with the HyperTerminal.

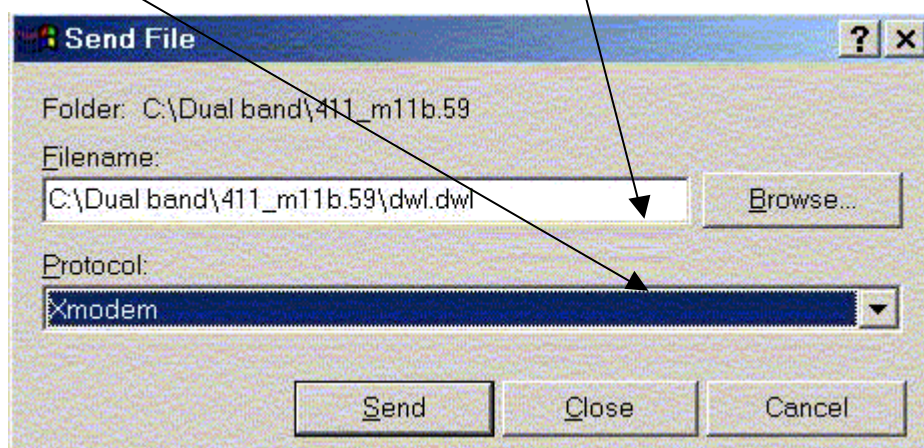




### III.2.3/ Transmission of the dwl.dwl file



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

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 X4xx.yyy.dwl file.

#### III.3.1/ Process

This file contains the Firmware.  
 The procedure to download this file is exactly the same as for " the dw1.dwl " except that the downloaded file is "X4xx.yyy.dwl".

#### 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**

### III.3.2/ Link between "X4xx.yyy.dwl" files and options

FILES:	PRODUCTS:	CONTENT:
<b>X402b</b> G0918.zip	M21x0A+Q2200A (0918)	X402bG0918.dwl
<b>X402b</b> ModemG0918.zip	M12x0A (0918)	X402bModemG0918.dwl
<b>X402b</b> G0919.zip	M21x0A+Q2200A (0919)	X402bG0919.dwl
<b>X402b</b> ModemG0919.zip	M12x0A (0919)	X402bModemG0919.dwl
<b>X410a</b> G0918.zip	M21x0A+Q2200A (0918)	X410aG0918.dwl
<b>X410a</b> ModemG0918.zip	M12x0A (0918)	X410aModemG0918.dwl
<b>X410a</b> G0919.zip	M21x0A+Q2200A (0919)	X410aG0919.dwl
<b>X410a</b> ModemG0919.zip	M12x0A (0919)	X410aModemG0919.dwl
<b>X411</b> G0918.zip	M21x0A+Q2200A (0918)	X411G0918.dwl
<b>X411</b> ModemG0918.zip	M12x0A (0918)	X411ModemG0918.dwl
<b>X411</b> G0919.zip	M21x0A+Q2200A (0919)	X411G0919.dwl
<b>X411</b> ModemG0919.zip	M12x0A (0919)	X411ModemG0919.dwl
<b>X421</b> G0918.zip	M21x0A+Q2200A (0918)	X421G0918.dwl
<b>X421</b> ModemG0918.zip	M12x0A (0918)	X421ModemG0918.dwl
<b>X421</b> G0919.zip	M21x0A+Q2200A (0919)	X421G0919.dwl
<b>X421</b> ModemG0919.zip	M12x0A (0919)	X421ModemG0919.dwl
<b>X421</b> G0918.2c2.zip	M21x3A + Q23xxA (0918)	X421G0918.2c2.dwl
<b>X421</b> ModemG0918.2c2.zip	M1303A (0918)	X421ModemG0918.2c2.dwl
<b>X421</b> G0919.2c2.zip	M21x3A + Q23xxA (0919)	X421G0919.2c2.dwl
<b>X430a</b> G0918.zip	M21x0A+Q2200A (0918)	X430aG0918.dwl
<b>X430a</b> ModemG0918.zip	M12x0A (0918)	X430aModemG0918.dwl
<b>X430a</b> G0919.zip	M21x0A+Q2200A (0919)	X430aG0919.dwl
<b>X430a</b> ModemG0919.zip	M12x0A (0919)	X430aModemG0919.dwl
<b>X430a</b> G0918.2c2.zip	M21x3A + Q23xxA (0918)	X430aG0918.2c2.dwl
<b>X430a</b> ModemG0918.2c2.zip	M1303A (0918)	X430aModemG0918.2c2.dwl
<b>X430a</b> G0919.2c2.zip	M21x3A + Q23xxA (0919)	X430aG0919.2c2.dwl
<b>X430a</b> G0918.3a.zip	P31xx (0918)	X430aG0918.3a.dwl
<b>X430a</b> G0919.3a.zip	P31xx (0919)	X430aG0919.3a.dwl
<b>X430d</b> G0918.zip	M21x0A+Q2200A (0918)	X430dG0918.dwl
<b>X430d</b> ModemG0918.zip	M12xA (0918)	X430dModemG0918.dwl
<b>X430d</b> G0919.zip	M21x0A+Q2200A (0919)	X430dG0919.dwl
<b>X431</b> G0918.3a.zip	P31xx (0918)	X431dG0918.3a.dwl
<b>X431</b> G0919.3a.zip	P31xx (0919)	X431dG0919.3a.dwl
<b>X431</b> G0918.2c2.zip	M21x3A + Q23xxA (0918)	X431dG0918.2c2.dwl
<b>X431</b> ModemG0918.2c2.zip	M1303A (0918)	X431dModemG0918.2c2.dwl
<b>X431</b> G0919.2c2.zip	Q23xxA (0919)	X431dG0919.2c2.dwl
<b>X430c</b> G0918.2c2.zip	M21x3A + Q23xxA (0918)	X430cG0918.2c2.dwl
<b>X430c</b> ModemG0918.2c2.zip	M1303A (0918)	X430cModemG0918.2c2.dwl
<b>X430c</b> G0919.2c2.zip	M21x3A + Q23xxA (0919)	X430cG0919.2c2.dwl
<b>X430c</b> G0918.3a.zip	P31xx (0918)	X430cG0918.3a.dwl
<b>X430c</b> G0919.3a.zip	P31xx (0919)	X430cG0919.3a.dwl
<b>X430d</b> G0918.zip	M21x0A+Q2200A (0918)	X430dG0918.dwl
<b>X430d</b> ModemG0918.zip	M12x0A (0918)	X430dModemG0918.dwl
<b>X430d</b> ModemG0919.zip	M12x0A (0919)	X430dModemG0919.dwl
<b>X430d</b> G0919.zip	M21x0A+Q2200A (0919)	X430dG0919.dwl



<b>X430g</b> G0918.zip	M21x0A+Q2200A (0918)	X430gG0918.dwl
<b>X430g</b> ModemG0918.zip	M12x0A (0918)	X430gModemG0918.dwl
<b>X430g</b> G0919.zip	M21x0A+Q2200A (0919)	X430gG0919.dwl
<b>X430g</b> ModemG0919.zip	M12x0A (0919)	X430gModemG0919.dwl
<b>X430g</b> G0918.2c2.zip	M21x3A + Q23xxA (0918)	X430gG0918.2c2.dwl
<b>X430g</b> ModemG0918.2c2.zip	M1303A (0918)	X430gModemG0918.2c2.dwl
<b>X430g</b> G0919.2c2.zip	M21x3A + Q23xxA (0919)	X430gG0919.2c2.dwl
<b>X430g</b> G0918.3a.zip	P31xx (0918)	X430gG0918.3a.dwl
<b>X430g</b> G0919.3a.zip	P31xx (0919)	X430gG0919.3a.dwl
<b>X432</b> G0918.3a.zip	P31xx (0918)	X432G0918.3a.dwl
<b>X432</b> G0919.3a.zip	P31xx (0919)	X432G0919.3a.dwl
<b>X432</b> G0918.2c2.zip	M21x3A + Q23xxA (0918)	X432G0918.2c2.dwl
<b>X432</b> G0919.2c2.zip	M21x3A + Q23xxA (0919)	X432G0919.2c2.dwl
<b>X432</b> ModemG0918.2c2.zip	M1303A (0918)	X432ModemG0918.2c2.dwl
<b>X432</b> G0918.2d.zip	Q2403 (0918)	X432G0918.2d.dwl
<b>X433</b> G0918.3a.zip	P31xx (0918)	X433G0918.3a.dwl
<b>X433</b> G0919.3a.zip	P31xx (0919)	X433G0919.3a.dwl
<b>X433</b> G0918.2c2.zip	M21x3A + Q23xxA (0918)	X433G0918.2c2.dwl
<b>X433</b> G0919.2c2.zip	M21x3A + Q23xxA (0919)	X433G0919.2c2.dwl
<b>X433</b> ModemG0918.2c2.zip	M1303A (0918)	X433ModemG0918.2c2.dwl
<b>X433</b> G0918.2d.zip	Q2403 (0918)	X433G0918.2d.dwl
<b>X433</b> G0918.3a.zip	P31xx (0918)	X433G0918.3a.dwl
<b>X433</b> G0919.3a.zip	P31xx (0919)	X433G0919.3a.dwl
<b>X534</b> G0918.3a.zip	P31xx (0918)	X534G0918.3a.dwl
<b>X534</b> G0919.3a.zip	P31xx (0919)	X534G0919.3a.dwl
<b>X534</b> G0918.2c2.zip	M21x3A + Q23xxA (0918)	X534G0918.2c2.dwl
<b>X534</b> G0919.2c2.zip	M21x3A + Q23xxA (0919)	X534G0919.2c2.dwl
<b>X534</b> ModemG0918.2c2.zip	M1303A (0918)	X534ModemG0918.2c2.dwl
<b>X534</b> G0918.2d.zip	Q2403 (0918)	X534G0918.2d.dwl
<b>X534</b> G0918.3ad.zip	P32xx (0918)	X534G0918.3ad.dwl
<b>X534a</b> G0918.3a.zip	P31xx (0918)	X534aG0918.3a.dwl
<b>X534a</b> G0919.3a.zip	P31xx (0919)	X534a G0919.3a.dwl
<b>X534a</b> G0918.2c2.zip	M21x3A + Q23xxA (0918)	X534a G0918.2c2.dwl
<b>X534a</b> G0919.2c2.zip	M21x3A + Q23xxA (0919)	X534a G0919.2c2.dwl
<b>X534a</b> ModemG0918.2c2.zip	M1303A (0918)	X534a ModemG0918.2c2.dwl
<b>X534a</b> G0918.2d.zip	Q2403 (0918)	X534a G0918.2d.dwl
<b>X534a</b> G0918.3ad.zip	P32xx (0918)	X534a G0918.3ad.dwl

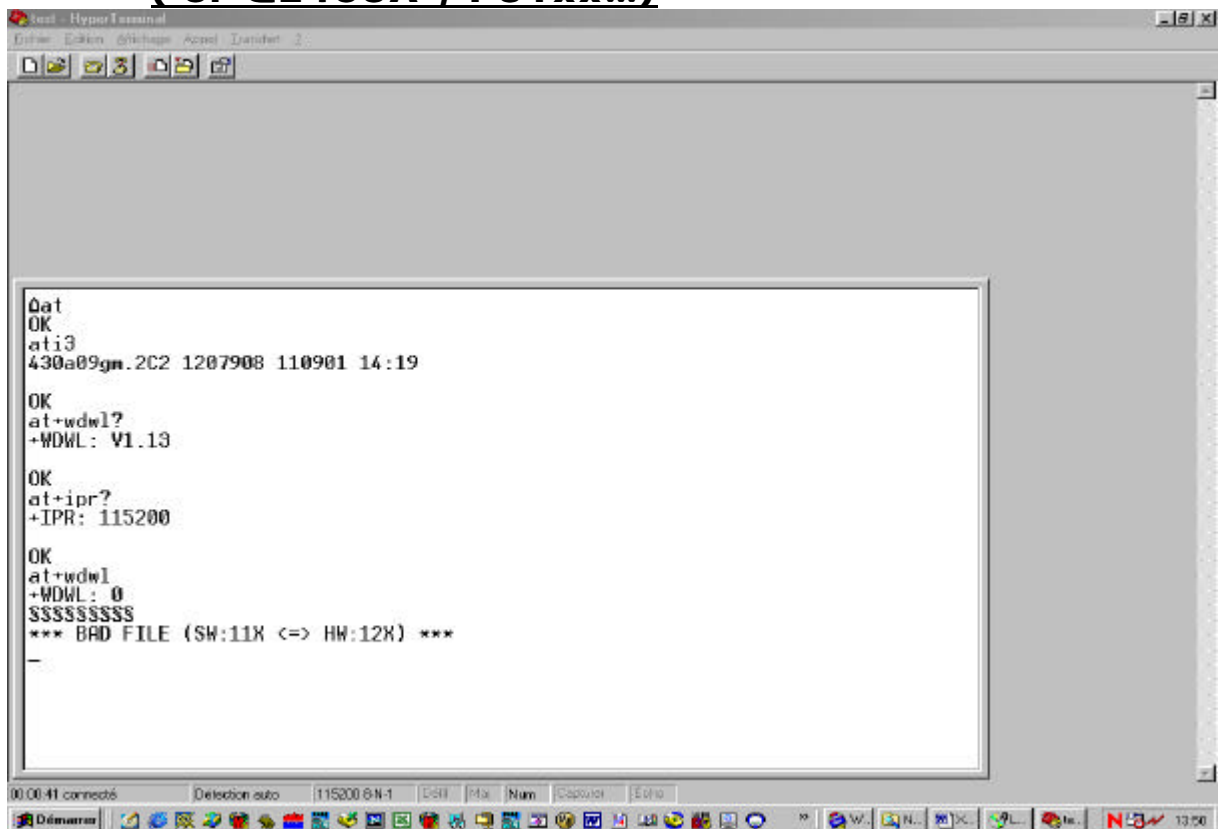
## IV/ Link between software and downloader versions

<b>SOFTWARE</b>	<b>DOWNLOADER</b>	<b>COMMENTS</b>
<b>400_m11b.54</b>	<b>V1.01</b>	<ul style="list-style-type: none"> <li>- Add version number Vxx.xx at the end of interrupt vector (fixed address)</li> <li>- Add AT command AT+WDWL?, returning the version number</li> <li>- Always check link between Boot pin and CTS, allowing to download through SPI even when the Binary code is correct</li> <li>- Change speed, while waiting 'a', each time a wrong character is received, until the right speed is found.</li> <li>- Always reset after download of a downloader, in or to avoid e2p parameter format conflicts.</li> </ul>
<b>401_m11b.55</b>	<b>V1.03</b>	<ul style="list-style-type: none"> <li>- Do not change speed when receiving \n</li> <li>- Add length test</li> <li>- Modify BOOT_CTS link detection</li> <li>- Add +WDWL before version number</li> </ul>
<b>402_m11b.56</b> <b>402am11b.56</b> <b>402bm11b.56</b>	<b>V1.04</b>	<ul style="list-style-type: none"> <li>- Correct E2P crashes of parameters</li> </ul>
<b>410_m11b.58</b> <b>410am11b.58</b>	<b>V1.08</b>	<ul style="list-style-type: none"> <li>- Change version</li> <li>- First version of object download</li> <li>- Clear only sectors that need to be cleared</li> <li>- Send +WDWL instead of +DWL before starting to download</li> </ul>
<b>411_m11b.59</b> <b>411_am11b.59</b> <b>421_09gm.2c</b> <b>421_09gm.2c2</b>	<b>V1.09</b>	<ul style="list-style-type: none"> <li>- Set all GPIO to input state : compatible V1.08</li> </ul>
<b>430a_09gm.2c</b> <b>430a_09gm.2c2</b> <b>430a_09gm.3a</b> <b>430c_09gm.2c2</b> <b>430c_09gm.3a</b> <b>431_09gm.2c2</b> <b>431_09gm.3a</b> <b>430d_09gm.2c</b>	<b>V1.13</b>	<ul style="list-style-type: none"> <li>- Compatible V1.09</li> <li>- XMODEM 1K handled</li> <li>- Hard/soft matching</li> <li>- Downloader mode selection by DSR pin &amp; Boot_pin bound</li> <li>- Handles 4Mbytes Flash Memory and 512 Kbytes RAM</li> </ul>
<b>430g_09gm.2c</b> <b>430g_09gm.2c2</b> <b>430g_09gm.3a</b>	<b>V1.14</b>	<ul style="list-style-type: none"> <li>- Compatible V1.13</li> <li>- After a AT+WDWL command you can stop download procedure by an AT command</li> </ul>
<b>534_09gm.2d</b> <b>534_09gm.2c2</b> <b>534_09gm.3a</b> <b>534_09gm.3ad</b> <b>534a_09gm.2d</b> <b>534a_09gm.2c2</b> <b>534a_09gm.3a</b> <b>534a_09gm.3ad</b>	<b>V1.16</b>	<ul style="list-style-type: none"> <li>- Compatible V1.14</li> </ul>

<b>432_09gm.2d</b> <b>432_09gm.2c2</b> <b>432_09gm.3a</b>  <b>433_09gm.2d</b> <b>433_09gm.2c2</b> <b>433_09gm.3a</b>	<p align="center"><b>V1.17</b></p>	<ul style="list-style-type: none"> <li>- Compatible V1.14</li> <li>- New release of E2P handler for 4Mbytes Flash</li> </ul>
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## V/ Compatibility between softwares

### 1- Download of Q2200A firmware into Q23xxA module: ( or Q2403A , P31xx...)



```

Qat
OK
ati3
430a09gm.2C2 1207908 110901 14:19

OK
at+wdwl?
+WDWL: V1.13

OK
at+ipr?
+IPR: 115200

OK
at+wdwl
+WDWL: 0
$$$$$$$$
*** BAD FILE (SW:11X <=> HW:12X) ***
  
```

As the window shows, it is impossible to download a "Q2200A software" into a 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...**