Odge5000i User Manual

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Table of Contents

READ ME 1
SOFTWARE MATRIX 2
1. Network Topology 3
2. 5G Integrated gNodeB 4
2.1 Installation Method 4
2.2 Odge5000i Physical Interfaces 7
2.3 Web LMT Login 9
2.4 Web fiber Login 9
2.5 SSH Login 10
3. Odge5000i Parameters Configuration 11
3.1 IP Interconnection Design 11
3.1.1 N2, N3 on same OPT Port 11
3.1.2 Vlan 12
3.2 gNB and Cell Naming Design 14
3.2.1 Configure gNB Name and gNB ID 14
3.2.2 Configure Cell ID 14
3.3 Cell Parameters Configuration 15
3.3.1 AMF IP 15
3.3.2 TAC 16
3.3.3 PLMN 16
3.3.4 NR-ARFCN 17
3.3.5 SSB 18
3.3.6 Bandwidth 18
3.3.7 SSB Power 19
3.3.8 Active Timer 19
3.3.9 Transmit Power 20
3.3.10 TDD Configuration 21
3.3.11 Frame Header Offset 24
3.3.12 Cell Split 24

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3.3.13 Handover Configuration 25
3.4 Clock Sync 31
3.4.1 GPS Connection 31
3.4.2 Check Synchronization status 31
3.5 CBRS 33
3.5.1 CBRS Preparation 33
3.5.2 CBRS Switch 33
3.5.3 CBRS Certificate Management 34
3.5.4 CBSD Common Configuration 34
3.5.5 CBSD Configuration 36
3.5.6 EIRP Calculation 38
3.5.7 Trigger CBSD Registration Process 38
3.5.8 Check CBSD Registration Status 39
3.6 System Information 40
3.6.1 Operation Status and version 40
3.6.2 BBU Version 40
3.6.3 RRU Version 40
3.6.4 Accelerator Card Version 41
3.6.5 Alarm 41
3.6.6 Log Capture Process 42
3.6.7 Fast saving configuration file 44
3.6.8 Fast uploading configuration file 44
3.6.9 Reboot the Device 44
4. Common Commands 44
Appendix:Certification Compliance 47
CE Compliance: 47
FCC Compliance: 47

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READ ME

Version	Editor	Release Date	Remark
V1.0	Jessi Zhou & Huaxin Wang	23rd May 2022	
V1.1	Jessi Zhou	1st June 2022	Interface Info and Release Note Updated
V1.2	Jessi Zhou	15th June 2022	Pictures of Odge5000i Updated
V1.3	Zackie Yang	17th Oct 2022	Support CBRS Support Cell split
V1.4	Zackie Yang	21th Nov 2022	Support DHCP Support Mask Support Floor Noise check
V1.5	Jessi Zhou	9th Feb 2023	Support Gateway Support Configuration in Web GUI of N41
V1.6	Zackie Yang	14th Feb 2023	Support frame offset
V2.0	Zackie Yang	27th June 2023	New OAM Support preferred output power configuration
V2.1	Zackie Yang	11st July 2023	GPS update
V2.2	Zackie Yang	26th Sep 2023	

For more information, please refer to the following video, which shows the installation method and physical connection of Odge5000i.
https://youtu.be/ExkwogrlD4c

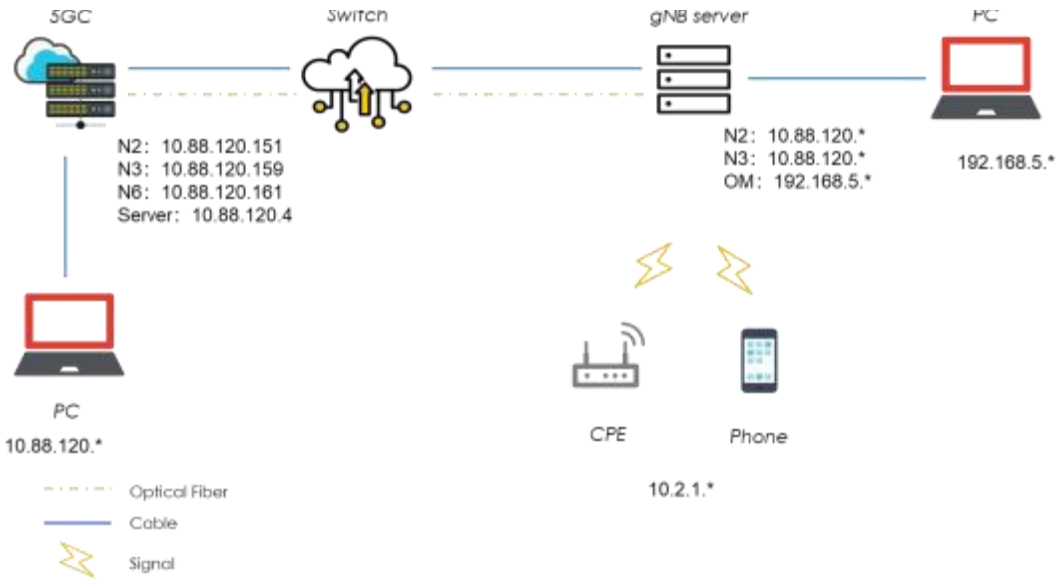
SOFTWARE MATRIX

Release Date	BBU Version	Accelerator Card Version	RRU Version	
0412_2022	5GNR_VPP_aa.tdd.fr1.2.2.3_800312_r315_20221012_163023	r315_20220412_194129	3550-3700 3500-3800	iDAS_DRRU_R518_V1.7.B11S_70A_20220928_3625 TBD
0615_2022	5GNR_VPP_aa.tdd.fr1.2.2.3_298_r315_20220615_143019;	FGBU20220509	3550-3700 3500-3800	iDAS_DRRU_R518_V0.1.B11S_BB82_20220512_3625
1017_2022	5GNR_VPP_aa.tdd.fr1.2.2.3_800312_r315_20221012_163023	FPGA 10141141	3550-3700 3500-3800	iDAS_DRRU_R518_V1.7.B11S_70A_20220928_3625
			3800-4100	TBD
1115_2022	5GNR_VPP_aa.tdd.fr1.2.2.3_800375_r315_20221109_113234_V2.2	FPGA 10141141	3550-3700 3500-3800 3800-4100	iDAS_DRRU_R518_V_M.2.8.B11S_1FFC_20221104
1215_2022	5GNR_VPP_aa.tdd.fr1.2.2.3_800375_r315_20221215_181338_V2.6	FPGA 10141141	3550-3700 3500-3800 3800-4100	iDAS_DRRU_R518_V_M.2.21.B11S_BAD4_20221215
0213_2023	5GNR_VPP_aa.tdd.fr1.2.2.3_800375_r315_20230203_103031_V2.8	FPGA 10141141	3550-3700 3500-3800 3800-4100	iDAS_DRRU_R518_V_M.2.24.B11S_C8F3_20230209
0627_2023	5GNR_VPP_aa.tdd.fr1.2.2.3.462_r611_m565_V3.6SP01	FPGA 10141141	3550-3700 3500-3800 3800-4100	iDAS_DRRU_R518_M0.8.B13S_8E03_20230601
0915_2023	5GNR_VPP_aa.tdd.fr1.2.2.3.462_r817_m693_V3.7SP05	FPGA 10141141	3550-3700 3500-3800 3800-4100	iDAS_DRRU_R518_M1.1.B13S_ADED_20230824

1. Network Topology

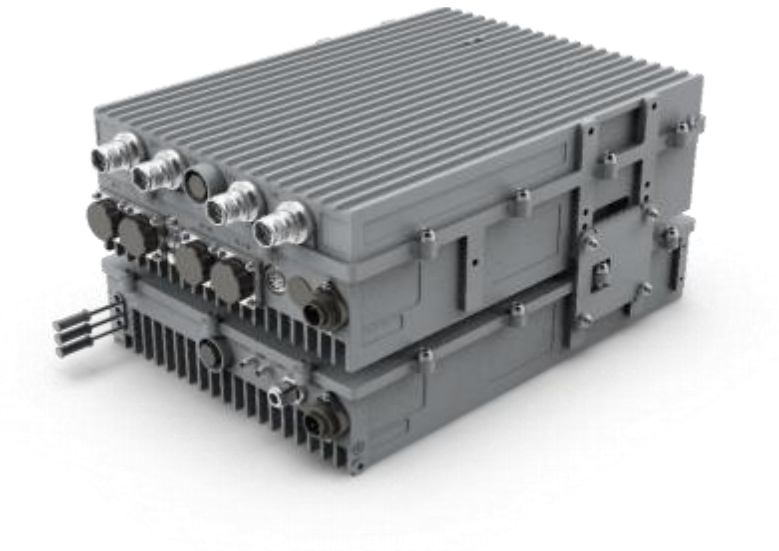
Following is a network topology example for reference.

The IPs should be configured according to the on-site requirements. Please take 4.1 IP interconnection design for more details.



2. 5G Integrated gNodeB

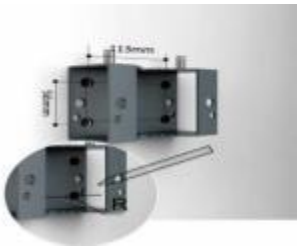
The Odge5000i is a 4T4R outdoor integrated gNB, it comes with an all-in-one design.



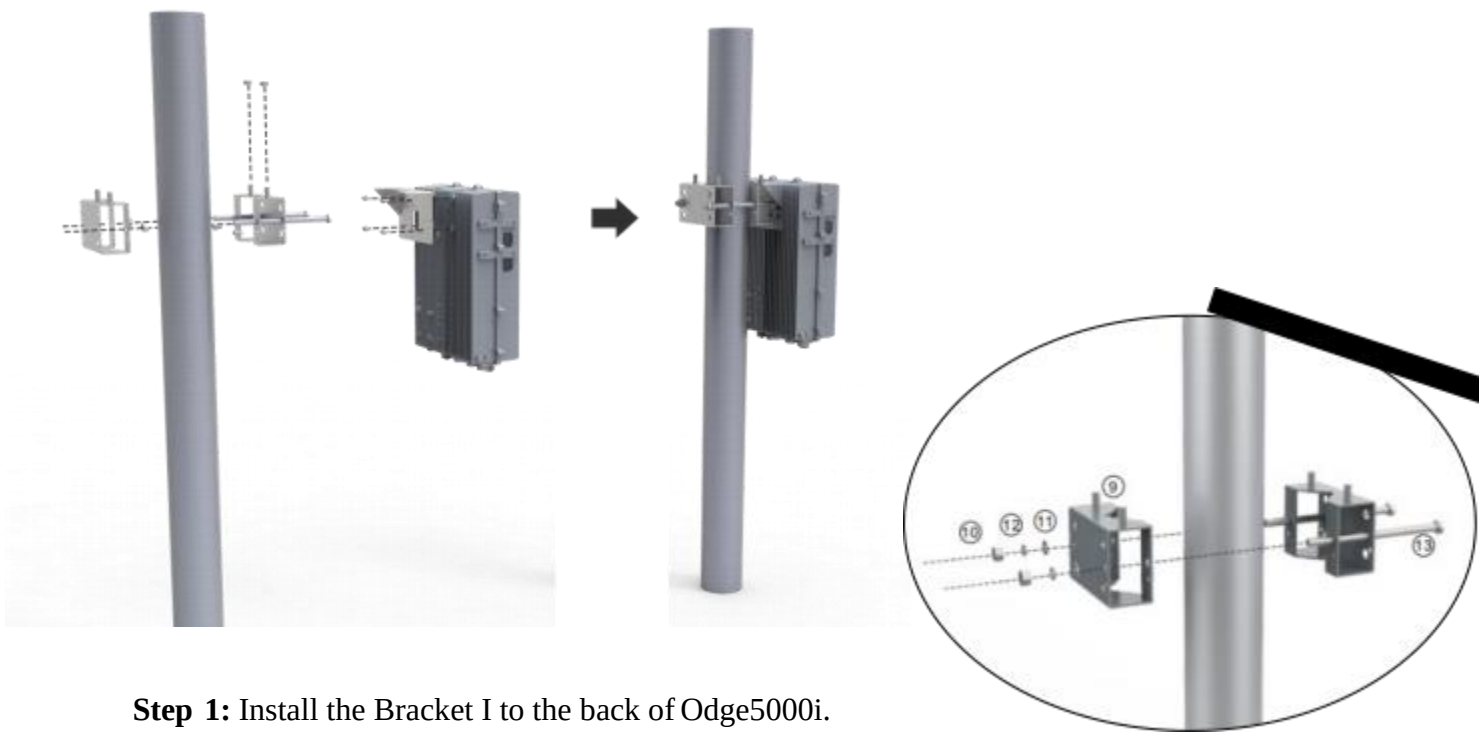
Odge5000i

2.1 Installation Method

- **Back on the Wall**

	Step 1: Fasten the Bracket I to the back of Odge5000i
	**Step 2:** Mark the holes for mounting Bracket II
	Step 3: Drill the holes
	Step 4: Fixed the Bracket II to the wall
	Step 5: Hang the RU4370 on mounting bracket II and fasten it
	Step 6: Fasten Bracket I and Bracket II

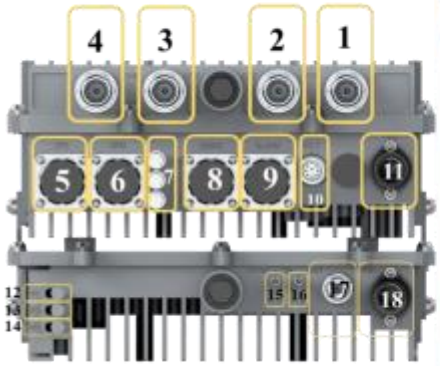
- **Pole Installation**



Step 1: Install the Bracket I to the back of Odge5000i.
Step 2: Install the bracket II and Bracket III to the pole.
Step 3: Hang the Odge5000i on the mounting bracket and fasten with nuts M10.
Step 4: Connect the ground cable and power cable.

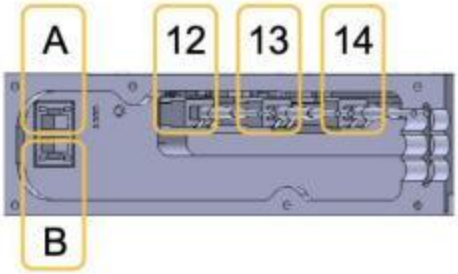
Note: The diameter ofPole shall not be over 110mm or less than 55mm.

2.2 Odge5000i Physical Interfaces



INTERFACE SPECIFICATION	
1. Duplex DL/UL RF Port 1	2. Duplex DL/UL RF Port 2
3. Duplex DL/UL RF Port 3	4. Duplex DL/UL RF Port 4
5. OP Port to DU	6. OP Port for Cascade (Reserved)
7. LED Indicator of OP& System	8. RU Maintenance Interface
9. External Alarm Port	10. AISG Port
11. Power Socket of RU	12. OP1 Port of DU
13. OP2 Port of DU	14. OP3 Port of DU
15. Tring SMA for debug	16. 10M SMA for debug
17. GPS Port N Type	18. Power Socket of DU

External Interface of Odge5000i



INTERFACE SPECIFICATION	
A. LMT Port	B. RGPS Port
12. OP1 of DU	13. OP2 of DU
14. OP3 of DU	

Internal Interface of Odge5000i

No.	Name	Type	Remark
A	Maintenance Port (LMT)	Cat6 Ethernet (RJ45)	IP: 192.168.5.216
5	OP Port to DU	SFP+	
8	RU Maintenance Port	Cat6 Ethernet (RJ45)	IP: 10.7.3.200
11	Power Socket of RU	DC 48v	
12	OP1 of DU	SFP+	Reserved
13	OP2 of DU	SFP+	RU fronthaul port
14	OP3 of DU	SFP+	N2/N3 backhaul port to the 5GC
17	GPS sync	N type	
18	Power Socket of DU	DC 48v	

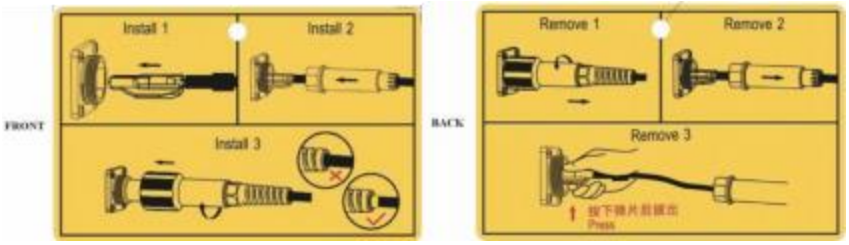
Common Interface of Odge5000i

Cable Connection Guide:

1. Install the antenna of the RU (interface 1/2/3/4) according to the actual situation. (***Note***: Please do not operate the device without antenna or load)
2. Install the GPS antenna of the device and lightning protection, connect to the Interface 17 of the Odge5000i.
3. Find the patch cord shipped with the device, please note that the port with label A

should be connected to Interface 5 (OP Port to DU), and the other end has been connected to interface 13 (OP2 of DU) already.

4. Connect the Interface 5 (OP Port to DU) and RU Interface 13 (OP2 of DU) using the optical fiber jumper delivered with the device. The installation method of connecting one end of the RU is as shown in the figure below. After the other end is connected, waterproof treatment of plastic housing is required.



Fiber Jumper installation guide to RU (Interface 13)

5. Use the 2-outputs power cord delivered with the device to connect the power ports 11 and 18.
6. Connect Interface 14 (OP3 of DU) to 5GC.

Note:

a. During the operation of the device, please keep the device installed correctly (wall or pole) to avoid the problem of limited cooling of the device.

b. The N2 and N3 interfaces should be combined to a single physical port. It needs to configure two different IP addresses to distinguish the AMF and UPF.

c. All IP addresses can be modified to match the local network requirements. For this part, please refer to *chap. 3.1 IP Interconnection Design.*

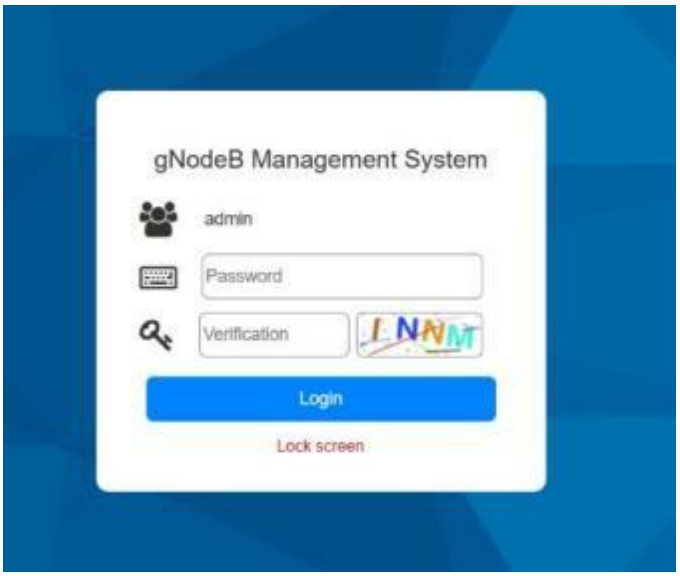
2.3 Web LMT Login

PC connects to the LMT port (Interface A) directly and configure PC's IP as 192.168.5.xx/24.

Open a browser and input the follow IP address: *http://192.168.5.216*

Account: *admin*

Password: *123456*



2.4 Web fiber Login

Connect Odge5000i Interface 14 (OP3 of DU) and PC to the same Optical Ethernet Switch. Configure PC's IP as the same segment with Odge5000i N2/N3 IP.

Open a browser and input the follow IP address: *http://Odge5000i N2/N3 IP*

Account: admin

Password: *123456*

2.5 SSH Login

PC connects to the LMT port (Interface A) directly and configure PC's IP as 192.168.5.xx/24.

Login via SSH with the IP 192.168.5.216.

1) Default IP Addresses of BBU
   ssh root@192.168.5.216

2) Default account and password for BBU server
   Account: *root*
   Password: *root*

3. Odge5000i Parameters Configuration

Common BBU parameters like AMF, PLMN, NRARFCN, Layer numbers, Antennas numbers can be configured through the Web LMT interface. Gather the following information in advance.

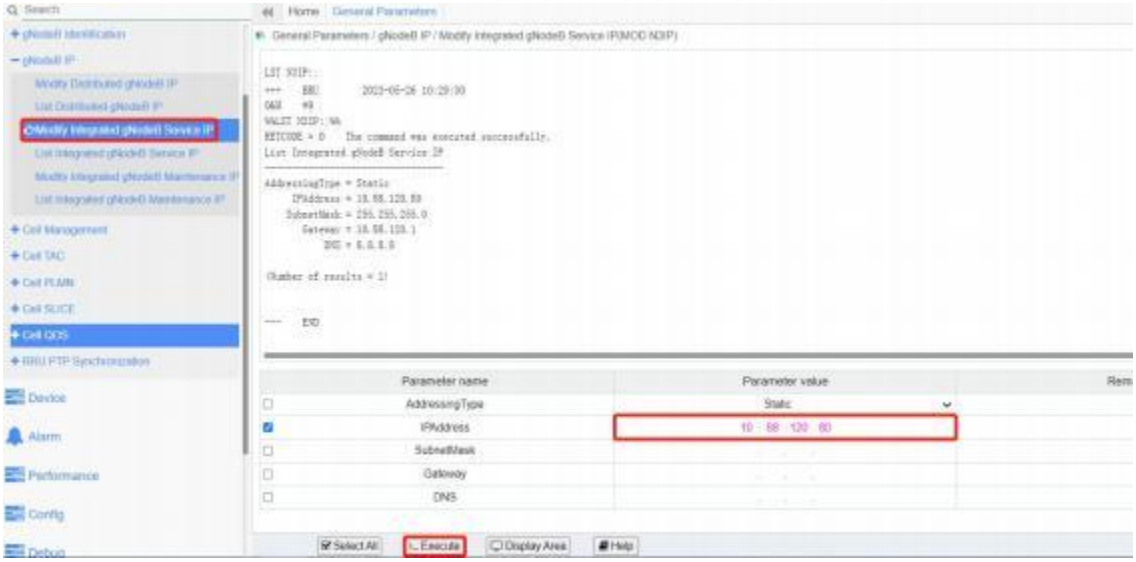
Item	5GC
N2 (gNB<->AMF)	
N3 (gNB<->UPF)	
N6 (UPF<->DN)	
TAC	
PLMN	
NRARFCN	
BANDWIDTH	

3.1 IP Interconnection Design

3.1.1 N2, N3 on same OPT Port

Path: General Parameters/gNodeB IP/Modify Integrated gNodeB Service IP

For example: if 5GC's N2(AMF) and N3(UPF) IP is 10.88.120.xx/24,
set "AdressingType" to "Static", "IPAddress" to "10.88.120.xx", with the same segment of 5GC's AMF IP.



3.1.2 Vlan

Assume that the vlan information to be configured is as follows (ps: this is an example, The specific configuration information should be configured according to the actual environment requirements)

IP INFO

5GC	N2 IP: 10.88.120.151/24	VLAN:20
	N3 IP: 10.88.130.159/24	VLAN:30
Switch	N2 GW: 10.88.120.1	VLAN:20
	N3 GW: 10.88.130.1	VLAN:30
gNodeB	N2 IP: 10.88.120.80/24	VLAN:20
	N3 IP: 10.88.130.80/24	VLAN:30

Step1 - Create 2 VLAN subnet card, VLAN 20 and VLAN 30

create sub-interfaces TenGigabitEthernet0 20

create sub-interfaces TenGigabitEthernet0 30

Notes: 20 and 30 are VLAN IDs, Please configure according to the actual IP plan.

Step2 - Set IP

set interface state TenGigabitEthernet0.20 up

set interface state TenGigabitEthernet0.30 up

set interface ip address TenGigabitEthernet0.20 10.88.120.80/24

set interface ip address TenGigabitEthernet0.30 10.88.130.80/24

Notes: 20 and 30 are VLAN IDs, 10.88.120.80/24 and 10.88.130.80/24 are the IP address, please configure according to the actual actual IP plan.

Step3 - Add Route

ip route add 10.88.120.151/24 via 10.88.120.1

ip route add 10.88.130.159/31 via 10.88.130.1

Notes: 10.88.120.151/24 and 10.88.130.159/24 are the 5GC IPs, 10.88.120.1 and 10.88.130.1 is the GW of gNB, please configure according to the actual IP plan.

Step4 - Set N2 interface:

nat44 add interface address TenGigabitEthernet0.20

nat44 add static mapping local 172.88.120.2 external TenGigabitEthernet0.20

set interface nat44 in host-vpp out TenGigabitEthernet0.20

Step5 - Set N3 interface

set interface ip upapp-bypass TenGigabitEthernet0.30

set interface ip6 upapp-bypass TenGigabitEthernet0.30

set interface n3 TenGigabitEthernet0.30

Notes:30 is the N3 VLAN ID, please configure according to the actual IP PLAN.

Step6 - Write all the above configurations to the ***interface.txtfile***

path: /opt/bbu/oam/cm

Notes:

- **The configuration in the figure below is based on the above example, and the actual content should be configured according to the actual IP PLAN).**
- **Line 2 & line 16 must be left empty when modifing.**

```
 1 set int state TenGigabitEthernet0 up
 2
 3 create sub-interfaces TenGigabitEthernet0 20
 4 create sub-interfaces TenGigabitEthernet0 30
 5 set interface state TenGigabitEthernet0.20 up
 6 set interface state TenGigabitEthernet0.30 up
 7 set interface ip address TenGigabitEthernet0.20 10.88.120.80/24
 8 set interface ip address TenGigabitEthernet0.30 10.88.130.80/24
 9 ip route add 10.88.120.151/24 via 10.88.120.1
10 ip route add 10.88.130.159/24 via 10.88.130.1
11 create host-interface name vpp hw-addr 02:fe:99:f8:80:01
12 set interface state host-vpp up
13 set interface ip address host-vpp 172.88.120.1/24
14 set interface ip address host-vpp fdab::1/96
15 set ip neighbor host-vpp 172.88.120.2 02:fe:99:f8:80:02
16
17 set ip neighbor host-vpp fdab::2 02:fe:99:f8:80:02
18 nat44 add interface address TenGigabitEthernet0.20
19 nat44 add static mapping local 172.88.120.2 external TenGigabitEthernet0.20
20 set interface nat44 in host-vpp out TenGigabitEthernet0.20
21 set interface n3 TenGigabitEthernet0.30
22 set interface ip upapp-bypass TenGigabitEthernet0.30
23 set interface ip6 upapp-bypass TenGigabitEthernet0.30
24 set interface mtu 1500 TenGigabitEthernet0
```

Step7 - Check ifVLAN settings is correct.

 # vppctl show int addr

```
^C
root@localdomain:~# vppctl show int addr
TenGigabitEthernet0 (up):
  L3 10.88.110.2/24
TenGigabitEthernet0.20 (up):
  L3 10.88.120.80/24
TenGigabitEthernet0.30 (up):
  L3 10.88.130.80/24
host-vpp (up):
  L3 172.88.120.1/24
  L3 fdab::1/96
local0 (dn):
```

10.88.120.80 and 10.88.130.80 are the VLAN IPs.

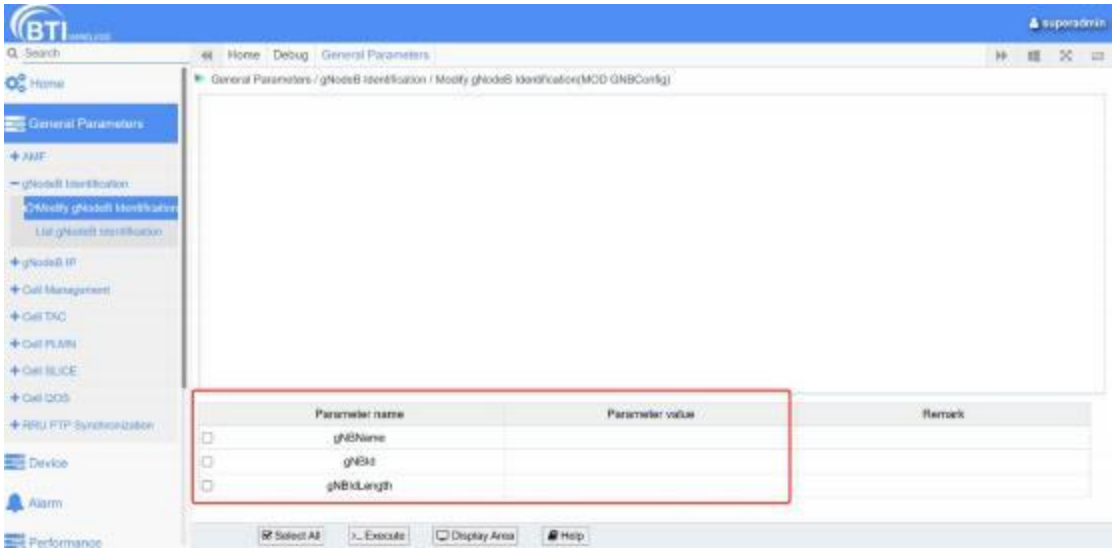
After the VLAN configuration of the Gnb side is completed, personnel on the switch side need to configure the corresponding interface vlan in order to finally connect to the core network.

3.2 gNB and Cell Naming Design

3.2.1 Configure gNB Name and gNB ID

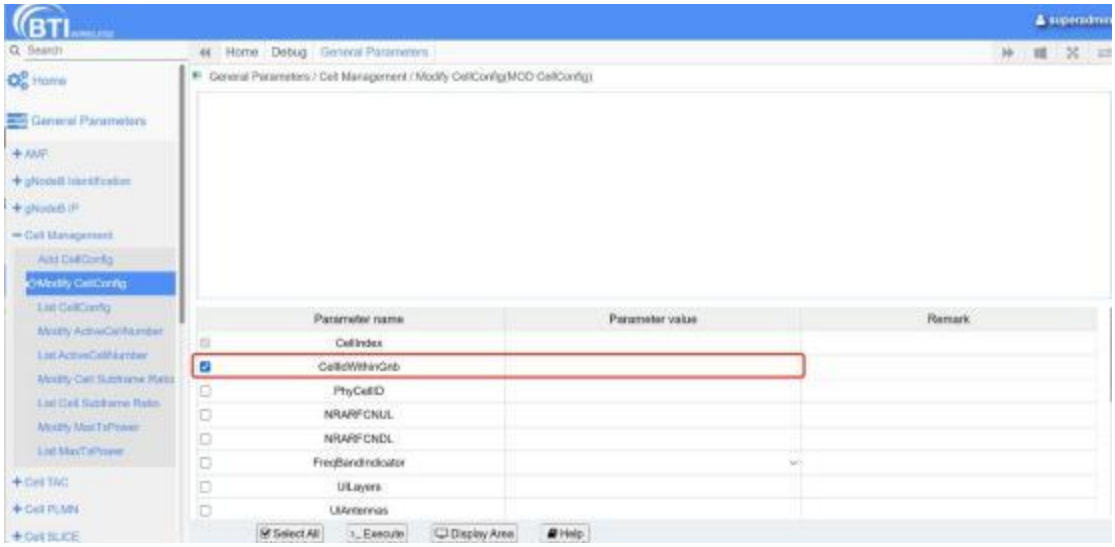
- **gNB Name and gNB ID**

  Path: General Parameters/gNodeB Identification/Modify gNodeB Identification



3.2.2 Configure Cell ID

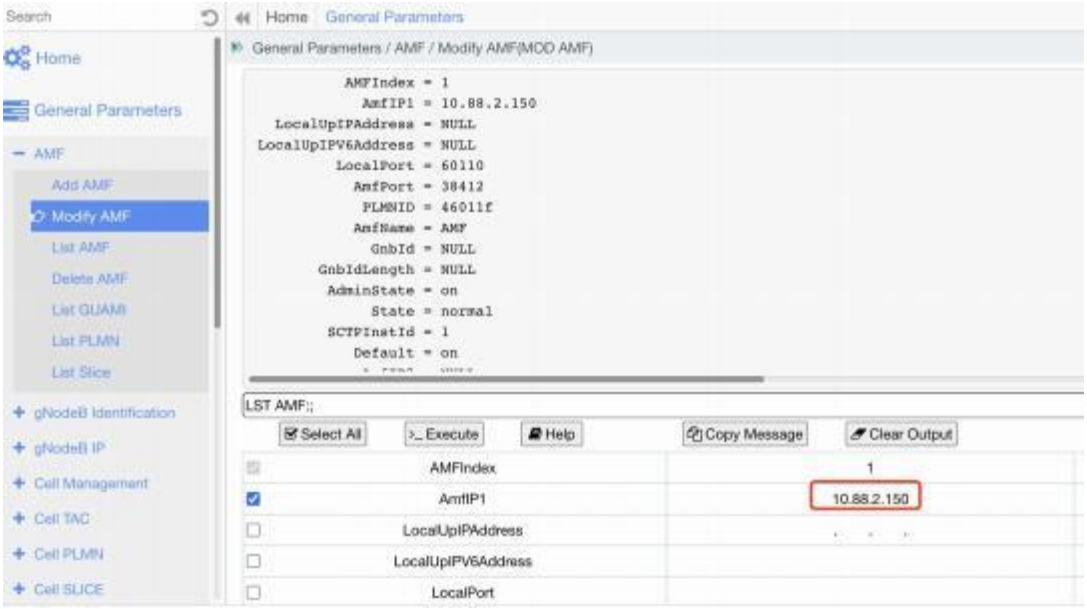
Path: General Parameters/Cell Management/Modify CellConfig /cellIdWithinGnb



3.3 Cell Parameters Configuration

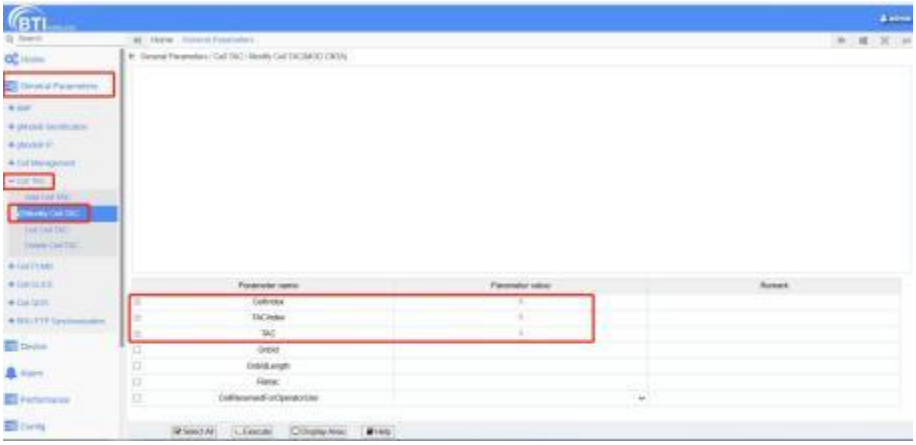
3.3.1 AMF IP

Path: Home/config/AMF



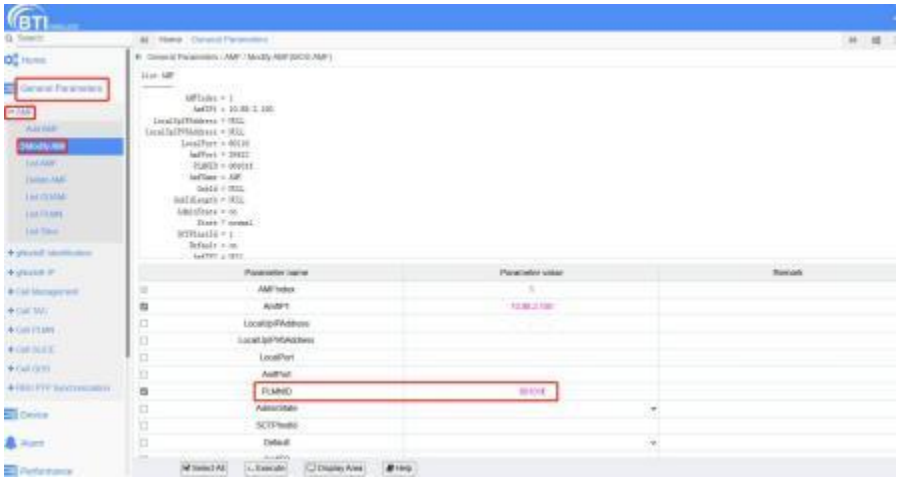
3.3.2 TAC

Path: Home/General Parameters/TA/TAC

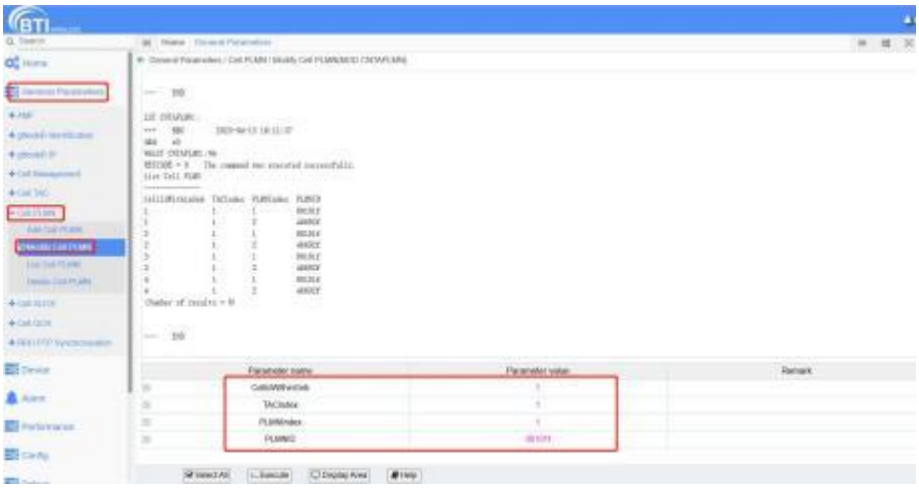


3.3.3 PLMN

- **AMF PrimaryPLMNID**
  Path: General Parameters/AMF/Modify AMF



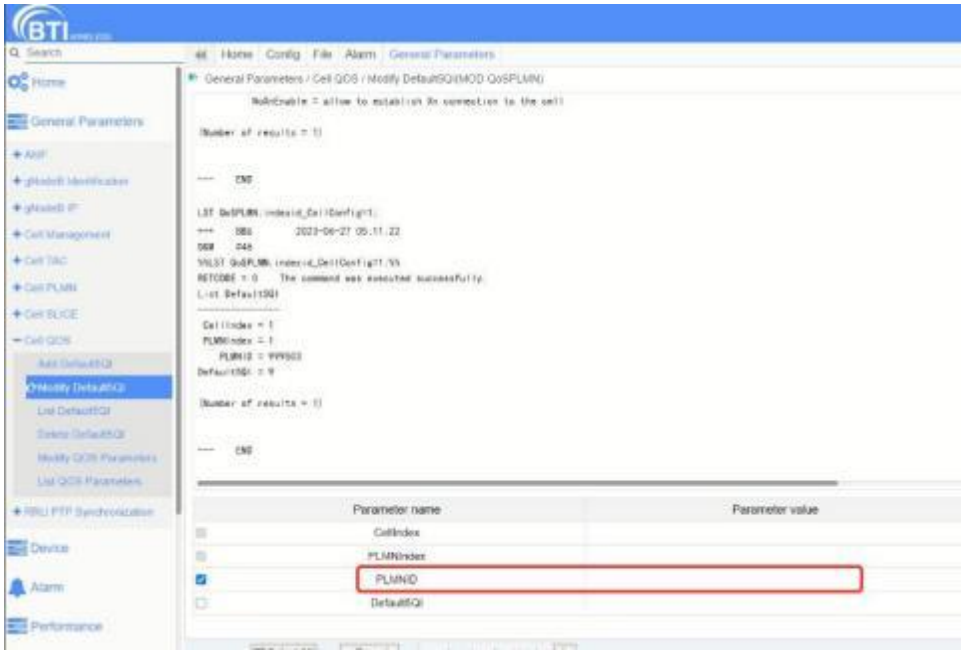
- **PLMNID**
  Path: General Parameters/Cell PLMN/Modify Cell PLMN



- **Default 5QI PLMNID**

  Path: General Parameters /Cell Management/Modify Default5QI

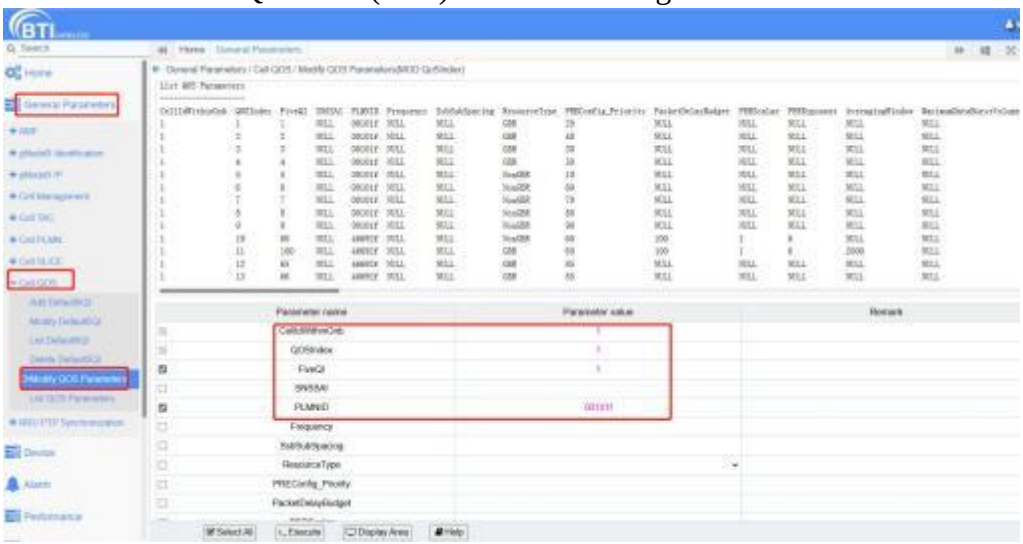
  Default 5QI is 9, it is configurable based on the 5GC.



- **QoS PLMNID**

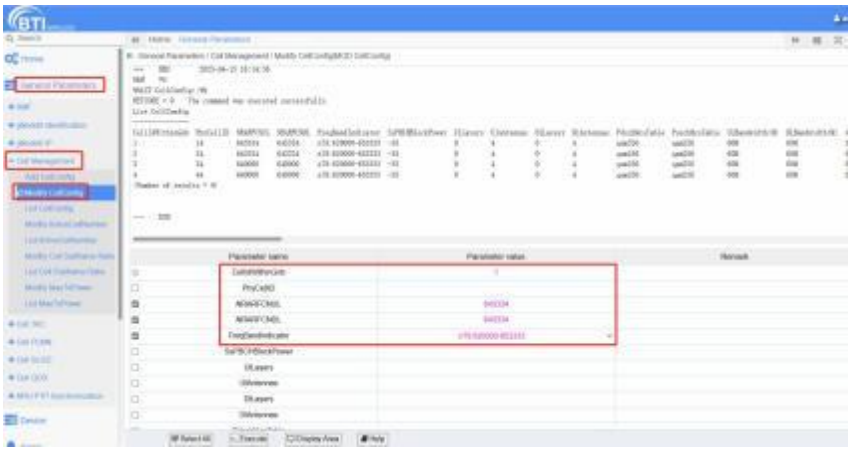
  Path: General Parameters/Cell QoS/Modify QoS Parameters

  All the PLMN in QoSIndex(1-20) should be configured.

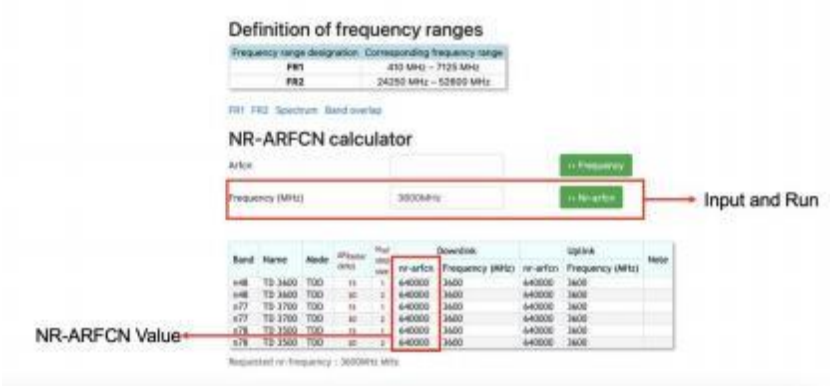


3.3.4 NR-ARFCN

Path: General Parameters/Cell Management/Modify Cell Config



NR-ARFCN Value Calculation
Reference Website: *https://www.sqimway.com/nr_band.php*



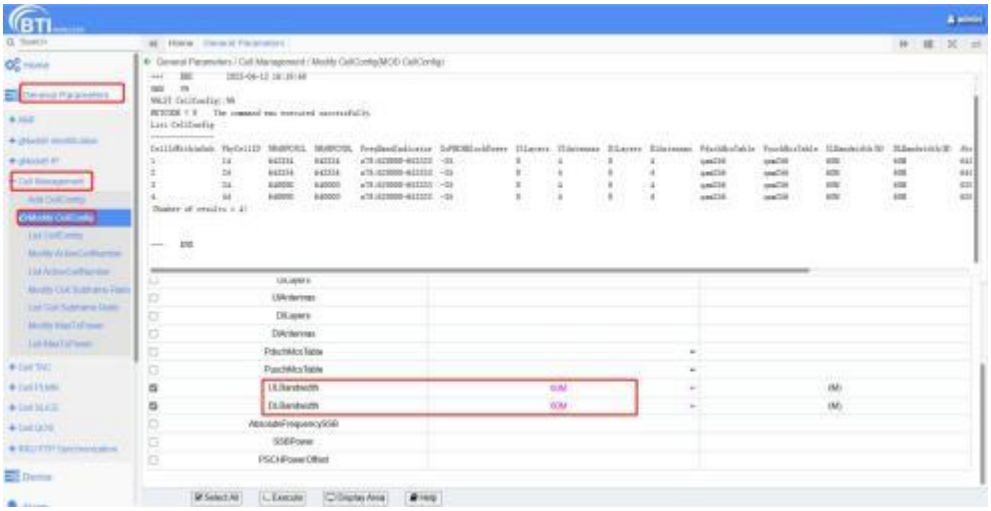
3.3.5 SSB

Path: General Parameters/Cell Management/List Cell Config

This version can automatically match the SSB based on the configured bandwidth.

3.3.6 Bandwidth

Path: General Parameters/Cell Management/Modify Cell Config



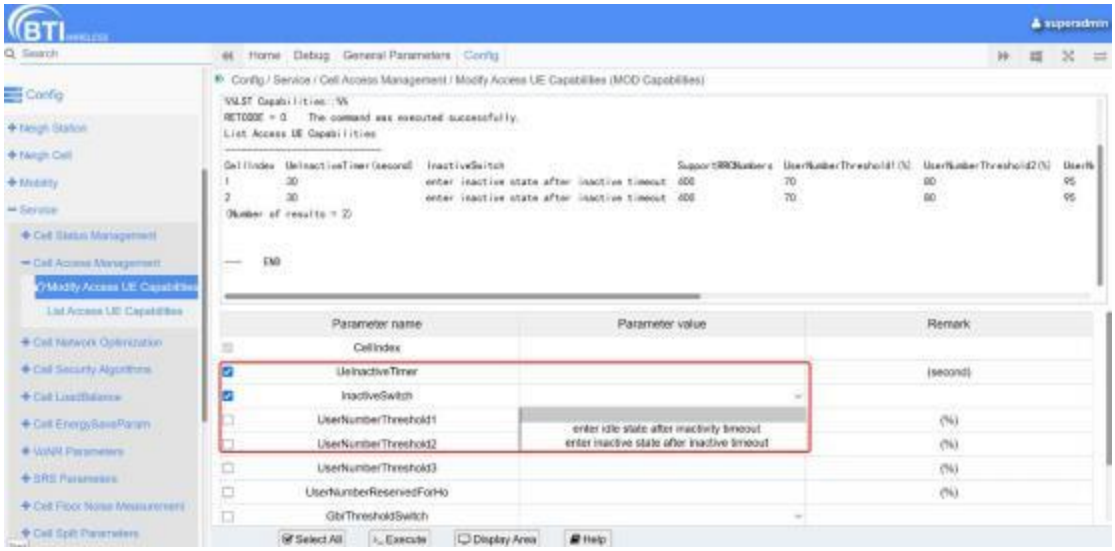
Note: This version can automatically match the RbNumber & c-srs & SRS-eanble configuration based on the configured bandwidth.

3.3.7 SSB Power

SSB power will adapt automatically based on the different bandwidth in use.

3.3.8 Active Timer

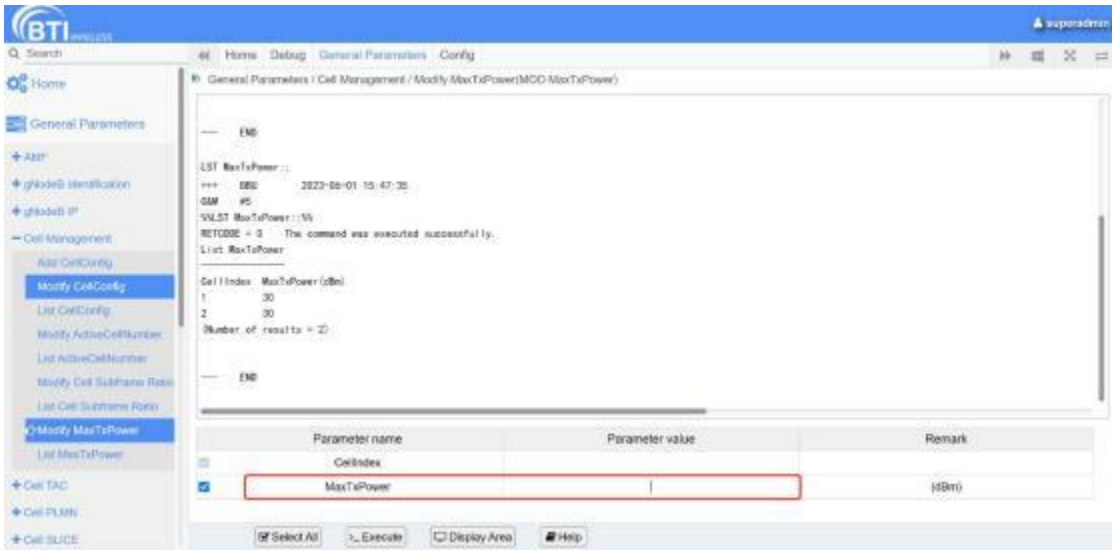
Path: Config/Service/CellAccess Management/Modify Access UE Capabilities



UeInactive Timer will be switched on by default.
UE will be idle status when no traffic passed for 30s to avoid fake connection.

3.3.9 Transmit Power

Path: Config/Service/CellAccess Management/Modify MaxTxPower



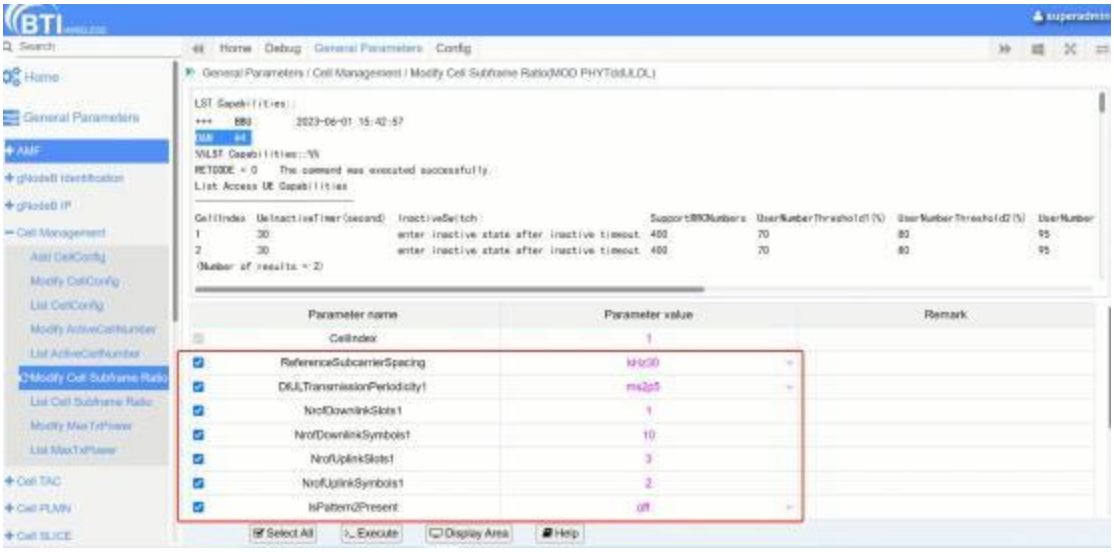
Range: 24~37, Unit: dbm

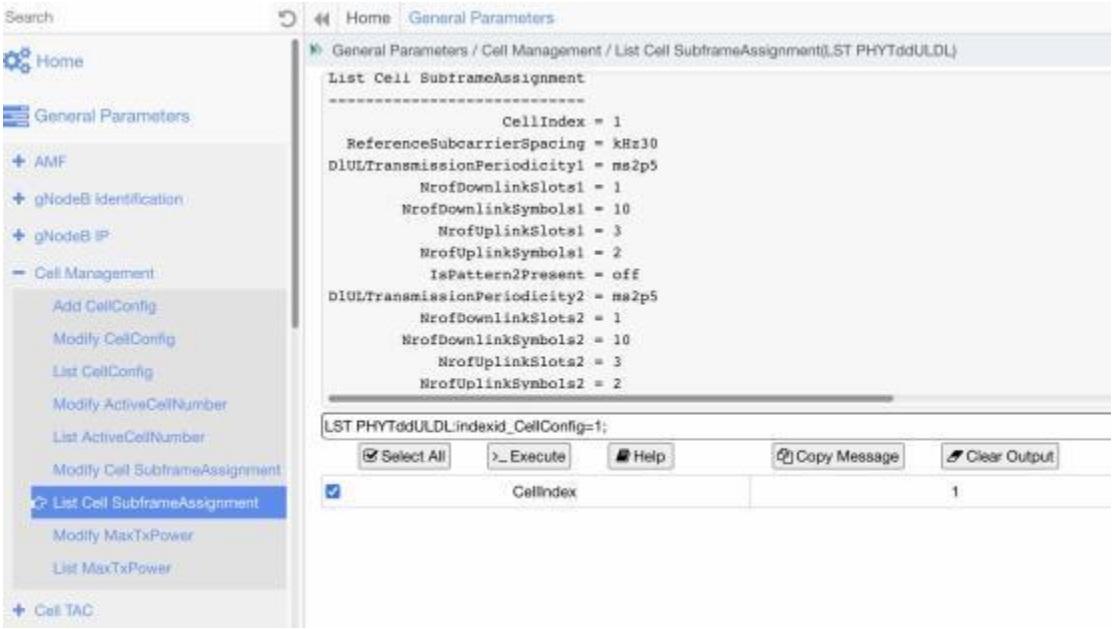
Note: *It is recommended that the MaxTxPower should be at least 1w (30dbm).*

3.3.10 TDD Configuration

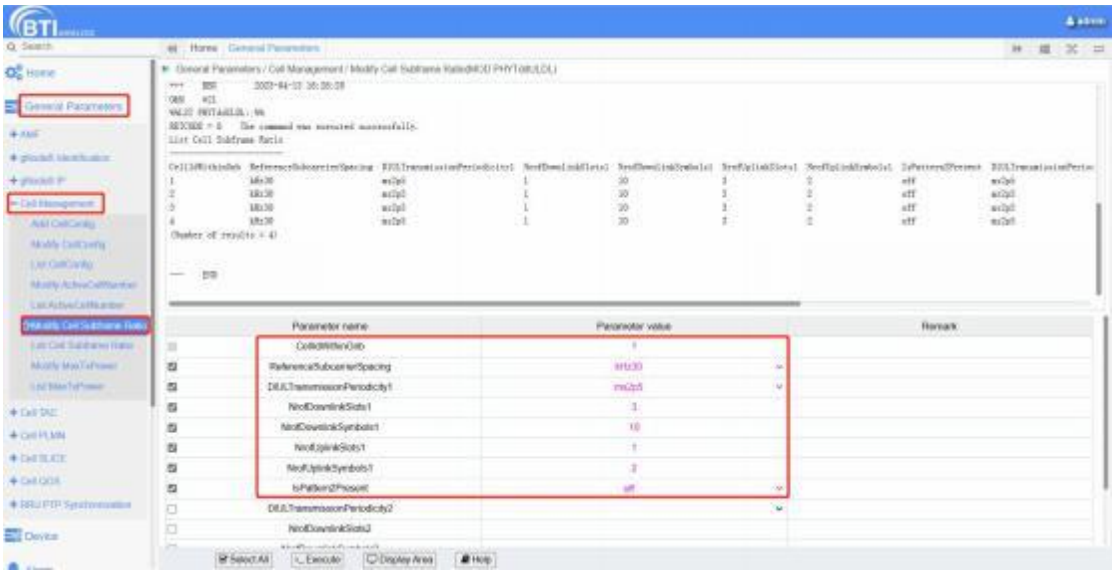
Path: General Parameters/Cell Management/Modify Cell Subframe Ratio

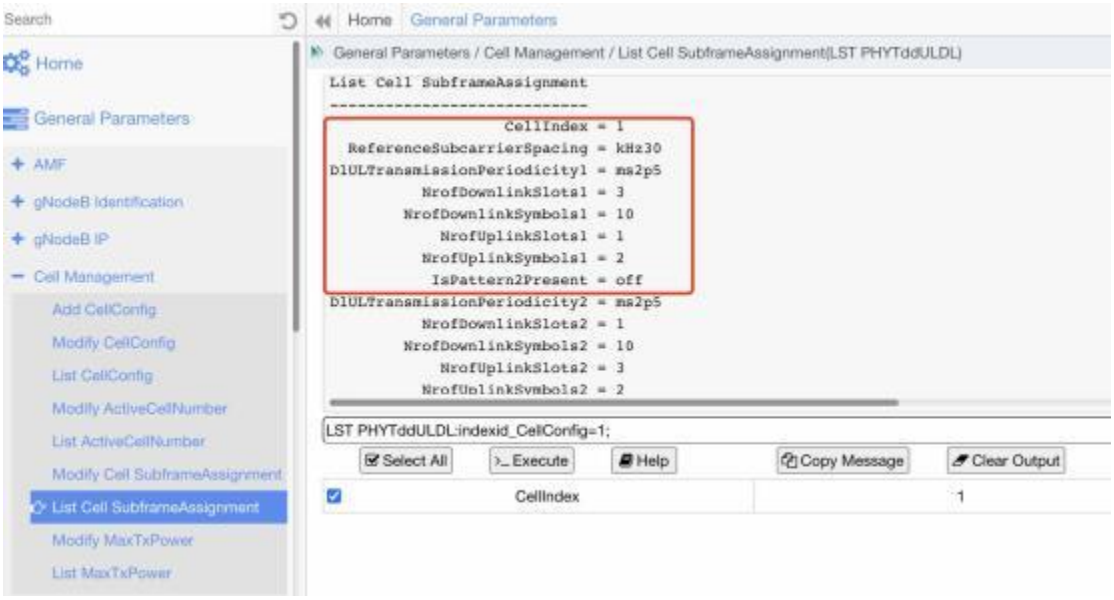
- **Scenario 1: 2.5ms single period 3U1D 10:2:2**



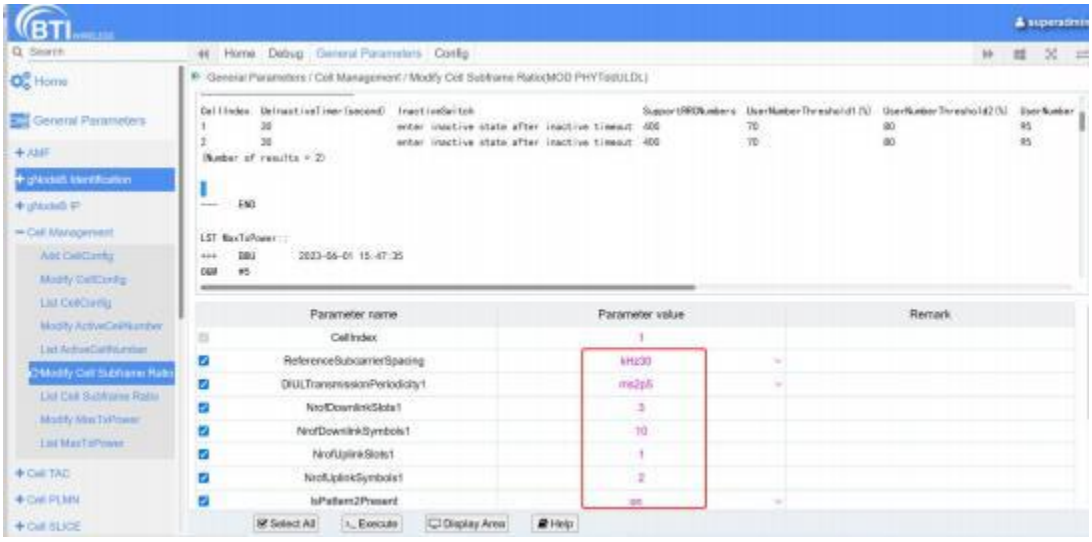


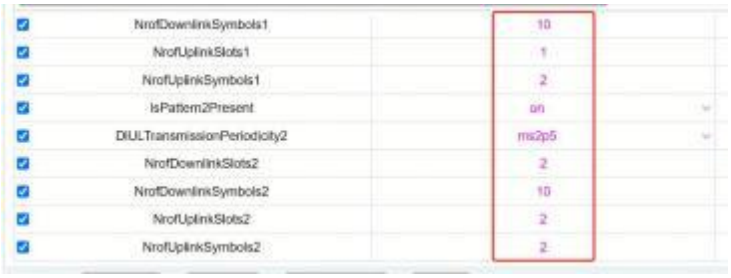
- **Scenario 2: 2.5ms single period 3D1U 10:2:2**

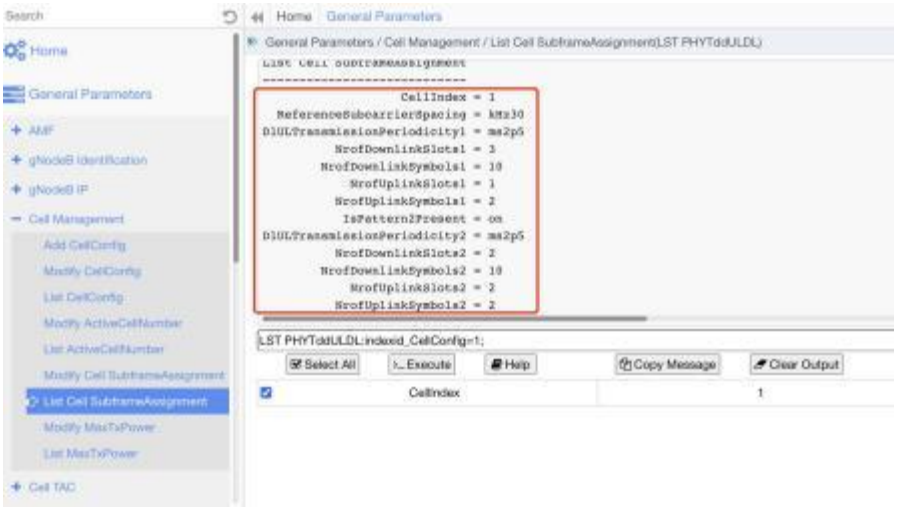




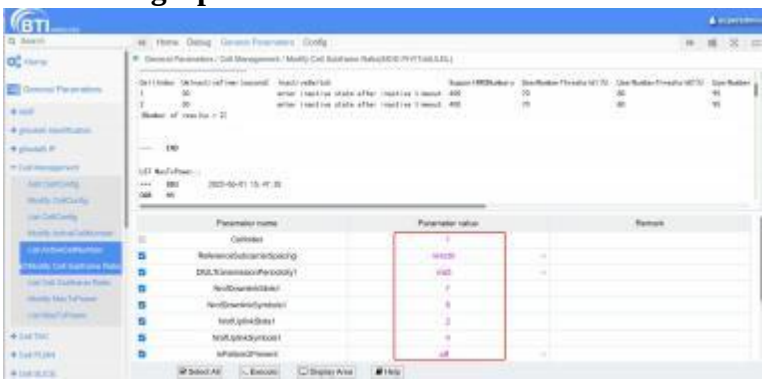
✇ Scenario 3: 2.5ms double periods 3D1U+2D2U 10:2:2

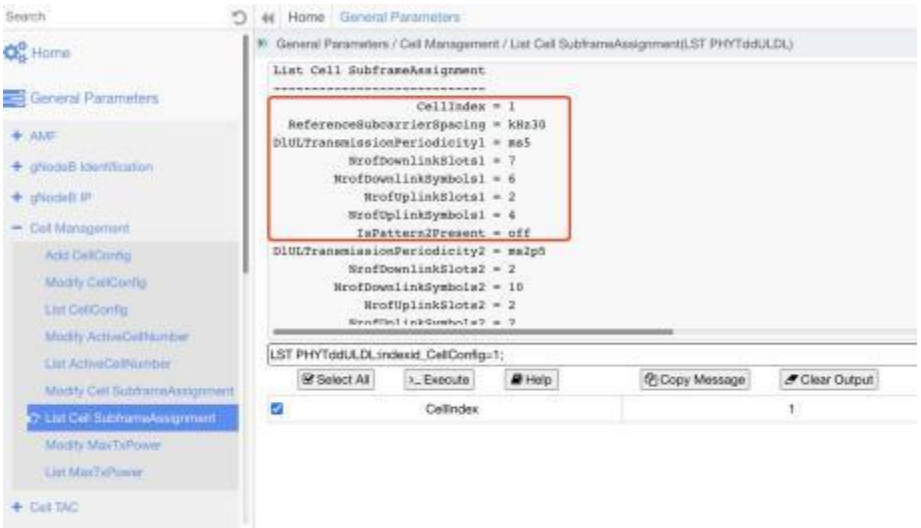






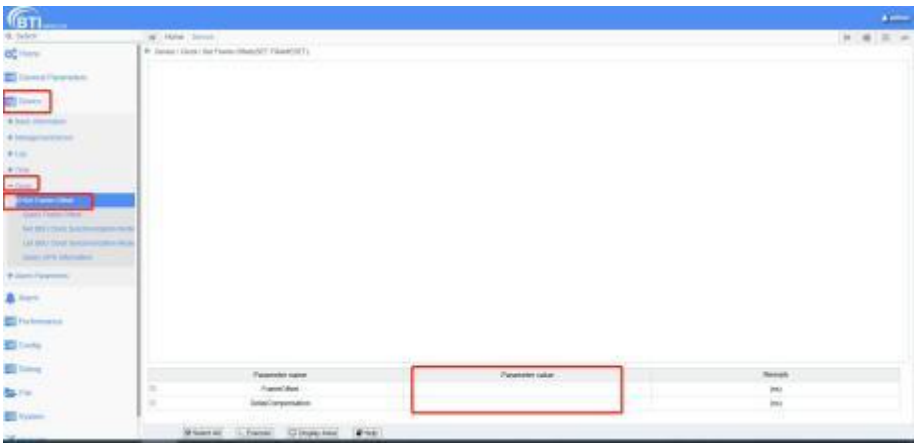
- **Scenario 4: 5ms single period 7D2U 6:4:4**





3.3.11 Frame Header Offset

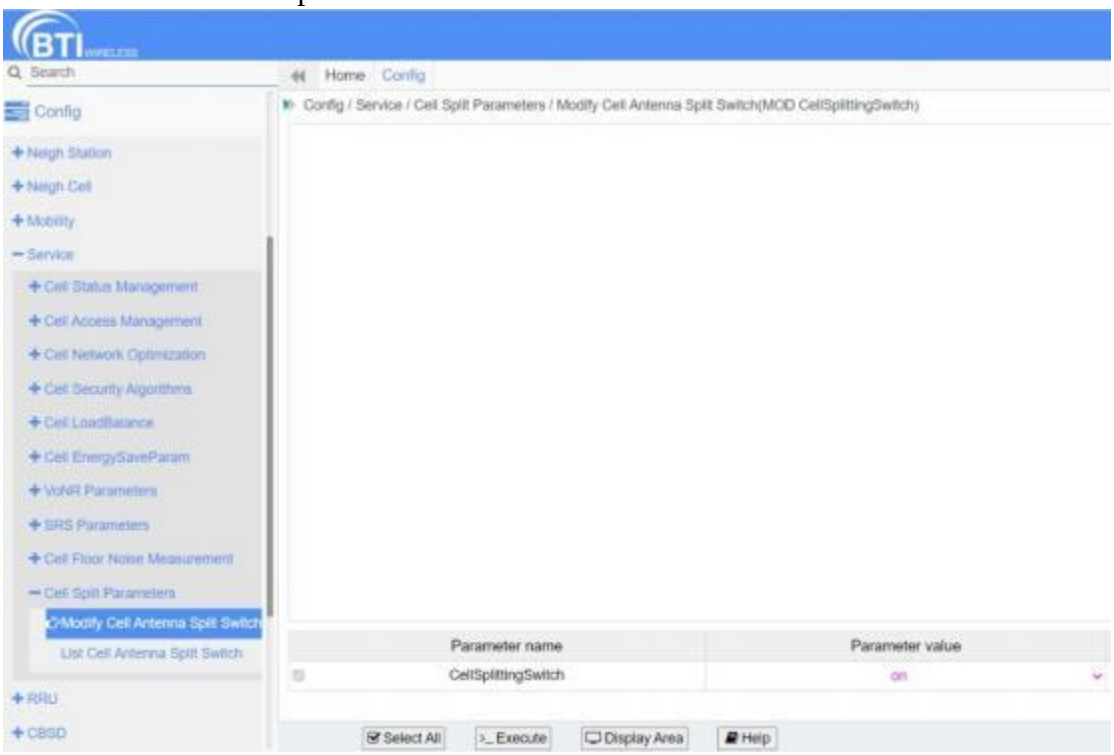
Path: Device/Clock/Set Frame Offset



3.3.12 Cell Split

Path: Config/Service/Cell Split Parameters/Modify CellAntenna Split Switch

Turn on the switch to split the cell.



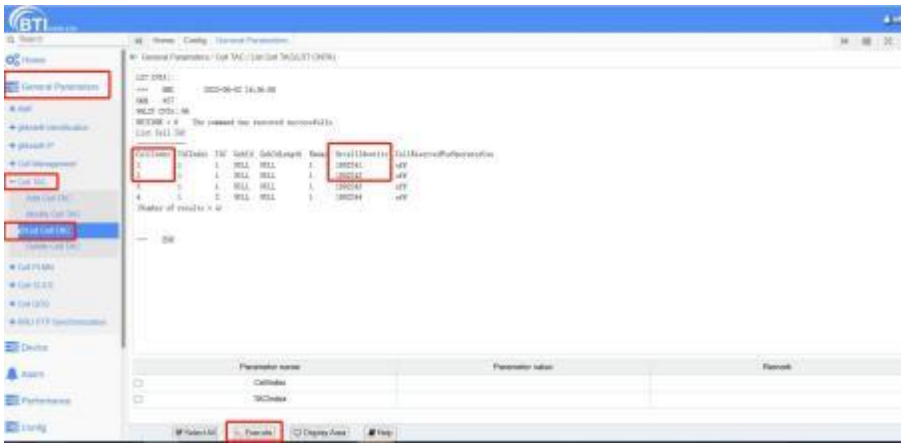
3.3.13 Handover Configuration

- **Fill in the below table.**

Item	Cell 1	Cell 2
gNB ID		
CID		
NRARFCN		
SSB		
Bandwidth		
TAC		
PLMN		
PCI		

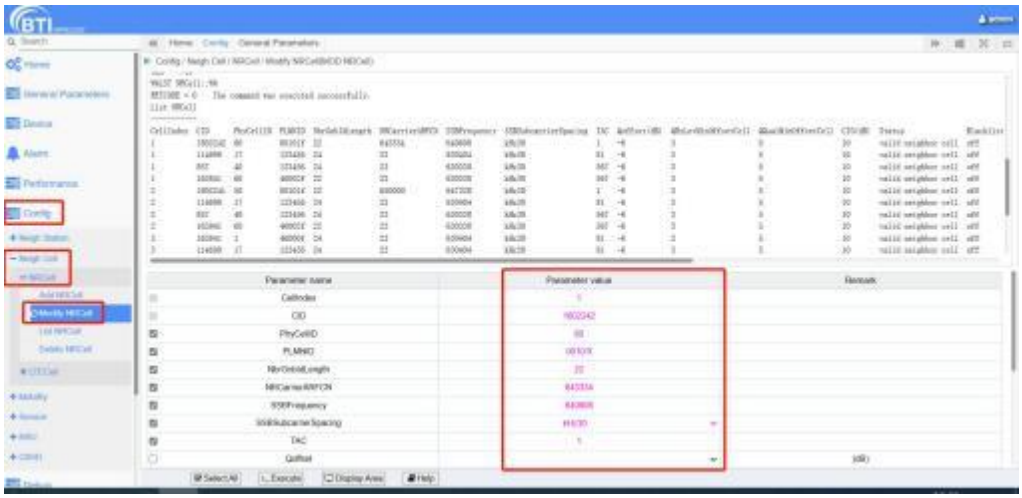
- **Check CID**

Path: Config/Service/Overall/CN/TA/NrcellIdentity



a) Add Neighbor cell

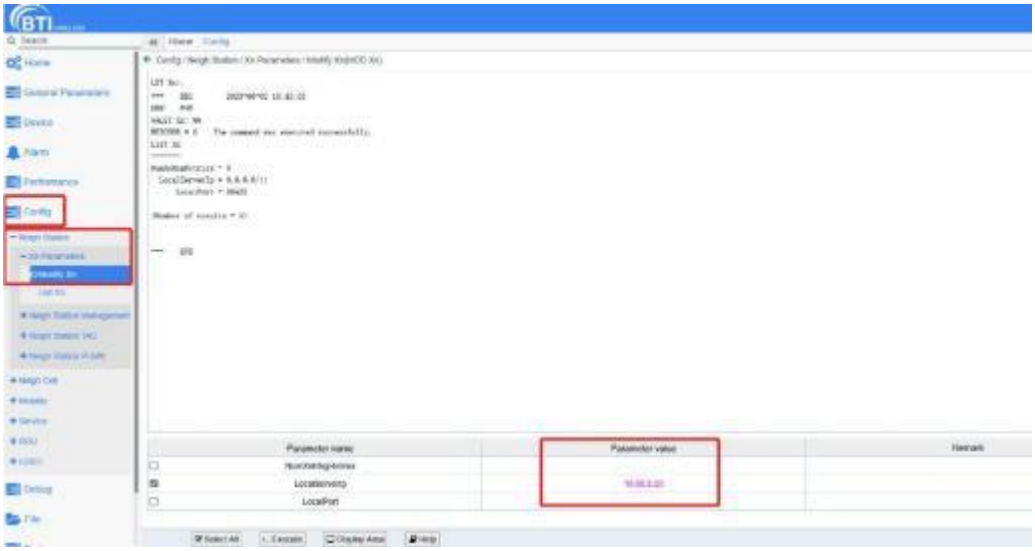
Path: Config/Neigh Cell/NRCell/Modify NRCell



b) Add Neighbor Station

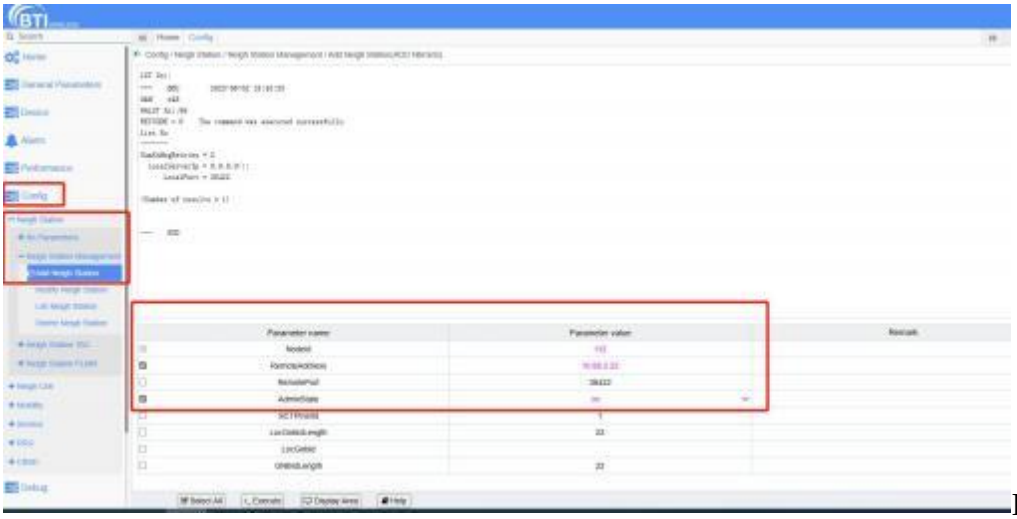
Step1 Configure Local Server IP

Path: Config/Neigh Station/Xn Parameters/Modify Xn



Step2: Add neighbor station

Path: Config /Neigh Station/Neigh Station Management/Add Neigh Station

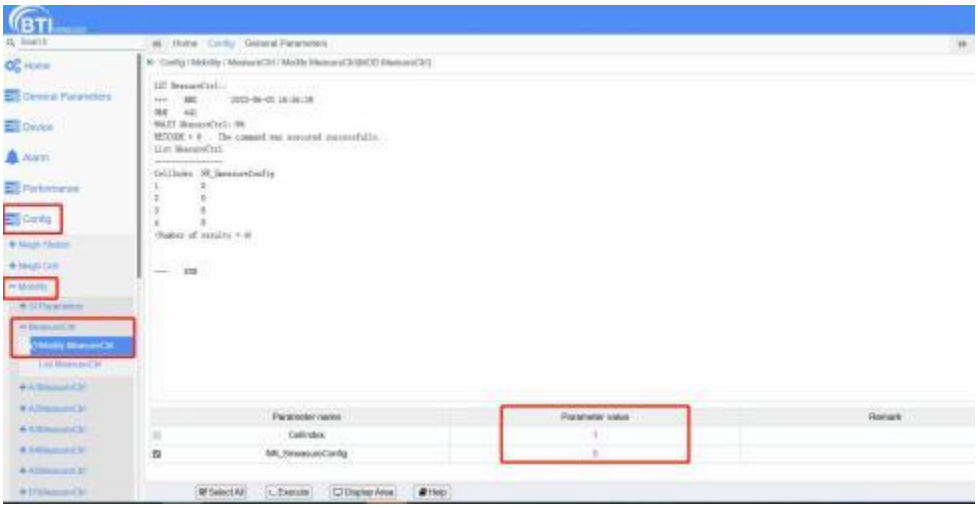


Handover Configuration

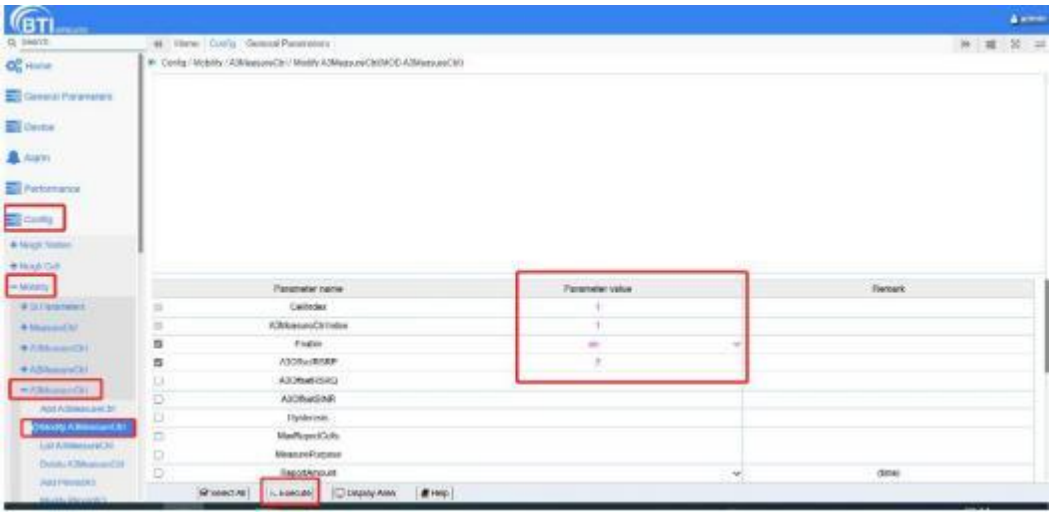
Path: Config/Modify/A3MeasureCtrl/Mobility A3MeasureCtrl

c) Intra-Frequency Handover

Step 1: Change NR_SmeasureConfig to 0.



Step 2: Change A3OffsetRSRP value to x(x=2 on the following screenshot)

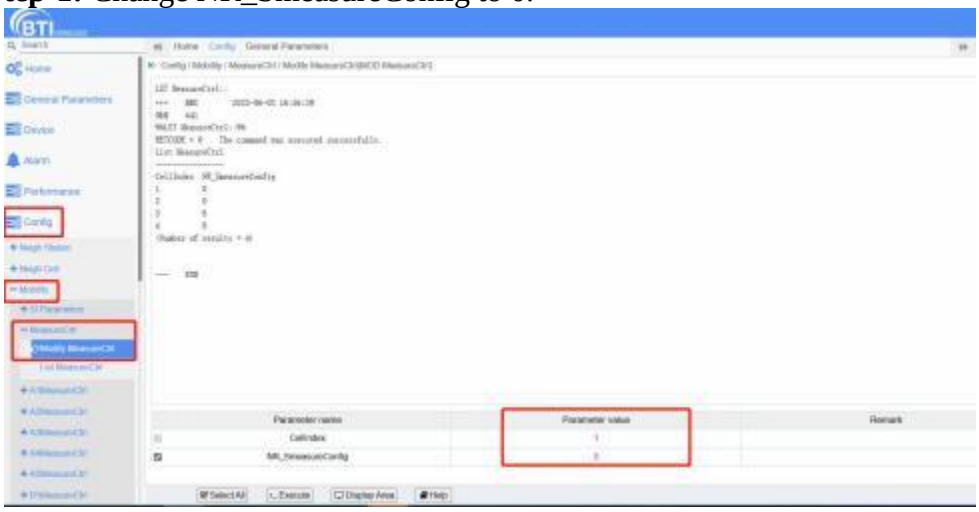


When the RSRP difference of the two cells is bigger than **x**, handover will happen.

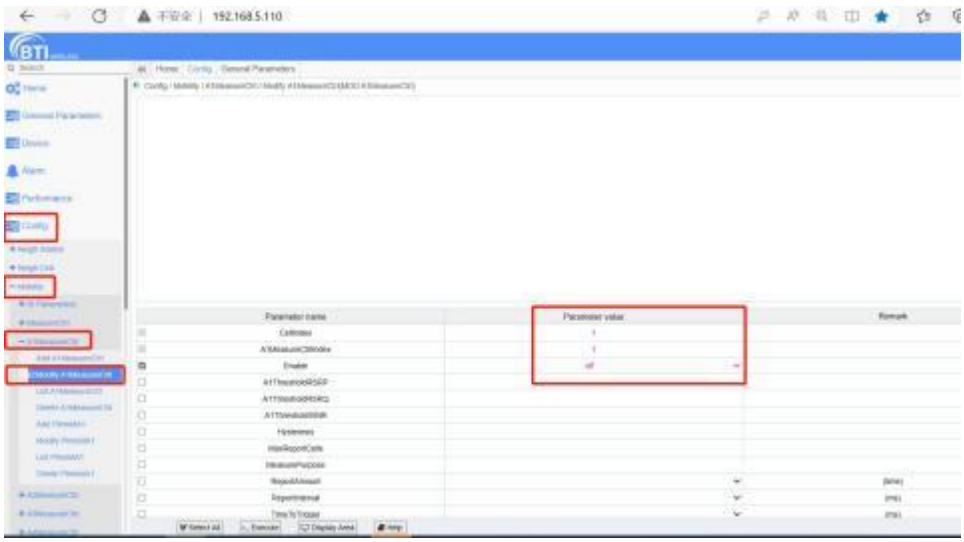
Note: this value can be adjusted.

d) Inter-Frequency Handover

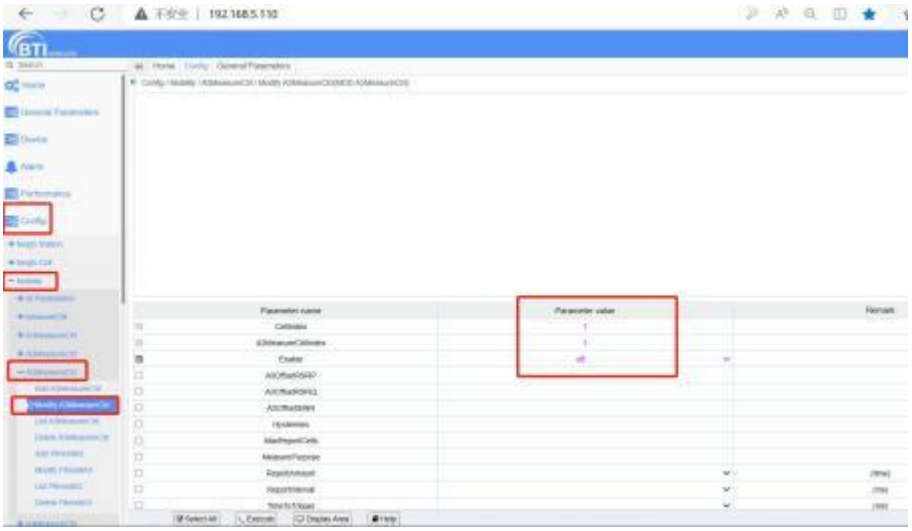
Step 1: Change NR_SmeasureConfig to 0.



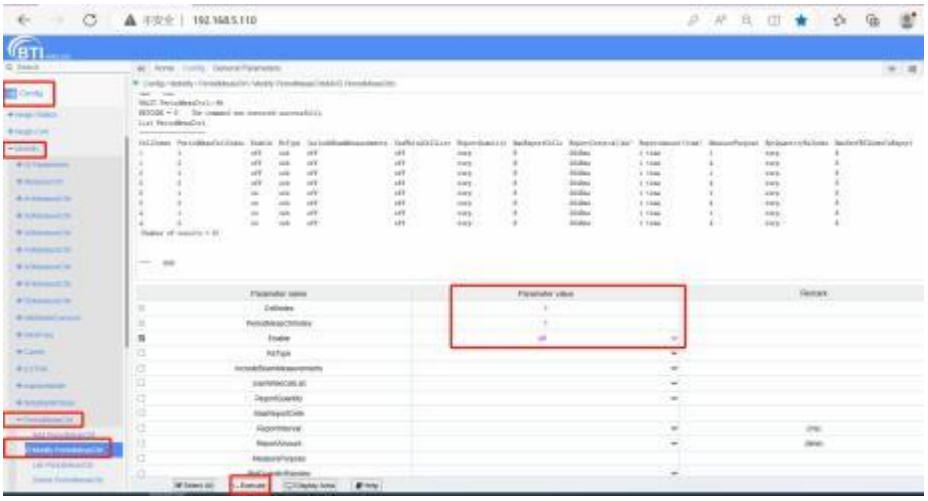
Step 2: Disable the A1MeasureCtrl



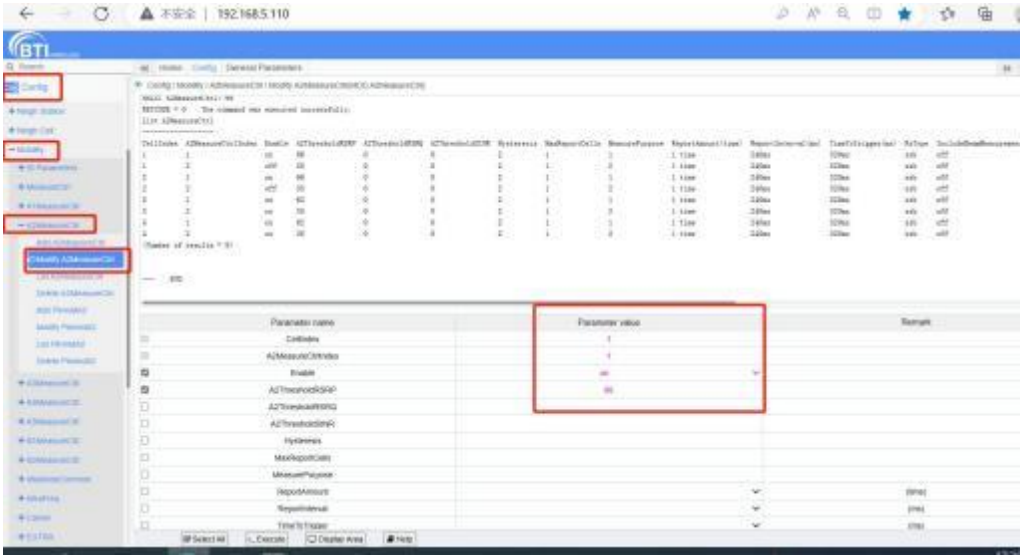
Step 3: Disable the A3MeasureCtrl



Step 4: Disable the PeriodMeasCtrl



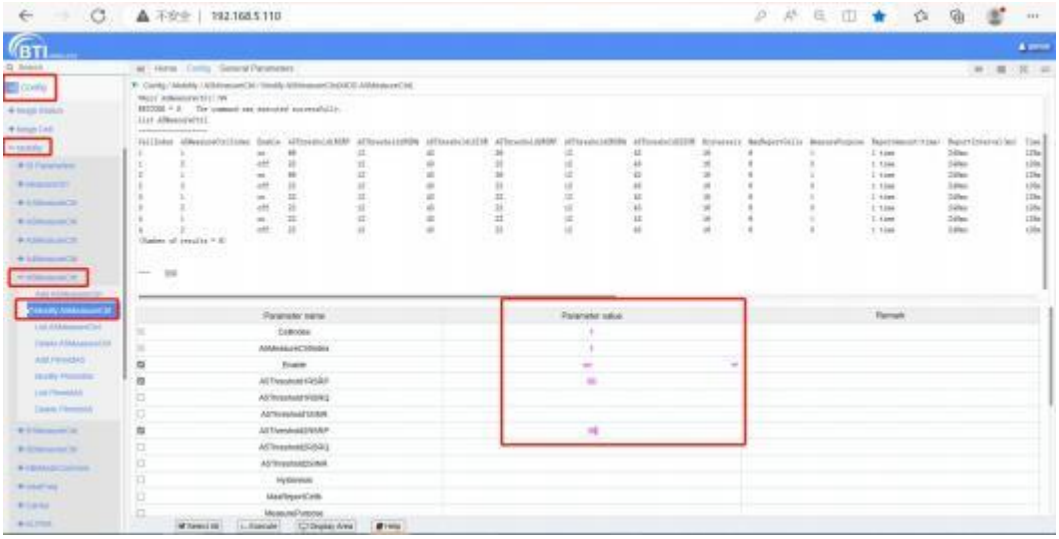
Step 5: Enable and configure the A2MeasureCtrl



TresholdRSRP: 66- 156=-90 dBm

When RSRP smaller than -90dBm, it will trigger the measurement report.
Note: A2ThresholdRSRP can be adjusted according to the situation.

Step 6: Enable and configure the A5Measure



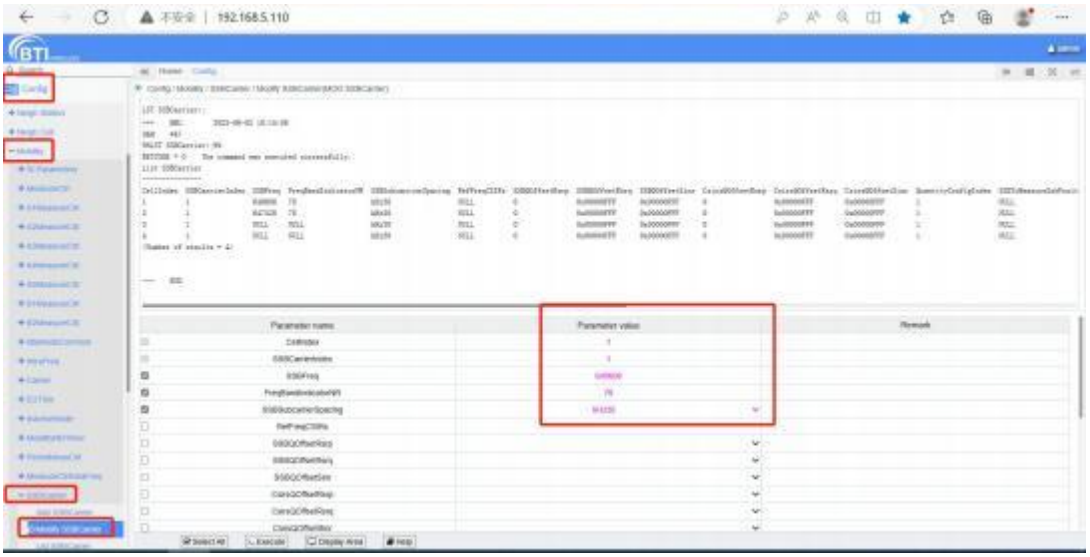
Threshold1RSRP: 66- 156=-90

Threshold2RSRP: 36- 156=- 120

When the RSRP of service cell is smaller than -90 and the RSRP of traget cell is bigger than - 120, then handover will happen.

Note: Threshold1RSRP & Threshold2RSRP can be adjusted according to the real use. The values suggested here will be eaiser to make the inter freq handover happen, and thus test thisfeature.

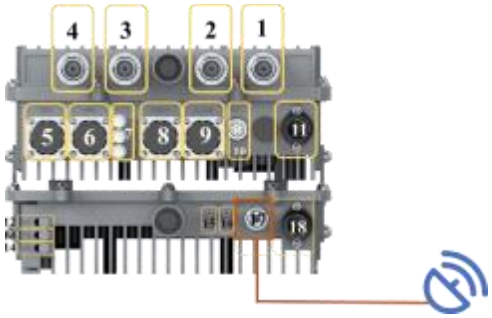
Step 7: Configure the SSB Freq of Neighbor Cell



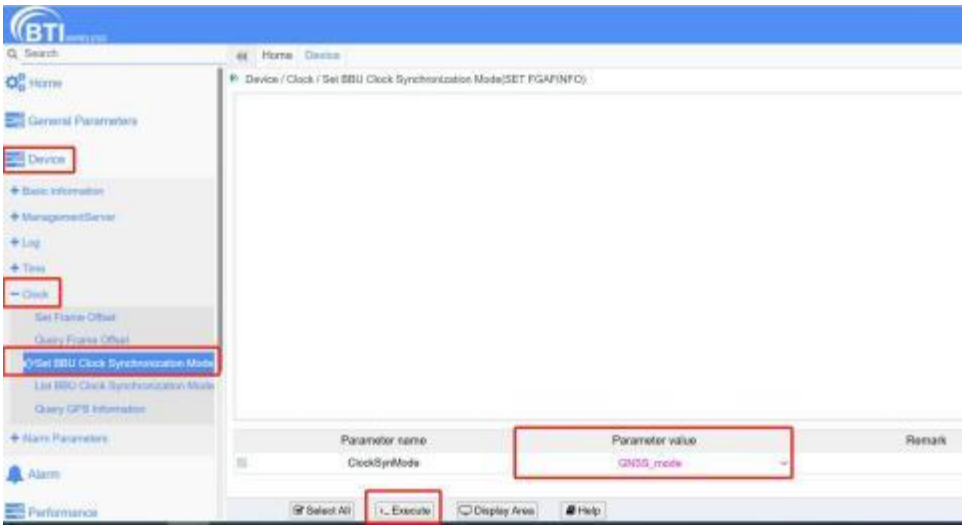
Step 8: Repeat the above confirmation on the handover target cell.

3.4 Clock Sync

3.4.1 GPS Connection



Choose synchronization method



3.4.2 Check Synchronization status

Currently GPS synchronization status should be checked via ssh.

Step1. Login to the accelerator card

 # ssh root@192.168.5.216 (Account: root; Password: root)

 # ssh root@192.168.1.11 (password:sjnt1234)

Step2. Check GPS connection

If the printings show regval=00000033, which means GPS is locked.

 # cd /data

 # ./check_ad9545.sh

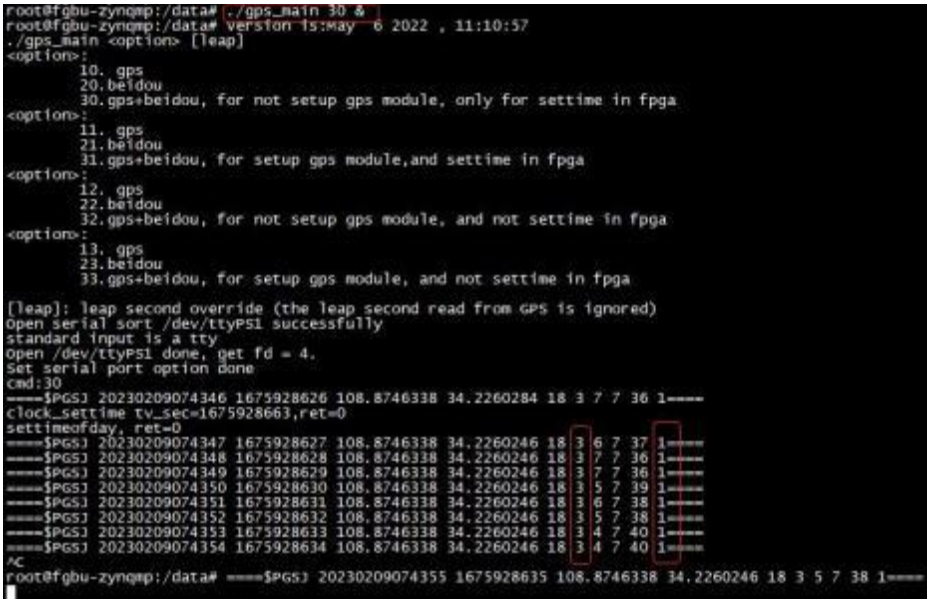
```
root@fgaf-zynqmp:~# cd /data
root@fgaf-zynqmp:/data# ./check_ad9545.sh
regval=00000033
root@fgaf-zynqmp:/data#
```

Step3. Check GPS performance

 # ./gps_main 30 &

Last fifth list means how many stars are searched.

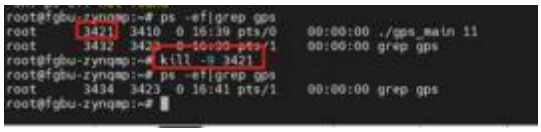
Last list 1 means GPS status is normal while 0 means GPS status is abnormal.



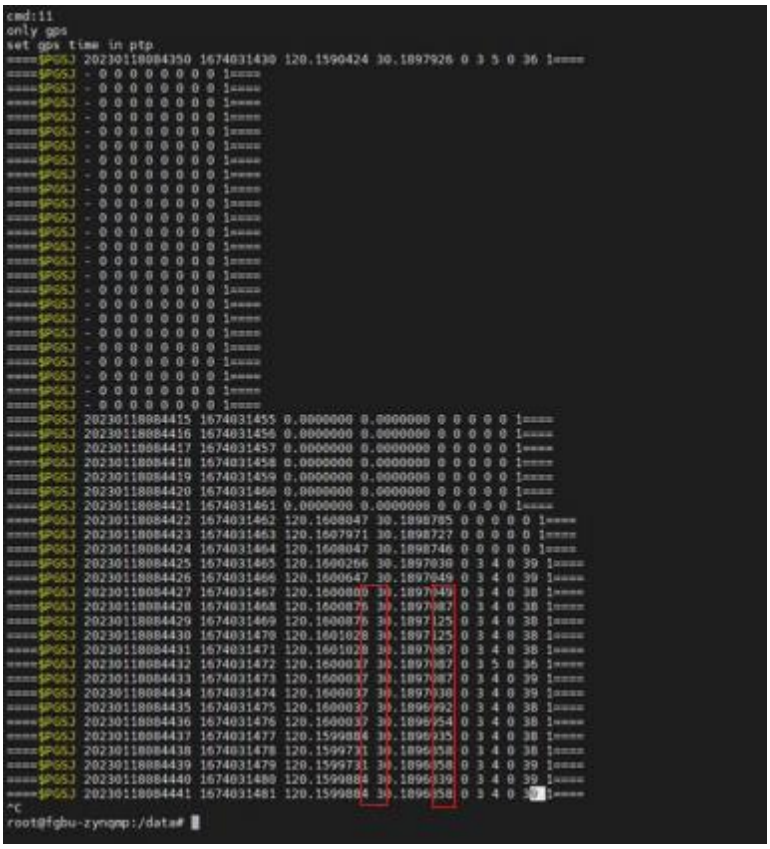
Note: In case you need reboot GPS:

 # ps -ef|grepgps //check the number of./gps_main 11

 # kill -9 3421 //kill the numberfirst



#./gps_main 11



3.5 CBRS

Please skip this chapter if CBRS is not needed.

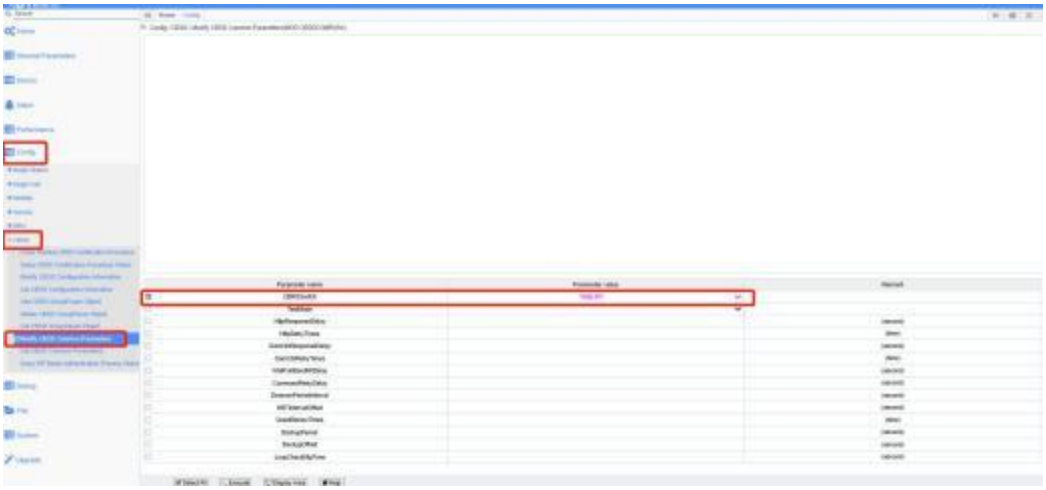
NOTE that When CBRS is enabled, please disable the CBRS function before modifying the configuration (Bandwidth) on BBU.

3.5.1 CBRS Preparation

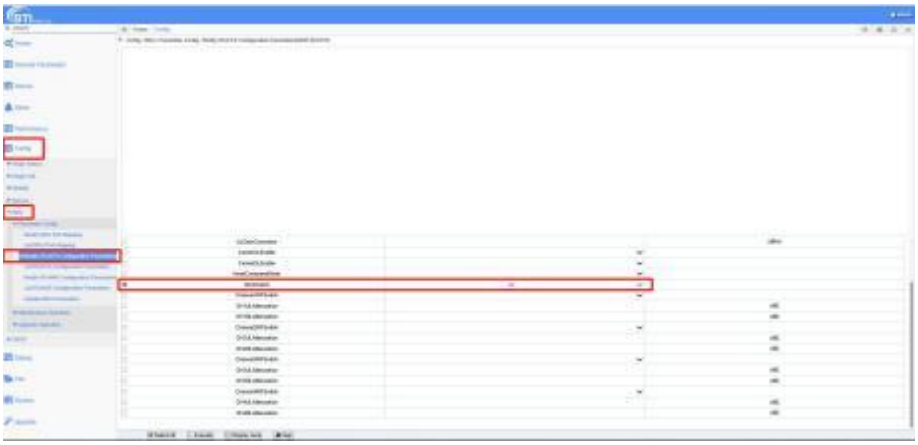
Please make sure the ping from BBU to Google SAS works.
If the ping fails, please check with ***#route -n*** to see if the route is added.

3.5.2 CBRS Switch

CBRS function will only be activated when the BBU CBRS switch is True and RRU CBRS Switch is Open.
Path: Config/CBSD/Modify CBSD Parameters



Path: Config/RRU/Parameter Config/Modify RU4370 Configuration Parameters



Note: The protocol state will operate normally after

a. *Complete the general and CBRS related parameters*
b. *Complete the negotiation with the SAS server*

3.5.3 CBRS Certificate Management

Path: File/Upload and download certificate

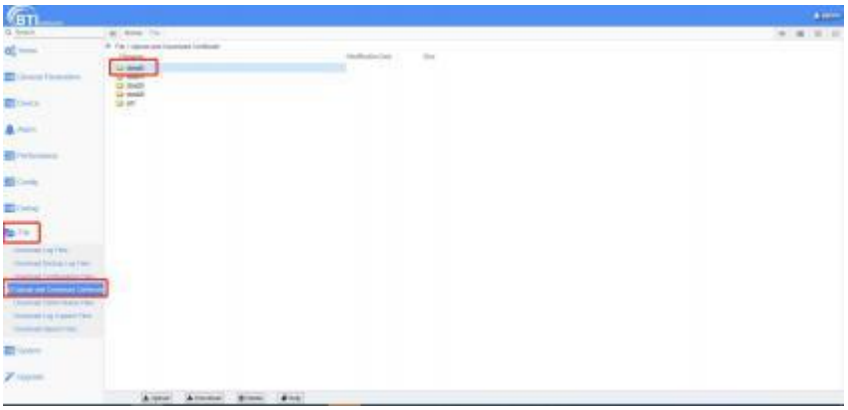
Note: The files should be provided by SAS. And before upload the 4 files, take the first cell as an example, please make sure:

CA file is named as ***cbsd0_cacert.pem***,

cert file is named as ***cbsd0_clientcert.pem***,

key file is named as ***cbsd0_clientkey.key,***

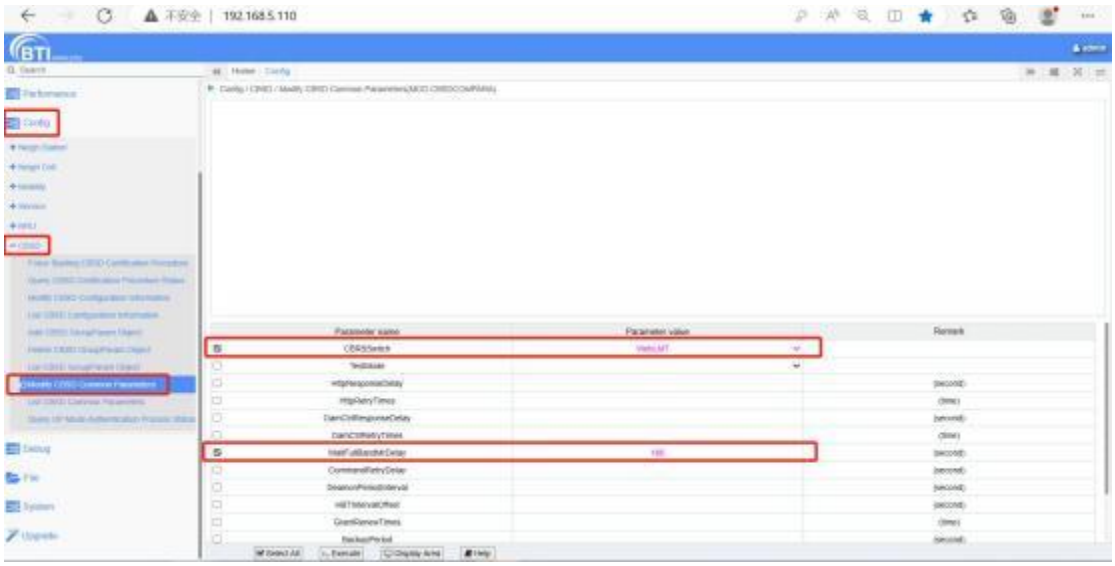
cpi key is named as ***cbsd0_cpikey.key,***



CBSD	Cell
CBSD0	1
CBSD1	2
CBSD2	3
CBSD3	4

3.5.4 CBSD Common Configuration

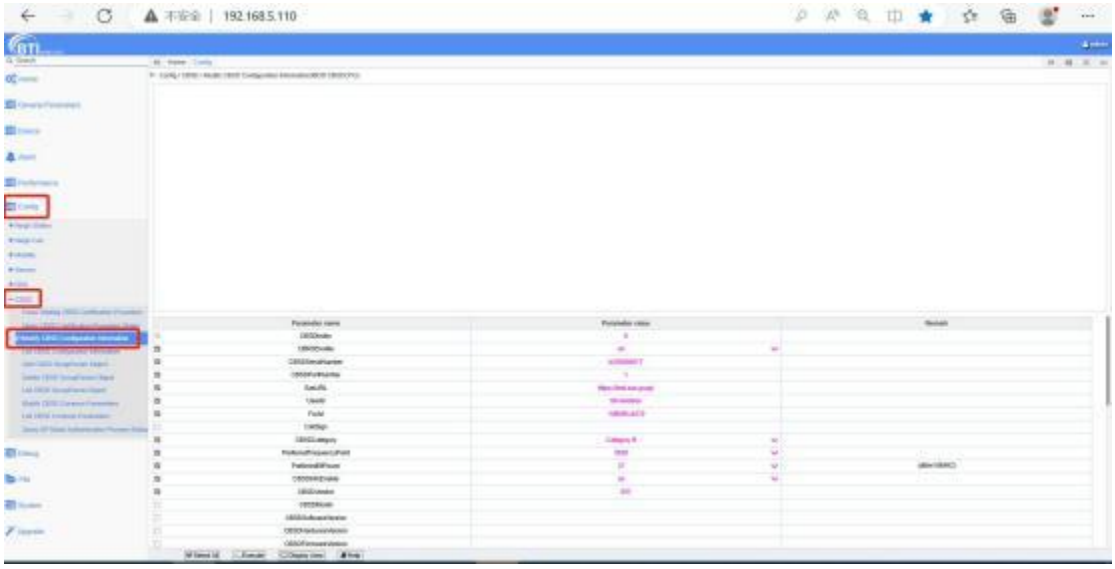
Path: Home/Device/CBSD Management/CBSD Common

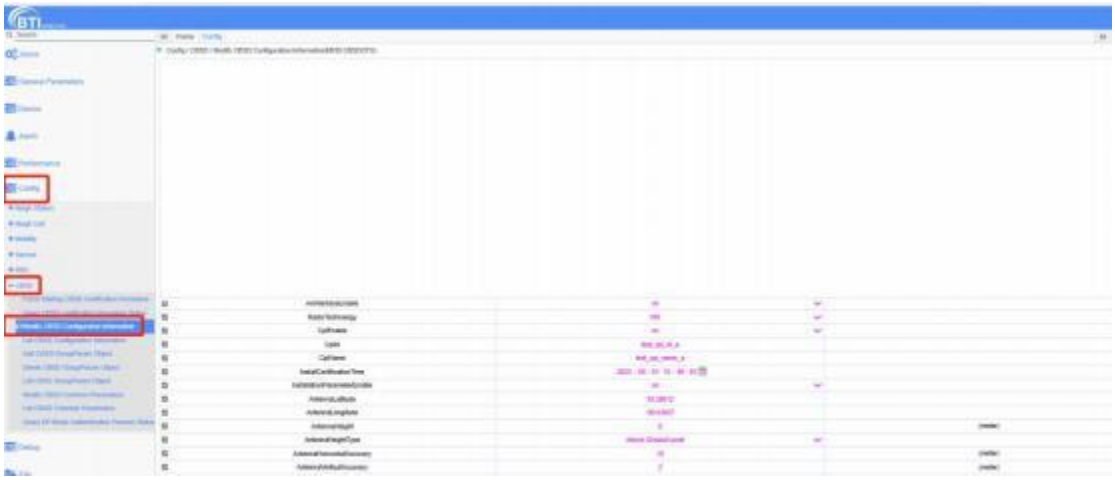


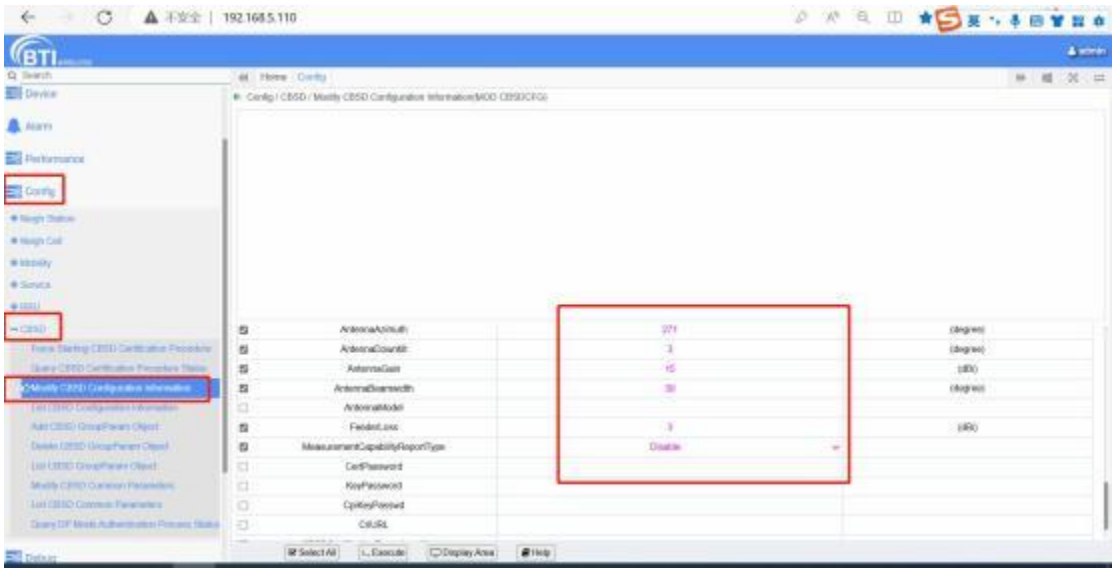
- Set CBRS Switch to ***WebLMT***
- Set Wait Full Band Measurement Report Delay(second) to ***180***

3.5.5 CBSD Configuration

Path: Config/CBSD/Modify CBSD Configuration Information







- Set CBRS Enable to ***on***
- Configure Serial Number to the ***same as RRU's***
- ***Choose the CBSD port number***
- Input the SAS URL (google test sas: ***https:/test.sas.goog***)
- Input the User ID ***that registered on SAS***
- Configure the FCC ID to ***WBKRU-4370***
- Set CBSD Category

CBDS Type	Maximum EIRP (dBm/10 MHz)	Maximum EIRP (dBm/MHz)	Antenna Height (Meter)
Category A	30 dBm or 1 watt	20 dBm	< 6 meters
Category B	47 dBm or 50 Watt	37 dBm	> 6 meters

- Set PreferredFrequencyPoint
- Set PreferredRfPower
- Set CBSDInfo Enable as ***True***
- Configure CBSD Vendor as ***BTI***
- Set AirInterface Enable to ***on***
- Set Radio Technology to ***NR***
- Set CPI Enable to ***On*** when there is no pre-configuration on SAS portal was done. Otherwise set the button to ***Of***.
- Set CPI ID
- Set CPI Name
- Set Install Certification Time to the format as ***xxxx-xx-xxTxx:xx:xxZ***
- Set InstallationParam Enable to ***True*** when there is no pre-configuration on SAS portal was done. If installation related parameters are configured on both sides, the parameters will go with SAS portal even the switch is set as ***True.***
- Configure the installation parameters ***according to the on-site info.***
- Set CBSD Measurement Capability Report Type to ***Disable.***

3.5.6 EIRP Calculation

RRU Port Outpower			BBU Register on SAS		
Bandwidth	RRU Outpower (dBm)	Port Outpower (dBm/10M)	Antenna Gain (dB)	Feeder Loss (dB)	EIRP(dBm/10M)
100M	37dBm	33	x	y	33+x-y
80M		34			34+x-y
60M		35			35+x-y
40M		37			37+x-y
20M		40			40+x-y
10M		43			43+x-y

EIRP= Port Outpower + Antenna Gain – Feeder Loss

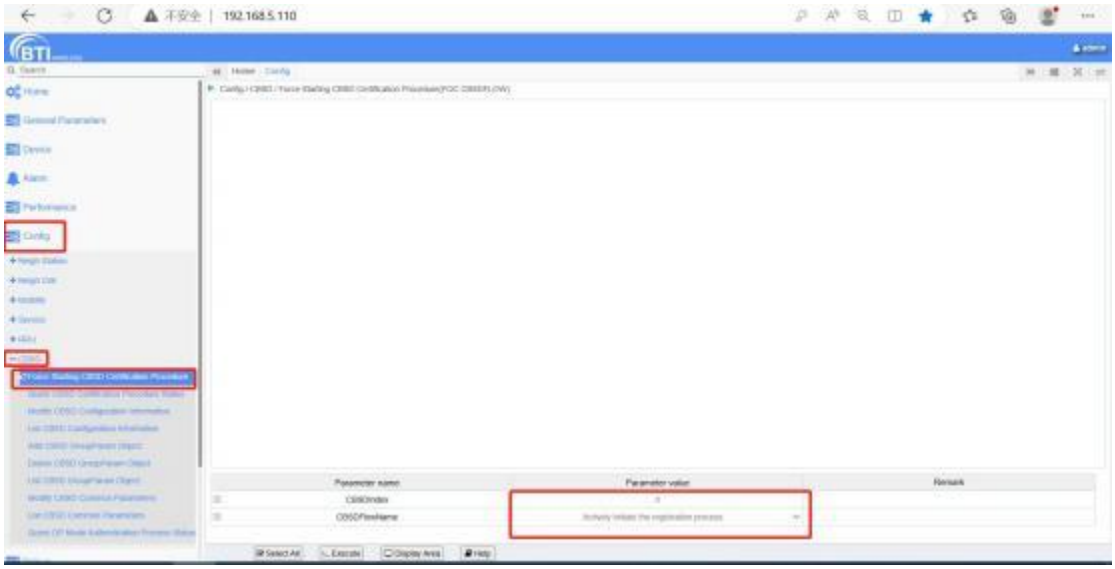
Port Outpower - fixed, based on the Bandwidth
Antenna - configurable, based on the filed value
Feeder Loss - configurable, based on the filed value

eg: 40M Bandwidth, Antenna Gain 15dBi, Feeder Loss 3dB
Based on the format
EIRP= Port Outpower + Antenna Gain – Feeder Loss
EIRP = 31(dBm/10M) +15(dBi) -3(dB) = 43 (dBm/10M)

Note - the maximum EIRP registered on official SAS of RU4370 is 47dBm/10M.

3.5.7 Trigger CBSD Registration Process

Path: Config/CBSD/Force Starting CBSD Certification Procedure



Step1. Choose the CBSD Index
Step2. Select registration of CBSD Certification Procedures Name

Step3. Execute

Note:

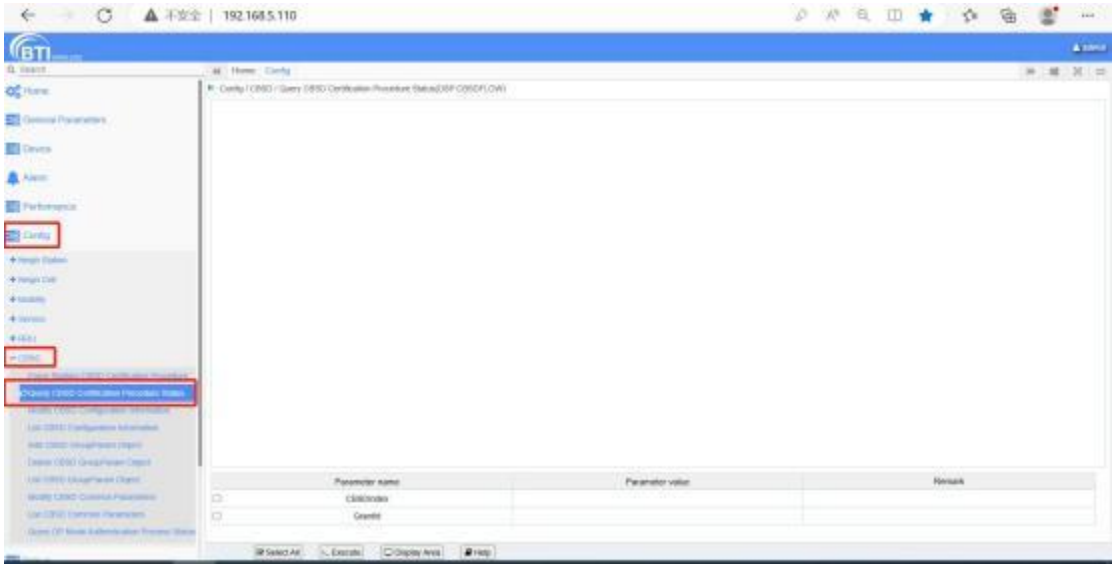
- *Before processing each test case, execute Force resetting the internal state*
- *CBRS status can be viewed on the BBU cbrsProcess.log.*

Path of CBRSLog: /opt/bbu/oam/cbrs/

#tail -f/opt/bbu/oam/cbrs/cbrsProcess.log

3.5.8 Check CBSD Registration Status

Path: Home/Device/CBSD Management/Query CBSD Flow



Step1. Choose the CBSD Index

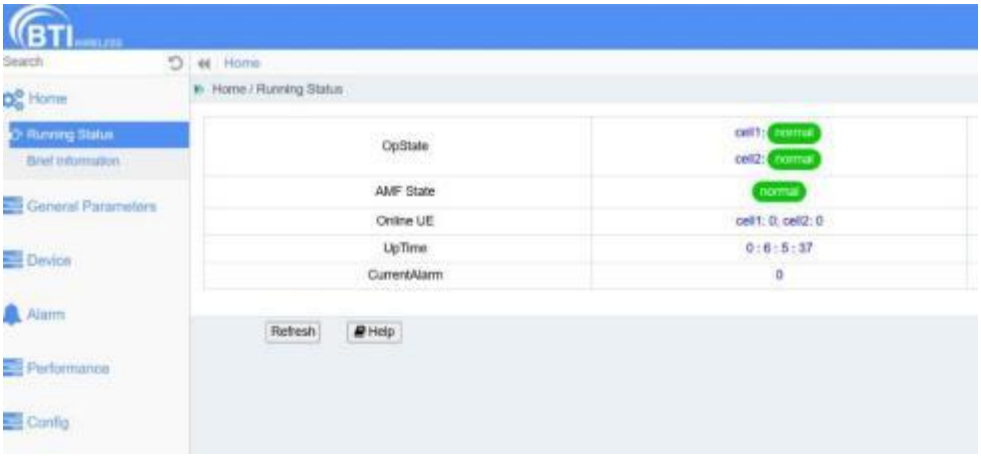
Step2. Check GrantDetails

State	Meaning
0	Idle
1	Granted
2	Authorized

3.6 System Information

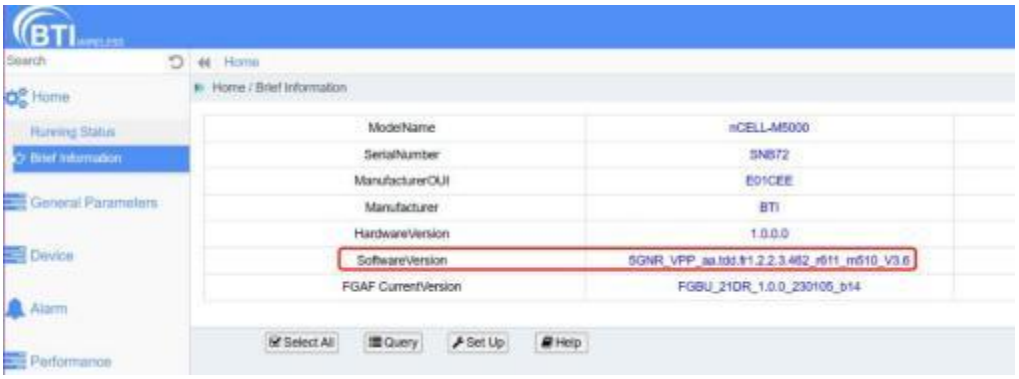
3.6.1 Operation Status and version

Path: Home / Running Status



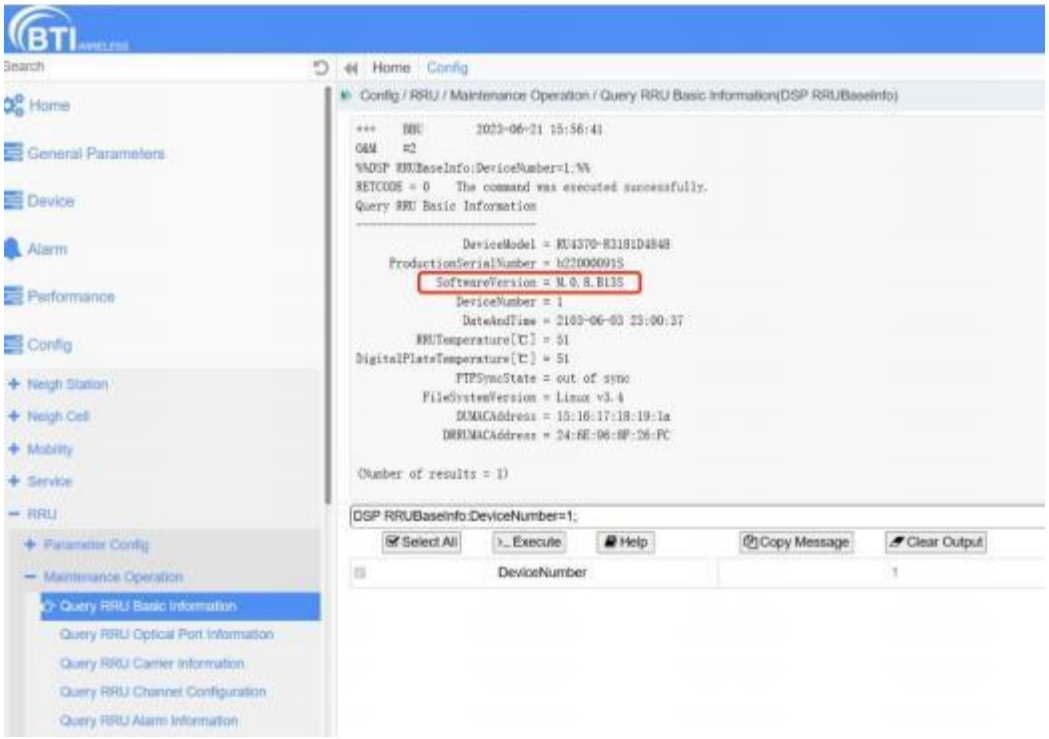
3.6.2 BBU Version

Path: Home/BriefInformation



3.6.3 RRU Version

Path: Config/RRU/Maintenance Operation/Query RRU Basic Information



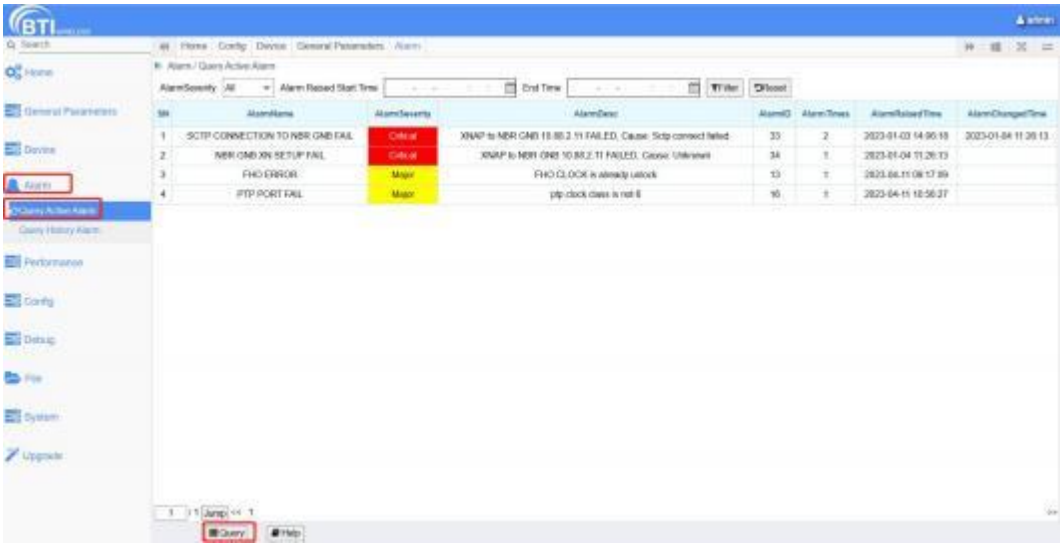
3.6.4 Accelerator Card Version

ssh@192.168.2.24

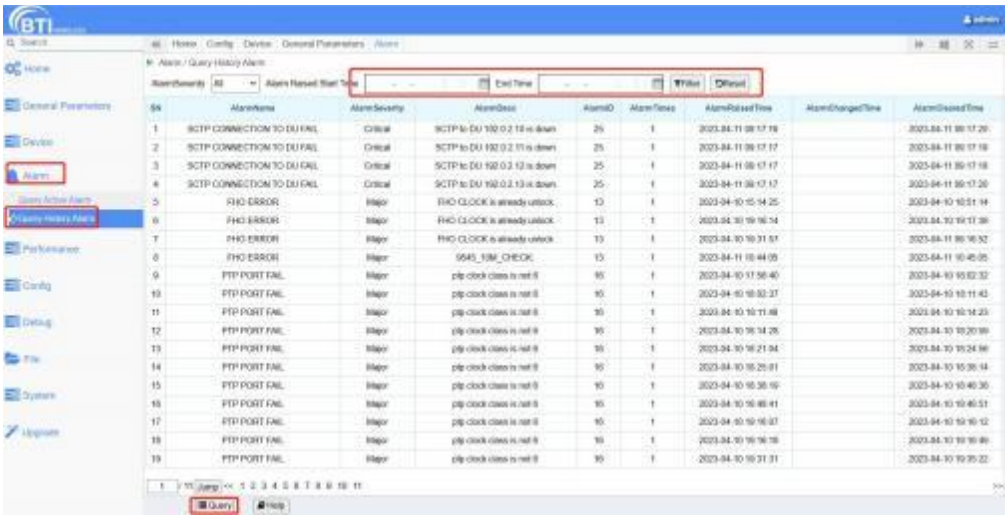
3.6.5 Alarm

Path: Alarm

Click *Query Active Alarm*, it will show the current alarms.



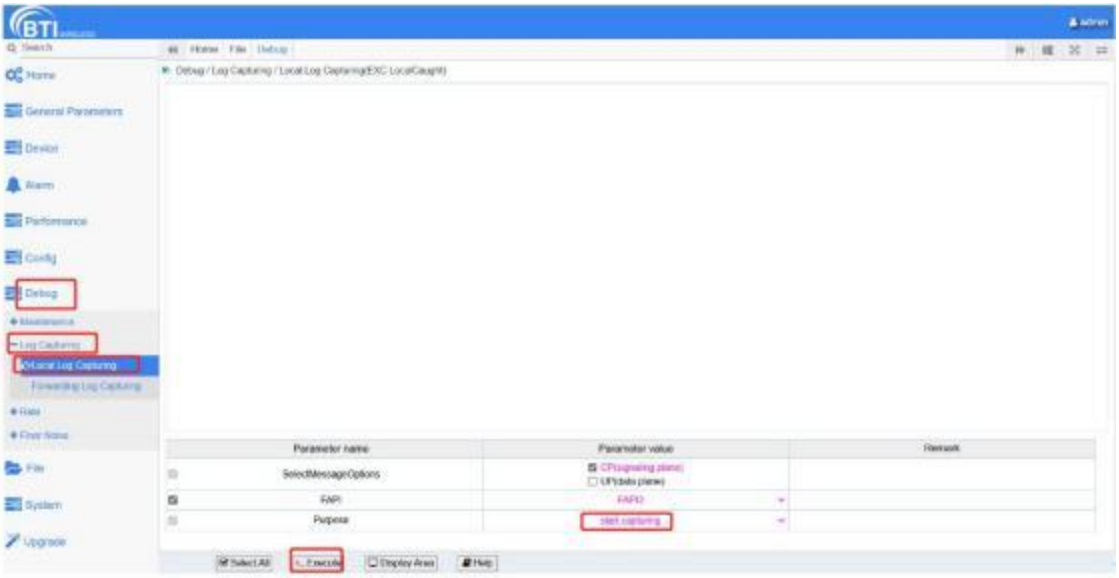
Click *Query History Alarm*, it will show the current alarms.

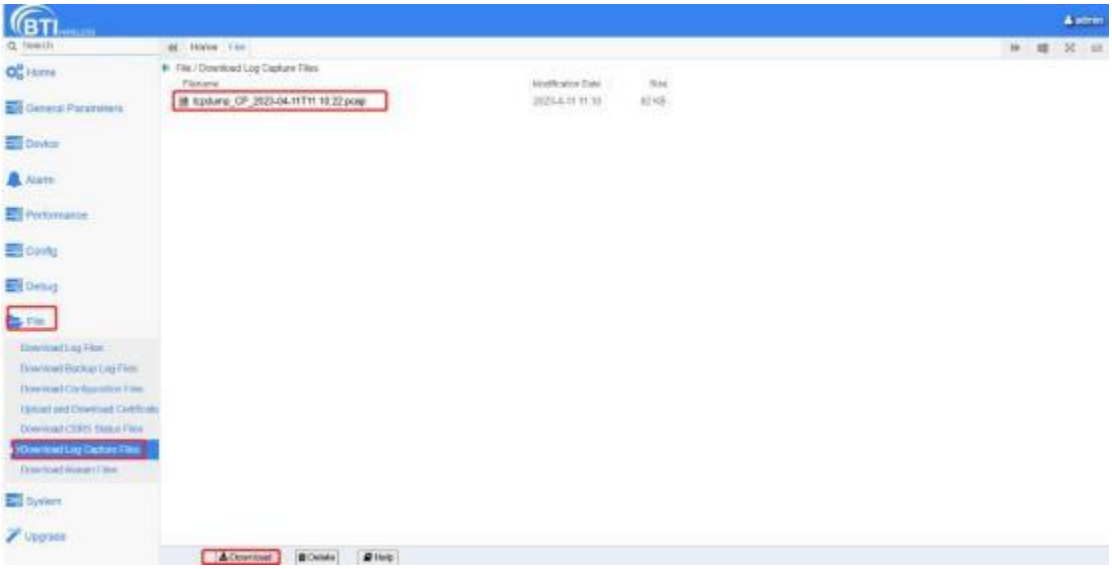


3.6.6 Log Capture Process

Log Type	Description
Signaling log	Signaling log is control plane data. It is used to capture sctp, ngap, F1AP etc. The captured file size is quite small.
FAPI log	PHY and MAC interaction messages. It can be used to view MAC dispatching information. The captured file size may be quite large.
N3 log	Data plane, it is also called user plane. It captures FAPI messaging with additional details. The captured file size is the biggest.
Gatherlog	System configuration/status log

. Local Caught - Download on GUI

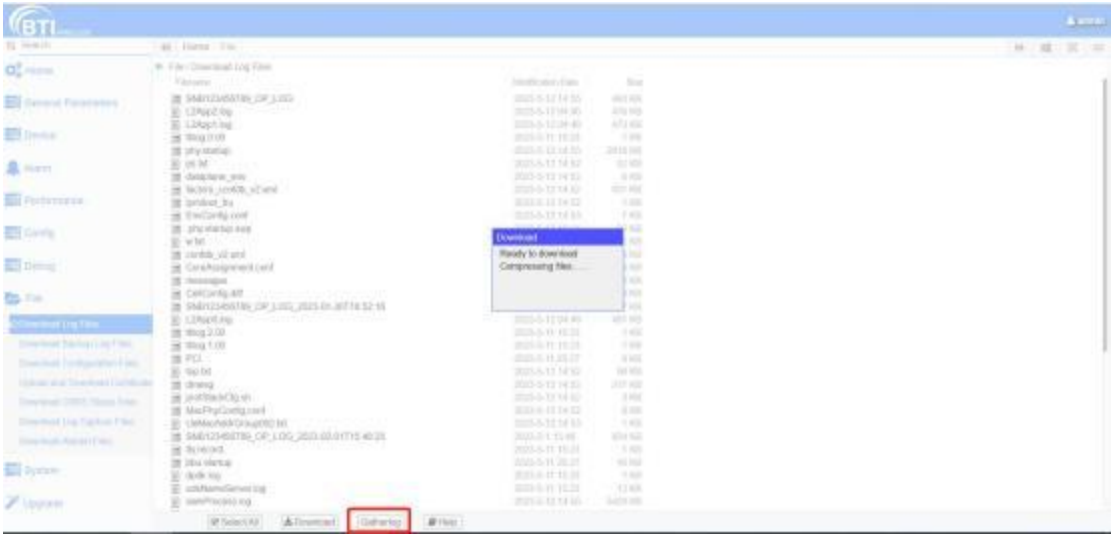




. Forward Caught - Using tcpdump or wireshark

. Gatherlog

path File/Download Log Files



Click gatherlog, the log will be compressed and downloaded automatically.

3.6.7 Fast saving configuration file

Confdb_v2_xml can be found in the gatherlog.

3.6.8 Fast uploading configuration file

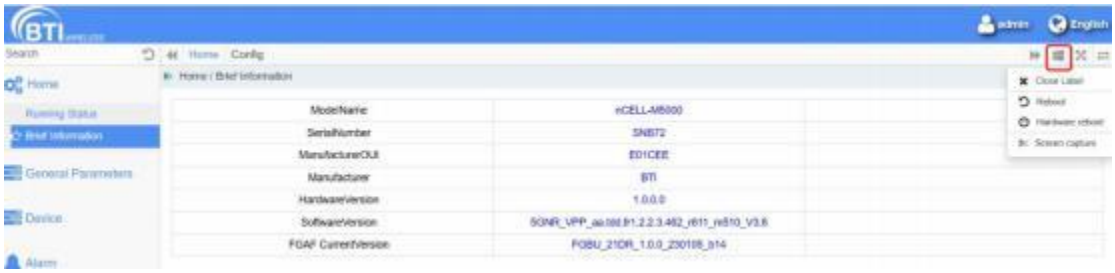
Note: ***The confdb_v2_xml can only be applied on the same BBU software version.***
a). Run *#sp.sh -k* to stop the protocol stake.

b). Upload the confdb_v2.xml to the path /opt/bbu/oam/cm/

c). chmod 777 confdb_v2.xml
d). Run *#restart.tcl*

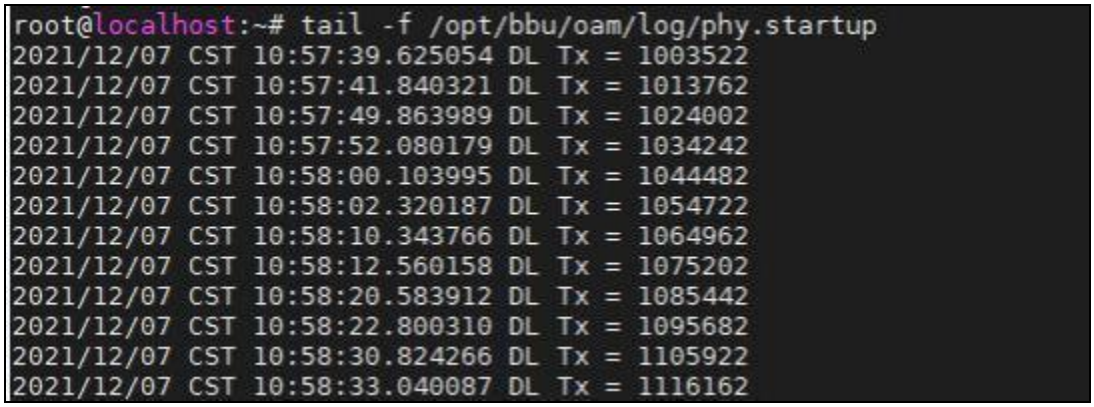
3.6.9 Reboot the Device

Reboot = software restart
Hardware reboot = hardware & software restart

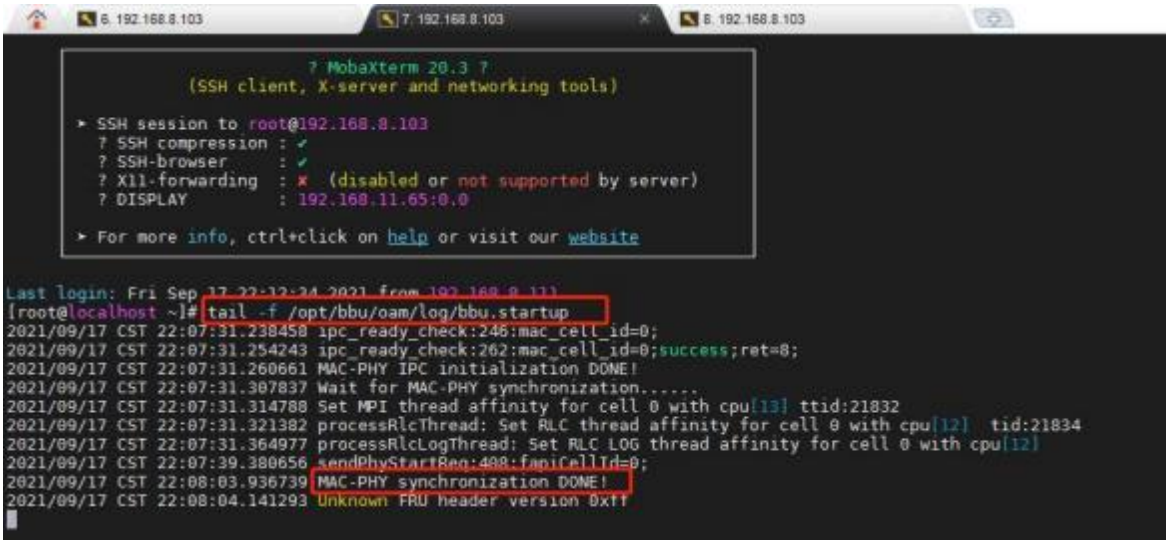


4. Common Commands

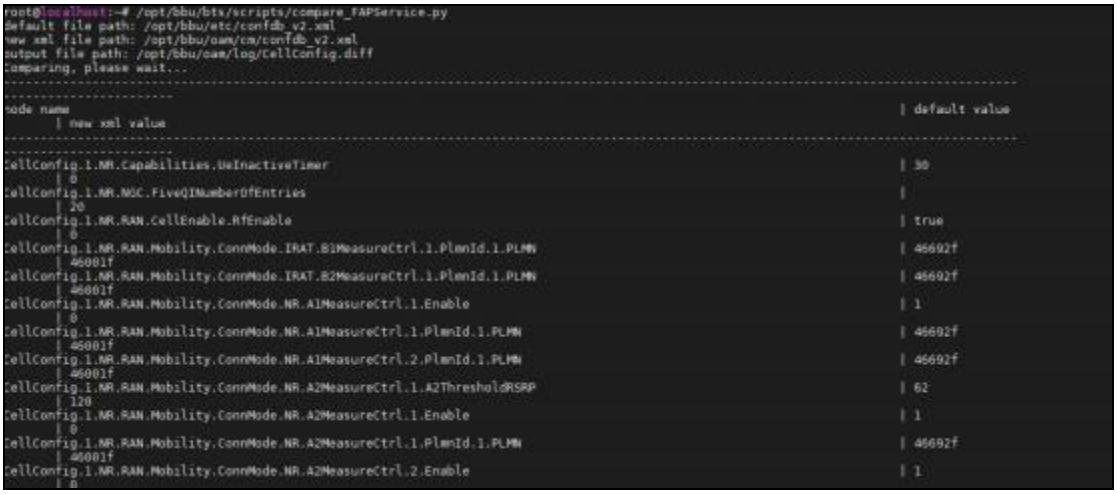
Check physical layer status:
#tail -f/opt/bbu/oam/log/phy.startup



Check protocol stack status:
#tail -f/opt/bbu/oam/log/bbu.startup

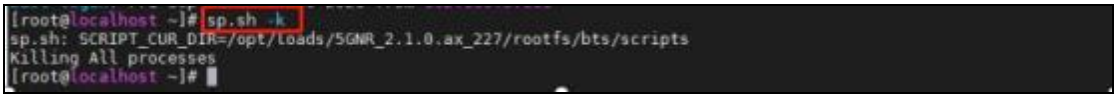


Compare modified parameters:
/opt/bbu/bts/scripts/compare_FAPService.py



View UEs connected to BBU:
odi -n duapp0 display-ue-info

Stop Protocol stack and physical layer script:
sp.sh –k



Process background startup protocol stack and physical layer script
restart.tcl

Check MAC Layer Throughput

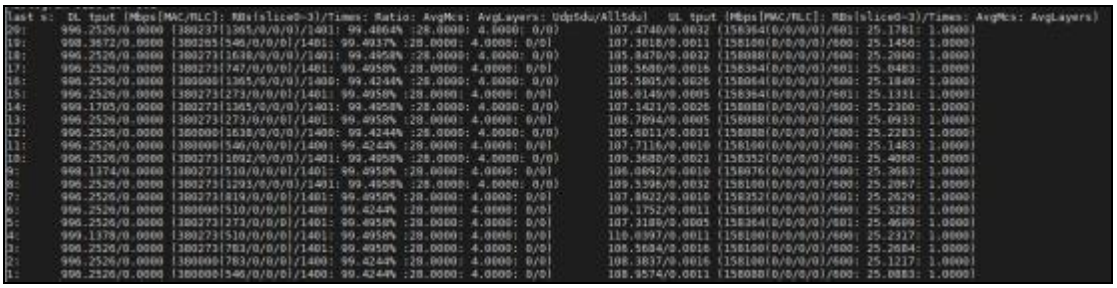
#Enable MAC layer DL:
odi -n duapp0 set-pdsch-fixed-rbs 273
odi -n duapp0 set-pdsch-padding-traffic 1

#Disable MAC layer DL:
odi -n duapp0 set-pdsch-padding-traffic 0

#Enable MAC layer UL:
odi -n duapp0 enable-auto-ul-sched 0
odi -n duapp0 set-presched 1 -1 100000 1

#Disable MAC layer UL:
odi -n duapp0 set-presched 0

#Watch throughput:
watch odi -n duapp0 show-mac-throughput-count 20



#vpp log capture
Enter vpp: *vppctl*
Start capture: *pcap trace**filename** max 1000000 intfc any*
Stop capture: *pcap trace**filename** of*
The captured log will be saved under /tmp, called ***filename***

#TCP dump via SSH:
tcpdump -i any -s0 -w /tmp/filename.pcap

Appendix:Certification Compliance

CE Compliance:

This device complies with standard CE certification,Manufactured products comply with the requirements of harmonized European standards.More details please refer to the CE report.

FCC Compliance:

changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the 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.

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. Operation of this equipment in a residential area is likely to cause harmful interference,, in which case the user will be required to correct the interference at his own expense.

WARNING: This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 80 inches (200 cm) between the radiator and your body. Changes or modification not expressly approved by the party responsiblefor compliance could void the user's authority to operate the equipment.