LTE Module

SIM7500A/SIM7500A-H/SIM7600A/SIM7600A-H Series
AT&T 3G Sunset Configuration Guide

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Version History

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V1.00	2022-01-11	Guo Yibo	V1.00

This document applies to the following products

This document applies to SIM7500A/SIM7500A-H/SIM7600A/SIM7600A-H series moduels.

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Abbreviation

AT	ATtention; the two-character abbreviation is used to start a command line to be sent from TE/DTE to TA/DCE
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

1 Summary

AT&T 3G sunset is scheduled on February 22, 2022. After that SIMCom SIM7500A/A-H and PCIE, SIM7600A/A-H and PCIE series modules will have 'No service' status if the Ue_Usage_Setting (UE usage setting) is 'Voice Centric' and not supporting VoLTE. To avoid this situation we need to use AT command to change the module Ue_Usage_Setting (UE usage setting) from 'Voice Centric' to 'Data Centric'.

This document introduces how to use AT command to set SIMCom modules form 'Voice Centric' to 'Data Centric'.

1.1 Technical Guide

1.1.1 Voice Centric

If Ue_Usage_Setting is Voice Centric, it requires current registered RAT has voice service ability. The following are the 3 scenarios of the device residing on a RAT.

1. When the device registered to LTE, and the network reply is combined EPS/IMSI attach, and also the network supports CS service (2G and 3G network), then the device can camp on this RAT.

2. When the device registered to LTE, and the network reply is combined EPS/IMSI attach, and the network does not support CS service (2G or 3G network), then the device will check if it can get VoLTE service:

If it gets VoLTE service, then the device will camp on this RAT, and support data and voice service;

If it does not get VoLTE service, then the device will restrict the current RAT, and search the RAT which supports 2G and 3G to get the voice service. If 2G or 3G is not supported, then the device enters 'No service' status (no data or voice service).

3. When the device registered to LTE, and the network reply is EPS only attach, then the device will check if it can get VoLTE service:

If it gets VoLTE service, then the device will camp on this RAT;

If it does not get VoLTE service, then the device will restrict the current RAT, and search the RAT which supports 2G and 3G to get the voice service. If 2G/3G is not supported, then the device enters 'No service' status (no data or voice service).

1.1.2 Data Centric

If Ue_Usage_Setting is Data Centric, it requires the current registered RAT has data service ability, there will be following 3 scenarios of residing in a RAT.

1.When the device registered to LTE, and the network reply is combined EPS/IMSI attach, and also the network supports CS service (2G and 3G network), then the device can camp on this RAT. The device will support voice and data service simultaneously.

2. When the device registered to LTE, and the network reply is combined EPS/IMSI attach, and the network does not support CS service (2G or 3G network), then the device will check if it can get VoLTE service:

If it gets VoLTE service, then the device will camp on this RAT, and support data and voice service;

If it does not get VoLTE service, then the device will camp on this RAT, and only support data service.

3. When the device registered to LTE, and the network reply is EPS only attach, then the device will check if it can get VoLTE service:

If it gets VoLTE service, then the device will camp on this RAT, and support data and voice service;

If it does not get VoLTE service, then the device will camp on this RAT, and only support data service.

1.2 AT&T Related Instruction

<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).

2 Parameter Configuration

This chapter introduces the technical guide to set the module from 'Voice Centric' to 'Data Centric'.

2.1 Parameter Configuration

To make sure the module can perform the following AT command:

The command to set to data centric:
`AT+CNV=/nv/item_files/modem/mmode/ue_usage_setting,0,01,1`

For the 'Date + Voice' modules to be used in the 'Data only' devices, we need to disable IMS. The command to disable IMS:
`AT+CNV=/nv/item_files/ims/IMS_enable,0,00,1`

2.2 Reset Module

Above parameter setting will take effect after the module resets, so the module needs to be reset manually after performing the AT command successfully.

Note: When the module parameter is set successfully, if the customer uses other carrier's (U)SIM card, then uses the AT&T (U)SIM card again, the module should be reconfigured again according to above steps.