

# **EC2x&EG9x&EG2x-G Series**

## **Software Configuration for AT&T 3G Sunset Guide**

**LTE Standard Module Series**

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# About the Document

## Revision History

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1.0	2021-04-21	Jarvis FENG	First official release

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# 1 Introduction

AT&T will have its 3G network sunset on February 22nd, 2022 and has informed Quectel. Since Quectel's LTE Standard EC2x series, EG9x series, EG2x-G modules have the Ue\_Usage\_Setting, which basically tells the network what's more important for that UE (voice or data) configured as Voice Centric, if the user device does not support VoLTE after AT&T's 3G sunset, the network service of the device will be shut down by then. Therefore, AT&T requires Quectel and its customers to modify Ue\_Usage\_Setting from Voice Centric to Data Centric when performing AT&T certification and actual network use.

This document introduces the software configuration of modifying Ue\_Usage\_Setting of the above-mentioned applicable modules to Data Centric to meet the requirements of the AT&T 3G network sunset solution.

## 1.1. Applicable Modules

Table 1: Applicable Modules

Module Series	Module
EC2x	EC21 Series
	EC25 Series
EG9x	EG91 Series
	EG95 Series
EG2x-G	EG21-G
	EG25-G

# 2 Background and Technology

This chapter mainly introduces the related background and technology of AT&T 3G network sunset.

## 2.1. Background

AT&T will have its 3G network sunset on February 22nd, 2022, and the figure below shows the solution required by AT&T for 3G network sunset.

### <CDR-IOT-180> Data Only module and device configuration

**Summary:** Cat 1 and above Data Only (DO) modules and devices shall operate in CS/PS mode 2 (3GPP TS 24.301, section 4.3.1) and perform combined EPS/IMSI Attach & TAU with the Additional Update Type set to “SMS only” (3GPP TS 24.301, section 9.9.3.0B). Per 3GPP TS 24.301, sections 8.2.4.13 and 8.2.29.19, UE Usage and Voice Domain Reference Information Elements (IEs) are omitted for a data-only product.

### <CDR-IOT-190> Data + Voice module and device UE Usage and Voice Domain Preference Setting

**Summary:** Cat 1 and above Data + Voice modules and devices shall operate in CS/PS mode 2 (3GPP TS 24.301, section 4.3.1) and perform combined EPS/IMSI Attach & TAU with UE’s Usage Setting of “Data centric”. Voice Domain Preference for E-UTRAN shall be set to either “IMS PS Voice preferred, CS Voice as secondary” or “IMS PS Voice Only” depending on the support of CS voice in the product. Modules and devices set to “IMS PS Voice only” shall also include the Additional Update Type set to “SMS only” (3GPP TS 24.301, section 9.9.3.0B).

Figure 1: Solution Required by AT&T for 3G Network Sunset



## 2.2. Technology

### 2.2.1. Voice Centric

If Ue\_Usage\_Setting is Voice Centric, the device must support voice in the current RAT. The following are three scenarios where the device camps on the RAT.

1. When the device registers on LTE, the network responds with a registration message of EPS/IMSI joint registration, and supports CS service (2G and 3G networks), then the device can camp on the RAT.
2. When the device register on LTE, the network responds with a registration message of EPS/IMSI joint registration, and does not support CS service (2G or 3G networks), then the device will check whether to obtain VoLTE service:
  - If yes, the device can still camp on the RAT, and supports both data and VoLTE services;
  - If not, the device will restrict the current RAT, and search supported RATs like 2G and 3G to get VoLTE service. If the network does not support 2G/3G, the device is out of service (No data or VoLTE service).
3. When the device registers on LTE, the network responds with a registration message of EPS only, then the device will check whether to obtain VoLTE service:
  - If yes, the device can still camp on the RAT;
  - If not, the device will restrict the current RAT, and search supported RATs like 2G and 3G to get VoLTE service. If the network does not support 2G/3G, the device is out of service (No data or VoLTE service).

### 2.2.2. Data Centric

If Ue\_Usage\_Setting is Data Centric, the device must support data in the current RAT. The following are three scenarios where the device camps on the RAT.

1. When the device registers on LTE, the network responds with a registration message of EPS/IMSI joint registration, and supports CS service (2G and 3G networks), then the device can camp on the RAT. And the device supports both voice and VoLTE services.
2. When the device register on LTE, the network responds with a registration message of EPS/IMSI joint registration, and does not support CS service (2G or 3G networks), then the device will check whether to obtain VoLTE service:
  - If yes, the device can still camp on the RAT, and supports both data and VoLTE services;
  - If not, the device can still camp on the RAT, and only support data service.

3. When the device registers on LTE, the network responds with a registration message of EPS only, then the device will check whether to obtain VoLTE service:
  - If yes, the device can still camp on the RAT, and supports both data and VoLTE services;
  - If not, the device can still camp on the RAT, and only support data service.

# 3 Software Configuration

This chapter introduces the steps to configure the module Ue\_Usage\_Setting as Data Centric required by AT&T.

## 3.1. Configure Ue\_Usage\_Setting

Execute the following commands in turn to configure Ue\_Usage\_Setting as Data Centric required by AT&T.

```
AT+QNVFW="/nv/item_files/modem/mmode/ue_usage_setting",01 //Configure Ue_Usage_Setting
as Data Centric.
OK
AT+QNVFR="/nv/item_files/modem/mmode/ue_usage_setting" //Query current configuration.
+QNVFR: 01
OK
```

For detailed information about the above AT commands, please contact Quectel Technical Supports ([support@quectel.com](mailto:support@quectel.com)).

## 3.2. Reboot the Module

The above configuration takes effect after the module is rebooted. Therefore, please manually reboot the module after executing the above commands .

### NOTE

Every time you switch to an AT&T (U)SIM card from that of other carriers, please reconfigure Ue\_Usage\_Setting of the module to Data Centric according to the steps described in this chapter.

# 4 Appendix Terms and Abbreviations

Table 2: Terms and Abbreviations

Abbreviation	Description
CS	Circuit Switching
EPS	Evolved Packet System
IMS	IP Multimedia Subsystem
LTE	Long-Term Evolution
RAT	Radio Access Technology
(U)SIM	(Universal) Subscriber Identity Module
UE	User Equipment
VoLTE	Voice over Long-Term Evolution