

## XMODEM DOWNLOAD

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Date : 24/10/ 2001

Reference / Référence : WM CUS UGD 002

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001	03/05/2001	First issue	Yannick RENAULT
002	24/07/2001	Modifications for 421_09gm.2c	Yannick RENAULT
003	24/10/2001	Modifications for 430a_09gm.2c	Yannick RENAULT

	Name / Nom	Function / Fonction	Date/ Date	Signature/ Signature
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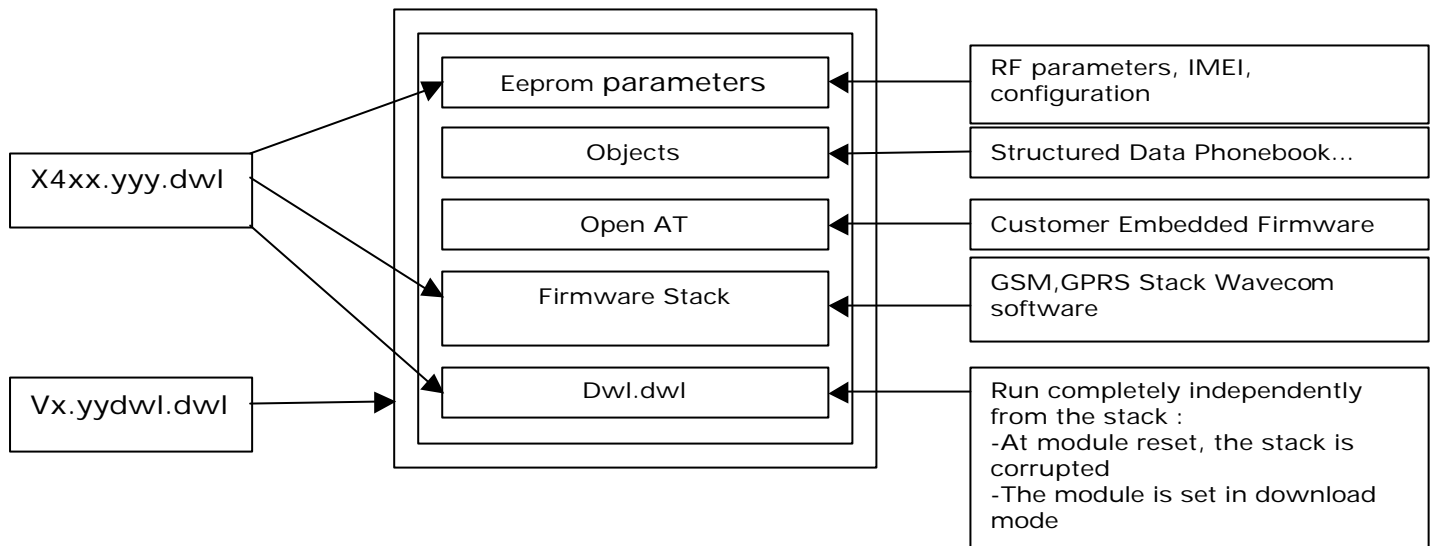
### FLASH MEMORY STRUCTURE

### FIRMWARE                      DOWNLOAD                      XMODEM INTERFACE

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### ANNEXE: Link between software & downloader version

## 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.

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

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

## Firmware download: Xmodem interface

### I/ XModem download interface

#### I.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 **flow control is obligatory (RTS and CTS signals)**.

The XModem 1K-CHKS is supported with V1.12 downloader version.

#### I.2/ Download procedure and V24 recommendation

##### I.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

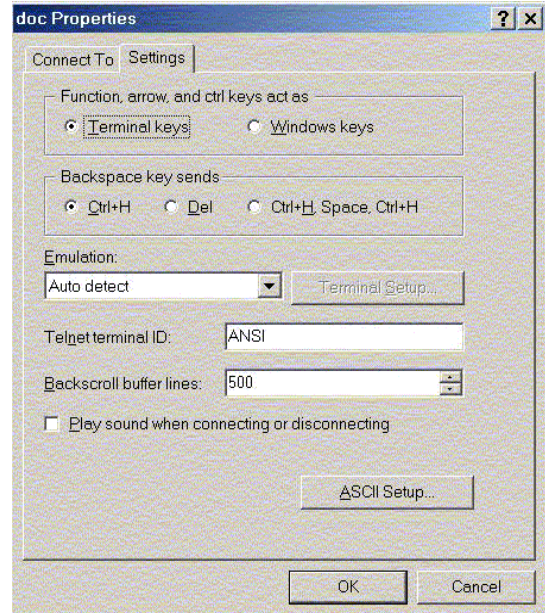
⇒ It is also strongly recommended to use the following signal:

- RTS : Request To send
- CTS : Clear To Send

⇒ the other RS232 signals are optional.

##### I.2.2/ Terminal configuration

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



### I.2.3/ Global behaviour

Through 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 10 seconds.

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.

## II/ Download procedure

### II.1/ Introduction

For a software version you've got two files.

For example, if you want to upgrade a WMOI3A-G0919 with 411-m11b.59, you have at your disposal a zip file that contains two dwl files:

- **X411.0919.zip**: which contains:
  - **X411.0919.dwl** : which is the new **firmware** to be downloaded
  - **Vx.yydwl.dwl** : which is the downloader.

PS: dwl.dwl is 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

#### II.1.1/Dwl upgrade

- the **Vx.yydwl.dwl** is the **downloader** itself. Before upgrading the firmware, you'd better upgrade the downloader. So begin downloading the Vx.yydwl.dwl file, reboot the module and then send the Xyyyy.dwl file from your terminal.

#### II.1.2/Firmware upgrade

- the **X411.0919.dwl** contains the firmware.

### II.2/ How to download the dwl.dwl file

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

- ATi3 ( or AT+CGMR) gives the software version
- AT+WDWL? gives the downloader version
- => So with the list in annexe, it will be easy to know if the downloader must be upgraded or not.

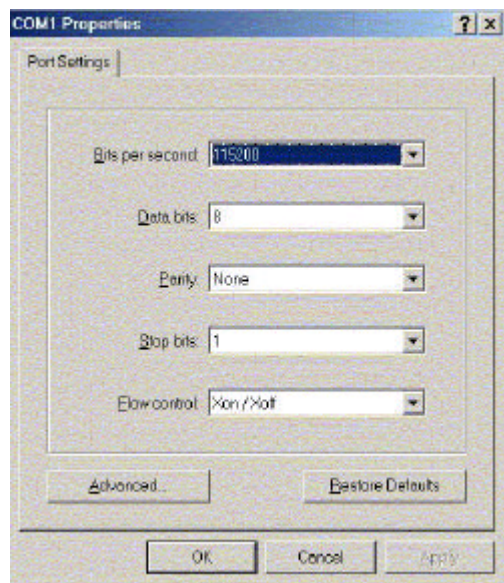


II.2.1/Configure the speed of the module at the highest baudrate (115200, by default the WISMO is configured at 9600bps):

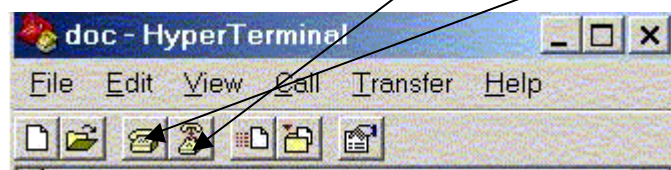
**AT+IPR=115200**  
**OK**

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

Example with Hyperterminal from Windows

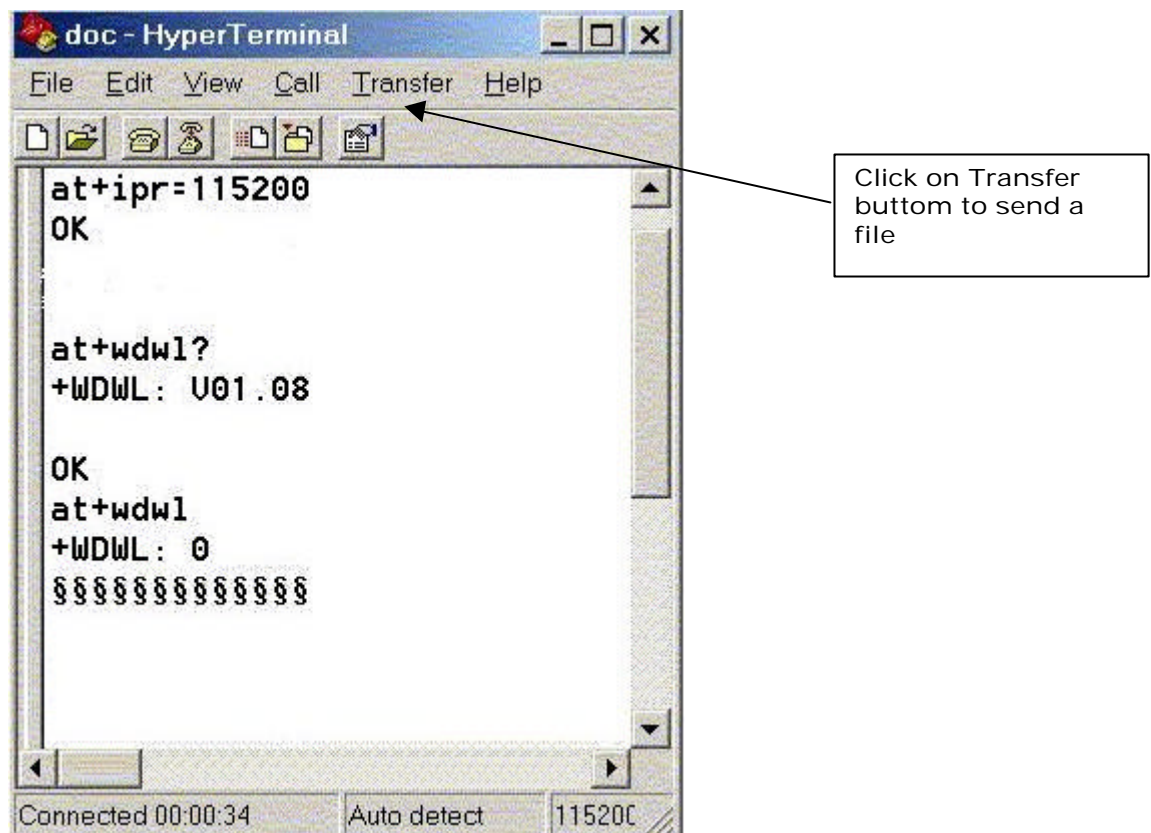


After clicking on OK you must disconnect and reconnect the communication with the HyperTerminal.

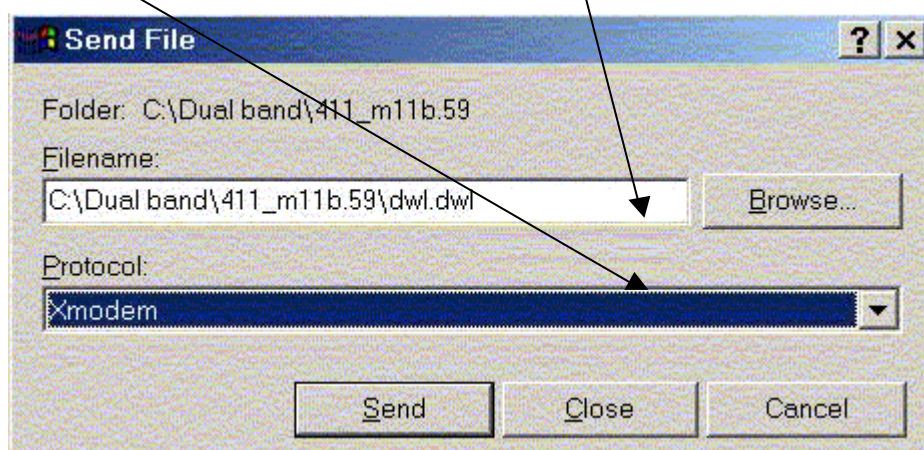




### II.2.3/Transmission of the dwl.dwl file



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\dlw.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**

## II.3/ How to download the X4xx.yyy.dwl file.

### II.3.1/Process

This file contains the Firmware.

The procedure to download this file is exactly the same as for " the dlw.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+CGMR**
- **Reset the WISMO module : AT+CFUN=1**

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

FILES:	PRODUCTS:	CONTENT:
X402b.zip	wmoi3a-G0918 + wismo2c-G0918	X402b.dwl
X402bModem.zip	wmod2b-G0918	X402bModem.dwl
X402b.0919.zip	wmoi3a-G0919 + wismo2c-G0919	X402b.0919.dwl
X410a.zip	wmoi3a-G0918 + wimo2c-G0918	X410a.dwl
X410aModem.zip	wmod2b-G0918	X410aModem.dwl
X410a.0919.zip	wmoi3a-G0919 + wismo2c-G0919	X410a.0919.dwl
X411.zip	wmoi3a-G0918 + wimo2c-G0918	X411.dwl
X411Modem.zip	wmod2b-G0918	X411Modem.dwl
X411.0919.zip	wmoi3a-G0919 + wismo2c-G0919	X411.0919.dwl
X420.zip	wmoi3a-G0918 + wimo2c-G0918	X420.dwl
X420Modem.zip	wmod2b-G0918	X420Modem.dwl
X420.0919.zip	wmoi3a-G0919 + wismo2c-G0919	X420.0919.dwl
X421.zip	wmoi3a-G0918 + wimo2c-G0918	X421.dwl
X421Modem.zip	wmod2b-G0918	X421Modem.dwl
X421.0919.zip	wmoi3a-G0919 + wismo2c-G0919	X421.0919.dwl
X430a.zip	wmoi3a-G0918 + wimo2c-G0918	X430a.dwl
X430aModem.zip	wmod2b-G0918	X430aModem.dwl
X430a.0919.zip	wmoi3a-G0919 + wismo2c-G0919	X430a.0919.dwl

## ANNEXE: Link between software & downloader version

Software	Downloader	Commentaries
<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>V1.09</b>	<ul style="list-style-type: none"> <li>- Set all GPIO to input state : compatible V1.08</li> </ul>
<b>420_09gm.2c</b> <b>421_09gm.2c</b>	<b>V1.09</b>	<ul style="list-style-type: none"> <li>- Compatible V1.08</li> </ul>
<b>430_09gm.2c</b> <b>430a_09gm.2c</b>	<b>V1.12</b>	<ul style="list-style-type: none"> <li>- Protocol 1K XModem supported: compatible V1.09</li> </ul>