# EG800Q&EG91xQ Series
# PSM&eDRX Application Note

**LTE Standard Module Series**

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# About the Document

## Revision History

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# 1 Introduction

This document outlines PSM and eDRX features and describes how to use the PSM and eDRX features of Quectel EG800Q series and EG91xQ family (EG915Q series and EG916Q-GL) modules through related AT commands.

# 2 Overview of PSM and eDRX

## 2.1. PSM Introduction

The PSM, as defined by 3GPP Release 12, operates similarly to a power-off state, yet it allows the UE, such as the EG800Q series and EG91xQ family modules, to maintain network registration without the necessity for re-attaching or re-establishing PDN connections. Despite this, the UE in PSM is not immediately accessible for mobile terminating services. When the UE is in PSM, it becomes available for mobile terminating services during its connected mode, as well as for a certain duration of the Active Time that follows the connected mode. The transition to connected mode can be triggered by mobile originated events, such as data transmission or signaling, for instance, after a periodic TAU process.

Consequently, PSM is ideal for UEs that anticipate infrequent mobile originating and terminating services and can tolerate a degree of latency in the mobile terminating communication.

**NOTE**

For more details regarding PSM mode defined by 3GPP Release 12, see *3GPP TS 23.682 clause 4.5.4 UE Power Saving Mode*.

## 2.2. eDRX Introduction

eDRX is introduced in *3GPP Release 13* as an extension of the DRX feature used by IoT devices for reducing power consumption.

- DRX is a mechanism that puts a device to sleep and subsequently wakes it up after a fixed interval to receive downlink data.
- The basic principle of eDRX is to extend idle mode DRX cycles to allow the device to remain in a power-saving state for an extended period.

Applications that use extended idle mode DRX must carefully handle mobile-terminating services or data transfers, and in particular they need to consider the delay tolerance of mobile terminated data. A network side application may send mobile terminated data, an SMS, or a device trigger, and needs to be aware that extended idle mode DRX may be in place. A UE should request extended idle mode DRX only when all expected mobile terminating communication is tolerant to delay.[1)]

The eDRX parameters include paging time window (PTW) and eDRX cycle. UE should include the expected eDRX parameter IE in an **Attach Request** or **Tracking Area Update Request** message to indicate that the UE supports the idle eDRX feature. If the network supports the eDRX feature, it will include the corresponding eDRX parameter values in the **Attach Accept** or **Tracking Area Update Accept** message sent to the UE. Regarding E-UTRAN network, it should include "eDRX-Allowed-r13 <true>" IE in system information. If this IE is not present, it should be assumed that the network does not support the eDRX feature.

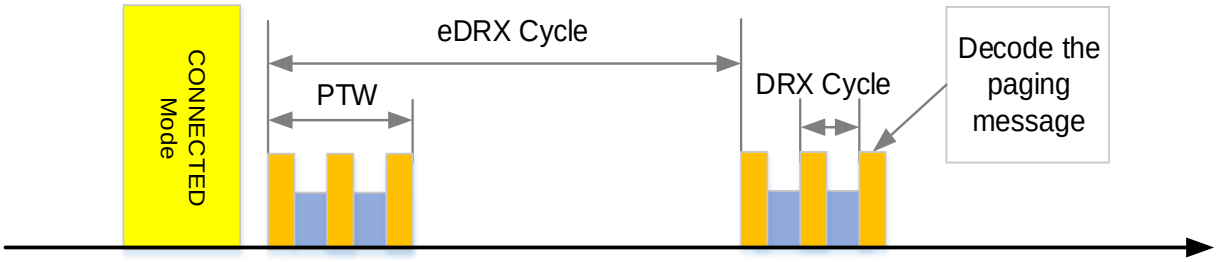


**Figure 1: eDRX Feature Overview**

**NOTE**

1. [1)] Quoted from *3GPP TS 23.682* technical specification. For more information on eDRX mode, see *3GPP TS 23.682, clause 4.5.13 Extended idle mode DRX*.
2. The Paging Time Window (PTW) is not started by receiving an RRC release and starts from the next Paging Occasion (PO). The calculation of PO is primarily determined by the UE_ID (IMSI). For more details, see *3GPP TS36.304, clause 7 Paging*.

# 3 Description of AT Commands

## 3.1. AT Command Introduction

### 3.1.1. Definitions

- **<CR>** Carriage return character.
- **<LF>** Line feed character.
- **<...>** Parameter name. Angle brackets do not appear on the command line.
- **[...]** Optional parameter of a command or an optional part of TA information response. Square brackets do not appear on the command line. When an optional parameter is not given in a command, the new value equals its previous value or the default settings, unless otherwise specified.
- **Underline** Default setting of a parameter.

### 3.1.2. AT Command Syntax

All command lines must start with **AT** or **at** and end with **<CR>**. Information responses and result codes always start and end with a carriage return character and a line feed character: **<CR><LF><response><CR><LF>**. In tables presenting commands and responses throughout this document, only the commands and responses are presented, and **<CR>** and **<LF>** are deliberately omitted.

**Table 1: Types of AT Commands**

| Command Type | Syntax | Description |
|---|---|---|
| Test Command | **AT+<cmd>=?** | Test the existence of corresponding command and return information about the type, value, or range of its parameter. |
| Read Command | **AT+<cmd>?** | Check the current parameter value of a corresponding command. |
| Write Command | **AT+<cmd>=<p1>[,<p2>[,<p3>[...]]]** | Set user-definable parameter value. |
| Execution Command | **AT+<cmd>** | Return a specific information parameter or perform a specific action. |

## 3.2. Declaration of AT Command Examples

The AT command examples in this document are provided to help you learn about the use of the AT commands introduced herein. The examples, however, should not be taken as Quectel's recommendations or suggestions about how to design a program flow or what status to set the module into. Sometimes multiple examples may be provided for one AT command. However, this does not mean that there is a correlation among these examples, or that they should be executed in a given sequence.

## 3.3. Description of PSM AT Commands

### 3.3.1. AT+CPSMS Set Power Saving Mode

The Write Command configures PSM parameters of the module. It controls whether the module wants to apply PSM or not, as well as configures the requested extended periodic TAU value and Active Time value in E-UTRAN.

| **AT+CPSMS Set Power Saving Mode** | |
|---|---|
| Test Command<br>**AT+CPSMS=?** | Response<br>**+CPSMS: (**range of supported **<mode>**s**),,,(**list of supported **<Requested_Periodic-TAU>**s**),(**list of supported **<Requested_Active-Time>**s**)**<br><br>**OK** |
| Read Command<br>**AT+CPSMS?** | Response<br>**+CPSMS: <mode>,,,[<Requested_Periodic-TAU>], [<Requested_Active-Time>]**<br><br>**OK** |
| Write Command<br>**AT+CPSMS=[<mode>,,[,<Requested_Periodic-TAU>[,<Requested_Active-Time>]]]** | Response<br>**OK**<br><br>If there is any error:<br>**ERROR** |
| Maximum Response Time | 300 ms |
| Characteristics | The command takes effect immediately.<br>The configurations are saved automatically. |
| Reference<br>3GPP TS 27.007 | / |

## Parameter

| | |
|---|---|
| **<mode>** | Integer type. Disable or enable the use of PSM in the UE.<br>0 Disable the use of PSM<br>1 Enable the use of PSM<br>2 Disable the use of PSM and discard all parameters for PSM configuration |
| **<Requested_Periodic-TAU>** | String type. One byte in an 8-bit format. Requested extended periodic TAU value (T3412) to be allocated to the UE in E-UTRAN (e.g. "00001010" equals 100 minutes.). In the Write Command, when **<mode>** is 1 and **<Requested_Periodic-TAU>** is omitted, the last configured value is used.<br>Bits 5 to 1 represent the binary coded timer value.<br>Bits 6 to 8 define the timer value unit as follows:<br>**Bits 8 7 6**<br>0 0 0 value is incremented in multiples of 10 minutes<br>0 0 1 value is incremented in multiples of 1 hour<br>0 1 0 value is incremented in multiples of 10 hours<br>0 1 1 value is incremented in multiples of 2 seconds<br>1 0 0 value is incremented in multiples of 30 seconds<br>1 0 1 value is incremented in multiples of 1 minute<br>1 1 0 value is incremented in multiples of 320 hours<br>1 1 1 value indicates that the timer is deactivated |
| **<Requested_Active-Time>** | String type. One byte in an 8-bit format. Requested Active Time value (T3324) to be allocated to the UE. (e.g. "00011110" equals 1 minute.).<br>Bits 5 to 1 represent the binary coded timer value.<br>Bits 6 to 8 define the timer value unit as follows:<br>**Bits 8 7 6**<br>0 0 0 value is incremented in multiples of 2 seconds<br>0 0 1 value is incremented in multiples of 1 minute<br>0 1 0 value is incremented in multiples of decihours<br>1 1 1 value indicates that the timer is deactivated |

## Example

```
AT+CPSMS=1,,,"00000100","00001111"    //Set the requested T3412 value to 40 minutes, and set the
OK                                     requested T3324 value to 30 seconds.
```

### 3.3.2. AT+QPSMS Set Power Saving Mode (Extended)

This is an extended AT command for setting PSM parameters, which was developed by Quectel. A special form of the command can be run as **AT+QPSMS=** (with all parameters omitted). In this form, the use of PSM is disabled (**<mode>**=0) and data for all parameters in the command are removed. It is similar to **AT+CPSMS**.

| **AT+QPSMS Set Power Saving Mode (Extended)** | |
|---|---|
| Test Command<br>**AT+QPSMS=?** | Response<br>**+QPSMS: (**list of supported **<mode>**s**),,,(**list of supported **<Requested_Periodic-TAU>**s**),(**list of supported **<Requested_Active-Time>**s**)**<br><br>**OK** |
| Read Command<br>**AT+QPSMS?** | Response<br>**+QPSMS: <mode>,,,[<Network_Periodic-TAU>], [<Network_Active-Time>]**<br><br>**OK** |
| Write Command<br>**AT+QPSMS=[<mode>,,[,<Requested_Periodic-TAU>[,<Requested_Active-Time>]]]** | Response<br>**OK**<br><br>If there is any error:<br>**ERROR** |
| Maximum Response Time | 300 ms |
| Characteristics | The command takes effect immediately.<br>The configurations are saved automatically. |
| Reference<br>3GPP TS 27.007 | / |

#### Parameter

| | |
|---|---|
| **<mode>** | Integer type. Disable or enable the use of PSM in the UE.<br>0 Disable the use of PSM<br>1 Enable the use of PSM |
| **<Requested_Periodic-TAU>** | String type. One byte in an 8-bit format. Requested extended periodic TAU value (T3412) to be allocated to the UE in E-UTRAN (e.g. "00001010" equals 100 minutes.).<br>Bits 5 to 1 represent the binary coded timer value.<br>Bits 6 to 8 define the timer value unit as follows:<br>**Bits 8 7 6**<br>0 0 0 value is incremented in multiples of 10 minutes<br>0 0 1 value is incremented in multiples of 1 hour |

| | |
|---|---|
| | 0 1 0 value is incremented in multiples of 10 hours<br>0 1 1 value is incremented in multiples of 2 seconds<br>1 0 0 value is incremented in multiples of 30 seconds<br>1 0 1 value is incremented in multiples of 1 minute<br>1 1 0 value is incremented in multiples of 320 hours<br>1 1 1 value indicates that the timer is deactivated |
| **<Requested_Active-Time>** | String type. One byte in an 8-bit format. Requested Active Time value (T3324) to be allocated to the UE. (e.g. "00011110" equals to 1 minute.).<br>Bits 5 to 1 represent the binary coded timer value.<br>Bits 6 to 8 define the timer value unit as follows:<br>**Bits 8 7 6**<br>0 0 0 value is incremented in multiples of 2 seconds<br>0 0 1 value is incremented in multiples of 1 minute<br>0 1 0 value is incremented in multiples of decihours<br>1 1 1 value indicates that the timer is deactivated |
| **<Network_Periodic-TAU>** | Integer type. Extended periodic TAU value (T3412) to be allocated to the UE in E-UTRAN, and the value is specified by network. Unit: second. |
| **<Network_Active-Time>** | Integer type. Active timer value (T3324) to be allocated to the UE in E-UTRAN, and the value is specified by network. Unit: second. |

**NOTE**

If the network has already set **<Network_Periodic-TAU>** and **<Network_Active-Time>**, you can use **AT+QPSMS?** to query the current values of these timers. If the network has not yet allocated these two parameters, executing this command will return **+QPSMS: 1,,,,**.

## Example

```
AT+QPSMS=1,,,"00000100","00001111"    //Set the requested T3412 value to 40 minutes, and set the
                                        requested T3324 value to 30 seconds.
OK
AT+QPSMS?                             //Query the PSM mode and the periodic-TAU and active
                                        time specified by the network.
+QPSMS: 1,,,86400,2

OK
```

### 3.3.3. AT+QCFG="psm/urc" Enable/Disable PSM Entering Indication

The command enables/disables the output of URC **+QPSMTIMER: <TAU_timer>,<T3324_timer>**, which indicates the interval for periodic TAU and active time duration before the module enters PSM.

When PSM function is enabled and RRC connection release is received, the active timer (T3324) is started, and the indication URC is reported.

| **AT+QCFG="psm/urc" Enable/Disable PSM Entering Indication** | |
|---|---|
| Write Command<br>**AT+QCFG="psm/urc"[,<enable>]** | Response<br>If the optional parameter is omitted, query the current setting:<br>**+QCFG: "psm/urc",<enable>**<br><br>**OK**<br><br>If the optional parameter is specified, set whether to enable PSM entering indication.<br>**OK**<br><br>If there is an error related to ME functionality:<br>**+CME ERROR: <err>**<br><br>If there is any other error:<br>**ERROR** |
| Maximum Response Time | 300 ms |
| Characteristics | The command takes effect immediately.<br>The configuration is saved automatically. |

#### Parameter

| | |
|---|---|
| **<enable>** | Integer type. Enable/disable the output of URC **+QPSMTIMER: <TAU_timer>,<T3324_timer>**. If enabled, the URC is reported when RRC connection release is received.<br>0 Disable<br>1 Enable |
| **<TAU_timer>** | Integer type. Interval for periodic tracking area updating. Unit: second. |
| **<T3324_timer>** | Integer type. Active time duration before the module enters PSM. Unit: second. |
| **<err>** | Error code. See ***Chapter 4*** for details. |

**Example**

```
AT+QCFG="psm/urc"
+QCFG: "psm/urc",0

OK
AT+QCFG="psm/urc",1
OK

+QPSMTIMER: 86400,2                    //Interval for periodic TAU and active time duration.
```

## 3.4. Description of eDRX AT Commands

### 3.4.1. AT+CEDRXS Set eDRX Parameters

This command sets the UE's eDRX parameters. It allows the UE to specify whether to apply eDRX or not, as well as the requested eDRX cycle value for each specified access technology.

It also controls the presentation of the URC **+CEDRXP: <AcT>[,<Requested_eDRX_value>[,<NW-provided_eDRX_value>[,<Paging_time_window>]]]** when **<mode>**=2 and there is a change in the eDRX parameters provided by the network.

A special form of the command can be given as **AT+CEDRXS=3**. In this form, eDRX is disabled and all parameters configured by **AT+CEDRXS** are deleted.

| **AT+CEDRXS Set eDRX Parameters** | |
|---|---|
| Test Command<br>**AT+CEDRXS=?** | Response<br>**+CEDRXS: (**range of supported **<mode>**s**),(**list of supported **<AcT>**s**),(**list of supported **<Requested_eDRX_value>**s**)**<br><br>**OK** |
| Read Command<br>**AT+CEDRXS?** | Response<br>**+CEDRXS: <AcT>[,<Requested_eDRX_value>]**<br><br>**OK** |
| Write Command<br>**AT+CEDRXS=<mode>[,<AcT>[,<Requested_eDRX_value>]]** | Response<br>**OK**<br><br>If there is any error:<br>**ERROR** |
| Maximum Response Time | 300 ms |
| Characteristics | This command takes effect immediately. |

| | |
|---|---|
| | The configurations are saved automatically. |
| Reference<br>3GPP TS 27.007 | / |

## Parameter

**<mode>** Integer type. Disable or enable the use of eDRX in the UE.

0 Disable the use of eDRX

1 Enable the use of eDRX

2 Enable the use of eDRX and enable the URC

**+CEDRXP: <AcT>[,<Requested_eDRX_value>[,<NW-provided_eDRX_value>[,<Paging_time_window>]]]**

3 Disable eDRX and discard all parameters for eDRX configuration

**<AcT>** Integer type. Type of access technology.

0 Access technology is not using eDRX. This parameter value is only used in the URC.

4 E-UTRAN (WB-S1 mode)

**<Requested_eDRX_value>** String type. Half a byte in a 4-bit format. eDRX cycle requested by UE.

| Bit | | | | Description |
|---|---|---|---|---|
| **4** | **3** | **2** | **1** | **E-UTRAN eDRX cycle** |
| 0 | 0 | 0 | 0 | 5.12 seconds |
| 0 | 0 | 0 | 1 | 10.24 seconds |
| 0 | 0 | 1 | 0 | 20.48 seconds |
| 0 | 0 | 1 | 1 | 40.96 seconds |
| 0 | 1 | 0 | 0 | 61.44 seconds |
| 0 | 1 | 0 | 1 | 81.92 seconds |
| 0 | 1 | 1 | 0 | 102.4 seconds |
| 0 | 1 | 1 | 1 | 122.88 seconds |
| 1 | 0 | 0 | 0 | 143.36 seconds |
| 1 | 0 | 0 | 1 | 163.84 seconds |
| 1 | 0 | 1 | 0 | 327.68 seconds |
| 1 | 0 | 1 | 1 | 655.36 seconds |
| 1 | 1 | 0 | 0 | 1310.72 seconds |
| 1 | 1 | 0 | 1 | 2621.44 seconds |
| 1 | 1 | 1 | 0 | 5242.88 seconds |
| 1 | 1 | 1 | 1 | 10485.76 seconds |

**<NW-provided_eDRX_value>** String type. Half a byte in a 4-bit format. eDRX cycle issued by the network.

| Bit | | | | Description |
|---|---|---|---|---|
| **4** | **3** | **2** | **1** | **E-UTRAN eDRX cycle** |
| 0 | 0 | 0 | 0 | 5.12 seconds |
| 0 | 0 | 0 | 1 | 10.24 seconds |
| 0 | 0 | 1 | 0 | 20.48 seconds |

| | | | | | |
|---|---|---|---|---|---|
| | 0 | 0 | 1 | 1 | 40.96 seconds |
| | 0 | 1 | 0 | 0 | 61.44 seconds |
| | 0 | 1 | 0 | 1 | 81.92 seconds |
| | 0 | 1 | 1 | 0 | 102.4 seconds |
| | 0 | 1 | 1 | 1 | 122.88 seconds |
| | 1 | 0 | 0 | 0 | 143.36 seconds |
| | 1 | 0 | 0 | 1 | 163.84 seconds |
| | 1 | 0 | 1 | 0 | 327.68 seconds |
| | 1 | 0 | 1 | 1 | 655.36 seconds |
| | 1 | 1 | 0 | 0 | 1310.72 seconds |
| | 1 | 1 | 0 | 1 | 2621.44 seconds |
| | 1 | 1 | 1 | 0 | 5242.88 seconds |
| | 1 | 1 | 1 | 1 | 10485.76 seconds |
| **<Paging_time_window>** | String type. Half a byte in a 4-bit format. Paging time window issued by the network. | | | | |
| | **Bit** | | | | **Description** |
| | **4** | **3** | **2** | **1** | **PTW length** |
| | 0 | 0 | 0 | 0 | 1.28 seconds |
| | 0 | 0 | 0 | 1 | 2.56 seconds |
| | 0 | 0 | 1 | 0 | 3.84 seconds |
| | 0 | 0 | 1 | 1 | 5.12 seconds |
| | 0 | 1 | 0 | 0 | 6.4 seconds |
| | 0 | 1 | 0 | 1 | 7.68 seconds |
| | 0 | 1 | 1 | 0 | 8.96 seconds |
| | 0 | 1 | 1 | 1 | 10.24 seconds |
| | 1 | 0 | 0 | 0 | 11.52 seconds |
| | 1 | 0 | 0 | 1 | 12.8 seconds |
| | 1 | 0 | 1 | 0 | 14.08 seconds |
| | 1 | 0 | 1 | 1 | 15.36 seconds |
| | 1 | 1 | 0 | 0 | 16.64 seconds |
| | 1 | 1 | 0 | 1 | 17.92 seconds |
| | 1 | 1 | 1 | 0 | 19.20 seconds |
| | 1 | 1 | 1 | 1 | 20.48 seconds |

**Example**

```
AT+CEDRXS=1,4,"0000"                    //Set the requested eDRX cycle to 5.12 seconds.
OK
AT+CEDRXS=0,4                           //Disable eDRX function.
OK
AT+CEDRXS=2,4,"0000"                    //Set the requested eDRX cycle to 5.12 seconds and enable
                                         the URC.
OK

+CEDRXP: 4,"0000","0000","0000"         //Network accepted the eDRX parameters.
```

### 3.4.2. AT+QPTWEDRXS Set Paging Time Window and eDRX Cycle Values

This command controls the setting of the UE's PTW value and eDRX parameters. It allows the UE to specify whether to apply PTW and eDRX, and also provides the requested PTW and eDRX cycle parameter values for each specified access technology.

Additionally, the command controls the presentation of the URC **+QPTWEDRXP: <AcT>[,<Requested_paging_time_window>[,<Requested_eDRX_value>[,<NW-provided_eDRX_value>[,<Paging_time_window>]]]],** which is triggered when **<mode>**=2 and there is a change in the paging time window and eDRX parameters provided by the network.

A special form of the command can be given as **AT+QPTWEDRXS=3**. In this form, PTW and eDRX are disabled and all parameters configured by **AT+QPTWEDRXS** are deleted.

| **AT+QPTWEDRXS Set Paging Time Window and eDRX Cycle Values** | |
|---|---|
| Test Command<br>**AT+QPTWEDRXS=?** | Response<br>**+QPTWEDRXS**: **(**range of supported **<mode>**s**),(**list of supported **<AcT>**s**),(**range of supported **<Requested_paging_time_window>**s**),(**range of supported **<Requested_eDRX_value>**s**)**<br><br>**OK** |
| Read Command<br>**AT+QPTWEDRXS?** | Response<br>**+QPTWEDRXS: <AcT>[,<Requested_paging_time_window>,<Requested_eDRX_value>[,<NW-provided_eDRX_value>[,<Paging_time_window>]]]**<br>**[…]**<br><br>**OK**<br>Or<br>**ERROR** |

| | |
|---|---|
| | If there is any error related to ME functionality:<br>**+CME ERROR: <err>** |
| Write Command<br>**AT+QPTWEDRXS=<mode>[,<AcT>[,<Requested_paging_time_window>[,<Requested_eDRX_value>]]]** | Response<br>**OK**<br>Or<br>**ERROR**<br><br>If there is any error related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300 ms |
| Characteristics | This command takes effect immediately.<br>The configurations are saved automatically. |

## Parameter

**<mode>**

Integer type. Disable or enable the use of requested PTW and eDRX in UE. This parameter is applicable to all specified types of access technology, i.e., the most recent setting of **<mode>** will take effect for all specified values of **<AcT>** returned with **AT+QNWINFO**. For more details about the AT command, see ***document [1]***.

0 Disable the use of requested PTW and eDRX

1 Enable the use of requested PTW and eDRX

2 Enable the use of requested PTW and eDRX, and enable the URC:
**+QPTWEDRXP: <AcT>[,<Requested_paging_time_window>[,<Requested_eDRX_value>[,<NW-provided_eDRX_value>[,<Paging_time_window>]]]]**

3 Disable the use of requested PTW and eDRX, and discard all parameters for eDRX configuration

**<AcT>**

Integer type. Type of access technology.

0 Access technology is not using eDRX. This parameter value is only used in the URC.

4 E-UTRAN (WB-S1 mode)

**<Requested_paging_time_window>**

String type. Half a byte in a 4-bit format. Paging time window requested by UE.

| Bit | | | | Description |
|---|---|---|---|---|
| **4** | **3** | **2** | **1** | **PTW length** |
| 0 | 0 | 0 | 0 | 1.28 seconds |
| 0 | 0 | 0 | 1 | 2.56 seconds |
| 0 | 0 | 1 | 0 | 3.84 seconds |
| 0 | 0 | 1 | 1 | 5.12 seconds |
| 0 | 1 | 0 | 0 | 6.4 seconds |
| 0 | 1 | 0 | 1 | 7.68 seconds |
| 0 | 1 | 1 | 0 | 8.96 seconds |

| | | | | | |
|---|---|---|---|---|---|
| | 0 | 1 | 1 | 1 | 10.24 seconds |
| | 1 | 0 | 0 | 0 | 11.52 seconds |
| | 1 | 0 | 0 | 1 | 12.8 seconds |
| | 1 | 0 | 1 | 0 | 14.08 seconds |
| | 1 | 0 | 1 | 1 | 15.36 seconds |
| | 1 | 1 | 0 | 0 | 16.64 seconds |
| | 1 | 1 | 0 | 1 | 17.92 seconds |
| | 1 | 1 | 1 | 0 | 19.20 seconds |
| | 1 | 1 | 1 | 1 | 20.48 seconds |
| **<Requested_eDRX_value>** | String type. Half a byte in a 4-bit format. eDRX cycle requested by UE. | | | | |
| | **Bit** | | | | **Description** |
| | **4** | **3** | **2** | **1** | **E-UTRAN eDRX cycle** |
| | 0 | 0 | 0 | 0 | 5.12 seconds |
| | 0 | 0 | 0 | 1 | 10.24 seconds |
| | 0 | 0 | 1 | 0 | 20.48 seconds |
| | 0 | 0 | 1 | 1 | 40.96 seconds |
| | 0 | 1 | 0 | 0 | 61.44 seconds |
| | 0 | 1 | 0 | 1 | 81.92 seconds |
| | 0 | 1 | 1 | 0 | 102.4 seconds |
| | 0 | 1 | 1 | 1 | 122.88 seconds |
| | 1 | 0 | 0 | 0 | 143.36 seconds |
| | 1 | 0 | 0 | 1 | 163.84 seconds |
| | 1 | 0 | 1 | 0 | 327.68 seconds |
| | 1 | 0 | 1 | 1 | 655.36 seconds |
| | 1 | 1 | 0 | 0 | 1310.72 seconds |
| | 1 | 1 | 0 | 1 | 2621.44 seconds |
| | 1 | 1 | 1 | 0 | 5242.88 seconds |
| | 1 | 1 | 1 | 1 | 10485.76 seconds |
| **<NW-provided_eDRX_value>** | String type. Half a byte in a 4-bit format. eDRX cycle issued by the network. | | | | |
| | **Bit** | | | | **Description** |
| | **4** | **3** | **2** | **1** | **E-UTRAN eDRX cycle** |
| | 0 | 0 | 0 | 0 | 5.12 seconds |
| | 0 | 0 | 0 | 1 | 10.24 seconds |
| | 0 | 0 | 1 | 0 | 20.48 seconds |
| | 0 | 0 | 1 | 1 | 40.96 seconds |
| | 0 | 1 | 0 | 0 | 61.44 seconds |
| | 0 | 1 | 0 | 1 | 81.92 seconds |
| | 0 | 1 | 1 | 0 | 102.4 seconds |
| | 0 | 1 | 1 | 1 | 122.88 seconds |
| | 1 | 0 | 0 | 0 | 143.36 seconds |
| | 1 | 0 | 0 | 1 | 163.84 seconds |
| | 1 | 0 | 1 | 0 | 327.68 seconds |

| | | | | | |
|---|---|---|---|---|---|
| | 1 | 0 | 1 | 1 | 655.36 seconds |
| | 1 | 1 | 0 | 0 | 1310.72 seconds |
| | 1 | 1 | 0 | 1 | 2621.44 seconds |
| | 1 | 1 | 1 | 0 | 5242.88 seconds |
| | 1 | 1 | 1 | 1 | 10485.76 seconds |
| **<Paging_time_window>** | String type. Half a byte in a 4-bit format. Paging time window issued by the network. | | | | |
| | **Bit** | | | | **Description** |
| | **4** | **3** | **2** | **1** | **PTW length** |
| | 0 | 0 | 0 | 0 | 1.28 seconds |
| | 0 | 0 | 0 | 1 | 2.56 seconds |
| | 0 | 0 | 1 | 0 | 3.84 seconds |
| | 0 | 0 | 1 | 1 | 5.12 seconds |
| | 0 | 1 | 0 | 0 | 6.4 seconds |
| | 0 | 1 | 0 | 1 | 7.68 seconds |
| | 0 | 1 | 1 | 0 | 8.96 seconds |
| | 0 | 1 | 1 | 1 | 10.24 seconds |
| | 1 | 0 | 0 | 0 | 11.52 seconds |
| | 1 | 0 | 0 | 1 | 12.8 seconds |
| | 1 | 0 | 1 | 0 | 14.08 seconds |
| | 1 | 0 | 1 | 1 | 15.36 seconds |
| | 1 | 1 | 0 | 0 | 16.64 seconds |
| | 1 | 1 | 0 | 1 | 17.92 seconds |
| | 1 | 1 | 1 | 0 | 19.20 seconds |
| | 1 | 1 | 1 | 1 | 20.48 seconds |
| **<err>** | Error code. See ***Chapter 4*** for details. | | | | |

### 3.4.3. AT+CEDRXRDP Read eDRX Dynamic Parameters

The Execution Command returns **+CEDRXRDP: <AcT>[,<Requested_eDRX_value>[,<NW-provided_eDRX_value>[,<Paging_time_window>]]]** if the cell in which the UE is registered has enabled eDRX. The Execution Command only responds with **+CEDRXRDP: 0** if the cell in which the UE is registered does not support eDRX.

| **AT+CEDRXRDP Read eDRX Dynamic Parameters** | |
|---|---|
| Test Command<br>**AT+CEDRXRDP=?** | Response<br>**OK** |
| Execution Command<br>**AT+CEDRXRDP** | Response<br>**+CEDRXRDP: <AcT>[,<Requested_eDRX_value>[,<NW-provided_eDRX_value>[,<Paging_time_window>]]]**<br><br>**OK** |
| Maximum Response Time | 300 ms |

| | |
|---|---|
| Characteristics | / |
| Reference<br>3GPP TS 27.007 | / |

## Parameter

**<AcT>**

Integer type. Type of access technology.

0 Access technology is not using eDRX

4 E-UTRAN (WB-S1 mode)

**<Requested_eDRX_value>**

String type. Half a byte in a 4-bit format. eDRX cycle requested by UE.

| Bit | | | | Description |
|---|---|---|---|---|
| **4** | **3** | **2** | **1** | **E-UTRAN eDRX cycle** |
| 0 | 0 | 0 | 0 | 5.12 seconds |
| 0 | 0 | 0 | 1 | 10.24 seconds |
| 0 | 0 | 1 | 0 | 20.48 seconds |
| 0 | 0 | 1 | 1 | 40.96 seconds |
| 0 | 1 | 0 | 0 | 61.44 seconds |
| 0 | 1 | 0 | 1 | 81.92 seconds |
| 0 | 1 | 1 | 0 | 102.4 seconds |
| 0 | 1 | 1 | 1 | 122.88 seconds |
| 1 | 0 | 0 | 0 | 143.36 seconds |
| 1 | 0 | 0 | 1 | 163.84 seconds |
| 1 | 0 | 1 | 0 | 327.68 seconds |
| 1 | 0 | 1 | 1 | 655.36 seconds |
| 1 | 1 | 0 | 0 | 1310.72 seconds |
| 1 | 1 | 0 | 1 | 2621.44 seconds |
| 1 | 1 | 1 | 0 | 5242.88 seconds |
| 1 | 1 | 1 | 1 | 10485.76 seconds |

**<NW_provided_eDRX_value>**

String type. Half a byte in a 4-bit format. eDRX cycle issued by the network.

| Bit | | | | Description |
|---|---|---|---|---|
| **4** | **3** | **2** | **1** | **E-UTRAN eDRX cycle** |
| 0 | 0 | 0 | 0 | 5.12 seconds |
| 0 | 0 | 0 | 1 | 10.24 seconds |
| 0 | 0 | 1 | 0 | 20.48 seconds |
| 0 | 0 | 1 | 1 | 40.96 seconds |
| 0 | 1 | 0 | 0 | 61.44 seconds |
| 0 | 1 | 0 | 1 | 81.92 seconds |
| 0 | 1 | 1 | 0 | 102.4 seconds |
| 0 | 1 | 1 | 1 | 122.88 seconds |
| 1 | 0 | 0 | 0 | 143.36 seconds |
| 1 | 0 | 0 | 1 | 163.84 seconds |
| 1 | 0 | 1 | 0 | 327.68 seconds |

| | | | | | |
|---|---|---|---|---|---|
| | 1 | 0 | 1 | 1 | 655.36 seconds |
| | 1 | 1 | 0 | 0 | 1310.72 seconds |
| | 1 | 1 | 0 | 1 | 2621.44 seconds |
| | 1 | 1 | 1 | 0 | 5242.88 seconds |
| | 1 | 1 | 1 | 1 | 10485.76 seconds |
| **<Paging_time_window>** | String type. Half a byte in a 4-bit format. Paging time window issued by the network. | | | | |
| | **Bit** | | | | **Description** |
| | **4** | **3** | **2** | **1** | **PTW length** |
| | 0 | 0 | 0 | 0 | 1.28 seconds |
| | 0 | 0 | 0 | 1 | 2.56 seconds |
| | 0 | 0 | 1 | 0 | 3.84 seconds |
| | 0 | 0 | 1 | 1 | 5.12 seconds |
| | 0 | 1 | 0 | 0 | 6.4 seconds |
| | 0 | 1 | 0 | 1 | 7.68 seconds |
| | 0 | 1 | 1 | 0 | 8.96 seconds |
| | 0 | 1 | 1 | 1 | 10.24 seconds |
| | 1 | 0 | 0 | 0 | 11.52 seconds |
| | 1 | 0 | 0 | 1 | 12.8 seconds |
| | 1 | 0 | 1 | 0 | 14.08 seconds |
| | 1 | 0 | 1 | 1 | 15.36 seconds |
| | 1 | 1 | 0 | 0 | 16.64 seconds |
| | 1 | 1 | 0 | 1 | 17.92 seconds |
| | 1 | 1 | 1 | 0 | 19.20 seconds |
| | 1 | 1 | 1 | 1 | 20.48 seconds |

## Example

```
AT+CEDRXS=1,4,"0000"                    //Set the requested eDRX cycle to 5.12 seconds.
OK
AT+CEDRXRDP
+CEDRXRDP: 4,"0000","0000","0000"       //Network accepted the eDRX parameters.

OK
AT+CEDRXS=0,4                           //Disable eDRX feature.
OK
AT+CEDRXRDP
+CEDRXRDP: 0                            //Access technology is not using eDRX.

OK
```

# 4 Summary of Error Codes

Final result code **+CME ERROR: <err>** indicates an error related to mobile equipment or network. It functions similarly to **ERROR** result code. If a command line receives this code, no further command in that line will be executed and no **ERROR** or **OK** result code will be returned.

**<err>** values are mostly used by common message commands. The following table lists related **ERROR** codes. However, **ERROR** codes of some GSM protocol failure causes described in GSM specifications are not provided in the table.

**Table 2: Different Coding Schemes of +CME ERROR: <err>**

| Numeric <err> Value | Verbose <err> Value |
|---|---|
| 3 | operation not allowed |
| 4 | operation not supported |
| 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 |
| 18 | SIM PUK2 required |
| 20 | memory full |
| 21 | invalid index |
| 22 | not found |

| | |
|---|---|
| 23 | memory failure |
| 24 | text string too long |
| 30 | no network service |
| 31 | network timeout |

# 5 Appendix References

**Table 3: Related Document**

| Document Name |
|---|
| [1] Quectel_EG800Q&EG91xQ_Series_AT_Commands_Manual |

**Table 4: Terms and Abbreviations**

| Abbreviation | Description |
|---|---|
| 3GPP | 3rd Generation Partnership Project |
| DRX | Discontinuous Reception |
| eDRX | Extended Discontinuous Reception |
| E-UTRAN | Evolved Universal Terrestrial Radio Access Network |
| IE | Information Element |
| IMSI | International Mobile Subscriber Identity |
| IoT | Internet of Things |
| PDN | Packet Data Network |
| PIN | Personal Identification Number |
| PO | Paging Occasion |
| PSM | Power Saving Mode |
| PTW | Paging Time Window |
| PUK | PIN Unlock Key |
| RRC | Radio Resource Control |
| SIM | Subscriber Identity Module |
| SMS | Short Message Service |

| | |
|---|---|
| TAU | Tracking Area Update |
| UE | User Equipment |
| URC | Unsolicited Result Code |