ME310G1/ME910G1/ML865G1

LWM2M AT Commands Reference Guide

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Technical Documentation

Contents

1 Applicability Table

Table 1: Applicability Table - Products

Products
ME310G1-W1
ME310G1-WW
ME910G1-W1
ME910G1-WW
ME310G1-W2
ME310G1-W3
ML865G1-WW
ME910G1-W3

Table 2: Applicability Table - Software

Software
37.00.xx6/M0C.xx0005

2 Introduction

2.1 Scope

This document is aimed to provide a detailed specification and a comprehensive listing for reference for the entire AT command set.

2.2 Audience

Readers of this document should be familiar with Telit modules and their ease of controlling by means of AT Commands.

2.3 Contact Information, Support

For technical support and general questions, e-mail:

- TS-EMEA@telit.com
- TS-AMERICAS@telit.com
- TS-APAC@telit.com
- TS-SRD@telit.com
- TS-ONEEDGE@telit.com

Alternatively, use: https://www.telit.com/contact-us/

Product information and technical documents are accessible 24/7 on our website:
https://www.telit.com

2.4 Conventions

Note: Provide advice and suggestions that may be useful when integrating the module.

Danger: This information MUST be followed, or catastrophic equipment failure or personal injury may occur.

ESD Risk: Notifies the user to take proper grounding precautions before handling the product.

Warning: Alerts the user on important steps about the module integration.

Danger: This information MUST be followed or catastrophic equipment failure or personal injury may occur.

Warning: Alerts the user on important steps about the module integration. If these points are not followed, the module and end user equipment may fail or malfunction.

Note/Tip: This section provides all information related to the AT command involved. Each note can provide a different level of information: danger, caution/warning and tip/information.

Note/Tip: Provides other advices and suggestions.

Set: This section provides all information related to SET functionality of the AT command involved. If there is strictly and relevant SET information, it can be found at the end of the section.

Read: This section provides all information related to READ functionality of the AT command involved. If there is strictly and relevant READ information, it can be found at the end of the section.

Test: This section provides all information related to TEST functionality of the AT command involved. If there is strictly and relevant TEST information, these can be found at the end of the section.

▶▶	**Additional info:** This section provides any kind of additional and useful information related to the AT command section as well as command exceptions or special behavior cases
	Reference: This section provides useful references (standards or normative) related to the AT command involved.
</>	**Example:** This section provides useful examples related to the AT command involved.

All dates are in ISO 8601 format, that is YYYY-MM-DD.

2.5 Terms and conditions

Refer to https://www.telit.com/hardware-terms-conditions/.

2.6 Disclaimer

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3 Commands

The Telit family of wireless modules can be controlled via the serial interface using the standard AT commands. It complies with:

1. Hayes standard AT command set, to maintain the compatibility with existing SW programs.
2. 3GPP TS 27.007 specific AT command and GPRS specific commands.
3. 3GPP TS 27.005 specific AT commands for SMS (Short Message Service) and CBS (Cell Broadcast Service)

Moreover, the Telit family of wireless modules also supports Telit proprietary AT commands for special purposes.

The following is a description of how to use the AT commands with the Telit family of wireless modules.

> Note: The AT is an ATTENTION command and is used as a prefix to other parameters in a string. The AT command combined with other parameters can be set up in the communications package or typed in manually as a command line instruction combined with other parameters can be set up in the communications package or typed in manually as a command line instruction.

3.1 Definitions

The following syntactic definitions apply:

<CR> Carriage return character, is the command line and terminator character of the result code, whose value, in decimal ASCII between 0 and 255, is specified within the parameter S3. The default value is 13.

<LF> Linefeed character, is the character recognized as line feed character. Its value, in decimal ASCII between 0 and 255, is specified within parameter S4. The default value is 10. The line feed character is output after the carriage return character if detailed result codes are used (V1 option used) otherwise, if numeric format result codes are used (V0 option used) it will not appear in the result codes.

<...> Name enclosed in angle brackets is a syntactic element. They are not displayed on the command line.

[...] The optional sub parameter of a command or an optional part of the TA information response is enclosed in square brackets. The brackets themselves are not displayed on the command line. When the sub parameter is not given in AT commands that have a Read command, new value is equal to its previous value. In AT commands that do not store the values of any of their sub parameters, and therefore do not have a Read

command, which are called action type commands, an action should be performed according to the recommended default setting of the sub parameter.

3.2 AT Commands Syntax

The syntax rules followed by Telit implementation of either Hayes AT commands, GSM commands are very similar to those of standard basic and extended AT commands

There are two types of extended command:

- **Parameter type commands**. This type of commands may be "set" (to store a value or values for later use), "read" (to determine the current value or stored values), or "tested" (to determine ranges of values supported). Each of them has a test command (trailing =?) to provide information about the type of its sub parameters; they also have a Read command (trailing?) to check the current values of sub parameters.
- **Action type commands**. This type of command may be "executed" or "tested".
  - "executed" to invoke a function of the equipment, which generally involves more than the simple storage of a value for later use
  - "tested" to determine:
    - if sub parameters are associated with the action, the ranges of sub parameters values that are supported; if the command has no sub parameters, issuing the correspondent Test command (trailing =?) raises the result code "**ERROR**". Note: issuing the Read command (trailing?) causes the command to be executed.
    - whether the equipment implements the Action Command or not (in this case issuing the correspondent Test command - trailing =? - returns the **OK** result code), and, if sub parameters are associated with the action, the ranges of sub parameters values that are supported.

Action commands do not store the values of any of their possible sub parameters.

Moreover:

The response to the Test Command (trailing =?) may be modified in the future by Telit to allow for the description of new values/functionalities.

If all the sub parameters of a parameter type command **+CMD** are optional, issuing **AT+CMD=<CR>** causes the result code to be returned to **OK** and the previous values of the omitted sub parameters to be retained.

String Type Parameters

A string, either enclosed between quotes or not, is a valid string type parameter input. According to V25.ter space characters are ignored on the command line and may be used freely for formatting purposes, unless they are embedded in numeric or quoted string constants; therefore a string containing a space character must be enclosed between quotes to be considered a valid string type parameter (e.g. typing **AT+COPS=1,0,"A1"** is the

same as typing **AT+COPS=1,0,A1**; typing **AT+COPS=1,0,"A BB"** is different from typing **AT+COPS=1,0,A BB**).

A string is always case-sensitive.

A small set of commands always requires to write the input string parameters in quotes: this is explicitly reported in the specific descriptions.

Command Lines

A command line is made up of three elements: the **prefix**, the **body** and the **termination character**.

The **command line prefix** consists of the characters "**AT**" or "**at**", or, to repeat the execution of the previous command line, the characters "**A/**" or "**a/**" or **AT#/** or **at#/**.

The **termination character** may be selected by a user option (parameter S3), the default being **<CR>**.

The basic structures of the command line are:

- **ATCMD1<CR>** where **AT** is the command line prefix, **CMD1** is the body of a **basic command** (note: the name of the command never begins with the character "**+**") and **<CR>** is the command line terminator character
- **ATCMD2=10<CR>** where 10 is a sub parameter
- **AT+CMD1;+CMD2=, ,10<CR>** These are two examples of extended commands (note: the name of the command always begins with the character "**+**"). They are delimited by semicolon. In the second command the sub parameter is omitted.
- **+CMD1?<CR>** This is a Read command for checking current sub parameter values
- **+CMD1=?<CR>** This is a test command for checking possible sub parameter values

> Note: The set of proprietary AT commands differs from the standard one because the name of each of them begins with either "@", "#", "$" or "*". Proprietary AT commands follow the same syntax rules as extended commands.

These commands might be performed in a single command line as shown below:

ATCMD1 CMD2=10+CMD1;+CMD2=, ,10;+CMD1?;+CMD1=?<CR>

however, it is always preferable to separate basic and extended commands in different command lines; furthermore, it is recommended to avoid placing several action commands in the same command line, because if one of them fails, then an error message is received but it is not possible to claim which one of them has failed the execution.

If command **V1** is enabled (detailed responses codes) and all commands in a command line have been performed successfully, the result code **<CR><LF>OK<CR><LF>** is sent from the TA to the TE, if sub parameter values of a command are not accepted by the TA or the command itself is invalid, or the command cannot be executed for some reason, result code **<CR><LF>ERROR<CR><LF>** is sent and no subsequent commands in the command line are processed.

If command **V0** is enabled (numeric responses codes), and all commands in a command line has been executed successfully, the result code **0<CR>** is sent from the TA to the TE, if sub-parameter values of a command are not accepted by the TA or the command itself is invalid, or command cannot be executed for some reason, result code **4<CR>** and no subsequent commands in the command line are processed.

In case of errors depending on ME operation, **ERROR** (or **4**) response may be replaced by **+CME ERROR: <err>** or **+CMS ERROR: <err>.**

> Note: The command line buffer accepts a maximum of 400 characters. If this number is exceeded, none of the commands will be executed and TA returns **ERROR**.

ME Error Result Code - +CME ERROR: <err>

This is NOT a command; it is the error response to **+Cxxx** 3GPP TS 27.007 commands.

Syntax: +CME ERROR: <err>

Parameter: <**err**> - error code can be either numeric or detailed (see **+CMEE**). The possible values of <**err**> are reported in the table:

> Note: "Numeric Format" Not all modules support the error codes shown in the table

> Note: "Verbose Format" There could be small variations in the message depending on the module in use

Table 3: ME Error Result Codes

Numeric Format	Verbose Format
0	phone failure
1	no connection to phone
2	phone adaptor link reserved
3	operation not allowed
4	operation not supported
5	PH-SIM PIN required
6	PH-FSIM PIN required
7	PH-FSIM PUK required
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	incorrect password
17	SIM PIN2 required

Numeric Format	Verbose Format
18	SIM PUK2 required
20	memory full
21	invalid index
22	not found
23	memory failure
24	text string too long
25	invalid characters in text string
26	dial string too long
27	invalid characters in dial string
30	no network service
31	network timeout
32	network not allowed - emergency calls only
34	numeric parameter instead of text parameter
35	text parameter instead of numeric parameter
36	numeric parameter out of bounds
37	text string too short
38	The GPIO Pin is already used
40	network personalization PIN required
41	network personalization PUK required
42	network subset personalization PIN required
43	network subset personalization PUK required
44	service provider personalization PIN required
45	service provider personalization PUK required
46	corporate personalization PIN required
47	corporate personalization PUK required
49	EAP method not supported
50	Invalid EAP parameter
51	Parameter length error for all Auth commands
52	Temporary error for all Auth command
53	not verified hidden key
100	unknown
103	Illegal MESSAGE
106	Illegal ME
107	GPRS services not allowed
111	PLMN not allowed
112	Location area not allowed
113	Roaming not allowed in this location area
132	service option not supported
133	requested service option not subscribed
134	service option temporarily out of order
148	unspecified GPRS error
149	PDP authentication failure
150	invalid mobile class
257	network rejected request
258	retry operation
259	invalid deflected to number

Numeric Format	Verbose Format
260	deflected to own number
261	unknown subscriber
262	service not available
263	unknown class
264	unknown network message
273	Minimum TFT per PDP address error
274	Duplicate TFT eval prec index
275	Invalid TFT param combination
277	Invalid number of parameters
278	Invalid Parameter
320	Call index error
321	Call state error
322	Sys state error
323	Parameters error
550	generic undocumented error
551	wrong state
552	wrong mode
553	context already activated
554	stack already active
555	activation failed
556	context not opened
557	can not setup socket
558	can not resolve DN
559	time-out in opening socket
560	can not open socket
561	remote disconnected or time-out
562	connection failed
563	tx error
564	already listening
565	socket disconnection
566	can not resume socket
567	ip version type incompatible
568	ipv6 not enabled
569	
600	Generic undocumented error
601	wrong state
602	Can not activate
603	Can not resolve name
604	Can not allocate control socket
605	Can not connect control socket
606	Bad or no response from server
607	Not connected
608	Already connected
609	Context down

Numeric Format	Verbose Format
612	Resource used by other instance
613	Data socket yet opened in cmdmode
614	FTP CmdMode data socket closed
615	FTP not connected
616	FTP disconnected
617	FTP read command closed
618	FTP read command error
619	FTP write command closed
620	FTP write command error
621	FTP read data closed
622	FTP read data error
623	FTP write data closed
624	FTP write data error
625	FTP host not found
626	FTP accept failure
627	FTP listen failure
628	FTP bind failure
629	FTP file create failure
630	FTP file get failure
631	FTP file put failure
632	FTP file not found
633	FTP timed out
634	FTP login incorrect
635	FTP close error
636	FTP server not ready
637	FTP server shutdown
638	FTP unexpected reply
639	FTP user ID and password don't match
640	FTP user ID and password don't match
641	FTP user already logged in
642	FTP open channel timeout
643	FTP communication timeout
644	FTP unknown error
657	Network survey error (No Carrier)
658	Network survey error (Busy)
659	Network survey error (Wrong request)
660	Network survey error (Aborted)
680	LU processing
681	Network search aborted
682	PTM mode
683	Network search terminated
684	CSG Search processing
690	Active call state
691	RR connection established
770	SIM invalid
900	No Response for AT Command

Numeric Format	Verbose Format
1000	SSL not activated
1001	SSL certs and keys wrong or not stored
1002	SSL generic error
1003	SSL already activated
1004	SSL error during handshake
1005	SSL socket error
1006	SSL invalid state
1007	SSL cannot activate
1008	SSL not connected
1009	SSL already connected
1010	SSL error enc/dec data
1011	SSL disconnected
1100	Model not recognized
1101	Model information missing
1102	Unable to open the file
1103	Unable to close the file
1104	Unable to read the nv file
1105	Unable to write the nv file
1106	Input pattern is wrong
1113	Call establishment failed
1114	File name already exist

Message Service Failure Result Code - +CMS ERROR: <err>

This is NOT a command; it is the error response to **+Cxxx** 3GPP TS 27.005 commands.

Syntax: +CMS ERROR: <err>

Parameter: <**err**> - numeric error code.

The <**err**> values are reported in the table:

Table 4: Message Service Failure Result Codes

Numeric Format	Meaning
According to 3GPP TS 24.011 section 8.2.5.4	
0 .. 127	
According to 3GPP TS 23.040 sub clause 9.2.3.22 values	
128 .. 255	
According to 3GPP TS 27.005 section 3.2.5 - Message Service Failure Result Code +CMS ERROR	
300	ME failure
301	SMS service of ME reserved
302	operation not allowed
303	operation not supported

Numeric Format	Meaning
304	invalid PDU mode parameter
305	invalid text mode parameter
310	SIM not inserted
311	SIM PIN required
312	PH-SIM PIN required
313	SIM failure
314	SIM busy
315	SIM wrong
316	SIM PUK required
317	SIM PIN2 required
318	SIM PUK2 required
320	memory failure
321	invalid memory index
322	memory full
330	SMSC address unknown
331	no network service
332	network time-out
340	no +CNMA acknowledgement expected
500	unknown error
510	msg blocked
<err> 512 and on are manufacturer specific	
512	No SM resources
513	TR1M timeout
514	LL error
515	No response from network

Carriage Returns, Line Feeds and Log

The Generally, the number of carriage returns <CR> and line feeds <LF> at the end of command responses may vary. This scenario may also vary from software version to software version. We do not have evidence of this behavior in URC lines.

Command responses examples:

AT#LWM2MMON?<CR>

<CR><LF>

#LWM2MMON: "4"<LF>#LWM2MMON: "3"

Warning: missing <CR>

<CR><LF>

<CR><LF>

OK

<CR><LF>

AT#LWM2MFYACKURI=0,2<CR>

<CR><LF>

#LWM2MNFYACKURI: "/3/0/9"<LF>#LWM2MNFYACKURI: "/3/0/8"

Warning: missing <CR>

<CR><LF>

<CR><LF>

OK

<CR><LF>

The user must be aware of this aspect before writing a script to parse the command lines and the relative response lines to generate a log.

Information Responses and Result Codes

The TA response, in case of verbose response format enabled, for the previous examples command line could be as shown below:

1. information response to **+CMD1?**

<CR><LF>+CMD1:2,1,10<CR><LF>

2. information response to **+CMD1=?**

<CR><LF>+CMD1(0-2),(0,1),(0-15)<CR><LF>

3. result code <CR><LF>OK<CR><LF>

Moreover, there are two other types of result codes:

1. *result codes* that inform about the progress of the TA operation (e.g. connection establishment **CONNECT**)
2. *result codes* that indicate the occurrence of an event not directly associated with the issuance of a command from TE (e.g. ring indication **RING**).

Here the basic result codes according to ITU-T V25Ter recommendation

Table 5: Basic Result Codes

Numeric Form	Verbose form
0	OK
1	CONNECT or CONNECT <text>
2	RING
3	NO CARRIER
4	ERROR
6	NO DIALTONE
7	BUSY
8	NO ANSWER
10	CONNECT 2400
11	CONNECT 4800
12	CONNECT 9600
15	CONNECT 14400
23	CONNECT 1200/75

Note: <text> can be "300", "1200", "2400", "4800", "9600", "14400" or "1200/75"

Command Response Time-Out

Every command issued to the Telit modules returns a result response, if response codes are enabled (default). The time required to process the given command and return the response varies, depending on the command type. The Commands that do not interact with the SIM or the network, and only involve internal setups or readings, have an immediate response. The Commands that interact with the SIM or the network may take several seconds to send a response, depending on the SIM configuration (for example, number of contacts stored in the phonebook, number of stored SMS), or on the network the command may interact with.

Command Issuing Timing

The chain Command -> Response must always be respected, and a new command must not be issued before the module has finished all the ending of the response result code (whatever it is).

This applies especially to applications that "sense" the **OK** text and therefore may send the next command before the complete code **<CR><LF>OK<CR><LF>** is sent by the module.

However, it is advisable to wait for at least 20 ms between the end of the reception of the response and the issue of the next AT command.

If the response codes are disabled and therefore the module does not report any response to the command, then at least the 20 ms pause time must be respected

Command Response after Module Boot

Please note that all LWM2M commands reply with ERROR if sent just after module boot.

There is a short delay between completion of AT interface initialization (when module starts to answer to AT commands) and completion of LWM2M task initialization (when module starts to answer to LWM2M commands).

3.3 Storage

Factory Profile and User Profiles

The Telit wireless modules store the values, set by several commands, in the internal non-volatile memory (NVM), allowing to remember this setting even after power off. In NVM, these values are set either as factory or user profiles. There are two customizable user profiles and one factory profile in the NVM of the device: by default, the device will start with user profile 0 equal to the factory profile.

For backward compatibility, each profile is divided into two sections, one base section which was historically the one saved and restored in early releases of code, and the extended section which includes all remaining values.

The **&W** command is used to save the current values of both profile sections into the NVM user profile.

Commands **&Y** and **&P** are both used to set the profile to be loaded at startup. **&Y** instructs the device to load at startup only the base section. **&P** instructs the device to load at startup the full profile: base + extended sections.

The **&F** command resets to factory profile values only the command of the base section of profile, while the **&F1** resets to factory profile values the full set of base + extended section commands.

The values set by other commands are stored in NVM outside the profile: some of them are always stored, without issuing any **&W**, some others are stored by issuing specific commands (**+CSAS**, **#SLEDSAV**, **#SKTSAV**, **#ESAV**); all these values are read at power-up.

In this document, each AT command description begins with an "AT Command short overview table" in the following format:

Table 6: AT Command short overview table

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
/	See below	/	/	/

This chapter focuses on the values that the **saved Setting** field can have and their meaning. The meaning of the other fields will be described in the next chapter. The **saved Setting** field can have one of the values listed below (for information about the AT instance introduced hereafter, see the reference section of the **#PORTCFG** command):

Specific profile the parameters values set by the command are stored in the profile base section. The stored values set is associated to the specific AT instance used to enter the command. It is a profile used by the specific AT instances.

Examples of the AT commands: **+IPR**, **E**, **Q**, **V**, **X**, **&Y**, etc.

The parameters values set by the command are stored in the profile extended section. The stored values set is associated to the specific AT instance used to enter the command. It is a profile used by the specific AT instance.

Examples of the AT commands: **+FCLASS**, **+CREG**, **+CLIP**, **#STIA**, etc.

Common profile the parameters values set by the command are stored in the profile extended section. The stored values set is not associated to the specific AT instance used to enter the command. It is a profile shared between the AT instances.

Examples of the AT commands: **+CALM**, **#E2SLRI**, **#DVI**, etc.

Auto the parameters values set by the command are automatically stored in NVM, without issuing any storing AT command, and regardless of the profile (unique values). The values are automatically restored at startup.

AT commands examples: **+COPS**, **+CGQREQ**, **#SCFG**, etc.

In some cases, the parameters values are stored in the file system.

AT commands examples: **#TEMPCFG**, **#TEMPMON**, etc.

Other the parameters values set by the command are stored in NVM by issuing a specific command and regardless of the profile.

Examples of the AT commands:

#SLED setting is saved by **#SLEDSAV**

#BIQUADINEX setting is saved by **#PSAV**

etc.

3.4 AT Command Short Overview Table

As stated before, each AT command description begins with an "AT Command short overview table" having the following format:

Table 7: AT Command short overview table

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Not required	/	No	-	2

Here are the table fields meanings:

SIM Presence indicates if the AT command to be executed needs the SIM presence.

Can be aborted indicates if the AT command can be aborted during its execution.

MAX timeout indicates the time within which the command must be executed.

SELINT indicates on which AT interface type the AT command is available

4 AT Commands References

4.1 IoT Portal

AT#LWM2MENA - Enable/Disable Telit LwM2M Agent

This command enables/disables the Telit LwM2M Client feature.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	No	No	-	2

AT#LWM2MENA=<en>[,<pdpId>[,<mode>[,<guardRequestTime>[,<guardReleaseTime>]]]]

Execution command enables/disables the Telit LwM2M Client feature. Enabling the client with **<mode>** set to 1 will produce the following URCs:

#LWM2MRING: <ring>

#LWM2MEND: <endResultCode>

Parameters:

Name	Type	Default	Description
<en>	integer	0	enable/disable the Telit LwM2M Client feature Values: 0 : disable 1 : enable
<pdpId>	integer	1	PDP context identifier the Telit LwM2M client should use on the module Value: 1÷6 : PDP context identifier
<mode>	integer	0	ACK modality Values:

	0 : no ACK required 1 : ACK required		
<guardRequestTime>	integer	5	in case of update registration and Notify events, it is the time of advance for the ACK notification Value: 1÷100 : time of advance for the ACK notification, in seconds
<guardReleaseTime>	integer	5	the client waits this time to manage further LwM2M server request before releasing the network data resource (emitting **#LWM2MEND:** URC) Value: 1÷100 : time to wait to release the network resource, in seconds

Additional info:

- The Telit LwM2M client show also an URC according to some events, in the form:
  #LWM2MINFO: <infoType>,<infoEvent>

- The Telit LwM2M client show also URCs according to the server registration status, in the form:
  #LWM2M-TLT: <event>,<SSID>,<URL>

Unsolicited fields:

Name	Type	Description
<ring>	string	the ring code enabled by the **<mode>** parameter set to 1 Values: REG : the client needs to register UPD : registration update to be sent NOT : a value under observation has changed and it should be notified to the server SMS : wake up SMS received from the server DRG : deregistration
<endResultCode>	integer	the result code transmitted by the **#LWM2MEND** URC Value: 0 : success
<infoType>	string	the type of information communicated by the client Value: GEN : general info
<infoEvent>	string	the event communicated with the **#LWM2MINFO** URC Values: FOTA REBOOT : a reboot occurring during FW upgrade DEVICE REBOOT : a reboot issued by LwM2M server. Case: EXEC 3/0/4 and EXEC 3/0/5.
<event>	string	event name Values:

BOOTSTRAPPING	:	the client is starting the bootstrap to the specified server
BOOTSTRAPPED	:	the client finished successfully the bootstrap to the specified server
REGISTERING	:	the client is starting the DM connection to the specified server
REGISTERED	:	the client finished successfully the DM connection to the specified server
DEREGISTERING	:	the client is starting the disconnection from the server in which it was registered
DEREGISTERED	:	the client disconnected successfully from the server in which it was registered
SUSPENDED	:	the client suspended successfully the DM connection to the specified server, as requested via /1/x/4 execution resource
CLIENT_DISABLED	:	the client has been disabled by AT command or by internal failures (i.e.: handshake failure)
FORCE_EXIT	:	the client failed the server connection and after the proper retries, it is stopped. This

				action is only manageable by a module reboot
			BOOTSTRAP_INVALID :	the client bootstrap to specified server is invalid
	<SSID>	integer	the short server ID code	
	<URL>	string	the server URL	

- The service registration URC service is not active by default: it is in charge of the user to activate it. Nevertheless, the bootstrap is always notified once the context has been activated.
- "CLIENT_DISABLED" and "FORCE_EXIT" <**event**> do not report <**SSID**> and <**URL**>
- Please notice that the URC reporting "FORCE_EXIT" <**event**> are always displayed, even in case of inactive service or in case of non-Telit clients.
- During the PDP activation or deactivation triggered by the **#LWM2MENA** command, the client shall not manage any other **#LWM2M** commands for a short period of time.
- If the client LwM2M is already enabled, a further enabling attempt will return an error.

AT#LWM2MENA?

If the client is enabled, read command reports the current values of parameters in the format:

#LWM2MENA: <en>,<pdpId>,<mode>,<guardRequestTime>,<guardReleaseTime>, <enabledStatus>

If the client is not enabled, read command reports the current values of parameters in the format:

#LWM2MENA: 0

- The **<enabledStatus>** parameter reports the same values reported by the **#LWM2MSTAT**. Therefore, for a list of the **<enabledStatus>** values, please refer to **#LWM2MSTAT** command.
- In case the LwM2M client is enabled with the **<mode>** active, the **<enabledStatus>** parameter in read command reports the LwM2M as active just after the command insertion and while waiting for the **#LWM2MACK** confirmation.
- In case the LwM2M client is enabled with the **<mode>** active, after the **#LWM2MENA** command to disable it, the **<enabledStatus>** parameter in read command reports the LwM2M as active since the disabling message towards the server needs the **#LWM2MACK** confirmation; this happens only when the disabling command is typed out of the LwM2M client active time window (i.e.: outside the <**guardReleaseTime**> inserted in **#LWM2MENA** command).
- In case the LwM2M client is enabled with the **<mode>** not active, after the **#LWM2MENA** command to disable it, for a short period of time, the **<enabledStatus>** parameter in read command could report some intermediate states between the "ACTIVE" and the disabled one.

AT#LWM2MENA=?

Test command reports the supported range of values for all the parameters.

Server URC and read command examples:

- Bootstrap session successful

  AT#LWM2MENA=1
  OK
  LWM2M-TLT:"BOOTSTRAPPING",SSID=0,"coaps://bs.telit.io:5684"
  LWM2M-TLT:"BOOTSTRAPPED",SSID=0,"coaps://bs.telit.io:5684"

- Bootstrap session failure

  AT#LWM2MENA=1
  OK
  LWM2M-TLT:"BOOTSTRAPPING",SSID=0,"coaps://bs.telit.io:5684"
  LWM2M-TLT:"BOOTSTRAPPING",SSID=0,"coaps://bs.telit.io:5684"
  LWM2M-TLT:"BOOTSTRAPPING",SSID=0,"coaps://bs.telit.io:5684"
  LWM2M-TLT:"FORCE_EXIT"

- The registration/deregistration to the Device Management server is shown only if the service is enabled:

  AT#LWM2MENA=1
  OK
  LWM2M- TLT:"REGISTERING",SSID=99,"coaps://api.devicewise.com"
  LWM2M- TLT:"REGISTERED",SSID=99,"coaps://api.devicewise.com"

  AT#LWM2MENA=0
  OK
  LWM2M-
  TLT:"DEREGISTERING",SSID=99,"coaps://api.devicewise.com"
  LWM2M- TLT:"DEREGISTERED",SSID=99,"coaps://api.devicewise.com"
  LWM2M-
  LWM2M-TLT:"CLIENT_DISABLED"

- DM failure (i.e.: for handshake problems), the status is shown only if the service is enabled:

  LWM2M- TLT:"REGISTERING",SSID=99,"coaps://api.devicewise.com"
  LWM2M-TLT:"FORCE_EXIT"
  LWM2M-TLT:"CLIENT_DISABLED"

- client suspending:
  LWM2M- TLT:"REGISTERING",SSID=99,"coaps://api.devicewise.com"
  LWM2M- TLT:"REGISTERED",SSID=99,"coaps://api.devicewise.com"
  .. execution of resource /1/x/4
  LWM2M- TLT:"SUSPENDED",SSID=99,"coaps://api.devicewise.com"
  .. after timeout as in resource /1/x/5
  LWM2M- TLT:"REGISTERING",SSID=99,"coaps://api.devicewise.com"
  LWM2M- TLT:"REGISTERED",SSID=99,"coaps://api.devicewise.com"

- Read command example in "no ack" mode:
  Disabling the LwM2M client when activated in "no ack" mode
  AT#LWM2MENA=1
  OK

  AT#LWM2MENA=0
  OK

  AT#LWM2MENA?
  #LWM2MENA: 1,1,0,5,5,"DEREG"
  OK

  AT#LWM2MENA?
  #LWM2MENA: 0
  OK

- Read command example in "ack" mode:

  Disabling the LwM2M client when activated in "ack" mode (when outside the LwM2M activity time window)
  AT#LWM2MENA=1,1,1,5,20
  OK

  #LWM2MRING: "REG"

  AT#LWM2MENA?
  #LWM2MENA: 1,1,1,5,20,"WAIT"

```
OK

AT#LWM2MACK=1
OK

LWM2M-TLT:"BOOTSTRAPPING",SSID=0,"coaps://bs.telit.io"
LWM2M-TLT:"BOOTSTRAPPED",SSID=0,"coaps://bs.telit.io"
#LWM2MEND: 0

AT#LWM2MENA?
#LWM2MENA: 1,1,1,5,20,"IDLE"
OK

AT#LWM2MENA=0
OK

#LWM2MRING: "DRG"

AT#LWM2MENA?
#LWM2MENA: 1,1,1,5,20,"WAIT"
OK

AT#LWM2MACK=1
OK

AT#LWM2MENA?
#LWM2MENA: 1,1,1,5,20,"DEREG"
OK

AT#LWM2MENA?
#LWM2MENA: 0
OK
```

AT#LWM2MSTAT - Telit LwM2M Client Current Status

This command provides information about the current internal state of the Telit LwM2M client.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	Auto	No	-	2

AT#LWM2MSTAT

If executed, the command returns the current Telit LwM2M client status. The status is returned through the string:

#LWM2MGETSTAT: <enabledStatus>,<status>

Additional info:

- Here are described the string parameters.

Name	Type	Default	Description
<enabledStatus>	integer	N/A	the current Telit LwM2M client enabling status Values: 0 : the client is disabled 1 : the client is enabled
<status>	string	N/A	the current internal status Values: DIS : the client is disabled WAIT : waiting for the user's ACK ACTIVE : after the ACK, the session is currently active

IDLE	:	there is not an active session currently
DEREG	:	the client is deregistering

In case the LwM2M client is enabled with the "ACK required" mode, the <**enabledStatus**> parameter in **#LWM2MSTAT** command reports the LwM2M as active just after the command insertion and while waiting for the **#LWM2MACK** confirmation.
Otherwise, if the client is enabled with the "no ACK required" mode, the <**enabledStatus**> parameter reports anyway the state "ACTIVE" just after the command, but this does not necessarily mean that a connection is ongoing.

In case the LwM2M client is enabled with the "ACK required" mode (refer to Example 1), after the **#LWM2MENA** command insertion to disable it, the <**enabledStatus**> parameter returned by **#LWM2MSTAT** command reports the LwM2M as active since the disabling message towards the server needs the **#LWM2MACK** confirmation; this happens only when the disabling command is typed out of the LwM2M client active time window (i.e.: outside the <**guardReleaseTime**> inserted in **#LWM2MENA** command).

Otherwise, if the client is enabled with the "no ACK required" mode (refer to Example 2), after the **#LWM2MENA** command insertion to disable it, for a short period of time, the <**enabledStatus**> parameter in **#LWM2MSTAT** command could report some intermediate states between the "ACTIVE" and the disabled one.

AT#LWM2MSTAT?

Not supported

AT#LWM2MSTAT=?

Test command returns **OK**.

#LWM2MSTAT command examples:

- Example 1:

  Enabling and disabling the LwM2M client when activated in "ACK" mode (when outside the LwM2M activity time window)

```
AT#LWM2MENA=1,1,1,5,20
OK

#LWM2MRING: "REG"

AT#LWM2MSTAT
#LWM2MGETSTAT: 1,"WAIT"
OK

AT#LWM2MACK=1
OK

LWM2M-TLT:"BOOTSTRAPPING",SSID=0,"coaps://bs.telit.io"
LWM2M-TLT:"BOOTSTRAPPED",SSID=0,"coaps://bs.telit.io"
#LWM2MEND: 0

AT#LWM2MSTAT
#LWM2MGETSTAT: 1,"ACTIVE"
OK

#LWM2MEND: 0

AT#LWM2MSTAT
#LWM2MGETSTAT: 1,"IDLE"
OK


AT#LWM2MENA=0
OK

#LWM2MRING: "DRG"

AT#LWM2MSTAT
#LWM2MGETSTAT: 1,"WAIT"
OK

AT#LWM2MACK=1
OK

AT#LWM2MSTAT
```

```
#LWM2MGETSTAT: "DIS"
OK

AT#LWM2MENA?
#LWM2MENA: 0
OK
```

- Example 2:
  Enabling and disabling the LwM2M client when activated in "no ACK" mode

```
AT#LWM2MENA=1,1,0
OK

AT#LWM2MSTAT

#LWM2MGETSTAT: 1,"ACTIVE"

OK

AT#LWM2MENA=0
OK


AT#LWM2MSTAT

#LWM2MGETSTAT: 0,"DIS"

OK
```

AT#LWM2MACK - Ack for Telit LwM2M Agent

This command sends an ACK to the Telit LwM2M Client.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	No	No	-	2

AT#LWM2MACK=<action>

if the **<mode>** in **#LWM2MENA** is not 0, the Telit LwM2M client requires an ACK to performs its operations on the dedicated data context.

Parameter:

Name	Type	Default	Description
<action>	integer	1	Acknowledge: the **<cid>** context indicated in **#LWM2MENA** command is active and the user allows the client to send data through this.

Value:

1 : action is required

AT#LWM2MACK?

Not supported

AT#LWM2MACK=?

Test command reports the supported range of values for all the parameters.

AT#LWM2MREG - Registration to a LwM2M Server

This command allows the user to request a full registration, a deregistration or a registration update to a LwM2M server. It also allows to query the registration state of one or all the LwM2M servers related to a LwM2M agent

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	No	No	-	2

AT#LWM2MREG=<agentId>,<actionID>[,<shortServerID>]

Parameters:

Name	Type	Default	Description
<agentId>	integer	N/A	identifier of the LwM2M agent related to the request Values: 0 : Telit agent 1÷3 : reserved for future use
<actionID>	integer	N/A	identifier of the required action Values: 0 : deregister 1 : full registration 2 : registration update 3 : retrieve registration info
<shortServerID>	integer	N/A	identifier of the server related to the request. It is optional in case **<actionID>** is equal to 3 Value: 1÷65534 : Short server ID of the addressed server

- Expected result <**actionID**> 0 - deregister

  The deregister operation will fail in the following conditions:

  - The state of the <**shortServerID**> is not registered or the client is already deregistering for the addressed server

  - The state of the <**shortServerID**> is disabled (a disable timeout has been requested for the addressed server)

- Expected result <**actionID**> 1 - full registration

  The register operation will fail in the following conditions:

  - The state of the <**shortServerID**> is alredy registered or the client is already registering to the addressed server

  - The state of the <**shortServerID**> is disabled (a disable timeout has been requested for the addressed server)

- Expected result <**actionID**> 2 - registration update

  The register operation will fail in the following conditions:

  - The state of the <**shortServerID**> is not registered

  - The state of the <**shortServerID**> is disabled (a disable timeout has been requested for the addressed server)

- Expected result <**actionID**> 3 - retrieve registration info

  The command will respond listing the registration details for the server <**shortServerID**>, or for all servers related to the <**agentId**> in case parameter <**shortServerID**> is not provided.

  The answer will be in the following form:

  #LWM2MREG: <shortServerID>,<regState>,<lastRegistration>,<nextUpdate>,<lastActivity>

Parameter	*Description*
<**shortServerID**>	Identifier of the server
<**regState**>	Identifier of the registration state: 0, not registered 1, disabled 2, registered
<**lastRegistration**>	Timestamp related to the last successful registration or

	registration updated. The timestamp is expressed in Unix local time. In case there is not a valid timestamp, 0 is reported
<nextUpdate>	Timestamp related to the next scheduled registration update.The timestamp is expressed in Unix local time. In case there is not a valid timestamp, 0 is reported
<lastActivity>	Timestamp related to the last succeeded data exchange between the LwM2M client and the server.The timestamp is expressed in Unix local time. In case there is not a valid timestamp, 0 is reported

AT#LWM2MREG?

Read command returns

OK

AT#LWM2MREG=?

Test command reports the supported range of values for the parameters.

AT#LWM2MSKIP - LwM2M Client startup mode

The set command enables and disables the LwM2M Client initialization mode at module startup. This command allows to the user the possibility to change the LwM2M client agents initialization.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Not required	No	No	-	2

AT#LWM2MSKIP=<enable>[,<agentMask>][,<reboot>]

Parameters:

Name	Type	Default	Description
<enable>	integer	0	enables or disables the "skipping client startup" modality Values: 0 : skip is disabled, thus the LwM2M clients selected in the <agentMask> parameter are configured to be started at module startup 1 : skip is enabled, thus the LwM2M clients selected in the <agentMask> parameter are configured to be not started at module startup
<agentMask>	hex	0	set of LwM2M clients affected by the <enable> parameter The command admits the parameter in hexadecimal format without the prefix 0x. The following values and combinations are accepted: 1: Telit client, bit mask 00000001 2: Verizon client, bit mask 00000010 4: AT&T client, bit mask 00000100

			8: DOCOMO client, bit mask 00001000 **ERROR** is returned if a bit of the mask has no LwM2M client mapped on. **<agentMask>**= 0 is not allowed since it is useless: it means that the skipping/not skipping required operation should not affect any clients. Giving the command without **<agentMask>** parameter will affect all LwM2M clients. Value: 1÷FF : bit mask length
<reboot>	integer	1	enables or disables the automatic reboot possibility after the command setting Values: 0 : Reboot is disabled 1 : Reboot as part of issuing the command (Default)

- If the command changes the current agents skip settings, in case of <**reboot**> parameter missing or set to 1, the module is rebooted. No reboots will be triggered if the command is not changing the current behavior.
- The command affects only the clients indicated in the <**agentMask**>. If a client startup is already skipped, a successive skip setting involving another agent will not impact on the former one, see example.
- There is no relation between the LwM2M in the <**agentMask**> and the module customization: it is possible to set the skip property for a Verizon client even on a module not customized for it; it

simply returns **OK** but there will not be a real effect at the next startup.

AT#LWM2MSKIP?

Read command reports the current values of parameters in the format:

#LWM2MSKIP: <enable>,<maskStatus>

AT#LWM2MSKIP=?

Test command reports the supported range of values for all the parameters.

Set the skip property for all agents available in the module: all the clients are stopped at startup (reboot is performed in particular cases, see additional notes) :

AT#LWM2MSKIP=1

OK

All LwM2M clients are skipped. The mask could vary according to the agents available in the module:

AT#LWM2MSKIP?

#LWM2MSKIP: 1,7

OK

Reset the skip property for Telit Client. Please note that the other LwM2M clients are not affected, since not indicated in the <**agentMask**>

AT#LWM2MSKIP=0,1

OK

AT#LWM2MSKIP?

#LWM2MSKIP: 1,6

OK

Set the skip property for all agents available in the module (reboot is not performed)

AT#LWM2MSKIP=1,,0

OK

Set the skip property for AT&T client. Reboot is not performed, it takes effect at next reboot

AT#LWM2MSKIP=1,4,0

OK

Reset the skip property for AT&T client. Reboot is not performed, it takes effect at next reboot:

AT#LWM2MSKIP=0,4,0

OK

AT#LWM2MSTS - Select Bootstrap/Standard Server

This command configures the LwM2M server parameters which the client will connect to at the next module reboot.
It could be used to restore the default LwM2M server configuration or to set a new server configuration.
For security reasons, only DTLS encryption mode (CoAPS) is supported.
The command requires the existence of the corresponding LwM2M agent.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	Auto	No	-	2

AT#LWM2MSTS=<agentId>[,<serverIndex>[,<URI>[,<isBootstrapServer>]]]

Parameters:

Name	Type	Default	Description
<agentId>	integer	0	identifier of the LwM2M agent related to the request. Issuing the command with only the <**agentId**> parameter will reset a formerly set server, restoring the condition to the factory default. Values: 0 : Telit agent 1 ÷3 : reserved for future use
<serverIndex>	integer	-	the server that will be used by the module at the next client reboot. Entries from: 0 to 9 reserved for Telit's agent 10 to 29 reserved for future use

			The correspondence table between <**serverIndex**> parameter and preconfigured server URI is shown in Additional info.
<URI>	string	-	URI
<isBootstrapServer>	integer	0	selects if the requested server is a bootstrap. Values: 0 : the specified server is not a bootstrap server 1 : the specified server is a bootstrap server

Additional info:

▸▸Correspondence table between <**serverIndex**> parameter and server URI.

<serverIndex>	server URI	Note
0	reserved	for internal use
10	"coaps://ddocdpboot.do.motive.com:5684"	Bootstrap server
11	"coaps://ddocdp.do.motive.com:5684"	DM server
20	"coaps://xattmpct.xdev.motive.com:5684"	Bootstrap server
999	customized server URI entry	/

<serverIndex> special value '999' allows the user to insert a customized server string; this string should start with "coaps://" sub-string and may or may not contain the indicated port. In case the port is not indicated, the LwM2M client will use the proper default CoAPS port (5684).

The bootstrap credentials are computed automatically inside the module for all LwM2M agent instances. In order to change default credentials, it is mandatory to set the new credential configuration using **#LWM2MINJKEYS**.

#LWM2MINJKEYS command is mandatory for all new server configuration set by **#LWM2MSTS** that involve a non-bootstrap server (< **isBootstrapServer**> =0). In this case, **#LWM2MINJKEYS** command should be executed before **#LWM2MSTS** command.

- The servers list is not constrained in any way to any customizations; therefore, each entry is available to every agent.
- The command execution will invalidate the running <**agentId**> and performs the deregistration of <**agentId**> from all servers.
- After successful command execution a module reboot is required before the following LWM2M AT commands for <**agentId**>, otherwise an ERROR or **+CMEE: ERROR** is returned:

AT COMMAND	COMMAND TYPE
#LWM2MENA	SET / READ
#LWM2MACK	SET
#LWM2MSTAT	EXEC
#LWM2MR	SET
#LWM2MW	SET
#LWM2ME	SET
#LWM2MSET	SET
#LWM2MGET	SET
#LWM2MMON	SET / READ
#LWM2MLIST	SET
#LWM2MEXIST	SET
#LWM2MNFYACKENA	SET
#LWM2MNFYACKURI	SET
#LWM2MFOTACFG	SET
#LWM2MFOTAACK	SET
#LWM2MREG	SET
#LWM2MFOTASTATE	SET

Exception is for the following commands that can be managed after **#LWM2MSTS** and before a module reboot:

#LWM2MSTS
#LWM2MINJKEYS
#LWM2MSKIP
#LWM2MCUST
#LWM2MCFG

If the command is given during BOOTSTRAP/REGISTRATION phase it will not stop them. New server will be used at the next module's reboot.

AT#LWM2MSTS?

Read command returns **OK** result code.

AT#LWM2MSTS=?

Test command returns **OK** result code.

It selects the "Leshan" test server, secure mode. Last parameter in this example could also be omitted.

AT#LWM2MSTS=0,999,"coaps://leshan.eclipse.org:5684",0

AT#LWM2MINJKEYS - LwM2M Store or Delete Credentials

This command stores or deletes security credentials: end-point name, DTLS identity and DTLS pre-shared key. The new credentials will take effect after next reboot leading to a new server connection with the new credentials.

The command requires the correspondent Lwm2m agent present and working. The agent presence is not related to the registration with a server; it may be verified using either **#LWM2MSKIP** or **#LWM2MEXIST** commands.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	Auto	No	-	2

AT#LWM2MINJKEYS=<agentId>,<mode>[,<epName>[,<identity>,<secretKey>]]

Parameters:

Name	Type	Default	Description
<agentId>	integer	0	identifier of the LwM2M agent related to the request Values: 0 : Telit agent 1÷3 : reserved for future use
<mode>	integer	N/A	defines the operation to be done Values: 0 : delete all credentials 1 : create the credentials specified 2 : delete only the end-point name 3 : delete DTLS identity and DTLS pre-shared key
<epName>	string	-	end-point name injected. String length range: 0...64

<identity>	string	-	DTLS identity injected. String length range: 0...64
<secretKey>	string	-	DTLS pre-shared key injected. String length range: 0...64

The command returns an **ERROR** if **<identity>, <secretKey>** are not both present.
The strings **<epName>**, **<identity>** and **<secretKey>** could be used in the AT command with or without the quotation marks.

A new bootstrap procedure restores the credentials to default values, so, in order to use custom credentials, the command **AT#LWM2MINJKEYS** has to be used before **AT#LWM2MSTS** command.

AT#LWM2MINJKEYS?

Read command return **OK** code.

AT#LWM2MINJKEYS=?

Test command return **OK** code.

Here below some Telit Agent examples.

- Deletes all the credentials (end-point name, DTLS identity and DTLS pre-shared key).
  AT#LWM2MINJKEYS=0,0

  Injects the keys of all the credentials (end-point name, DTLS identity and DTLS pre-shared key).
  AT#LWM2MINJKEYS=0,1,"aa","bb","cc"

  Injects only the key end-point name.
  AT#LWM2MINJKEYS=0,1,"aa"

  Injects the keys DTLS identity and DTLS pre-shared key.
  AT#LWM2MINJKEYS=0,1,,"bb","cc"

  Deletes the key end-point name.
  AT#LWM2MINJKEYS=0,2

  Deletes the keys DTLS identity and DTLS pre-shared key..
  AT#LWM2MINJKEYS=0,3

AT#LWM2MNEWINST - Create a New Object Instance

This command can be used to create dynamically the new <**objectInstanceID**> of the specified <**objectID**>.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	Auto	No	-	2

AT#LWM2MNEWINST=<agentId>,<objectID>,<objectInstanceID>

Execution command allows the user to create dynamically the <**objectInstanceID**> of the specified <**objectID**>. When succeed, the newly created <**objectInstanceID**> will have all the resources filled with default values. The user shall populate them properly, by using the **#LWM2MW** command for writable resources, or by the **#LWM2MSET** command for non-writable resources.

Parameters:

Name	Type	Default	Description
<agentId>	integer	0	identifier of the LwM2M agent related to the request Value: 0 : Telit client
<objectID>	integer	N/A	object identifier <**objectID**> value 65535 is reserved only <**objectID**> starting from value 7 can be used to dynamically create objects Value: 7÷65535 : object identifier range
<objectInstanceID>	integer	N/A	object instance identifier to be created. <**objectInstanceID**> value 65535 is reserved

Value:

0÷65534 : object instance identifier range.

AT#LWM2MNEWINST?

Read command returns **OK** code.

AT#LWM2MNEWINST=?

Test command reports the supported range of values for the parameters.

AT#LWM2MDELINST - Deletes one or all object instances

This command can be used to delete the <**objectInstanceID**> or all instances of the specified <**objectID**>.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	Auto	No	-	2

AT#LWM2MDELINST=<agentId>,<objectID>[,<objectInstanceID>]

Execution command allows the user to delete the <**objectInstanceID**> or all instances of the specified <**objectID**>.

Parameters:

Name	Type	Default	Description
<agentId>	integer	0	identifier of the LwM2M agent related to the request Value: 0 : Telit client
<objectID>	integer	N/A	object identifier; only <**objectID**> starting from value 7 can be used to delete objects Value: 7÷65535 : object identifier range
<objectInstanceID>	integer	N/A	object instance identifier to be deleted. <**objectInstanceID**> value 65535 is reserved Value: 0÷65534 : object instance identifier range

Additional info:

- When <**objectInstanceID**> is not specified all instances of the <**objectID**> are deleted.

AT#LWM2MDELINST?

Read command returns **OK** code.

AT#LWM2MDELINST=?

Test command reports the supported range of values for the parameters.

Delete object instance 0 of object 3301:
AT#LWM2MDELINST=0,3301,0

Delete all instances of object 3301:
AT#LWM2MDELINST=0,3301

AT#LWM2MLIST - Reports Objects and Object Instances

This command allows the end-user to query the module to retrieve the list of the objects and object instances supported for a given agent.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	No	No	-	2

AT#LWM2MLIST=<agentId>

After the command is issued the answer returned is in the format:

#LWM2MLIST:
</objectID$_1$/objectInstanceID$_1$>,</objectID$_2$/objectInstanceID$_2$>,...,
</objectID$_n$/objectInstanceID$_n$>

In case the list is longer than the internally reserved buffer, the string is truncated to the last data that can be displayed but a special character "~" is issued at the end of the string, to alert the user that the data displayed is not complete, in the format:

#LWM2MLIST:
</objectID$_1$/objectInstanceID$_1$>,...,</objectID$_n$/objectInstanceID$_n$>~

Parameter:

Name	Type	Default	Description
<agentId>	integer	0	identifier of the LwM2M agent related to the request
	Values:		
	0	:	Telit agent
	1÷3	:	reserved for future use

In case an object is defined but it has no valid instances declared (such as in case of dynamic objects without any explicitly declared instance), the returned information reports uniquely the object number, in the format:

#LWM2MLIST: ...,<objectID$_n$>,...

AT#LWM2MLIST?

Read command return **OK** code

AT#LWM2MLIST=?

Test command reports the supported range of values for all the parameters.

Default response:

AT#LWM2MLIST=0

#LWM2MLIST:
</1/0>,</2>,</3/0>,</4/0>,</5/0>,</6/0>,</10/0>,</7/0>,</9/0>,</11/1>,</11/2>,</11/3>,</11/4>,</11/5>,</11/6>,</500/0>,</500/6>,</500/7>,</33205/0>,</33206/0>,</33207/0>,</33210>,</33211/0>

OK

AT#LWM2MEXIST - Command for Detecting an Agent/Specific URI Existence

This command allows the end-user to verify if a specific agent configuration is managed by the LwM2M client or if a specific URI path is present in a specific agent. Partial URI path can be specified, also.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	No	No	-	2

AT#LWM2MEXIST=<agentId>[,<objectID>[,<objectInstanceID>[,<resourceID>[,<resourceInstanceID>]]]]

Parameters:

Name	Type	Default	Description
<agentId>	integer	0	identifier of the LwM2M agent related to the request Values: 0 : Telit agent 1÷3 : reserved for future use
<objectID>	integer	N/A	select object identifier Value: 0÷65535 : object identifier range
<objectInstanceID>	integer	N/A	select object instance identifier Value: 0÷65535 : object instance identifier range
<resourceID>	integer	N/A	select resource identifier Value: 0÷65535 : resource identifier range

<resourceInstanceID>	integer	N/A	select resource instance identifier
	Value:		
	0÷65535	:	resource instance identifier range

The **#LWM2MEXIST** command returns **OK** if the given agent and URI exist. It returns an error in case it does not exist. The user should use **+CMEE=2** command to know exactly what is not existent. List of possible errors:

+CME ERROR:	Meaning
"Invalid agent"	the given agent does not exist
"Invalid URI"	the given agent exists, but the URI does not exist
"Invalid args"	the given parameters are invalid
"Internal Error"	LwM2M client internal error

AT#LWM2MEXIST?

Read command returns **OK** code

AT#LWM2MEXIST=?

Test command reports the supported range of values for all the parameters.

#LWM2MEXIST command examples:

- AT#LWM2MLIST=0
  #LWM2MLIST: </1/0>,</2>,</3/0>,</4/0>,</5/0>, .. ,</33211/0>
  OK

  In case the URI exists:

  AT#LWM2MEXIST=0,33211,0,0,0
  OK

  AT#LWM2MEXIST=0,4,0

  OK

- In case the URI does not exist:
  AT#LWM2MEXIST=0,33211,10,0,0
  ERROR

  AT+CMEE=2
  OK

  AT#LWM2MEXIST=0,33211,10,0,0
  +CME ERROR: Invalid URI

- In case the agent does not exist:
  AT#LWM2MEXIST=3
  +CME ERROR: Invalid agent

AT#LWM2MW - LwM2M Client Resource Writing

This set command selects the parameters for the write operation of a value on a LwM2M resource of the specific LwM2M agent.

It requires the correspondent LwM2M agent present and working. The agent presence is not related to the registration with a server; it may be verified using either **AT#LWM2MSKIP** or through the **AT#LWM2MEXIST** commands.
The resource must be writable (W).

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	Auto	No	-	2

AT#LWM2MW=<agentId>,<objectID>,<objectInstanceID>,<resourceID>,<resourceInstanceID>,<value>

Parameters:

Name	Type	Default	Description
<agentId>	integer	0	identifier of the LwM2M agent related to the request Values: 0 : Telit agent 1÷3 : reserved for future use
<objectID>	integer	N/A	object identifier to be selected. The following objects could not be accessed by the command: - '0', Security object - '1', Server object - '2', Access Control object - '5', Firmware Update object Value: 0÷65535 : object identifier range

<objectInstanceID>	integer Value: 0÷65535 : object Instance identifier range	N/A	object Instance identifier
<resourceID>	integer Value: 0÷65535 : resource identifier range	N/A	the resource identifier
<resourceInstanceID>	integer Value: 0÷65535 : resource instance identifier range	N/A	resource instance identifier
<value>	mixed	-	data to be written in the selected URI path

Additional info:

- <**value**> data could assume the following values, according to specified resource type

Name	Type	Default	Description
<value>	integer Values: -9.2233720368548E+18÷9223372036854775807 : values range for integers 0,1 : values range for booleans	N/A	integer values
<value>	mixed	-	float values Values range for floats from -1.797693e+308 to 1.797693e+308

			Please note that the command accepts only numbers with decimal representation such as 1234.5678. For the sake of representation here are represented in exponential notation. Float values are accepted in positive and negative format, according to the proper float notation.
<value>	string	-	string values, max 255 characters accepted.
<value>	hex	-	opaque values, introduced by the hexadecimal representation, max 2048 characters accepted. Only characters 0-9 and A-F are accepted.
<value>	integer	-	time values Same notation as integer values, expressed as the number of seconds since Jan 1st, 1970 in the UTC time zone (Unix Epoch format).
<value>	string	-	ObjectLink values string of max 11 characters, represented as a couple of integer numbers separated by colon, which represent an Object ID and an Object Instance ID in the format "<**objectID**>:<**objectInstanceID**>" The values range for the numbers separated by colon is: (0-65535):(0-65355)

- The command returns an **ERROR** if the selected resource is not writable.
- When writing Float type resources, to achieve the best accuracy available, a standard IEEE754 double variable (8 bytes) is used to handle these data.
  Note that this type of data is according to OMA-TS-LightweightM2M-V1_0_2-20180209-A, appendix C specification, and it follows the same

rules of standard ANSI C code: when inserting the value, this is automatically converted to the nearest IEEE754 double, e.g.

AT#LWM2MW=0,3311,0,5805,0,1.378

the value "1.378" will be converted to its nearest IEEE754 double, which is exactly 1.377999999999999989164223279658.

This value will be the actual one used for handling (storing, computation, transmission, etc.).

Since <**resourceInstanceID**> parameter is mandatory, in case of single instance resources, it will be ignored.

The write command has effect only if the agent is present: it can be verified through the **AT#LWM2MEXIST** command

AT#LWM2MW?

Read command return **OK** code

AT#LWM2MW=?

Test command reports the range for parameters.

AT#LWM2MR - LwM2M Client Resource Reading

This set command selects the parameters to read the value of a specific LwM2M resource on the LwM2M agent.

It requires the correspondent LwM2M agent present and working. The agent presence is not related to the registration with a server; it may be verified through the **AT#LWM2MEXIST** command.
The resource must be readable (R).

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	Auto	No	-	2

AT#LWM2MR=<agentId>,<objectID>,<objectInstanceID>,<resourceID>,<resourceInstanceID>

Parameters:

Name	Type	Default	Description
<agentId>	integer	0	identifier of the LwM2M agent related to the request Values: 0 : Telit agent 1÷3 : reserved for future use
<objectID>	integer	N/A	select object identifier. The following objects could not be accessed by the command: - '0', Security object - '1', Server object - '2', Access Control object - '5', Firmware Update object Value: 0÷65535 : object identifier range

<objectInstanceID>	integer	N/A	object instance identifier Value: 0÷65535 : object instance identifier range
<resourceID>	integer	N/A	resource identifier Value: 0÷65535 : resource identifier range
<resourceInstanceID>	integer	N/A	resource instance identifier Value: 0÷65535 : resource instance identifier range

The command returns an **ERROR** if the selected resource is not readable.

According to OMA-TS-LightweightM2M-V1_0_2-20180209-A, appendix C specification, Float type resources are compliant to standard IEEE754 Floating-Point Arithmetic.

In order to provide the user the most accurate representation, all available significant digits are being shown when reading the data. Depending on the floating point value, the number of these significant digits can be up 18-20, e.g.

Resource /3311/0/5805/0, actual IEEE754 double value stored:

1.377999999999999164223279658

Read command:

AT#LWM2MR=0,3311,0,5805,0

#LWM2MR: 1.3779999999999999

OK

It is up to the user cutting out the less significant digits, according to the accuracy they need.

When reading Object Link resources, they will be displayed as a string in the format:

"<objectID>:<objectInstanceID>"

- Since the <**resourceInstanceID**> parameter is mandatory, in case of single instance resources, it will be ignored.
- The write command has effect only if the agent is present: it can be verified through the **AT#LWM2MEXIST** command

AT#LWM2MR?

Read command return **OK** code

AT#LWM2MR=?

Test command reports the range for parameters

AT#LWM2ME - LwM2M Client Resource Executing

This set command selects the parameters to execute a specific LwM2M resource on the LwM2M agent.

It requires the correspondent LwM2M agent present and working. The agent presence is not related to the registration with a server; it may be verified through the **AT#LWM2MEXIST** command.
The resource must be executable (E).

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	No	No	-	2

AT#LWM2ME=<agentId>,<objectID>,<objectInstanceID>,<resourceID>,<resourceInstanceID>

Parameters:

Name	Type	Default	Description
<agentId>	integer	0	identifier of the LwM2M agent related to the request Values: 0 : Telit agent 1÷3 : reserved for future use
<objectID>	integer	N/A	select object identifier. The following objects could not be accessed by the command: - '0', Security object - '1', Server object - '2', Access Control object - '5', Firmware Update object Value: 0÷65535 : select object range

<objectInstanceID>	integer	N/A	object Instance identifier
	Value:		
	0÷65535	:	object Instance identifier range
<resourceID>	integer	N/A	resource identifier
	Value:		
	0÷65535	:	resource identifier range
<resourceInstanceID>	integer	N/A	resource instance identifier
	Value:		
	0÷65535	:	resource instance identifier range

- The command returns an **ERROR** if the selected resource is not executable.
- Since the <**resourceInstanceID**> parameter is mandatory, in case of single instance resources, it will be ignored.
- The write command has effect only if the agent is present: it can be verified through the **AT#LWM2MEXIST** command.

AT#LWM2ME?

Read command return **OK** code

AT#LWM2ME=?

Test command reports the range for parameters

#LWM2ME command URCs examples:

- Execution of /3303/0/5605 on server side:
  #LWM2MINFO: "GEN","EXEC: /3303/0/5605/0"

- Execution of /3303/0/5605 on client side:
  AT#LWM2ME=0,3303,0,5605,0
  OK

  #LWM2MINFO: "GEN","EXEC: /3303/0/5605/0"

- Execution of /3/0/4 (module reboot) on server side:
  #LWM2MINFO: "GEN","DEVICE REBOOT"

AT#LWM2MSET - Set LwM2M Whitelisted Resource

This set command writes a value on a ReadOnly (RO) LwM2M resource.
The resource must be ReadOnly (RO) and whitelisted (refer to Additional info section).

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	Auto	No	-	2

AT#LWM2MSET=<type>,<objectID>,<objectInstanceID>,<resourceID>,<resourceInstanceID>, <value>

Parameters:

Name	Type	Default	Description
<type>	integer	N/A	data type to be inserted Values: 0 : Integer and Boolean 1 : Float 2 : String 3 : Opaque 4 : Object Link 5 : Time
<objectID>	integer	N/A	object identifier Value: 0÷65535 : object identifier range
<objectInstanceID>	integer	N/A	object instance identifier Value: 0÷65535 : object instance identifier range
<resourceID>	integer	N/A	resource identifier

			Value: 0÷65535 : resource identifier range
<resourceInstanceID>	integer	N/A	resource instance identifier Value: 0÷65535 : resource instance identifier range
<value>	mixed	-	the value to be associated to the specified resource, see Additional info section.

Additional info:

- <value> data could assume the following values, according to the specified <type>

Name	Type	Default	Description
<value>	integer	N/A	integer values Values: - -9.2233720368548E+18÷+9.2233720368548E+18 : values range for integers 0,1 : values range for booleans
<value>	mixed	N/A	float values Please note that the command accepts only number with decimal representation such as 1234.5678. For the sake of representation, the test command will return an exponential representation. Float values are accepted in positive and negative format, according to the proper float notation.

Value:

-1.797693E+308÷1.797693e+308 : values range for floats

<value>	string	-	string values max 255 characters accepted
<value>	hex	-	opaque values, introduced by the hexadecimal representation max 2048 characters accepted
<value>	string	-	Object link values string of max 11 characters, represented as a couple of integer numbers separated by colon, which represent an Object ID and an Object Instance ID in the format "<**objectID**>:<**objectInstanceID**>" The values range for the numbers separated by colon is: (0-65535):(0-65355)
<value>	integer	-	time values Same notation as integer values, expressed as the number of seconds since Jan 1st, 1970 in the UTC time zone (Unix Epoch format).

This command only works on whitelisted resources and objects. Currently, the whitelist is:

URI	Name	Data Type
3,0,6,0	Device Object, Available Power Sources	Integer
3,0,7,0	Device Object, Power Source Voltage	Integer
3,0,8,0	Device Object, Power Source Current	Integer
3,0,9,0	Device Object, Battery level	Integer
3,0,17,0	Device Object, Device Type	String
3,0,20,0	Device Object, Battery Status	Integer

In addition, all the "read-only" resources dynamically created by **#LWM2MNEWINST** command will be automatically whitelisted.

The command **#LWM2MSET** provides to the user the full control of the resource, aside from the resource type, therefore the command allows writing values outside the specified range.

When setting Float type resources, to achieve the best accuracy available, a standard IEEE754 double variable (8 bytes) is used to handle these data.

Note that this type of data is according to OMA-TS-LightweightM2M-V1_0_2-20180209-A, appendix C specification, and it follows the same rules of standard ANSI C code: when inserting the value, this is automatically converted to the nearest IEEE754 double, e.g.

AT#LWM2MNEWINST=0,3311,0

AT#LWM2MSET=1,3311,0,5805,0,1.378

the value "1.378" will be converted to its nearest IEEE754 double, which is exactly 1.377999999999999989164223279658.

This value will be the actual one used for handling (storing, computation, transmission, etc.).

Since <**resourceInstanceID**> parameter is mandatory, in case of single instance resources, it will be ignored

AT#LWM2MSET?

Read command returns **OK** code.

AT#LWM2MSET=?

Test command reports the supported range of values for the <**type**> parameters.

AT#LWM2MGET - Get LwM2M Whitelisted Resource

This set command selects the parameters to read the value of a specific WriteOnly (WO) LwM2M resource,
The resource must be WriteOnly (WO) and whitelisted (refer to Notes).

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	Auto	No	-	2

AT#LWM2MGET=<type>,<objectID>,<objectInstanceID>,<resourceID>,<resourceInstanceID>

Parameters:

Name	Type	Default	Description
<type>	integer	N/A	data type to be inserted Values: 0 : Integer and Boolean 1 : Float 2 : String 3 : Opaque 4 : Object Link 5 : Time
<objectID>	integer	N/A	object identifier Value: 0÷65535 : object identifier range
<objectInstanceID>	integer	N/A	object instance identifier Value: 0÷65535 : object instance identifier range

<resourceID>	integer Value: 0÷65535	N/A :	resource identifier resource identifier range
<resourceInstanceID>	integer Value: 0÷65535	N/A :	resource instance identifier resource instance identifier range

This command only works on whitelisted resources and objects. For the object whitelist, please refer to **AT#LWM2MSET** command.

According to OMA-TS-LightweightM2M-V1_0_2-20180209-A, appendix C specification, Float type resources are compliant to standard IEEE754 Floating-Point Arithmetic.

In order to provide the user the most accurate representation, all available significant digits are being shown when getting the data. Depending on the floating point value, the number of these significant digits can be up 18-20, e.g.

Resource /3311/0/5805/0, actual IEEE754 double value stored:

1.377999999999999989164223279658

Get command:

AT#LWM2MGET=1,3311,0,5805,0

#LWM2MGET: 1.3779999999999999

OK

It is up to the user cutting out the less significant digits, according to the accuracy they need.

When writing Object Link resources, they must be inserted as a string in the format:

"<objectID>:<objectInstanceID>"

Since <**resourceInstanceID**> parameter is mandatory, in case of single instance resources, it will be ignored.

AT#LWM2MGET?

Read command returns **OK** code.

AT#LWM2MGET=?

Test command reports the supported range of values for the parameters.

AT#LWM2MOBJSET - Write values to more resources of the same object instance in a unique command

This command allows the user to write the values of more resources of a LwM2M object instance.

The resources can be writable (W) and read only (RO), so this command can replace multiple **AT#LWM2MW** and **AT#LWM2MSET** commands.

The operation is a "Partial Update", meaning that resources already existing in the target object instance and not present in the command will be neither changed nor removed.

Open Mobile Alliance - Lightweight Machine to Machine Technical Specification

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	No	No	-	2

AT#LWM2MOBJSET=<agentId>,<objectId>,<objectInstanceId>

After the command line is terminated with <**CR**>, the module sends a four-character sequence prompt:

<CR><LF><greater_than><space> (IRA 13, 10, 62, 32)

and waits for the user input.

The input must follow the JSON format as described in Section 6.4.4 of *OMA Lwm2m specification ver. 1.0.2 (Data Formats for Transferring Resource Information - JSON).*

The full URI of the resources to be modified is composed concatenating the values of the attributes base name "bn" and name "n" (see examples).

The resources whose full URI does not begin with the <**objectId**> and <**objectInstanceId**> indicated in the command arguments will be ignored. At least one resource must begin with the <**objectId**> and <**objectInstanceId**> indicated in the command arguments.

To confirm the input values, issue Ctrl-Z character (0x1A hex). To exit without executing the command, issue ESC character (0x1B hex).

Parameters:

Name	Type	Default	Description

<agentId>	integer	N/A	identifier of the LwM2M agent related to the request Values: 0 : Telit agent 1÷3 : reserved for future use
<objectId>	integer	N/A	object identifier. The following objects could not be accessed by the command: - '0', Security object - '1', Server object - '2', Access Control object - '5', Firmware Update object Value: 0÷65535 : object identifier range
<objectInstanceId>	integer	N/A	object instance identifier Value: 0÷65534 : object instance identifier range

Expected result

When successful, the command returns:
OK
In case of error, the command returns:
ERROR
In addition to this, if the failure is caused by the LwM2M client not being able to set the desired values, one or more URC are emitted describing the failure.

Failure descriptions may be:

ERROR ON OBJECT /<objectId>
client failure when accessing the content of an object
ERROR ON OBJECT INSTANCE /<objectId>/<objectInstanceId>
client failure when accessing the content of an object instance
ERROR ON RESOURCE /<objectId>/<objectInstanceId>/<resourceId>
client failure when accessing the content of a resource
ERROR ON RESOURCE INSTANCE /<objectId>/<objectInstanceId>/<resourceId>-<resourceInstaneId>
client failure when writing a resource instance
UNKNOWN RESOURCE /<objectId>/<objectInstanceId>/<resourceId>
the client did not recognize a resource Id
OBJECT INSTANCE NOT FOUND
the object instance to be set was not present in the client
JSON DESERIALIZATION FAILED
a generic error was found when parsing the JSON string

Max length of JSON string is 6144 characters.

There is a limit of 512 tokens (JSON objects, JSON lists, strings, values) that can be parsed from the input string. This translates to a maximum of 101 resource instances (if using the notation in the examples).

AT#LWM2MOBJSET?

Read command returns:
OK

AT#LWM2MOBJSET=?

Test command reports the supported range of values for the parameters.

- Example:
  for an existing object instance /33205/0 on a LwM2M agent with ID 0, issue the command:
  AT#LWM2MOBJSET=0,33205,0
  the parser will prompt the user with:
  >
  Send the input values in JSON format, for example:
  {"e":[{"n":"/33205/0/0","sv":"SGVsbG8sIHdvcmxkIQ=="},{"n":"/33205/0/2","v":2}]}
  or
  {"bn":"/33205/0/","e":[{"n":"0","sv":"SGVsbG8sIHdvcmxkIQ=="},{"n":"2","v":2}]}

  to modify the resources 0 and 2 of /33205/0.
  Confirm sending a Ctrl-Z character (0x1A hex).
  Resource 1 will not be changed.

- Example on failure:
  for an existing object instance /33205/0 on a LwM2M agent with ID 0, issue the command:
  AT#LWM2MOBJSET=0,33205,0
  the parser will prompt the user with:
  >
  Send the input values in JSON format, for example:
  {"e":[{"n":"/33205/0/0","sv":"SGVsbG8sIHdvcmxkIQ=="},{"n":"/33205/0/2","sv":"2"}]}
  to modify the resources 0 and 2 of /33205/0.
  Confirm sending a Ctrl-Z character (0x1A hex).
  In this case the client will respond with:
  ERROR
  ERROR ON RESOURCE INSTANCE /33205/0/2-0
  because resource 2 is not a string type.

- Examples for various types of LwM2M resources :
  in case of integer (battery level, 3/0/9):
  {"bn":"/3/0/","e":[{"n":"9","v":99}]}

  in case of time (current time, 3/0/13):
  {"bn":"/3/0/","e":[{"n":"13","v":1620828702}]}
  for UTC: Wednesday, May 12, 2021 2:11:42 PM

  in case of float (temperature, 3303/0/5700):

{"bn":"/3303/0/","e":[{"n":"5700","v":25.1}]}

in case of boolean (Digital input state, 3200/0/5500):
{"bn":"/3200/0/","e":[{"n":"5500","bv":true}]}

in case of string (Light Control Colour, 3311/0/5706):
{"bn":"/3311/0/","e":[{"n":"5500","sv":"hello world"}]}

in case of opaque (LwM2M SW management package, 9/0/2):
{"bn":"/9/0/","e":[{"n":"2","sv":"aGVsbG8gd29ybGQ="}]}

please note that the opaque value holds the Base64 format of the string:
Base64("hello world")="aGVsbG8gd29ybGQ="

in case of objLink (LwM2M SW management Checkpoint, 9/0/5):
{"bn":"/9/0/","e":[{"n":"5","ov":"6:0"}]}

setting multiple resources:
{"bn":"/3/0/","e":[{"n":"6/0","v":1},{"n":"6/1","v":5},{"n":"6/2","v":7}]}

AT#LWM2MOBJGET - Read values of all the resources of a LwM2M object/object instance in a unique command

This command allows the user to read the values of all the resources of a LwM2M object/object instance/resource.

The resources can be readable (R) and write only (WO), so this command can replace multiple **AT#LWM2MR** and **AT#LWM2MGET** commands.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	Auto	No	-	2

AT#LWM2MOBJGET=<agentId>,<objectId>[,<objectInstanceId>[,<resourceId>]]

Parameters:

Name	Type	Default	Description
<agentId>	integer	N/A	identifier of the LwM2M agent related to the request Values: 0 : Telit agent 1÷3 : reserved for future use
<objectId>	integer	N/A	object identifier. The following objects could not be accessed by the command: - '0', Security object - '1', Server object - '2', Access Control object - '5', Firmware Update object Value: 0÷65535 : object identifier range
<objectInstanceId>	integer	N/A	object instance identifier Value:

	0÷65534 : object instance identifier range		
<resourceId>	integer	N/A	resource identifier Value: 0÷65535 : resource identifier range

Expected result

When successful, the command prints the result of the query in the JSON format as described in Section 6.4.4 of *OMA Lwm2m specification ver. 1.0.2 (Data Formats for Transferring Resource Information - JSON)*. Then, it returns:

OK

In case of error, the command returns:

ERROR

AT#LWM2MOBJGET?

Read command returns:

OK

AT#LWM2MOBJGET=?

Test command reports the supported range of values for the parameters.

Example:
for an existing object /33205 on a LwM2M agent with ID 0, issue the command:

AT#LWM2MOBJGET=0,33205

If two object instances exist in the client (e.g. ID 0 and ID 1), the parser will return:

{"bn":"/33205/",
"e":[{"n":"0/0","sv":"AA=="},
{"n":"0/1","sv":"IA=="},
{"n":"0/2","v":0},
{"n":"1/0","sv":"AA=="},
{"n":"1/1","sv":"IA=="},
{"n":"1/2","v":3}]
}

OK

for an existing object instance /33205/0 on a LwM2M agent with ID 0, issue the command:

AT#LWM2MOBJGET=0,33205,0

the parser will return:

{"bn":"/33205/0/",
"e":[{"n":"0","sv":"AA=="},
{"n":"1","sv":"IA=="},
{"n":"2","v":0}]
}

OK

for an existing single instance resource /33205/0/1 on a LwM2M agent with ID 0, issue the command:

AT#LWM2MOBJGET=0,33205,0,1

the parser will return:

{"bn":"/33205/0/1",
"e":[
{"sv":"IA=="}]
}

OK

for an existing multiple instance resource /4/0/1 on a LwM2M agent with ID 0, issue the command:

AT#LWM2MOBJGET=0,4,0,1

the parser will return:

```
{"bn":"/4/0/1/",
"e":[
{"n":"0","v":0},
{"n":"1","v":6}]
}

OK
```

AT#LWM2MNFYACKURI - Manage URIs for URC Reporting

This command allows the user to manage (remove/add/list) the list of resources that can generate an URC on serial port related to LwM2M notify acknowledged by the server or not.

The presence of the URC for all the resources in the list is enabled and disabled by the **AT#LWM2MNFYACKENA** command.

The URC is issued in both cases of acknowledged notify and missing ACK, reporting the "ACK" and "NACK" flags.

The command requires the correspondent LwM2M agent present and working. The agent presence is not related to the registration with a server; it may be verified through the **AT#LWM2MEXIST** command.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	No	No	-	2

AT#LWM2MNFYACKURI=<agentId>,<operation>,<objectID>,<objectInstanceID>,[<resourceID>]

If a specified instance/resource URI is present in the NFYACKURI list and the URC reporting is enabled through **AT#LWM2MNFYACKENA** command, any notify sent by the LwM2M client related to the specified URI will issue a URC in the format:

#LWM2MNFYACK: <agentId>,<ShortServerID>,"/<objectID>/<objectInstanceID>/ <resourceID>", "ACK" (NACK)

(Whether the ACK has been properly received or not received at all).

Parameters:

Name	Type	Default	Description
<agentId>	integer	0	identifier of the LwM2M agent related to the request
	Values:		
	0 :	Telit agent	

	1÷3 : reserved for future use		
<operation>	integer	N/A	remove/add/list the URI Values: 0 : remove URI 1 : add URI 2 : list URIs, see Additional info section
<objectID>	integer	N/A	object identifier of the URI Value: 0÷65535 : object Instance identifier range
<objectInstanceID>	integer	N/A	object Instance identifier of the URI Value: 0÷65535 : object Instance identifier range
<resourceID>	integer	N/A	resource identifier of the URI Value: 0÷65535 : resource identifier range

Additional info:

- **AT#LWM2MNFYACKURI=<agentId>,2**
  reports the list of currently supported URIs, in the format:

  #LWM2MNFYACKURI: "/<objectID$_1$>/<objectInstanceID$_1$>/<resourceID$_1$>"
  #LWM2MNFYACKURI: "/<objectID$_2$>/<objectInstanceID$_2$>/<resourceID$_2$>"
  ...
  The URI are listed according to their insertion in the list.

- Precondition to receive the **#LWM2MNFYACK** URCs is to have an observation running on the LwM2M client.
- The list for Notify ACK is limited to 6 entries for each <**agentId**>. Over this limit it is not possible to add any further URI unless another URI already present in list is removed.
- The list and the enabling status are not persistent to a power-cycle.
- If <**resourceID**> is omitted, URC will be enabled for the entire object instance.

AT#LWM2MNFYACKURI?

Read command returns **OK**

AT#LWM2MNFYACKURI=?

Test command reports the supported range of values for the parameters.

Start observation to 3/0/9 on server side
enable NFYACK URC:
AT#LWM2MNFYACKURI=0,1,3,0,9
OK
AT#LWM2MNFYACKENA=0,1
OK
change the value of 3/0/9 to cause a notify sent to the server:
AT#LWM2MSET=0,3,0,9,0,50
OK
#LWM2MNFYACK: 0,99,"/3/0/9", "ACK"

AT#LWM2MNFYACKENA - Control URC Reporting

This command can be used to disable/enable/read the status of the URC reporting in case of LwM2M notify acknowledged by the server.

For more info, please refer to **AT#LWM2MNFYACKURI** command.

The command requires the correspondent Lwm2m agent present and working. The agent presence is not related to the registration with a server; it may be verified through the **AT#LWM2MEXIST** command.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	No	No	-	2

AT#LWM2MNFYACKENA=<agentId>,<action>

By enabling the issuing of the URCs, each time a LWM2M Notify ACK is received for a resource, the user - if the URI of that resource has
been added with **#LWM2MNFYACKURI** - receives an URC reporting the URI path of the resource in the format:

#LWM2MNFYACK: <agentId>,<ShortServerID>,"/<objectID>/<objectInstanceID>/<resourceID>","ACK" ("NACK")

(Whether the ACK has been properly received or not received at all)

Parameters:

Name	Type	Default	Description
<agentId>	integer	N/A	identifier of the LwM2M agent related to the request Values: 0 : Telit agent 1÷3 : reserved for future use
<action>	integer	N/A	remove/add/list the URI Values: 0 : disable URC reporting

1 : enable URC reporting

2 : read URC reporting status, see Additional info section

Additional info:

▸▸ AT#LWM2MFYACKENA=<agentId>,2

reports the current status for the selected <agentId> in the following format:

LWM2MNFYACKENA: <agentId>,<status>

- Precondition to receive the #LWM2MNFYACK URCs is to have an observation running on the LwM2M client.
- The list for Notify ACK is limited to 6 entries for each <agentId>. After that number, it is not possible to add any further URI unless another URI already present in list is removed.
- The list and the enabling status are not persistent to a power-cycle.

AT#LWM2MNFYACKENA?

Read command returns OK

AT#LWM2MNFYACKENA=?

Test command reports the supported range of values for the parameters.

Start observation to 3/0/9 on server side
enable NFYACK URC:
AT#LWM2MNFYACKURI=0,1,3,0,9
OK
AT#LWM2MNFYACKENA=0,1
OK
change the value of 3/0/9 to cause a notify sent to the server:
AT#LWM2MSET=0,3,0,9,0,50
OK
#LWM2MNFYACK: 0,99,"/3/0/9", "ACK"

AT#LWM2MMON - Activate/Deactivate the LwM2M object monitoring

This command can be used to activate/deactivate the object monitoring on client side.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	Auto	No	-	2

AT#LWM2MMON=<action>,<objectID>

Activating the monitoring for an object, an URC is reported on serial port to indicate that the value of a resource of the object has been changed.

Resources usually changes the value due to **AT#LWM2MW** and **AT#LWM2MSET** commands on client side and remotely write operations from server side.

The URC reports the complete URI path of the resource changed but not its value, hence **AT#LWM2MR** and **AT#LWM2MGET** commands are needed to get the value.

The format of the URC is:

#LWM2MMON:
UPD,"/<objectID>/<objectInstanceID>/<resourceID>/<resourceInstanceID>"

Parameters:

Name	Type	Default	Description
<action>	integer	0	activate/deactivate the resource monitoring
	Values:		
	0 : deactivate		
	1 : activate		
<objectID>	integer	N/A	object identifier
	Value:		

1÷65535 : object identifier range

- The list of monitorable <**objectID**> is limited to 6.
  Over this limit, it is not possible to monitor any further object unless another object already present in the list is removed.
- It is possible that the overall list of monitorable <**objectID**> is lower than 6, due to the use by other non-LwM2M entities. It is recommended to verify whether the list is empty by using the read command
- The object list under monitoring is not persistent to a power-cycle.
- The URC is emitted only if the monitoring functionality has been activated via AT command.
- The monitoring functionality can be deactivated by any LwM2M client instance, and not necessarily by the one that activated it.

AT#LWM2MMON?

Read command reports the list of currently supported objects, in the format:

#LWM2MMON: "<objectID$_1$>"

#LWM2MMON: "<objectID$_2$>"

...

The <**objectID$_i$**> are listed according to their insertion order in the list.

AT#LWM2MMON=?

Test command reports the supported range of values for the parameters.

AT#LWM2MCFG - Configuration of generic parameter

This command allows the user to configure a parameter specified by <**paramId**>.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	No	No	-	2

AT#LWM2MCFG=<agentId>,<paramId>,<actionId>[,<value>]

Parameters:

Name	Type	Default	Description
<agentId>	integer	N/A	identifier of the LwM2M agent related to the request Values: 0 : Telit agent 1÷3 : reserved for future use
<paramId>	integer	N/A	identifier of the parameter to be configured Values: 0 : reserved for internal use 1 : PDN type connection 2 : COAP acknowledge timeout 3 : COAP maximum retransmission count 4 : External observations polling time 5 : reserved for internal use 6 : GNSS service (only for Telit agent) 7 : registration URCs (only for Telit agent) 8 : user activated PDP (only for Telit agent) 9 : DTLS retransmission (only for Telit agent)

10 : reserved for internal use

<actionId>	integer	N/A	the required action Values: 0 : Sets the specified <value> for the <paramId> 1 : Gets the current <paramId> setting
<value>	integer	-	identifier of the configured value. It is mandatory in case <**actionId**> is equal to 0. See additional info

Additional info:

- if <**paramId**> set to 1

Name	Type	Default	Description
<value>	integer	0	identifier of the configured value Values: 0 : IPv4 and IPv6 admitted connections (default) 1 : IPv4-only admitted connections

- if <**paramId**> set to 2

Name	Type	Default	Description
<value>	integer	2	identifier of the configured value Value: 1÷30 : the acknowledge timeout for CoAP expressed in seconds

- if <**paramId**> set to 3

Name	Type	Default	Description
<value>	integer	4	identifier of the configured value Value: 1÷5 : the maximum number of CoAP retransmissions

- if <paramId> set to 4

Name	Type	Default	Description
<value>	integer	N/A	identifier of the configured value. See additional notes for default Value: 2÷2592000 : the external observation polling time

- if <paramId> set to 6

Name	Type	Default	Description
<value>	integer	0	identifier of the configured value Values: 0 : disable the GNSS service 1 : enable the GNSS service

- if <paramId> set to 7

Name	Type	Default	Description
<value>	integer	0	identifier of the configured value Values:

0 : disable the registration URCs

1 : enable the registration URCs

▶▶ if <paramId> set to 8

Name	Type	Default	Description
<value>	integer	0	identifier of the configured value
	Values:		
	0 : disable the user activated PDP		
	1 : enable the user activated PDP		

▶▶ if <paramId> set to 9

Name	Type	Default	Description
<value>	integer	0	identifier of the configured value
	Values:		
	0 : disable the DTLS Retransmission (default)		
	1 : enable the DTLS Retransmission		

The values set with <paramId> affect uniquely the agent identified by <agentId>.

The values set with <paramId>= 2 and <paramId>= 3 must be coherent with the table below

COAP maximum retransmission count	Max COAP acknowledge timeout
1	30
2	12
3	6
4	2

5	1

- The default value for <**paramId**>= 4 depends on the <**agentId**>, for Telit agent default value is 1800, for other agents is 10.
- The default value for <**paramId**>= 9 is 0.

AT#LWM2MCFG?

Read command returns

OK

AT#LWM2MCFG=?

Test command reports the supported range of values for the parameters <**agentId**>,<**paramId**> and <**actionId**>.

Setting the IPv4-only connections for Telit agent

```
AT#LWM2MCFG=0,1,0,1
OK
```

Setting a COAP ack_timeout for the Telit agent

```
AT#LWM2MCFG=0,2,0,1
OK
```

Getting the COAP ack_timeout for the Telit agent

```
AT#LWM2MCFG=0,2,1
#LWM2MCFG: 0,2,1
OK
```

Setting a COAP max_retransmit for the Telit agent

```
AT#LWM2MCFG=0,3,0,3
OK
```

Setting external polling time for the Telit agent

```
AT#LWM2MCFG=0,4,0,86400
OK
```

Getting the external polling time for the Telit agent

```
AT#LWM2MCFG=0,4,1
#LWM2MCFG: 0,4,86400
OK
```

Setting DTLS Retransmission status to enable for Telit agent

```
AT#LWM2MCFG=0,9,0,1
OK
```

Getting DTLS retransmission status for the Telit agent

```
AT#LWM2MCFG=0,9,1
#LWM2MCFG: 0,9,0
OK
```

AT#LWM2MCUST - Sets LwM2M General Customization Parameters

This command allows the end-user to set LwM2M customization parameters related to the module. Those settings are generally neither related nor manageable with other LwM2M agent commands.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	Auto	No	-	2

AT#LWM2MCUST=<paramId>,<data>

Parameters:

Name	Type	Default	Description
<paramId>	integer	0	identifier of the parameter to be set Values: 0 : sets a LwM2M customization to the module. The change has no effect if there is a specific LwM2M carrier agent that is automatically activated (i.e.: VZW, ATT). 1 : deletes a LwM2M customization in the module (set by <paramId>=0), if any
<data>	mixed	-	data to be set for the selected **<paramId>**. <**data**> type depends on the **<paramId>**. See the table in the Additional info section.

Additional info:

▶▶

<paramId>	<data> type	<data> value	note
		"VZW"	customizes the LwM2M to run the Verizon agent instance

0	string	"ATT"	customizes the LwM2M to run the AT&T agent instance
		"DCM"	customizes the LwM2M to run the Docomo agent instance

String values shall be upper case.

The customization settings are stored in the module and have effect after a power-cycle.

AT#LWM2MCUST?

Read command return **OK** code

AT#LWM2MCUST=?

Test command reports the supported range of values for **<paramId>**.

Enabling the DOCOMO customization
AT#LWM2MCUST=0,"DCM"
OK
Deleting the customization
AT#LWM2MCUST=1
OK

AT#LWM2MFOTACFG - LwM2M Client Fota Management

This set command selects the FOTA mode that will be applied to the specified agent.

The command requires the correspondent LwM2M agent present and working. The agent presence is not related to the registration with a server; it may be verified through the **AT#LWM2MEXIST** command.

The user will be able to enable the ACK request for any of the FOTA operations (delta download, delta apply for the software update, both and none of them).

After the FOTA mode has been configured, an URC is issued each time the client needs the ACK to continue with the required operation. Every URC emitted should be acknowledged (and authorized) with **AT#LWM2MFOTAACK** command.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	Auto	No	-	2

AT#LWM2MFOTACFG=<agentId>,<mode>[,<timeoutAction>]

Parameters:

Name	Type	Default	Description
<agentId>	integer	0	identifier of the LwM2M agent related to the request
	Values:		
	0 : Telit agent		
	1÷3 : reserved for future use		
<mode>	integer	0	select the FOTA mode
	Values:		
	0 : Normal mode, no ACK required		
	1 : ACK required for delta file downloading		
	2 : ACK required for delta application for the software upgrade		
	3 : ACK required for both delta download and delta update application		

			4 : FOTA should be rejected
<timeoutAction>	integer	0	select the action to be performed after the FOTA timeout for ACK expiration Values: 0 : After the FOTA timeout for ACK expiration, the operation waiting for user confirmation is rejected and FOTA entire operation is reset 1 : After the FOTA timeout for ACK expiration, the operation waiting for user confirmation is automatically applied

- The FOTA timeout for ACK confirmation lasts 1 week (in case of ACK not sent) for each ACK confirmation request.
- FOTA configuration <**mode**> and <**timeoutAction**> are persistent to the module power cycle.
- FOTA configuration <**mode**> and <**timeoutAction**> are persistent to the factory reset and to the **#LWM2MSTS** command.
- URC are emitted, according to the FOTA mode set, to allow the user to identify the operation that has triggered it. URC are issued in the format:
  #LWM2MFOTARING: <agentId>,"DOWNLOAD"
  #LWM2MFOTARING: <agentId>,"UPDATE"
  #LWM2MFOTARING: <agentId>,"FOTA REJECTED"
- The action that should be performed (either download or update) will be applied in a time ranging from a few seconds up to a couple of minutes.
- If the <**mode**> is set to 4 (FOTA rejection), the client returns an error at every FOTA request generated by the server.
- In case of FOTA operation rejected due to ACK timeout expiring without an ACK confirmation (i.e.: <**timeoutAction**> set to 0), an URC is issued:
  #OTAEV: "FOTA REQUEST DROPPED"

#LWM2MFOTACFG should be given only in FOTA idle status to avoid uncertain scenarios; as soon as the delta firmware is being downloaded,every attempt to change the FOTA configuration during a FOTA operation cycle will result in an error.

AT#LWM2MFOTACFG?

Read command returns the current FOTA configuration for all the LwM2M clients currently active in the module, in the format:

#LWM2MFOTACFG: <agentId$_1$>,<mode$_1$>,<timeoutAction$_1$>

...

#LWM2MFOTACFG: < agentId$_n$>,<mode$_n$>,<timeoutAction$_n$>

AT#LWM2MFOTACFG=?

Test command reports the range for parameters

#LWM2MFOTACFG/#LWM2MFOTAACK use case example:

// Telit LwM2M client first activation

AT#LWM2MENA=1

OK

LWM2M-TLT:"BOOTSTRAPPING",SSID=0,"coaps://bs.telit.io"

LWM2M-TLT:"BOOTSTRAPPED",SSID=0,"coaps://bs.telit.io"

// setting Telit LwM2M client to require ACK for any FOTA operation

AT#LWM2MFOTACFG=0,3

OK

// FOTA campaign is triggered on server side: delta package download ACK is sent

#LWM2MFOTARING: 0,"DOWNLOAD"

AT#LWM2MFOTAACK=0,1

OK

// LwM2M Telit client is downloading the delta package

...

// Download is finished, and the delta package integrity is confirmed: delta application ACK request is sent

#LWM2MFOTARING: 0,"UPDATE"

AT#LWM2MFOTAACK=0,1

OK

// Delta is applied, LwM2M Telit client is rebooted and FOTA ends with a new bootstrap

#LWM2MINFO: "GEN","FOTA REBOOT"

#OTAEV: Module Upgraded To New Fw

LWM2M-TLT:"BOOTSTRAPPING",SSID=0,"coaps://bs.telit.io"

LWM2M-TLT:"BOOTSTRAPPED",SSID=0,"coaps://bs.telit.io"

AT#LWM2MFOTAACK - Ack for Telit LwM2M Agent FOTA Operation Confirmation

This command sends an ACK to the LwM2M Client to authorize the FOTA operation required to the specified client.

The command requires the correspondent LwM2M agent present and working. The agent presence is not related to the registration with a server; it may be verified through the **AT#LWM2MEXIST** command.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	Auto	No	-	2

AT#LWM2MFOTAACK=<agentId>,<action>

if the **<mode>** set with **#LWM2MFOTACFG** command is not 0 (default), the Telit LwM2M client requires an ACK to performs its operations on the dedicated data context.

Parameters:

Name	Type	Default	Description
<agentId>	integer	0	identifier of the LwM2M agent related to the request
	Values: 0 : Telit agent 1÷3 : reserved for future use		
<action>	integer	1	acknowledge to the FOTA required operation
	Value: 1 : execute the pending action according to last #LWM2MFOTARING URC		

The action that should be performed (either download or update) will be applied in a time ranging from a few seconds up to a couple of minutes.

AT#LWM2MFOTAACK?

Not supported

AT#LWM2MFOTAACK=?

Test command reports the supported range of values for all the parameters.

#LWM2MFOTACFG/#LWM2MFOTAACK use case example:

// Telit LwM2M client first activation

AT#LWM2MENA=1
OK
LWM2M-TLT:"BOOTSTRAPPING",SSID=0,"coaps://bs.telit.io"
LWM2M-TLT:"BOOTSTRAPPED",SSID=0,"coaps://bs.telit.io"

// setting Telit LwM2M client to require ACK for any FOTA operation
AT#LWM2MFOTACFG=0,3
OK
// FOTA campaign is triggered on server side: delta package download ACK is sent
#LWM2MFOTARING: 0,"DOWNLOAD"
AT#LWM2MFOTAACK=0,1
OK

// LwM2M Telit client is downloading the delta package
...

// Download is finished, and the delta package integrity is confirmed: delta application ACK request is sent
#LWM2MFOTARING: 0,"UPDATE"
AT#LWM2MFOTAACK=0,1
OK

// Delta is applied, LwM2M Telit client is rebooted and FOTA ends with a new bootstrap
#LWM2MINFO: "GEN","FOTA REBOOT"

#OTAEV: Module Upgraded To New Fw
LWM2M-TLT:"BOOTSTRAPPING",SSID=0,"coaps://bs.telit.io"
LWM2M-TLT:"BOOTSTRAPPED",SSID=0,"coaps://bs.telit.io"

AT#LWM2MFOTASTATE - LwM2M Client FOTA State

This command allows the end-user to query the module in order to retrieve, for a given agent, the FOTA client state, both in terms of the LwM2M specification status and the internal FOTA client management status.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	No	No	-	2

AT#LWM2MFOTASTATE=<agentId>

Parameter:

Name	Type	Default	Description
<agentId>	integer	0	identifier of the LwM2M agent related to the request
	Values:		
	0	:	Telit agent
	1÷3	:	reserved for future use

Additional info:

- After the command is issued, the answer returned is in the format:
  #LWM2MFOTASTATE: <fwUpdateObjStatus>,<fotaStatus>,<ackExpiringTime>
  The <**fwUpdateObjStatus**> parameter returns the Firmware object resource 3 "FIRMWARE STATE", which is the FOTA status expressed in terms of the LwM2M specification.
  The <**fotaStatus**> parameter returns the internal FOTA client status.
  The <**ackExpiringTime**> parameter reports the time remaining to the ACK request expiration, in case **#LWM2MFOTACFG** is not set to default value, it reports the value 0 otherwise

Name	Type	Default	Description

<fwUpdateObjStatus>	integer	N/A	Firmware object resource 3 "FIRMWARE STATE" Values: 0 : IDLE 1 : DOWNLOADING 2 : DOWNLOADED 3 : UPDATING
<fotaStatus>	integer	N/A	internal FOTA client status Values: 0 : IDLE 1 : FOTA INIT REQUEST RECEIVED 2 : DOWNLOAD REQUEST RECEIVED, WAITING FOR ACK 3 : DOWNLOAD IN PROGRESS 4 : DOWNLOAD OF A VALID DELTA FILE COMPLETED 5 : DELTA INTEGRITY CHECK 6 : UPDATE REQUEST RECEIVED, WAITING FOR ACK 7 : UPDATE IN PROGRESS 8 : FOTA REJECTED 9 : FOTA FAILED
<ackExpiringTime>	integer	-	time remaining to the ACK request expiration, expressed in seconds.

- If the **#LWM2MFOTACFG** command is not set, the parameter <**fotaStatus**> may assume only a subset of its values set
- The <**fotaStatus**> parameters values 1 (DOWNLOAD REQUEST RECEIVED, WAITING FOR ACK), 4 (UPDATE REQUEST RECEIVED, WAITING FOR ACK) and 6 (FOTA REJECTED) may be assumed only when the **#LWM2MFOTACFG** command is not set to the default value
- FOTA rejected is a permanent condition; this code is returned when **#LWM2MFOTACFG** is set with this option, regardless there was a FOTA request effectively
- <**fwUpdateObjStatus**> and <**fotaStatus**> report different internal information, thus their value may not be constantly aligned
- In case of **#LWM2MFOTACFG** not set to the default value, once the **#LWM2MFOTAACK** is issued, the internal FOTA management may take several seconds to check it and manage it properly; during this time the <**ackExpiringTime**> parameter may continue to return decreasing values.
- The FOTA LwM2M state machine (either internal or external) and the download process or delta check process are not constantly aligned; therefore, a short delay may be present.

AT#LWM2MFOTASTATE?

Read command returns:

OK

AT#LWM2MFOTASTATE=?

Test command reports the range for parameters.

Server URC and read command examples:

- During the Telit agent FOTA waiting for update ACK, **#LWM2MFOTACFG** set to require ack for all the operations, after a day of waiting:

  AT#LWM2MFOTACFG?
  #LWM2MFOTACFG: 0,3,0
  OK

  AT#LWM2MFOTASTATE=0
  LWM2MFOTASTATE: 3,6,518400
  OK

- The Telit agent FOTA is set to reject all the FOTA sessions:

  AT#LWM2MFOTACFG?
  #LWM2MFOTACFG: 0,4,0
  OK

  AT#LWM2MFOTASTATE=0
  LWM2MFOTASTATE: 0,8,0
  OK

- The Telit agent FOTA entire process, with ACK for all the steps

  AT#FOTAURC=1
  OK

  AT#LWM2MFOTACFG=0,3
  OK

  AT#LWM2MFOTASTATE=0
  #LWM2MFOTASTATE: 0,0,0
  OK

  #OTAEV: "FOTA REQUEST INIT"

  AT#LWM2MFOTASTATE=0
  #LWM2MFOTASTATE: 1,1,0
  OK

#LWM2MFOTARING: 0,"DOWNLOAD"

AT#LWM2MFOTASTATE=0
#LWM2MFOTASTATE: 1,2,604700
OK

AT#LWM2MFOTAACK=0,1
OK

AT#LWM2MFOTASTATE=0
#LWM2MFOTASTATE: 1,3,0
OK

#OTAEV: "DOWNLOAD STARTED"

AT#LWM2MFOTASTATE=0
#LWM2MFOTASTATE: 1,3,0
OK

#OTAEV: "DOWNLOAD COMPLETED"

AT#LWM2MFOTASTATE=0
#LWM2MFOTASTATE: 1,5,0
OK

#OTAEV: "INTEGRITY CHECK PASS"

AT#LWM2MFOTASTATE=0
#LWM2MFOTASTATE: 2,4,0
OK

#LWM2MFOTARING: 0,"UPDATE"

AT#LWM2MFOTASTATE=0
#LWM2MFOTASTATE: 3,6,604750
OK

```
AT#LWM2MFOTAACK=0,1
OK

#LWM2MINFO: "GEN","FOTA REBOOT"

AT#LWM2MFOTASTATE=0
#LWM2MFOTASTATE: 3,7,0
OK
```

AT#LWM2MCIPHERENA - Toggles between the advanced and default ciphers

This command toggles between the advanced ciphers and the default ciphers.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	Auto	No	-	2

AT#LWM2MCIPHERENA=<agent>,<cipher_mode>

This command sets the cipher suites for the agent specified

Parameters:

Name	Type	Default	Description
<agent>	integer	N/A	agent ID
	Values:		
	0 : Telit agent		
	1÷3 : reserved for future use		
<cipher_mode>	integer	0	Cipher mode
	Values:		
	0 : Default ciphers		
	1 : Advanced ciphers		

Additional info:

- ***Default ciphers:***
  Cipher Suite: TLS_PSK_WITH_AES_128_CCM_8 (0xc0a8)
  Cipher Suite: TLS_PSK_WITH_AES_128_CBC_SHA (0x008c)

  Advanced ciphers:
  Cipher Suite: TLS_ECDHE_PSK_WITH_AES_128_CBC_SHA256 (0xc037)
  Cipher Suite: TLS_ECDHE_ECDSA_WITH_AES_128_CCM (0xc0ac)

Cipher Suite: TLS_PSK_WITH_AES_128_CCM_8 (0xc0a8)
Cipher Suite: TLS_PSK_WITH_AES_128_CBC_SHA (0x008c)

AT#LWM2MCIPHERENA?

Read command reports the current values of parameters with **OK** result code

AT#LWM2MCIPHERENA=?

Test command returns the range of the parameters with **OK** result code

```
AT#LWM2MCIPHERENA=0,1
OK

AT#LWM2MCIPHERENA?
#LWM2MCIPHERENA:0,1
OK

AT#LWM2MCIPHERENA=?
#LWM2MCIPHERENA: (0-3),(0-1)
OK
```

AT#LWM2MNFYLIST - Obtain information about active observations

This command allows the user to request information on the active observations set by LwM2M servers at which the client is registered to.

SIM Presence	Setting saved	Can be aborted	MAX timeout	SELINT
Required	Auto	No	-	2

AT#LWM2MNFYLIST=<agentId>[,<shortServerID>]

Parameters:

Name	Type	Default	Description
<agentId>	integer	0	identifier of the LwM2M agent related to the request Values: 0 : Telit agent 1÷3 : reserved for future use
<shortServerID>	integer	N/A	identifier of the server related to the request. If this parameter is not present, the query will be done for all servers at which the client is registered to. Value: 1÷65534 : Short server ID of the addressed server

Additional info:

- Expected result
  The command will respond listing the observations details for the server <**shortServerID**>, or for all servers related to the <**agentId**> in case parameter <**shortServerID**> is not provided.

- If an active observation is present, the answer will be in the following form:

  #LWM2MNFYLIST: <shortServerID>,<objID>[,<objInstID>[,resID]]
  ...
  OK

Name	Type	Default	Description
<shortServerID>	integer	-	Identifier of the server
<objID>	integer	-	Object ID related to the observation
<objInstID>	integer	-	Object Instance ID related to the observation
<resID>	integer	-	Resource ID related to the observation

- Otherwise if a server at which the client is registered to, does not have an active observation the answer will be in the following form:
  #LWM2MNFYLIST: <shortServerID>,"EMPTYLIST"
  OK

AT#LWM2MNFYLIST?

Read command returns **OK** code.

AT#LWM2MNFYLIST=?

Test command reports the supported range of values for the parameters.

List active observations for Telit Agent (Registered to one server with two active observations):

AT#LWM2MNFYLIST=0

#LWM2MNFYLIST:
99,4,0,0
99,500
OK

List active observations for Telit Agent (Not registered to any server):

AT#LWM2MNFYLIST=0

ERROR

List active observations for Telit Agent (Registered to two servers, only one set an observation):

AT#LWM2MNFYLIST=0

#LWM2MNFYLIST:
99,6,0
100,"EMPTYLIST"
OK

List active observations related to Telit Agent for Short Server ID 100 :

AT#LWM2MNFYLIST=0,100

#LWM2MNFYLIST:
100,"EMPTYLIST"
OK

5 Acronyms and Abbreviations

Table 8: Acronyms and Abbreviations

Acronym	Definition
ARFCN	Absolute Radio Frequency Channel Number
AT	Attention command
BA	BCCH Allocation
BCCH	Broadcast Control Channel
CA	Cell Allocation
CBM	Cell Broadcast Message
CBS	Cell Broadcast Service
CCM	Current Call Meter
CLIR	Calling Line Identification Restriction
CTS	Clear To Send
CUG	Closed User Group
DCD	Data Carrier Detect
DCE	Data Communication Equipment
DCS	Digital Cellular System
DGPS	Differential GPS, the use of GPS measurements, which are differentially corrected
DNS	Domain Name System
DSR	Data Set Ready
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi Frequency
DTR	Data Terminal Ready
GGA	GPS Fix data
GLL	Geographic Position – Latitude/Longitude
GLONASS	Global positioning system maintained by the Russian Space Forces
GMT	Greenwich Mean Time
GNSS	Any single or combined satellite navigation system (GPS, GLONASS and combined GPS/GLONASS)
GPRS	Global Packet Radio Service
GPS	Global Positioning System
GSA	GPS DOP and Active satellites
GSM	Global System Mobile
GSV	GPS satellites in view
HDLC	High Level Data Link Control
HDOP	Horizontal Dilution of Precision
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
IRA	International Reference Alphabet
IWF	Interworking Function
ME	Mobile Equipment
MO	Mobile Originated
MT	either Mobile Terminated or Mobile Terminal
NMEA	National Marine Electronics Association
NVM	Non-Volatile Memory
PCS	Personal Communication Service
PDP	Packet Data Protocol
PDU	Packet Data Unit
PIN	Personal Identification Number
PPP	Point to Point Protocol

Acronym	Definition
PUK	Pin Unblocking Code
RLP	Radio Link Protocol
RMC	Recommended minimum Specific data
RTS	Request To Send
SAP	SIM Access Profile
SCA	Service Center Address
SMS	Short Message Service
SMSC	Short Message Service Center
SMTP	Simple Mail Transport Protocol
TA	Terminal Adapter
TCP	Transmission Control Protocol
TE	Terminal Equipment
UDP	User Datagram Protocol
USSD	Unstructured Supplementary Service Data
UTC	Coordinated Universal Time
VDOP	Vertical dilution of precision
VTG	Course over ground and ground speed
WAAS	Wide Area Augmentation System

6 Related Documents

Refer to https://dz.telit.com/ for current documentation and downloads.

7 Document History

Table 9: Document History

Revision	Date	Changes
6	2023-08-07	New document template Updated Applicability table New Commands: AT#LWM2MDELINST, AT#LWM2MNFYLIST, AT#LWM2MSKIP Updated Commands: AT#LWM2MCFG, AT#LWM2ME, AT#LWM2MENA, AT#LWM2MEXIST, AT#LWM2MFOTAACK, AT#LWM2MFOTACFG, AT#LWM2MGET, AT#LWM2MINJKEYS, AT#LWM2MLIST, AT#LWM2MMON, AT#LWM2MNEWINST, AT#LWM2MNFYACKENA, AT#LWM2MNFYACKURI, AT#LWM2MOBJGET, AT#LWM2MOBJSET, AT#LWM2MR, AT#LWM2MSET, AT#LWM2MSTAT, AT#LWM2MSTS, AT#LWM2MW
5	2022-07-11	Updated Commands: AT#LWM2MCFG
4	2022-06-24	Updated Applicability Table Re-ordered commands list Updated Commands: AT#LWM2MCFG, AT#LWM2MCIPHERENA, AT#LWM2ME, AT#LWM2MENA, AT#LWM2MFOTAACK, AT#LWM2MGET, AT#LWM2MINJKEYS, AT#LWM2MMON, AT#LWM2MNFYACKENA, AT#LWM2MNFYACKURI, AT#LWM2MOBJSET, AT#LWM2MR, AT#LWM2MSET, AT#LWM2MSTAT, AT#LWM2MSTS, AT#LWM2MW
3	2021-10-08	Updated Commands: AT#LWM2MCFG, AT#LWM2MSTAT
2	2021-09-07	New document template Added Clause "Command Response after Module Boot" Updated Commands: AT#LWM2MENA, AT#LWM2MSET, AT#LWM2MR, AT#LWM2MW, AT#LWM2ME, AT#LWM2MSTS, AT#LWM2MMON, AT#LWM2MGET, AT#LWM2MNFYACKENA, AT#LWM2MNFYACKURI, AT#LWM2MFOTACFG, AT#LWM2MFOTAACK, AT#LWM2MINJKEYS New Commands: AT#LWM2MCFG, AT#LWM2MOBJSET, AT#LWM2MOBJGET, AT#LWM2MFOTASTATE, AT#LWM2MCIPHERENA
1	2020-12-14	Updated Commands: AT#LWM2ME, AT#LWM2MSTS, AT#LWM2MMON, AT#LWM2MNFYACKENA, AT#LWM2MNFYACKURI, AT#LWM2MFOTACFG, AT#LWM2MFOTAACK, AT#LWM2MEXIST New Commands: AT#LWM2MREG, AT#LWM2MLIST, AT#LWM2MCUST
0	2020-04-21	First issue

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Technical Documentation