Event Monitor Application Note

80000NT10028a Rev.4 – 2013-02-15

Making machines talk.

APPLICABILITY TABLE

	Software Version
GC Family (Compact)	
GC864-QUAD	10.00.xx7
GC864-QUAD V2	10.00.xx7
GC864-DUAL V2	10.00.xx7
GE/GL Family (Embedded)	
GE864-QUAD	10.00.xx7
GE864-QUAD V2	10.00.xx7
GE864-QUAD Automotive V2	10.00.xx7
GE864-QUAD ATEX	10.00.xx7
GE864-DUAL V2	10.00.xx7
GE864-GPS	10.00.xx7
GE865-QUAD	10.00.xx7
GL865-DUAL	10.00.xx7
GL865-QUAD	10.00.xx7
GL868-DUAL	10.00.xx7
GE910-QUAD	13.00.xx3
GL865-DUAL V3	16.00.xx2
GL868-DUAL V3	16.00.xx2
GT Family (Terminal)	
GT863-PY	10.00.xx7
GT864-QUAD	10.00.xx7
GT864-PY	10.00.xx7
HE910 Family	
HE910 [1]	12.00.xx3
HE910-GA	12.00.xx3
HE910-D	12.00.xx3
HE910-EUR / HE910-EUD	12.00.xx3
HE910-EUG / HE910-NAG	12.00.xx3
HE910-NAR / HE910-NAD	12.00.xx3

[1] HE910 is the "type name" of the products marketed as HE910-G & HE910-DG.

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Contents

Tables

1. Introduction

1.1. Scope

Scope of the document is to give to the reader a guideline to configure the EVENT MONITOR Service provided by the Telit's modules.

1.2. Audience

The present note is intended for people that need to develop applications based on the recognition of events provided by the EVENT MONITOR Service.

1.3. Contact Information, Support

For general contact, technical support, to report documentation errors and to order manuals, contact Telit Technical Support Center (TTSC) at:

TS-EMEA@telit.com
TS-NORTHAMERICA@telit.com
TS-LATINAMERICA@telit.com
TS-APAC@telit.com

Alternatively, use:
http://www.telit.com/en/products/technical-support-center/contact.php
For detailed information about where you can buy the Telit modules or for recommendations on accessories and components visit:
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To register for product news and announcements or for product questions contact Telit Technical Support Center (TTSC).
Our aim is to make this guide as helpful as possible. Keep us informed of your comments and suggestions for improvements.
Telit appreciates feedback from the users of our information.

1.4. Text Conventions

Danger – This information MUST be followed or catastrophic equipment failure or bodily injury may occur.

Caution or Warning – Alerts the user to important points about integrating the module, if these points are not followed, the module and end user equipment may fail or malfunction.

Tip or Information – Provides advice and suggestions that may be useful when integrating the module.

All dates are in ISO 8601 format, i.e. YYYY-MM-DD.

1.5. Related Documents

[1] AT Commands Reference Guide, Telit document: 80000ST10025a
[2] HE910 AT Commands Reference Guide, Telit document: 80378ST10091A
[3] Virtual Serial Device, Application Note, Telit document: 80000NT10045A
[4] HE910 Family Ports Arrangements, User Guide, Telit document 1vv0300971
[5] Telit Modules Software User Guide, Telit document: 1vv0300784

1.6. Document History

Revision	Date	Changes
ISSUE#0	2009-08-28	Release First ISSUE# 0
ISSUE #1	2010-05-07	Added note on alerts section Added note regarding STARTUP event on alerts section
ISSUE#2	2010-10-04	Added GL865-DUAL to the applicability table
ISSUE#3	2012-10-08	General review of the document in accordance with the addition of the products: HE910, GE910.
ISSUE#4	2013-02-15	Updated Applicability Table, removed: GM862-GPS, GE863-GPS, and GE863-PRO; added: GL865-DUAL V3, GL868-DUAL V3 Added chapter: DTMF String Monitoring, and Abbreviation and acronyms. Removed chapter: Requirements. Reorganized the entire document.

2. Event Monitor Service

The Telit's modules provide the EVENT MONITOR service allowing the user to associate the execution of one or more AT command in accordance with the occurrence of a specified and configured event monitored by the module itself.

Warning: to have more information about the syntax and parameters of the AT commands described in the next pages refer to the document [1], or [2] according to the specific module that you are using.

2.1. Preliminary Event Monitor Setting

Using the following AT command, the service is configured to run on the third AT instance (see later in this chapter the concept of instance), the #EVMONI: <AT Command(s)> URC is enabled and the maximum timeout for the AT commands execution (triggered by the event) is set to 2 minutes:

AT#ENAEVMONICFG=3,1,2

Warning: usefulness of the timeout. The AT commands that force the module in online mode connection (like #SD, #FTPGET, #FTPPUT, etc) should be avoided because they cause a block of the #EVMONI execution. After the expiration of the timeout, set via AT#ENAEVMONICFG command, the module reboots.

Enter the following command to enable the EVENT MONITOR service.
AT#ENAEVMONI=1

Using the **AT#EVMONI** command described in the next chapters, it is possible to monitor the specific events summarized in the table below.

<label> identifying the Event	Events Description
VBATT	Battery voltage
DTR	DTR signal status
ROAM	Network roaming state
CONTDEACT	GPRS context deactivation
RING	Call rings number
STARTUP	Module start-up
REGISTERED	Network registration (to home network or in roaming)
GPIOx (x = 1,2,3,4,5)	GPIO pin status monitoring

<label> identifying the Event	Events Description
ADCH1	ADC pin exceeding voltage threshold
ADCL1	ADC pin drops below voltage threshold
DTMFx (x = 1,2,3,4)	DTMF string monitoring

Tab. 1: Events provided by the Telit's Modules

At this point it is advisable to shortly describe the interaction among the EVENT MONITOR service, the selected AT instance and the other services provided by the Telit's modules. To have detailed information about the concept of AT instance, refer to documents [3] or [4] according to the specific module:

- When the EVENT MONITOR service is enabled setting to 1 the <mod> parameter of the AT#ENAEVMONI command, then the AT instance specified by the <muxInstance> parameter of the AT#ENAEVMONICFG command is reserved to run only the AT commands associated with the monitored event(s).

- If the EVENT MONITOR service is disabled setting to 0 the <mod> parameter of the AT#ENAEVMONI command, then the used AT instance is returned to the previous service, if there is one.

- The <mod> parameter of the AT#ENAEVMONI command and <muxInstance> parameter of the AT#ENAEVMONICFG command are stored in the NVM. Therefore, at module power ON, if the <mod> parameter is set to 1, then the AT instance specified in the <muxInstance> is automatically reserved to run only the AT commands associated with the monitored event(s).

- When an AT instance is reserved for the EVENT MONITOR service, then any other request to use it, coming from other services, is refused. Only the FOTA service can subtract the AT instance reserved to EVENT MONITOR service.

Before starting with the description of the examples that show the settings of the events summarized in Tab. 1 and the relating URC, hereafter there are some notes about the syntax of the AT commands used in the next chapters:

- The parameters of the AT#EVMONI command change their meaning and range in accordance with the <label> that identifies the type of the event.

- The AT command(s) associated with an event via the AT#EVMONI command and executed when the event itself is occurred, is (are) included between two double quotes characters ("). In addition, the string command must begin with a characters sequence (prefix) AT (or at). After the prefix there are the commands bodies (for example: +CGMR, +CGSN, etc) separated by the semicolon character

(;) if the extended commands syntax[2] is used. The maximum number of characters included between the two double quotes is 96. If the command string contains a double quotes (") character, then it must be replaced with the following three characters \22.

2.1.1. Battery Voltage Drop

Before setting the monitoring of the specific VBATT event, it is good practice to configure the EVENT MONITOR service as previously stated in chapter 2.1, if it has not been done before:

```
AT#ENAEVMONICFG=3,1,2        ← Example of configuration
AT#ENAEVMONI=1               ← Enabling the service
```

Note: it is not mandatory to configure the EVENT MONITOR service before the setting of one of the specific event listed in Tab. 1.

Use AT#EVMONI command with "VBATT" <label> to configure the "Battery Voltage Drop" as the specific event to monitor. An example of setting is shown by the following steps:

- Step 1: set the voltage threshold = 4 Volts.
  AT#EVMONI="VBATT",0,1,400
- Step 2: set the time interval equal to 10 sec. If the voltage remains below the threshold for a time interval greater that 10 sec, the SMS message defined in the next step will be sent to the selected recipient subscriber.
  AT#EVMONI="VBATT",0,2,10
- Step 3: write the text of the SMS (e.g.: *Battery low*) that will be sent when the condition described in step 2 is verified. In the body of the following AT#EVMONI command is used the extended commands syntax to send both commands (+CMGF and #CMGS) on the instance configured via AT#ENAEVMONICFG command. The AT+CMGF command selects the Text Mode for the SMS message.
  AT#EVMONI="VBATT",0,0,"AT+CMGF=1;#CMGS=+39346XXXXX,\22Battery low\22"

The monitoring of the specific VBATT event is enabled issuing the following command:

[2] Refer to [1] or [2].

AT#EVMONI="VBATT",1

In alternative, the event monitoring can be activated setting to 1 the second parameters of any AT command included in the step sequence. It is suggested to use the last AT commands that closes the step sequence configuration.

Note: the sequence of the steps previously shown is not mandatory, it may be changed.

When the "VBATT" event is occurred, on the DTE is displayed the following URC:

#EVMONI: AT+CMGF=1;#CMGS=+39346XXXXX,"Battery low"

At the same time, the SMS message is sent to the recipient subscriber. No responses commands are shown on the DTE because they are executed on the instance previously configured via AT#ENAEVMONICFG command.

2.1.2. DTR Signal Status

Before setting the monitoring of the specific DTR event, it is good practice to configure the EVENT MONITOR service as previously stated in chapter 2.1, if it has not been done before:

AT#ENAEVMONICFG=3,1,2 ← Example of configuration
AT#ENAEVMONI=1 ← Enabling the service

Note: it is not mandatory to configure the EVENT MONITOR service before the setting of one of the specific event listed in Tab. 1.

Use AT#EVMONI command with "DTR" <label> to configure the "DTR signal status" as the specific event to monitor. An example of setting is shown by the following steps:

- Step 1: set "high" the status to monitor
  AT#EVMONI="DTR",0,1,1

- Step 2: set the time interval equal to 50 sec. If the DTR signals remains "high" for a time interval greater that 50 sec, the SMS message defined in the next step will be send to the selected recipient subscriber.
  AT#EVMONI="DTR",0,2,50

- Step 3: write the text of the SMS (e.g. *DTR high*) that will be sent when the condition described in step 2 is verified. In the body of the following AT#EVMONI command is used the extended commands syntax to send both commands (+CMGF and #CMGS) on the instance configured via AT#ENAEVMONICFG command. The AT+CMGF command selects the Text Mode for the SMS message.
  AT#EVMONI="DTR",0,0,"AT+CMGF=1;#CMGS=+39346XXXXX,\22DTR high\22"

The monitoring of the specific DTR event is enabled issuing the following command:

AT#EVMONI="DTR",1

In alternative, the event monitoring can be activated setting to 1 the second parameters of any AT command included in the step sequence. It is suggested to use the last AT commands that closes the step sequence configuration.

Note: the sequence of the steps previously shown is not mandatory, it may be changed.

When the "DTR" event is occurred, on the DTE is displayed the following URC:

#EVMONI: AT+CMGF=1;#CMGS=+39346XXXXX,"DTR high"

At the same time, the SMS message is sent to the recipient subscriber. No responses commands are shown on the DTE because they are executed on the instance previously configured via AT#ENAEVMONICFG command.

Warning: if the AT+CFUN=0 command is associated with the DTR event, it has effect only if the corresponding URC is disabled by means of #ENAEVMONICFG command.

2.1.3. Network Roaming State

Before setting the monitoring of the specific ROAM event, it is good practice to configure the EVENT MONITOR service as previously stated in chapter 2.1, if it has not been done before:

AT#ENAEVMONICFG=3,1,2 ← Example of configuration
AT#ENAEVMONI=1 ← Enabling the service

Note: it is not mandatory to configure the EVENT MONITOR service before the setting of one of the specific event listed in Tab. 1.

Use AT#EVMONI command with "ROAM" <label> to configure the "Network Roaming State" as the specific event to monitor. An example of setting is shown below:

- Write the text of the SMS (e.g. *Roaming*) that will be sent to the recipient subscriber when the network roaming state is occurred. In the body of the following AT#EVMONI command is used the extended commands syntax to send both commands (+CMGF and #CMGS) on the instance configured via AT#ENAEVMONICFG command. The AT+CMGF command selects the Text Mode for the SMS message.
  AT#EVMONI="ROAM",0,0,"AT+CMGF=1;#CMGS=+39346XXXXX,\22Roaming\22"

The monitoring of the specific ROAM event is enabled issuing the following command:

AT#EVMONI="ROAM",1

In alternative, the event monitoring can be activated setting to 1 the second parameters of the AT#EVMONI command that include the sending of the SMS message.

When the "ROAM" event is occurred, on the DTE is displayed the following URC:

#EVMONI: AT+CMGF=1;#CMGS=+39346XXXXX,"Roaming"

At the same time, the SMS message is sent to the recipient subscriber. No responses commands are shown on the DTE because they are executed on the instance previously configured via AT#ENAEVMONICFG command.

2.1.4. GPRS Context Deactivation

Before setting the monitoring of the specific CONTDEACT event, it is good practice to configure the EVENT MONITOR service as previously stated in chapter 2.1, if it has not been done before:

AT#ENAEVMONICFG=3,1,2 ← Example of configuration
AT#ENAEVMONI=1 ← Enabling the service

Note: it is not mandatory to configure the EVENT MONITOR service before the setting of one of the specific event listed in Tab. 1.

Use AT#EVMONI command with "CONTDEACT" <label> to configure the "GPRS Context Deactivation" as the specific event to monitor. An example of setting is shown below:

- Write the text of the SMS (e.g. *Context deactivation*) that will be sent to the recipient subscriber when the GPRS context is deactivated. In the body of the following AT#EVMONI command is used the extended commands syntax to send both commands (+CMGF and #CMGS) on the instance configured via AT#ENAEVMONICFG command. The AT+CMGF command selects the Text Mode for the SMS message.
  AT#EVMONI="CONTDEACT",0,0,"AT+CMGF=1;#CMGS=+39346XXXXX,\22Context deactivation\22"

The monitoring of the specific CONTDEACT event is enabled issuing the following command:

AT#EVMONI="CONTDEACT",1

In alternative, the event monitoring can be activated setting to 1 the second parameters of the AT#EVMONI command that include the sending of the SMS message.

When the "CONTDEACT" event is occurred, on the DTE is displayed the following URC:

#EVMONI: AT+CMGF=1;#CMGS=+39346XXXXX,"Context deactivation"

At the same time, the SMS message is sent to the recipient subscriber. No responses commands are shown on the DTE because they are executed on the instance previously configured via AT#ENAEVMONICFG command.

2.1.5. Call Rings Number

Before setting the monitoring of the specific RING event, it is good practice to configure the EVENT MONITOR service as previously stated in chapter 2.1, if it has not been done before:

AT#ENAEVMONICFG=3,1,2 ← Example of configuration
AT#ENAEVMONI=1 ← Enabling the service

Note: it is not mandatory to configure the EVENT MONITOR service before the setting of one of the specific event listed in Tab. 1.

Use AT#EVMONI command with "RING" <label> to configure the "CALL Ring Number" as the specific event to monitor. An example of setting is shown by the following steps:

- Step 1: set the Call rings number equal to 5
  AT#EVMONI="RING",0,1,5

- Step 2: write the text of the SMS (e.g. *call rings*) that will be sent to the recipient subscriber when the call rings number, set in step 1, is reached. In the body of the following AT#EVMONI command is used the extended commands syntax to send both commands (+CMGF and #CMGS) on the instance configured via AT#ENAEVMONICFG command. The AT+CMGF command selects the Text Mode for the SMS message.
  AT#EVMONI="RING",0,0,"AT+CMGF=1;#CMGS=+39346XXXXX,\22Call rings\22"

The monitoring of the specific RING event is enabled issuing the following command:

AT#EVMONI="RING",1

In alternative, the event monitoring can be activated setting to 1 the second parameters of any AT command included in the step sequence. It is suggested to use the last AT commands that closes the step sequence configuration.

Note: the sequence of the steps previously shown is not mandatory, it may be changed..

When the "RING" event is occurred, on the DTE is displayed the following URC:

#EVMONI: AT+CMGF=1;#CMGS=+39346XXXXX,"Call rings"

At the same time, the SMS message is sent to the recipient subscriber. No responses commands are shown on the DTE because they are executed on the instance previously configured via AT#ENAEVMONICFG command.

2.1.6. Module Start-Up

Before setting the monitoring of the specific STARTUP event, it is good practice to configure the EVENT MONITOR service as previously stated in chapter 2.1, if it has not been done before:

AT#ENAEVMONICFG=3,1,2 ← Example of configuration
AT#ENAEVMONI=1 ← Enabling the service

Note: it is not mandatory to configure the EVENT MONITOR service before the setting of one of the specific event listed in Tab. 1.

Use AT#EVMONI command with "STARTUP" <label> to configure the "Module Start-Up" as the specific event to monitor. An example of setting is shown below:

- Set GPIO8 pin as output with high status when the module will be powered OFF/ON.
  AT#EVMONI="STARTUP",0,0,"AT#GPIO=8,1,1"

The monitoring of the specific STARTUP event is enabled issuing the following command:

AT#EVMONI="STARTUP",1

In alternative, the event monitoring can be activated setting to 1 the second parameters of the AT#EVMONI command that include the GPIO setting.

After the module is powered OFF/ON, on the DTE is displayed the following URC:

#EVMONI: AT#GPIO=8,1,1

At the same time, the AT#GPIO=8,1,1 command is executed and no response command is shown on the DTE because it is executed on the instance previously configured via AT#ENAEVMONICFG command.

Warning: when the module is powered on in alarm mode, the STARTUP event is not triggered. The AT#WAKE command should be issued to force the module in normal operating mode and trigger the STARTUP event.

2.1.7. Network Registration

Before setting the monitoring of the specific REGISTERED event, it is good practice to configure the EVENT MONITOR service as previously stated in chapter 2.1, if it has not been done before:

AT#ENAEVMONICFG=3,1,2 ← Example of configuration
AT#ENAEVMONI=1 ← Enabling the service

Note: it is not mandatory to configure the EVENT MONITOR service before the setting of one of the specific event listed in Tab. 1.

Use AT#EVMONI command with "REGISTERED" <label> to configure the "Network Registration" as the specific event to monitor. An example of setting is shown below:

- Write the text of the SMS (e.g. Module registered) that will be sent to the recipient subscriber when the module has been registered to home network or in roaming after the start-up. In the body of the following AT#EVMONI command is used the extended commands syntax to send both commands (+CMGF and #CMGS) on the instance configured via AT#ENAEVMONICFG command. The AT+CMGF command selects the Text Mode for the SMS message.
  AT#EVMONI="REGISTERED",0,0,"AT+CMGF=1;#CMGS=+39346XXXXX,\22Module registered\22"

The monitoring of the specific REGISTERED event is enabled issuing the following command:

AT#EVMONI="REGISTERED",1

In alternative, the event monitoring can be activated setting to 1 the second parameters of the AT#EVMONI command that include the sending of the SMS message.

After the module is powered OFF/ON and the "REGISTERED" event is occurred, on the DTE is displayed the following URC:

#EVMONI: AT+CMGF=1;#CMGS=+39346XXXXX,"Module registered"

At the same time, the SMS message is sent to the recipient subscriber. No responses commands are shown on the DTE because they are executed on the instance previously configured via AT#ENAEVMONICFG command.

2.1.8. GPIO Pin Status Monitoring

Before setting the monitoring of the specific GPIOx event, it is good practice to configure the EVENT MONITOR service as previously stated in chapter 2.1, if it has not been done before:

AT#ENAEVMONICFG=3,1,2 ← Example of configuration

AT#ENAEVMONI=1 ← Enabling the service

Note: it is not mandatory to configure the EVENT MONITOR service before the setting of one of the specific event listed in Tab. 1.

AT#EVMONI provides the capability to monitor up to a maximum of five different GPIO status pins. The five different events are identified using five labels: GPIO1, GPIO2, GPIO3, GPIO4 and GPIO5 used as first parameter of #EVMONI command. An example of setting is shown by the following steps:

- Step 1: assign "GPIO1" label to GPIO pin 4
  AT#EVMONI="GPIO1",0,1,4

- Step 2: monitor the "high" status of the GPIO pin associated with the "GPIO1" event
  AT#EVMONI="GPIO1",0,2,1

- Step 3: define a time interval of 5 seconds. If the GPIO pin status remains "high" for a time interval greater than 5 seconds, the AT command(s) included in the AT#EVMONI command shown in step 4 is executed.
  AT#EVMONI="GPIO1",0,3,5

- Step 4: write the text of the SMS (e.g. *GPIO 4 high*) that will be sent to the recipient subscriber when the condition described in step 3 is verified. In the body of the following AT#EVMONI command is used the extended commands syntax to send both commands (+CMGF and #CMGS) on the instance configured via AT#ENAEVMONICFG command. The AT+CMGF command selects the Text Mode for the SMS message.
  AT#EVMONI="GPIO1",0,0,"AT+CMGF=1;#CMGS=+39346XXXXX,\22GPIO 4 high\22"

The monitoring of the specific GPIO1 event is enabled issuing the following command:

AT#EVMONI="GPIO1",1

In alternative, the event monitoring can be activated setting to 1 the second parameters of any AT command included in the step sequence. It is suggested to use the last AT commands that closes the step sequence configuration.

Note: the sequence of the steps previously shown is not mandatory, it may be changed.

When the "GPIO1" event is occurred, on the DTE is displayed the following URC:

#EVMONI: AT+CMGF=1;#CMGS=+39346XXXXX,"GPIO4 high"

At the same time, the SMS message is sent to the recipient subscriber. No responses commands are shown on the DTE because they are executed on the instance previously configured via AT#ENAEVMONICFG command.

Warning: if the GPIO pin direction is set to 2, i.e. "Alternate Functions", the GPIO pin status cannot be monitored, because it has no meaning, refer to [1], [2], and [5].

2.1.9. ADC Pin Exceeds Voltage Threshold

Before setting the monitoring of the specific ADCH1 event, it is good practice to configure the EVENT MONITOR service as previously stated in chapter 2.1, if it has not been done before:

```
AT#ENAEVMONICFG=3,1,2      ← Example of configuration
AT#ENAEVMONI=1             ← Enabling the service
```

Note: it is not mandatory to configure the EVENT MONITOR service before the setting of one of the specific event listed in Tab. 1.

Use AT#EVMONI command with "ADCH1" <label> to configure the "ADC Pin Exceeds Voltage Threshold" as the specific event to monitor. An example of setting is shown by the following steps:

- Step 1: monitor the ADC pin 2, it is the example shown below. In general, the available ADC pins number depends on the used module; please refer to the specific Hardware User Guide.
  AT#EVMONI="ADCH1",0,1,2

- Step 2: set the voltage threshold equal to 1500 mV.
  AT#EVMONI="ADCH1",0,2,1500

- Step 3: set the time interval equal to 10 sec. If the voltage value remains higher than the threshold for a time interval greater than 10 sec, the AT command(s) included in the AT#EVMONI command of step 4 is executed.
  AT#EVMONI="ADCH1",0,3,10

- Step 4: write the text of the SMS (e.g. *ADC pin 2 high*) that will be sent to the recipient subscriber when the condition described in step 3 is verified. In the body of the following AT#EVMONI command is used the extended commands syntax to send both commands (+CMGF and #CMGS) on the instance configured via AT#ENAEVMONICFG command. The AT+CMGF command selects the Text Mode for the SMS message.
  AT#EVMONI="ADCH1",0,0,"AT+CMGF=1;#CMGS=+39346XXXXX,\22ADC pin 2 high\22"

The monitoring of the specific ADCH1 is enabled issuing the following command:

AT#EVMONI="ADCH1",1

In alternative, the event monitoring can be activated setting to 1 the second parameters of any AT command included in the step sequence. It is suggested to use the last AT commands that closes the step sequence configuration.

Note: the sequence of the steps previously shown is not mandatory, it may be changed.

When the "ADCH1" event is occurred, on the DTE is displayed the following URC:

#EVMONI: AT+CMGF=1;#CMGS=+39346XXXXX,"ADC pin 2 high"

At the same time, the SMS message is sent to the recipient subscriber. No responses commands are shown on the DTE because they are executed on the instance previously configured via AT#ENAEVMONICFG command.

2.1.10. ADC Pin Drops Below Voltage Threshold

Before setting the monitoring of the specific ADCL1 event, it is good practice to configure the EVENT MONITOR service as previously stated in chapter 2.1, if it has not been done before:

AT#ENAEVMONICFG=3,1,2 ← Example of configuration
AT#ENAEVMONI=1 ← Enabling the service

Note: it is not mandatory to configure the EVENT MONITOR service before the setting of one of the specific event listed in Tab. 1.

Use AT#EVMONI command with "ADCL1" <label> to configure the "ADC Pin Drops Below Voltage Threshold" as the specific event to monitor. An example of setting is shown by the following steps:

- Step 1: monitor the ADC pin 2, it is the example shown below. In general, the available ADC pins number depends on the used module; please refer to the specific Hardware User Guide.
  AT#EVMONI="ADCL1",0,1,2

- Step 2: set the voltage threshold equal to 500 mV.
  AT#EVMONI="ADCL1",0,2,500

- Step 3: set the time interval equal to 10 sec. If the voltage value remains lower than the threshold for a time interval greater than 10 sec, the AT command(s) included in the AT#EVMONI command of step 4 is executed.
  AT#EVMONI="ADCL1",0,3,10

- Step 4: write the text of the SMS (e.g. *ADC pin 2 low*) that will be sent to the recipient subscriber when the condition described in step 3 is verified. In the body of the following AT#EVMONI command is used the extended commands syntax to send both commands (+CMGF and #CMGS) on the instance configured via AT#ENAEVMONICFG command. The AT+CMGF command selects the Text Mode for the SMS message.
  AT#EVMONI="ADCL1",0,0,"AT#CMGS=+39346XXXXX,\22ADC pin 2 low\22"

The monitoring of the specific ADCL1 event is enabled issuing the following command:

AT#EVMONI="ADCL1",1

In alternative, the event monitoring can be activated setting to 1 the second parameters of any AT command included in the step sequence. It is suggested to use the last AT commands that closes the step sequence configuration.

Note: the sequence of the steps previously shown is not mandatory, it may be changed..

When the "ADCL1" event is occurred, on the DTE is displayed the following URC:

#EVMONI: AT+CMGF=1;#CMGS=+39346XXXXX,"ADC pin 2 low"

At the same time, the SMS message is sent to the recipient subscriber. No responses commands are shown on the DTE because they are executed on the instance previously configured via AT#ENAEVMONICFG command.

2.1.11. DTMF String Monitoring

Before setting the monitoring of the specific DTMFx event, it is required to configure the EVENT MONITOR service as previously stated in chapter 2, if it has not been done before:

```
AT#ENAEVMONICFG=3,1,2          ← Example of configuration
AT#ENAEVMONI=1                 ← Enabling the service
```

In addition, in this case, DTMF decoder must be enabled:
AT#DTMF=1

AT#EVMONI provides the capability to monitor up to a maximum of four different events associated with the reception of DTMF tones. The four different events are identified by four labels: DTMF1, DTMF2, DTMF3, and DTMF4 used as first parameter of #EVMONI command. An example of setting is shown by the following steps:

- Step 1: assign "DTMF1" label to the DTFM tones string 123 received via the audio channel from a remote sender subscriber.
  AT#EVMONI="DTMF1",0,1,"123"

- Step 2: define a time interval of 5 seconds (5000 msec). It is the maximum time interval between to consecutive DTMF tones belonging to the same string.
  AT#EVMONI="DTMF1",0,2,5000

- Step 3: when the DTMF tones string is received, the module sends to the recipient subscriber the SMS: *DTMF tones string is received*. In the body of the following AT#EVMONI command is used the extended commands syntax to send both commands (+CMGF and #CMGS) on the instance configured via AT#ENAEVMONICFG command. The AT+CMGF command selects the Text Mode for the SMS message.
  AT#EVMONI="DTMF1",0,0,"AT+CMGF=1;#CMGS=+39346XXXXX,\22DTMF tones string is received\22"

The monitoring of the specific DTFM1 event is enabled issuing the following command:

AT#EVMONI="DTFM1",1

In alternative, the event monitoring can be activated setting to 1 the second parameters of any AT command included in the step sequence. It is suggested to use the last AT commands that closes the step sequence configuration.

Note: the sequence of the steps previously shown is not mandatory, it may be changed.

When the "DTFM1" event is occurred, on the DTE is displayed the following URC:

#EVMONI: AT+CMGF=1;#CMGS=+39346XXXXX,"DTMF tones string is received"

At the same time, the SMS message is sent to the recipient subscriber. No responses commands are shown on the DTE because they are executed on the instance previously configured via AT#ENAEVMONICFG command.

3. Abbreviation and acronyms

ADC	Analog Digital Converter
DTE	Data Terminal Equipment
DTMF	Dual Tone Multiple Frequency
DTR	Data Terminal Ready
FOTA	Firmware Over The Air
GPIO	General Purpose Input/Output
NVM	Non Volatile Memory
URC	Unsolicited Result Code
URC	Unsolicited Result Code