WLTGFC Gemtek TDD LTE Small Cell User Guide

Date	Version
2019/11/5	V2.8

Table of Contents

Table of Contents 2
Copyright Notice 4
1. Overview 5
2. Gemtek Small Cell Installation and Test Environment 7
3. Accessing Web Management Interface 9
3.1 System Requirement 9
3.2 Getting Started 9
3.2.1 Login 10
3.2.2 Modify Configuration 11
3.2.3 Reconfiguration Reboot 14
4. Web Management Interface Reference Manual 15
4.1 Status 15
4.1.1 Status | System Status 15
4.1.2 Status | Network Status 16
4.1.3 Status | LTE Status 17
4.1.4 Status | UEs Status 18
4.2 LTE Configuration 19
4.2.1 LTE Configuration | General 19
4.2.2 LTE Configuration | Radio Access Network 20
4.2.3 LTE Configuration | Neighbor List 21
4.2.4 LTE Configuration | Measurement Report Triggers 23
4.2.5 CBRS Configuration 24
4.3 Syslog 26
4.3.1 Syslog | Operation Log 26
4.3.2 Syslog | Configuration Log 26
4.3.3 Syslog | Alarm Log 26
4.3.4 Syslog | Export Log Files 26
4.4 Management 27
4.4.1 Management | Network Configuration 27
4.4.2 Management | IPsec Configuration 27
4.4.3 Management | System Configuration 28
4.4.4 Management | Routing Configuration 28
4.4.5 Management | Configuration File 29
4.4.6 Management | Firmware Utility 32
4.4.7 Management | Change Login Password 36
4.4.8 Management | Software Package Management 37
4.4.9 Management | Time Setting 38

4.4.10 Management | CSFB Configuration 39
4.4.11 Management | Reset to Factory Default 39
4.4.12 Management | Reboot System 40
4.5 Logout....41
4.6 LED Definition....42
4.6.1 LED Behavior 42
5. All-In-One Small Cell (X-Cell)Web Management Interface Reference Manual 43
5.1 EPC....43
5.1.1 EPC | EPC-MME Configuration....43
5.1.2 EPC | HSS-KEY Configuration....44
5.2 X-Cell Network Planning....46
5.3 Cell Phone APN Settings:....47
5.4 Small Cell Wall Mount Accessory Installation....52
6 Federal Communication Commission Interference Statement 54
IMPORTANT NOTE:....54
FCC Radiation Exposure Statement: 54
Professional installation instruction....55
1). Installation personal 55
2). Installation location....55
3). External antenna....55
4). Installation procedure....55
5). Warning....55

Copyright Notice

Copyright© 2015 Gemtek Technology Co., Ltd.
All rights reserved.

No part of this publication may be reproduced, transmitted, transcribed, or translated into any language without the written permission of Gemtek Technology Co., Ltd. or its suppliers or affiliate companies. Gemtek Technology Co., Ltd. reserves the right to change specifications without prior notice. To obtain this permission write to the attention of Legal counsel, Gemtek Technology Co., Ltd., No.15-1 Zhonghua Road, Hsinchu Industrial Park, Hukou, Hsinchu, Taiwan (R.O.C.) ,30352.

1. Overview

This document will lead you to learn more about Web Management Interface features of Gemtek LTE Small Cell. The Web Management Interface is an intuitive Web GUI used to configure, monitor and perform diagnostics on Gemtek LTE Small Cell. It can be run as a stand-alone application, or as part of the management system.

The available features include:

A. Status

- *System Status*: Display Model Name, RF/BB Temperature, Memory, System Up Time, etc.
- *Network Status*: Display Small Cell IP Address, MAC Address, Default/Security Gateway, NTP/SON Server information, and IPSec Status.
- *LTE Status*: Display the LTE general configuration about information of Frequency band, PLMN, MME/eNodeB IP address, Bandwidth, EARFCN, and, etc.
- *UEs Status*: Show the UL/DL MCS Selection, Throughput and BLER.

B. LTE Configuration

- *General* : Configure eNodeB basic setting including, eNodeB type, Cell ID, Physical Cell/Group Cell ID, PLMN, MME IP and its SCTP Port.
- *Radio Access Network*: Configure RF Bandwidth, Tx Power and EARFCN.
- *Neighbor List*: Set Neighbor List for Intra-Frequency and Inter-Frequency usage.
- *Measurement Report Triggers*: Set Trigger conditions for A1/A2/A3/A4/A5 events.

C. Syslog

- *Alarm Log*
- *Operation Log*
- *Configuration Log*
- *Export Log Files*

D. Management

- *Network Configuration*: Configure eNodeB IP, DNS, DHCP.
- *IPsec Configuration:* Configure IPSec status and Certificate.
- *System Configuration*: Configure NTP and Syslog Servers.
- *Routing Configuration:* Configure Route Type、Destination、Mask、Gateway、Interface.
- *Configuration File*: Provide configuration file Export, Import and Restore functions.
- *Firmware Utility*: Support Firmware Upgrade and Rollback utilities.
- *Change Login Password*: Reset Web GUI password.
- *Software Package Manager*: To install debug utility.
- *Time Setting:* Configure TimeZone.
- *CSFB Configuration :*Configure Circuit Switch Fallback Priority.(3G、4G)
- *Reset to Factory Default :* Select reset default type.
- *Reboot*: Reboot eNodeB.

E. Logout

- Logout the Small Cell Web GUI

F. LED Behavior

Before starting accessing the Gemtek LTE Web Management Interface, we will show you show to install the Gemtek LTE Small Cell first in the next Chapter.

2. Gemtek Small Cell Installation and Test Environment

Shown below are the features of Gemtek LTE Small Cell and POE (Power over Ethernet).

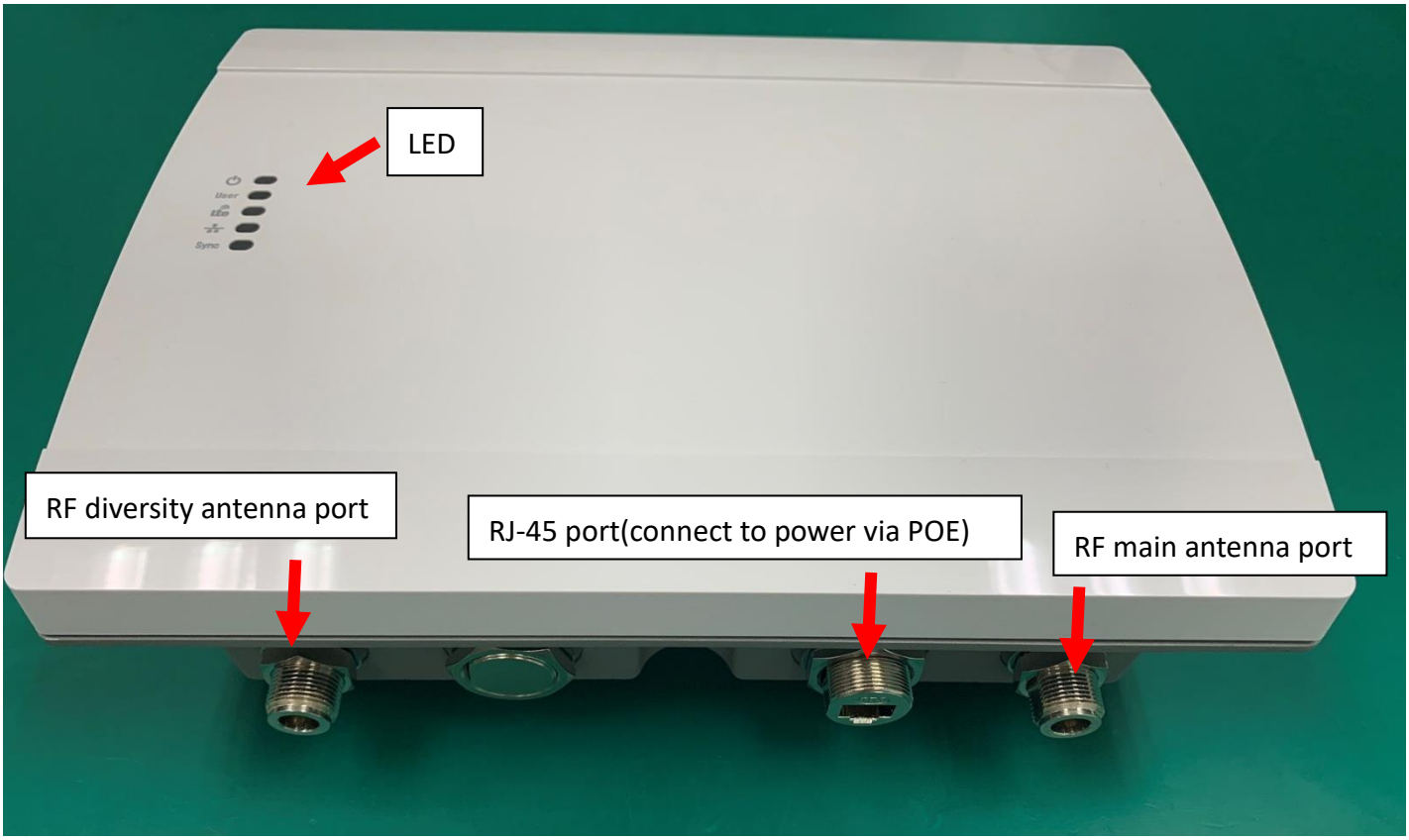
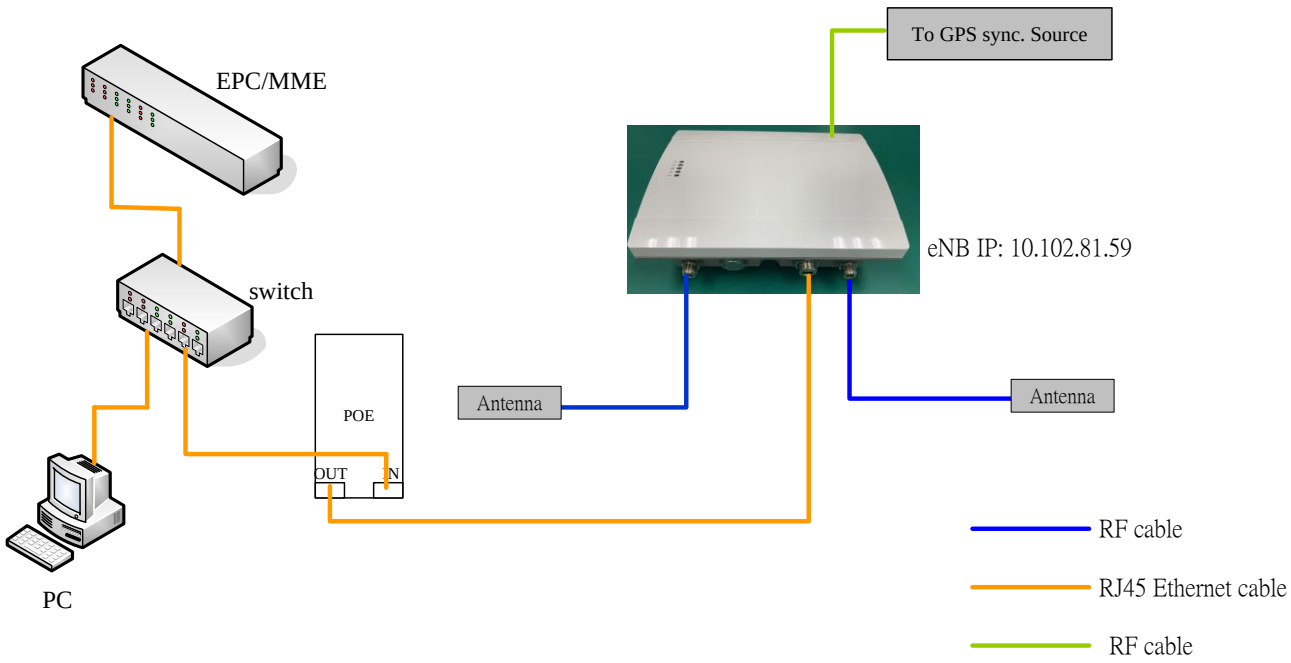


Figure below shows us how to install the Gemtek LTE Small Cell in overall test environment.



3. Accessing Web Management Interface

This chapter introduce the requirements and procedures for accessing the Web Management Interface of Gemtek LTE Small Cell. The following information is covered in this chapter:

- System Requirements
- Getting Started

3.1 System Requirement

Web Management Interface has been tested on the following platforms:

- Microsoft Windows XP/7/10
- Red Hat Enterprise Linux 6.3

The suggested Web browsers are:

- Google Chrome 40.0 or higher
- Firefox 10.0 or higher
- Windows Internet Explorer 8.0 or higher

3.2 Getting Started

This section covers how to start Gemtek LTE Small Cell Web Management. Before accessing the Web GUI, make sure that your PC must follows the network setting listed below.

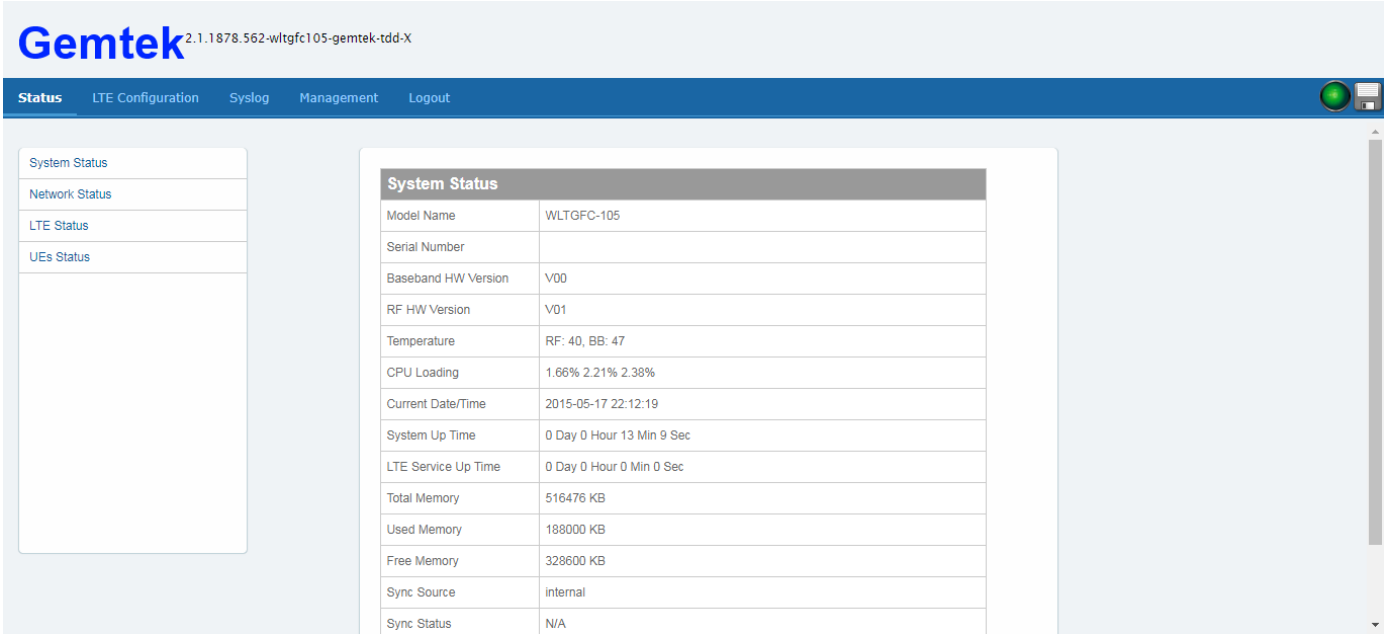
A. Set the network card to use static IP address as <10.102.81.X>
B. Set the subnet mask as <255.255.255.0>

3.2.1 Login

Open Web browser to login Gemtek LTE Small Cell Web Management

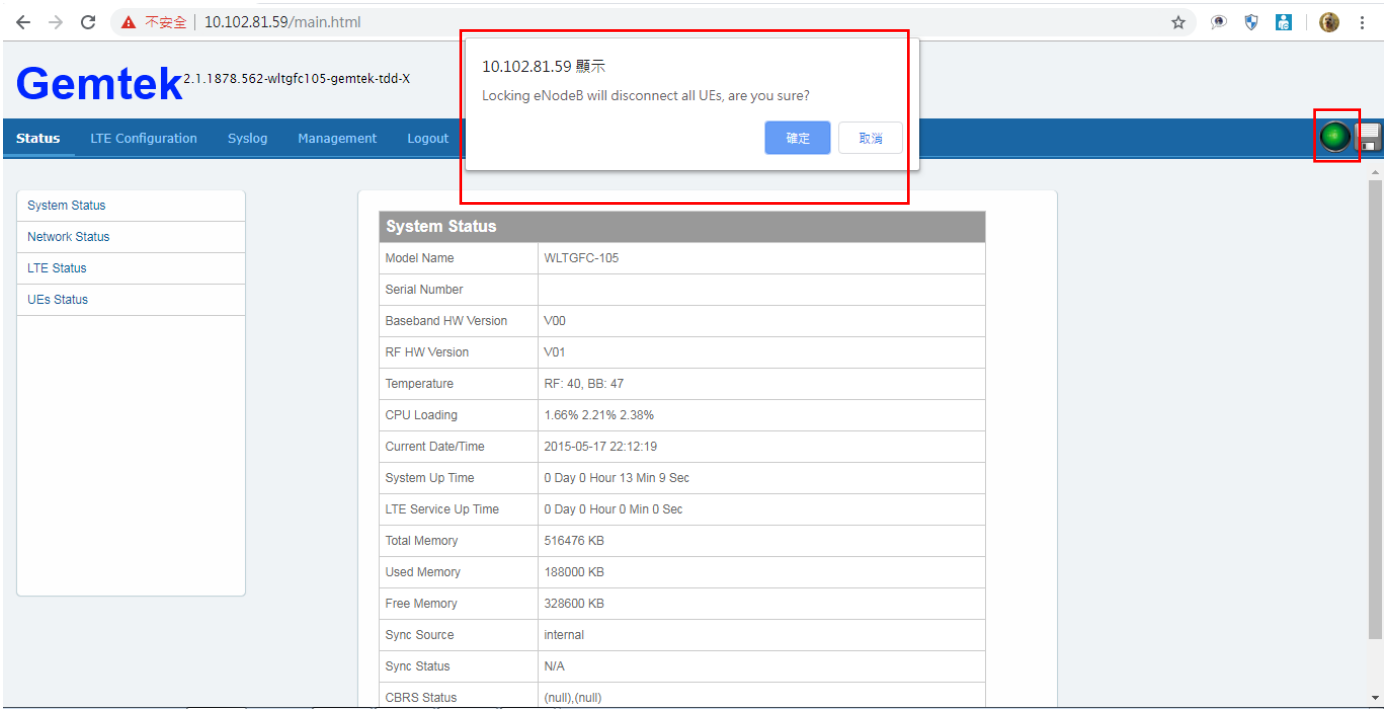
- Default Login Website: https://10.102.81.59
- Username/Password: admin/admin

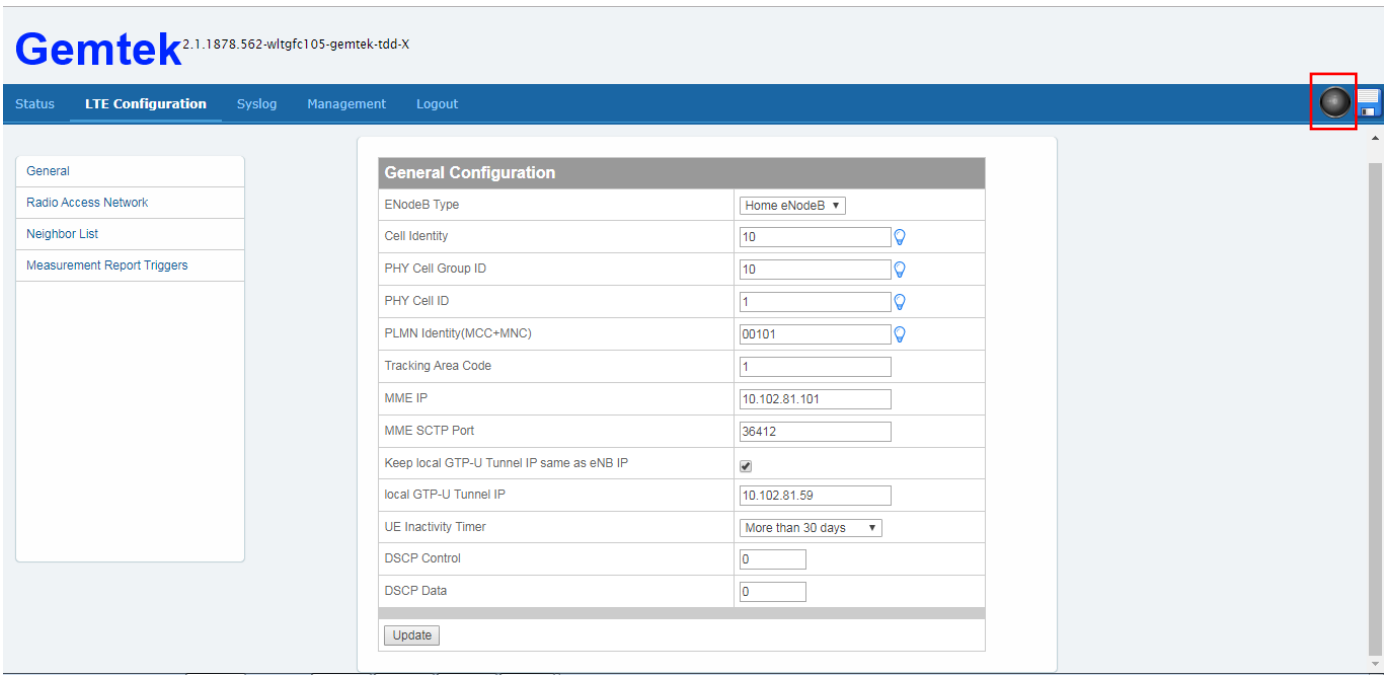
- Homepage



3.2.2 Modify Configuration

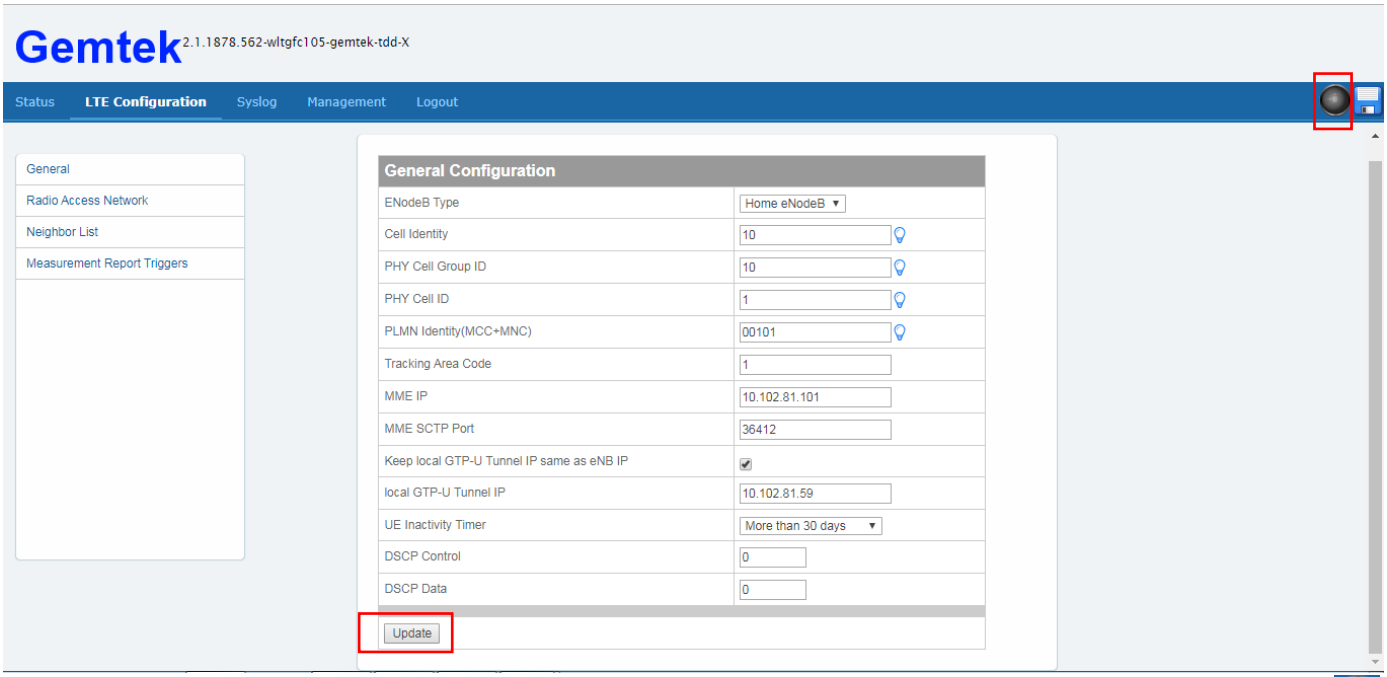
If you want to edit any configurations (except reboot, firmware upgrade/rollback or export/import/restore configuration files), you should **lock** eNodeB first by clicking the button on top-right corner of the page and then you can edit what you want when the button become . At this time, you must allow all UEs to be disconnected (if any UE attached at any time).





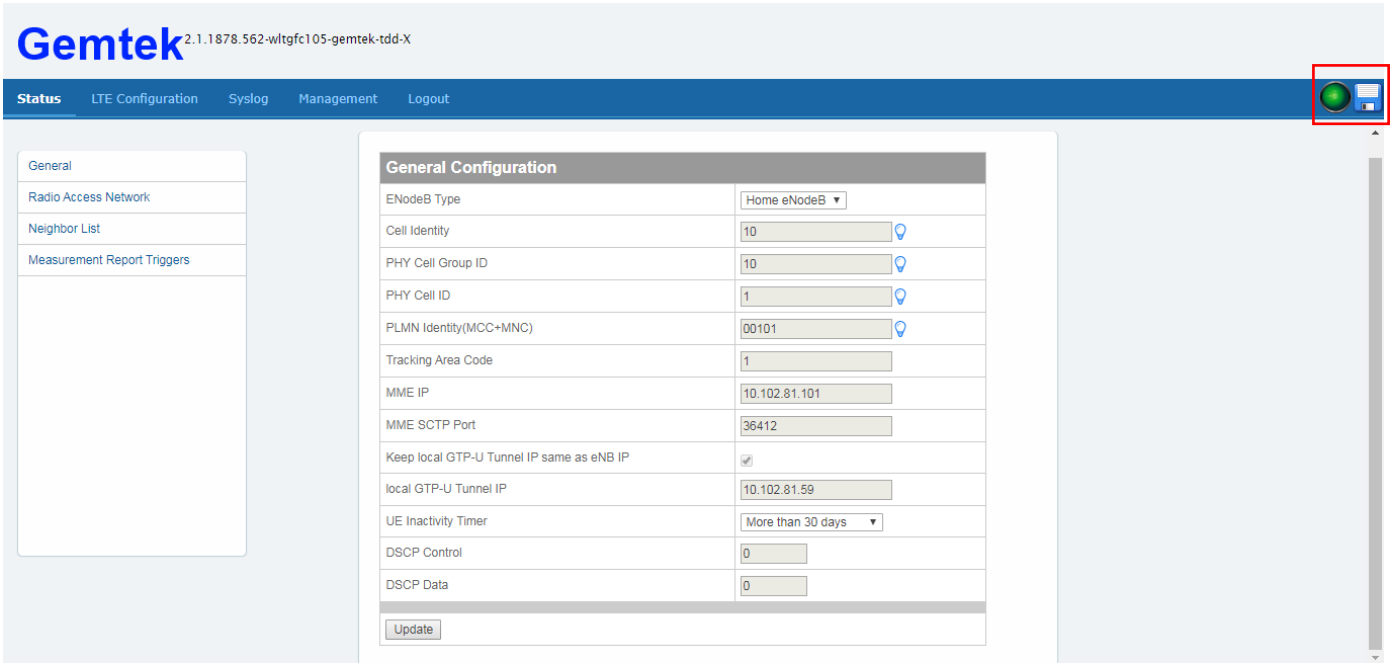
Shown below is an example of how “General Configuration” was modified and saved. All other configurations will be dealt with in detail in Chapter 3.

Once finish editing the configuration, you have to click **Update** button.

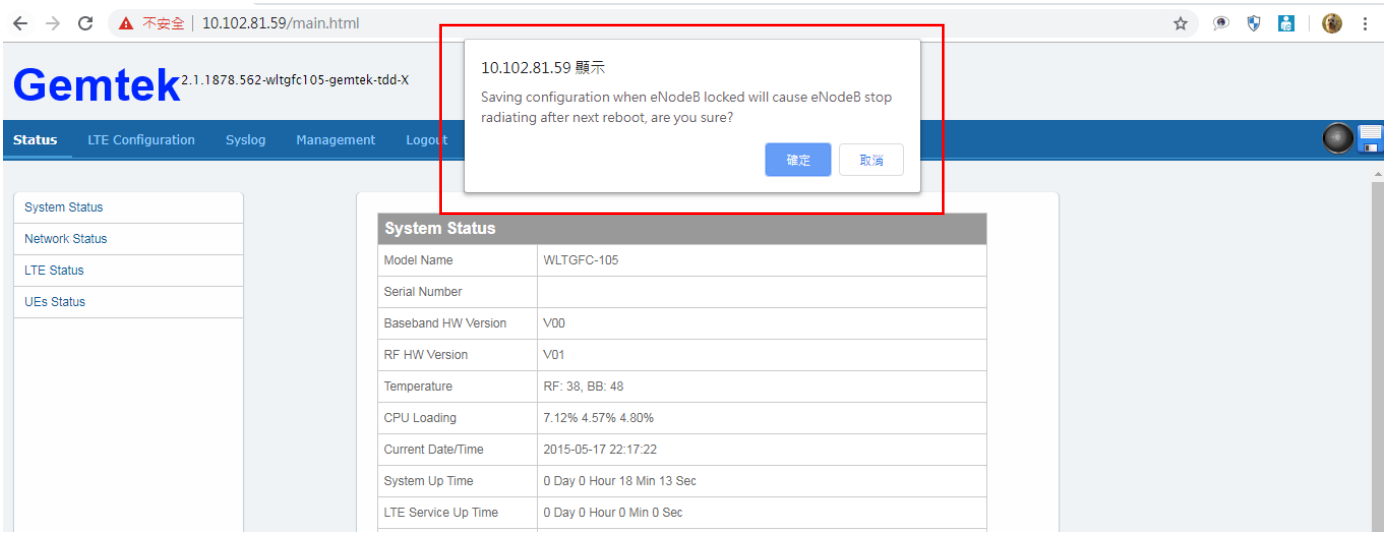


Before saving the configuration, be sure to **unlock** eNodeB by clicking the button to make it turn green . Hence, the result shows that all fields can't be edited anymore when finishing unlock.

Then click the button on the top-right corner to save the configuration.

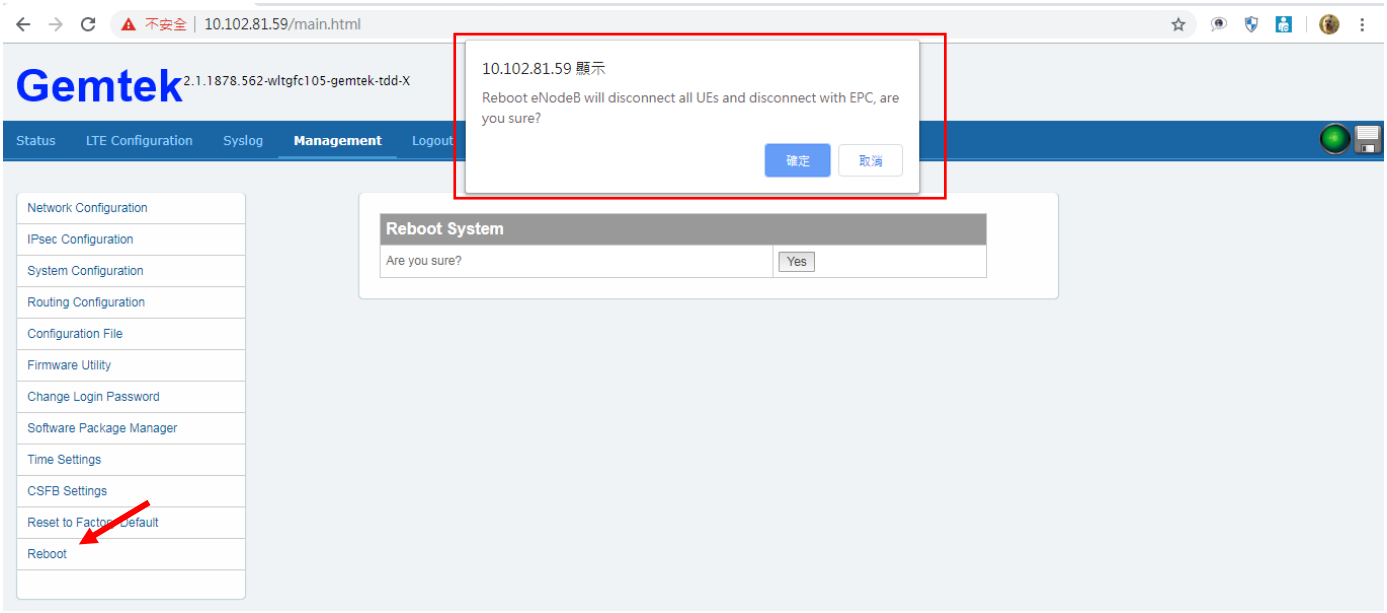


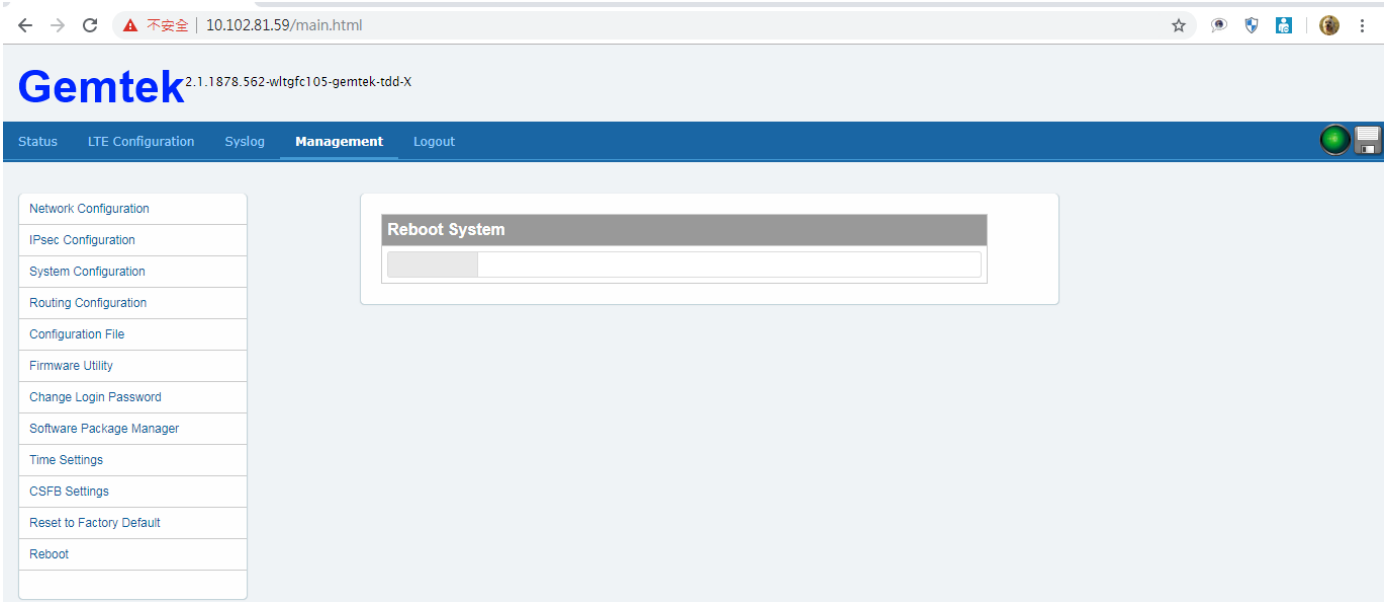
If you ever **FORGOT** to unlocke NodeB and save the configuration, you will see the pop-up message to inform you that "Saving configuration when eNodeB locked will cause eNodeB stop radiating after next reboot, are you sure?" In this situation, go back to **unlock** eNodeB and save again.



3.2.3 Reconfiguration Reboot

To validate reconfiguration, you should **reboot** eNodeB via the “Management” menu and click “Reboot”.





4. Web Management Interface Reference Manual

4.1 Status

4.1.1 Status | System Status

Select list item – Status | System Status, you can see the information about model name, RF/BB temperature, system up time, memory status, and etc.

System Status	
Model Name	WLTGFC-105
Serial Number	
Baseband HW Version	V00
RF HW Version	V01
Temperature	RF: 41, BB: 49
CPU Loading	4.22% 2.68% 2.38%
Current Date/Time	2015-05-17 22:02:31
System Up Time	0 Day 0 Hour 3 Min 21 Sec
LTE Service Up Time	0 Day 0 Hour 0 Min 0 Sec
Total Memory	516476 KB
Used Memory	186828 KB
Free Memory	329788 KB
Sync Source	internal
Sync Status	N/A
CBRS Status	(null),(null)
Location	N/A

These two blocks can check the sync. status if the cell boots with GPS mode.

4.1.2 Status | Network Status

Select list item – Status | Network Status, you can see Small Cell Local/MAC IP address and other Ethernet related information.

Network Status	
Small Cell Local IP Address	10.102.81.59
Small Cell Local MAC Address	1C:49:7B:FB:1C:D1
Default Gateway	10.102.81.254
DNS Server	8.8.4.4
IEEE-1588v2 Grand Master	N/A
NTP Server	Disabled
EMS/ACS Server	N/A
SON Server	N/A
Security Gateway	Disabled
IPSec Status	
status	

4.1.3 Status | LTE Status

Select list item – Status | LTE Status, you can get the LTE general configuration about information of Frequency band, PLMN, MME/eNodeB IP address, Bandwidth, EARFCN, and, etc.

General Configuration	
Cell State	UP
Frequency Band	48
MME IP address	10.102.81.100
Small Cell IP address	10.102.81.59
ENodeB Type	Home eNodeB
Cell Identity	10
PHY Cell Group ID	10
PHY Cell ID	1
PLMN Identity(MCC+MNC)	00101
EARFCN	55990
Bandwidth	10MHz
Current TX Power	9.780000000000001
FDD/TDD Mode	TDD

4.1.4 Status | UEs Status

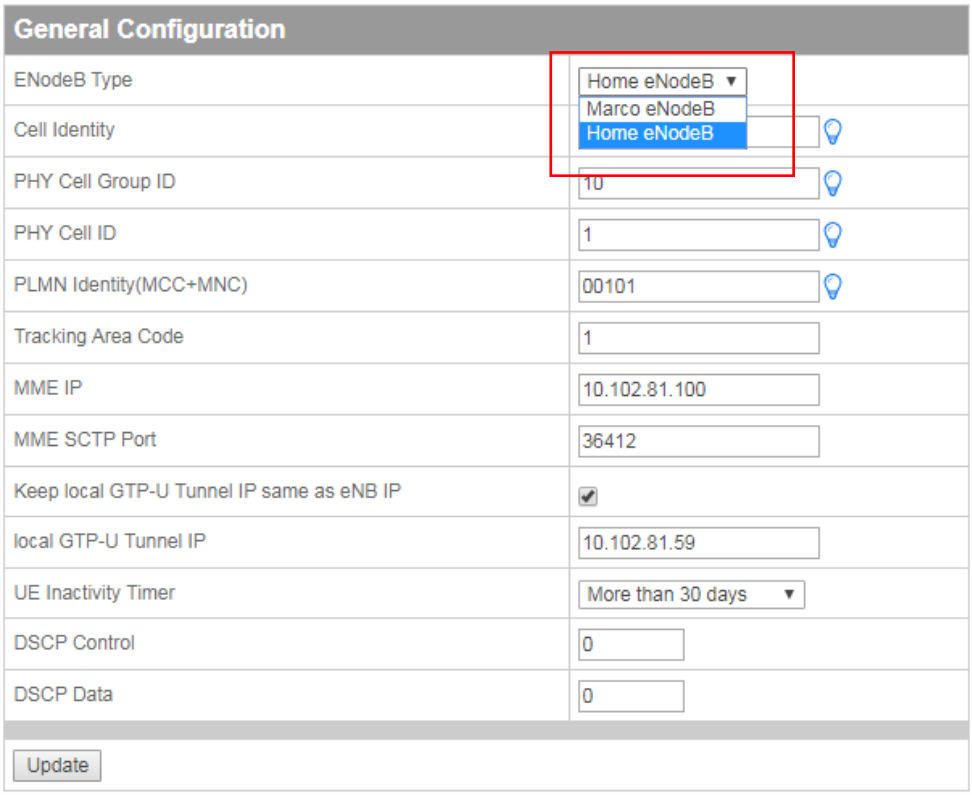
Select list item – Status | UEs Status shown as bellow, you will see here were 2 UEs attached in this case. The DL/UL throughput and MCS index of UE#1 were 7,903/8,465 Kbps and 19/27. And the DL/UL throughput and MCS index of UE#2 were 8,417/5,018 Kbps Kbps and 20/27.

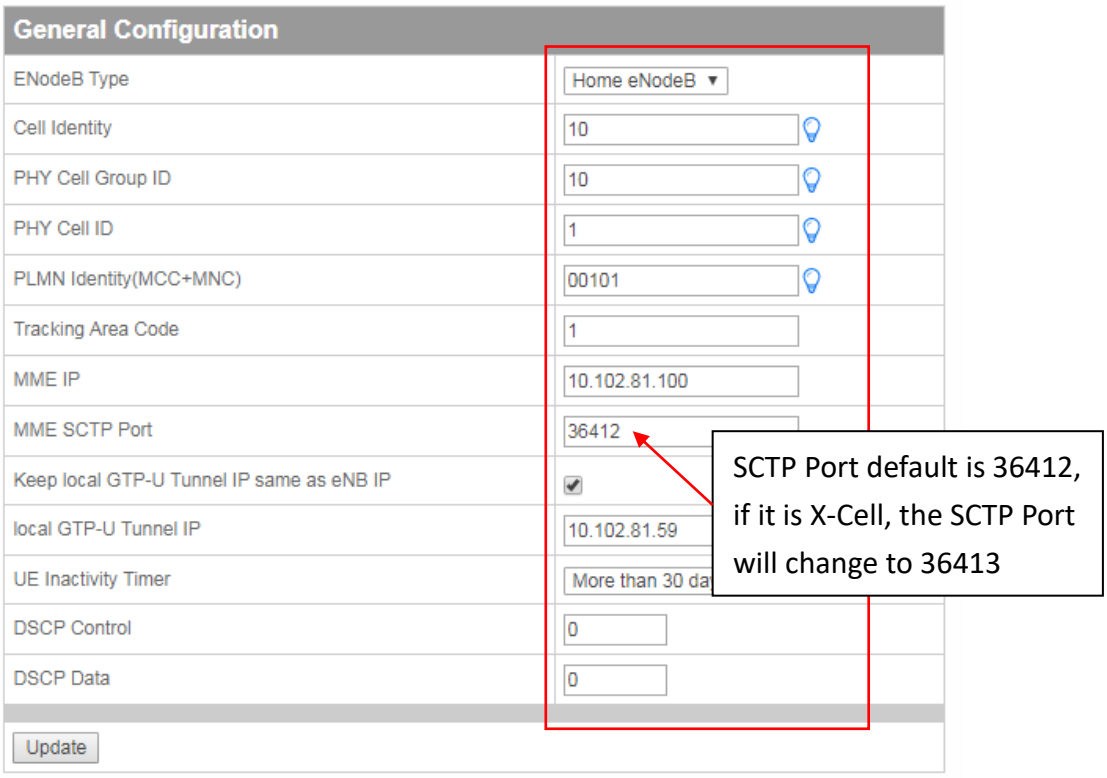
UEs Status								
	UpLink				DownLink			
1	RNTI	BLER(%)	Tput(Kbps)	MCSidx	RNTI	BLER(%)	Tput(Kbps)	MCSidx
	101	0.02(0.08)	7903	19	101	0.00(0.01)	8465	27
2	RNTI	BLER(%)	Tput(Kbps)	MCSidx	RNTI	BLER(%)	Tput(Kbps)	MCSidx
	138	0.00(0.10)	8417	20	138	0.00(0.01)	5018	27

4.2 LTE Configuration

4.2.1 LTE Configuration | General

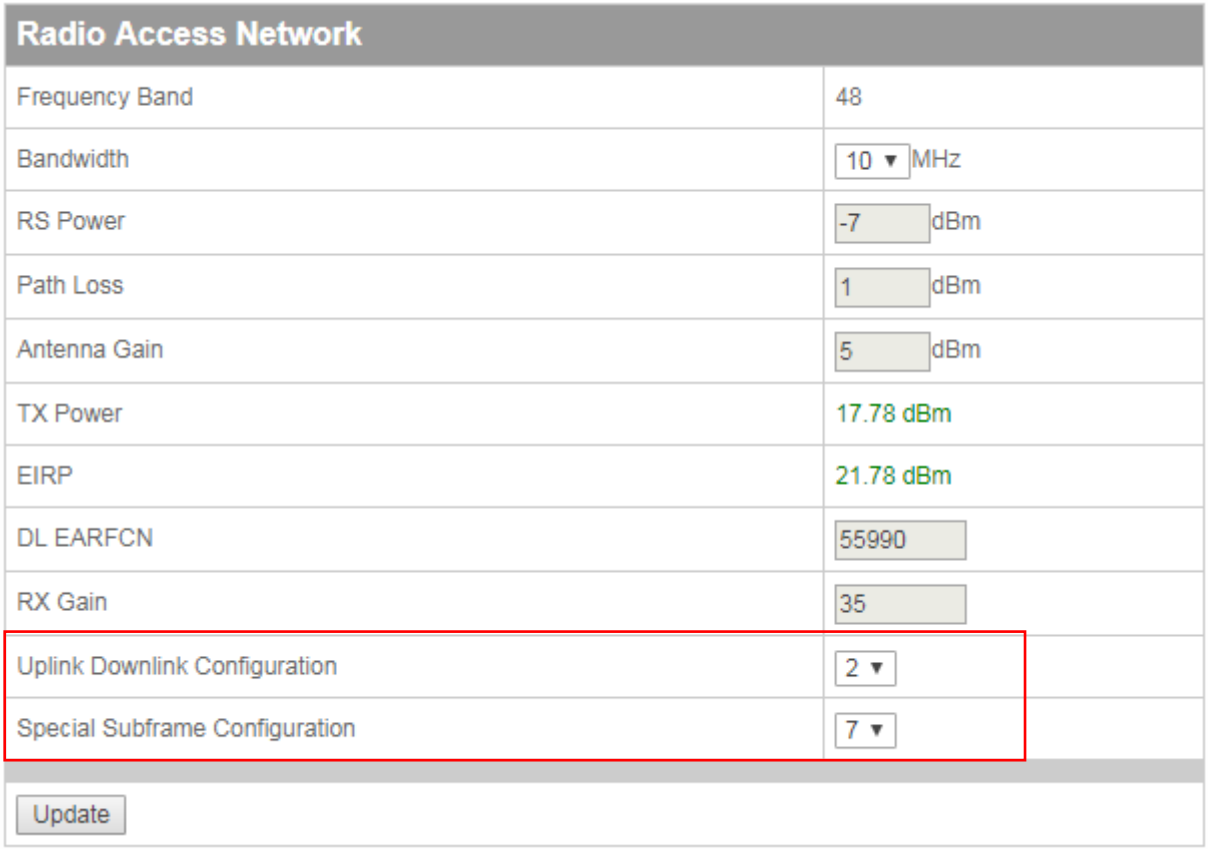
Select list item – LTE Configuration | General, you will see that eNodeB Type have 2 selections to choose, Marco eNodeB and Home eNodeB. As for the other parameters, you can input the responding values to configure your eNodeB.





4.2.2 LTE Configuration | Radio Access Network

Select list item – LTE Configuration | Radio Access Network, you will see that Bandwidth can be configured as to 5, 10, 15 and 20 MHz. As for Tx Power, its maximum value is 20. You can also configure the DL EARFCN to what you want, as for the responding UL EARFCN, the system will automatically help you finish it. And RX gain is to adjust the receiver gain of RF.

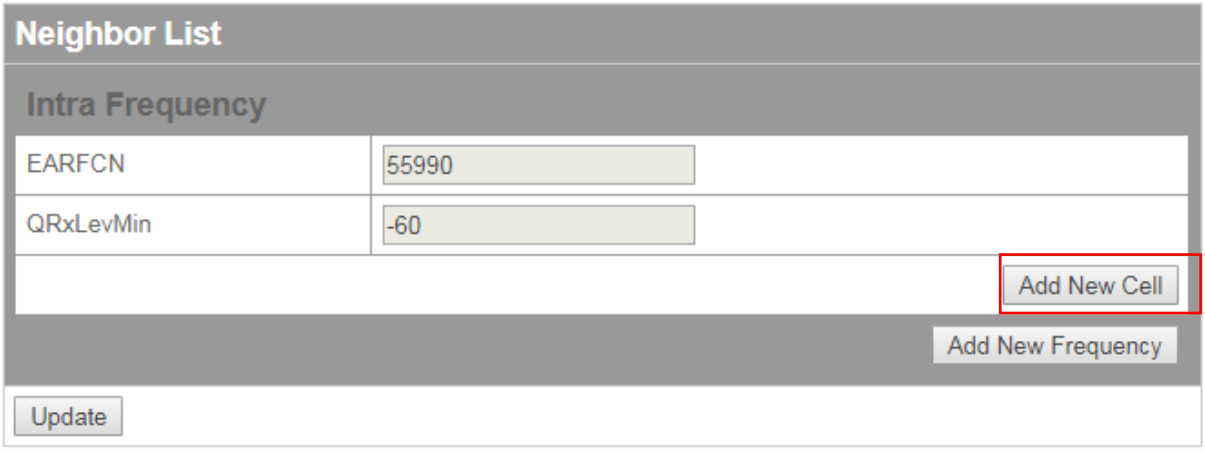


TDD has an additional mode, you can change "Uplink Downlink Configuration" to setup the UL/DL ratio according to your requirement. We support configuration 1~5.

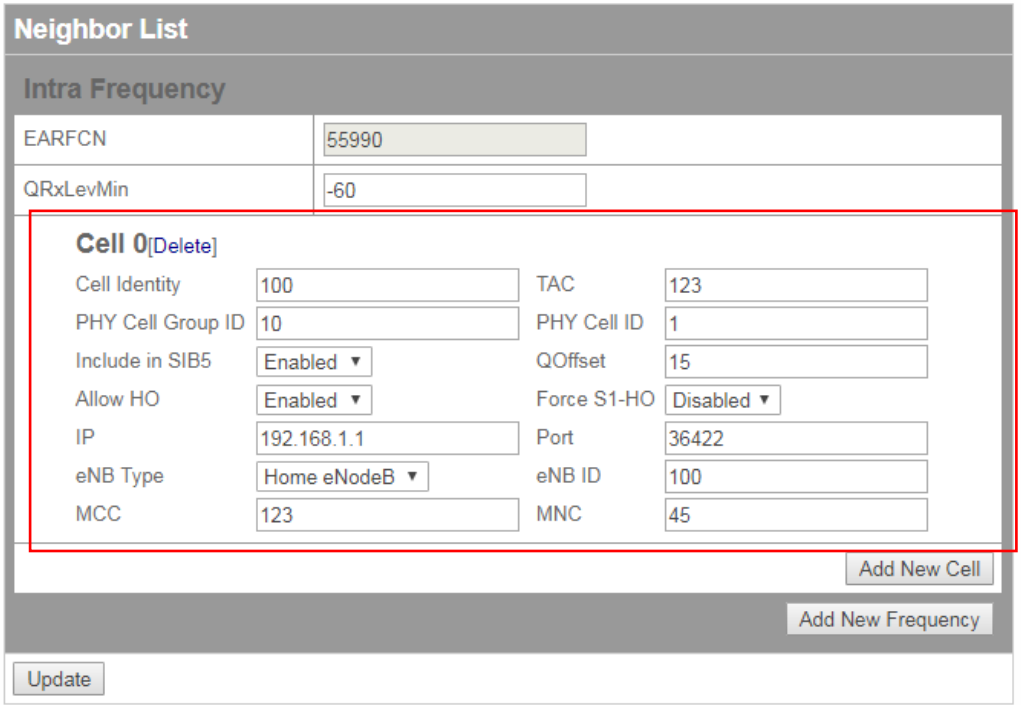
Note that the following chapters (4.2.3 & 4.2.4) are the settings with multiple small cells. Thus, if you are X-cell, you can ignore these parts.

4.2.3 LTE Configuration | Neighbor List

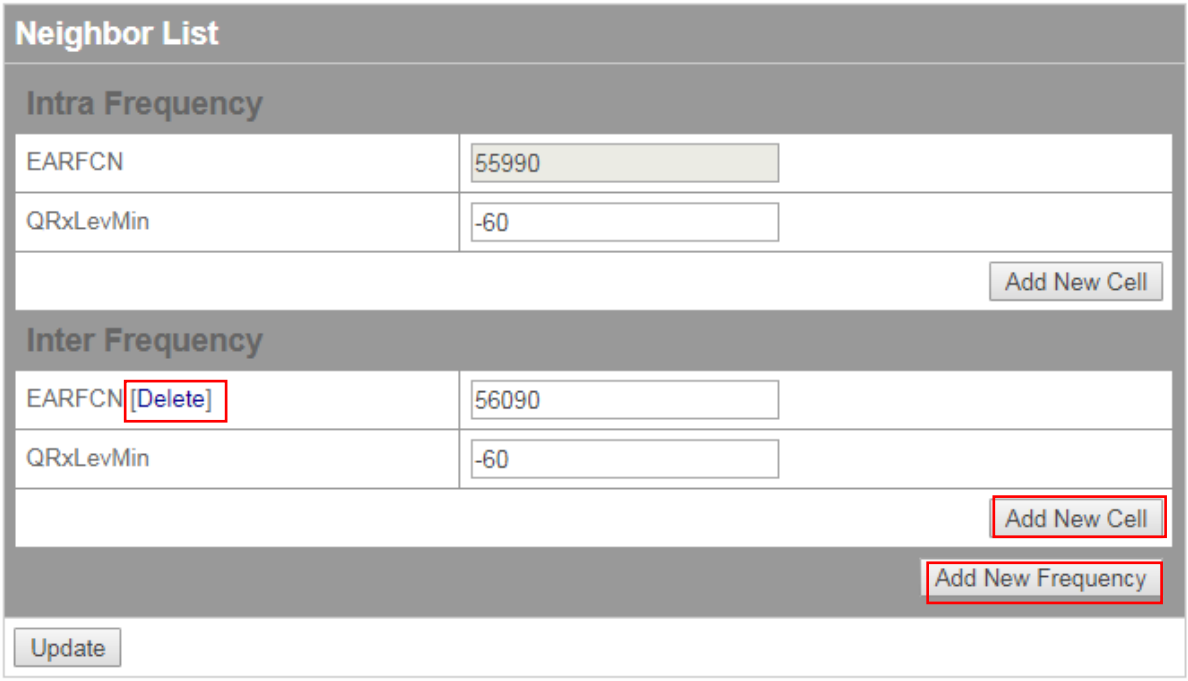
Before adding neighbors, you first have to check the frequency is intra or inter. If the neighbor is an intra-frequency neighbor, you can directly add a neighbor cell under the frequency of the eNodeB. If no cells are added, ANR will still be working to add any neighbor cell that UE reports to the neighbor relation table of this eNodeB.



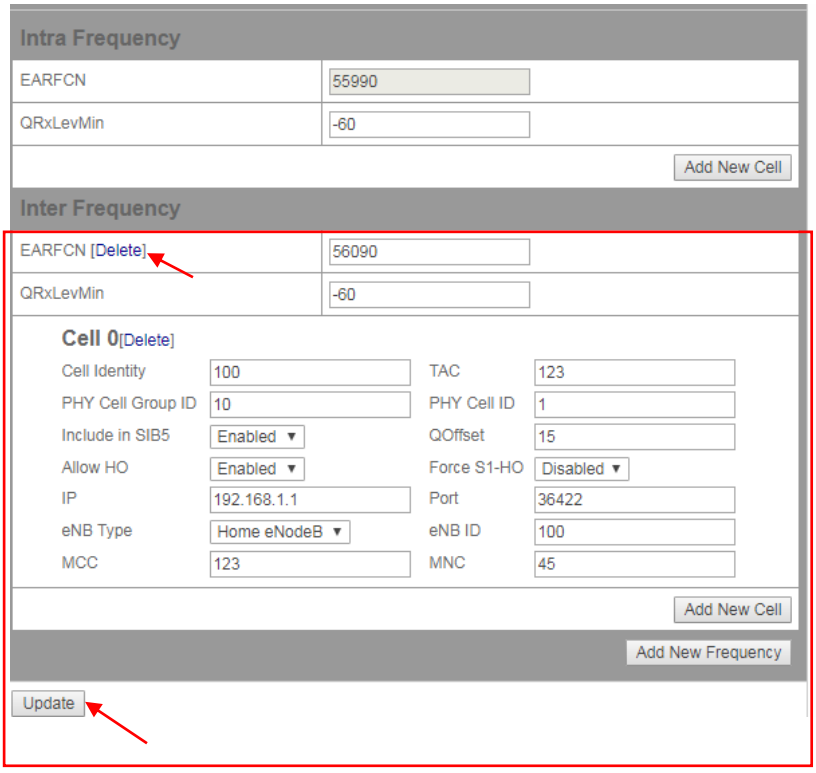
Edit the information of the neighbor cell, especially the Cell ID, PHY cell group ID, PHY Cell ID, and Bandwidth. If X2 HO is not needed, IP, Port, eNB Type, eNB ID, MCC, MNC, and MME CGI can be ignored. After edited, press the **Update** button to apply the changes. And don't forget to save your changes.



If the neighbor cell is inter-frequency, press the "Add New Frequency" button to add a new EARFCN. The "Delete" link can be used to delete this frequency. Press the "Add New Cell" button under this inter-frequency to add a new neighbor cell. If no cells are added, ANR will still be working to add any neighbor cell that UE reports to the neighbor relation table of this eNodeB.



Edit the information of the neighbor cell. The "Delete" link can be used to delete the cell. After edited, press the **Update** button to apply the changes. And don't forget to save your changes.



4.2.4 LTE Configuration | Measurement Report Triggers

Select list item – LTE Configuration | Measurement Report Triggers, you can edit the A1/A2/A3/A4/A5 trigger conditions.

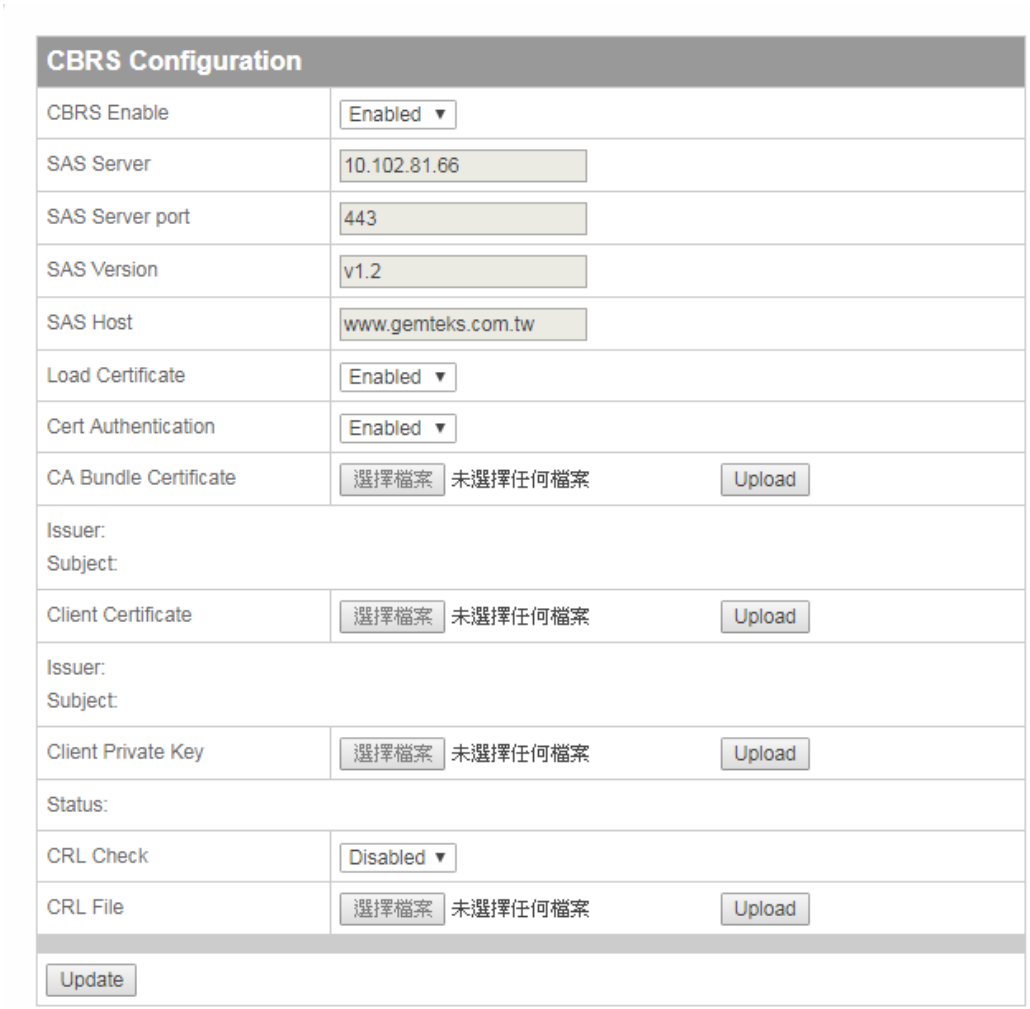
Measurement Report Triggers	
A1 event	
RSRP Threshold	70
Hysteresis	2
Time to Trigger	640 ms
Max Report Cells	4
Report Interval	2048ms
Report Amount	Infinity
A2 event	
RSRP Threshold	60
Hysteresis	2
Time to Trigger	640 ms
Max Report Cells	4
Report Interval	2048ms
Report Amount	Infinity

A3 event	
Offset	6
Report on Leave	False
Hysteresis	4
Time to Trigger	320 ms
Max Report Cells	4
Report Interval	480ms
Report Amount	Infinity
A4 event	
RSRP Threshold	80
Hysteresis	6
Time to Trigger	640 ms
Max Report Cells	8
Report Interval	1min
Report Amount	64

A5 event	
RSRP Threshold 1	70
RSRP Threshold 2	70
Hysteresis	2
Time to Trigger	640 ms
Max Report Cells	4
Report Interval	480ms
Report Amount	Infinity
Update	

4.2.5 CBRS Configuration

※Please make sure that the time of the eNB is the same as the time of the SAS Server. Otherwise, the certificate will fail.



CBRS Enable: Enable CBRS Function

SAS Server: SAS Server's IP Address or Domain Name

SAS Server port: SAS Service Port Number

SAS Version: SAS-CBSD protocol version

SAS Host: SAS Server's host name

Load Certificate: Use certificate (default is enable)

Cert Authentication: Enable mutual authentication (client side)

CRL Check: enable CRL check

※This page is visible when CBRS Enable = Enable.

User can set CBRS protocol parameter using this page.

Registration Request Parameter	
userId	gtkUser01
fccId	gtkCbsd01
cbsdSerialNumber	gtkCbsdSn01
callSign	
cbsdCategory	A
cbsdInfo	
airInterface	E_UTRA
measCapability	RECEIVED_POWER_WITH
installationParam(Optional)	
latitude	44
longitude	-93
height	9
heightType	AGL
horizontalAccuracy	
verticalAccuracy	
indoorDeployment	1
antennaAzimuth	
antennaDowntilt	
antennaGain	5
eirpCapability	
antennaBeamwidth	
antennaModel	
groupingParam(Optional)	
groupType	
groupId	
cpiSignatureData(Optional)	
protectedHeader	
encodedCpiSignedData	
digitalSignature	
SpectrumInquiry Request Parameter	
inquiredSpectrum	3680000000,3690000000;3
Update	

4.3 Syslog

4.3.1 Syslog | Operation Log

```
Jan 1 00:00:23 (none) local1.info root: [MSG_CENTER] : Operation Normal
Jan 1 00:00:23 (none) local1.info root: [CMS] : Operation Normal
Jan 1 00:00:24 (none) local1.info root: [Network Static ip] : Operation Normal
Dec 31 16:00:24 (none) local1.info root: [NTP] : Operation Disable
Jan 2 00:00:00 LSM local1.info root: [Telent] : Operation Normal
Jan 2 00:00:00 LSM local1.info root: [Zabbix] : Operation Disable
Jan 2 00:00:35 LSM local1.info root: [MIF] : Operation Normal
Jan 2 00:00:48 LSM local1.info root: [GEMTEK-RF] : Operation Normal
```

4.3.2 Syslog | Configuration Log

```
Jan 2 00:05:25 LSM local2.info root: admin login to web management console success
Jan 2 00:11:13 LSM local2.info root: admin login to web management console success
Jan 2 00:16:12 LSM local2.info root: adminstate changed to 0
Jan 2 00:22:44 LSM local2.info root: adminstate changed to 1
```

4.3.3 Syslog | Alarm Log

```
Jan 2 00:00:50 LSM local3.info gtkSwitch: SFP0 link state change to [down]
Jan 2 00:00:50 LSM local3.info gtkSwitch: SFP1 link state change to [down]
Jan 2 00:00:50 LSM local3.info gtkSwitch: ETH link state change to [up]
```

4.3.4 Syslog | Export Log Files

Export Log File	
Export Log File	Export

4.4 Management

4.4.1 Management | Network Configuration

Below is the default setting. Here, you can edit eNodeB static IP、VLAN and DNS.

Network Configuration	
DHCP	Disabled ▼
VLAN	Disabled ▼
IP +	10 . 102 . 81 . 59
Netmask	255 . 255 . 255 . 0
Default Gateway	10 . 102 . 81 . 254
Primary DNS	8 . 8 . 8 . 8
Secondary DNS	8 . 8 . 4 . 4
Update	

4.4.2 Management | IPsec Configuration

Below is the default setting. you can edit eNodeB Server IP、Client IP and fill in the empty blocks.

IPsec Configuration		
IPsec Function	Disabled ▼	
Server IP	. . .	
Client ID	Default ▼	
Server ID	Same as IP ▼	
Authentication	Pre-shared Key ▼	
Remote Subnet	. . . /	
Pre-shared Key		
Root CA Certificate	選擇檔案 未選擇任何檔案	Upload
Issuer: Subject:		
Client Certificate	選擇檔案 未選擇任何檔案	Upload
Issuer: Subject:		
Client Private Key	選擇檔案 未選擇任何檔案	Upload
Status:		
Update		

4.4.3 Management | System Configuration

Below is the default setting.

System Configuration	
Redirect to Syslog Server	Disabled ▼
ReEst Function	Disabled ▼
ANR Function	Enabled ▼
SON Function	Disabled ▼
EMS Function	Disabled ▼
Bootstrap Function	Disabled ▼
Logdisp Function	Disabled ▼
Update	

4.4.4 Management | Routing Configuration

Below is the default setting. You can edit the Route Type, Destination, Mask, Gateway, Interface and fill in the empty blocks.

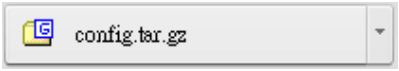
Routing Configuration			
Route Type	net ▼		
Destination	. . .		
Mask	. . .		
Gateway	. . .		
Interface			
Update Delete			
Destination	Gateway	Genmask	Iface

4.4.5 Management | Configuration File

Here provide “Export Configuration”, “Import Configuration” and “Restore Last Configuration” functions to manage your eNodeB configuration files.

Configuration File	
Export Configuration	Export
Import Configuration	選擇檔案 未選擇任何檔案 Import
Restore Last Configuration	Restore

a. Export Configuration:

Click **Export** button and select “Download Link”, your browser will download “config.tar.gz” file 

to your computer.

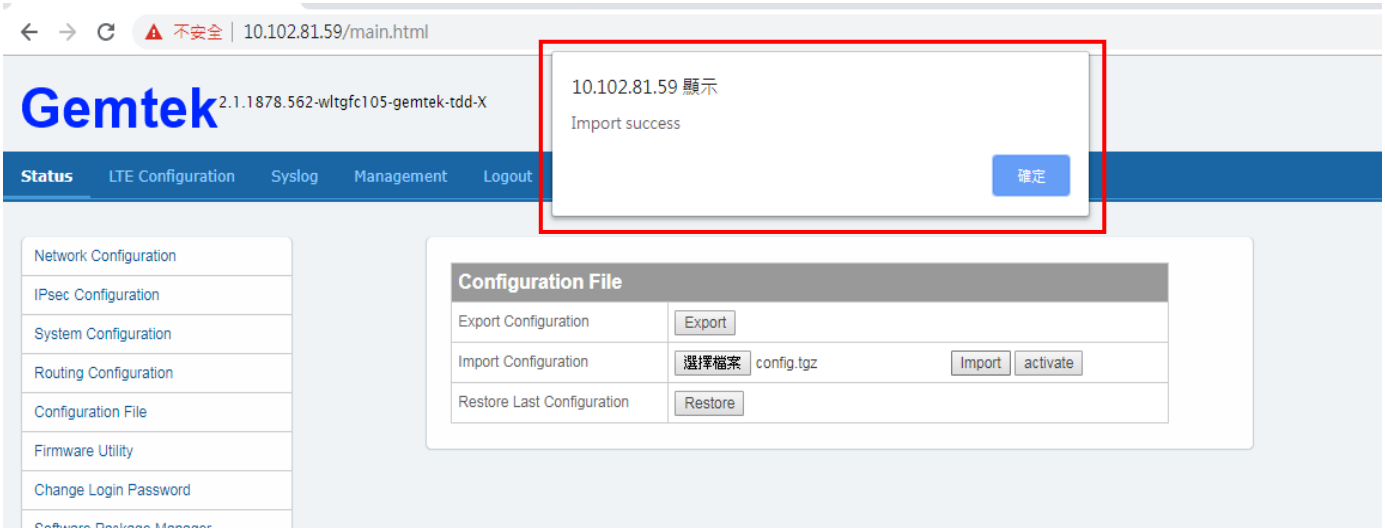
Configuration File	
Export Configuration	Export Download Link
Import Configuration	選擇檔案 未選擇任何檔案 Import
Restore Last Configuration	Restore

b. Import Configuration:

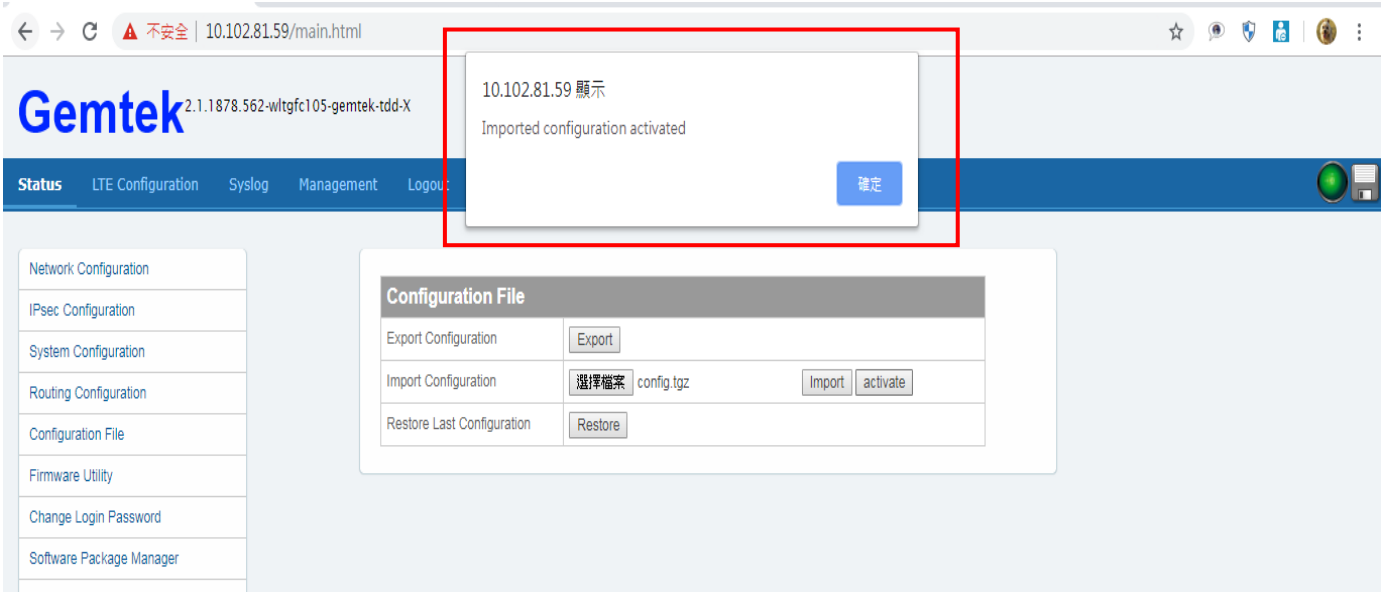
Select a backup “config.tar.gz” and press **Import** button. You will change the configuration files on your eNodeB (Pop-up message will show: Import success).

Configuration File	
Export Configuration	Export
Import Configuration	選擇檔案 未選擇任何檔案 Import activate
Restore Last Configuration	Restore

Configuration File	
Export Configuration	Export
Import Configuration	選擇檔案 config.tar.gz Import activate
Restore Last Configuration	Restore



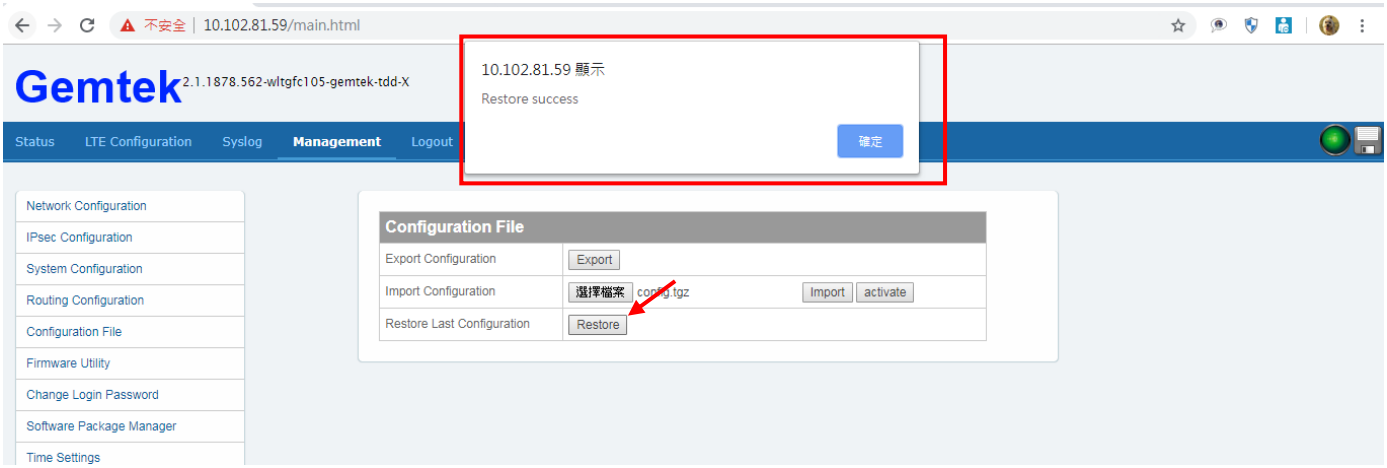
Click the ‘active’ button to active the new configuration file.



Then **reboot** eNodeB to validate the reconfiguration.

c. Restore Last Configuration:

This function can help you recover eNodeB to the last version of configuration. You should just select **Restore** button and get “Restore success” pop-up message. But you should also **reboot** eNodeB to get recovery.

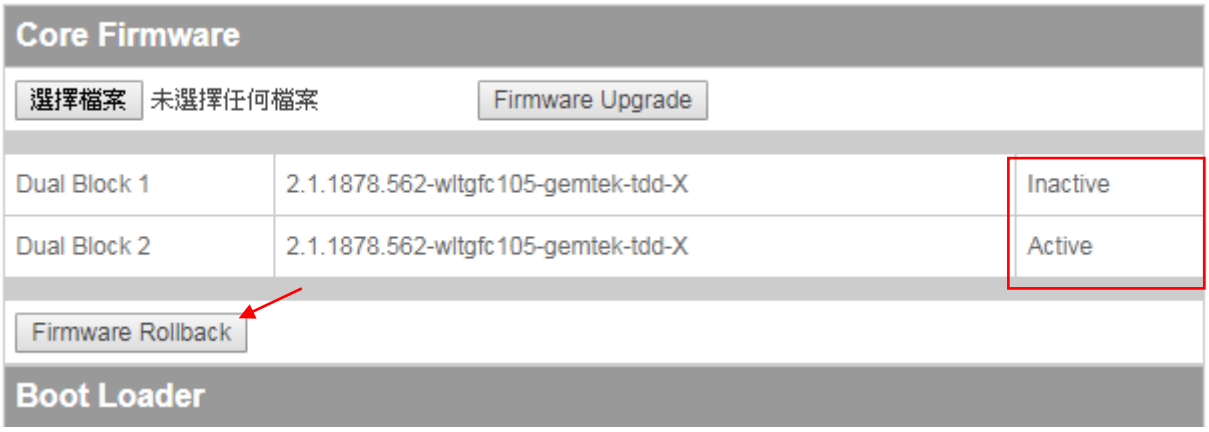


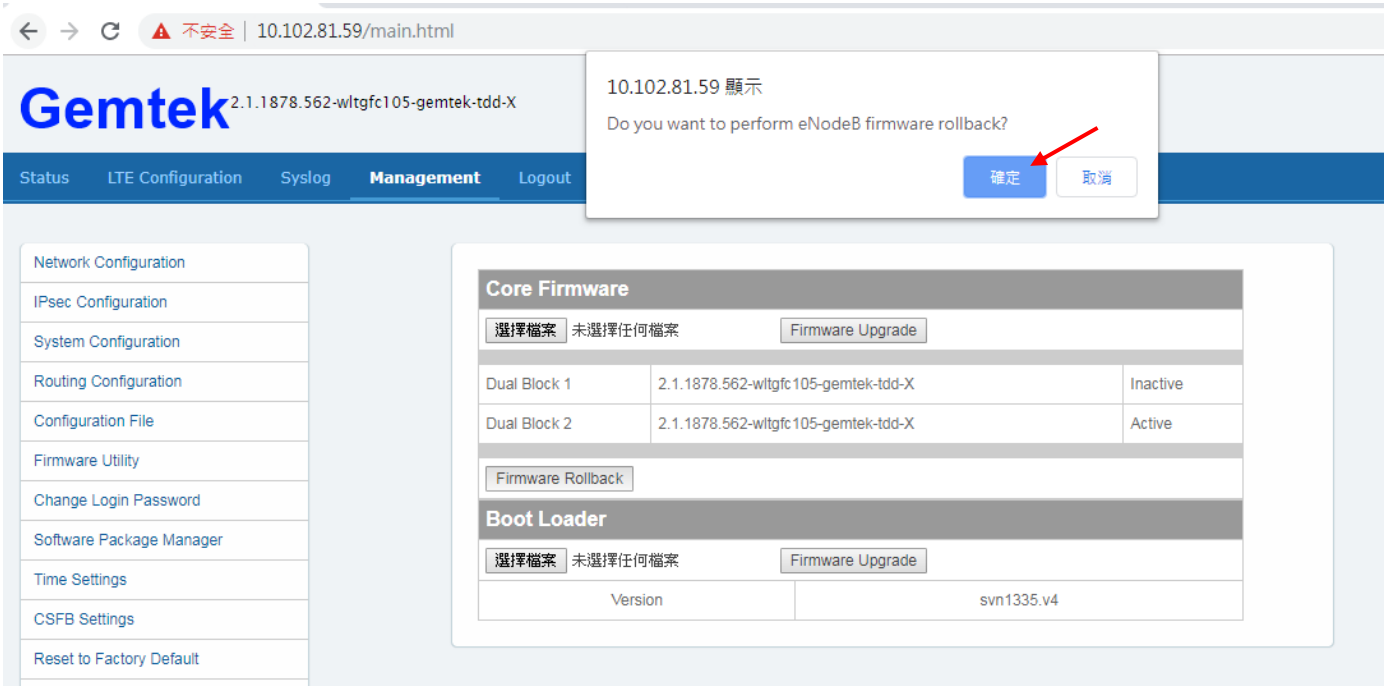
4.4.6 Management | Firmware Utility

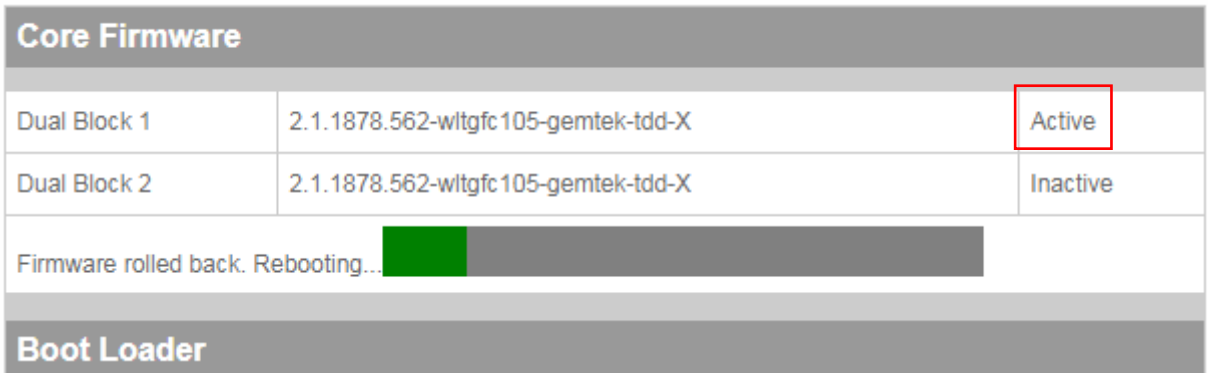
The Web GUI provides “Firmware Rollback” and “Core Firmware” functions for customer to change image. You will see below eNodeB having dual images, now, Dual Block 1 is in Active and Dual Block 2 is in Inactive. In this case, the image saved in Dual Block 2 will become active (1) to recover your eNodeB if you run “Firmware Rollback”, or (2) to be replaced by new image if you run “Firmware Upgrade”.

a. Firmware Rollback:

Once press the **Firmware Rollback** button, the Small cell will rollback to another block immediately.



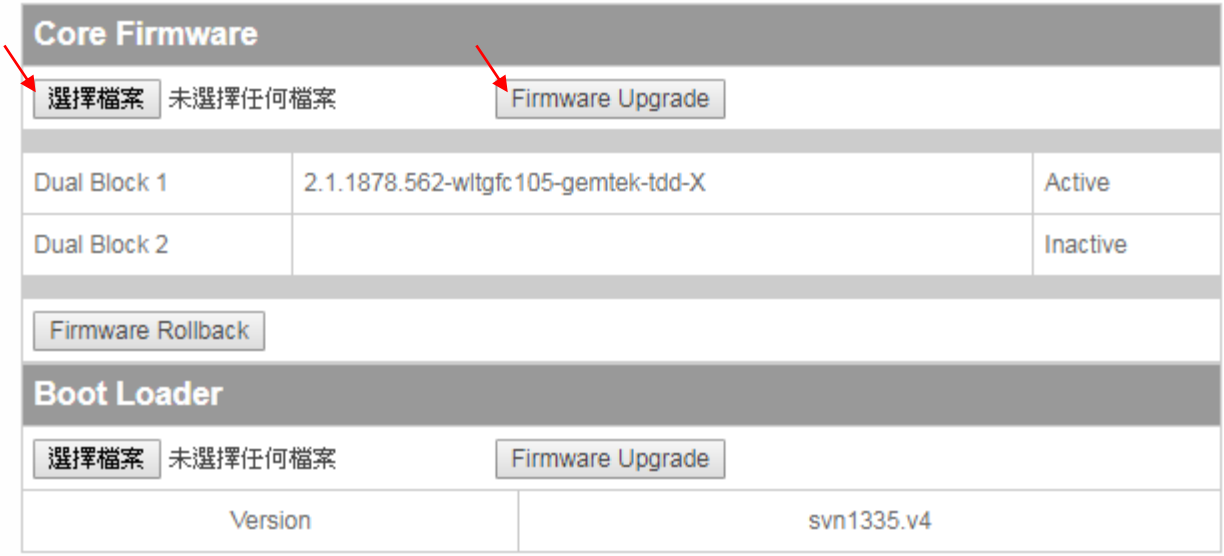




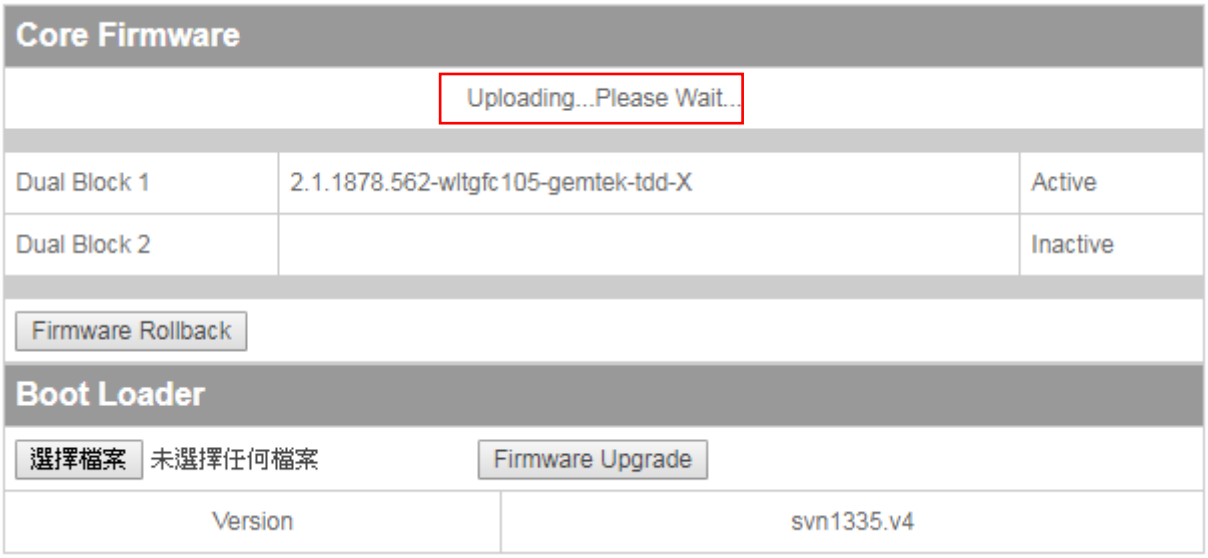
Here, you can see the Dual Block 1 image become “Active”.

b. Firmware Upgrade:

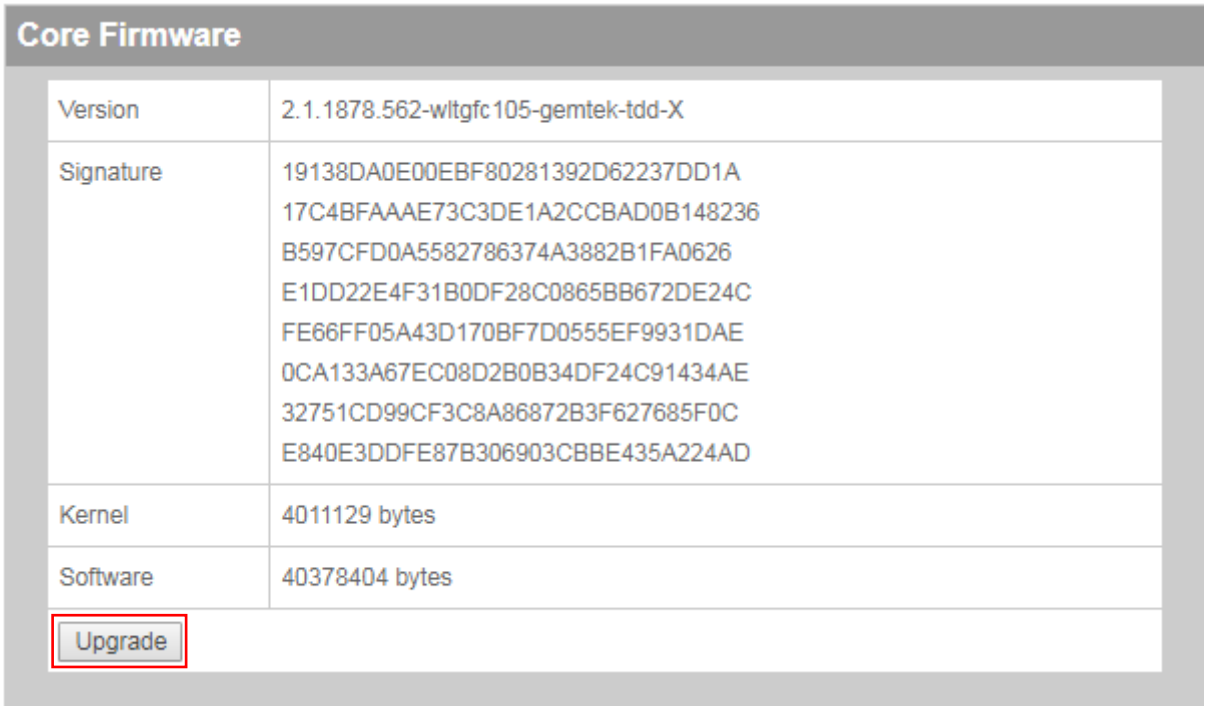
Choose a new image from PC directory that contains the new image and press **Firmware Upgrade** button.

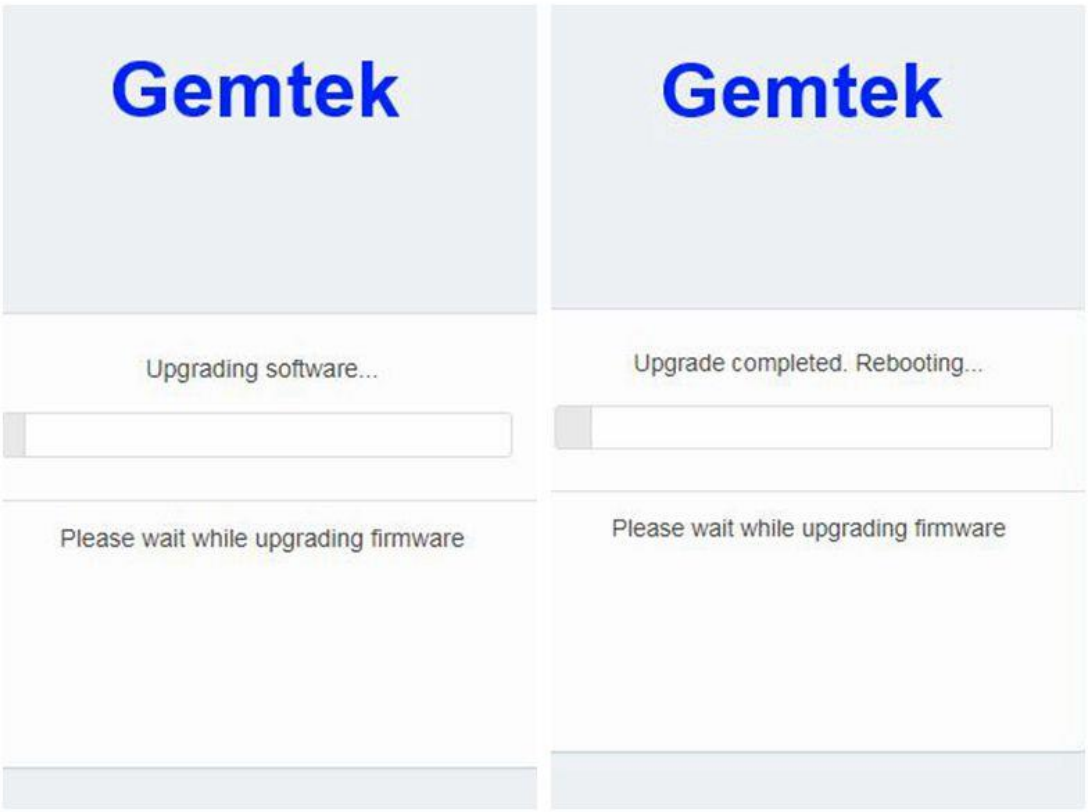


This process need several seconds loading new image and then show the below information for you to check.

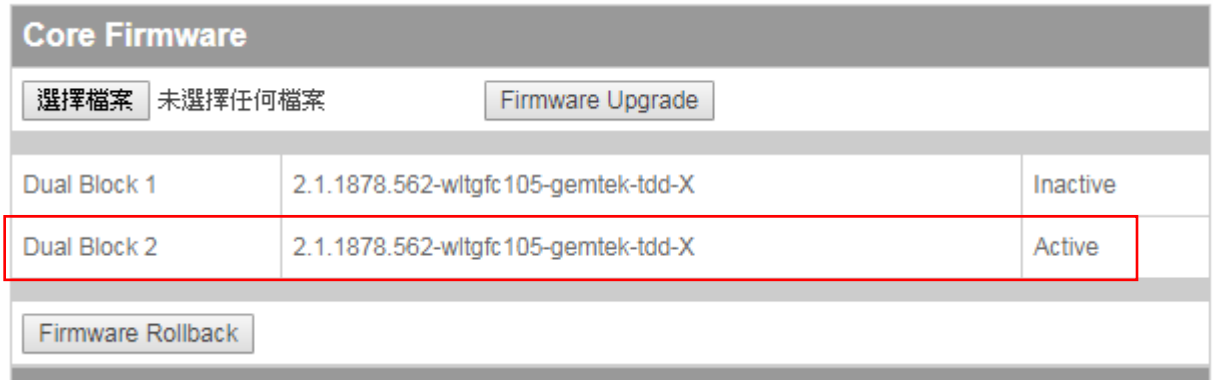


Check the image and click **Upgrade** button to upgrade firmware.
Wait a few minutes for the process to finish.



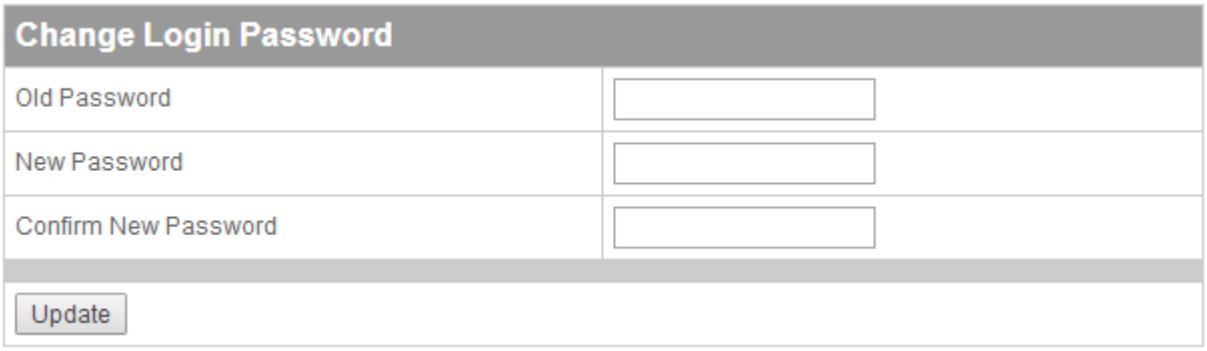


After finishing firmware upgrade and login Web GUI, you will find that the upgrade process results in Dual Block 2 become “Active” and the older one saved on Dual Block 1 was marked as “Inactive”.



4.4.7 Management | Change Login Password

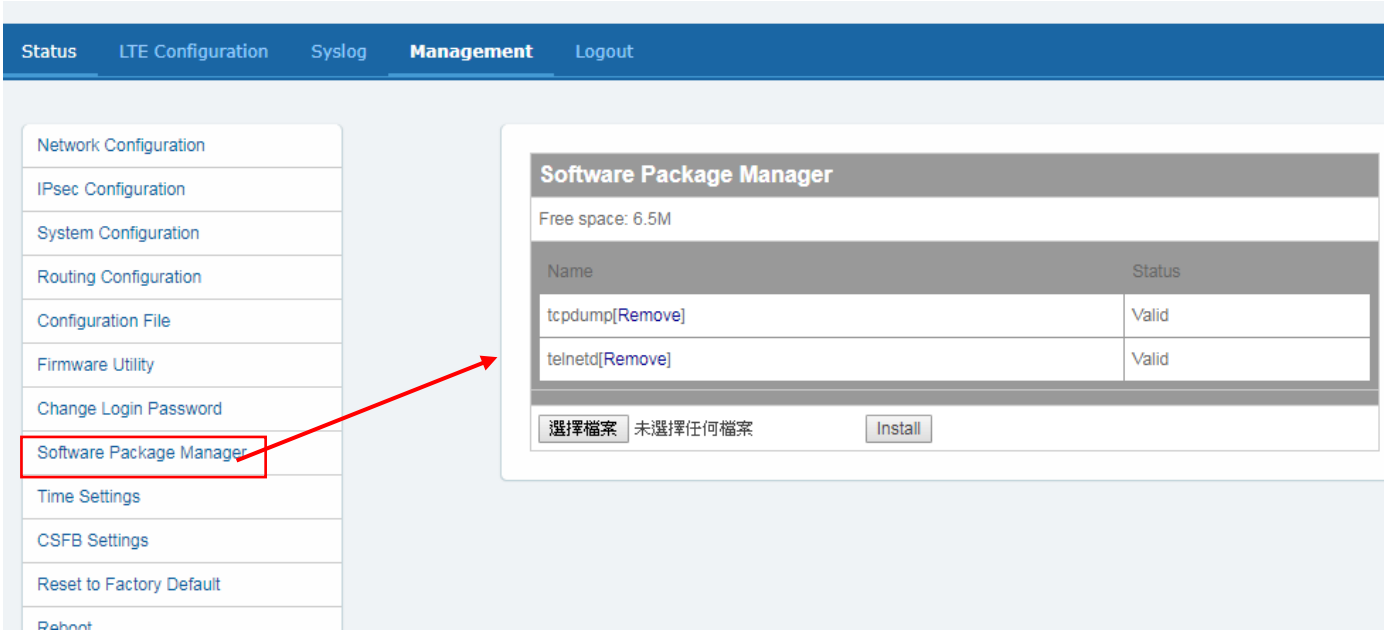
- Default password: admin (length is 5 characters long)
- New password length should be 6-10characters long.



- Once “Update” the new password, you will be asked to login with new password again as follows.

4.4.8 Management | Software Package Management

Normally, customer will not use this function. This feature is used to install some utilities to debug Small Cell issues and will be under Gemtek engineer authorization and manipulation.



4.4.9 Management | Time Setting

1) 1588 Function: Enable/Disable
2) Protocol: 802.3/udp

   802.3 is ethernet's protocol.

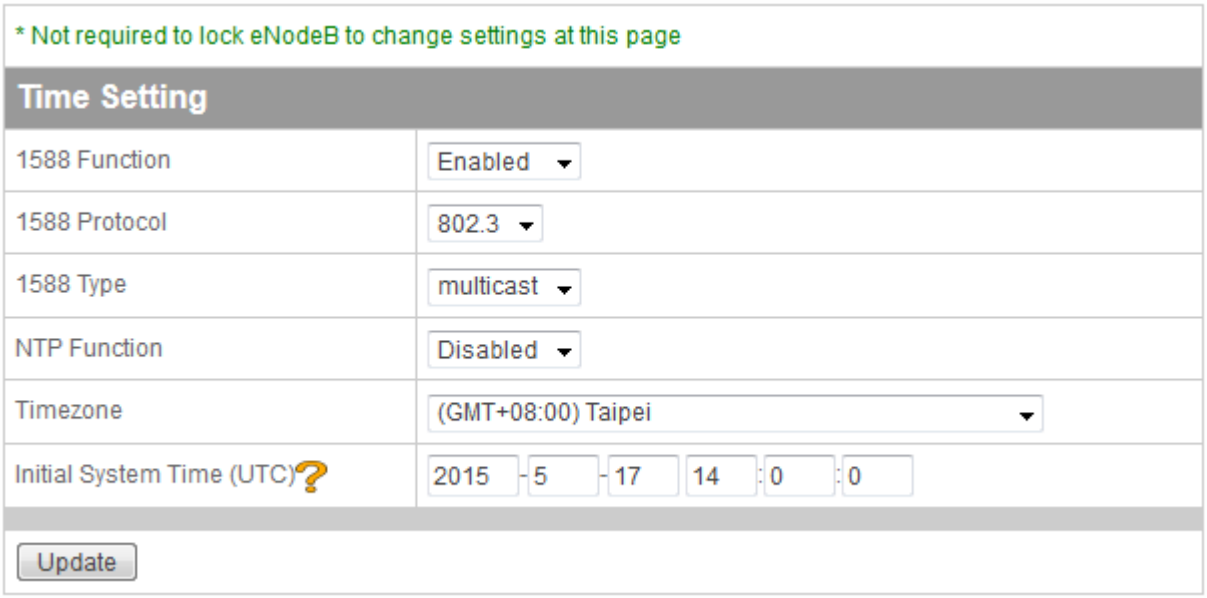
   Udp is ipv4's protocol.

   Before using 1588, please make sure your eNodeB can access 1588 server via ping operation without issue.
3) 1588 Type: multicast/unicast

   ◎ **multicast** is group communication where data transmission is addressed to a group of destination computers simultaneously. Multicast can be one-to-many or many-to-many distribution

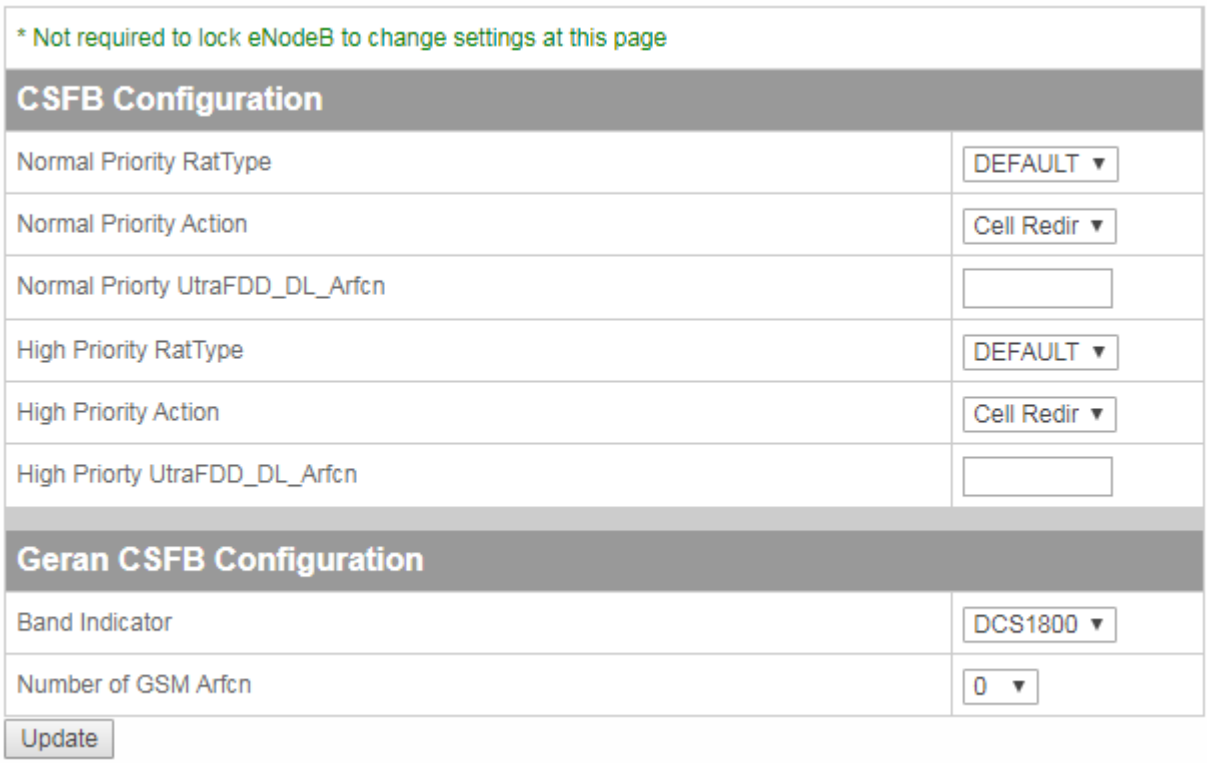
   ◎ **unicast** refers to a one-to-one transmission from one point in the network to another point; that is, one sender and one receiver, each identified by a network address.
4) NTP Function: Disable/Enable

   The Network Time Protocol (NTP) is a networking protocol for clock synchronization between computer systems over packet-switched, variable-latency data networks.
5) Timezone: Please select the time of your location.
6) NTP Server Name: Default setting is 2015-5-17 14:0:0 (year-month-day hr:min:sec.



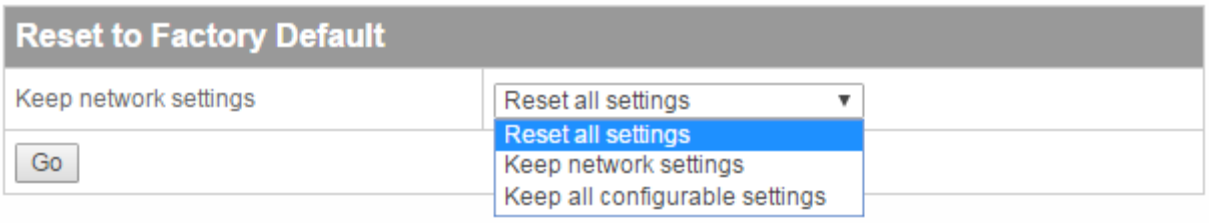
4.4.10 Management | CSFB Configuration

Below is the default setting. You can select the different modes of priority

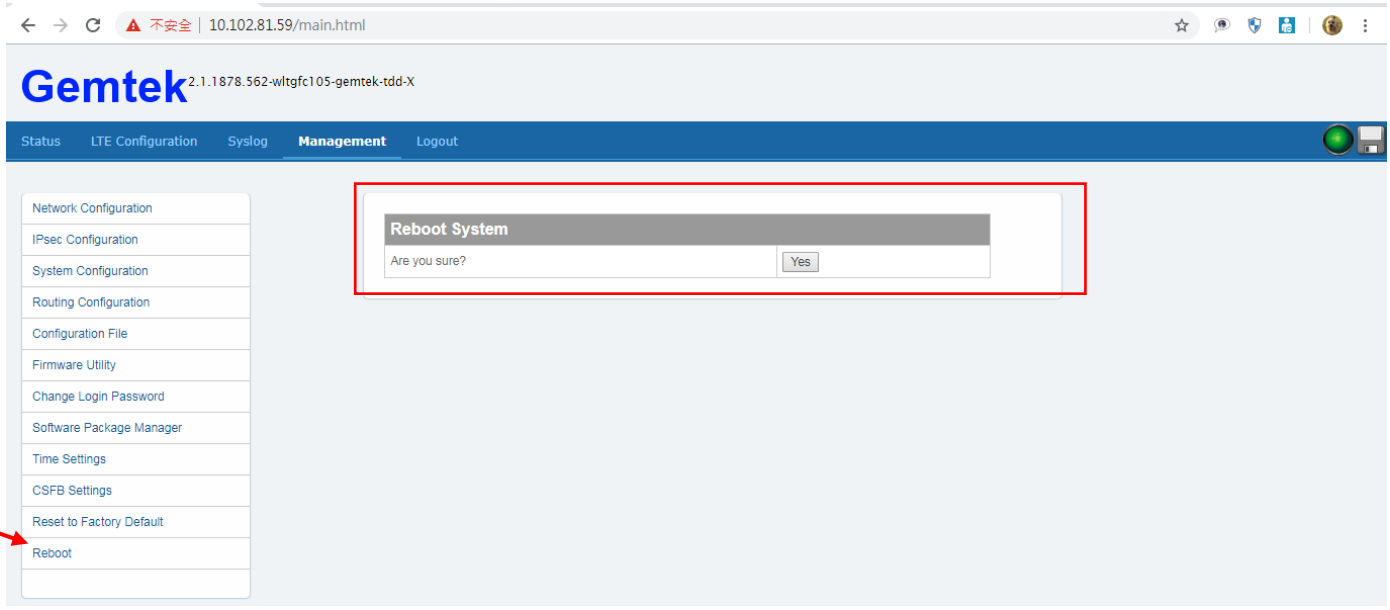


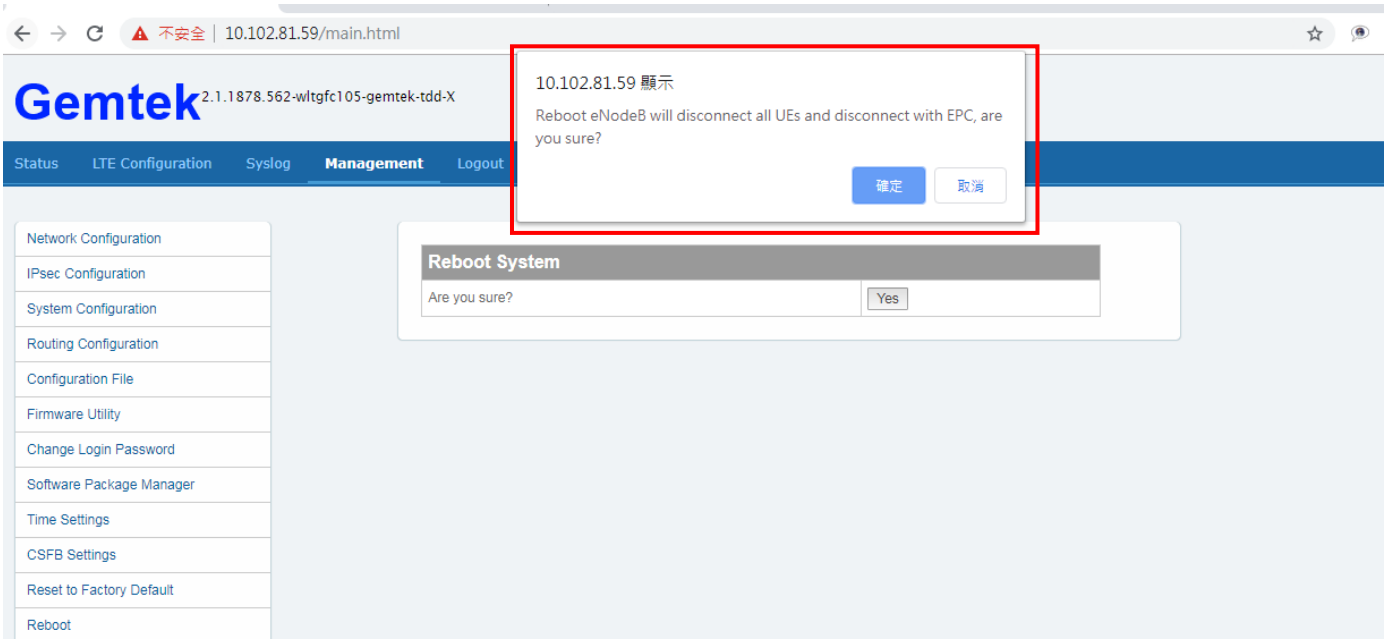
4.4.11 Management | Reset to Factory Default

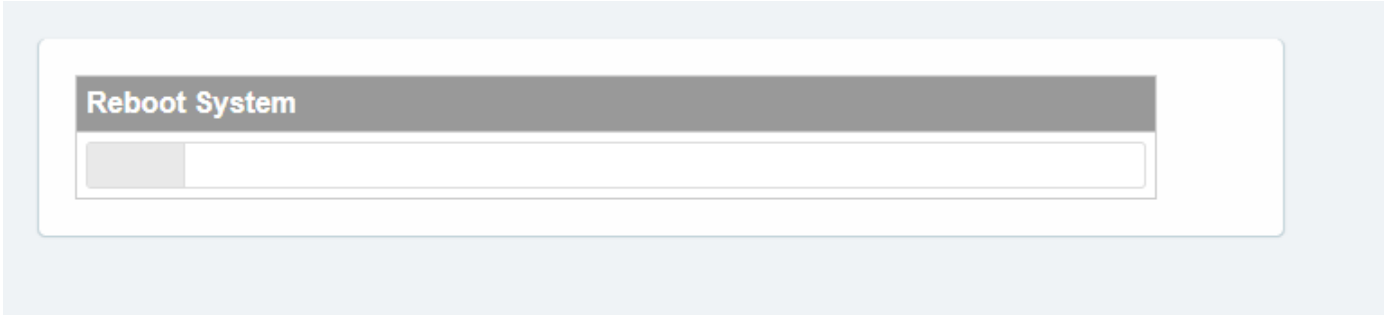
Factory default mode, there are three modes. Please select the operating mode.



4.4.12 Management | Reboot System

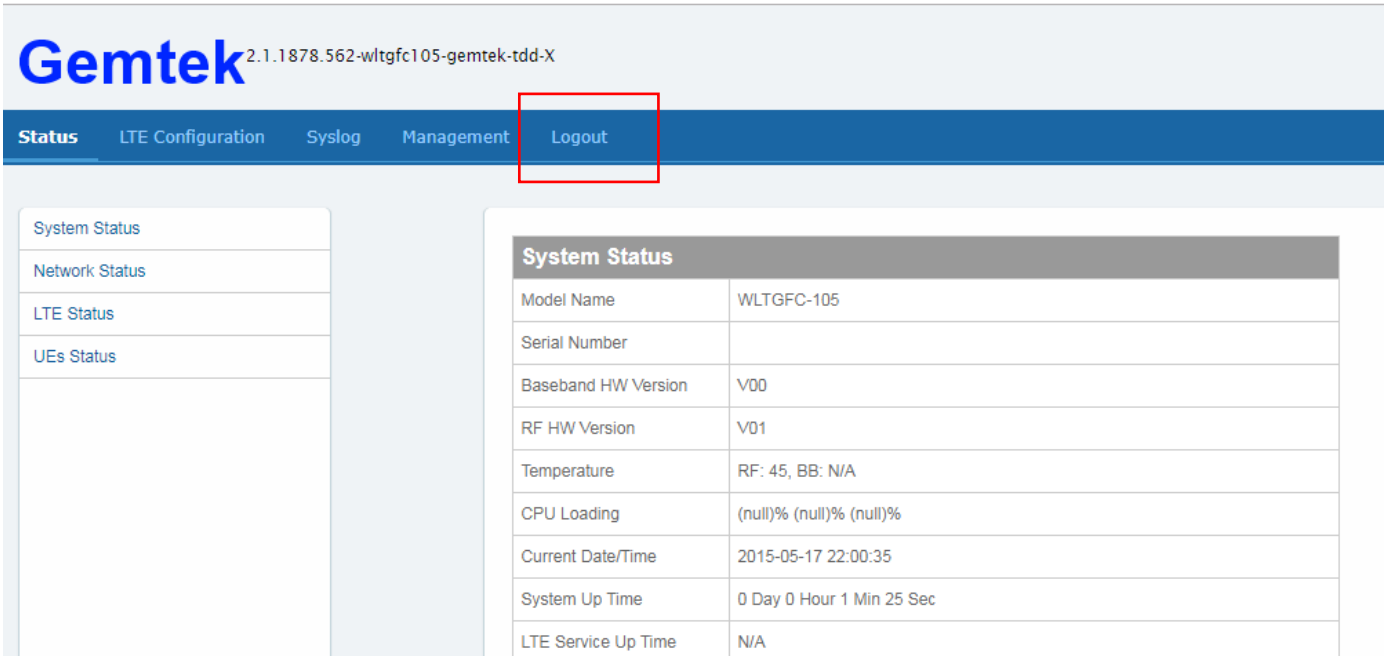


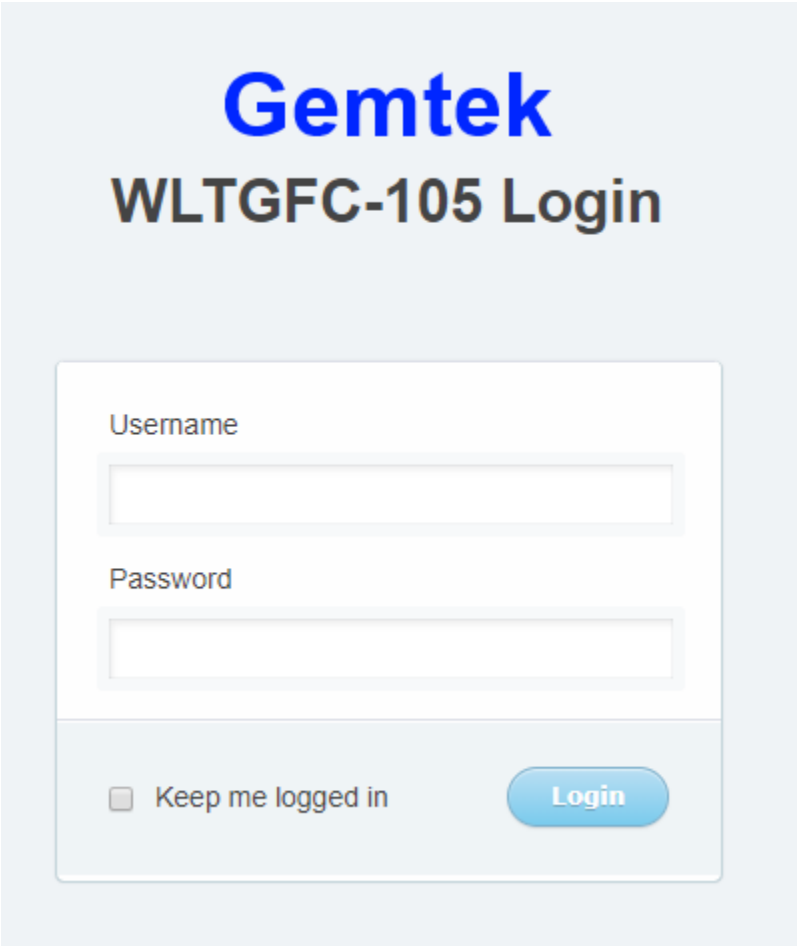




4.5 Logout

You can click "Logout" tab in any window to log out and then go back to Login page.





4.6 LED Definition

4.6.1 LED Behavior

LED ON/OFF Sequence:

Uboot LED light Process :

LTE user LED ON ->LTE LED ON ->Power LED ON ->LTE user LED OFF ->LTE LED OFF ->Power LED OFF

LED display	Behavior
Power & System LED	**Green** : Power ready and system ready(default)
	Red : 1. Power ok during booting the device
	2. System Error or Alarm.
LTE User LED	**On**: UEs attached.
	Blink :UE's Traffic Tx/Rx
	Off : No active UE on line
LTE LED	**On**: Cell Setup successfully, LTE service is ready.
	Blink : Tx/Rx LTE Traffic
	Off: No LTE server.
Ethernet LED	**On:** Ethernet connected
	Blink: Under Ethernet traffic
	Off: No Ethernet can be connected
GPS sync. LED	**On:** GPS source is ready
	Blink: Under Synchronization
	Off: No GPS can be detected

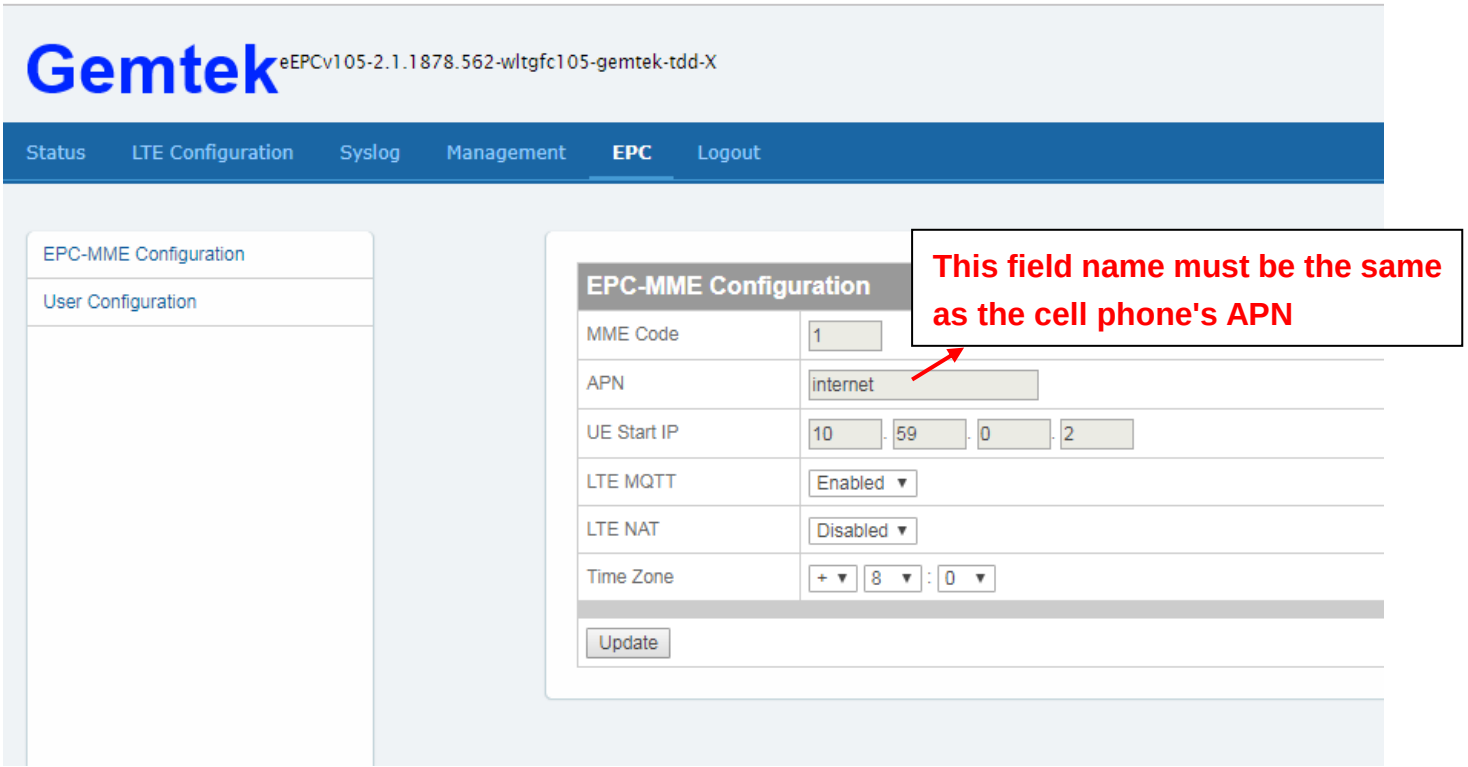
5. All-In-One Small Cell (X-Cell) Web Management Interface Reference Manual

Since the web management of the All-In-One small cell (X-cell) is the same except for the “EPC” icon. Please follow “Chapter 3.2.2Modify Configuration” to modify the X-cell configuration parameters. **The following part is the settings of the embedded EPC.**

5.1 EPC

5.1.1 EPC | EPC-MME Configuration

Select list item – EPC | EPC-MME Configuration, You can set MME code, APN and UE Start IP for EPC. Then, you can select LTE MQTT status and Time Zone.



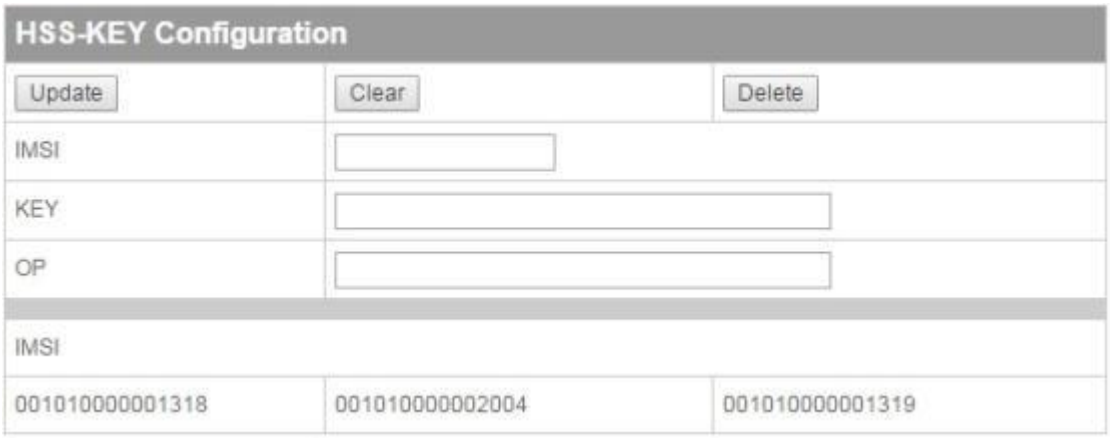
1. Click ‘EPC’ tag.
2. Click ‘EPC-MME’ Configuration
3. Please base on your test environment to configure these parameters for MME.
   i. MME Code : 1~255
   ii. APN : The max length is 64
   iii. UE Start IP : UE IP Address
   iv. LTE MQTT: **This is for special application use only. Please don’t enable it**. If enable it, it will reduce the system throughput performance.
   v. Time Zone: The value is assigned to UEs after UEs have attached completed.
4. If you update the value, you must reboot the system.

5.1.2 EPC | HSS-KEY Configuration

Select list item – EPC | HSS-KEY Configuration, You can check IMSI list.

When you click IMSI number, you can see the information of KEY and OP.

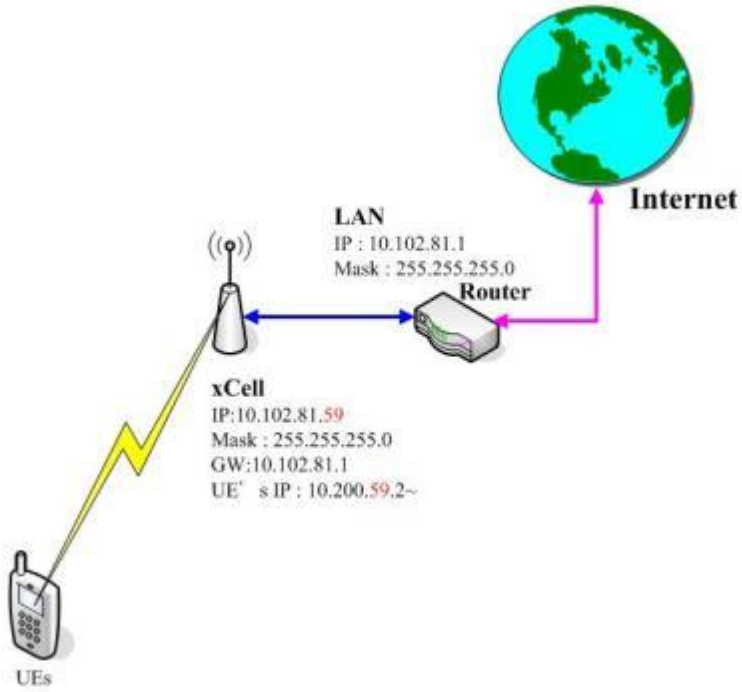
You can add IMSI by input IMSI, KEY and OP field and click Update button.



You can delete IMSI by input IMSI, KEY and OP field and click Delete button.

5.2 X-Cell Network Planning

- For Example



1. The X-Cell need to setup the Default Gateway to **Router**.
   Ex: In the Figure, the IP of Router is 10.102.81.1. We must setup the GW to 10.102.81.1. How to set the Default Gateway, you can reference [**4.4.1 Management | Network Configuration**].
2. The **Router** must set a static routing rule:
   Ex: The X-Cell assigns the IP 10.200.59.**X** to UEs. We must set a routing rule for this router.
   Linux cmd: **route add -net 10.200.59.0/24 gw 10.102.81.59**
   10.200.59.0 is UE's IP
   24 is the mask of UE's IP and this value = 255.255.255.0
   10.102.81.59 is X-Cell's IP
3. If the Router has a web management. You can reference the User's Guild of the router to add a static routing rule. You can set the ip10.200.59.0, mask255.255.255.0, and GW is 10.102.81.59.

5.3 Cell Phone APN Settings:

iOS (Please follow these operating steps by taking iPhone7 as an example)

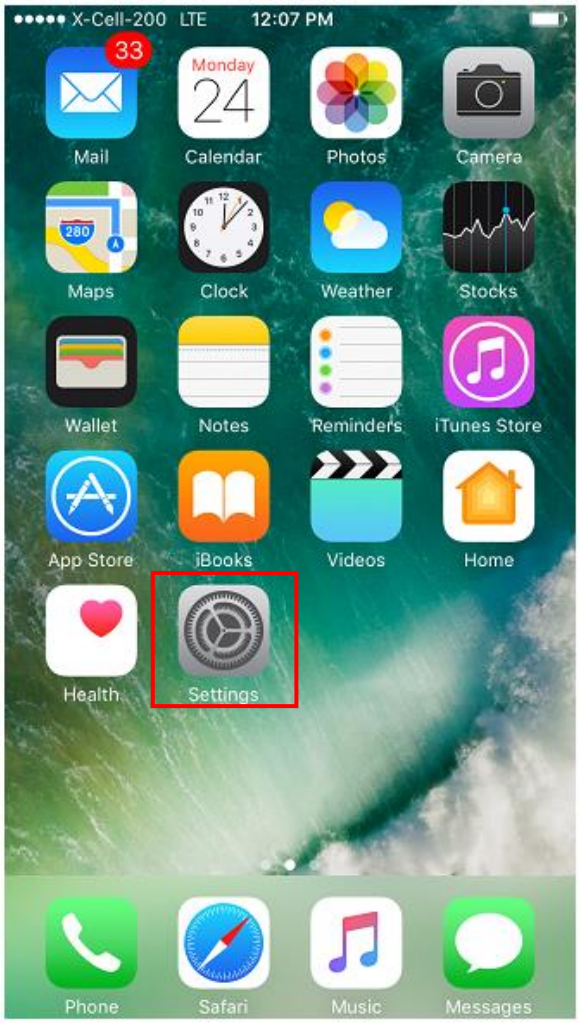
Step1:Settings →Cellular →Cellular Data Options →Cellular Data Network

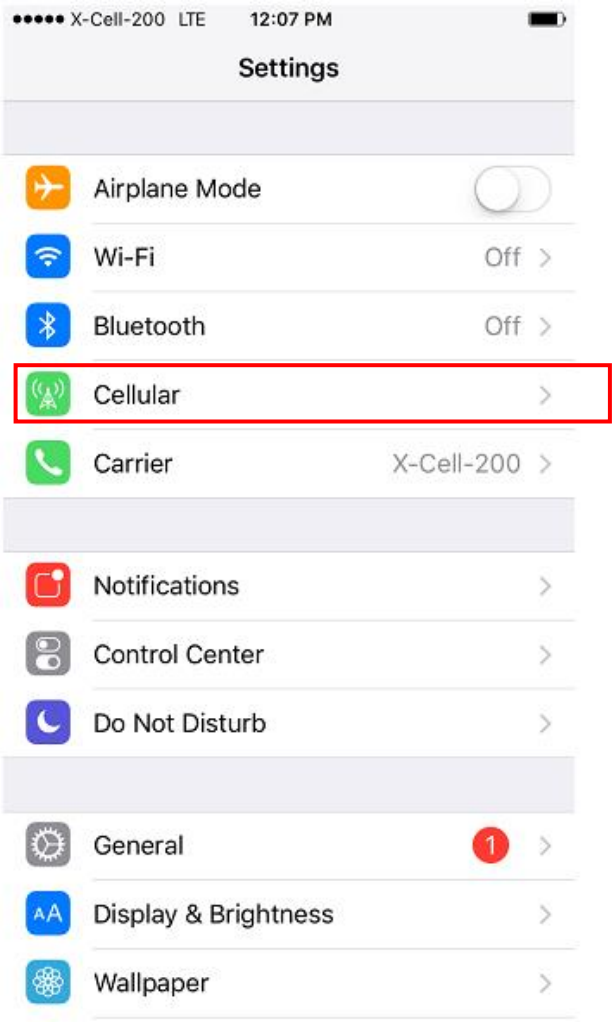
Step2: Please enter「internet」for the APN field(other fields just left as blank)

Step3: Back to Setting →Carrier→Network Selection →Turn on "Automatic"

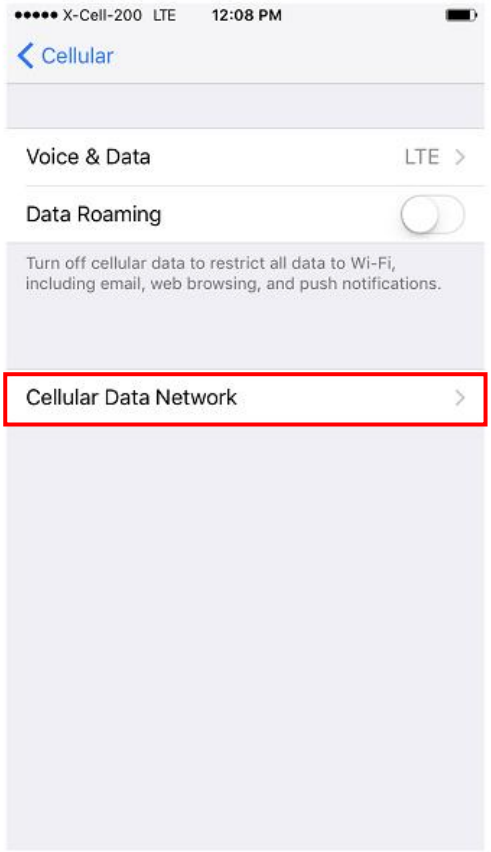
Step4: After a few seconds or minutes, it will be connected to the small cell automatically.

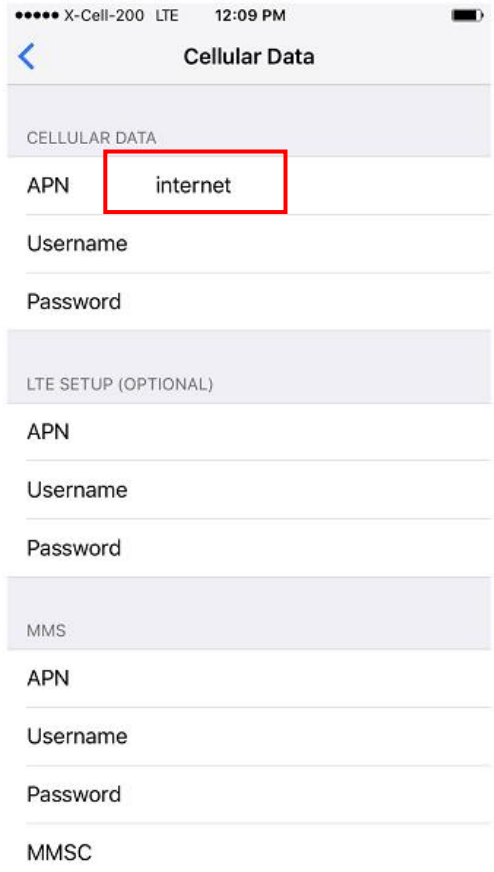
※If not, please reboot and let the phone to search signal again.

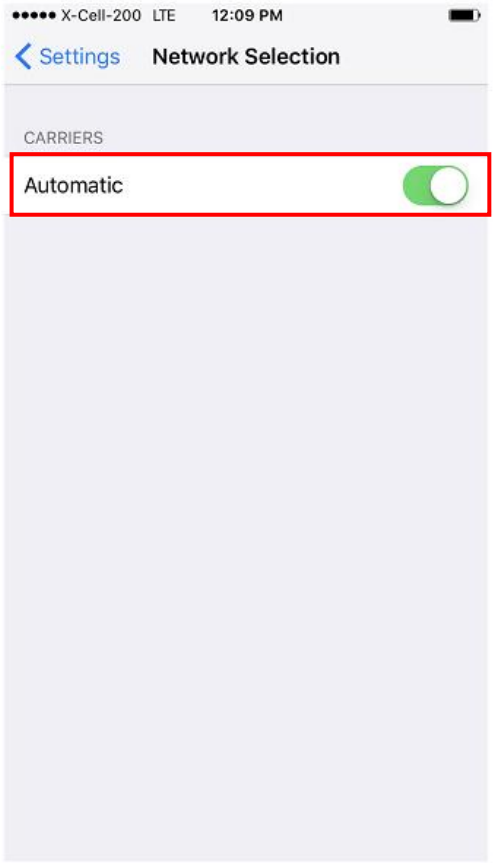




●●●●● X-Cell-200 LTE 12:07 PM
Settings
Cellular
Cellular Data
Cellular Data Options
Roaming On
CALL TIME
Current Period
0 Minutes
Lifetime
0 Minutes
CELLULAR DATA USAGE
Current Period
47.4 MB
Current Period Roaming
0 bytes
USE CELLULAR DATA FOR:
App Store
Calendar & Reminders
51.9 KB
Clock


●●●●● X-Cell-200 LTE 12:08 PM
Cellular
Voice & Data
LTE
Data Roaming
Turn off cellular data to restrict all data to Wi-Fi, including email, web browsing, and push notifications.
Cellular Data Network


●●●●● X-Cell-200 LTE 12:09 PM
Cellular Data
CELLULAR DATA
APN
internet
Username
Password
LTE SETUP (OPTIONAL)
APN
Username
Password
MMS
APN
Username
Password
MMSC


●●●●● X-Cell-200 LTE 12:09 PM
Settings
Network Selection
CARRIERS
Automatic

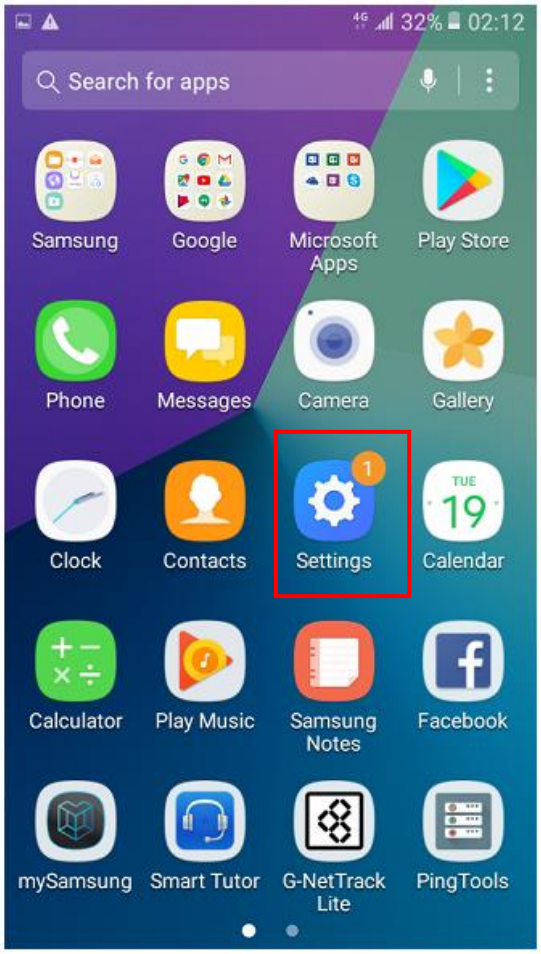
Android (Please follow these operating steps by taking Samaung as an example)

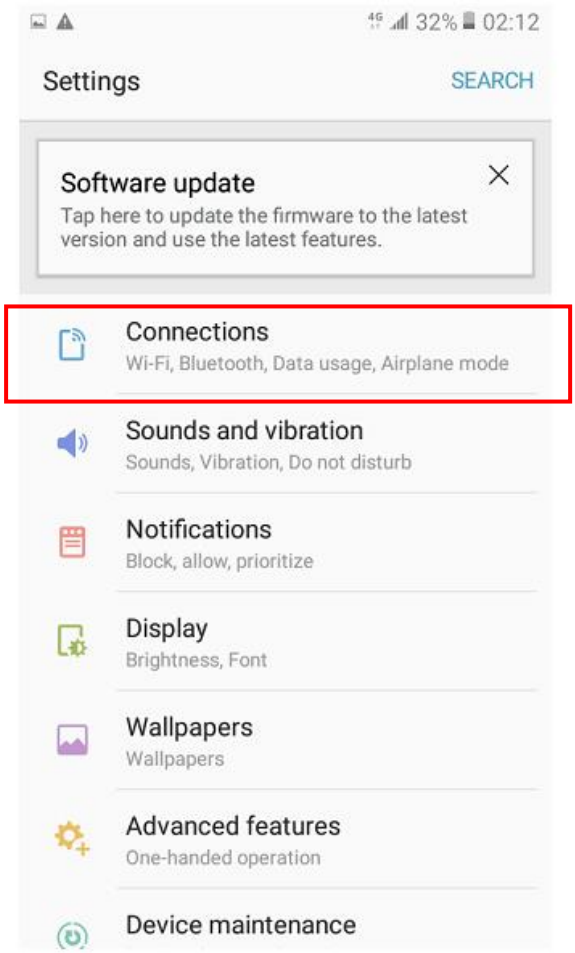
Step1: Settings →Connections →Mobile networks →Access Point Names →ADD

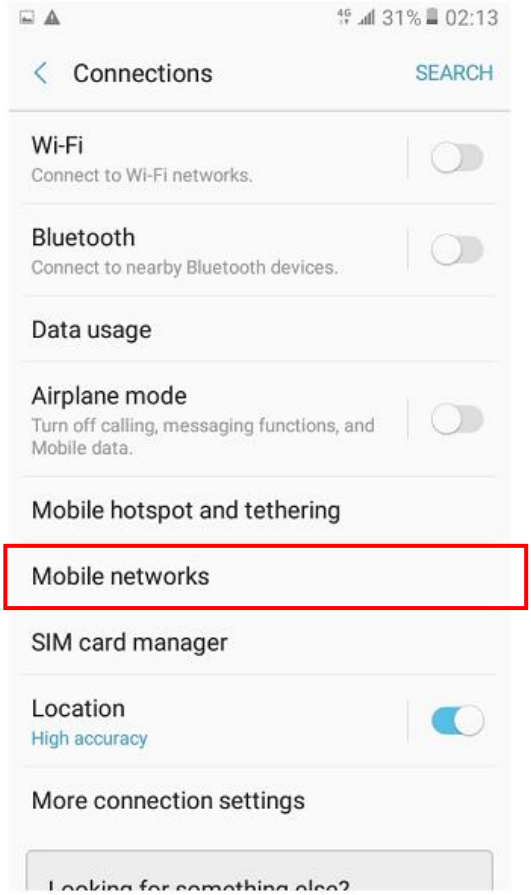
Step2: Edit access point →Edit Name (input "internet" in the field)→Edit APN (input "internet" in the field)→Press the top right corner of the screen to save (Other fields just left as blank)

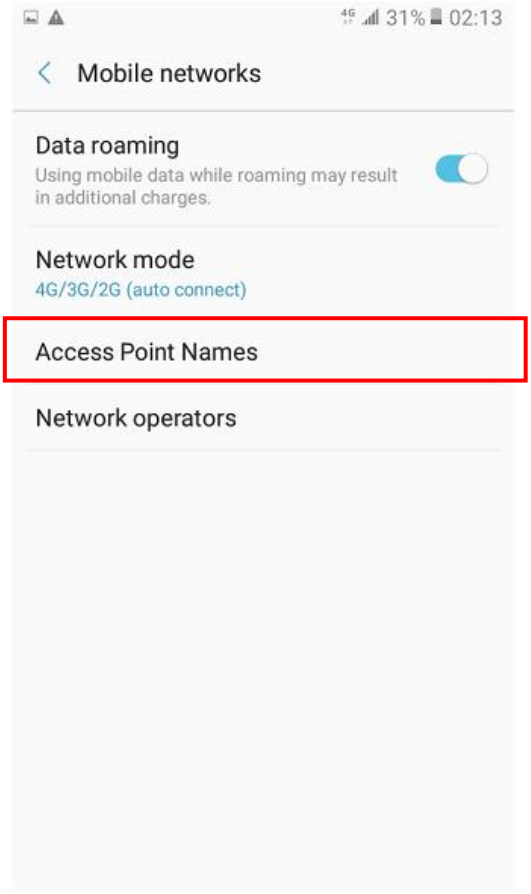
Step3: After a few seconds or minutes, it will be connected to the small cell automatically.

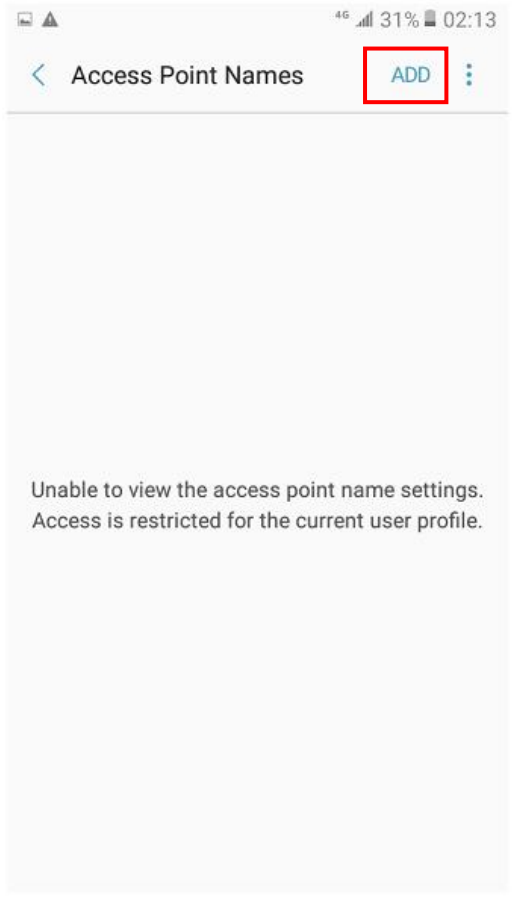
※If not, please reboot and let the phone to search signal again.

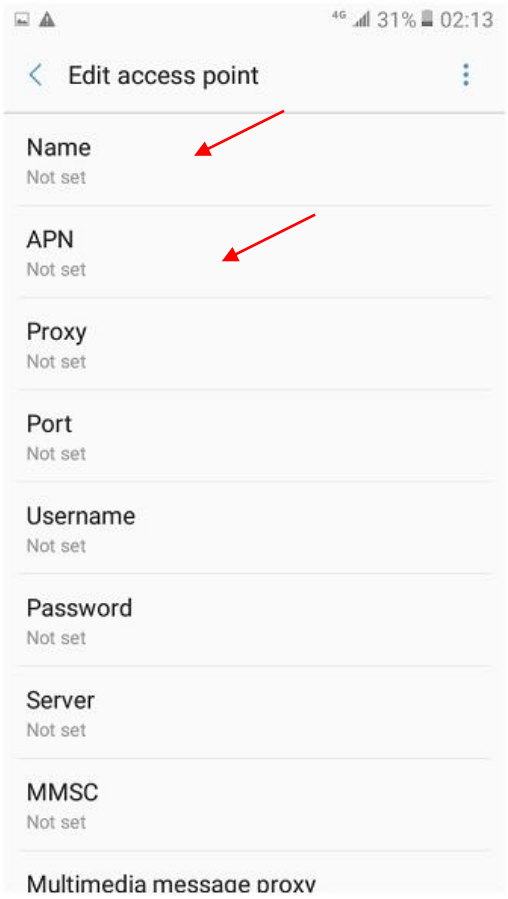


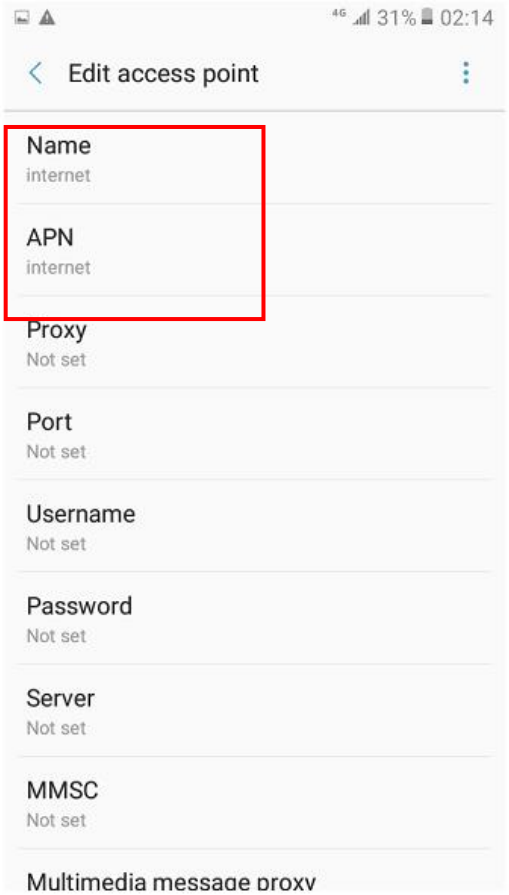


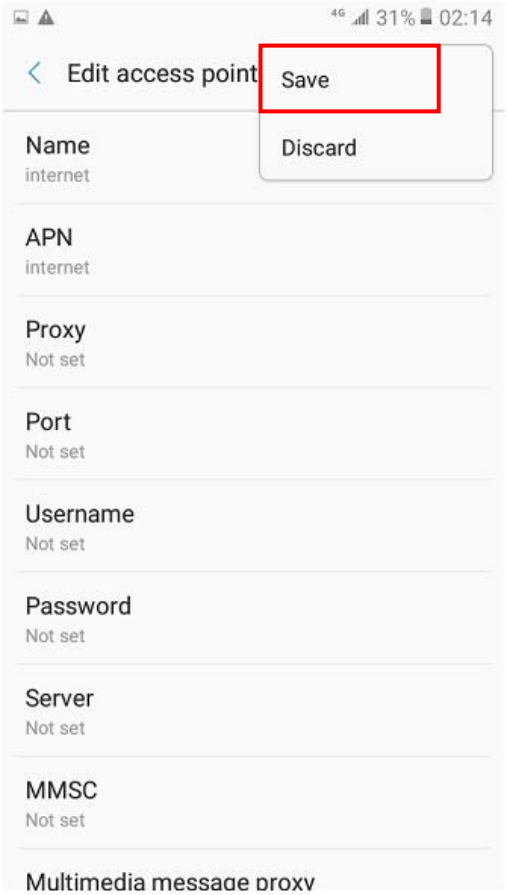

31% 02:13
Connections
SEARCH
Wi-Fi
Connect to Wi-Fi networks.
Bluetooth
Connect to nearby Bluetooth devices.
Data usage
Airplane mode
Turn off calling, messaging functions, and Mobile data.
Mobile hotspot and tethering
Mobile networks
SIM card manager
Location
High accuracy
More connection settings


31% 02:13
Mobile networks
Data roaming
Using mobile data while roaming may result in additional charges.
Network mode
4G/3G/2G (auto connect)
Access Point Names
Network operators

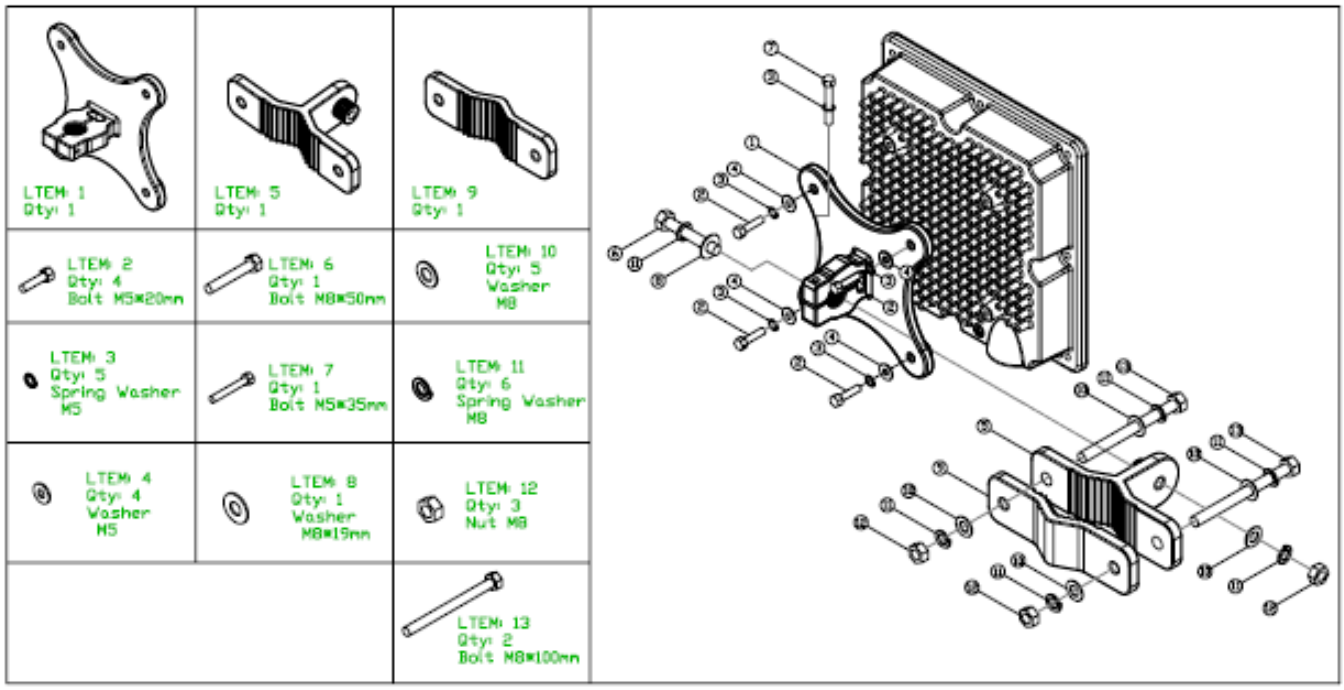

31% 02:13
Access Point Names
ADD
Unable to view the access point name settings.
Access is restricted for the current user profile.


31% 02:13
Edit access point
Name
Not set
APN
Not set
Proxy
Not set
Port
Not set
Username
Not set
Password
Not set
Server
Not set
MMSC
Not set
Multimedia message proxy


31% 02:14
Edit access point
Name
internet
APN
internet
Proxy
Not set
Port
Not set
Username
Not set
Password
Not set
Server
Not set
MMSC
Not set
Multimedia message proxy

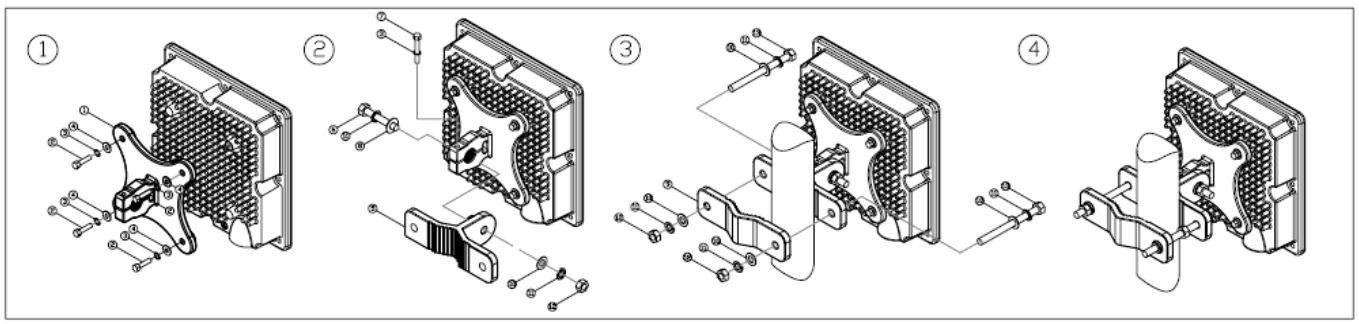

31% 02:14
Edit access point
Save
Discard
Name
internet
APN
internet
Proxy
Not set
Port
Not set
Username
Not set
Password
Not set
Server
Not set
MMSC
Not set
Multimedia message proxy

5.4 Small Cell Wall Mount Accessory Installation



<Gemtek Small Cell Standard Wall Mount Equipment Installation>

<Gemtek Small Cell Wall Mount Equipment Installation Example>



<Installation Steps>

● **About Gemtek Small Cell Grounding Construction**

(1)The position of the grounding rod and the Gemtek Small Cell must be the shortest position of the grounding wire.

(2)The grounding rod needs at least 8 inches from the ground.

(3)Connect the grounding clip to the grounding rod. You will use this grounding clip to provide a grounding band connection between the Small Cell and the outdoor antenna, refer to the ground connection diagram.

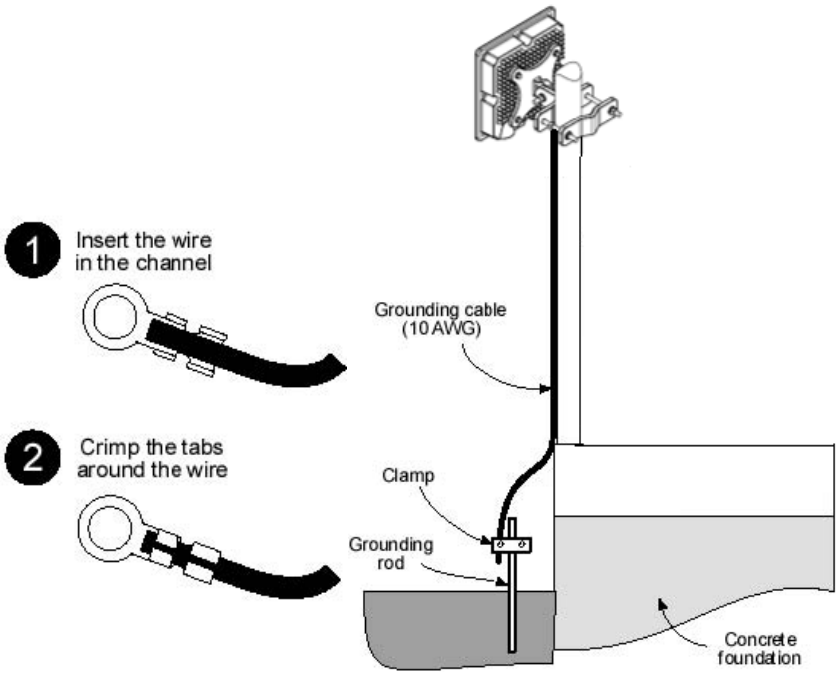
(4)Connect the grounding band to the grounding wire.

(5)Remove the ground screw of Gemtek Small Cell. Position the ground screw through the grounding band and reinstall the Gemtek Small Cell.

(6)Connect the grounding band to the grounding clamp and refer to the ground connection diagram.

(7) Gemtek Small Cell grounding construction is completed.

<Gemtek Small Cell Grounding Point Diagram>



<Ground Connection Diagram>

6 Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Professional installation instruction

Please be advised that due to the unique function supplied by this product, the device is intended for use with our interactive entertainment software and licensed third-party only. The product will be distributed through controlled distribution channel and installed by trained professional and will not be sold directly to the general public through retail store.

1). Installation personal

This product is designed for specific application and needs to be installed by a qualified personal who has RF and related rule knowledge. The general user shall not attempt to install or change the setting.

2). Installation location

The product shall be installed at a location where the radiating antenna can be kept 20 cm from nearby person in normal operation condition to meet regulatory RF exposure requirement.

3). External antenna

Use only the antennas which have been approved by Gemtek. The non-approved antenna(s) may produce unwanted spurious or excessive RF transmitting power which may lead to the violation of FCC limit and is prohibited.

4). Installation procedure

Please refer to user's manual for the detail.

5). Warning

Please carefully select the installation position and make sure that the final output power does not exceed the limit set force in relevant rules. The violation of the rule could lead to serious federal penalty.

Since WLTGFC-105/CBRS is a Category A device the product can only be installed outdoors below 6m height AGL or indoors.