



Celona Ruggedized Access Point AP 25 AP25-48 User Guide

CELONA COMPUTER CORPORATION

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Chapter 1 The Celona 5G NR Small Cell Admin Website

This section provides detailed information about the Celona 5G NR Small Cell Admin Website. Here, you can view the device status and modify configuration settings.

Accessing the Celona 5G NR Small Cell Admin Website

Follow these steps to access the admin website:

1. Ensure that your PC or laptop is connected to the same network as the Celona 5G NR Small Cell
2. Open a web browser and enter the IPv4 address of the Celona 5G NR Small Cell into the address bar as follows
 - **http://<ip address>**
 - **https://<ip address>**

The device primarily uses two network ports, WAN and SFP+, for connecting the Small Cell backhaul as shown in Figure 1. The default IP addressing mode is set to DHCP. You can switch to Static IP mode via the **Settings: Network** page



Figure 1. The Network Interfaces of the Celona 5G NR Small Cell (SCE2120/SCE2200)



Figure 2. The Network Interfaces of the Celona 5G NR Small Cell (SCU2140)

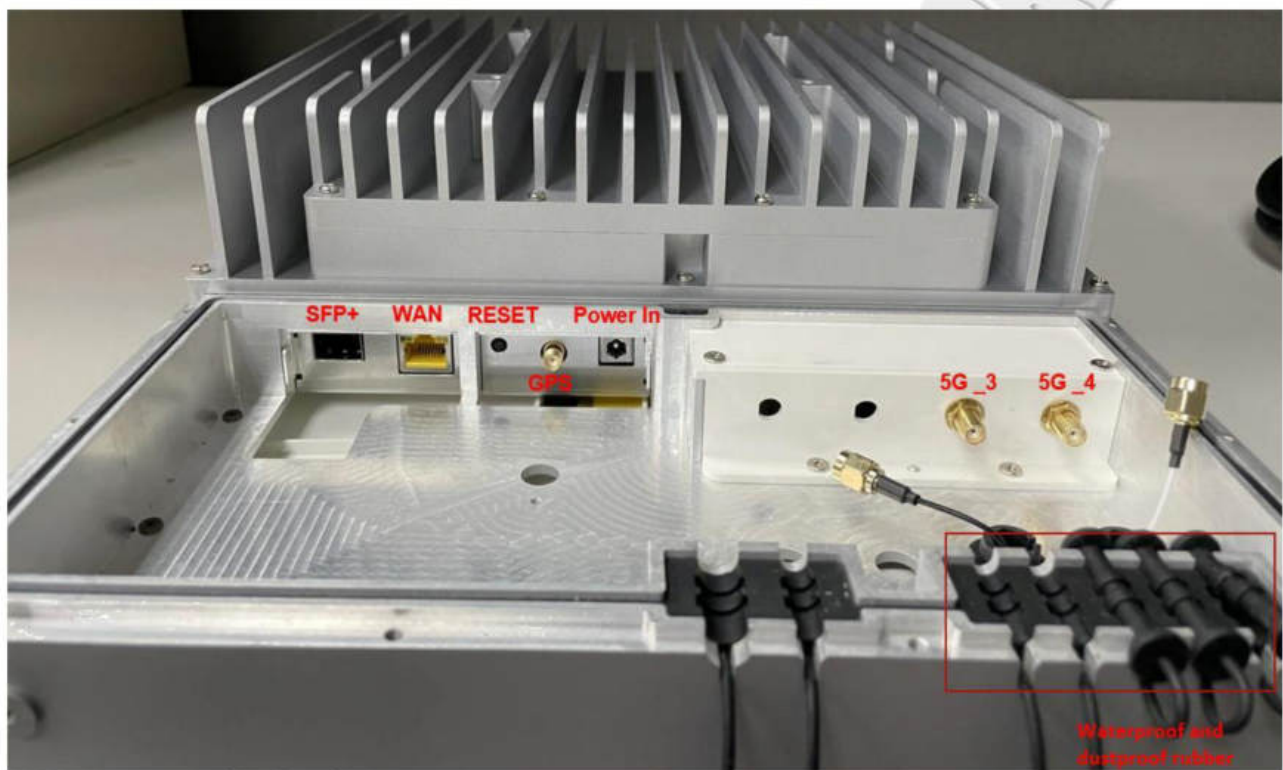


Figure 3. The Network Interfaces of the Celona 5G NR Small Cell (SCU2000/SCU2050)

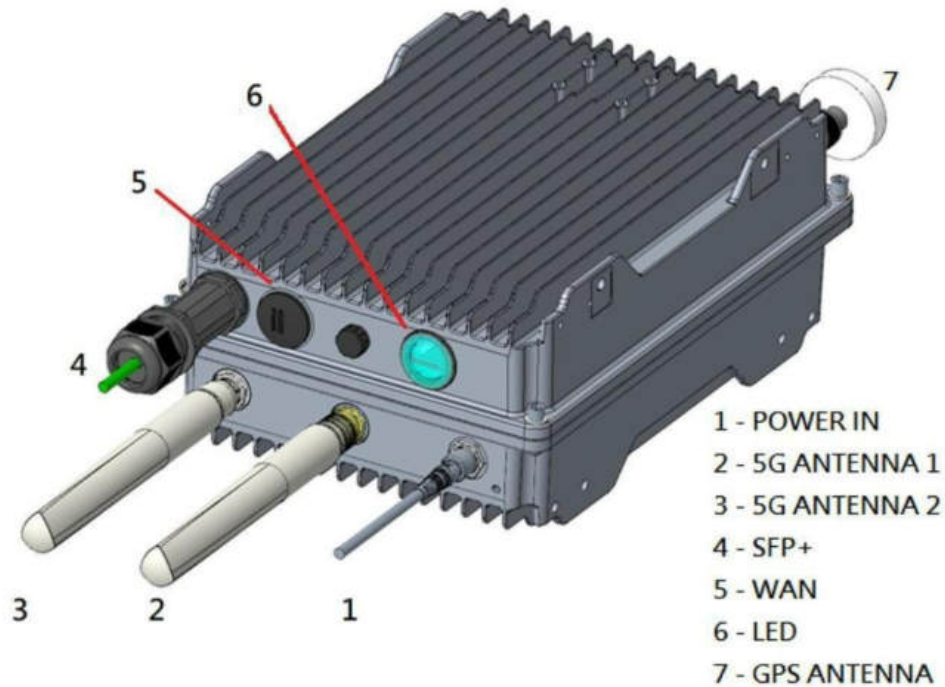


Figure 4. The Network Interfaces of the Celona 5G NR Small Cell (SCU2060/SCU2070/AP25-48)

The DBG port (Only available for SCE2120/SCE2200) serves as a debug or rescue interface with a default Static IP address of **192.168.8.100**. You can connect directly to this port using a PC or laptop and access the Admin Web via the URL **<http://192.168.8.100>**. The network settings of the DBG port can be modified through this interface. Note that it only supports Static IP mode within the **192.168.8.x** range and does not support gateway or name server configurations.

If a factory reset is performed through the Admin Web or by holding the RESET button for more than 15 seconds, the IP address of the DBG port will revert to **192.168.8.100**.

Browser Security Warning for HTTPS Access

When accessing the HTTPS version of the site, your browser may display a warning message due to the server's use of a self-signed certificate, which is not verified by a trusted Certificate Chain of Trust. To proceed, click the "Advanced" button and continue to access the website.

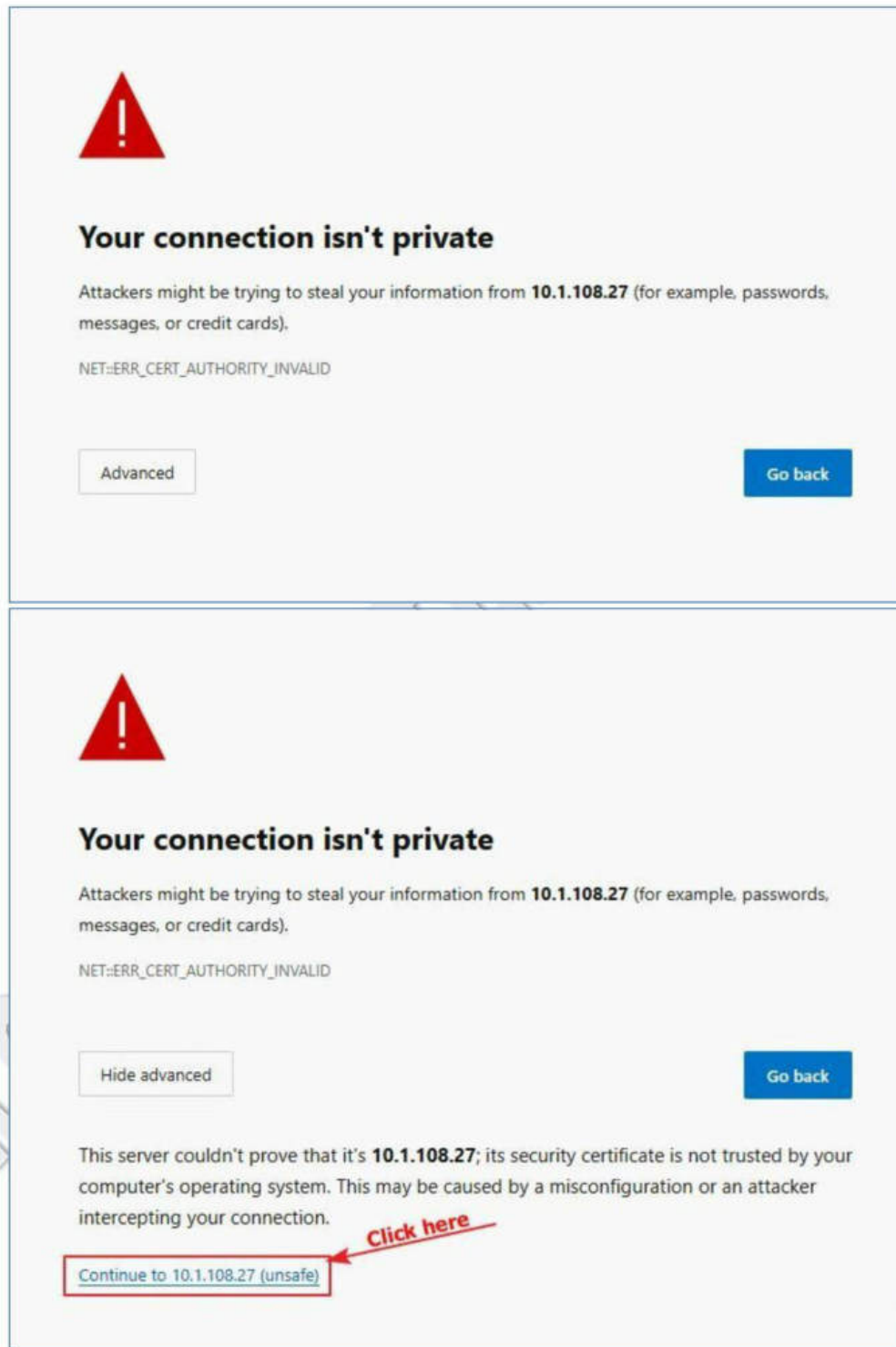


Figure 5. Access the Celona 5G NR Small Cell Admin Website via HTTPS

Admin Website Overview

Sign In

The homepage of the Admin Website features a login form. Please enter the default administrator password to gain access. The default password is structured as follows: **"AskNodeB"** followed by **the last four digits of the MAC** address associated with the WAN interface. For example, if the last four digits are **BD0A**, the default password would be **AskNodeBBD0A**



Please note that the password is case-sensitive. Ensure that the letters in the last four digits of the **MAC ID** are entered in **UPPER CASE**



Figure 6. The Celona 5G NR Small Cell Admin Website Sign-In Form

Once you have successfully logged in, the Admin Website will display the device information for the Celona 5G NR Small Cell

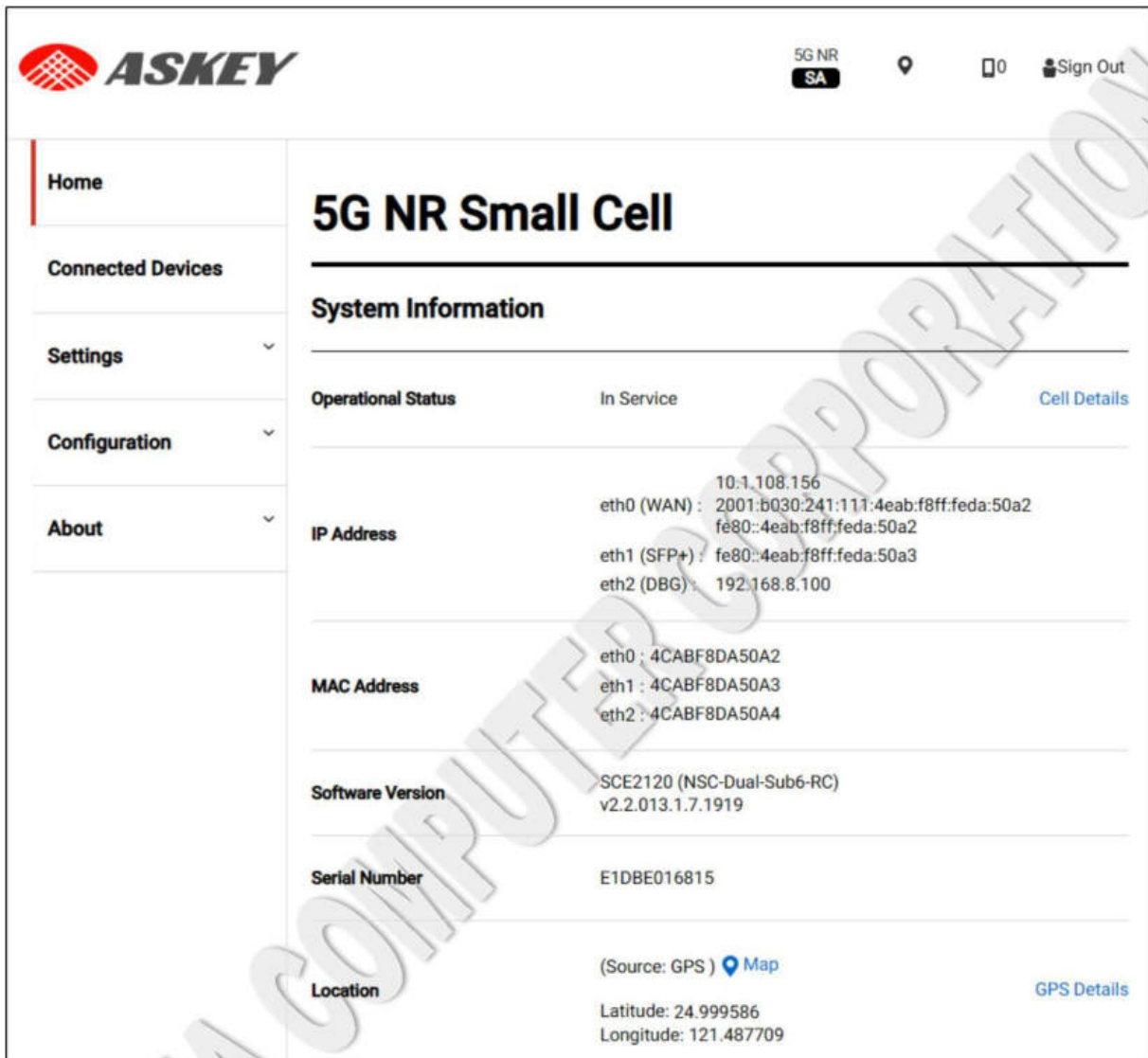


Figure 7. The Celona 5G NR Small Cell Admin Website Overview

The page presents basic information about the Celona 5G NR Small Cell, including the Operational Status, IP Address, MAC Address, Software Version, GPS Fixed Location, and a Map Illustration.

Located in the upper right corner of the Welcome page, quick reference icons provide immediate visual indicators of various statuses. These include the Service Status, GPS Status, the number of connected devices, and the Sign-in Status, as illustrated below.

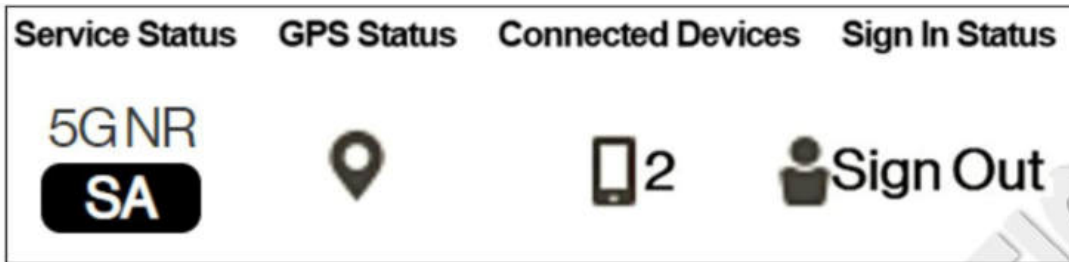


Figure 8. The Celona 5G NR Small Cell Quick Reference Icons



Figure 9. The Celona 5G NR Small Cell Service Status

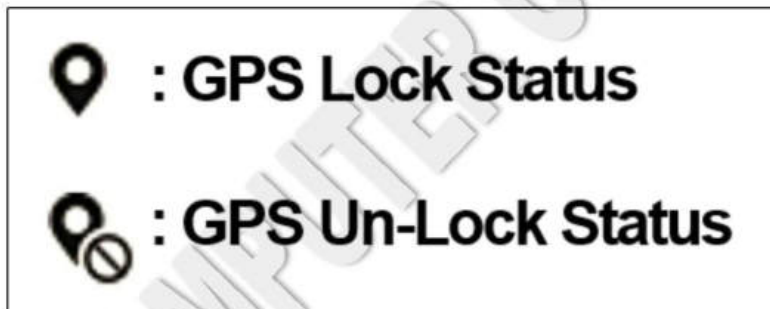


Figure 10. The Celona 5G NR Small Cell GPS Status

If the GPS location is acquired, the GPS coordinates will be displayed at the bottom of the page.

For more detailed GPS information

- Click the "GPS Detail" link to access the GPS information page
- Click the "Map" link to view the map illustration provided by ©OpenStreetMap

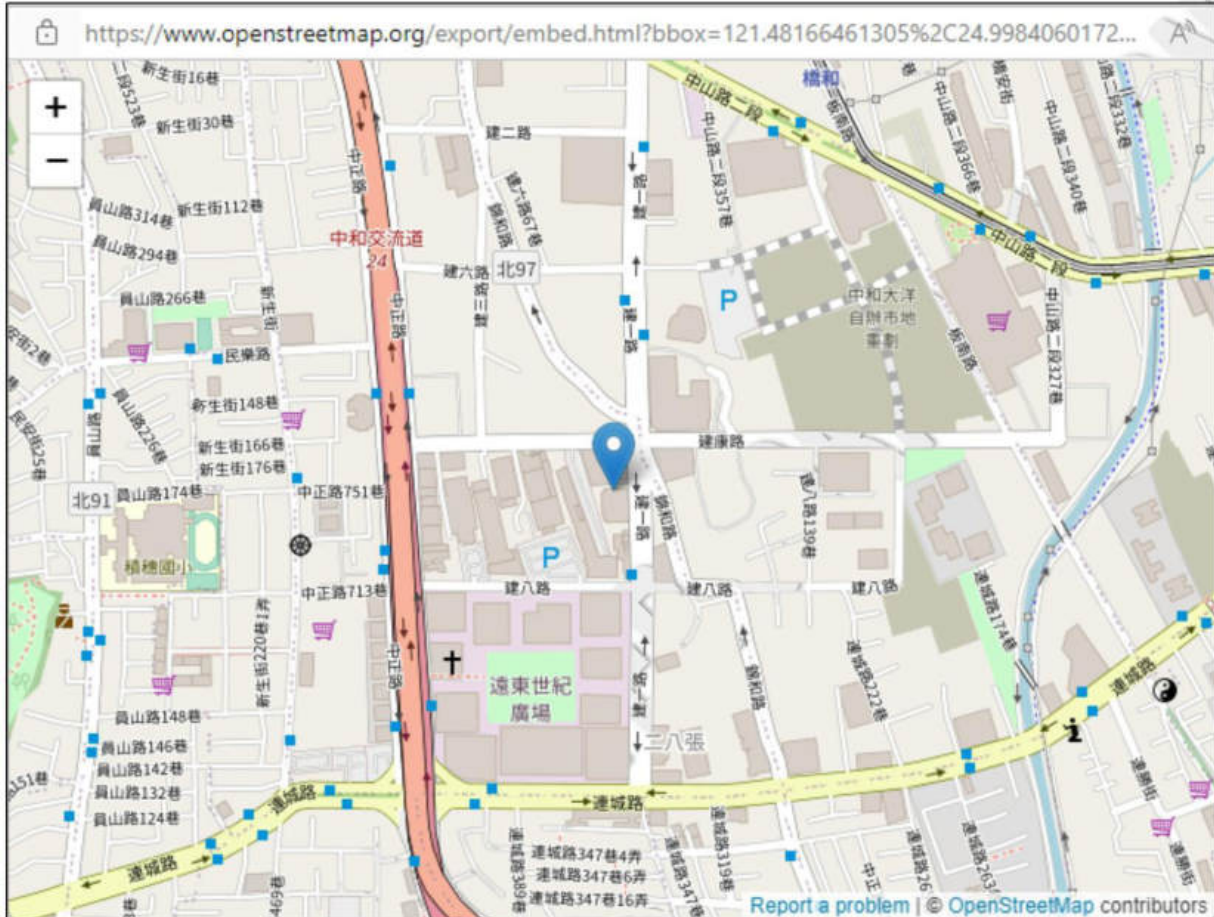


Figure 11. Map Illustration

Home

The Homepage provides all the Celona 5G NR Small Cell information.

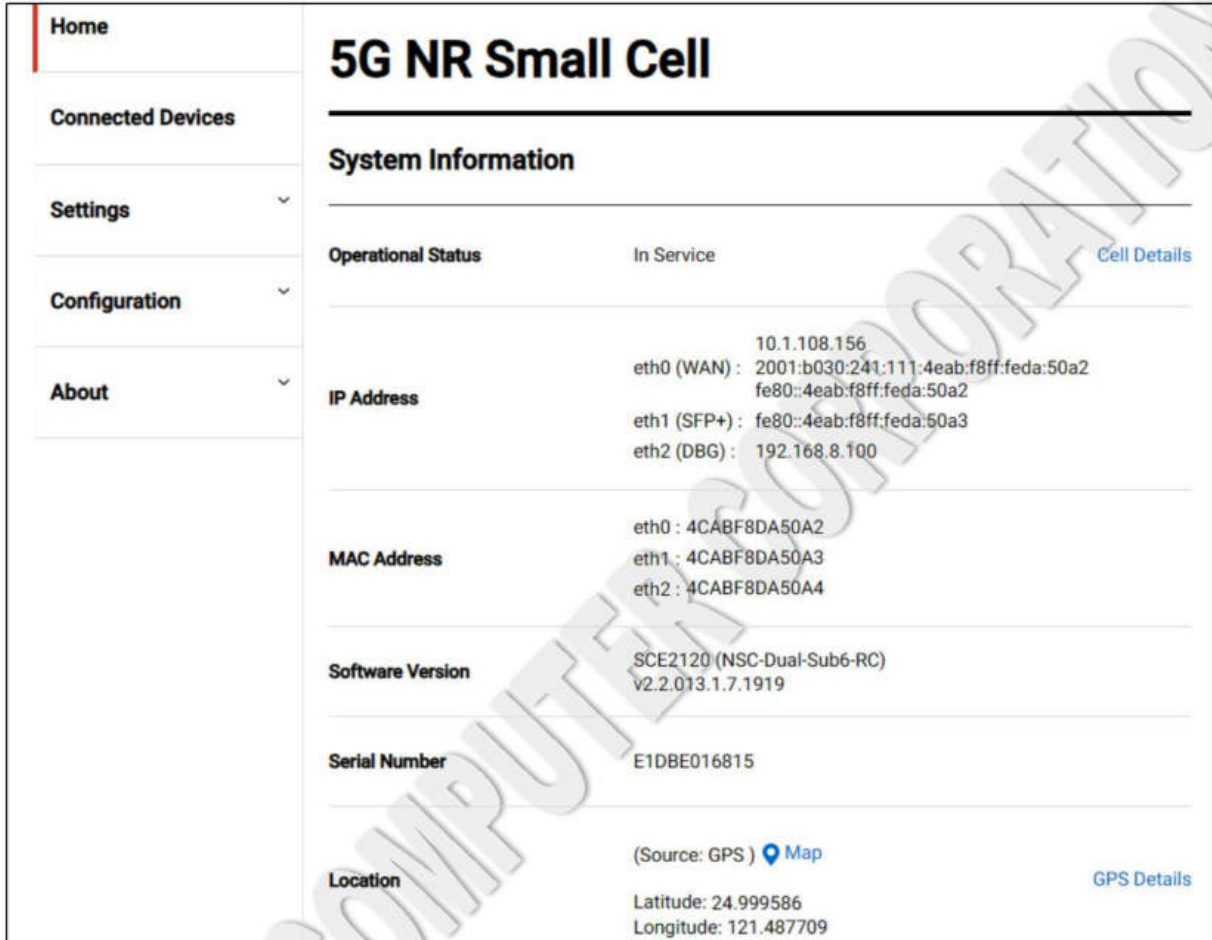


Figure 12. The Celona 5G NR Small Cell Home Page

Table 1. The Celona 5G NR Small Cell Home Page

Items	Descriptions
Operational Status	This indicates the current service condition of the Celona 5G NR Small Cell.
IP Address	Displays the Internet Protocol (IP) addresses assigned to the WAN, SFP+, and DBG interfaces of the Celona 5G NR Small Cell
MAC Address	Shows the unique Media Access Control (MAC) addresses corresponding to the device's network interfaces. This information is also located on the device's label.
Software Version	Lists the current operating software version installed on the Celona 5G NR Small Cell, which includes the model name and access mode.
Serial Number	The factory-assigned serial number for identification of the specific Celona 5G NR Small Cell unit
Location	Indicates the Celona 5G NR Small Cell's physical location as determined by the GPS coordinates.



By selecting this link, you can visualize the Celona 5G NR Small Cell's geographical position on an OpenStreetMap. This feature is accessible only when the GPS Status displays "Location Acquired."

Connected Devices

The connected devices page shows the current connected users.



Figure 13. The Celona 5G NR Small Cell Connected Devices Page

Table 2. The Celona 5G NR Small Cell Connected Devices

Item	Description
Last Data Refresh	Indicates the local time at which this page was last updated.
Total Connections	Reflects the total number of wireless devices (such as phones, tablets, or other data devices) that are presently connected and engaged in an active call or data session with the Celona 5G NR Small Cell.
Emergency Calls	Denotes the count of wireless devices engaged in an active emergency services call via the Celona 5G NR Small Cell.

Settings

Network

From the Celona 5G NR Small Cell Network page, you can check and modify the detailed network settings. The settings will be effective immediately without rebooting.

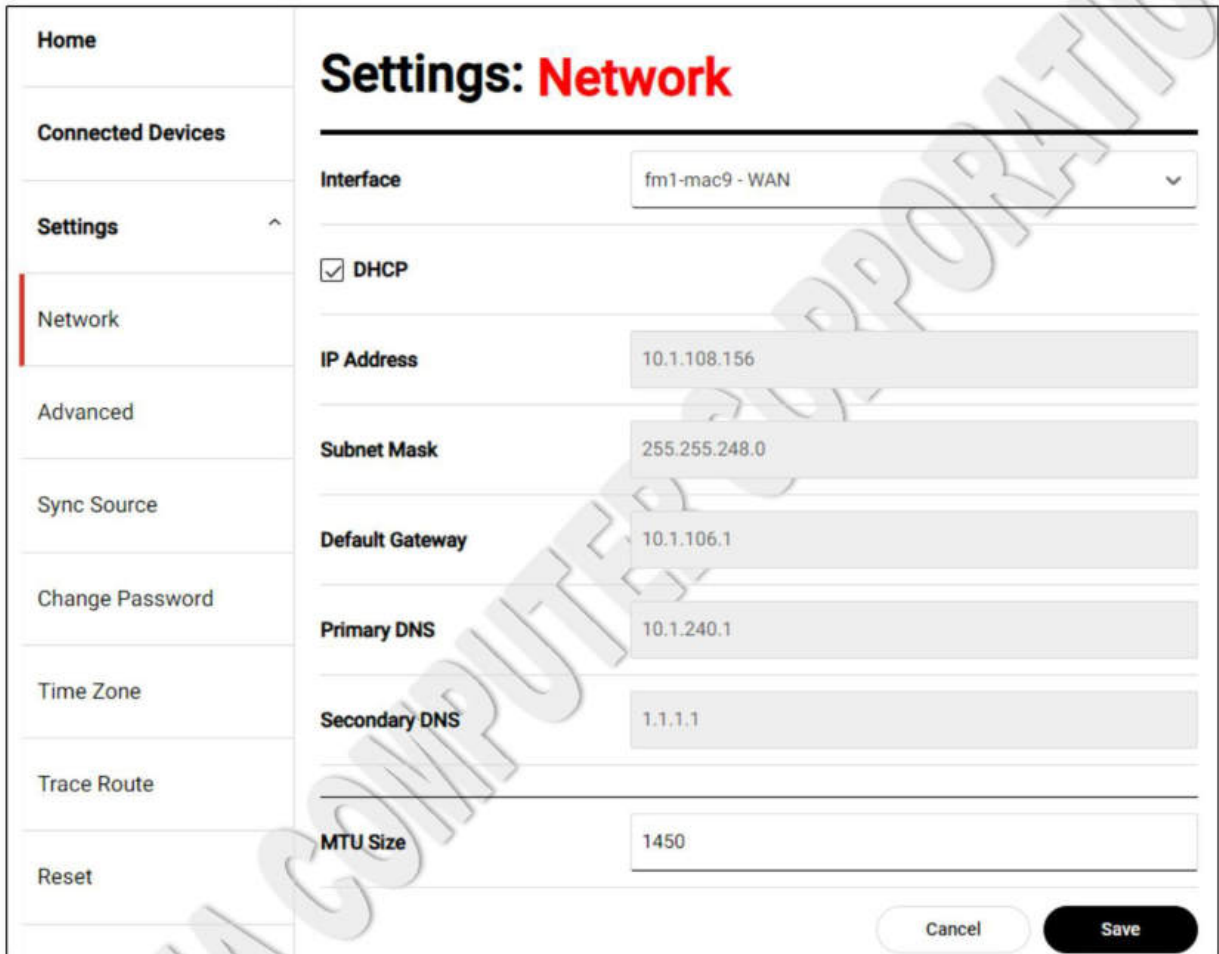


Figure 14. The Celona 5G NR Small Cell Network Page

If the device is equipped with multiple network interfaces, you can select the desired interface by clicking the dropdown menu as shown in the following illustration



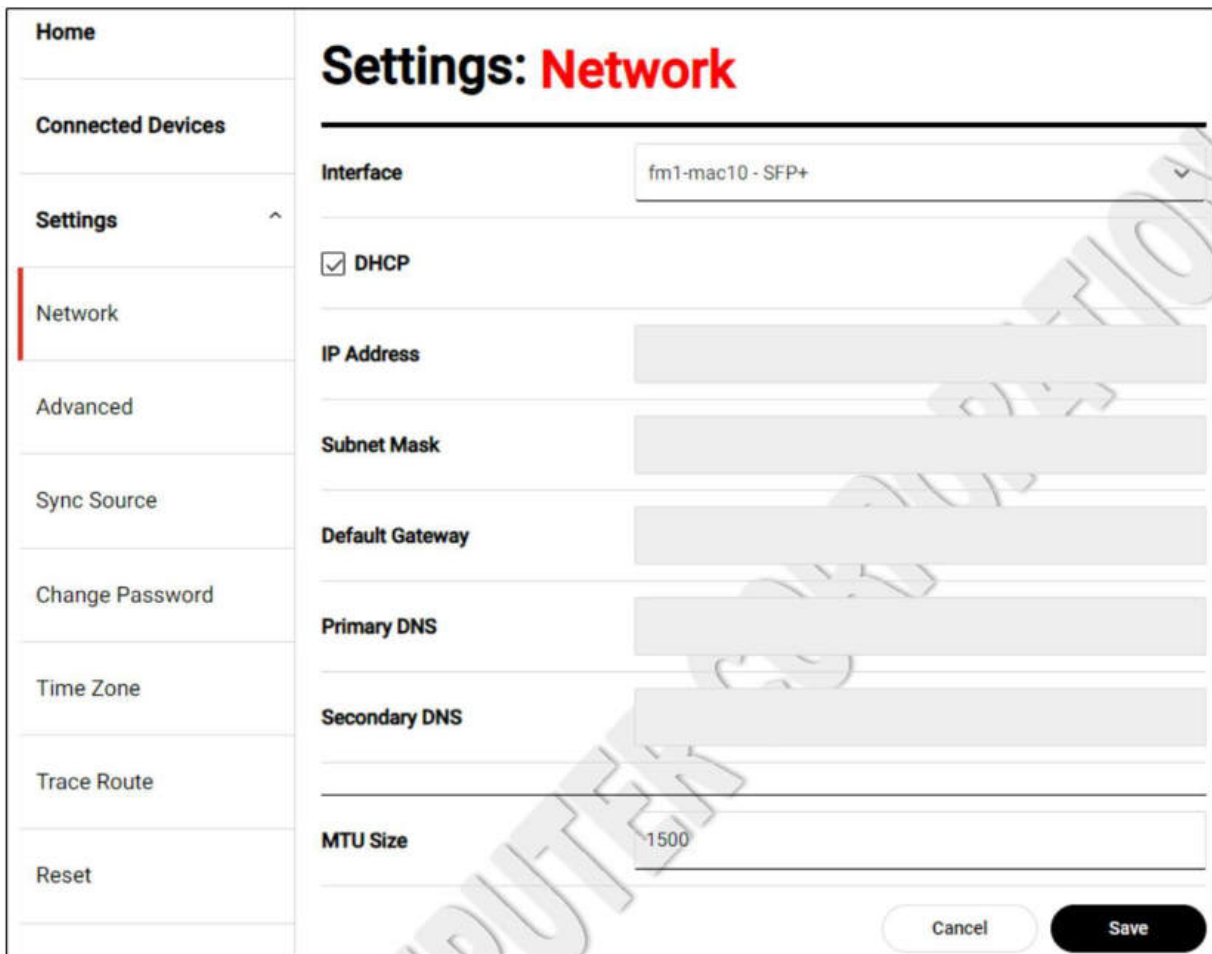
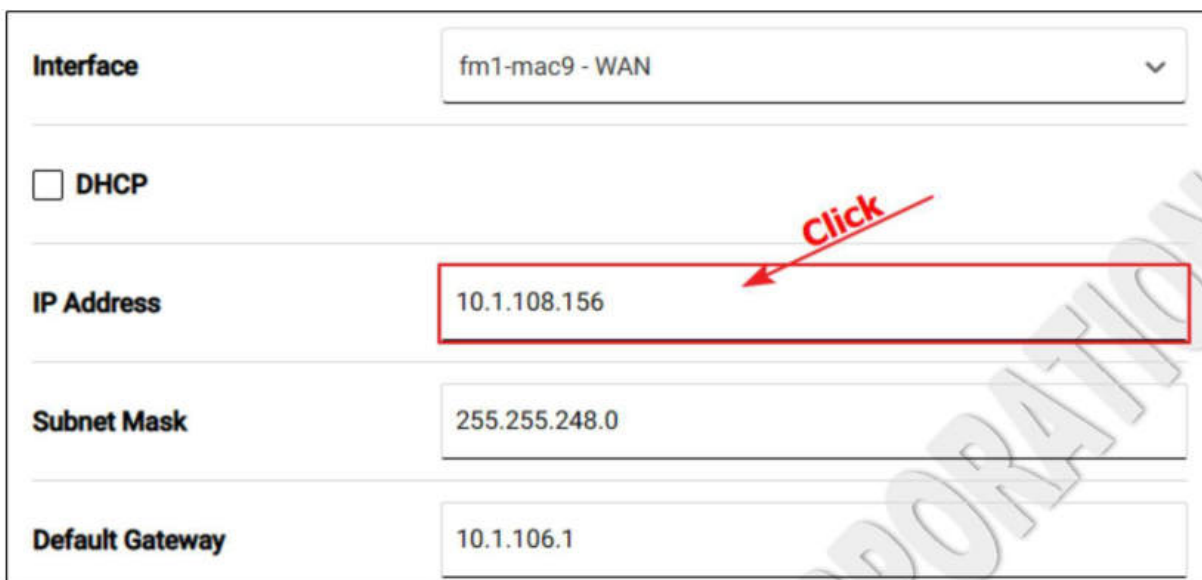


Figure 15. The Celona 5G NR Small Cell Network Page for the 2nd Interface

When the 'DHCP' checkbox is unchecked, you are able to manually configure the network settings for the specific interface. Clicking on the '**IP Address**' or '**Subnet Mask**' field will open a dialog window where you can enter multiple static IP addresses.



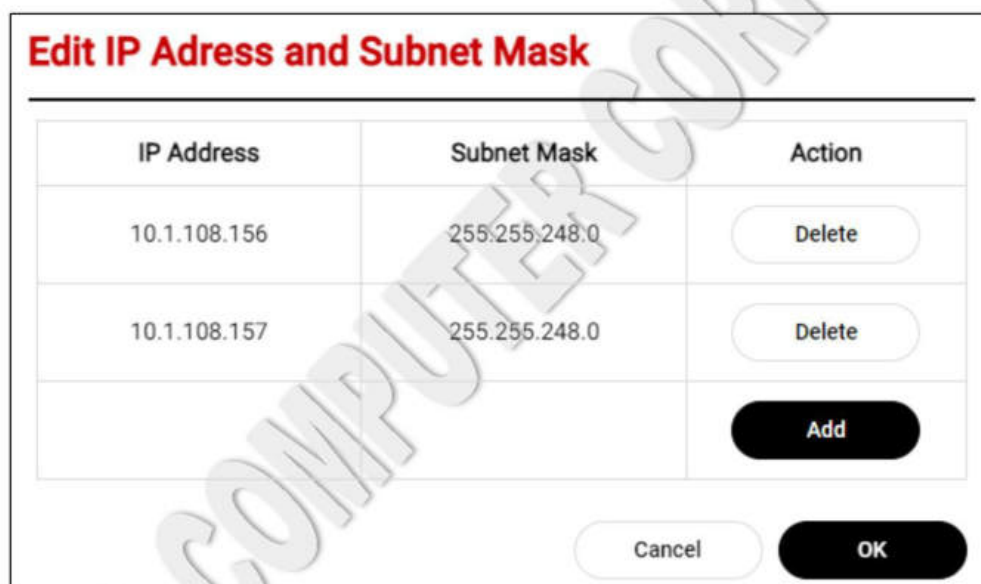
Interface: fm1-mac9 - WAN

☐ DHCP

IP Address: 10.1.108.156

Subnet Mask: 255.255.248.0

Default Gateway: 10.1.106.1



Edit IP Address and Subnet Mask

IP Address	Subnet Mask	Action
10.1.108.156	255.255.248.0	Delete
10.1.108.157	255.255.248.0	Delete
		Add

Cancel OK

Figure 16. The Multiple Static IP Addresses Dialog Window

The IP address and subnet mask can be edited directly within the dialog window. To remove an entry, click the **'Delete'** button. To add a new entry, click the **'Add'** button and enter the desired configuration.

IP addresses and subnet masks are displayed in a comma-separated format on the Admin Website. To apply the changes to multiple IP addresses without rebooting the device, click the **'Save'** button.

Settings: Network

Interface

☐ DHCP

IP Address

Subnet Mask

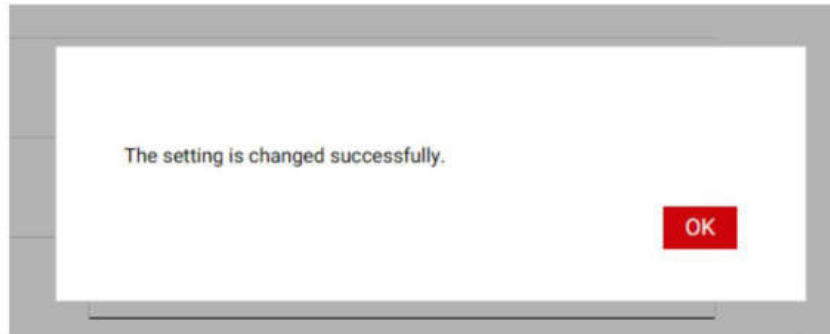
Default Gateway

Primary DNS

Secondary DNS

MTU Size

Figure 17. The Celona 5G NR Small Cell Network Page with the multiple IP addresses



After successfully updating the settings, you can use a web browser to access the Admin Website using the newly configured alternate static IP address.

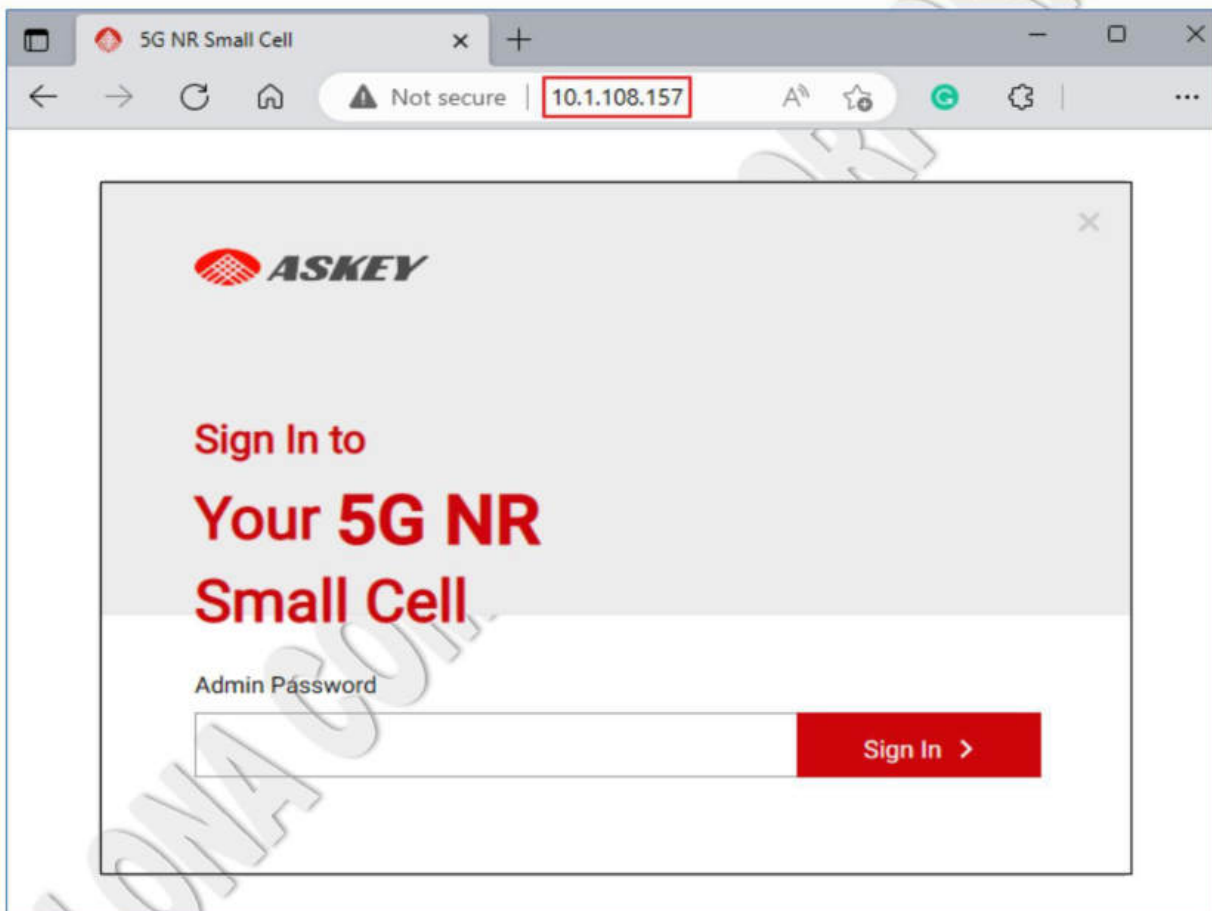


Figure 18. The Celona 5G NR Small Cell Admin Website with the alternate static IP address

If you access the Admin Website using the DBG interface IP address shown on the homepage, you'll find the DBG option in the 'Interface' dropdown menu. Selecting this option allows you to modify the DBG interface's IP address:

Interface	fm1-mac9 - WAN
☒ DHCP	✓ fm1-mac9 - WAN
IP Address	fm1-mac10 - SFP+
Subnet Mask	fm1-mac3 - DBG

Note that the DBG interface only accepts static IPs beginning with **192.168.8.**, and does not allow modifications to the gateway or name server settings. The GUI for the DBG interface will differ slightly from other ports, as illustrated below:

Home	Settings: Network Interface: fm1-mac3 - DBG IP Address: 192.168.8.100 Subnet Mask: 255.255.255.0 Cancel Save
------	---

Figure 19. The Celona 5G NR Small Cell Network Page for the DBG Interface

After you modify the new IP Address of the DBG port, you need to re-access the Admin Website with the new IP address.

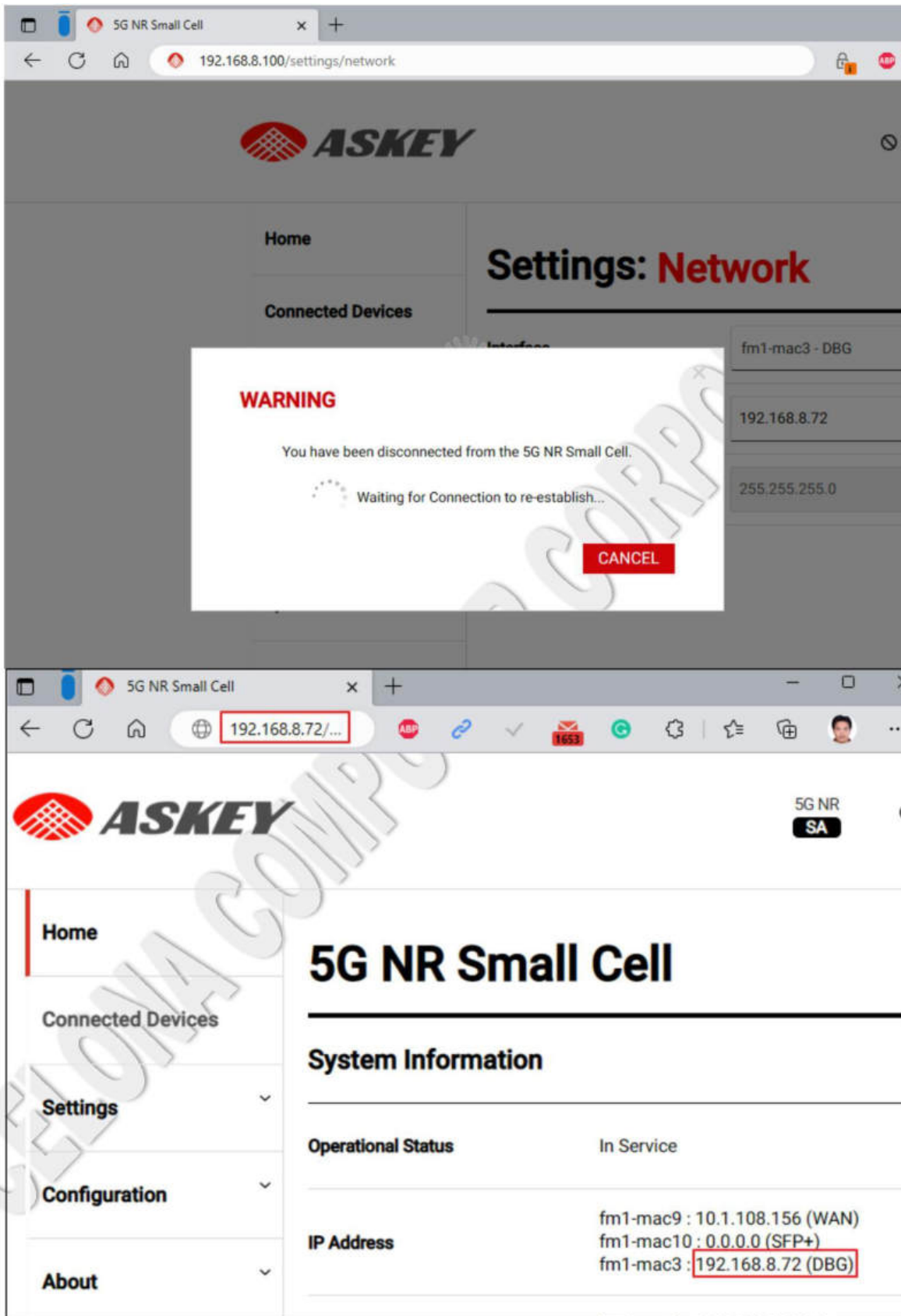


Table 3. The Celona 5G NR Small Cell Network

Item	Description
DHCP	A checkbox that, when selected (default), enables DHCP. The local DHCP server will then provide the IP configuration to the device. Users can deselect this option to manually configure multiple static IP addresses.
Default Gateway	In DHCP mode, this read-only field displays the default gateway IP address assigned by DHCP. When DHCP is disabled, the field allows for the input of a user-defined default gateway IP address.
IP Address	This field displays the IPv4 address assigned by DHCP and is read-only when DHCP is enabled. With DHCP disabled, it becomes editable, allowing the configuration of user-defined static IPv4 addresses, including multiple static IP and Subnet Mask combinations.
Subnet Mask	The DHCP-assigned Subnet Mask is displayed here and is non-editable in DHCP mode. When DHCP is off, users can input a custom Subnet Mask, supporting various static IP address and Subnet Mask combinations.
Primary/Secondary DNS	This field displays and allows configuration of both the primary and secondary DNS server IP addresses. When DHCP is enabled, these fields are read-only and show the DNS addresses provided by the DHCP server. If DHCP is disabled, you can manually enter the IP addresses for your preferred primary and secondary DNS servers to manage domain name resolution.
MTU Size	Defines the maximum size of data packets, in bytes, that the network can transmit. The standard MTU for Ethernet is 1500 bytes. Changes to the MTU size can impact network performance, and it's advisable to consult with a network professional before making adjustments.

Advanced

The Celona 5G NR Small Cell Advanced page provides all cells' information and sync status.

Home	Settings: Advanced	
Connected Devices	Last Data Refresh 11-02-2023 03:49:50 (UTC+0)	
Settings ^	5G NR Small Cell Information	
Network	GNB-IP	N2/N3: 10.1.108.156
Advanced	Sync Source-Status	GPS-DISP
Sync Source	CELL Status	In Service
Change Password	Network ID - CELL ID	00101-1
Time Zone	Physical CELL ID (PCI)	25
Trace Route	Frequency Band	77
Reset	ARFCN	649896
Configuration v	Center Frequency	3748440
About v	Subcarrier Spacing	30KHZ
	Channel Bw	40MHZ
	Carrier Bw	106
	Timeslot Config	DDDSU(4:1)
	Transmit Power	10.0 dBm

Figure 20. The Celona 5G NR Small Cell Advanced Page

Table 4. The Celona 5G NR Small Cell Advanced

Item	Description
Last Data Refresh	Indicates the local time at which this page was last updated.
5G NR Small Cell Information	This table provides detailed information about the Celona 5G NR Small Cell, including: ● GNB-IP: Displays the IP address of the gNodeB ● Sync Source-Status: Shows the synchronization source and the current sync status
Serving Cell information	If the gNB processes are active, this section displays information about the serving cell(s). The transmit power value is accurately shown when the cell status is marked as 'in-service.

Sync Source

The Celona 5G NR Small Cell Sync Source page displays the current sync state and status for each synchronization source. It also enables users to modify the sync type, priority, and detailed PTP configurations.

Home

Connected Devices

Settings

Network

Advanced

Sync Source

Change Password

Time Zone

Trace Route

Reset

Configuration

About

Settings: Sync Source

Sync Mode

GPS_PTP

Sync State

DISP

Sync Type

Auto

NTP Server

time.google.com

Source	GPS
Priority	255
Sync Status	Active
Source Status	Locked

Source	PTP
Priority	100
Sync Status	Standby
Source Status	Init
PTP Interface	eth0 - WAN
Domain Number	44
PTP Mode	G.8275.2
PTP UDP IP	0.0.0.0
PTP Status	INIT

Source	extPPS
Priority	200
Sync Status	Standby
Source Status	Init

Cancel

Save

Figure 21. The Celona 5G NR Small Cell Sync Source Page

The “**Sync Mode**” feature offers two options “**GPS_PTP**” and “**extPPS_PTP**”, as illustrated below:

Sync Mode	GPS_PTP
Sync State	✓ GPS_PTP
Sync Type	extPPS_PTP

Figure 22. The Celona 5G NR Small Cell Sync Mode

1. GPS_PTP Sync Mode:

When selected, this mode utilizes GPS signals to acquire precise timing information. It also employs the **Precision Time Protocol (PTP)** to synchronize clocks across the network. This mode is highly accurate and ideally suited for environments where GPS signal availability is reliable.

2. extPPS_PTP Sync Mode:

This mode relies on an **external Pulse Per Second (extPPS)** signal for timing, supplemented by PTP for network clock synchronization. It is typically preferred in situations where an external timing source is necessary or when GPS signals are obstructed or unavailable.

The “**Sync Type**” can be configured as either “**Auto**” or “**Manual**”:

1. Auto Type:

The device automatically selects the most suitable synchronization source.

2. Manual Type:

If you select this option, you need to specify the synchronization source based on the selected Sync Mode. For **GPS_PTP Sync Mode**, choose either ‘**GPS**’ or ‘**PTP**’ as the synchronization source. In **extPPS_PTP Sync Mode**, the source should be specified as either ‘**extPPS**’ or ‘**PTP**’

Sync Type	Manual
Sync Source	GPS
Source	✓ GPS
Priority	PTP

The PTP Mode can be set to either **G.8275.1** or **G.8275.2**. If **G.8275.2** is selected as the mode, you are also required to specify the **PTP UDP IP** address.



PTP Mode: G.8275.1

Buttons: Cancel, Save



PTP Mode: G.8275.2

PTP UDP IP: 10.1.106.22

Buttons: Cancel, Save

Table 5. The Celona 5G NR Small Cell Sync Source

Item	Description
Sync Mode	Choose GPS_PTP for synchronization using both GPS and PTP , or select extPPS_PTP when extPPS and PTP are required for precise timing.
Sync State	Displays the current synchronization state, which can be INIT , HARD_SYNC , DISP , RESYNC , or HOLDOVER . Cell processes will commence once the state reaches DISP
Sync Type / Sync Source	This field determines the synchronization source selection mechanism. ' Auto ' type automatically selects from multiple sync sources based on priority, while ' Manual ' requires specifying the sync source.
Priority	In ' Auto ' sync type, sources are tested in order of their priority value, which ranges from 1 to 255..
Status	Shows the synchronization status of either GPS or PTP, which can be either Standby or Active
PTP Interface	Identifies the network interface used by the gNB to connect to the PTP server.
Domain Number	Defines the PTP clock domain, with possible values ranging from 0 to 127
PTP Mode / PTP UDP IP	Specifies the current PTP mode, supporting either G.8275.1 or G.8275.2 . If G.8275.2 is selected, the corresponding PTP UDP IP must also be specified

Time Zone

The Celona 5G NR Small Cell Time Zone page enables users to adjust the Time Zone Offset, which affects the data refresh times displayed on the Admin Website

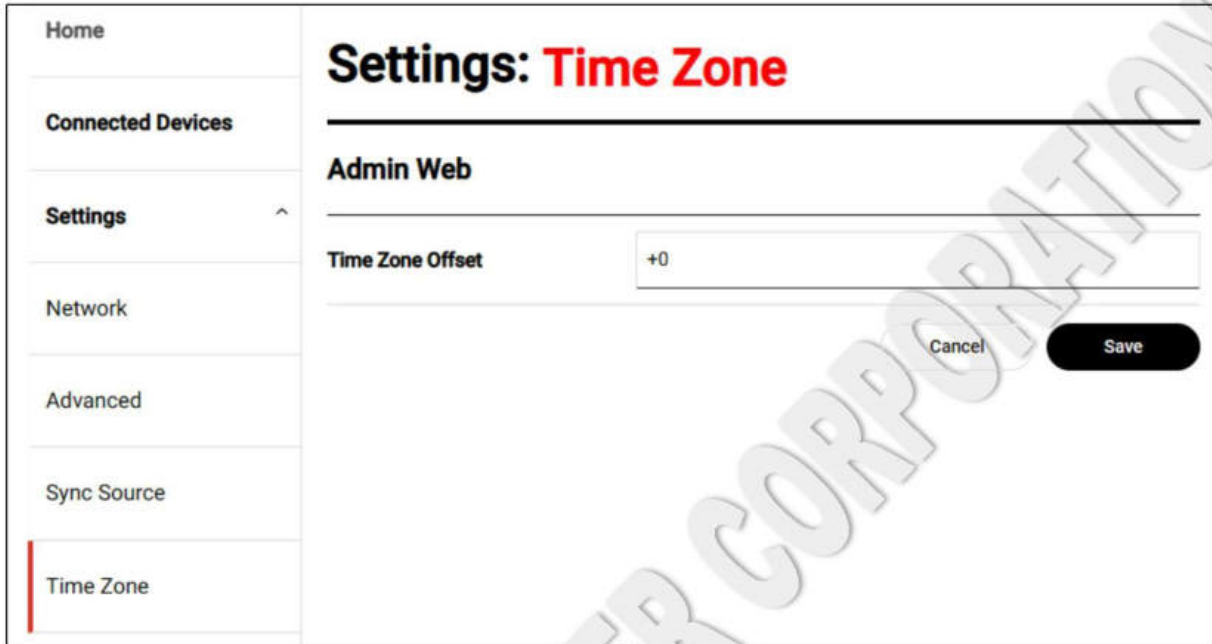
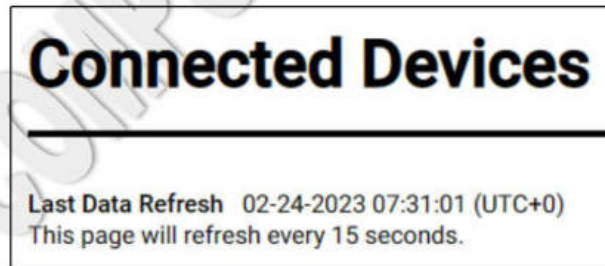


Figure 23. The Celona 5G NR Small Cell Time Zone Page

The default Time Zone Offset is set to **+0 (UTC)**. The page automatically refreshes, and the time of the last data refresh is displayed as shown in the following illustration:



The Time Zone Offset can be adjusted to any integer value ranging from **-12** to **+14**. Changes take effect immediately without the need to reboot the system.



Trace Route

The Celona 5G NR Small Cell Trace Route page enables you to test the network path to a specified destination using either a Target **FQDN (Fully Qualified Domain Name)** or an **IP address**. You can choose from three types of probes: **UDP**, **ICMP ECHO**, or **TCP SYN**. This feature is particularly useful for diagnosing network issues and visualizing the route that data packets take to reach their destination.

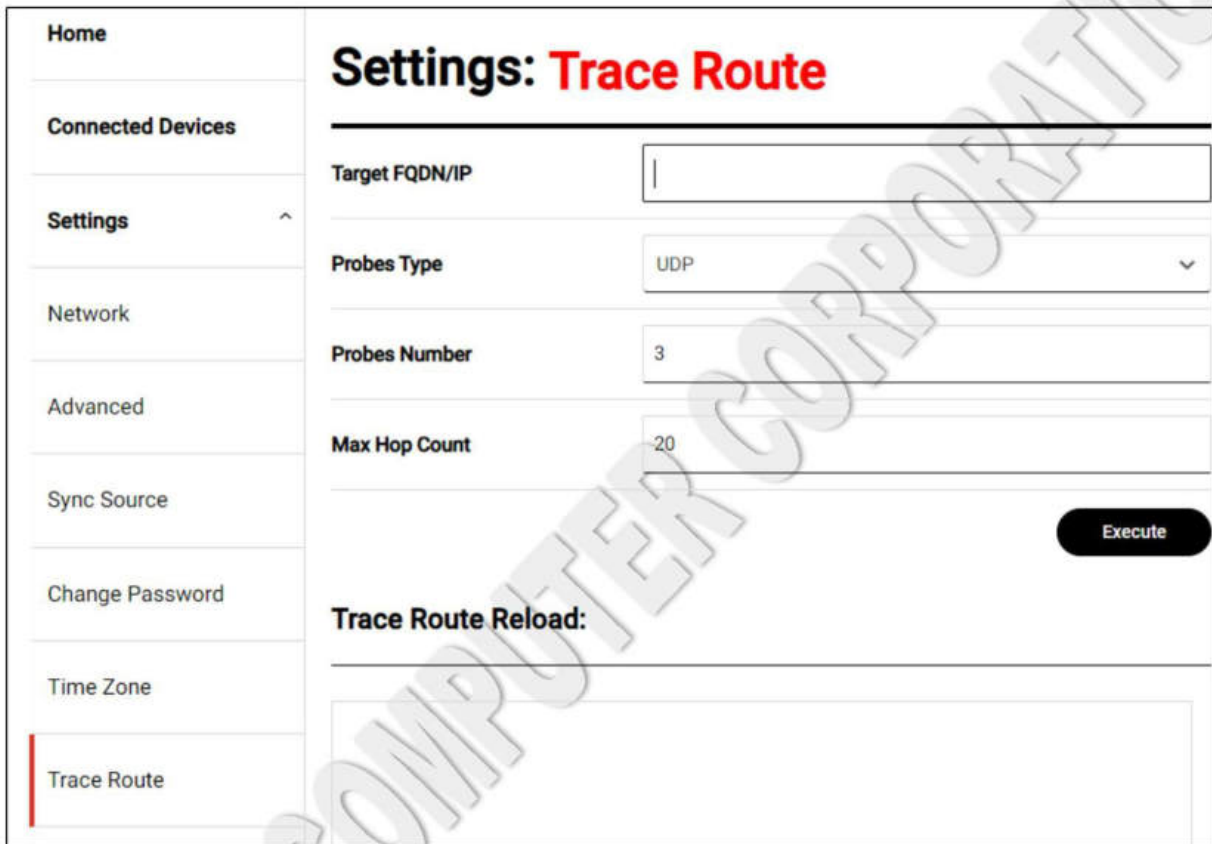


Figure 24. The Celona 5G NR Small Cell Trace Route Zone Page

For example, to verify the network path from the 5G NR Small Cell to the Google website, enter '**www.google.com**' in the Target FQDN/IP field and click '**Execute**'. Shortly after, the tracing results will appear in the text area below, as illustrated in the subsequent image:

```
tracert to www.google.com (172.217.163.36), 20 hops max, 60 byte packets
1  ***
2  211.75.141.254  6.835 ms  6.802 ms  6.731 ms
3  ***
4  220.128.3.114  3.439 ms  220.128.2.78  3.411 ms  220.128.3.122  3.084 ms
5  ***
6  220.128.8.25  3.086 ms  220.128.16.101  2.682 ms  220.128.12.57  2.212 ms
7  72.14.209.178  3.522 ms  72.14.202.162  3.094 ms  72.14.209.178  4.261 ms
8  108.170.244.33  3.696 ms  3.376 ms *
9  172.217.163.36  4.528 ms  108.170.244.129  5.424 ms  209.85.245.64  5.025 ms
```

Reset

The Celona 5G NR Small Cell Reset page provides users with the capability to remotely restart or perform a factory reset on the 5G NR Small Cell.

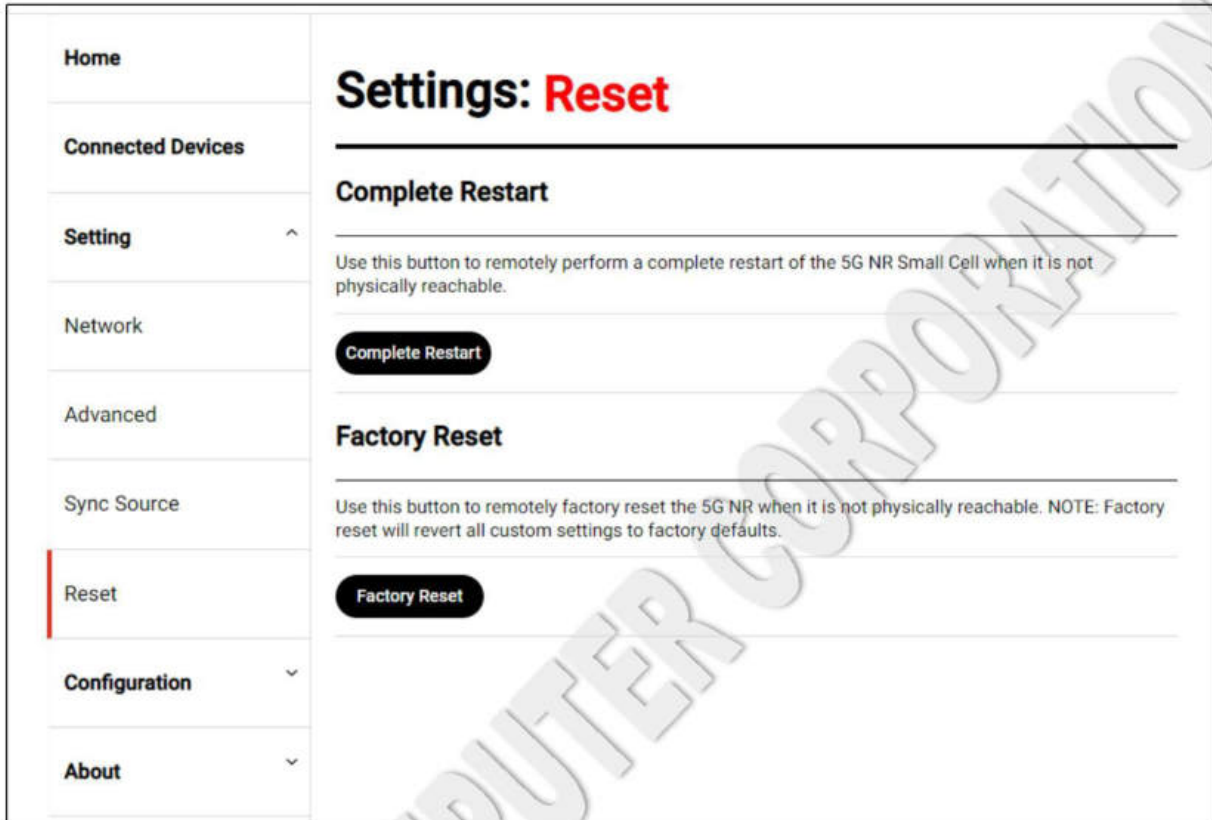
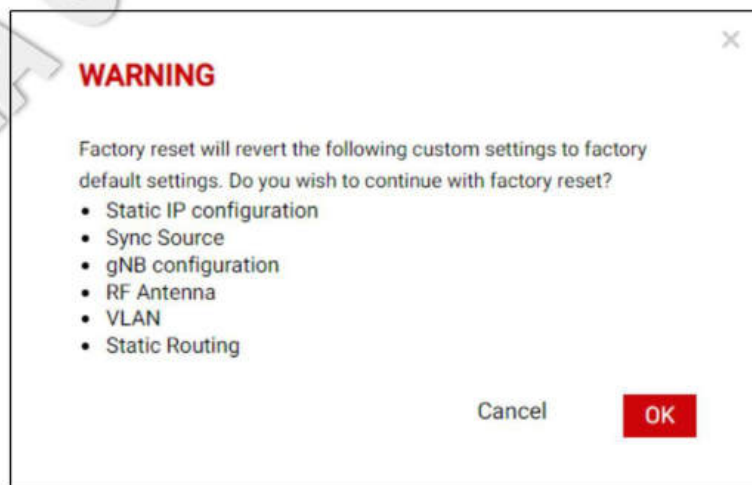


Figure 25. The Celona 5G NR Small Cell Reset Page

Initiating a factory reset will revert all custom settings back to the factory defaults. When you click the '**Factory Reset**' button on the Admin Website, the following prompt message will appear:



"If you encounter incorrect network settings on the Celona 5G NR Small Cell or cannot obtain the current IPv4 address, thereby preventing access to the Admin Website via IPv4, you can still access the site using the MAC to IPv6 link-local address. Navigate to **[http://\[IPv6 Link-Local Address\]/](http://[IPv6 Link-Local Address]/)** from any device on the same LAN. For detailed instructions, refer to the section '**Access the Admin Website by IPv6 Link-Local Address**' in Chapter 2.

Alternatively, you can reset the WAN port IP address to a static IP **192.168.8.101** by holding the reset button for more than **30** seconds and then releasing it. If the Celona 5G NR Small Cell still cannot reach, you can perform a factory reset by holding the reset button for more than **10** seconds and then releasing it. This action will trigger the device to revert to factory default settings and obtain a new IPv4 address from the DHCP server. The location of the reset button is shown in the illustration below.

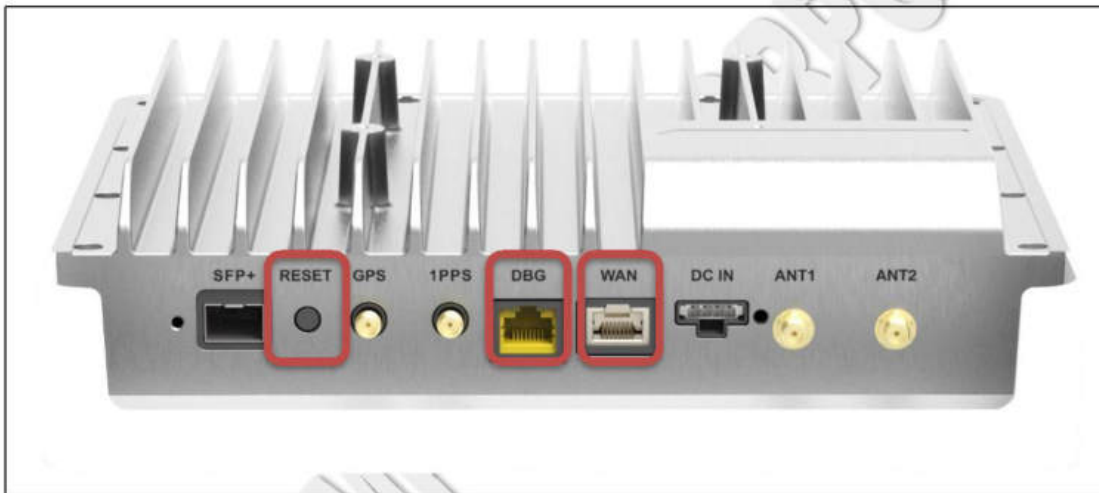


Figure 26. The Celona 5G NR Small Cell reset button (SCE2120/SCE2200)

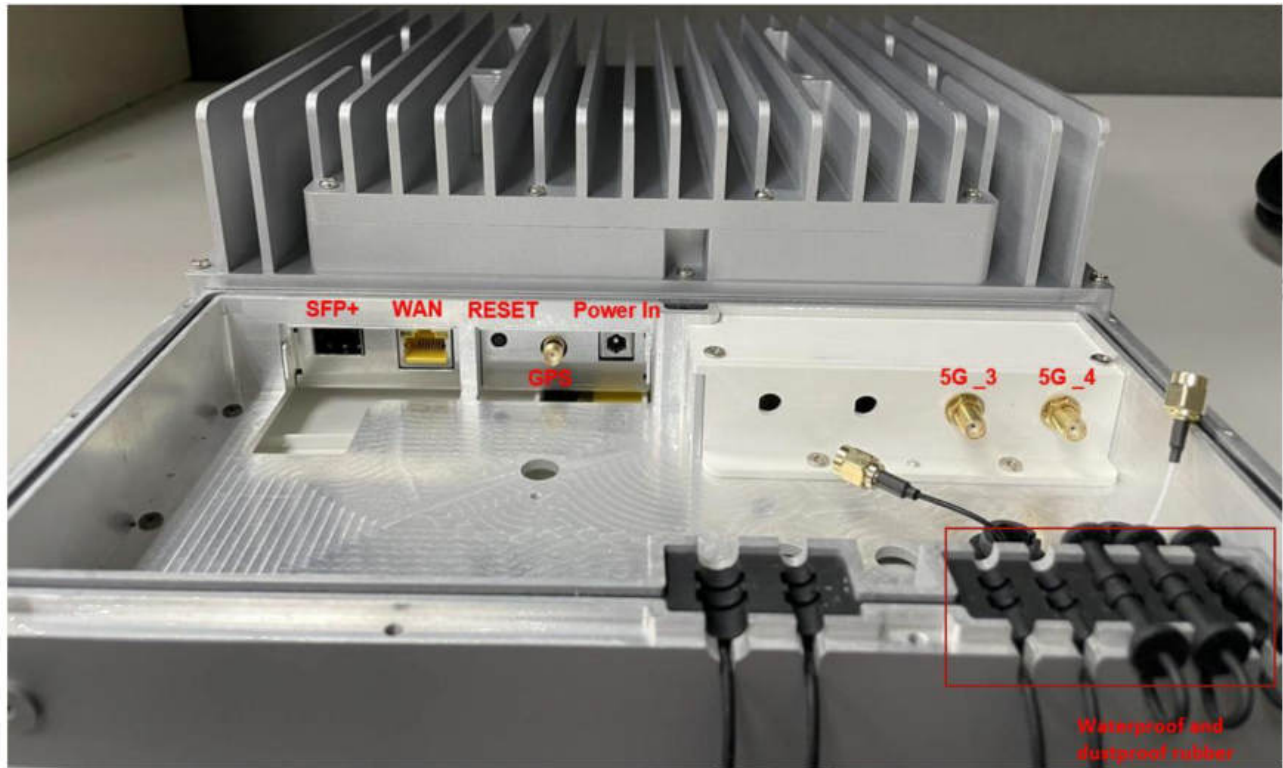


Figure 27. The Celona 5G NR Small Cell reset button (SCU2000/SCU2050)

Configuration

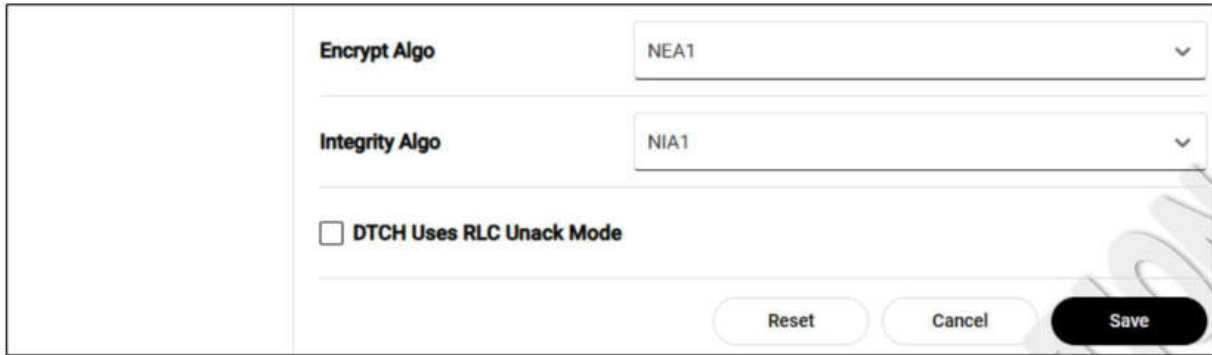
gNB

This Celona 5G NR Small Cell gNB page displays the principal configurations of the CU and DU. On the Web GUI, these items will be read-only when using the remote provisioning method, except for the gNB IP address. The gNB IP address value may correspond to one of the physical network interfaces or VLAN interfaces.



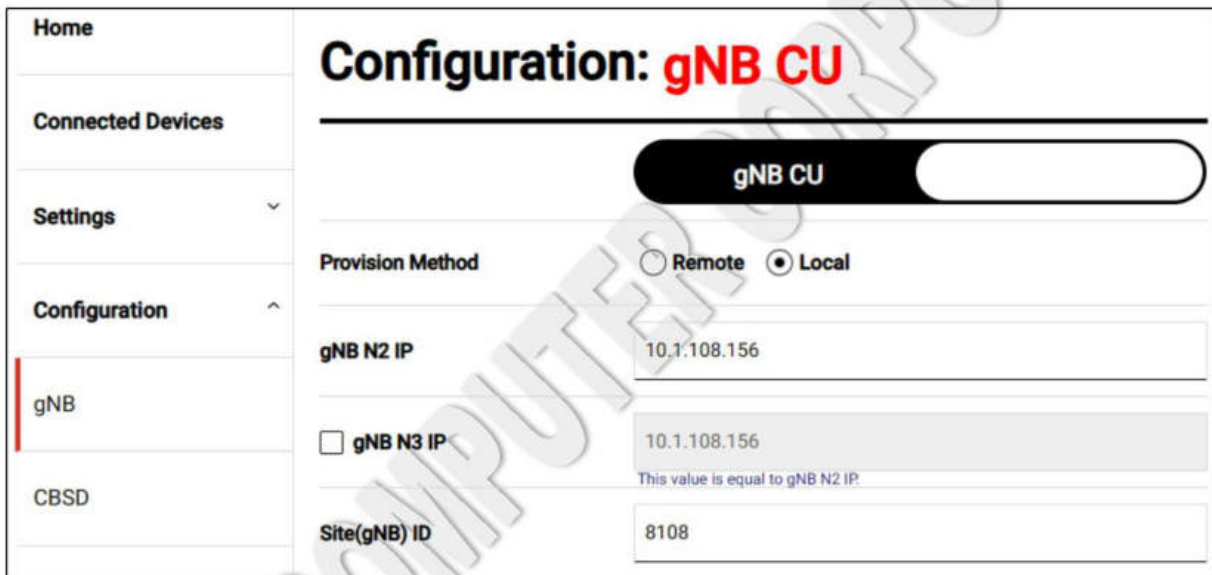
Configuration: gNB CU	
gNB CU	
Provision Method	☐ Remote ☒ Local
gNB N2 IP	10.1.108.156
☐ gNB N3 IP	10.1.108.156 This value is equal to gNB N2 IP.
Site(gNB) ID	8108
gNB ID Length	22
Cell ID	1
TAC	1
MCC	001
MNC	01
AMF IP	10.1.106.51
UE Inact Timer	day30
EPS Fallback By UE CAP	Enabled

Figure 28. The Celona 5G NR Small Cell gNB Page



Encrypt Algo	NEA1
Integrity Algo	NIA1
☐ DTCH Uses RLC Unack Mode	
Reset Cancel Save	

You can switch to the local provisioning method by selecting **'Local'** in the Provision Method options. After adjusting the configurations, click the **'Save'** button to save these changes. If you encounter any incorrect settings that prevent the cell from providing 5G NR service, you can reset to the default settings by clicking the **'Reset'** button.



Home
Connected Devices
Settings
Configuration
gNB
CBSD

Configuration: gNB CU

gNB CU

Provision Method
☐ Remote
☒ Local

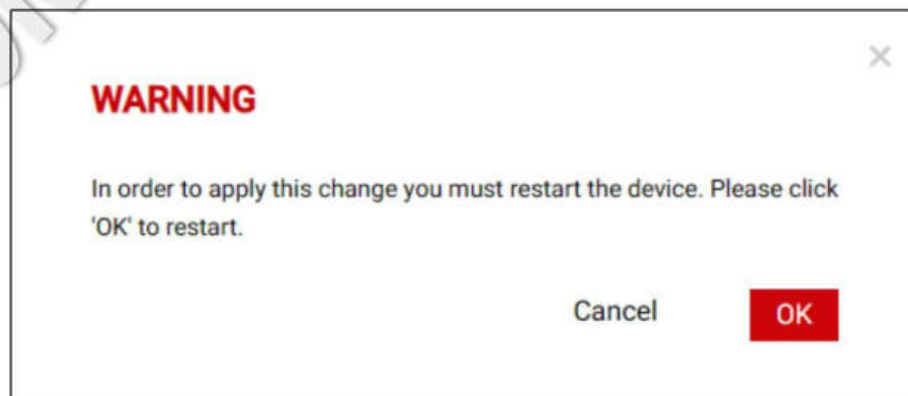
gNB N2 IP
10.1.108.156

☐ gNB N3 IP
10.1.108.156
This value is equal to gNB N2 IP.

Site(gNB) ID
8108

Figure 29. The Local Provision Method in gNB Configuration

After you save the new configurations, the Admin Website will display a message prompting you to restart the device. This ensures the changes are applied successfully.



×

WARNING

In order to apply this change you must restart the device. Please click 'OK' to restart.

Cancel

OK

gNB N2 IP	10.1.108.156
☒ gNB N3 IP	10.1.108.157

The diagram illustrates the network architecture for a 5G Small Cell. It shows the connection between an iPhone Client, a PoE Injector, a PoE Switch, a 5G Small Cell, a 5G Core (5GC), and a 5G Baseband Unit (BBU). The diagram includes labels for various ports and interfaces, such as N2/N3/OAM, WAN Port, SFP+(VLAN), and DBG Port. It also shows the WebGUI and Askey ACS (Remote Access) interfaces for configuration and management.

WebGUI

1. Configuration
2. SW upgrade
3. Log Download

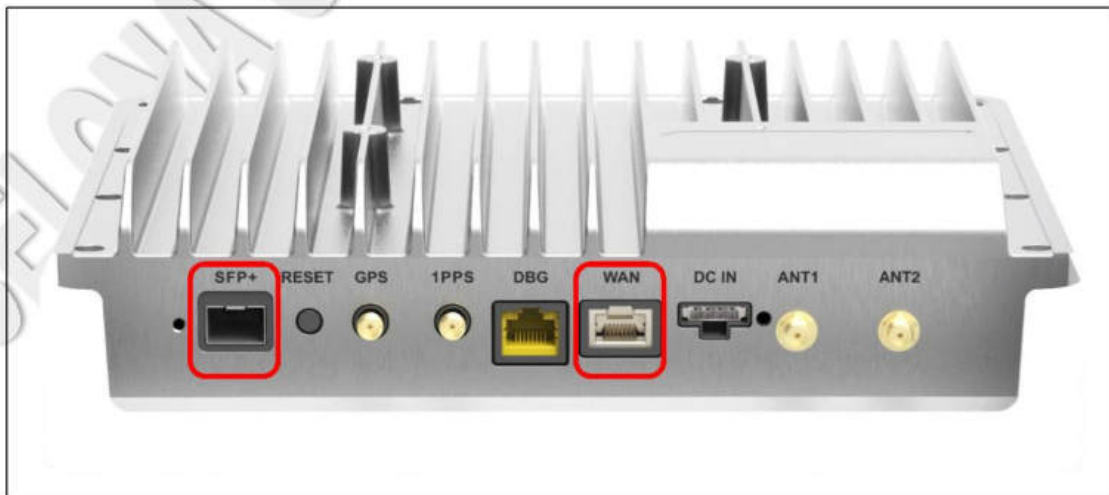
Askey ACS (Remote Access)

1. TR69 for 4G/5G NSA/SA
2. Configuration Management
3. Fault Management
4. Performance management
5. Security Management
6. SW upgrade
7. Log Tracing

WebGUI (Local Access)

1. Configuration
2. SW upgrade
3. Log Download

Figure 30. The Celona OAM Architecture



Configuration: VLAN

Interface

fm1-mac9 - WAN
▼

VLAN Interface	Tag ID	DHCP	IP Address	Action	
fm1-mac9-vlan5	5	NO	192.148.2.12	Delete	Edit
fm1-mac9-vlan22	22	YES	0.0.0.0	Delete	Edit
fm1-mac9-vlan23	23	NO	192.158.1.22	Delete	Edit

Table 6. The Celona 5G NR Small Cell CU Configuration

Items	Descriptions
Provision Method	This specifies whether the configuration is 'Remote' or 'Local' Remote: Configuration is managed by a remote server, such as an Autonomous Management Platform (AMP), which provisions the primary settings to the 5G NR Small Cell. Local: The 5G NR Small Cell uses configurations stored locally. Users can edit the primary gNB settings via the Admin Web GUI
gNB N2 IP/gNB N3 IP	Assigns the IP addresses for the gNodeB, which must correspond to the WAN port, SFP+ port, or a VLAN interface. It allows separate specification for the gNB local interfaces with the AMF (N2 interface) and the UPF (N3 interface) within the gNB configuration page. By default, the IP address is the same for both N2 and N3 interfaces
Site(gNB) ID	Uniquely identifies a gNB within a Public Land Mobile Network (PLMN)
gNB ID Length	Determines the bit length for gNB ID encoding, ranging from 22 to 32 bits.
Cell ID	Denotes the physical-layer Cell ID used in the signal. The ID is presented in decimal format.
TAC	Tracking Area Code, a component of the Tracking Area Identity (TAI) that uniquely identifies the Tracking Area.
MCC	Mobile Country Code, identifies the country of the mobile subscriber.
MNC	Mobile Network Code, identifies the home mobile network of the subscriber.
AMF IP	The IP address for the Access and Mobility Management Function, handling the signaling traffic.
UE Inact Timer	The time period a User Equipment (UE) remains inactive without sending or receiving user data.
EPS Fallback By UE CAP	Allows a UE to switch to the 4G LTE network for services not available on 5G, depending on the device's capabilities.
Encrypt Algo	NEA (Encryption Algorithm for 5G). It supports the NEA1 , NEA2 , and NEA3
Integrity Algo	EIA (EPS Integrity Algorithm). It supports the NIA1 , NIA2 , and NIA3

You can click the upper button to switch the configuration from gNB CU to gNB DU, and vice versa.

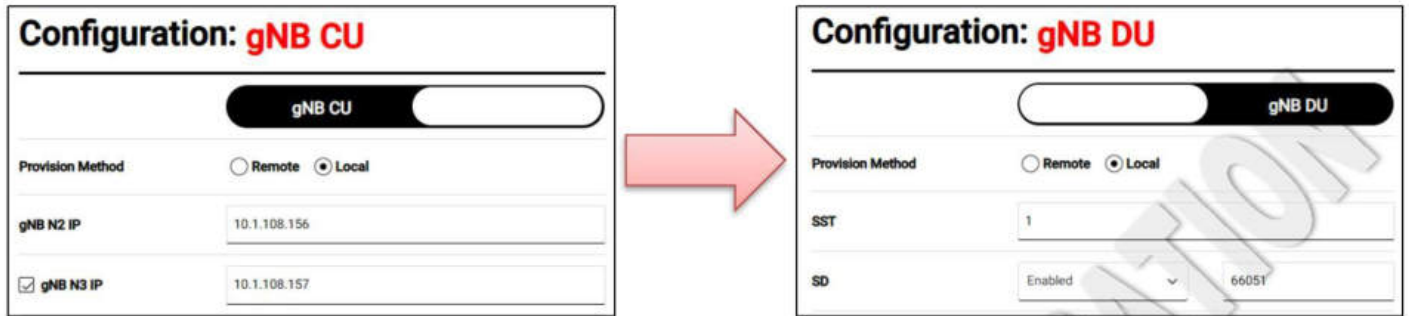


Figure 31. The Celona 5G NR Small Cell Switch CU or DU Configuration

There are many items in the DU configuration tab; they can be split by Common Items, Bandwidth Profile, NR ARFCN Profile, and Time Slot Profile.

Configuration: gNB DU

gNB DU

Provision Method

☐ Remote
☒ Local

SST

1

SD

Enabled

66051

NR Band

48

Physical Cell ID

25

Uplink Modulation

☒ QAM64
☐ QAM256

Uplink Layer

☒ One Layer
☐ Two Layers

UL Dmrs-AdditionalPosition

☐ Position 1
☒ Position 2

QRxLevMin

-50

QQualMin

-30

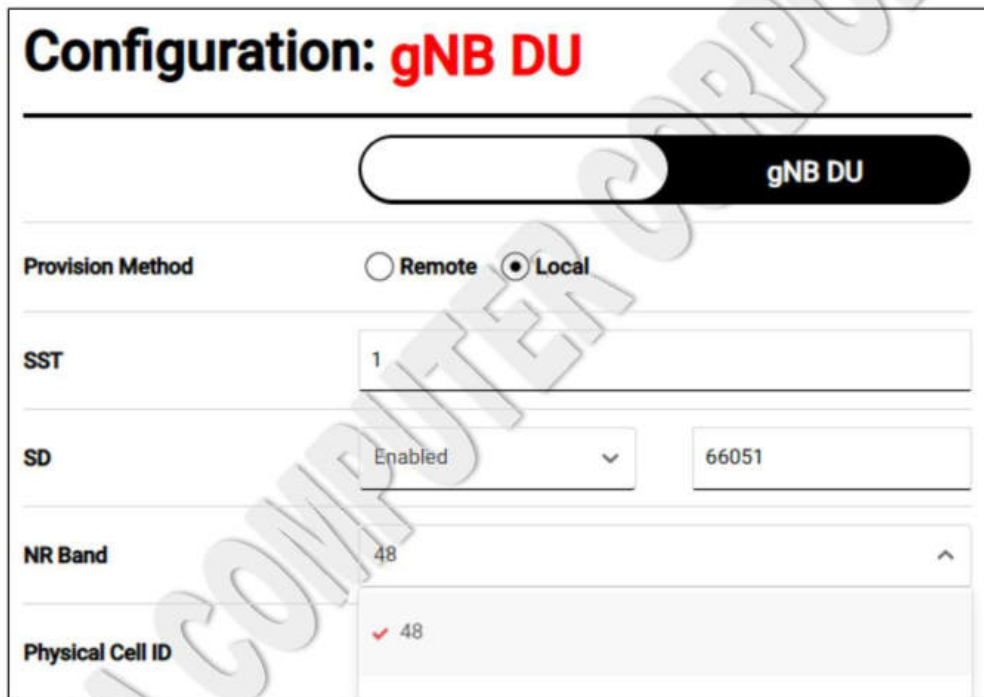
Figure 32. The Celona 5G NR Small Cell DU Configuration – Common Items

Table 7. The Celona 5G NR Small Cell DU Configuration – Common

Items	Descriptions
SST	Slice/Service Type, defines the type of service or slice expected in terms of network features and services.
SD	Slice Differentiator, used in combination with SST to distinguish between multiple network slices with the same SST. SD values can be omitted for standardized S-NSSAI that only includes SST.
NR Band	Specifies the frequency bands used for 5G New Radio. Supported bands include N48 , N77 , and N78
Physical Cell ID	Physical Cell identifier, a unique identifier for cells within the radio network.
Uplink Modulation	The modulation scheme used for the uplink. Options include 64 QAM and 256 QAM

Uplink Layer	Indicates how a symbol on an antenna port is related to another symbol on the same antenna port for conveying channel information
UL Dmrs-AdditionalPosition	Specifies the position for additional demodulation reference signal (DMRS) in uplink
QRxLevMin	The minimum required receive level within the cell, measured in dBm .
QQualMin	The minimum required signal quality level within the cell, measured in dB .

If the device supports the NR Band 48, the SAS Provider item will display in the CU configuration as the NR band is modified to 48. SAS/CBSD feature (Advanced Feature) is only applicable to models SCE2120/SCU2050/SCU2140/AP25-48.



Configuration: gNB DU

Provision Method ☐ Remote ☒ Local

SST 1

SD Enabled 66051

NR Band 48

Physical Cell ID ✓ 48

Figure 33. The Celona 5G NR Small Cell DU Configuration – CBRS NR Band 48

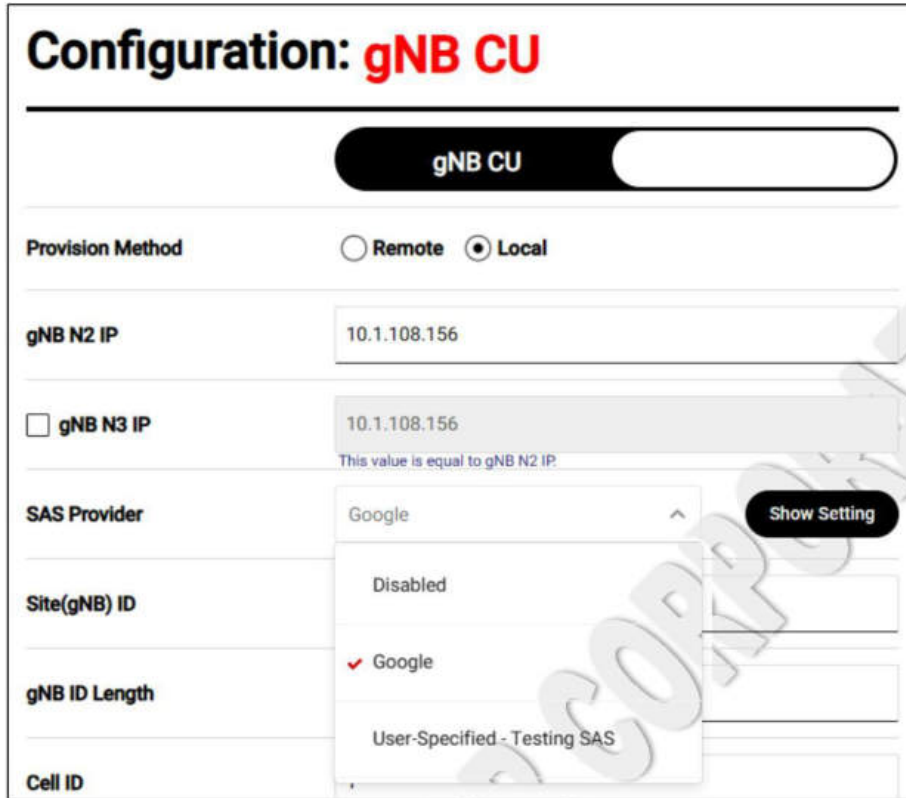


Figure 34. The Celona 5G NR Small Cell CU Configuration – SAS Provider

After rebooting the 5G NR Small Cell, the device will perform the standard SAS-CBSD procedures.

You can view the configurations of the default SAS provider (**Google Testing SAS**) by clicking the 'Show Setting' option, as depicted in the following illustration:



SAS Provider

SAS Vendor	Google
SAS Server URL	https://test.sas.goog/v1.2
CRL Server URL	
CA Path	certs/google.ca.crt.pem
Cert Path	certs/google.cbsd.crt.pem
Key Path	certs/google.cbsd.key.pem
Key Passphrase	
User ID	AskeyUserId-000001
FCC ID	AskeyFccId-000001

Close

Figure 35. The configurations of the default SAS provider

You can select the user-specific SAS provider and complete the relevant configurations.

SAS Provider

User-Specified -

Edit

Edit SAS Provider

SAS Vendor	Testing SAS	
SAS Server URL	https://test.sas.goog/v1.2	
CRL Server URL		
SAS CA Path	選擇檔案	certs/specific.ca.crt.pem
CBSD Cert Path	選擇檔案	certs/specific.cbsd.crt.pem
CBSD Key Path	選擇檔案	certs/specific.cbsd.key.pem
Key Passphrase		
User ID	AskeyUserId-000001	
FCC ID	AskeyFccId-000001	
GPS Simulator	true	
☒ Simulated Coordinate	61.2 Latitude (-90 to 90)	-155.5 Longitude (-180 to 180)
Height Type	AGL ▼	
Height	5.0	
CPI Enable	☐ Enabled ☒ Disabled	

Reset
Cancel
Save

Figure 36. The Configurations for User-Specified SAS Provider

If the CBSD requires **Certified Professional Installer (CPI)** installation, selecting **"Enabled"** for the **"CPI Enable"** item indicates that CPI installation is enabled. Additionally, you should fill in the detailed CPI installation configurations.

CPI Enable	☒ Enabled ☐ Disabled
CPI ID	cpi9001
CPI Name	BV Installer Certificate
CPI Key Path	選擇檔案 certs/specific.cpi.key.pem
Antenna Azimuth	10
Antenna Downtilt	20
Install Certification Time	2024-04-19T11:00:00Z

Figure 37. The detailed CPI Installation Configurations

If the CBSD is switched to remote provisioning, the user-specific SAS provider configuration will include the **'Domain Proxy Supported'** item. If this item is set to **'Enabled'**, the CBSD will only provide the relevant data to the AMP, and the Domain Proxy will collect these CBSD packages, communicate with the SAS, and carry out the SAS-CBSD procedures. The domain proxy needs to inform the SAS response to AMP to control these CBSDs.

Height Type	AGL
Height	5.0
Domain Proxy Supported	☐ Enabled ☒ Disabled
CPI Enable	☐ Enabled ☒ Disabled

Figure 38. The Domain Proxy Supported Configuration in Remote Provisioning

Table 8. The Celona 5G NR Small Cell DU Configuration – User-Specific SAS Provider

Items	Descriptions
SAS Vendor	The name or identifier of the SAS (Spectrum Access System) vendor
SAS Server URL	The URL address where the SAS server is located, typically used for communication between the CBSD (Citizen Broadband Radio Service Device) and SAS
CRL Server URL	The URL address of the Certificate Revocation List (CRL) server, used for verifying the validity of certificates issued by the SAS
SAS CA Path	This field requires the file path or directory where the SAS Certificate Authority (CA) certificate(s) are located. These certificates are typically used for authentication purposes
CBSD Cert Path	This field specifies the file path or directory containing the CBSD certificate(s), which are used for authentication when connecting to the SAS.
CBSD Key Path	This field indicates the file path or directory containing the private key associated with the CBSD certificate(s), necessary for authentication when connecting to the SAS.
Key Passphrase	The passphrase or password required to access the CBSD private key, if applicable.
User ID	The unique identifier or username assigned to the user or entity interacting with the SAS.
FCC ID	The Federal Communications Commission (FCC) identifier associated with the CBSD, used for regulatory compliance and identification purposes
GPS Simulator	Indicates whether a GPS simulator is enabled or disabled for testing purposes.
Simulated Coordinate	The simulated geographical coordinates (latitude and longitude) used by the GPS simulator
Height Type	The type of height measurement used, typically Above Ground Level (AGL) or Mean Sea Level (MSL)
Height	The height of the CBSD antenna above the ground or sea level
CPI Enable	This option enables or disables the Certified Professional Installer (CPI) functionality. When enabled, the CBSD operates under CPI installation guidelines
CPI ID	The unique identifier assigned to the CPI
CPI Name	The name or designation of the
CPI Key Path	Specifies the file path or directory containing the private key associated with the CPI certificate, used for authentication and secure communication during CPI installations.
Antenna Azimuth	The azimuth angle of the antenna, representing the horizontal direction of the antenna orientation in degrees. The valid range for this angle is from -90 to 90 degrees
Antenna Downtilt	The downtilt angle of the antenna, indicating the angle at which the antenna is tilted downwards from the horizontal plane. The valid range for this angle is from 0 to 359 degrees
Install Certification Time	The date and time when the installation certification was issued, represented in ISO 8601 format (YYYY-MM-DDThh:mm:ssZ).

In the bandwidth and NR ARFCN configurations, the Admin Website provides the supported item for each NR band. After choosing the profile option, the recommended values will be filled in the related items. For the more configurations, you can read the Chapter “The Recommend NR ARFCN Configuration” in the bottom of this document.

NR ARFCN

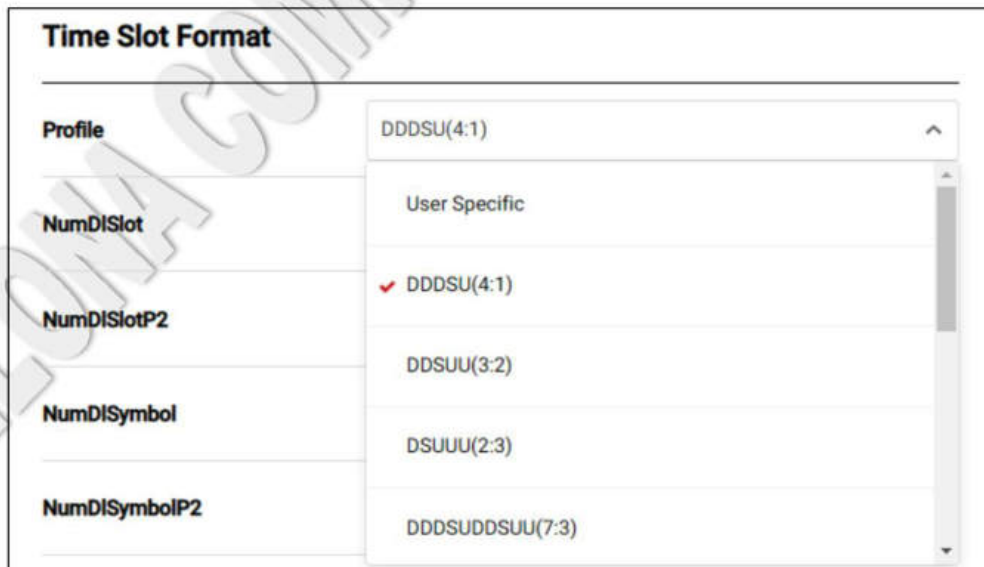
Profile	3.52G
DL NR ARFCN	635208
UL NR ARFCN	635208
DL CenterFreq	3528120
UL CenterFreq	3528120
DL AbsArfcnPointA	633936
UL AbsArfcnPointA	633936
DL AbsFreqPointA	3509040
UL AbsFreqPointA	3509040
AbsArfcnSsb	634464
AbsFreqSsb	3516960

Figure 39. The Celona 5G NR Small Cell DU Configuration – NR ARFCN

Table 9. The Celona 5G NR Small Cell DU Configuration – Bandwidth and NR ARFCN

Items	Descriptions
Bandwidth Profile	N48 supports 40MHz, 30MHz, and 20MHz N77 supports 100MHz, 90MHz, 80MHz, 60MHz, and 40MHz N78 supports 100MHz, 90MHz, 80MHz, 60MHz, 40MHz, 30MHz, and 20MHz
ARFCN Profile	It provides the recommended ARFCN configuration
DL NR ARFCN	The downlink NR ARFCN of the whole bandwidth
UL NR ARFCN	The uplink NR ARFCN of the whole bandwidth
DL CenterFreq	The downlink center frequency value in KHz
UL CenterFreq	The uplink center frequency value in KHz
DL AbsFreqPointA	The downlink absolute frequency point A configuration in KHz
UL AbsFreqPointA	The uplink absolute frequency point A configuration in KHz
DL AbsArfcnPointA	The downlink absolute ARFCN point A configuration
UL AbsArfcnPointA	The uplink absolute ARFCN point A configuration
AbsFreqSsb	The absolute frequency SSB configuration in KHz
AbsArfcnSsb	The absolute ARFCN SSB configuration

For the Time Slot Format, the Admin Website offers several predefined profiles along with recommended values for the associated items. You can select a profile option, and the corresponding values will automatically populate the detailed configuration items.



Time Slot Format

Profile: DDSU(4:1)

NumDISlot

NumDISlotP2

NumDISymbol

NumDISymbolP2

Figure 40. The Celona 5G NR Small Cell DU Configuration – Time Slot Profile

Time Slot Format

Profile	DDDSU(4:1) ✓
NumDlSlot	3
NumDlSlotP2	0
NumDlSymbol	10
NumDlSymbolP2	0
NumUlSlot	1
NumUlSlotP2	0
NumUlSymbol	2
NumUlSymbolP2	0
P2 Pres	0
PrachCfgIdx	159
PreambleFormat	RACH_FORMAT_B4 ▼

Figure 41. The Celona 5G NR Small Cell DU Configuration – Time Slot Parameters

Table 10. The Celona 5G NR Small Cell DU Configuration – Time Slot Format

Items	Descriptions
Profile	Lists common time slot patterns and provides default values for detailed settings.
numDISlot	The number of downlink slots.
numDISlot2	The number of P2 downlink slots.
numDISymbol	The number of downlink symbols for the slot format.
numDISymbolP2	The number of P2 downlink symbols for the slot format.
numUISlot	The number of uplink slots.
numUISlotP2	The number of P2 uplink slots.
numUISymbol	The number of uplink symbols for the slot format.
numUISymbolP2	The number of P2 uplink symbols for the slot format.
p2Pres	Represents the presence value of Pattern 2 (P2).
PrachCfgIdx	The PRACH configuration index value
PreambleFormat	Long preamble: Format 0, 1, 2, and 3 Short preamble: Format A1, A2, A3, B1, B2, B3, B4, C0, and C2

In the NR ARFCN and Time Slot Format configurations, the detailed items are read-only for the pre-defined profile. If users want to modify the detailed items, they should select the profile as '**User Specific**'.

NR ARFCN

Profile

User Specific

DL NR ARFCN

635208

UL NR ARFCN

635208

Time Slot Format

Profile

User Specific

NumDISlot

3

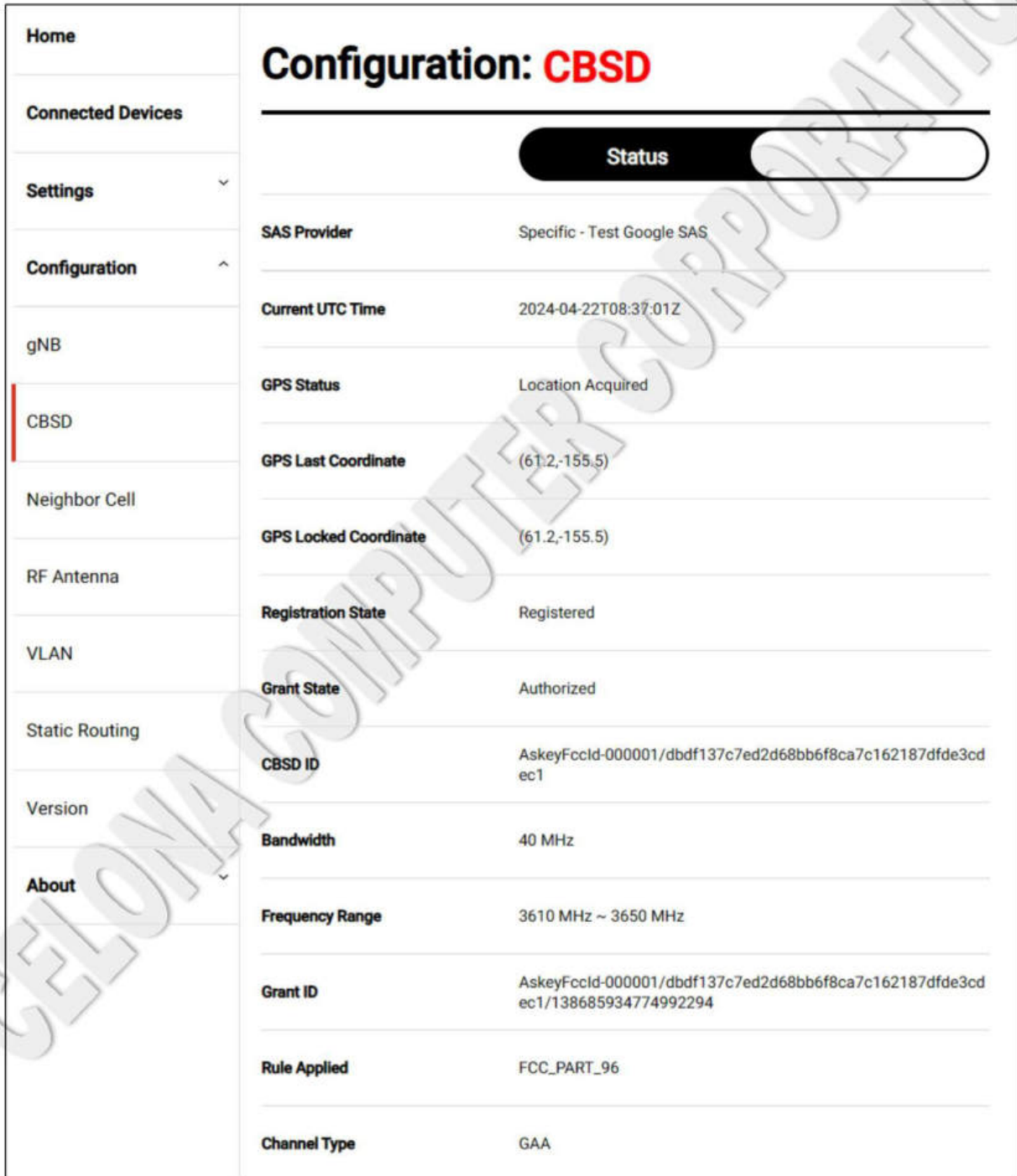
NumDISlotP2

0

CBSD

If the Celona 5G NR Small Cell Neighbor Cells support NR Band 48 and the SAS Provider is not disabled, the CBSD page will display the CBSD status and configurations as shown in the following illustration:

SAS/CBSD feature (Advanced Feature) is only applicable to models SCE2120/SCU2050/SCU2140/AP25-48.



Configuration: CBSD	
Status	
SAS Provider	Specific - Test Google SAS
Current UTC Time	2024-04-22T08:37:01Z
GPS Status	Location Acquired
GPS Last Coordinate	(61.2,-155.5)
GPS Locked Coordinate	(61.2,-155.5)
Registration State	Registered
Grant State	Authorized
CBSD ID	AskeyFccId-000001/dbdf137c7ed2d68bb6f8ca7c162187dfde3cd ec1
Bandwidth	40 MHz
Frequency Range	3610 MHz ~ 3650 MHz
Grant ID	AskeyFccId-000001/dbdf137c7ed2d68bb6f8ca7c162187dfde3cd ec1/138685934774992294
Rule Applied	FCC_PART_96
Channel Type	GAA

Figure 42. The Celona 5G NR Small Cell DU Configuration – CBSD Status

Grant Expire Time	2025-04-22T08:34:21Z
Heartbeat Interval	1800 seconds
Max TX Power	20.0 dBm
Max EIRP	19.0 dBm/MHz
Transmit Expire Time	2024-04-22T14:34:28Z
Response Code	0 - SUCCESS
Response Message	The CBSD request is approved by SAS

Home
Connected Devices
Settings
Configuration
gNB
CBSD
Neighbor Cell
RF Antenna
VLAN
Static Routing

Configuration: CBSD

Configs

SAS Provider	Specific - Test Google SAS
SAS Server URL	https://test.sas.goog/v1.2
CRL Server URL	
CA Path	/mnt/.app/cbsd/certs/specific.ca.crt.pem
Cert Path	/mnt/.app/cbsd/certs/specific.cbsd.crt.pem
Key Path	/mnt/.app/cbsd/certs/specific.cbsd.key.pem
FCC ID	AskeyFcclId-000001
CBSD Category	A

Figure 43. The Celona 5G NR Small Cell DU Configuration – CBSD Configurations

Version

About

Call Sign

ASK1046

User ID

AskeyUserId-000001

CBSD Serial Number

E1DBE016815

Radio Technology

NR

Supported Spec

NR-Rel15

Antenna Gain

6 dBi

EIRP Capability

30 dBm/10MHz

Indoor Deployment

True

Vendor

Askey Corporation

Model

SCE2120

SW Version

v2.2.013.1.7.1919

FW Version

0.47.10.150

HW Version

REV3

GPS Simulator

True

Simulated Coordinate

(62.5, -155.5)

Height Type

AGL

Height

5.0

Domain Proxy Supported

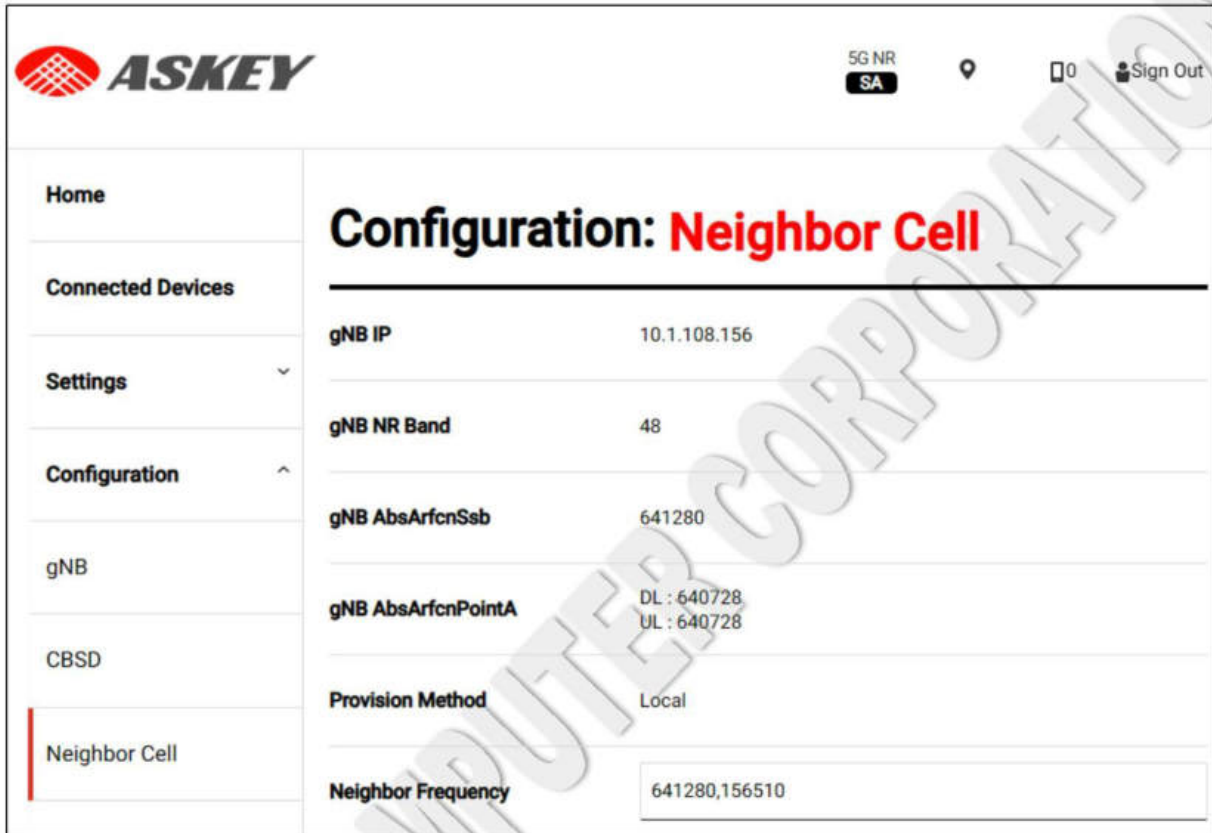
False

Cpi Enable

False

Nearbor Cell

The Celona 5G NR Small Cell Neighbor Cell page displays the related gNB information, and you can modify some items locally. You can also manually add the neighbor cell at the bottom of the page. These items will be read-only if the device is under remote provisioning.



Configuration: Neighbor Cell	
gNB IP	10.1.108.156
gNB NR Band	48
gNB AbsArfcnSsb	641280
gNB AbsArfcnPointA	DL : 640728 UL : 640728
Provision Method	Local
Neighbor Frequency	641280,156510

Figure 44. The Celona 5G NR Small Cell Neighbor Cell Page

The system automatically designates the first neighbor frequency as the intra-frequency for handovers, in line with the gNB's local provisioning settings. For remote provisioning, complete neighbor configurations are managed via the AMP. To add an additional neighbor frequency, click the '**Neighbor Frequency**' field and input the details in the popup window. A maximum of four neighbor frequencies can be configured; any attempts to add more will be rejected.

SSB Subcarrier Spacing defines the frequency gap between adjacent subcarriers within the Synchronization Signal Block of a 5G network, influencing bandwidth and essential for network frequency planning and signal clarity. The SSB Subcarrier Spacing value can be set to **15**, **30**, **60**, or **120** kHz on the page.

NR Band List is presented in comma-separated format and can include up to two bands.

Edit Neighbor Frequency

Handover Type	AbsArfcnSsb	Ssb Subcarrier Spacing	NR Band List	Action
Intra Handover	641280	30	48	
Inter Handover	156510	15 ^	28	Delete
				Add

You can also configure parameters related to handover events A1, A2, and A5.

A1 Threshold	3
A1 Hysteresis	0
A1 Timer To Trigger	MS40
A2 Threshold	3
A2 Hysteresis	0
A2 Timer To Trigger	MS40
A3 RSRP Offset	3
A3 Hysteresis	0
A3 Timer To Trigger	MS40
A5 Threshold1	3
A5 Threshold2	2
A5 Hysteresis	0
A5 Timer To Trigger	MS40

Figure 45. The configurations of A1, A2, and A5 events regarding the Neighbor Cell

If you wish to enable XN handover between gNBs, please check the '**XN Enable**' option.

☒ **Xn Enable**

Table 11. The Celona 5G NR Small Cell Neighbor Cell Configuration

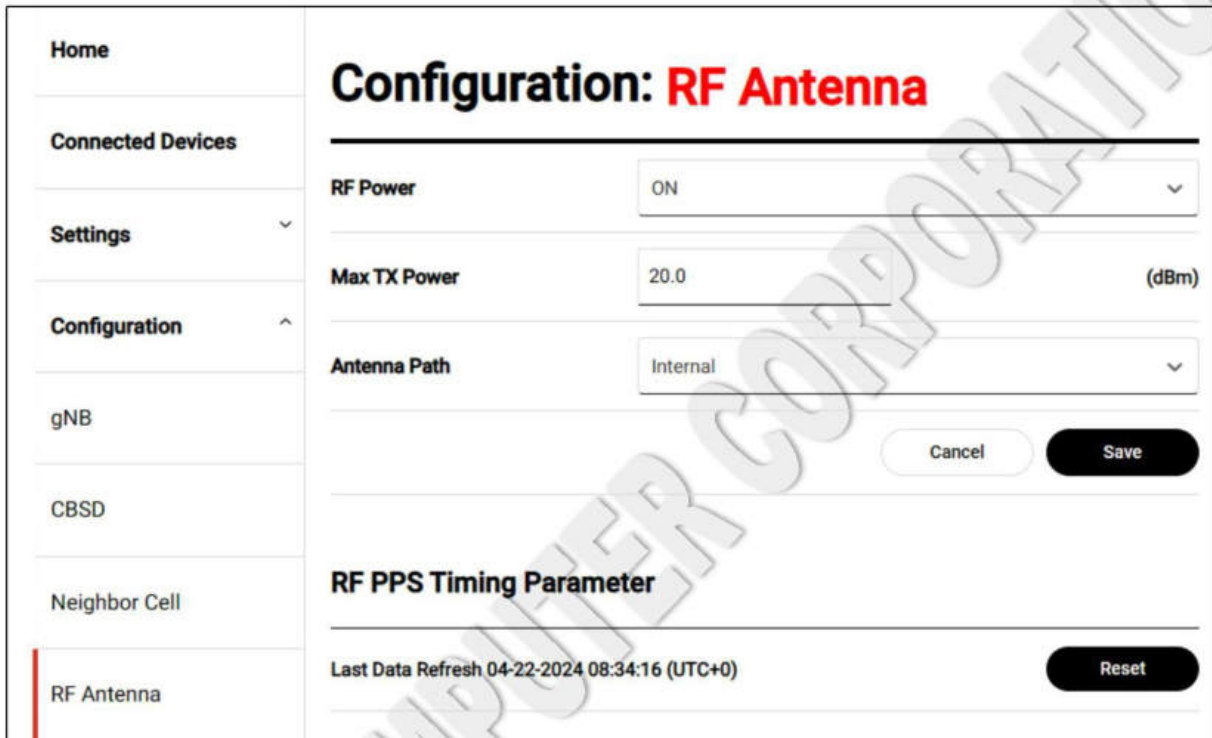
Items	Descriptions
Neighbor Frequency	The Neighbor Frequency refers to the absolute ARFCN point A configuration of the neighboring frequency.
A1 Event	An A1 event is triggered when the serving cell's signal quality becomes better than a predefined threshold. This event is typically used to optimize the user's connection without initiating a handover, by adjusting the modulation and coding scheme to improve the data rate as signal conditions allow.
A2 Event	An A2 event occurs when the signal quality of the serving cell drops below a certain threshold, indicating deteriorating conditions. It signals the need for the network to prepare for a potential handover or to apply measures to maintain the connection, such as reducing the data rate to maintain link stability.
A5 Event	The A5 event is a dual-threshold event that triggers a handover when the serving cell's signal quality gets worse than a certain threshold while a neighboring cell's signal quality is better than another threshold. This event is designed to ensure seamless handover to a cell with a stronger signal to maintain service continuity and quality.
XN Enable	If checked, the device will enable the XN handover.

RF Antenna

The Celona 5G NR Small Cell RF Antenna page enables users to adjust the maximum transmission (TX) power and the RF antenna path.

Max TX Power : 24 dBm (SCE2120/SCE2200/SCU2140/SCU2000/SCU2050)

Max TX Power : 37 dBm (SCU2060/SCU2070/AP25-48)



Home	Configuration: RF Antenna	
Connected Devices	RF Power	ON
Settings	Max TX Power	20.0 (dBm)
Configuration	Antenna Path	Internal
gNB	Cancel Save	
CBSD	RF PPS Timing Parameter	
Neighbor Cell	Last Data Refresh 04-22-2024 08:34:16 (UTC+0)	
RF Antenna	Reset	

Figure 46. The Celona 5G NR Small Cell RF Antenna Page

The RF Power field will display 'N/A' if the Celona 5G NR Small Cell is not in service.



Configuration: RF Antenna	
RF Power	N/A

Once the cell state transitions to 'in service', you can deactivate the RF power. At the same time, the MAX TX power field will become read-only.

Configuration: RF Antenna

RF Power

OFF

Max TX Power

24.0

(dBm)

The MAX TX power is a decimal number, allowing one decimal place precision. The range for this value is from 5.0 to 24.0. If CBSD is supported, the range becomes 0.0 to 20.0

Max TX Power

0.0

(dBm)

The number range is 0 to 24

This “Antenna Path” switching option is **ONLY** available for models SCE2120/SCE2200/SCU2140, and not available for models SCU2050/SCU2000/SCU2060/SCU2070/AP25-48.

The antenna path setting can be either **Internal** or **External**. When switched to External, the RF signal will be transmitted through the external antenna connector, as depicted in the illustration:



Models: SCE2120/SCE2200

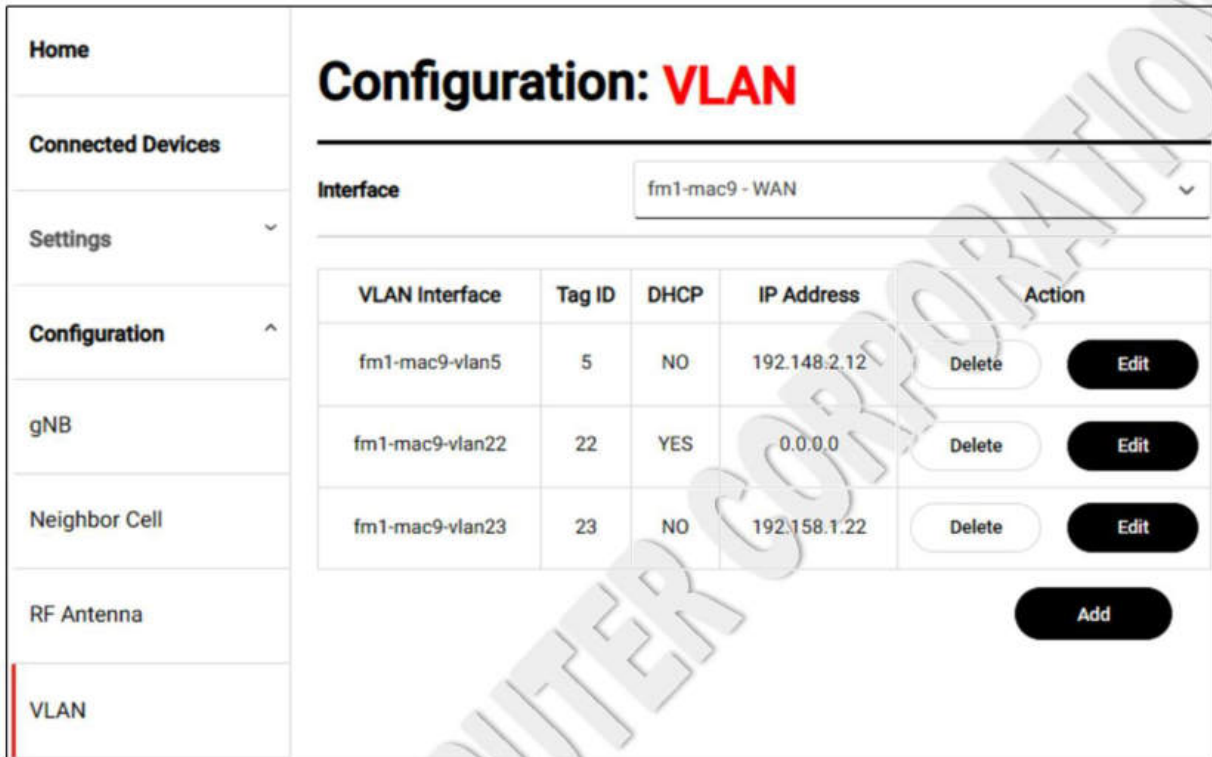


Model: SCU2140

At the bottom of the page, you'll find the date and time indicating when the '**RF PPS Timing Parameter**' was generated. If you encounter network timing discrepancies or synchronization issues, such as unexpected delays, data transmission errors, or loss of network coordination, you can click the '**Reset**' button. This action reinitializes the RF PPS Timing Parameter, restoring the system's timing synchronization to the pulse per second signal. This ensures that RF operations maintain the precision necessary for optimal network performance.

VLAN

This Celona 5G NR Small Cell VLAN page allows users to create, read, update and delete the VLAN (Virtual Local Area Network) configurations.



VLAN Interface	Tag ID	DHCP	IP Address	Action
fm1-mac9-vlan5	5	NO	192.148.2.12	Delete Edit
fm1-mac9-vlan22	22	YES	0.0.0.0	Delete Edit
fm1-mac9-vlan23	23	NO	192.158.1.22	Delete Edit

Add

Figure 47. The Celona 5G NR Small Cell VLAN Page

Initially, you need to select the physical network interface to which the VLAN will attach. Upon changing the interface, the corresponding VLAN configurations associated with the selected physical network interface will be displayed on the page.



VLAN Interface	Tag ID
fm1-mac9-vlan5	5

Interface: fm1-mac9 - WAN

- fm1-mac9 - WAN
- fm1-mac10 - SFP+

Configuration: VLAN

Interface: fm1-mac10 - SFP+

VLAN Interface	Tag ID	DHCP	IP Address	Action
fm1-mac10-vlan12	12	YES	0.0.0.0	Delete Edit Add

Figure 48. The Celona 5G NR Small Cell VLAN Page – Read Operation

When you click the **'Add'** button, a window will appear, allowing you to create a new VLAN attached to the selected physical network interface. DNS configurations are optional for VLANs with static IP addresses. If DHCP is enabled, you can add the option **'Ignore Routes'** to instruct the device to disregard any default routes provided by the DHCP server for the VLAN configuration.

Add VLAN

Interface: fm1-mac10 - SFP+

Tag ID:

☒ DHCP
 ☐ Ignore Routes

VLAN IP (CIDR Format): 0.0.0.0/0

Default Gateway:

Primary DNS:

Secondary DNS:

Cancel

Save

Figure 49. The Celona 5G NR Small Cell VLAN Page – Create Operation

Click the **Edit** button in the VLAN list will prompt a window to update the specified VLAN configuration.

Configuration: VLAN

Interface

fm1-mac10 - SFP+

VLAN Interface	Tag ID	DHCP	VLAN IP (CIDR Format)	Action
fm1-mac10-v12	12	YES	0.0.0.0/0	Delete Edit
fm1-mac10-v5	5	NO	192.168.100.60/24	Delete Edit

Add

Edit VLAN

Interface

fm1-mac10 - SFP+

VLAN Interface

fm1-mac10-v5

Tag ID

5

☐ DHCP

VLAN IP (CIDR Format)

192.168.100.60/24

Default Gateway

Primary DNS

Secondary DNS

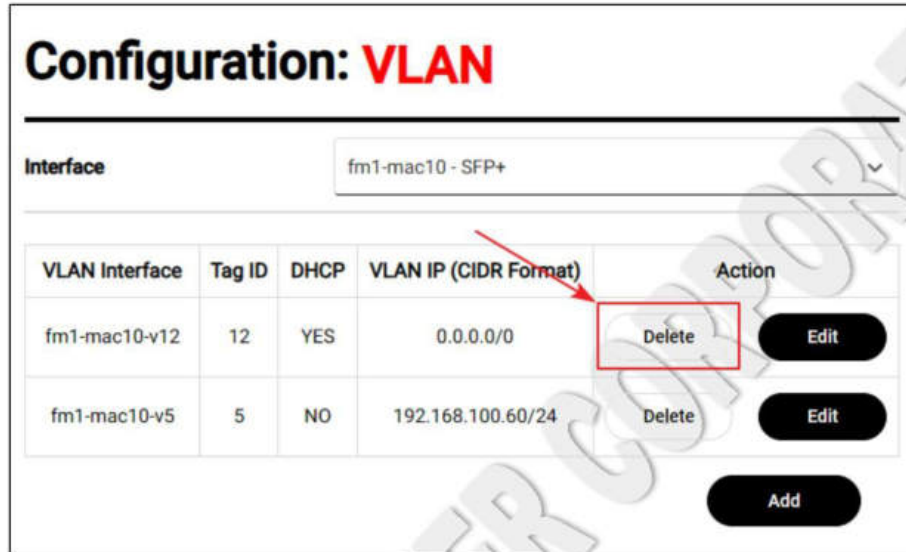
Cancel

Save

Figure 50. The Celona 5G NR Small Cell VLAN Page – Update Operation

In addition, if the VLAN tag ID has existed in the create operation (ref [Figure 34.](#)), it will become an update operation that will update the previous VLAN configuration with the tag ID.

Click the **Delete** button in the VLAN list will delete the specified VLAN configuration. It doesn't need to restart the device for the delete operation.



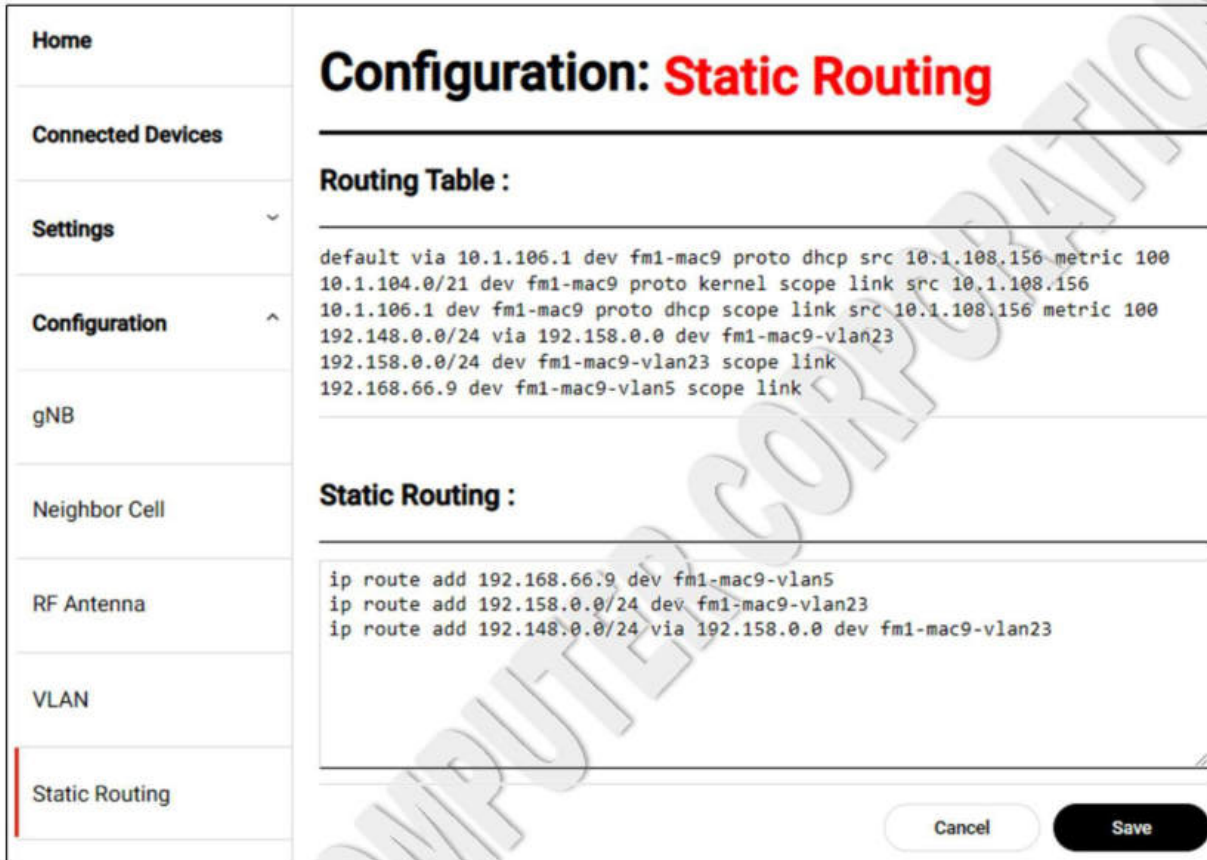
VLAN Interface	Tag ID	DHCP	VLAN IP (CIDR Format)	Action
fm1-mac10-v12	12	YES	0.0.0.0/0	Delete Edit
fm1-mac10-v5	5	NO	192.168.100.60/24	Delete Edit

Add

Figure 51. The Celona 5G NR Small Cell VLAN Page – Delete Operation

Static Routing

The Celona 5G NR Small Cell Static Routing page displays the current routing table and enables users to define static routing rules. Commands in the static routing rules must begin with "**ip route**"; otherwise, they will be ignored.



Home
Connected Devices
Settings
Configuration
gNB
Neighbor Cell
RF Antenna
VLAN
Static Routing

Configuration: Static Routing

Routing Table :

```

default via 10.1.106.1 dev fm1-mac9 proto dhcp src 10.1.108.156 metric 100
10.1.104.0/21 dev fm1-mac9 proto kernel scope link src 10.1.108.156
10.1.106.1 dev fm1-mac9 proto dhcp scope link src 10.1.108.156 metric 100
192.148.0.0/24 via 192.158.0.0 dev fm1-mac9-vlan23
192.158.0.0/24 dev fm1-mac9-vlan23 scope link
192.168.66.9 dev fm1-mac9-vlan5 scope link

```

Static Routing :

```

ip route add 192.168.66.9 dev fm1-mac9-vlan5
ip route add 192.158.0.0/24 dev fm1-mac9-vlan23
ip route add 192.148.0.0/24 via 192.158.0.0 dev fm1-mac9-vlan23

```

Cancel
Save

Figure 52. The Celona 5G NR Small Cell Static Routing Page

Version

This Celona 5G NR Small Cell Version page shows the current software, hardware, and web version. In Addition, you can upload an encoded installer with matched access code to perform a local upgrade of the Celona 5G NR Small Cell.



Configuration: Version	
Software Version	SCE2120 (NSC-Dual-Sub6-RC) v2.2.013.1.7.1919
BSP Version	0.47.10.150
Web Version	v6.3.8536
Hardware Version	REV3
Choose Software Installer	選擇檔案 沒有選擇檔案
Input The Access Code	
Upload	

Figure 53. The Celona 5G NR Small Cell Version Page

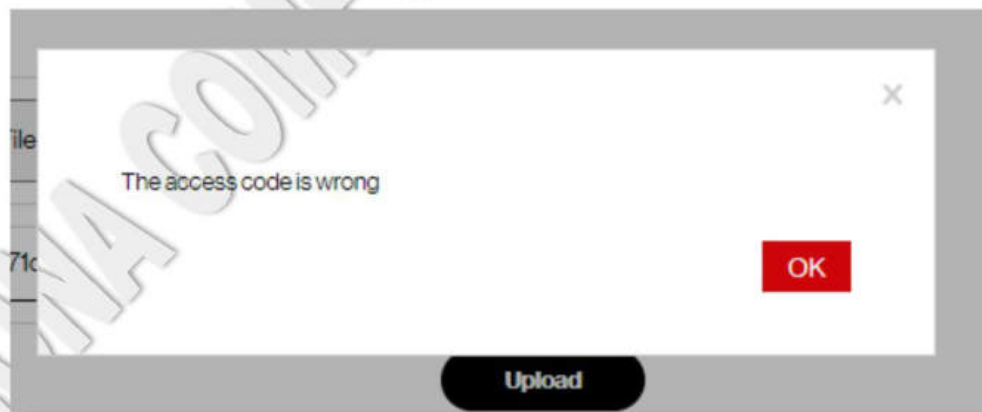
Firstly, you need to select the encrypted software installer and enter the access code provided by Celona. After clicking the 'Upload' button, the installer will be uploaded to the DUT.



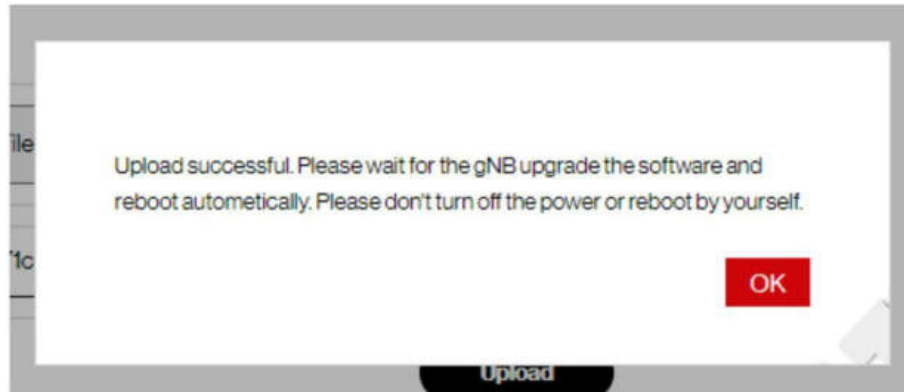
A progress bar indicates the upload progress. When it reaches 100%, the API server concatenates the chunked upload files and verifies the access code.



If the access code is incorrect, the Admin Website will display a warning message, as shown below. Please double-check the access code and upload the installer again with the correct code.



If the access code is correct, the Admin Website will display a message confirming the successful upload, as illustrated below. The Celona 5G NR Small Cell will then commence the software upgrade process.



During this process, the API server decodes the installer and initiates the local upgrade. As a result, clicking the 'OK' button will temporarily disable other operations on the Web GUI, as depicted below.

Once the upgrade is complete, the Admin Website will display another message, as illustrated below.



When the Admin Website displays the following message, it indicates that the startup procedure for the Celona 5G NR Small Cell is complete. Clicking the "OK" button will redirect you to the login form to access the Admin Website.



About

GPS

This Celona 5G NR Small Cell GPS Page shows the GPS status, including GPS Satellite ID, signal quantities, description, etc.

Home

Connected Devices

Settings

Configuration

About

GPS

Dashboard

About: GPS

Last Data Refresh 04-22-2024 10:06:08 (UTC+0)
This page will refresh every 15 seconds.

GPS

A minimum of four satellites are required to provide a GPS location fix. Please place the 5G NR Small Cell's GPS antenna in a location where there are at least four strong satellite signals in the table below.

GPS Status : Location Acquired [Map](#)

MSL Altitude : 66.75 m

GPS Satellite ID	GPS Signal Quality (dB)	Description
88	47	Excellent
81	46	Excellent
67	44	Excellent
65	39	Good
333	34	Good
195	33	Good
326	33	Good
11	32	Good
5	32	Good
13	32	Good
196	31	Good
20	31	Good

40-99 dB / Excellent (QTY:3)

30-39 dB / Good (QTY:9)

20-29 dB / Fair (QTY:0)

0-19 dB / Weak (QTY:0)

Figure 54. The Celona 5G NR Small Cell GPS Page

Table 12. The Celona 5G NR Small Cell GPS

Items	Descriptions
Last Data Refresh	Indicates the local time at which this page was last updated.
GPS Status	Indicates whether The Celona 5G NR Small Cell has acquired GPS signals or not. The cell will not come into service if the status does not say " Location Acquired ".
GPS Satellite ID	Lists the GPS satellites currently being detected, along with each satellite's unique identifier.
GPS Satellite Quality (dB)	Describes the signal-to-noise ratio for the GPS signal. A higher value indicates better quality. If the signal quality does not improve, an external GPS antenna may be required.
Description	Describes the quality level of the satellite signal as Excellent, Good, Fair, or Weak. Refer to the legend for the mapping

Dashboard

The Celona 5G NR Small Cell Dashboard page provides an overview of integrated small cell information, encompassing cell service status, synchronization state, and location data. Additionally, the page displays the connectivity status to the AMF, EMS, or SAS.

Home	About: Dashboard
Connected Devices	
Settings	
Configuration	
About	
GPS	
Dashboard	
	gNB IP Address N2/N3: 10.1.108.156
	gNB Profile Name gNB_Profile_SA_SCE2120_N48_CBSD.json
	Cell State In Service
	Active UEs 0
	GNSS Fixed Status Location Acquired
	Sync Capability GPS
	Sync State DISP
	Connectivity Status - AMF (10.1.106.51) - EMS (https://amp.askeydms.com:443) - SAS (https://test.sas.goog/v1.2)

Figure 55. The Celona 5G NR Small Cell Dashboard Page

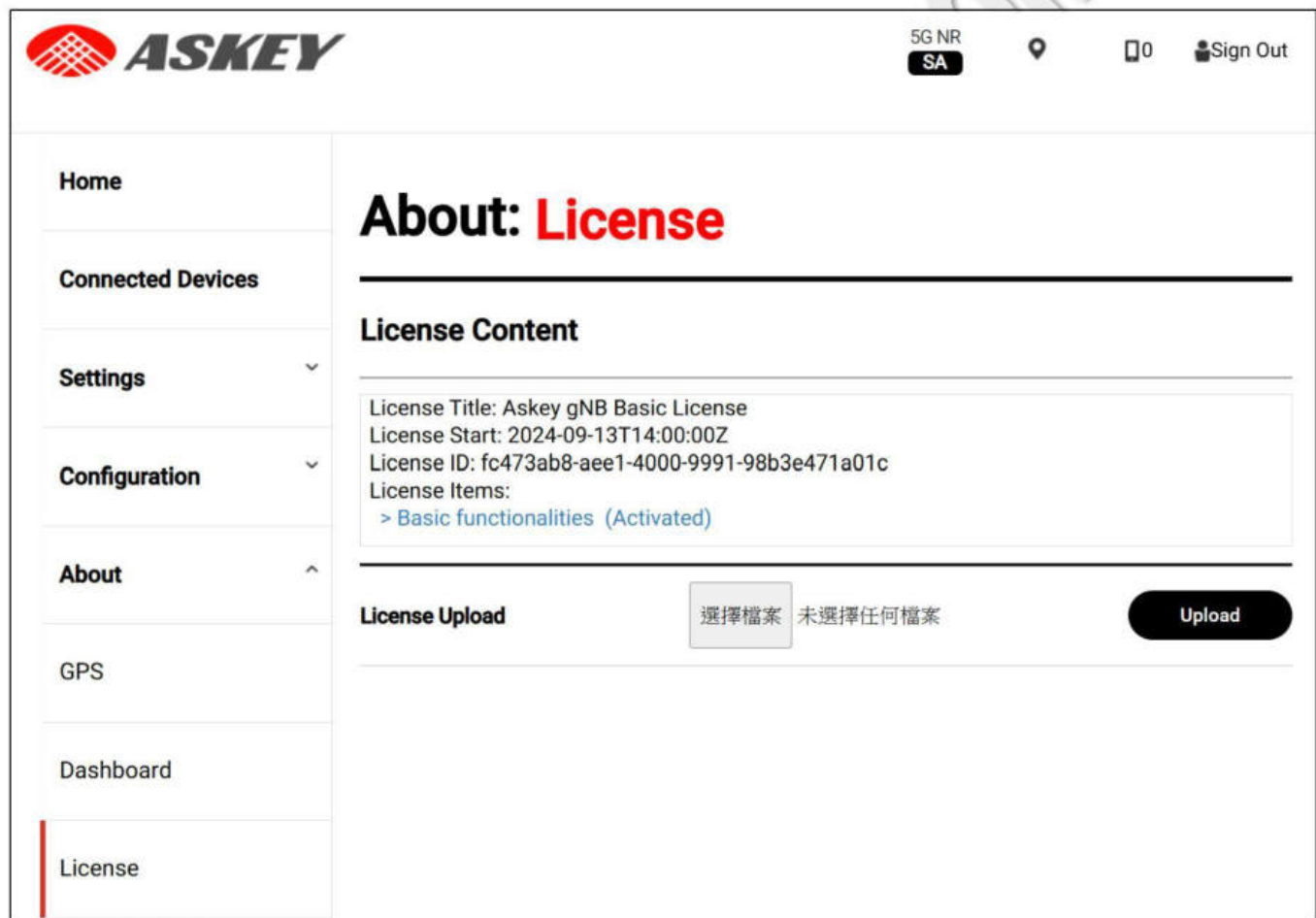
Table 13. The Celona 5G NR Small Cell Dashboard

Items	Descriptions
gNB IP Address	The IP address of the gNodeB. It supports separate specifications for the gNB local interface with the AMF (N2 interface) and the UPF (N3 interface) on the gNB configuration page. The default IP address is the same value for the N2 and N3 interfaces.
gNB Profile Name	The "gNB Profile Name" refers to the default configurations for the Celona 5G NR Small Cell. Clicking the field reveals detailed information about the profile content.
Cell State	The current operational state of the small cell, either ' Not In-Service ' or ' In-Service '.
Active UEs	The number of wireless devices (phones, tablets, or other data devices) currently connected to the Celona 5G NR Small Cell
GNSS Fixed Status	The status of GNSS (Global Navigation Satellite System) fix, indicating whether the device is searching for a signal or has acquired location information.

Sync Capability	The synchronization capability of the device.
Sync State	Indicates the current synchronization state, which could be INIT , HARD_SYNC , DISP , RESYNC , or HOLDOVER . The cell processes will continue until the sync state is DISP .
Connectivity Status	Check the network connection status of the following servers using ping commands (ICMP) or HTTP(s) requests: AMF , EMS , or SAS .

License

The Celona 5G NR Small Cell License Page shows the license content of this device's functions. Celona provides basic functions. After purchasing additional functions, you can upload the license key to the device through this page to activate the additional functions.



The screenshot displays the 'About: License' page of the ASKEY Celona 5G NR Small Cell Admin Website. The page features a sidebar with navigation links: Home, Connected Devices, Settings, Configuration, About, GPS, Dashboard, and License (which is highlighted). The main content area is titled 'About: License' and includes a section for 'License Content'. The license details are as follows:

- License Title: Askey gNB Basic License
- License Start: 2024-09-13T14:00:00Z
- License ID: fc473ab8-ae1-4000-9991-98b3e471a01c
- License Items:
 - > Basic functionalities (Activated)

Below the license content, there is a 'License Upload' section. It includes a button labeled '選擇檔案' (Select File), a status indicator '未選擇任何檔案' (No file selected), and an 'Upload' button.

Chapter 2 The Celona Small Cell Support Utilities

Small Cell Log Download Mechanism

You can download the runtime or backup log files by the following HTTPS linking URL and send them back to the Celona Small Cell team to analyze.

PS:

1. Please don't modify the downloaded file name
2. Please don't download two log files at the same time

Backup Log Illustration: (The max page size is 3)



Runtime Log:

<https://<ip address>/api/logs/TwpEceURn15qxDYSW88IddB7LAsiOr64HNg>

Backup Log:

<https://<ip address>/api/logs/TwpEceURn15qxDYSW88IddB7LAsiOr64HNg/<page size>>

<https://<ip address>/api/logs/TwpEceURn15qxDYSW88IddB7LAsiOr64HNg/<page size>/<page no>>

Examples:

<https://10.1.108.15/api/logs/TwpEceURn15qxDYSW88IddB7LAsiOr64HNg>

→ **Runtime log:**

[Celonalog_280375459184643_20221025-092816_nsc.tgz.enc](#)

<https://10.1.108.15/api/logs/TwpEceURn15qxDYSW88IddB7LAsiOr64HNg/3>

→ **Backup log (page size 3, page no 1):**

[Celonalog_280375459184643_20221025-092825_nsc_last_01-03.tgz.enc](#)

<https://10.1.108.15/api/logs/TwpEceURn15qxDYSW88IddB7LAsiOr64HNg/3/3>

→ **Backup log (page size 3, page no 3):**

[Celonalog_280375459184643_20221025-092902_nsc_last_07-09.tgz.enc](#)

Access the Admin Website by IPv6 Link-Local Address

If the network settings of the Celona 5G NR Small Cell are incorrect, or if you are unable to obtain the current IP address, accessing the Admin Website via IPv4 may not be possible. In such cases, you can use the MAC to IPv6 Converter available at <https://nettools.club/mac2ipv6> to retrieve the link-local address of the Celona 5G NR Small Cell. Subsequently, you can access the Admin Website using the URL (`http://[IPv6 Link-Local Address]/`) within the same LAN.

For example, if the MAC address is '**FE:FF:FF:A6:00:03**', the converter will yield the following result:

Just fill in one of the fields and the second will update automatically.

MAC Address:

FE:FF:FF:A6:00:03

IPv6 Link-local:

fe80::fcff:ffff:fea6:3

You can then access the Admin Website using the URL `http://[fe80::fcff:ffff:fea6:3]/` within the same LAN. If you are accessing the Admin Website using this method for the first time, it may require more than one refresh to complete the IPv6 Neighbor Discovery process.

Note:

Comparison of Different Models

Model	Outdoor	Max TX Power (24dBm)	Max TX Power (37dBm)	Antenna Path Option (WebUI)	SAS/CBSD
SCE2120		V		V	V
SCE2200		V		V	
SCU2140	V	V		V	V
SCU2000	V	V			
SCU2050	V	V			V
SCU2060	V		V		
SCU2070	V		V		
AP25-48	V		V		V

Safety Warning

To lower the radio influence to the human body, please keep a safe distance (Minimum 55cm) between AP25-48 and the people around

FCC Statement 1:

Any changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

FCC Statement 2:

Part 15.19 (a)(3) Statement

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 Statement 3:

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 or more 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 Statement 4:

RF exposure statements

1

2: This Transmitter must not be operated or operating in conjunction with any other antenna or transmitter. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 55 centimeters between the radiator and your body or nearby persons.

FCC Statement 5: Responsible Party in the United States

Contact us

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TEL: (510) 415-2767