EC2x&AG35Quecopen Base Station Position Solution

LTE Module Series

Rev. EC2x&AG35-Quecopen_Base_Station_Position_Solution_V1.0

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Status: Preliminary

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About the Document

History

Revision	Date	Author	Description
1.0	2018-09-17	Navy QIU	Initial

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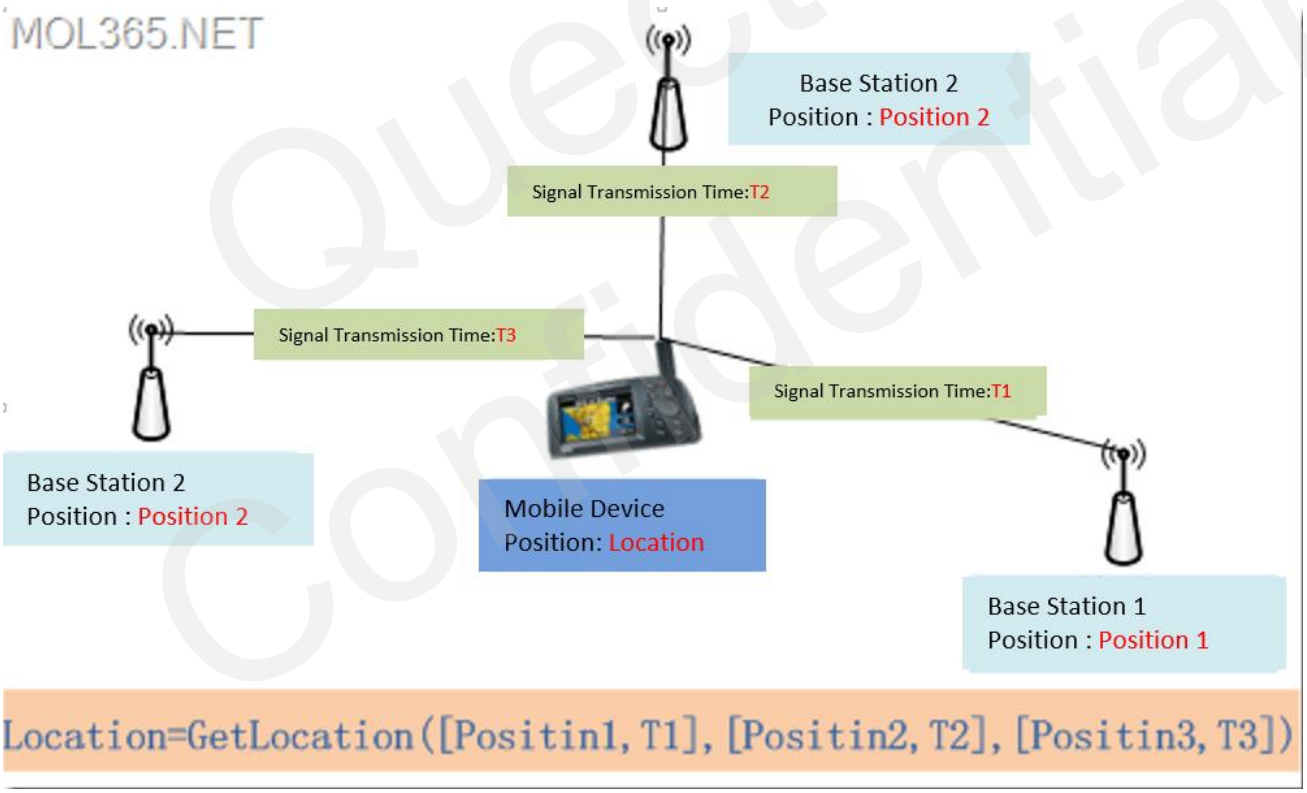
1 Base Station Position Theory

Base station position refers to a kind of function that mobile phone launching base station calculates mobile phone coordinate position according to its distance from the mobile phone. The base station position is generally applied to mobile phone users and, also its service is called as location based service (LBS service), which obtains mobile terminal users location information (latitude and longitude coordinates) by telecomm mobile operator's networks (such as the GSM network). Under the support of the electronic map platform, it is a kind of value-added business by providing its corresponding service for users. In order to use base station to locate its interface, it must find a resolution on the network. Its position accuracy ultimately depends on the density of a local base station. Its position accuracy in the city is around 50 to 150 meters, the suburbs are about 100 to 300 meters, and the villages are about 200 to 2,000 meters. As less base station density in remote areas, so the position accuracy will be very poor.



2 API Interface Introduction

Linux Application will obtain information by using the following API:

```
E_QL_ERROR_CODE_T QL_MCM_NW_GetRegStatus
(
    nw_client_handle_type                   h_nw,
    QL_MCM_NW_REG_STATUS_INFO_T             *pt_info
)
```

Function feature: obtaining current network information
Taking examples as follows:

2.1. Using Unicom card (Unicom and Mobile users to use CID/TAC for Positioning)

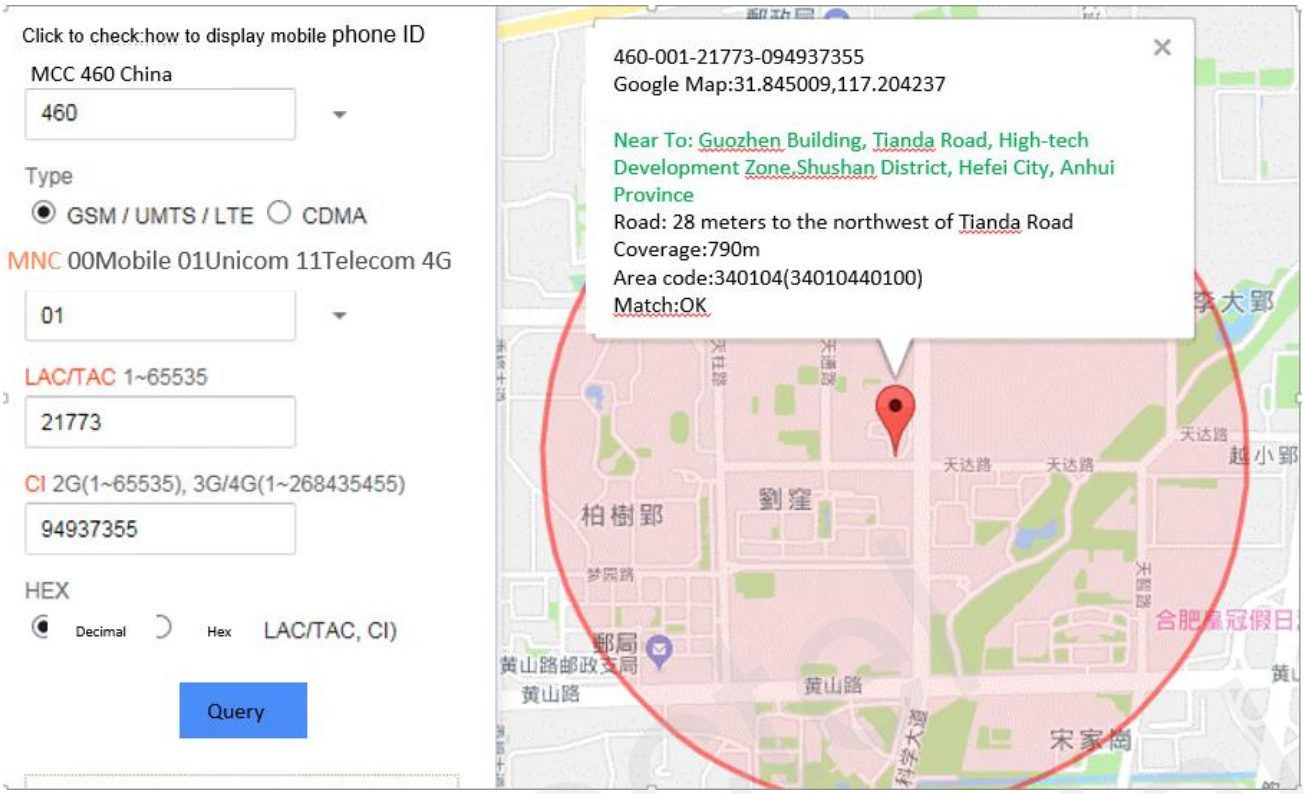
```
root@mdm9607-perf:/# ./test_api_all
Test groups:

0:      mcm_atcop
1:      mcm_data
2:      mcm_dm
3:      mcm_gps
4:      mcm_mobap
5:      mcm_nw
6:      mcm_sim
7:      mcm_sms
8:      mcm_voice

please input command index(-1 exit): 5
Group Name:mcm_nw, Supported test cases:

0:      QL_MCM_NW_Client_Init
1:      QL_MCM_NW_SetConfig
2:      QL_MCM_NW_GetConfig
3:      QL_MCM_NW_GetNitzTimeInfo
4:      QL_MCM_NW_EventRegister
5:      QL_MCM_NW_GetOperatorName
```

6: QL_MCM_NW_PerformScan
7: QL_MCM_NW_GetRegStatus
8: QL_MCM_NW_SetLowPowerMode
9: QL_MCM_NW_SetSelection
10: QL_MCM_NW_GetSignalStrength
11: QL_MCM_NW_GetCellAccessState
12: QL_MCM_NW_Client_Deinit
13: Set Time Server
14: Set Time Zone
15: QL_MCM_NW_AddRxMsgHandler

please input cmd index(-1 exit): 0
Starting MCM RIL Services: done
QL_MCM_NW_Client_Init ret = 0
please input cmd index(-1 exit): 8 // As the defaulted low-power-mode for the previous version is open, the information was not updated in real time, so it needs to close and try it again
please input low power mode(0: off, other: on): 0

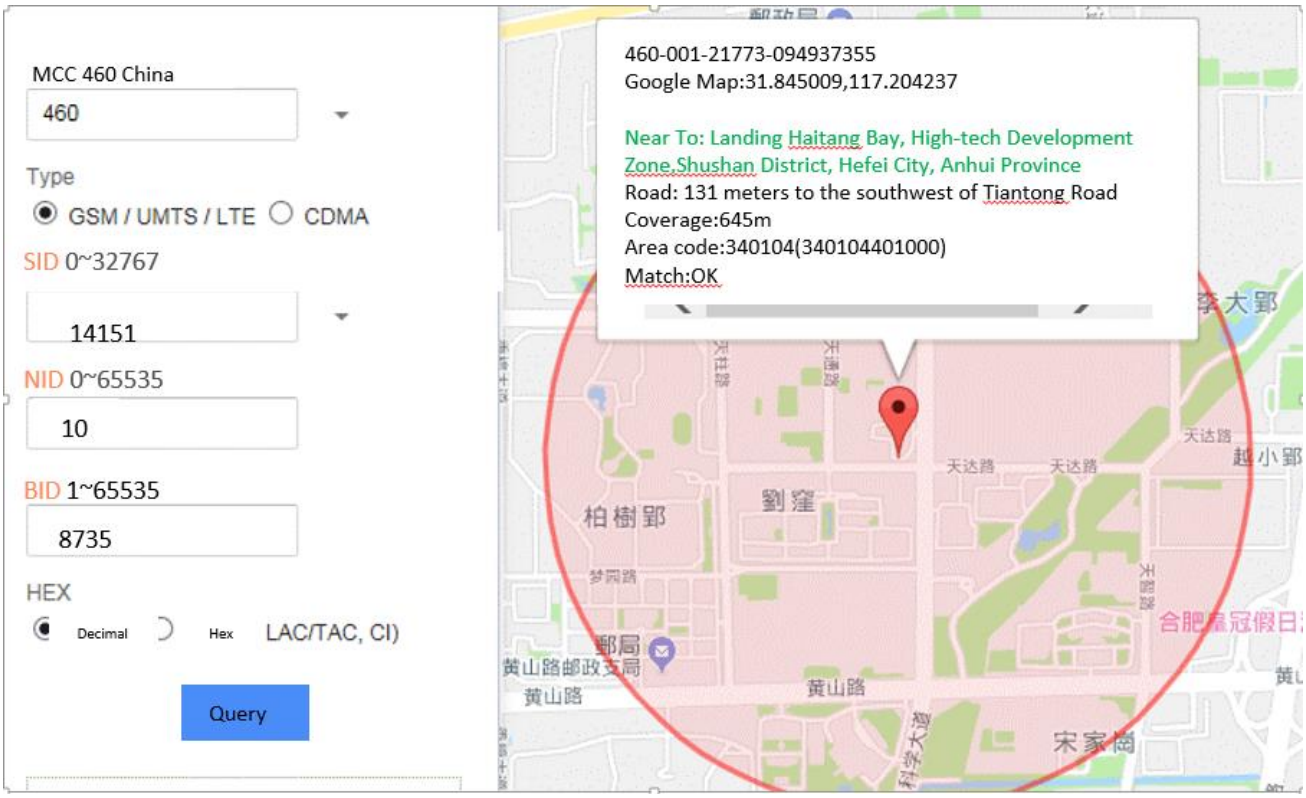
QL_MCM_NW_SetLowPowerMode ret = 0
please input cmd index(-1 exit): 5
QL_MCM_NW_GetOperatorName ret = 0, long_eons=CHN-UNICOM, short_eons=UNICOM, mcc=460, mnc=01
please input cmd index(-1 exit): 7
QL_MCM_NW_GetRegStatus ret = 0, detail info:
voice_registration:
tech_domain=3GPP2, radio_tech=LTE, roaming=0, registration_state=2
data_registration:
tech_domain=3GPP, radio_tech=LTE, roaming=0, registration_state=2
voice_registration_details_3gpp:
tech_domain=3GPP, radio_tech=LTE, mcc=460, mnc=01, roaming=0, forbidden=0, cid=0x5A8A10B, lac=0, psc=0, tac=21773
data_registration_details_3gpp:
tech_domain=3GPP, radio_tech=LTE, mcc=460, mnc=01, roaming=0, forbidden=0, cid=0x5A8A10B, lac=0, psc=0, tac=21773

please input cmd index(-1 exit):
use website http://www.gpsspg.com/bs.htm query result is as follows：



2.2. Using Telecom card: Telecom uses sid,nid and bsid for positioning

QL_MCM_NW_GetRegStatus ret = 0, detail info:
voice_registration: tech_domain=2, radio_tech=12, roaming=0, registration_state=2
data_registration: tech_domain=2, radio_tech=10, roaming=0, registration_state=2
voice_registration_details_3gpp2: tech_domain=2, radio_tech=12, mcc=460, mnc=03, roaming=0, forbidden=0, sid=14151, nid=10, bsid=8735
voice_registration_details_3gpp2: tech_domain=2, radio_tech=10, mcc=, mnc=, roaming=0, forbidden=0, sid=0, nid=0, bsid=0


MCC 460 China
460
Type
GSM / UMTS / LTE
CDMA
SID 0~32767
14151
NID 0~65535
10
BID 1~65535
8735
HEX
Decimal
Hex
LAC/TAC, CI)
Query
460-001-21773-094937355
Google Map:31.845009,117.204237
Near To: Landing Haitang Bay, High-tech Development Zone,Shushan District, Hefei City, Anhui Province
Road: 131 meters to the southwest of Tiantong Road
Coverage:645m
Area code:340104(340104401000)
Match:OK
天达路
柏樹郢
劉窪
黄山路
宋家圈