PRELIMINARY CUSTOMER RELEASE NOTES

Open AT® Firmware 7.1a

Reference:
WM_PGM_OASIS_CRN_002

Revision: **001**

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Document Information

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This document has been commissioned by Wavecom for Open AT® Software Suite 2.02.

Contents

1 Introduction

1.1 Scope of this document

The scope of this document is the Open AT® Firmware 7.1a release description for Wireless CPU® series **WMP100, Q2686, Q2687 and Fastrack Supreme.**

1.2 Audience for this document

This Release note may be distributed to all direct and indirect customers and will be posted on the corporate web site under the Support\Private area.

1.3 Release Feature List

1.3.1 Features list

Features list
Refer to OS 6.02 and FW 7.1a
[Open AT® OS]: Multitasked Event based Pre-Emptive RTOS
[Open AT® OS]:Improved Guarantied Response Time to Interruptions
[Open AT® OS]: Direct Access to hardware ressources (HW Timer, DSP, SPI, ADC, External IT Pins)
[Open AT® OS]: Open AT® Application Dedicated Watchdog
[Open AT® Audio]: Audio Sniff Mode
[Open AT® Audio]: Audio Player Mode
[Open AT® Audio]: Audio Recorder Mode
[Open AT® Audio]: Built-In DTMF Encoder / Decoder
[Open AT® OS]: BSP based Time Critical Software Architecture
[GSM]: Listen mode
[GSM]: Multiple PDP contexts
[Intelligent Device Services]: IDS ready Open AT® Software Suite.
[GSM]: Incoming SMS indication through V24 break signal
[GSM]: Enhanced cell indication reporting

For more details on these features please refer to chapter 6.

1.4 Dedicated versions for Specific Markets

1.4.1 New product introduction

As per specific market requirements, additional "countries dedicated" version of Wireless CPU® has been launched

1.4.2 Dedicated version

As these products are tailored for the dedicated countries, they are locked not to work on any other network but the selected country's available carriers. Obviously Wavecom will perform maintenance on these products in the same way as it is done on other products.

1.4.3 Storage & Marking

For countries dedicated versions, in the Product Code file, the SW Configuration of this version includes the mention "CCx", x depending on the country.
This SW configuration will only appear on the pizza box. A special attention is required to manage the storage, as this SW configuration is the only way to distinguish the product.

1.4.4 Availability

SW versions available on the Wavecom web site are only for not dedicated products.
In order to obtain Software version for updating the products dedicated to specific countries, contact your Wavecom technical support.

1.4.5 Warning

Standard Open AT® Firmware 7.1a software not tuned for dedicated countries must not be used on Wireless CPU's® that are dedicated to a specific country, as it is not compatible. In this case, the message BAD SOFTWARE is displayed (refer to the AT Command Interface Guide for more information on this message).
This can be undone by re-downloading a compatible version.

1.4.6 Software Behavior

The use of Wireless CPU® for not allowed countries is forbidden. In this case, the message "**SIM NOT ALLOWED FOR THIS MODULE**" is sent, the Wireless CPU® reset and AT SIM commands are then no more possible.
The Wireless CPU® upgrade by using a specific country lock version is not reversible. Effectively, all Wireless CPUs upgrade performed by using such a version won't be able to use previous software version. In this case, a message "**BAD SOFTWARE**" will be displayed.

2 RELATED DOCUMENTS

[1]	**AT Commands Interface Guide for FW 7.1a release**	WM_DEV_OAT_UGD_059 – Rev 009
[2]	**DWLWin Download Application**	WM_DEV_TOO_UGD_010 – Rev 002
[3]	**Product Technical Specification for WMP100**	WM_DEV_WUP_PTS_005 - Rev 004
[4]	**Customer Design Guidelines for WMP100**	WM_DEV_WUP_PTS_005 - Rev 004
[5]	**Product Technical Specification for Q2687**	WA_ENG_Q2687_PTS_001 – Rev 003
[6]	**Customer Design Guidelines for Q2687**	WA_DEV_Q2687_PTS_007 - Rev 002
[7]	**Product Technical Specification for Q2686**	WM_PRJ_Q2686_PTS_001 – Rev 007
[8]	**Customer Design Guidelines for Q2686**	WM_PRJ_Q2686_PTS_003 - Rev 004
[9]	**ADL User Guide for Open AT® OS v6.02**	WM_DEV_OAT_UGD_060 – Rev 009
[10]	**Open AT FW v6.5 Customer Release Note**	WM_PGM_WUP_CRN_001 – Rev 001
[11]	**Open AT Software Suite v1.0 Official Release Note**	WM_DEV_OAT_DVD_312 – Rev 001

3 ABBREVIATIONS AND DEFINITIONS

Abbreviation/Acronym	Description
BT	Bluetooth
SDK	Software Development Kit
UGD	User Guide
WM	Wavecom

4 Compatibilities

4.1 Wireless CPU® Compatibility

Open AT® Firmware Version	Wireless CPU® compatibility list
7.1a	WMP 100
7.1a	Q2686
7.1a	Q2687
7.1a	Fastrack Supreme

4.2 Software Compatibilities

Open AT® Firmware Version	Open AT® OS version	Open AT® plug-in
7.1a	6.02	WIP 4.00
7.1a	6.02	C-GPS 1.1

5 Software release description

5.1 Release identification

	Wireless CPU – WMP100 / Q26xx / FSU - Series	
Date of generation	041808 13:46	
Software identification	R71a_01gg.WMP100	32/8 Mbits
	R71a_01gg.WMP100	32/16 Mbits
	R71a_01gg.WMP100	64/16 Mbits
	R71a_01gg.Q2686	32/16 Mbits
	R71a_01gg.Q2687	32/16 Mbits
	R71a_01gg.FSU001	32/16 Mbits
	R71a_01gg.FSU002	32/16 Mbits
IMEISV	WMP100	9
	Q2686	0x18
	Q2687	0x18
	FSU	0x18
Checksum	0x65 1F 47 B9	
Binary Size	2076692	
Flash type	32/8 Mbits / 32/16 Mbits / 64/16 Mbits	
Open AT® version	V6.02	
Xmodem downloader	V08b03	
New Firmware based on release	6.5b	

5.2 Released Files & Download Processes

This section describes the process to upgrade your current Wireless CPU® with Open AT® Firmware 7.1a.

5.2.1 Download processes

Download processes are possible through DWLwin tool or through X-modem. But, download process through DWLwin is recommended to upgrade Wireless CPU® with Open AT® Firmware 7.1a because it is easier.

5.2.1.1 Download procedure with DWLwin

The Wireless CPU® can be upgraded thanks to the DWLWin v4.1.6.6 tool or further according to the following procedure. The dongle usage is not required to execute this procedure if a software is already loaded into the flash, but the dongle usage is mandatory for a blank flash driven by Wireless Microprocessor®.

1) Set DWLwin parameters:
   a. Select the right WPK package to download:
      i. R71a01-cus-wmp-01.wpk for WMP family

ii. R71a01-cus-q26-01.wpk for Q26/Fastrack family

b. Select erase "Objects"
c. Select erase "Open application"
d. For "Customization files":
   i. Do NOT select erase "Customization files" if you use a Wireless Microprocessor® with a blank flash (dongle required)
   ii. Otherwise, select erase "Customization files" (dongle not required)

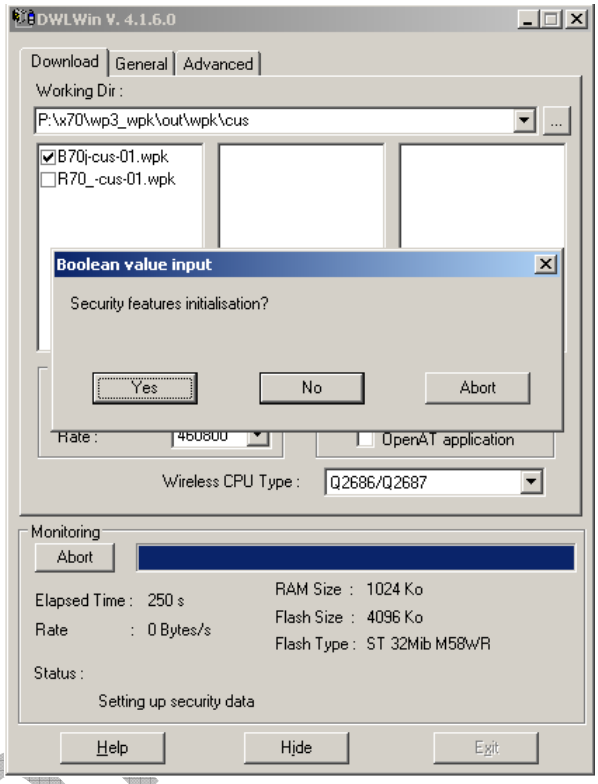
2) Start the download
3) To the question : "Please select the Wireless CPU type ?", select the right Wireless CPU® (if necessary, use ATI3 command to find the right one)
4) In case of Wireless Microprocessor® with dongle usage, you will have the following question : "Do you want to active security features ?"
   a. Answer "Yes" if your want to active the security features or change their parameters. Refer to "Activation of security features" chapter
   b. Answer "No" neither
5) To the question : "Do you want to resize A&D DOTA volume ?"
   a. Answer "Yes" if you expect to use A&D zone. Refer to "A&D zone initialization" chapter
   b. Answer "No" neither
6) To the question : "Do you want to customize the flash object area (ADL flash API) ?", answer "No"
7) To the question : "Do you want to download the firmware ?", answer "Yes"
8) In case of Wireless Microprocessor® without IMEI and with dongle usage, you will have the following question: "Do you want to program the IMEI ?"
   a. Answer "Yes" if you want to program a new IMEI. Refer to "IMEI programming" chapter
   b. Answer "No" neither
9) In case of Wireless Microprocessor® with dongle usage, you will have the following question: "Do you want to program the firmware's feature ?", answer "No"
10) The download is processed

This procedure is resetting some configuration parameters (like GSM bands for example) which shall be manually reset thanks to classical AT or Open AT® APIs.
The package won't download the firmware if it's already in flash.

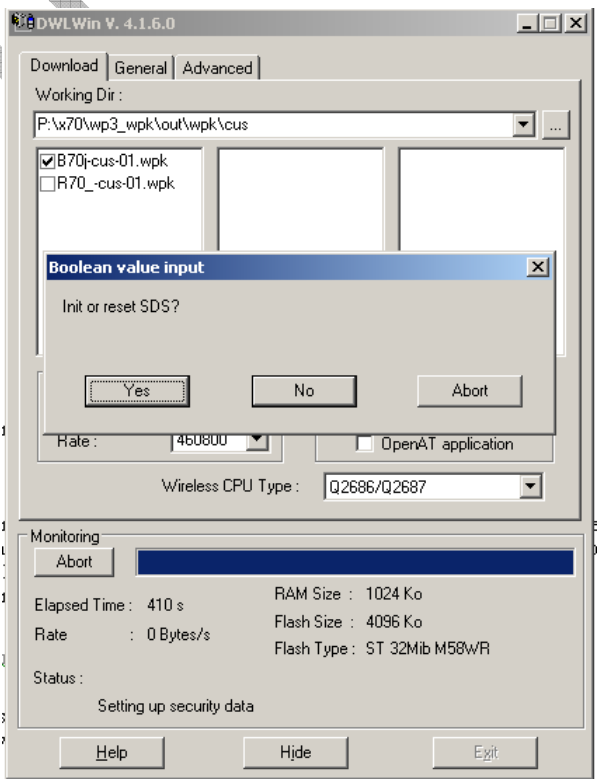
Open AT® application built with a previous version than Open AT® Software Suite 2.01 will not work with the firmware R71a.

Activation of security features

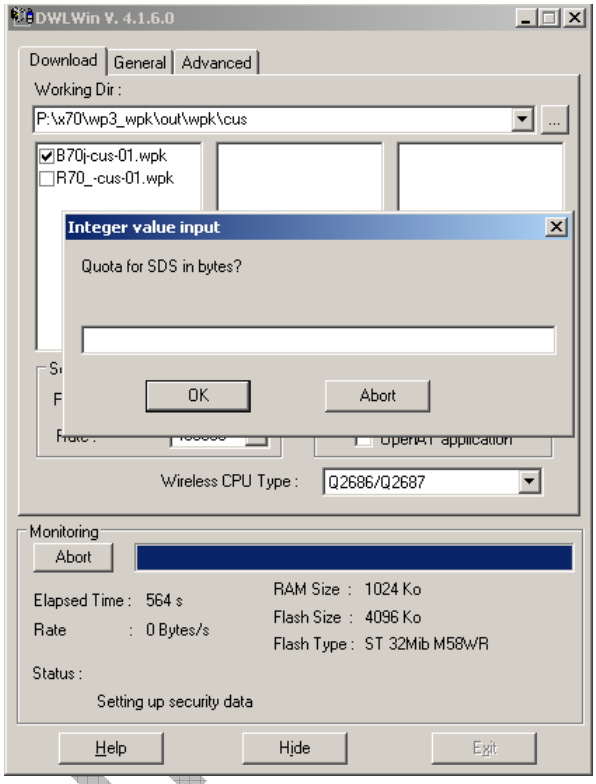
The package will ask for the Security feature initialization.
If you do not want to initialize this feature, to click on "No, allows you to bypass all action related to Security Features



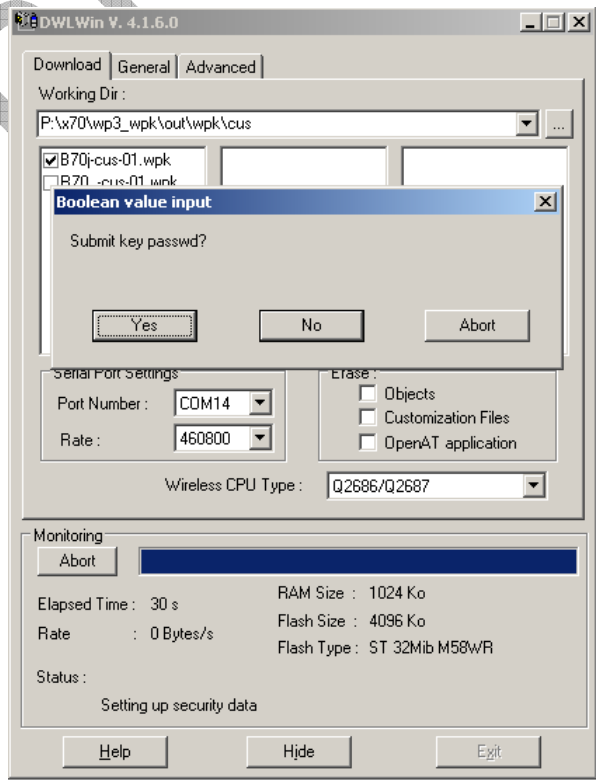
If you select "Yes" for Security features initialisation, then the package will ask for Init / reset SDS.
If you do not want to init or reset SDS (Security Data Storage), choice "No", in the other case click on "Yes" and SDS will be reset



If you have chosen to reset SDS, then the package will ask for "Quota for SDS in bytes" you want to reserved.

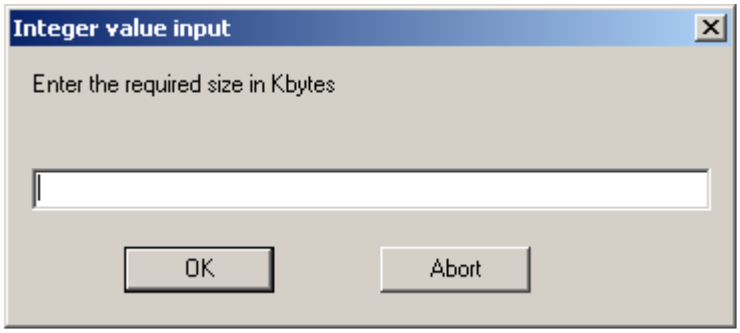


Then the package will ask for Submit a key password (a password mechanism can be setup to prevent illegal modification of the public key).
If you select "Yes", then the package will ask for Change Password or enter a new password.



A&D zone initialization

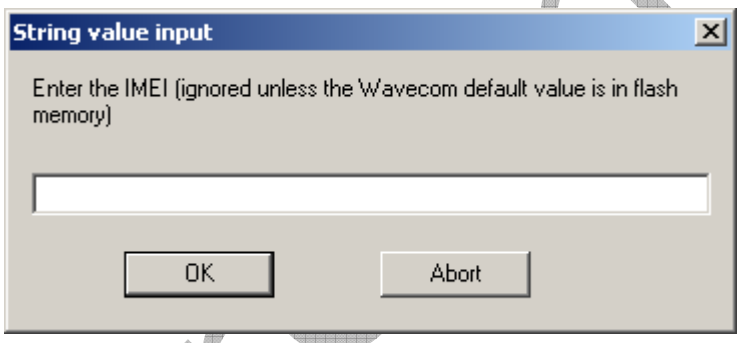
Then the package will ask for the required size with the same format as the <A&Dsize> parameter in AT+WOPEN=6 command. See [1] for more information.



Modifying the memory configuration using the AT+WOPEN=6 command can be a quite long operation.
This step can be performed faster through the automation interface (OLE/COM interface): set an integer extra option named "DOTA_VOLUME_SIZE" whose value should be the requested size in Kbytes. See [2] fro more information.

IMEI programming

The package will ask for entering the IMEI (15 digits)



It can only overwrite once the default IMEI value. A try of new overwrite won't generate an error message, but it will not work.

5.2.1.2 Download procedure through X-modem

This procedure is not applicable for Wireless Microprocessor® with blank flash. The objects and DOTA data are not erased. And the size of the DOTA area and the size of the object areas remain the same.

1. Upgrade the bootloader: Type "AT+WDWL", wait for the NACK characters, and send the porting downloader named dwl_port.dwl by the X-modem protocol.
2. Type "AT+CFUN=1" in order to take into account the new downloader.
3. Upgrade the Open AT® Firmware: Type "AT+WDWL", wait for the NACK characters, and send the specific dwl upgrade file named upgrade_xxx.dwl

(choose the right file according to the Wireless CPU® and the previous Open AT® Firmware used) by the xmodem protocol. Then send the new application if needed.

4. Type "AT+CFUN=1". The customer application has to be restarted (AT+WOPEN=1) if needed.

Open AT® application built with a previous version than Open AT® Software Suite 2.01 will not work with the firmware R71a.

5.2.2 Downgrade processes

The downgrade procedures are not available.

5.3 Software Tools Version

This section gives the last Wavecom tools versions.

S/W Tools Name	Version
Target Monitoring Tool (TMT)	2.9.7
TMT Workspace	B72g01gg.p521x_64k.wks
Dwlwin downloader	Dwlwin 4.1.6.6

6 Feature description

This section lists the features of Open AT® Software Suite 2.02.

6.1 Same feature set as FW 6.5b OS 5.00

Refer to related documents [10] and [11].

6.2 [Open AT® OS]: Multitasked Event based Pre-Emptive RTOS.

On Open AT® Software Suite 2.02, Wavecom Open AT® OS is allowing the embedded software developer to define up to 30 tasks in the Open AT® application.
The developer can define several levels of priorities for its tasks, some of them being of higher priority than non-critical GSM tasks.
The synchronization between tasks can be made through the use of semaphores.
The communication between tasks can be made through tasks, mailboxes, messages queues and shared memory areas.

6.3 [Open AT® OS]: Direct Access to hardware

Open AT® OS developer has access to the lower layers of the following hardware resources provided by Wavecom Wireless CPUs:

- HW Timer (TCU – Timer Control Unit)
- DSP
- SPI
- ADC
- External Interruption Pins.

6.4 [Open AT® OS]:Improved Guarantied Response Time to Interruptions

The guarantied response time to interruptions (External, DSP, SPI, ADC, HW timer) whatever the GSM status the Wireless CPU® is in has been improved on Open AT® Software Suite 2.02 compared to Open AT® Software Suite 1.0.

6.5 [Open AT® OS]: Open AT® application dedicated watchdog

The Open AT® Application correct behavior is monitored by the Wireless CPU watchdog independently from the FW. This will allow the detection of Open AT® application that fell into a "dead-end lock" state while the Firmware is properly running.
Moreover the Open AT® application watchdog duration will be tunable by the Open AT® Application to allow it to perform "long" operations (such as signature calculation)

without having to cut these operations in pieces to avoid reset due to above watchdog duration processing.

6.6 [Open AT® Audio]: Audio Sniff Mode.

This feature will allow developer to listen to the audio packets exchanged between the GSM DSP and the PCM interface.

6.7 [Open AT® Audio]: Audio Player Mode.

This feature allows developers to play sounds on the GSM voice channel or on the loud speaker output of the PCM Interface.

6.8 [Open AT® Audio]: Audio Recorder Mode.

This feature allows developers to record audio packets coming either from the GSM Voice Channel or the microphone input of the PCM interface.

6.9 [Open AT® Audio]: Built-In DTMF Encoder / Decoder.

Wavecom Wireless CPU® has built-in DTMF decoding and encoding capabilities what ever the GSM state the Wireless CPU® is in. This DTMF encoding / decoding can be done either on the audio in / outs of the PCM interface or the audio in / outs of the GSM Interface.

6.10 [Open AT® OS]: BSP based time critical software architecture.

The Open AT Software Suite 2.02 is built on a Board Support Package based Software architecture. This means all software elements have been abstracted from the Hardware on top of which it is executed. This allows Wavecom to provide the exact same software architecture, APIs and high level features set on top of any Wireless CPU®. The only impacted features when changing from one Wireless CPUs to another are the ones that are intrinsically depending on the hardware resources (number of IOs, IT Pins, UARTs…).

6.11 [GSM]: Listen mode

Wavecom Wireless CPU® has the ability to listen to the GSM network without being registered on it. This mode does not allow to receive incoming events from the network (such as incoming call or SMS receiving), but as the network is permanently scanned, this mode allows to initiate very quickly a outgoing call on demand.

6.12 [GSM]: Multiple PDP contexts

This feature allow to access more than one network service (APN) at the same time with varying quality of services or/and to run concurrently several IP stacks embedded into the Open AT® application or into an external processor.

6.13[Intelligent Device Services]: IDS ready Open AT® Software Suite.

The Open AT® Software Suite 2.02 is IDS ready. This means it natively supports Wavecom Intelligent Device Service offering.

6.14[GSM]: incoming SMS indication through V24 break signal

Customer application can be warned that the Wireless CPU® has received an incoming SMS thanks to a V24 break indication.

6.15 [GSM]: Enhanced cell indication reporting

Several supplementary GSM layer 3 indications are available to develop an application able to monitor GSM radio environment. This reporting can be used to allow GSM operators to optimize their network.
Example of new parameters reported in GSM layer 3 indications (Please, refer to 3GPP TS 05.05 and 04.18 for a detailed description):

- Cell reselection criteria (C1, C2, C31, C32) for each synchronized cells
- Maximum TX power level authorized by the network (MS-TXPWR-MAX-CCH)

7 Additional Information

The following table details links between the wording used in the Open AT® Software Suite 2.02 documentation and the wording used in Product Technical Specifications [3], [5] and [7].

Software documentation	PTS documentations		
Open AT® Software Suite	WMP100 [3]	Q2686 [7]	Q2687 [5]
ADC #0	+VBATT	+VBATT	+VBATT
ADC #1	BATT_TEMP	BATT_TEMP	BATT_TEMP
ADC #2	AUX-ADC0	AUX-ADC	AUX-ADC
ADC #3	AUX-ADC1		temperature sensor
DAC #0	AUX-DAC		AUX-DAC
I2C #1	SCL	SCL	SCL
I2C #1	SDA	SDA	SDA

8 Restrictions

This section lists the restrictions that must be taken into account regarding the Open AT® Firmware 7.1.

Id	Description (What / When)	Impacted Domain	Impacted Sub Domain
ANO47185	When an alarm is set by AT+CALA to a date different than the current date, the alarm doesn't occur.	AT	OTHER
CUS41988	When CMUX protocol is launched on one port and auto answer is set using ATS0 command on a logical port, during an incoming call, the Wireless CPU® resets. The Wireless CPU® should not reset and the incoming call should be automatically accepted.	DEVICE	CMUX
ANO46615	If an Open AT® application compiled with OASiS 2.00 is downloaded using DOTA, the Open AT® firmware in the Wireless CPU® gets corrupted. The firmware should not get corrupted and the "AT+WOPEN=7" should return 4 as the OatState value.	DWL	OTHER
N/A	The IDS feature is released as alpha version. For now, a known restriction is that IDS doesn't work with a delta patch having size greater than 65kB.	N/A	N/A
ANO40743	A Wireless CPU® reset occurs in the following scenarios: - When "ME" extended phonebook entry is read using AT+CPBN or AT+WPGR command with selected phonebook as "MT". - When "ME" extended phonebook entry is read using AT+WPGR command with selected phonebook as "SM".	AT	PHONEBOOK
ANO41985	When a setup call proactive command is performed and the call is released before the connection, no terminal reponse is sent to the SIM.	AT	STK

Id	Description (What / When)	Impacted Domain	Impacted Sub Domain
ANO47032	While using the Ethernet sample and after getting a local IP address, the NET task (WIP) is blocked by a semaphore after some time. Because of this, it is not possible to contact the IP address of the Wireless CPU® any more.	DEVICE	OTHER
ANO46749	When a large frame is sent between UART and HAPC, the frames are not received properly.	DEVICE	OTHER
ANO41906	Some dwl files may not be downloaded by the xmodem downloader with a bad checksum error. This happens only when the checksum offset is located on the end of the first sector and the beging of the second sector in the FLASH.	DWL	OTHER
ANO47288	Wireless CPU® does not switch to slow idle mode when FCM is switched to data mode and then DTR is set to OFF.	OTHER	OTHER
CUS47098	It is not possible to subscribe to FCM flow on the ADL_PORT_GSM_BASE port from the Open AT® application for more than one time.	DATA	OTHER
ANO47294	When the External SIM switch is de-activated, "+CME ERROR : 515" is received for the SIM related commands.	SIM	OTHER
ANO48668	it is no more possible to manage 2 devices (using CS2 and CS3) on the parallel bus.	OTHER	OTHER
ANO48576	AT+CLVL=? returns the range of the speaker 2 when the speaker 1 is selected and it returns the range of the speaker 1 when the speaker 2 is selected.	N/A	N/A
ANO47032	A task accessing to the SPI bus can freeze	DEVICE	IOB
CUS48422	Power loss recovery fails with ST 65nm parts : a power loss can make the WCPU® unusable.	OTHER	OTHER
ANO48042	Can't save a date with AT+CCLK command	AT	OTHER

Id	Description (What / When)	Impacted Domain	Impacted Sub Domain
ANO47698	When a WCPU® is produced, a RDMS volume is created. This volume is not formatted until the 1st update package using IDS services. This have an impact on the response to AT+WOPEN=? Command	FLASH	OTHER
ANO47487	Backtrace when discovering node ./Wavecom/Monitoring/Network/Ip_Addr/Value	Embedded RDMS	RDMS
ANO47486	Systematic backtraces at stratup after activating a few monitoring parameters	Embedded RDMS	RDMS
ANO47361	Backtrace after AT+WDSC?	AT	OTHER
ANO47354	Device crashed when restart a download interrupted by a reset	Embedded RDMS	RDMS
ANO47298	Update with "big patch" fails	Embedded RDMS	RDMS
ANO47293	Backtrace in fms_adFinalize	Embedded RDMS	RDMS
ANO47181	Subscription to Monitoring/Provisioning service resets the module	AT	OTHER
ANO47176	When the SIM is removed during download, it is not resumed when SIM card is re-inserted	Embedded RDMS	RDMS
ANO47170	When antenna is removing during download, more than 1 minutes, the download is not resumed	Embedded RDMS	RDMS
ANO47288	Wireless CPU does not switch to slow idle mode when FCM data is Open and DTR is OFF	DEVICE	OTHER
ANO47185	when an alarm is set by +CALA to a date different than the current date, the alarm doesn't occur	AT	OTHER
CUS47098	No possibility, to do 2 successive CSD calls with OpenAt application	DATA	OTHER
ANO46789	SIM returns a CME ERROR 10 when voltage = 1.8v	SIM	RESET
ANO46749	Large RPC frame are dropped ?	N/A	N/A

Id	Description (What / When)	Impacted Domain	Impacted Sub Domain
ANO47516	RESET when launching an WIP application by RTE using ECLIPSE	N/A	N/A
ANO45273	Unexpected behaviour of DirectRead/DirectWrite when using a odd address	OTHER	OTHER
ANO43849	"CME Error: 515"is received when "AT+CFUN=1" command is executed after the concatenated command is executed.	N/A	N/A
CUS41988	when +CMUX protocol is launched on one port and when the auto answer is set using ATS0 command on a logical port, during an incoming call, the Wireless CPU® makes a reset. The Wireless CPU® should not make a reset and the incoming call should be automatically accepted.	DEVICE	CMUX
ANO41985	When a setup call proactive command is performed and the call is released before the connection, no terminal reponse is sent to the SIM	AT	STK
ANO41906	Some dwl files may not be downloaded by the xmodem downloader (bad checksum)	DWL	OTHER
ANO40743	A reset occurs in the following scenarios: - When "ME" extended phonebook entry is read using AT+CPBN or AT+WPGR command with selected phonebook as "MT". - When "ME" extended phonebook entry is read using AT+WPGR command with selected phonebook as "SM".	AT	PHONEBOOK