Askey 5G NR Small Cell SA Mode Admin Website User Guide

ASKEY COMPUTER CORPORATION

May 2025

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Chapter 1 The Askey 5G NR Small Cell Admin Website

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

Accessing the Askey 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 Askey 5G NR Small Cell
2. Open a web browser and enter the IPv4 address of the Askey 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

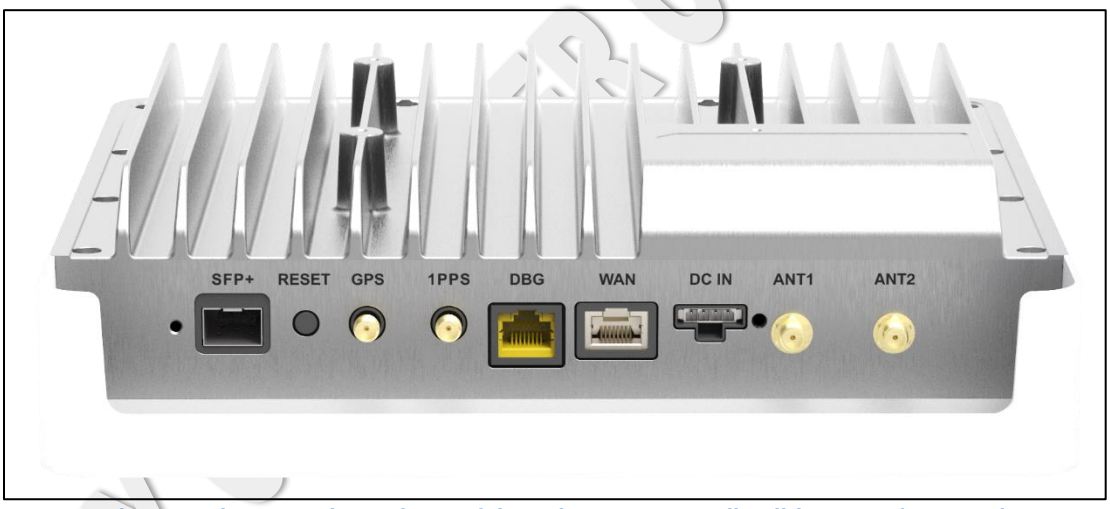

Figure 1. The Network Interfaces of the Askey 5G NR Small Cell (SCE2120/SCE2200)

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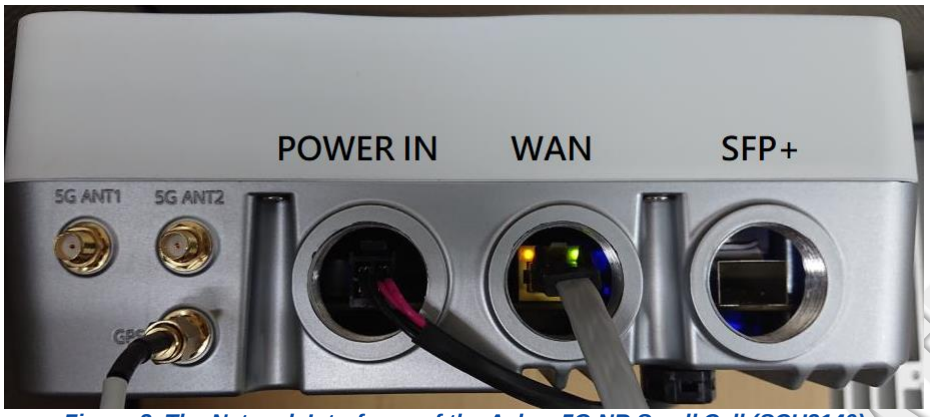

Figure 2. The Network Interfaces of the Askey 5G NR Small Cell (SCU2140)

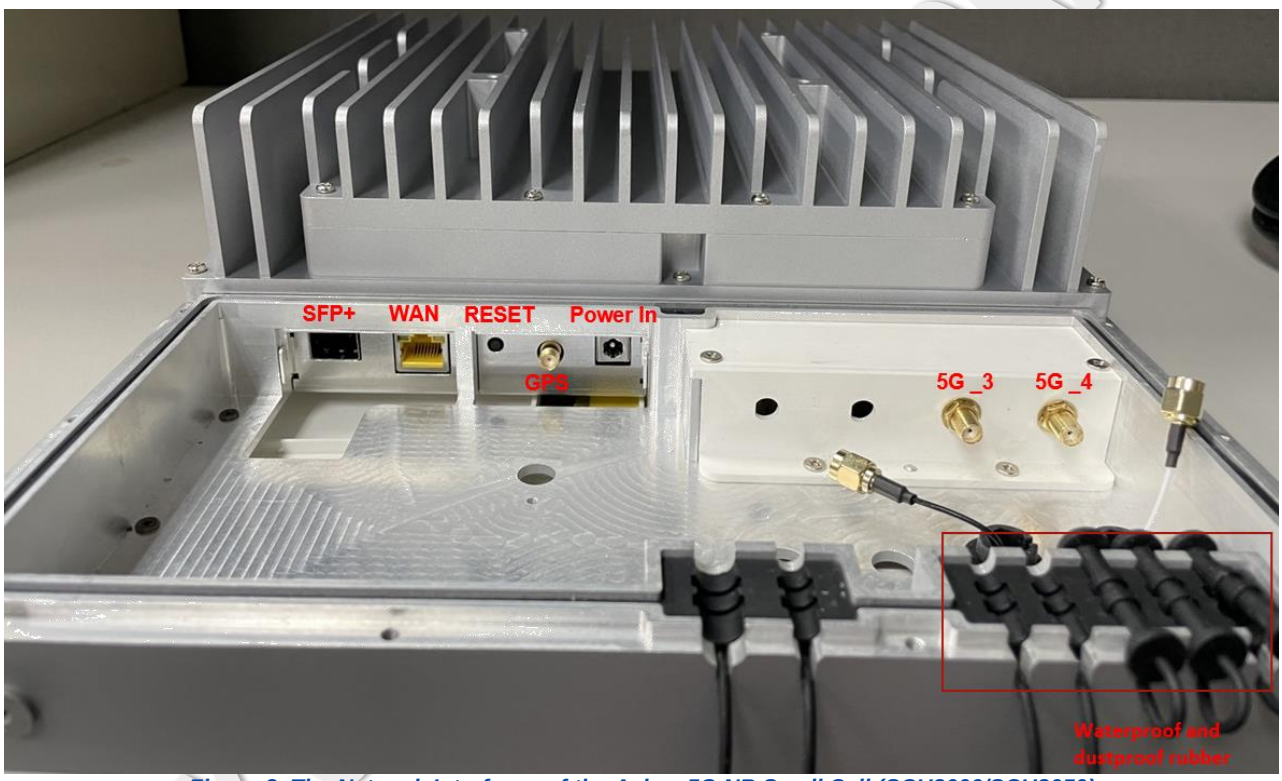

Figure 3. The Network Interfaces of the Askey 5G NR Small Cell (SCU2000/SCU2050)

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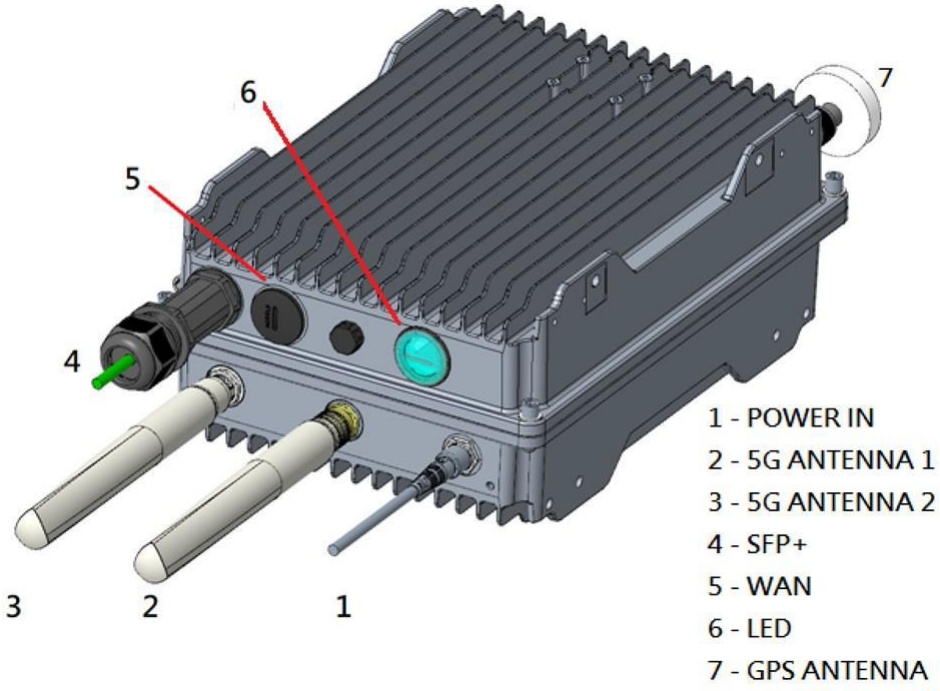

Figure 4. The Network Interfaces of the Askey 5G NR Small Cell (SCU2060/SCU2070/SCU2080)

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**.

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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.

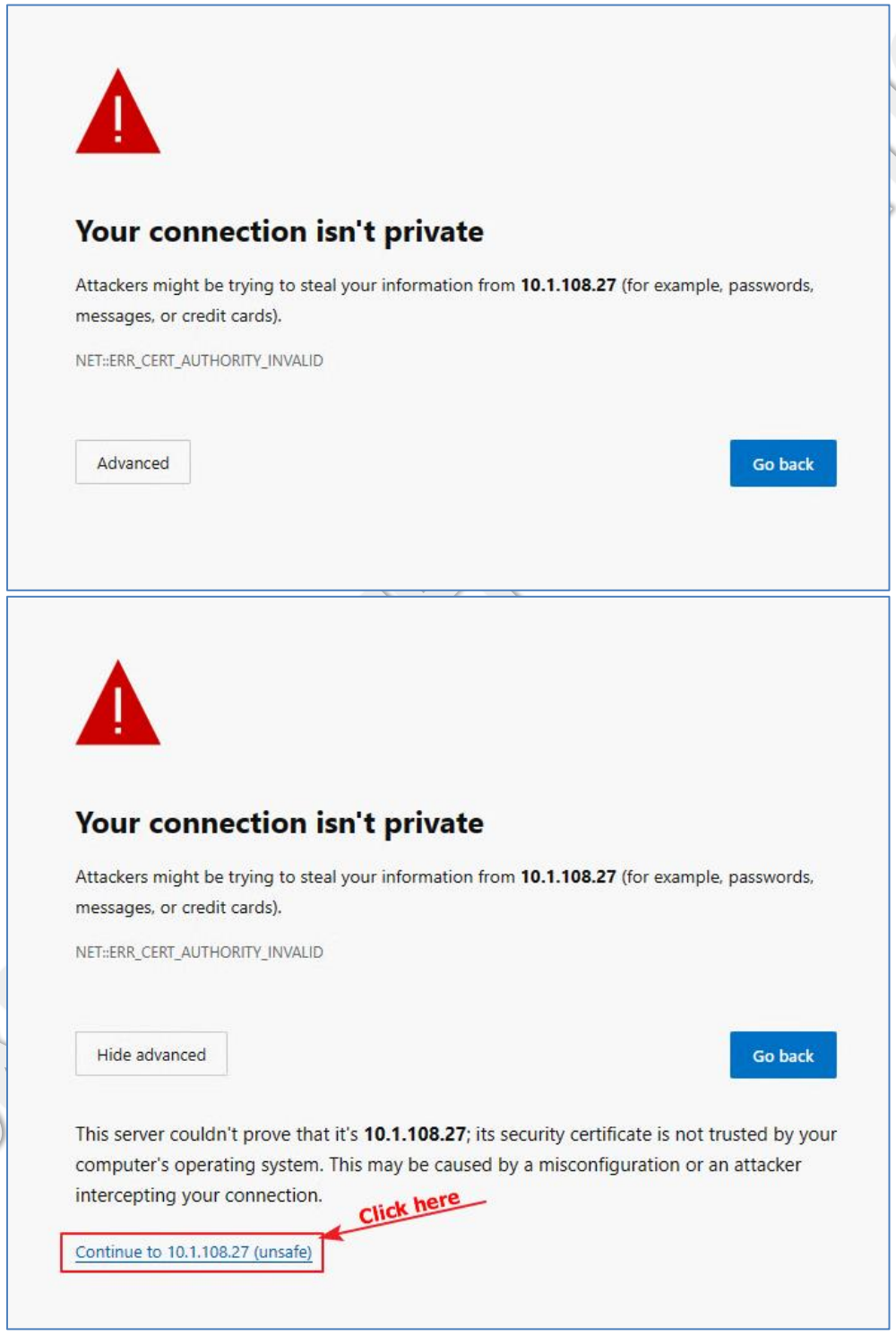

Figure 5. Access the Askey 5G NR Small Cell Admin Website via HTTPS

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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 Askey 5G NR Small Cell Admin Website Sign-In Form

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

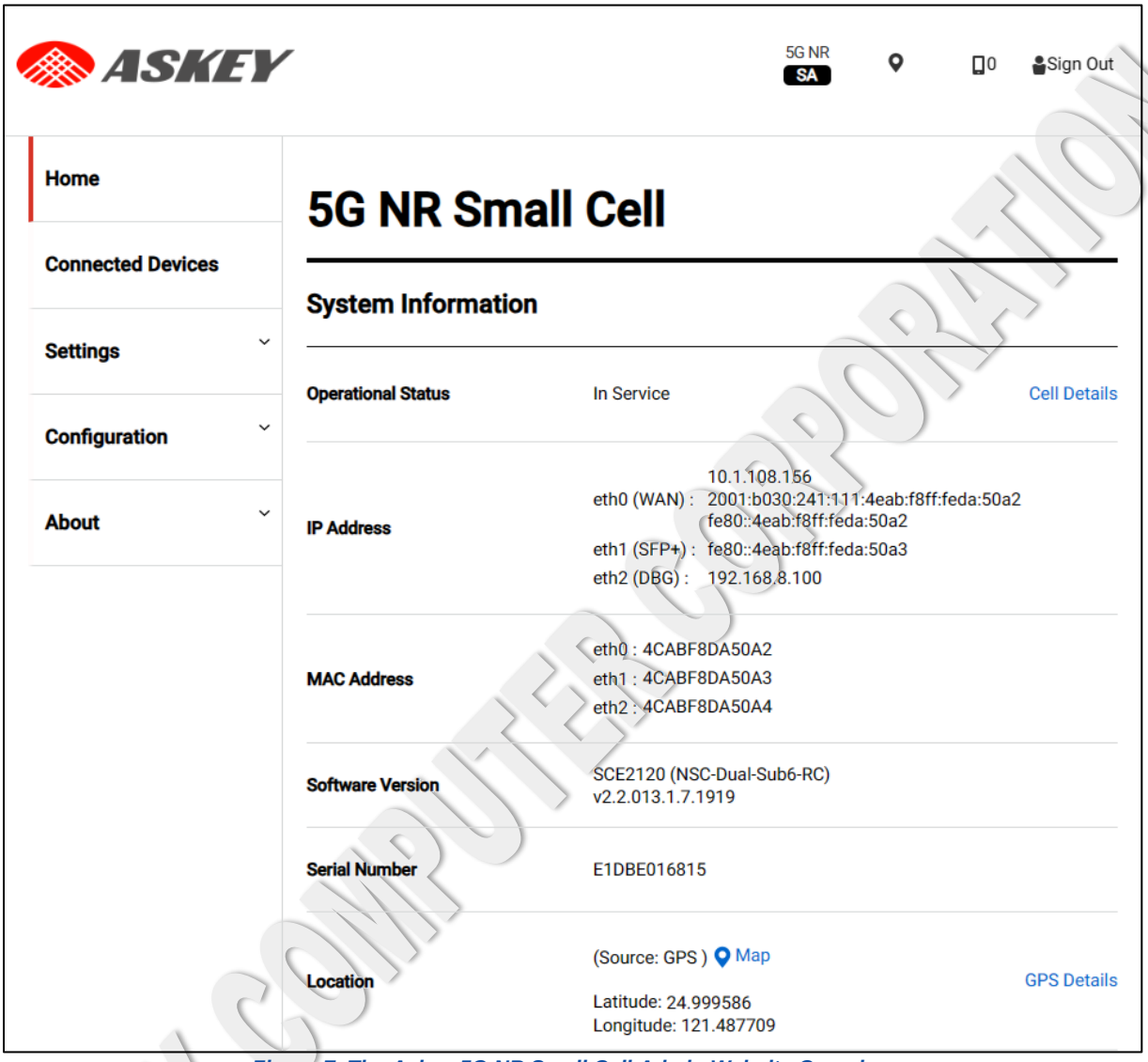

Figure 7. The Askey 5G NR Small Cell Admin Website Overview

The page presents basic information about the Askey 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.

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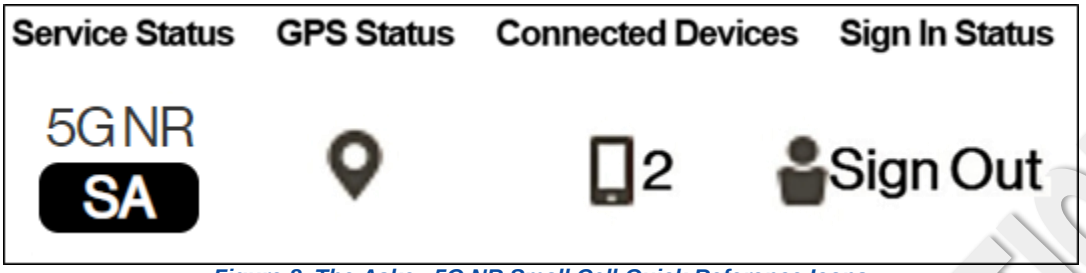

Figure 8. The Askey 5G NR Small Cell Quick Reference Icons

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

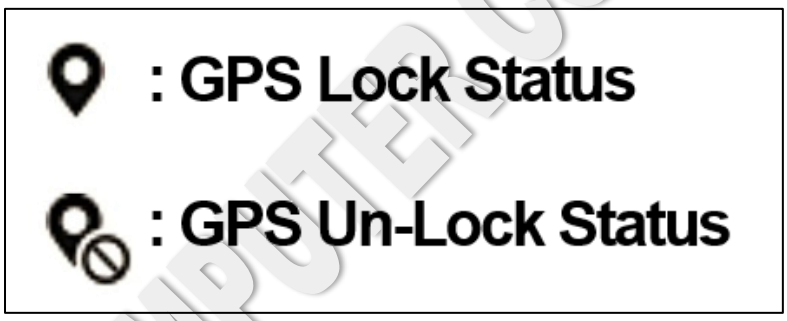

Figure 10. The Askey 5G NR Small Cell GPS Status

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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**

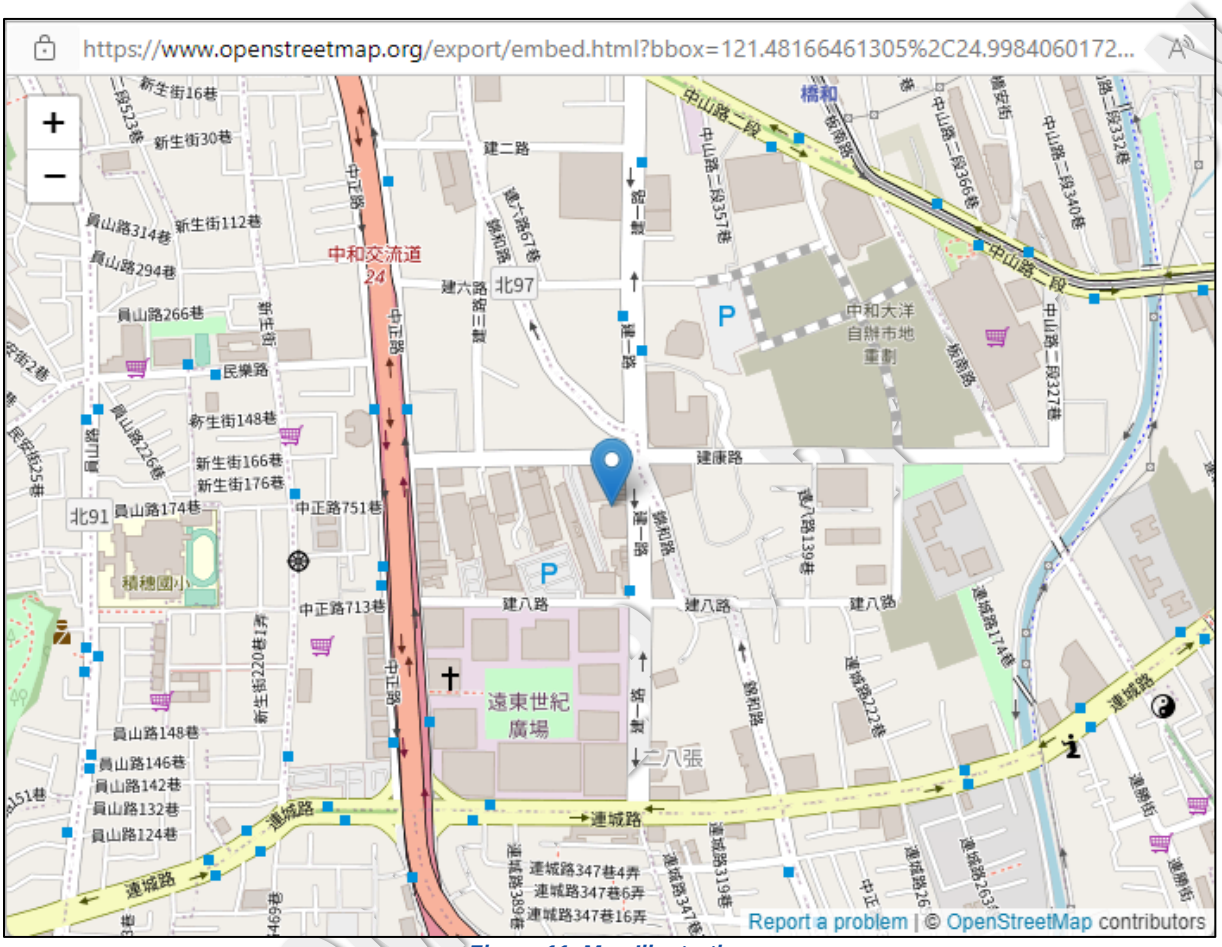

Figure 11. Map Illustration

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Home

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

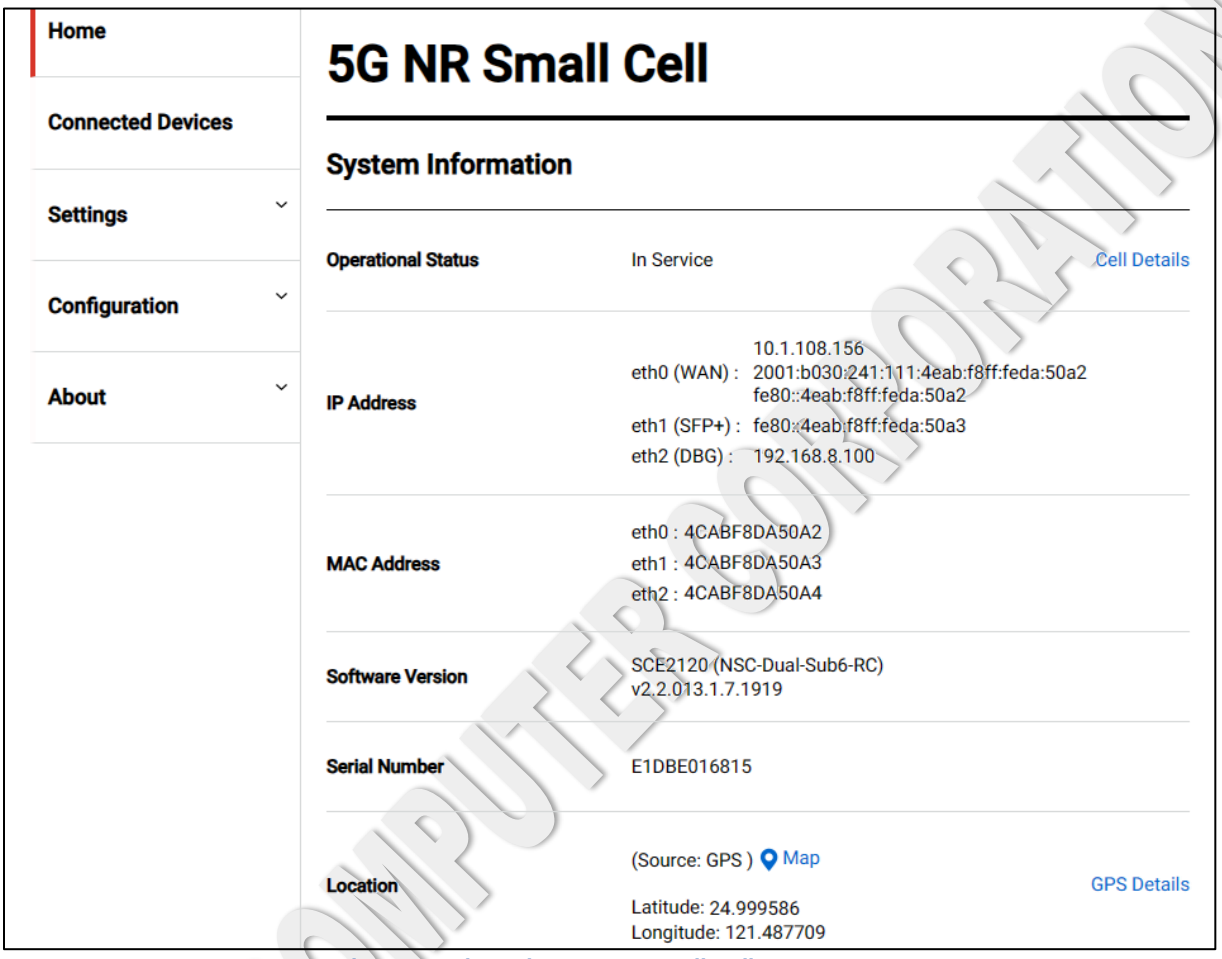

Figure 12. The Askey 5G NR Small Cell Home Page

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

Items	Descriptions
Operational Status	This indicates the current service condition of the Askey 5G NR Small Cell.
IP Address	Displays the Internet Protocol (IP) addresses assigned to the WAN, SFP+, and DBG interfaces of the Askey 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 Askey 5G NR Small Cell, which includes the model name and access mode.
Serial Number	The factory-assigned serial number for identification of the specific Askey 5G NR Small Cell unit
Location	Indicates the Askey 5G NR Small Cell's physical location as determined by the GPS coordinates.

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Map	By selecting this link, you can visualize the Askey 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.

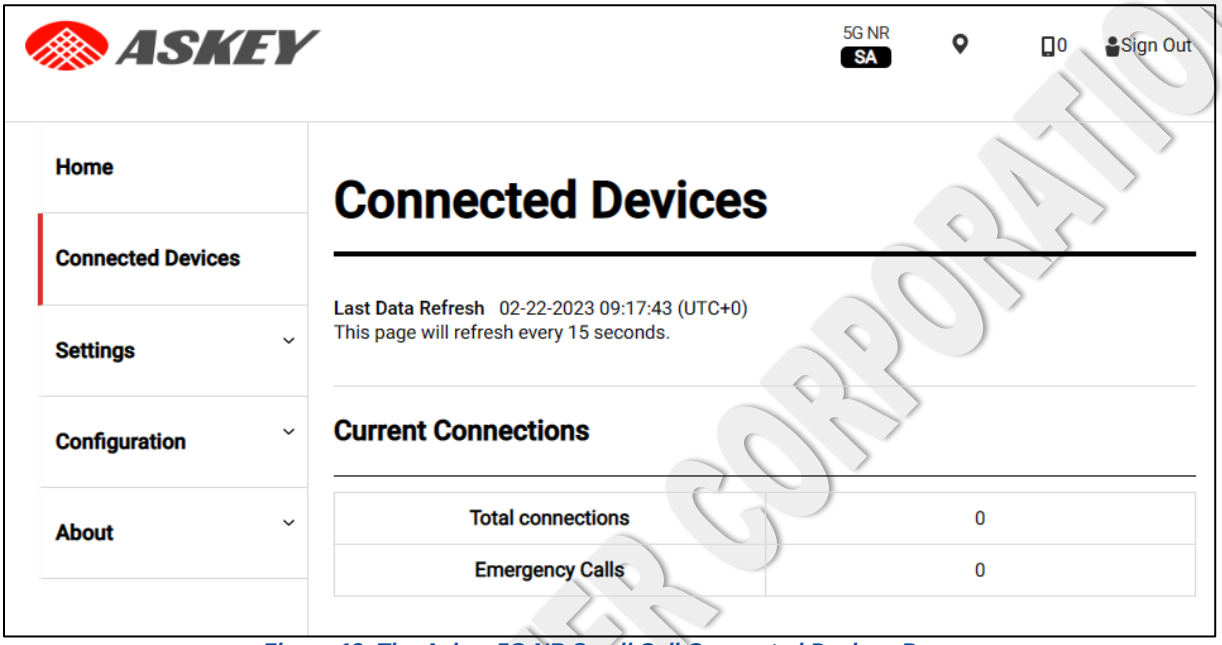

Figure 13. The Askey 5G NR Small Cell Connected Devices Page

Table 2. The Askey 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 Askey 5G NR Small Cell.
Emergency Calls	Denotes the count of wireless devices engaged in an active emergency services call via the Askey 5G NR Small Cell.

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Settings

Network

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

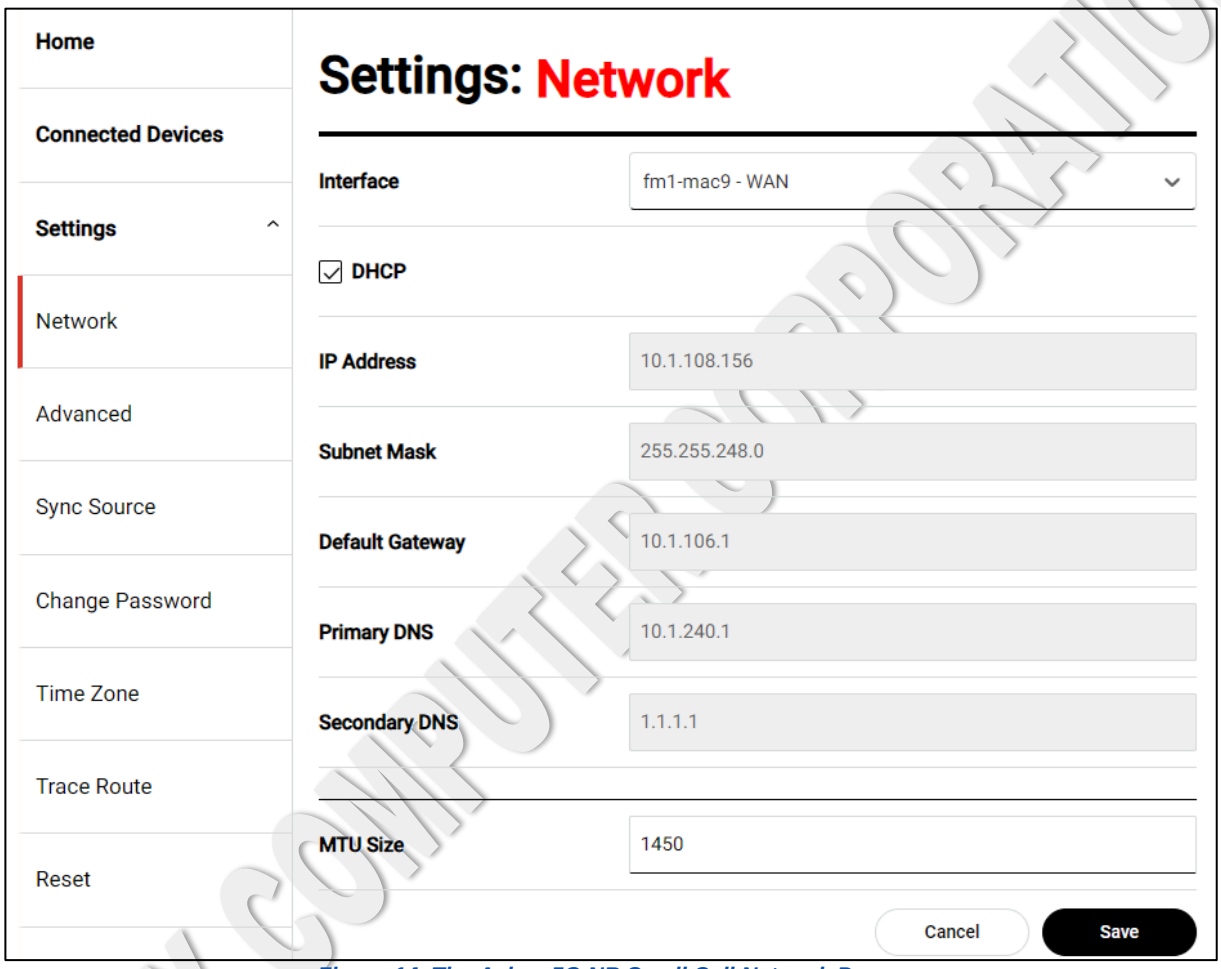
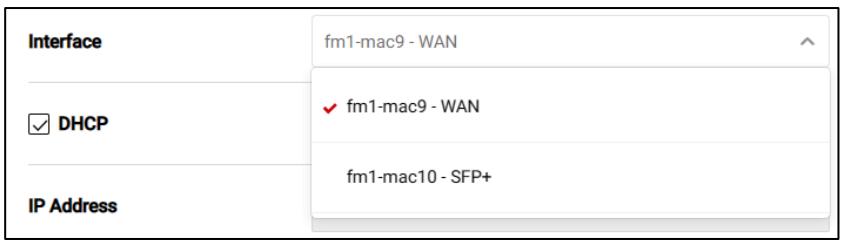


Figure 14. The Askey 5G NR Small Cell Network Page

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



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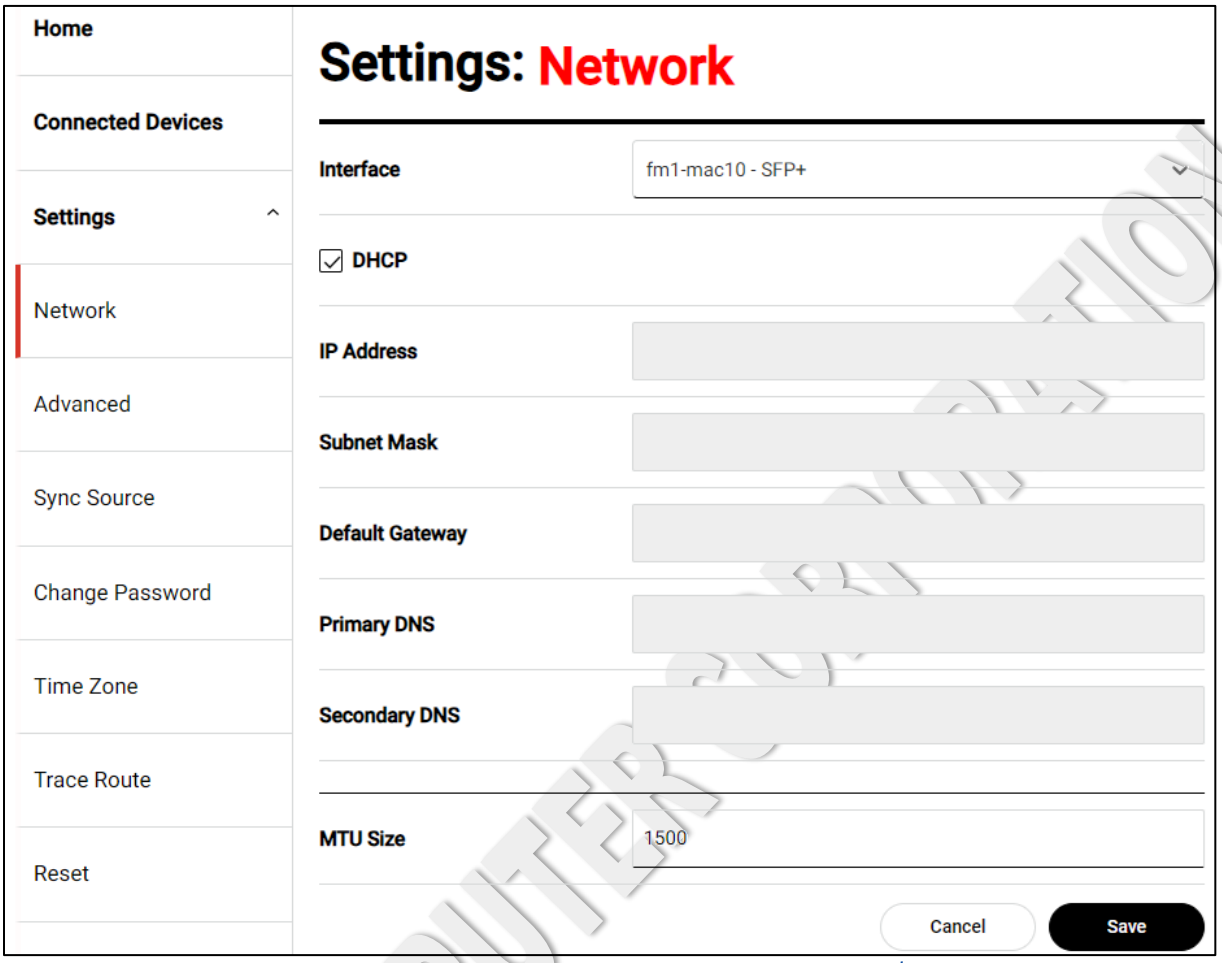

Figure 15. The Askey 5G NR Small Cell Network Page for the 2nd Interface

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.

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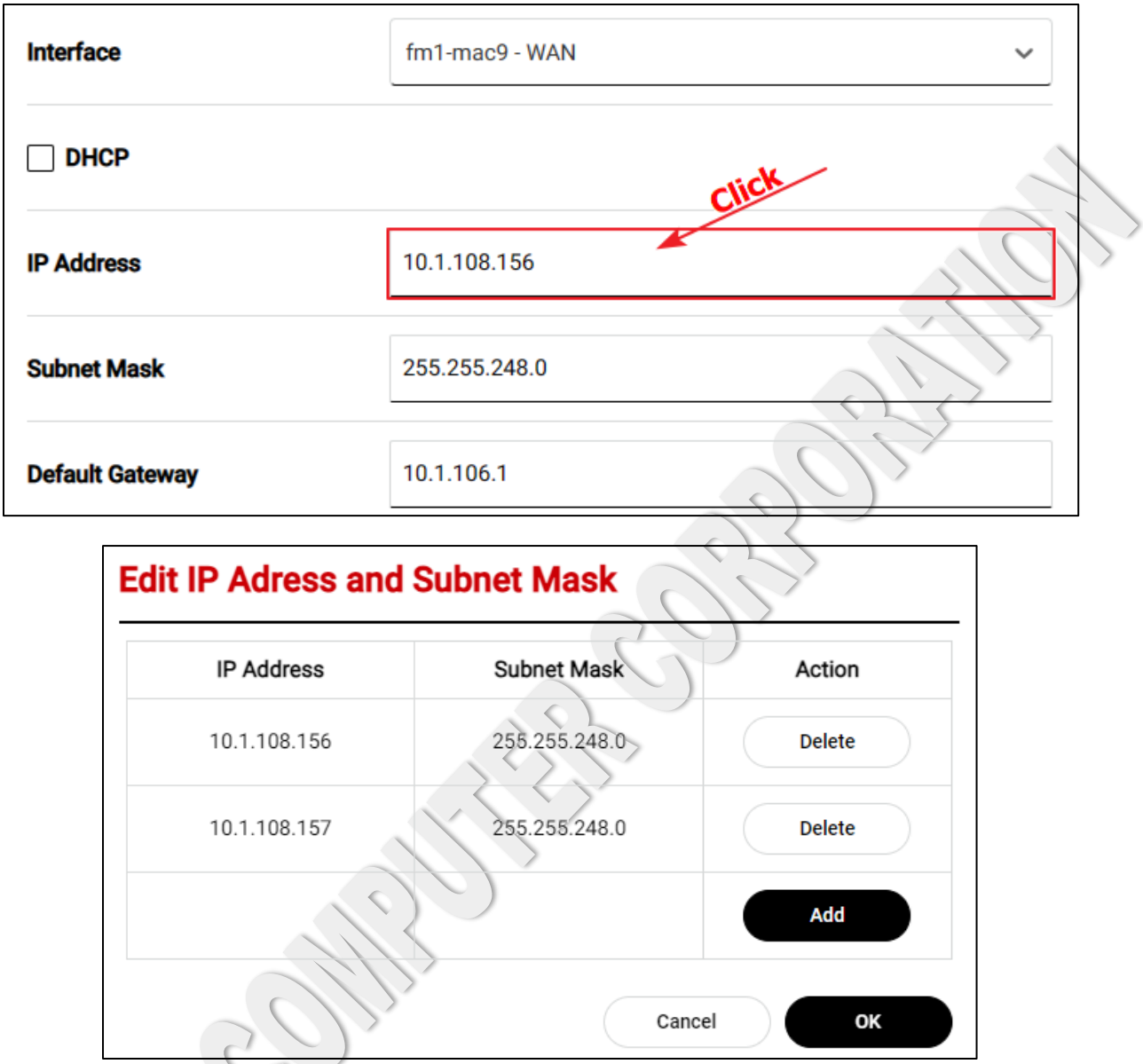

Figure 16. The Multiple Static IP Addresses Dialog Window

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.

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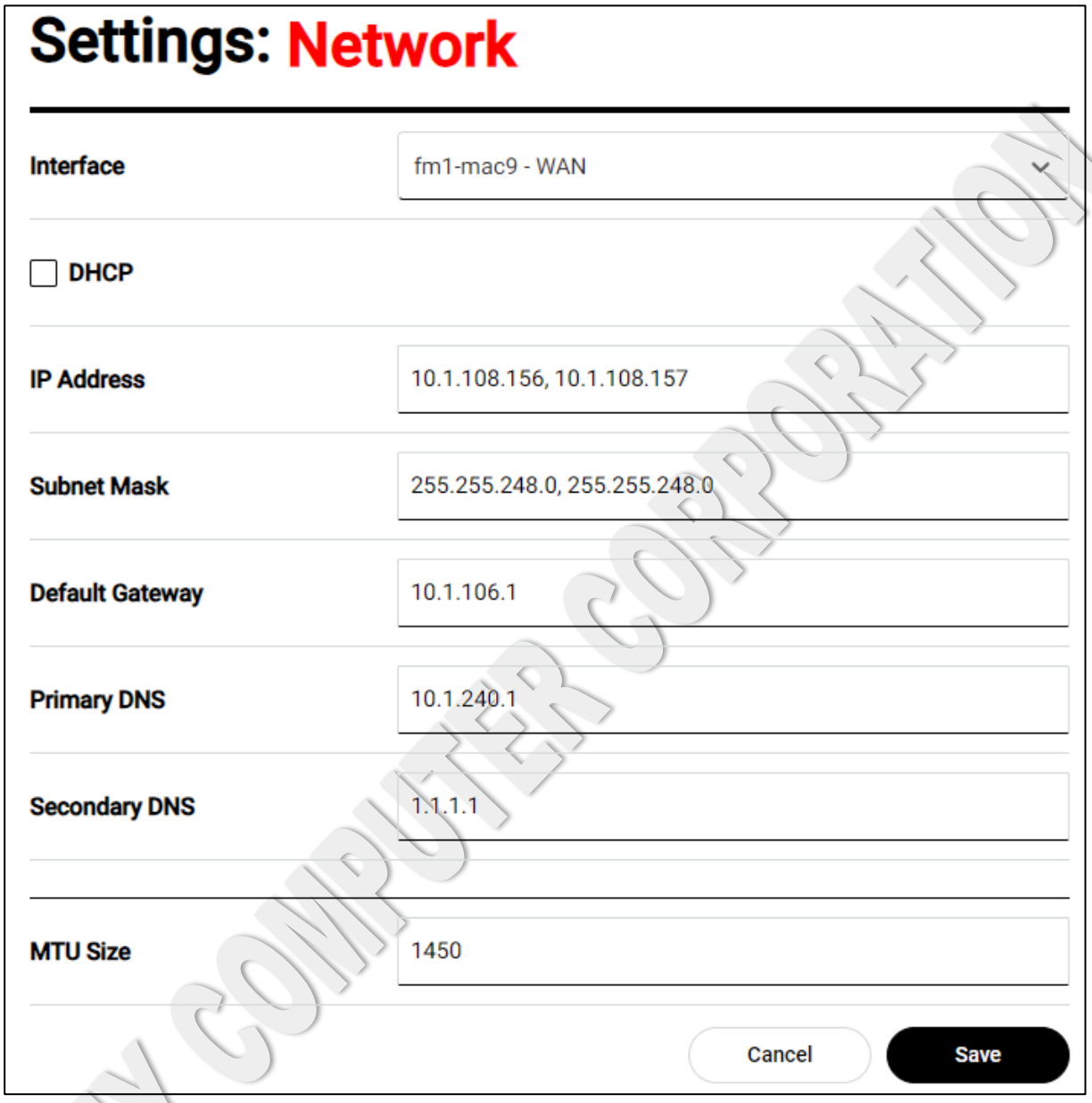

Figure 17. The Askey 5G NR Small Cell Network Page with the multiple IP addresses

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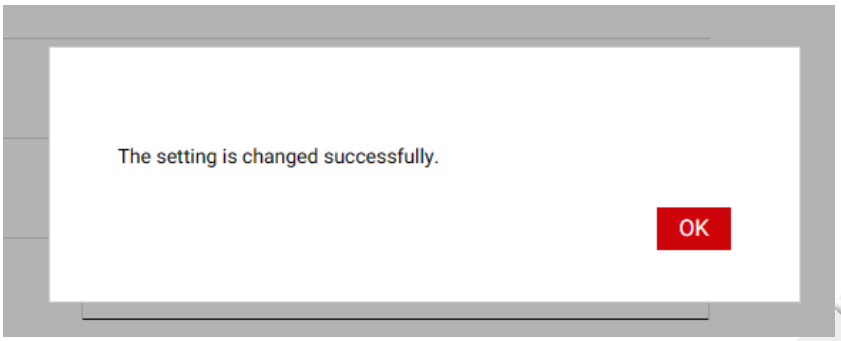

After successfully updating the settings, you can use a web browser to access the Admin Website using the newly configured alternate static IP address.

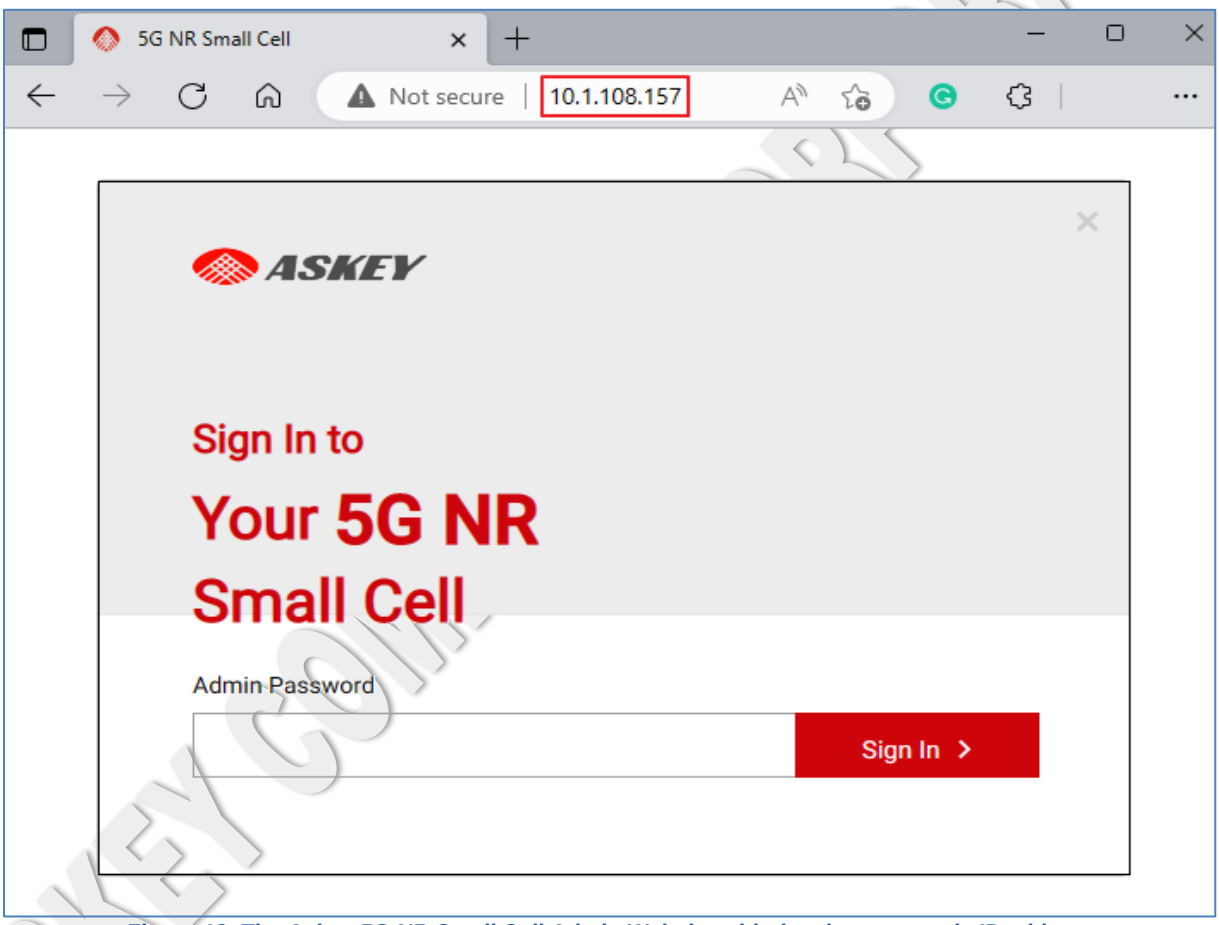

Figure 18. The Askey 5G NR Small Cell Admin Website with the alternate static IP address

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:

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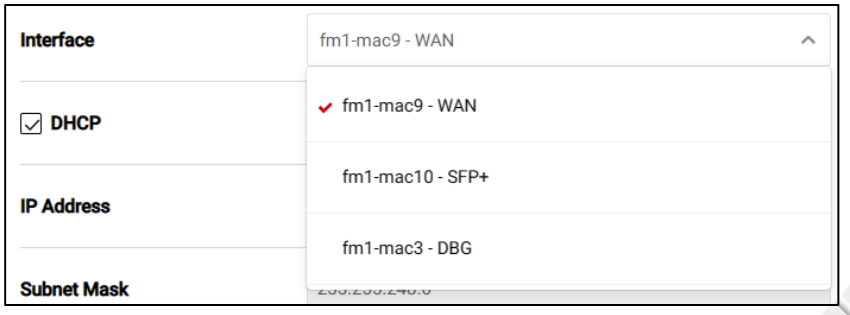

Note that the DBG interface only accepts static IPs beginning with **192.168.8.**, and does not allow modifications to the gateway or name server settings. The GUI for the DBG interface will differ slightly from other ports, as illustrated below:

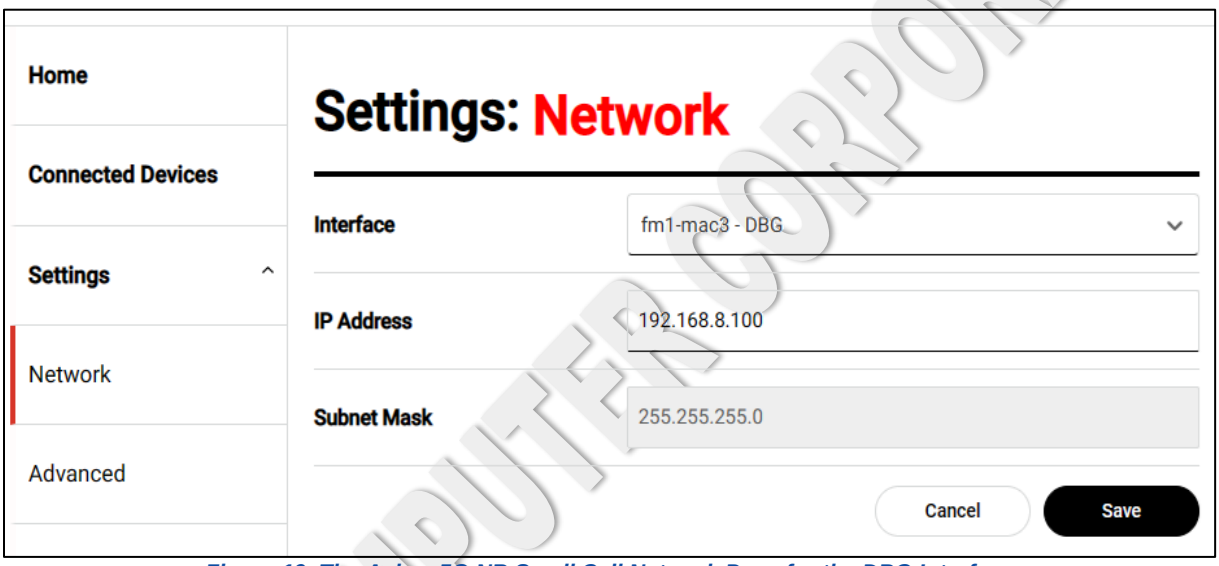

Figure 19. The Askey 5G NR Small Cell Network Page for the DBG Interface

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

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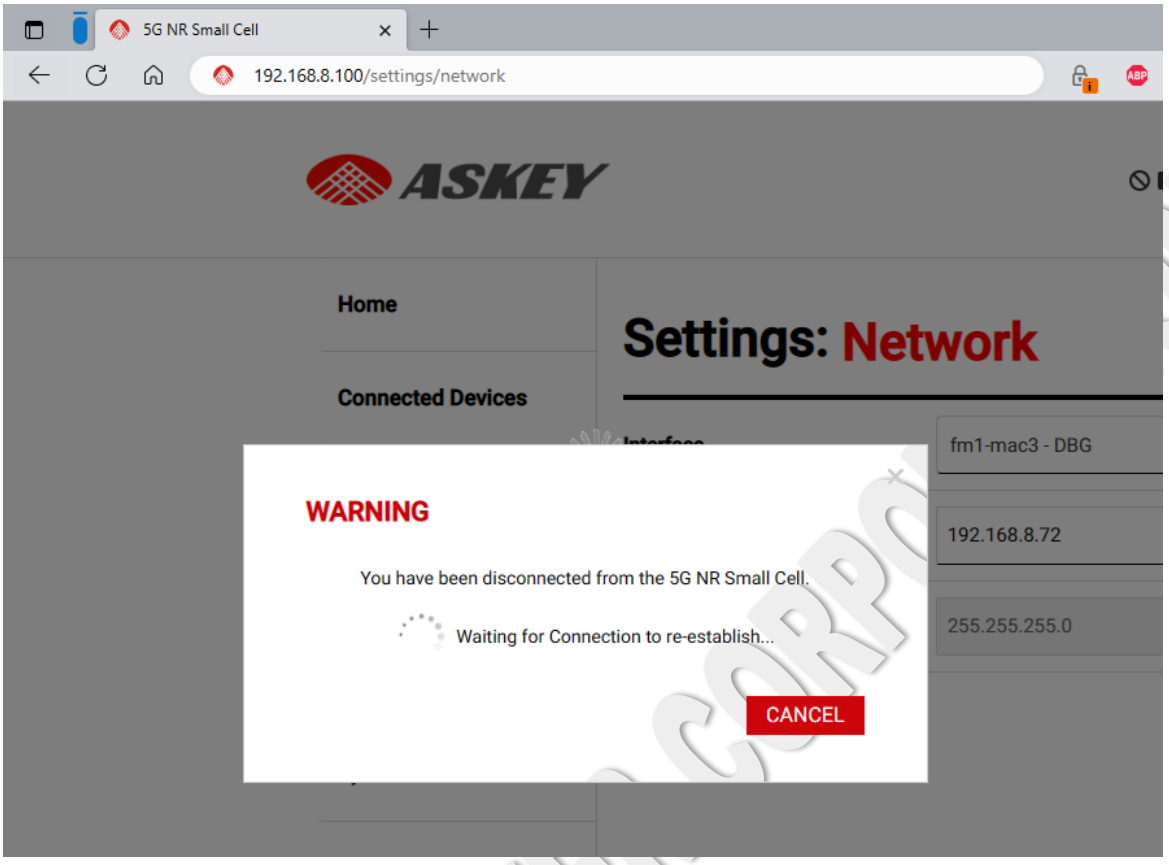

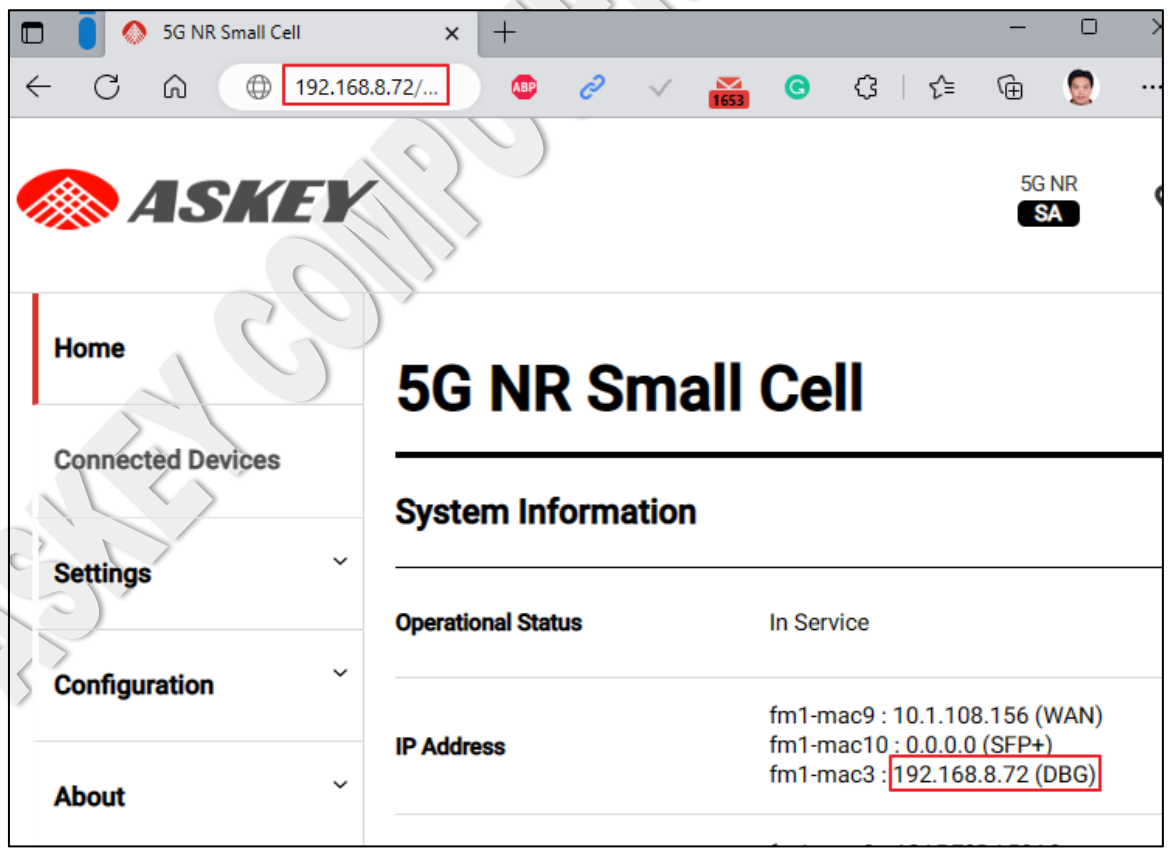

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Table 3. The Askey 5G NR Small Cell Network

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.

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Advanced

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

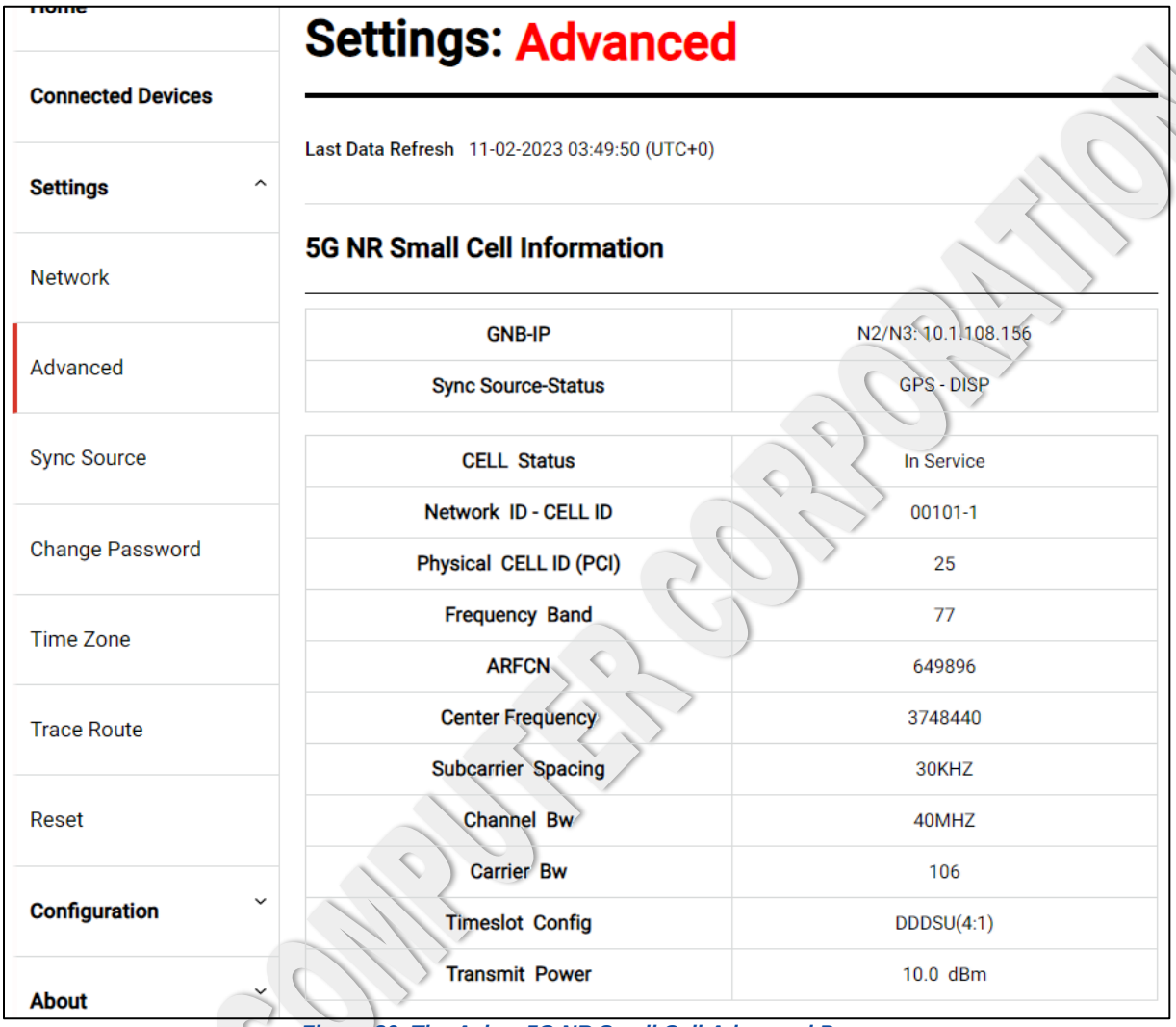

Figure 20. The Askey 5G NR Small Cell Advanced Page

Table 4. The Askey 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 Askey 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.

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Sync Source

The Askey 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.

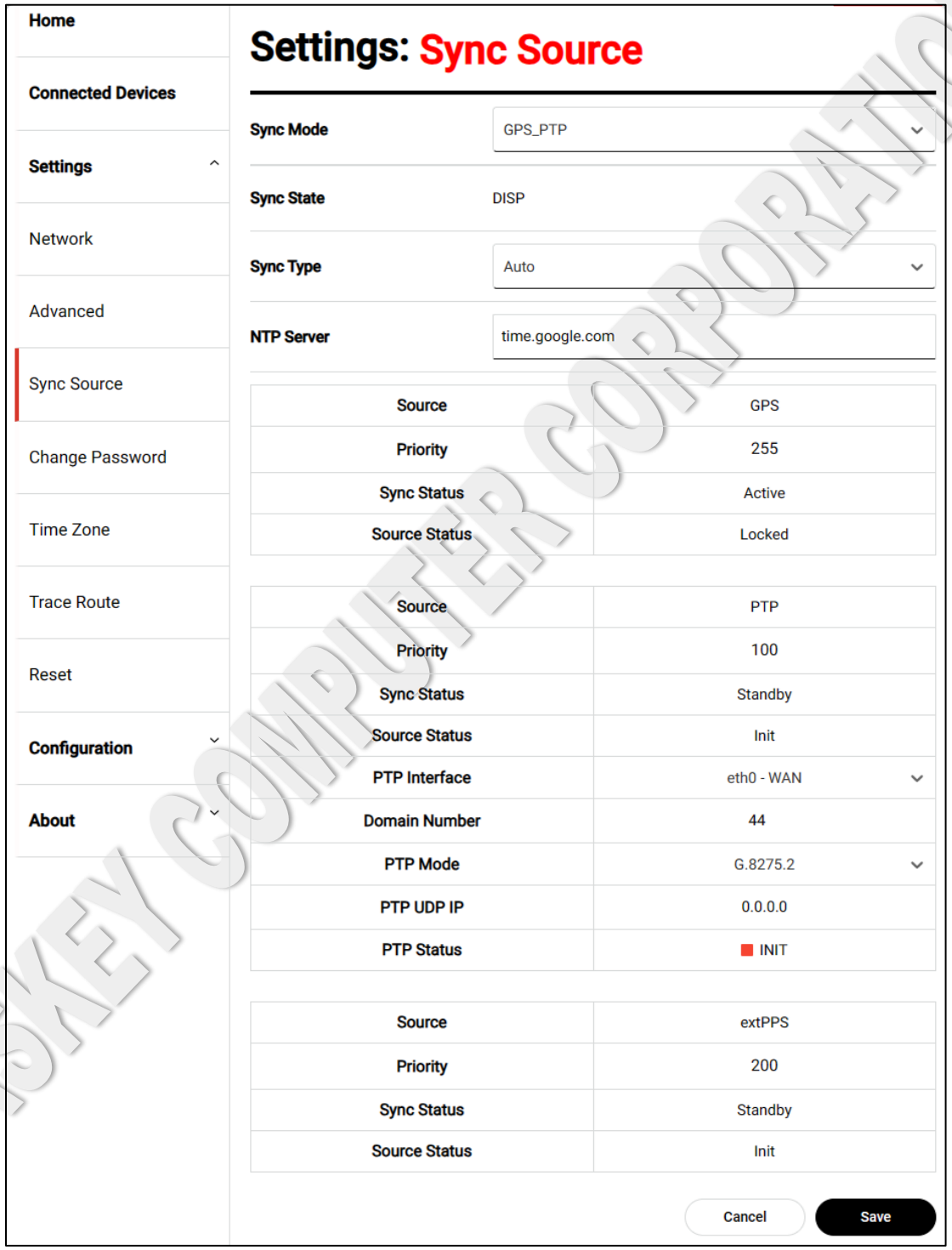

Figure 21. The Askey 5G NR Small Cell Sync Source Page

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

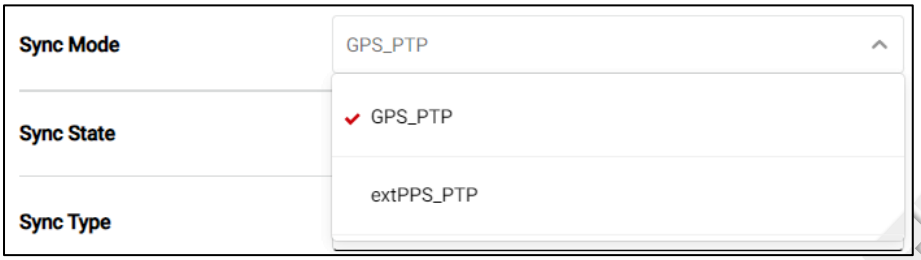


Figure 22. The Askey 5G NR Small Cell Sync Mode

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.

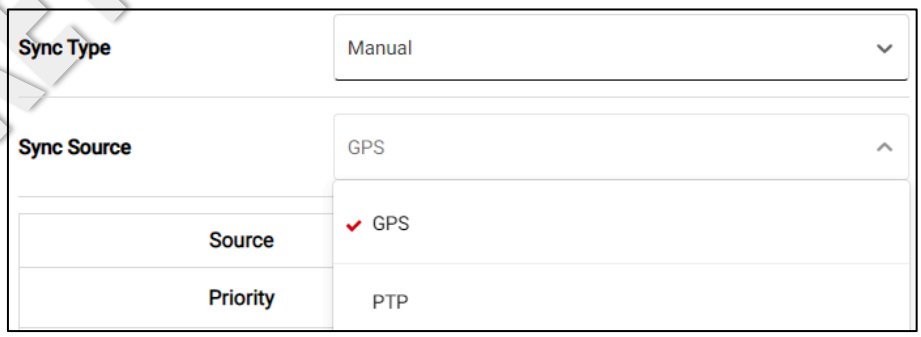
The "**Sync Type**" can be configured as either "**Auto**" or "**Manual**":

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**



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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.

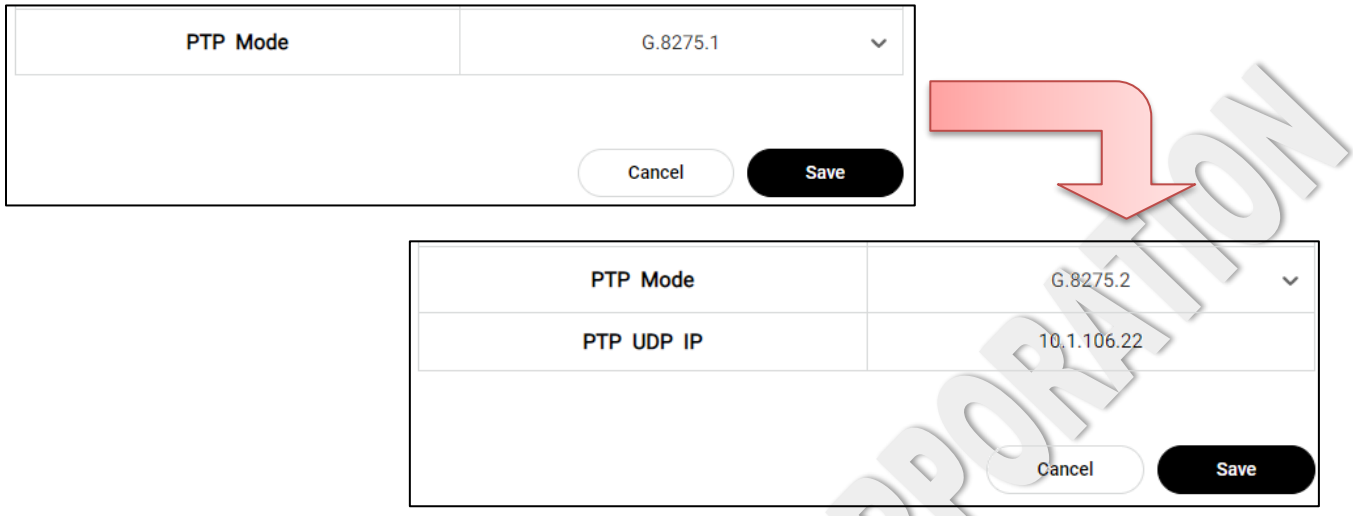

Table 5. The Askey 5G NR Small Cell Sync Source

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

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Time Zone

The Askey 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

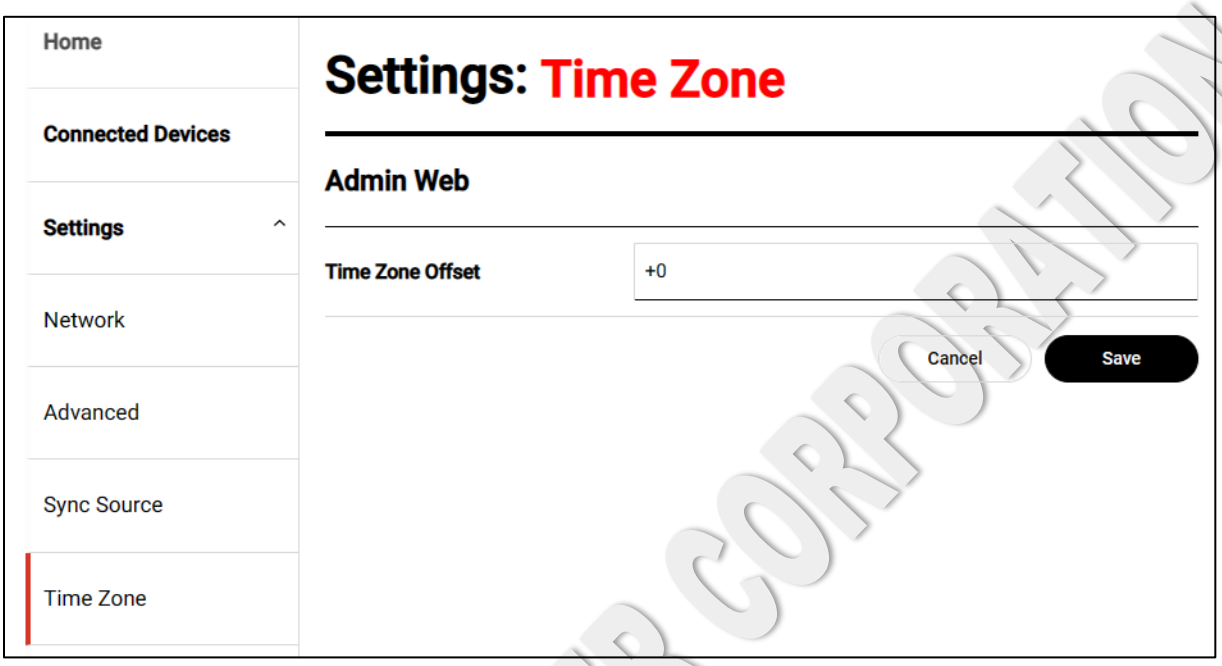

Figure 23. The Askey 5G NR Small Cell Time Zone Page

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.

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Trace Route

The Askey 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.

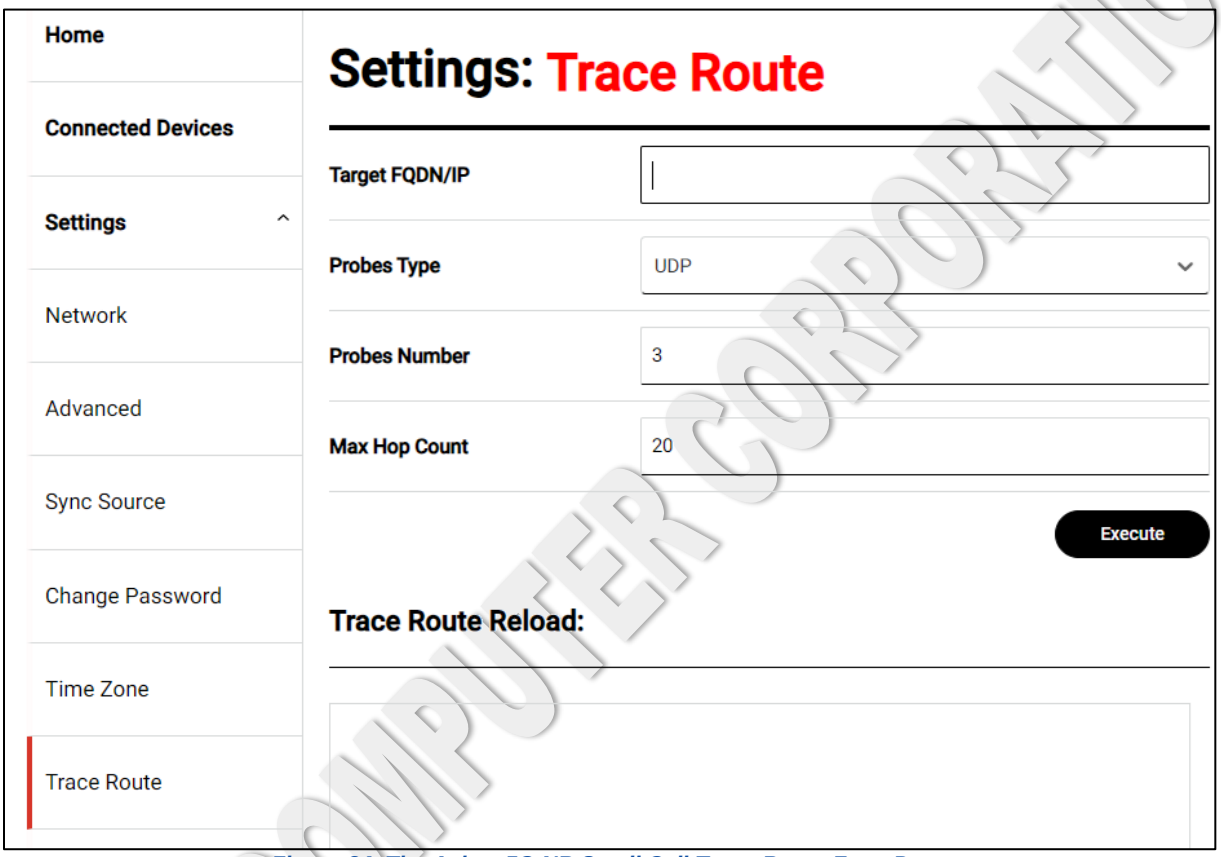

Figure 24. The Askey 5G NR Small Cell Trace Route Zone Page

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:

```
traceroute 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
```

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Reset

The Askey 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.

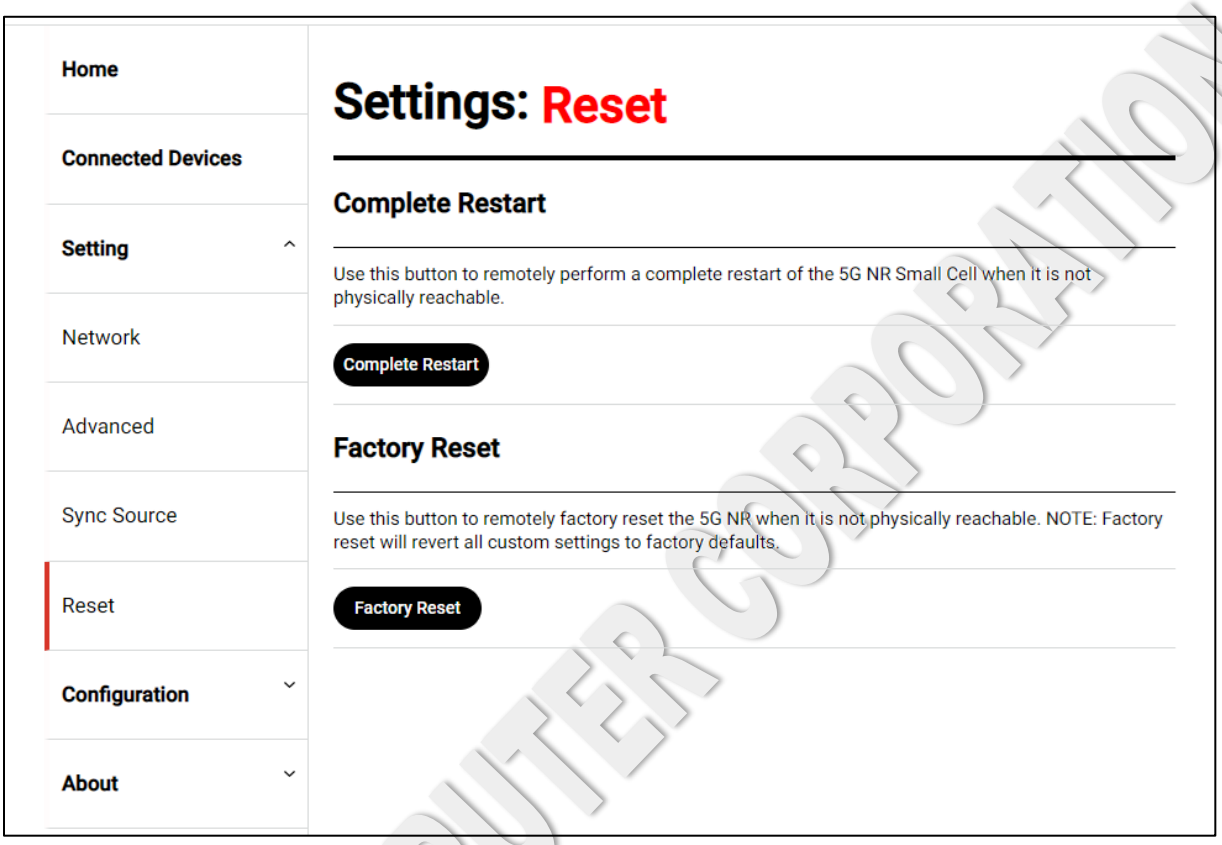
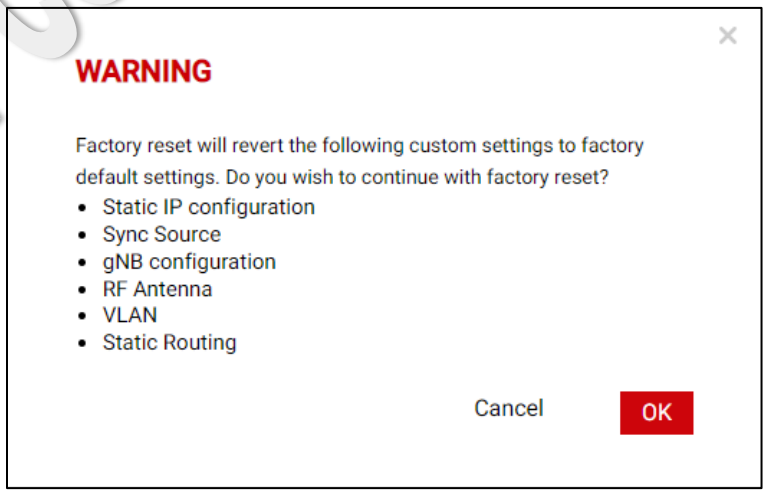


Figure 25. The Askey 5G NR Small Cell Reset Page

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:



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"If you encounter incorrect network settings on the Askey 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]/** 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 Askey 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.

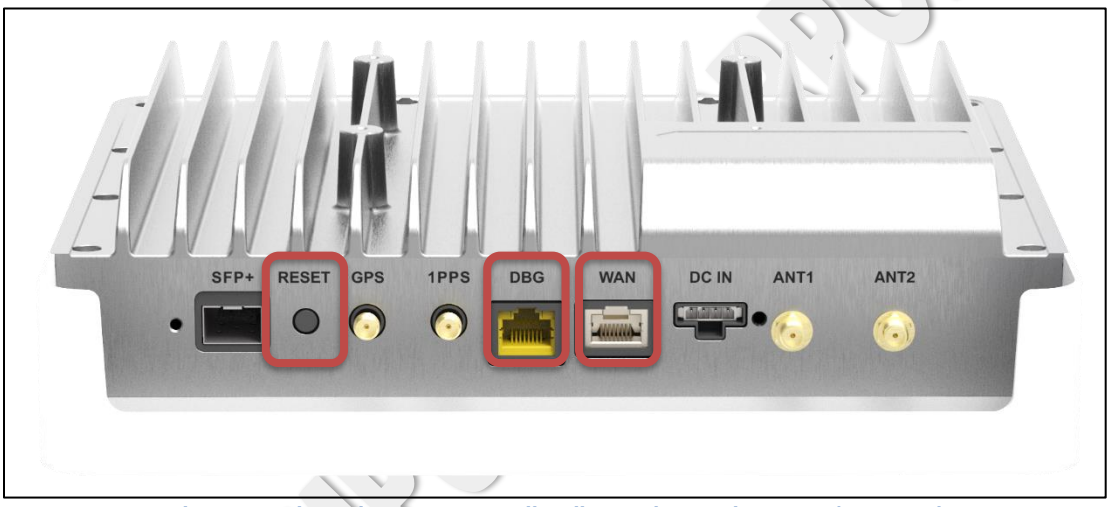

Figure 26. The Askey 5G NR Small Cell reset button (SCE2120/SCE2200)

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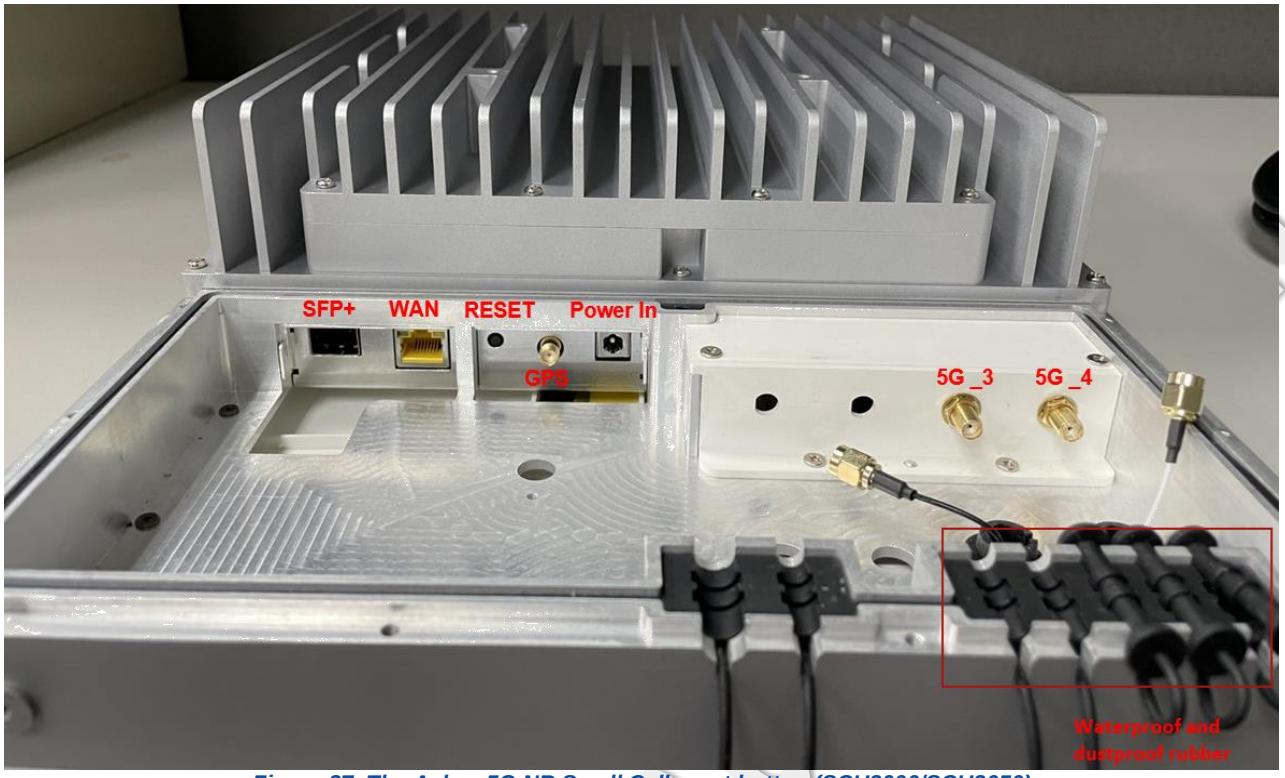

Figure 27. The Askey 5G NR Small Cell reset button (SCU2000/SCU2050)

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Configuration

gNB

This Askey 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.

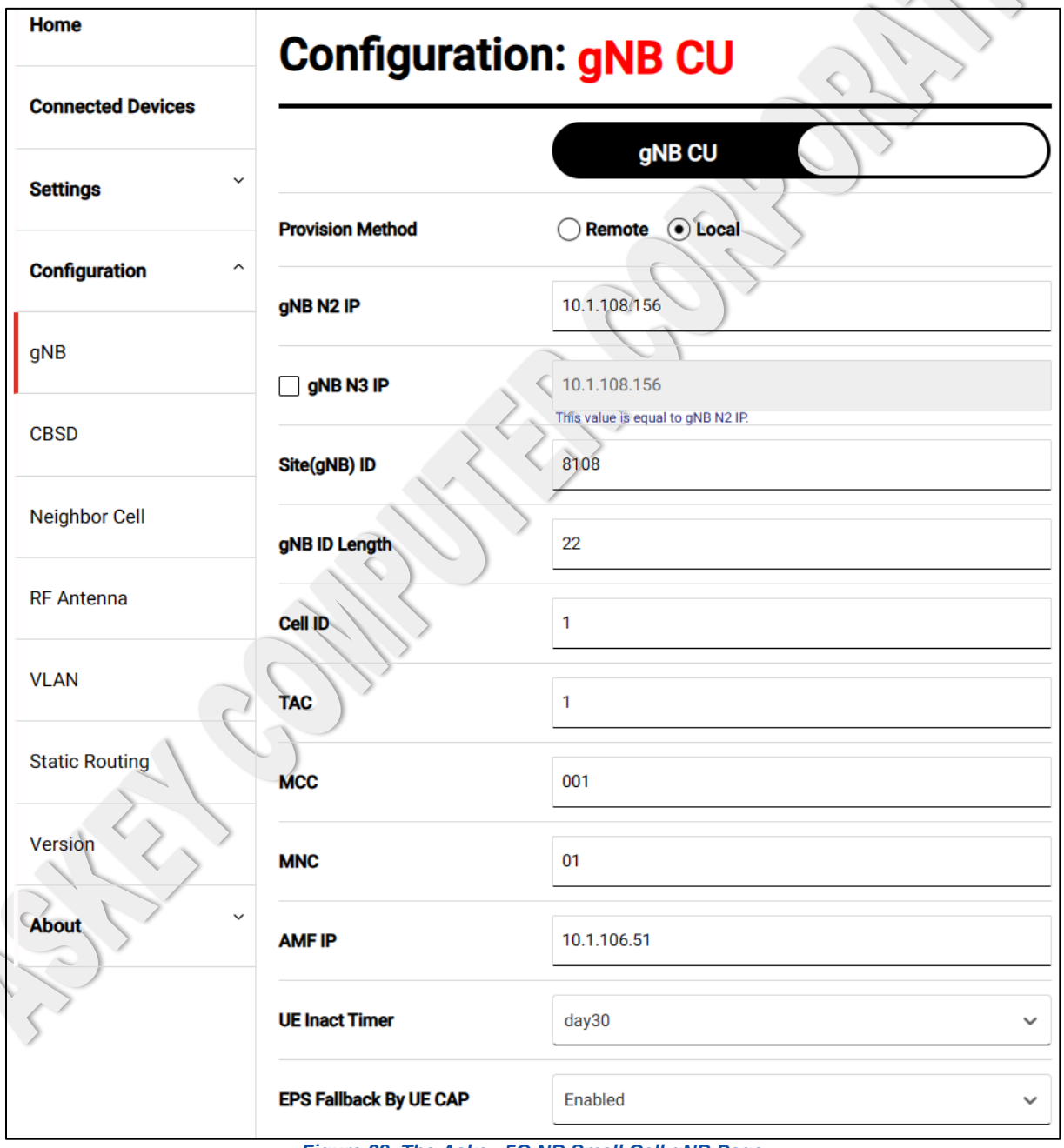

Figure 28. The Askey 5G NR Small Cell gNB Page

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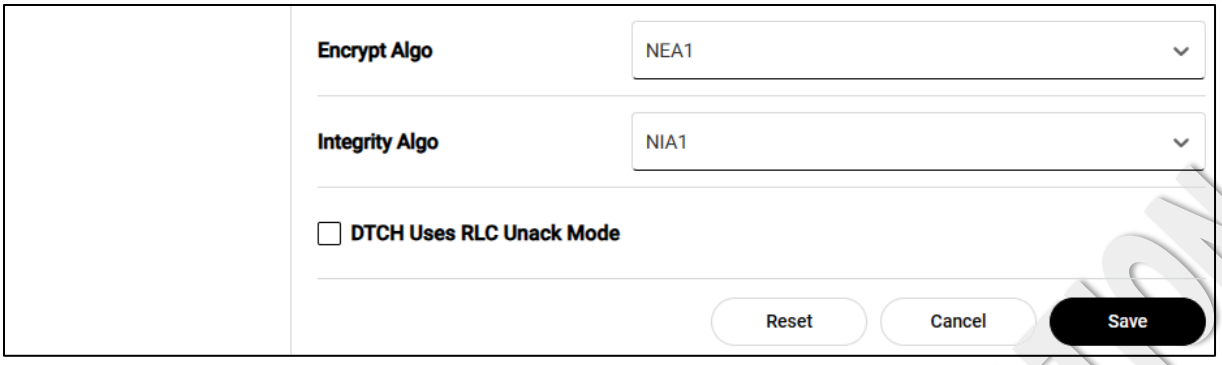


You can switch to the local provisioning method by selecting **'Local'** in the Provision Method options. After adjusting the configurations, click the **'Save'** button to save these changes. If you encounter any incorrect settings that prevent the cell from providing 5G NR service, you can reset to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

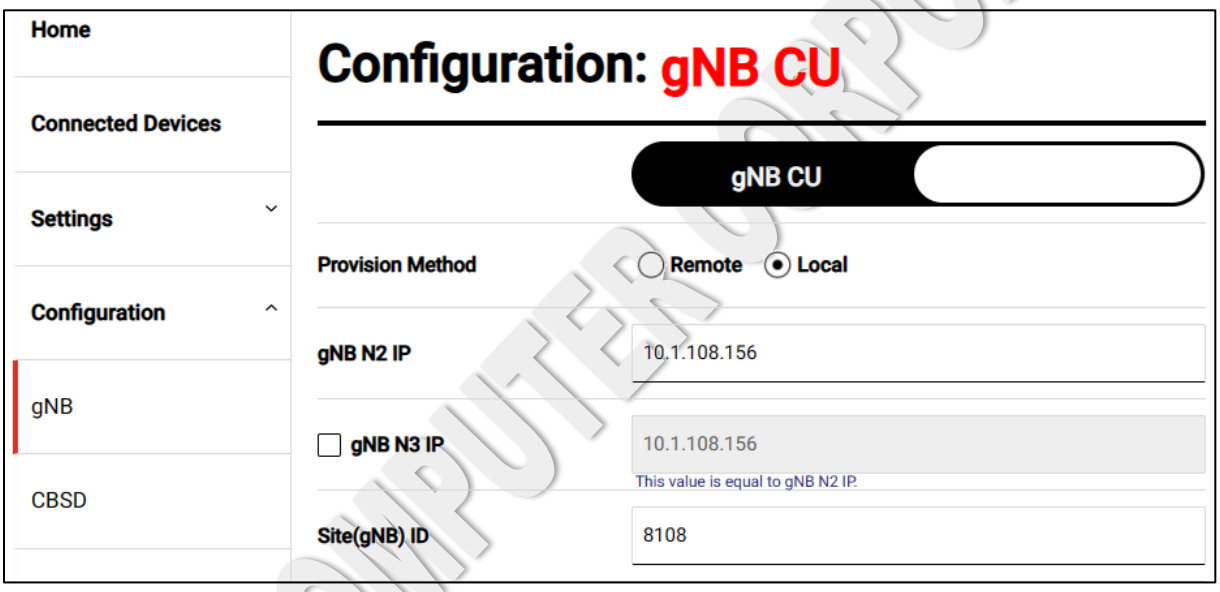
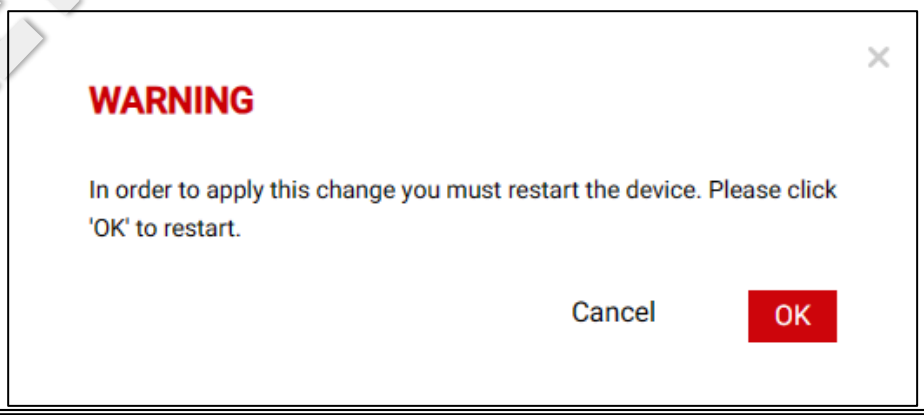


Figure 29. The Local Provision Method in gNB Configuration

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.



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By default, the gNB IP address is the same for both the N2 and N3 interfaces. To assign a unique IP address to the N3 interface, check the designated box to activate this configuration.

As shown in the figure below Askey OAM Architecture, verify that the gNB IP is correctly set according to the network configuration and that the cable is connected to the appropriate port—WAN, SFP+, or a designated VLAN IP address.

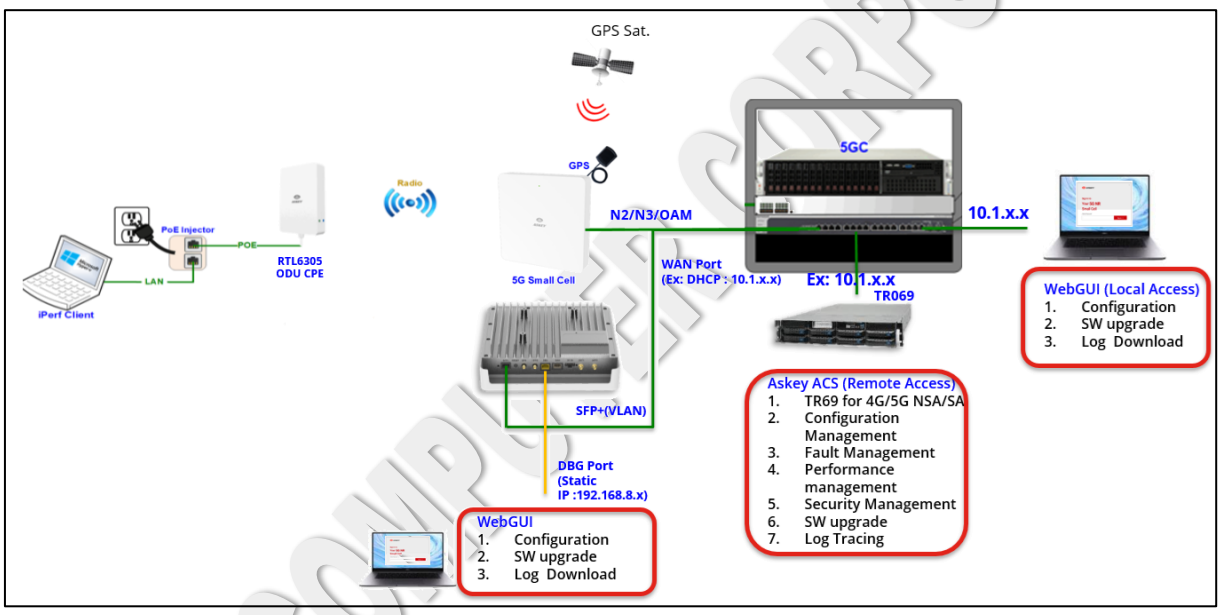
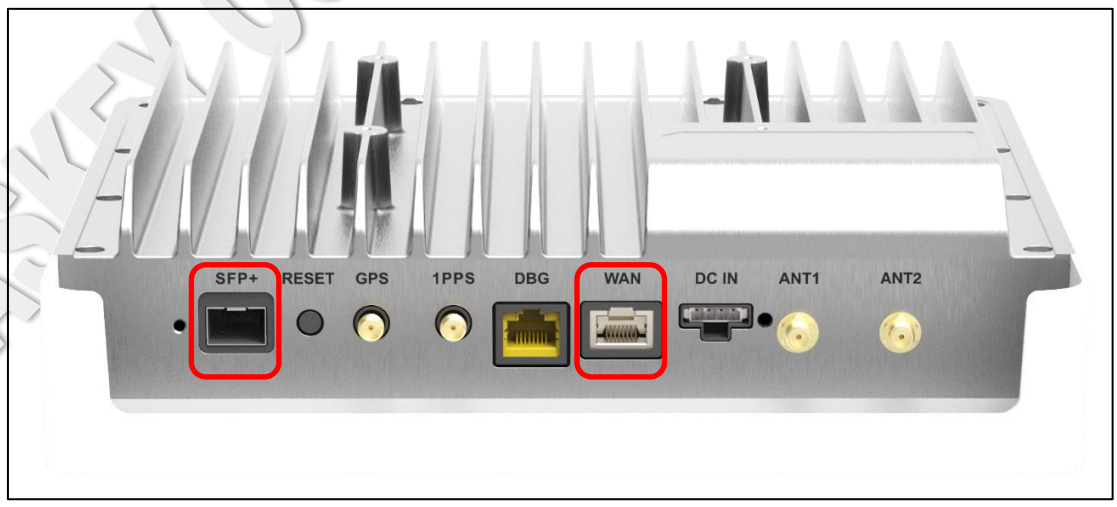


Figure 30. The Askey OAM Architecture



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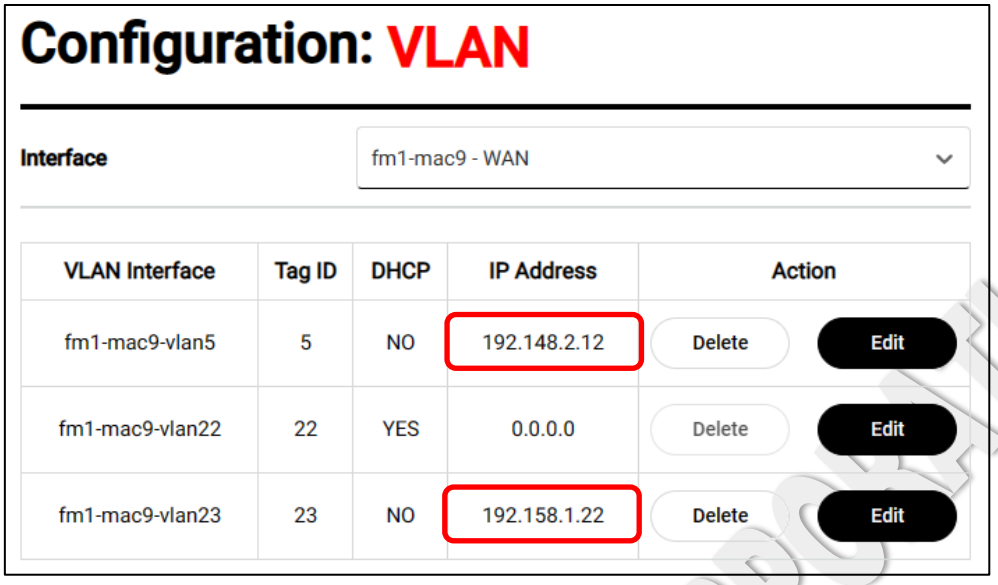

Table 6. The Askey 5G NR Small Cell CU Configuration

Items	Descriptions
Provision Method	This specifies whether the configuration is '**Remote**' or '**Local**' 1. **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. 2. **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**

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

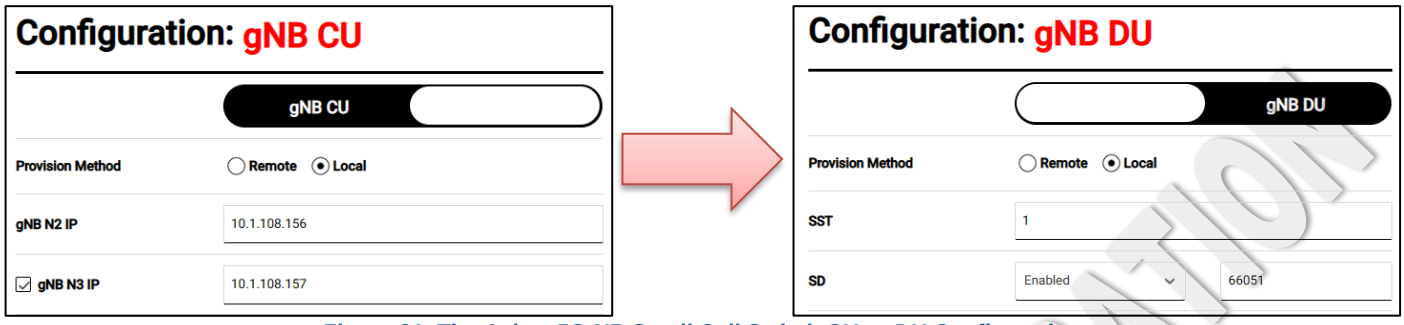

Figure 31. The Askey 5G NR Small Cell Switch CU or DU Configuration

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.

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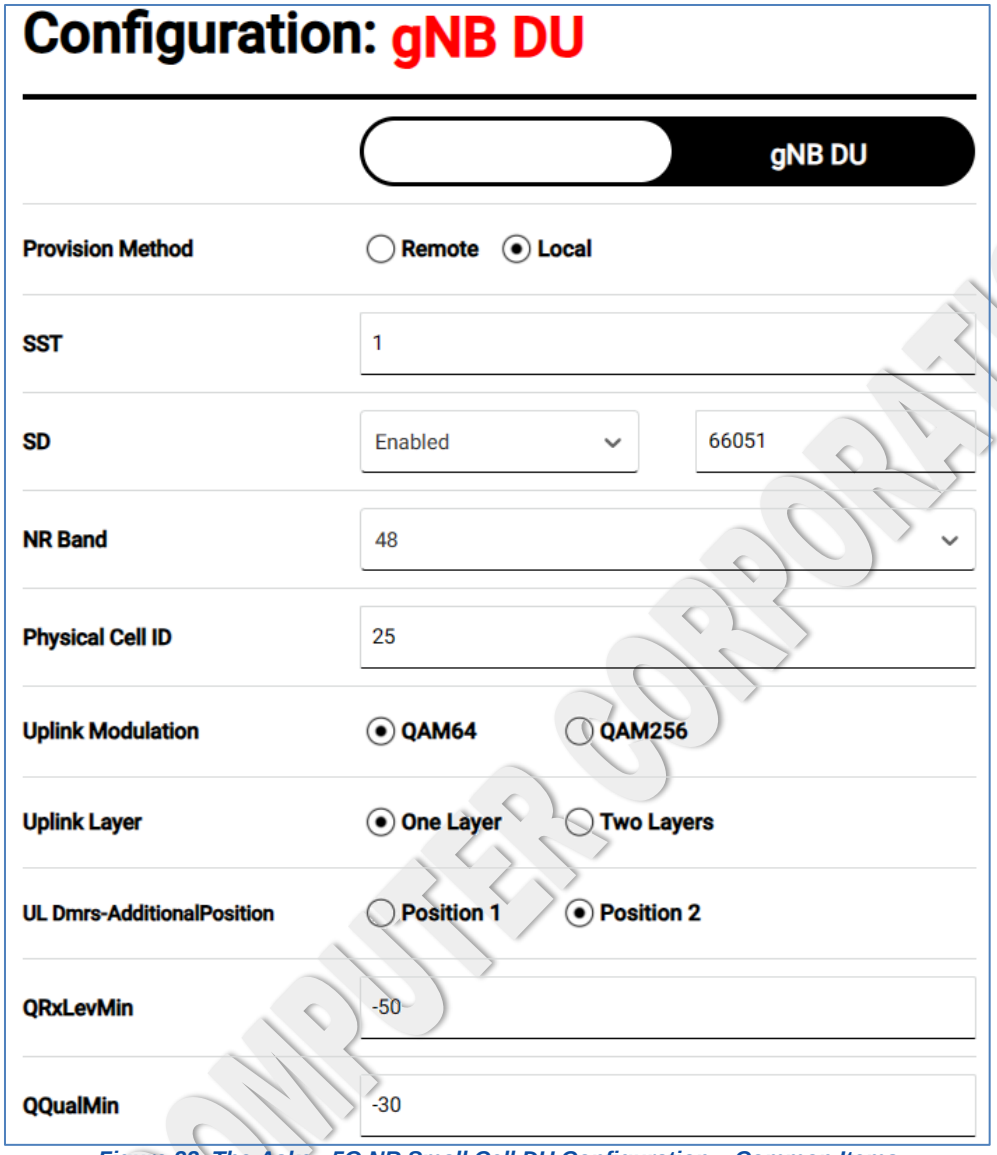

Figure 32. The Askey 5G NR Small Cell DU Configuration – Common Items

Table 7. The Askey 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

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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/SCU2080.

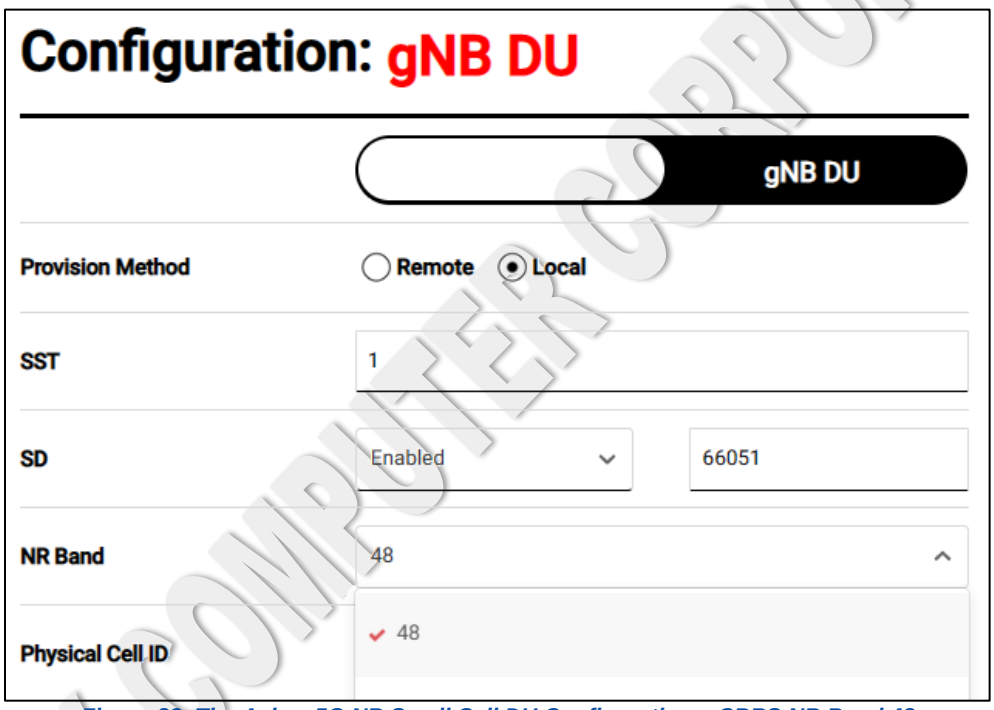

Figure 33. The Askey 5G NR Small Cell DU Configuration – CBRS NR Band 48

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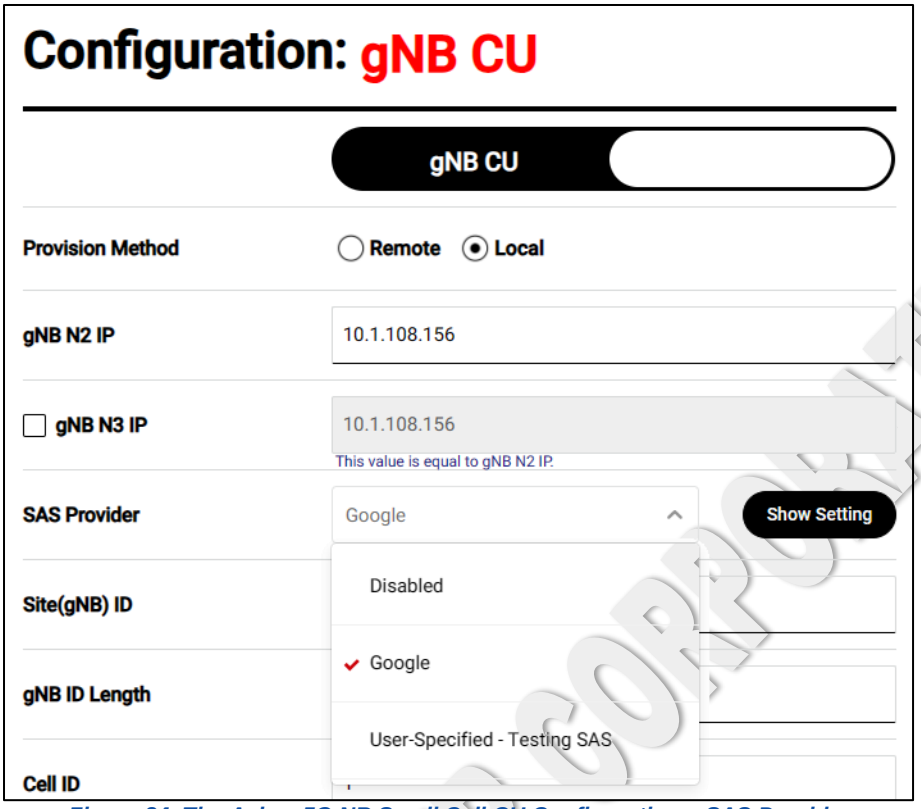
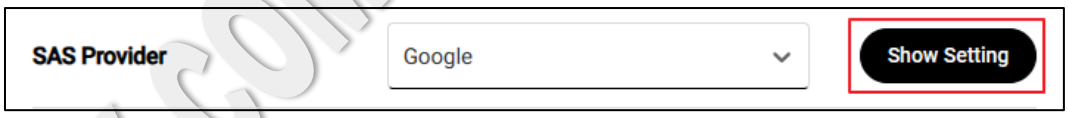


Figure 34. The Askey 5G NR Small Cell CU Configuration – SAS Provider

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:



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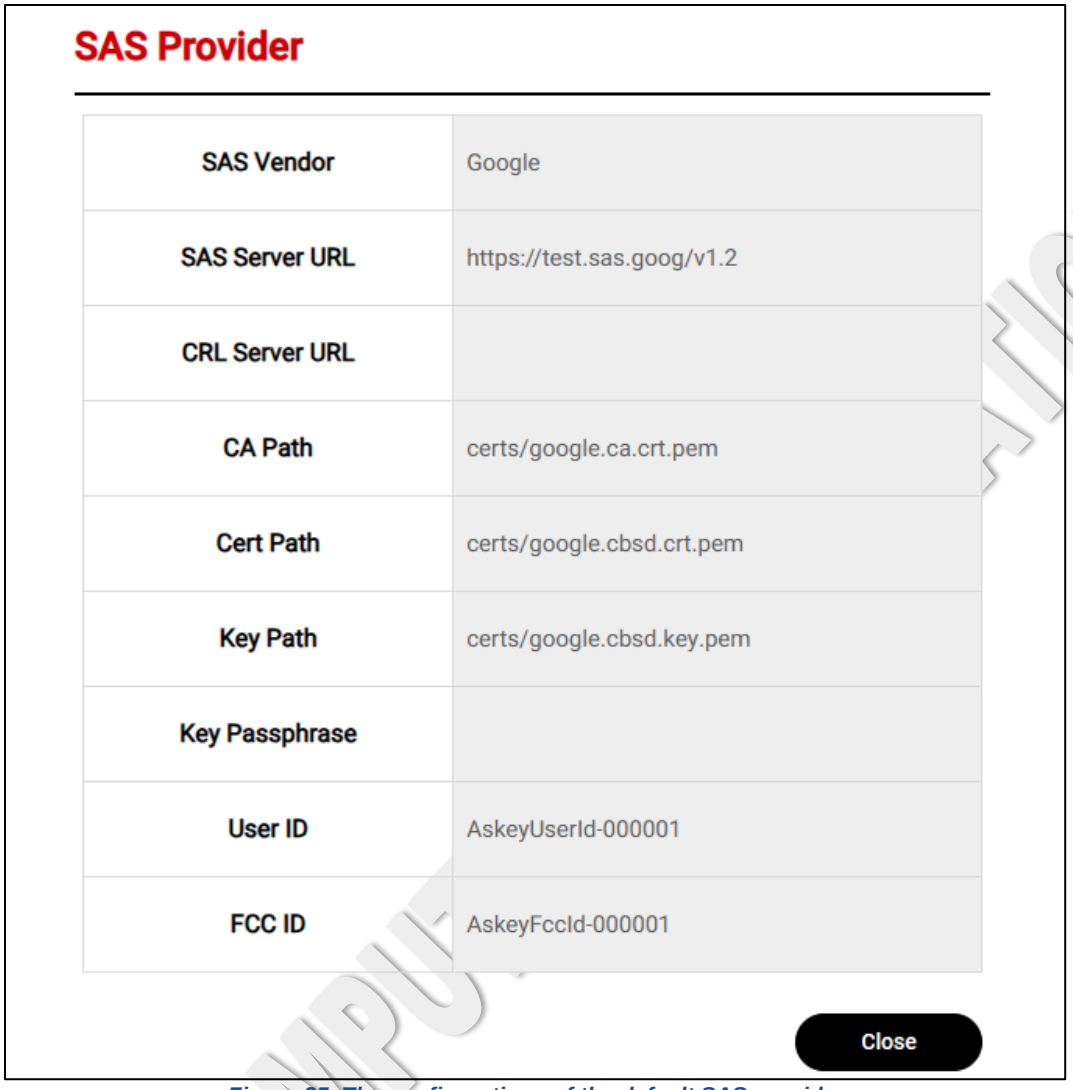

Figure 35. The configurations of the default SAS provider

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

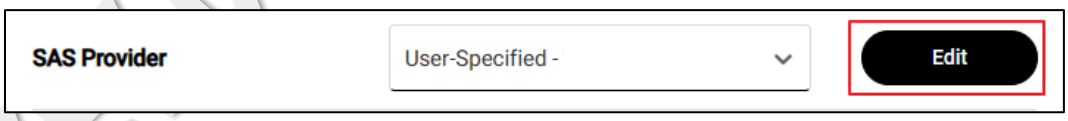

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Figure 36. The Configurations for User-Specified SAS Provider

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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.

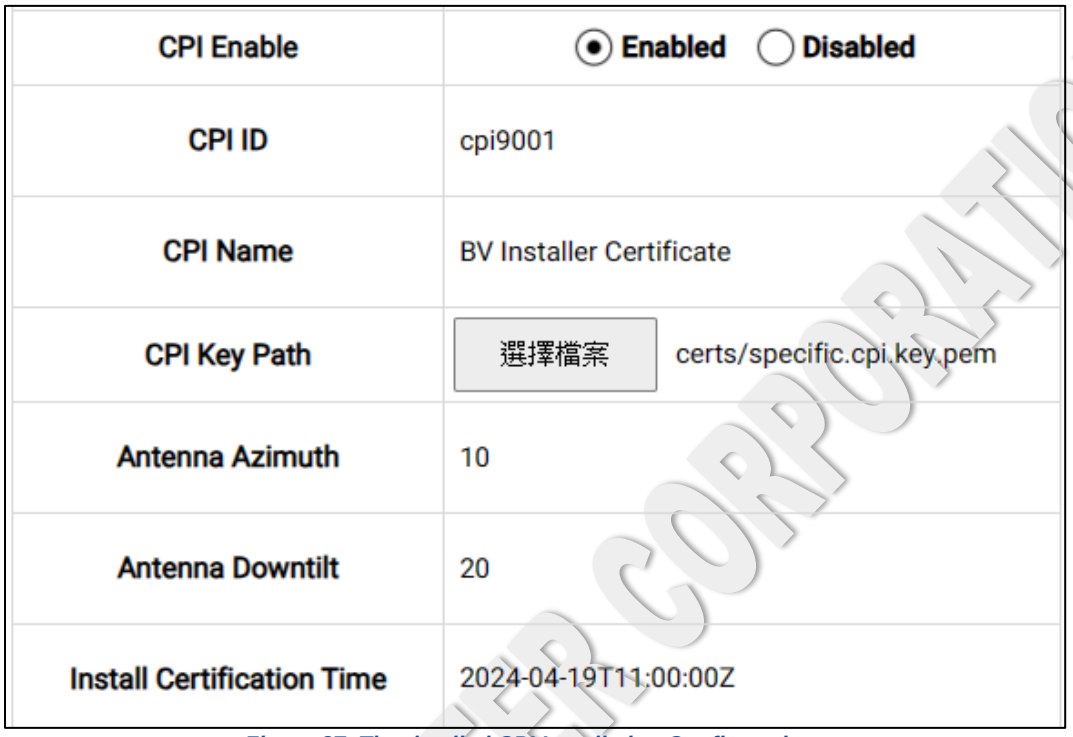

Figure 37. The detailed CPI Installation Configurations

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.

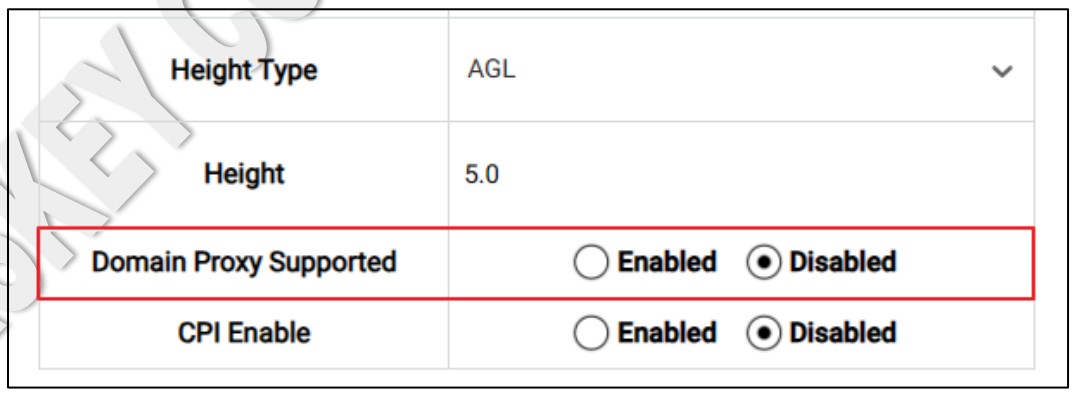

Figure 38. The Domain Proxy Supported Configuration in Remote Provisioning

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Table 8. The Askey 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).

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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.

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

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Table 9. The Askey 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.

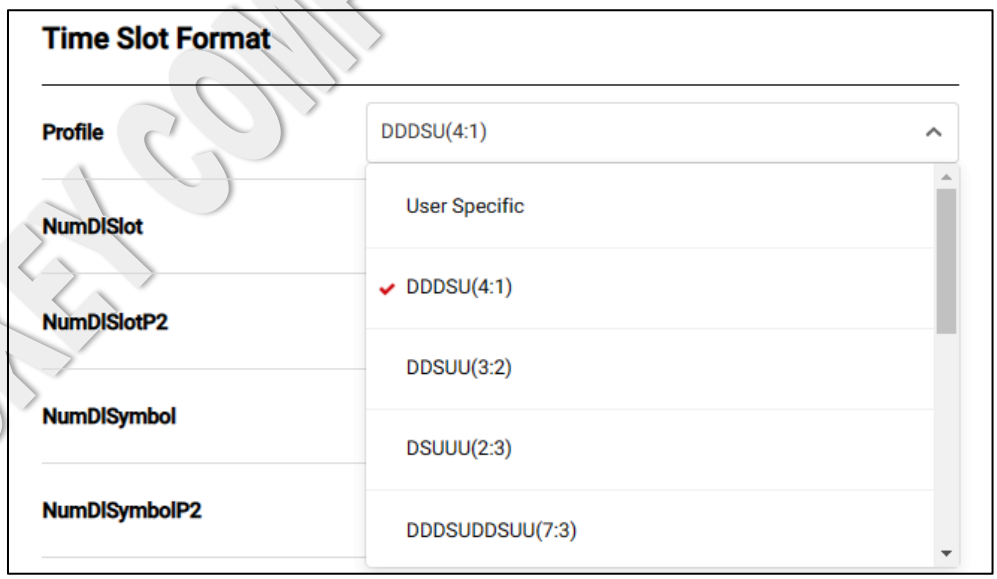

Figure 40. The Askey 5G NR Small Cell DU Configuration – Time Slot Profile

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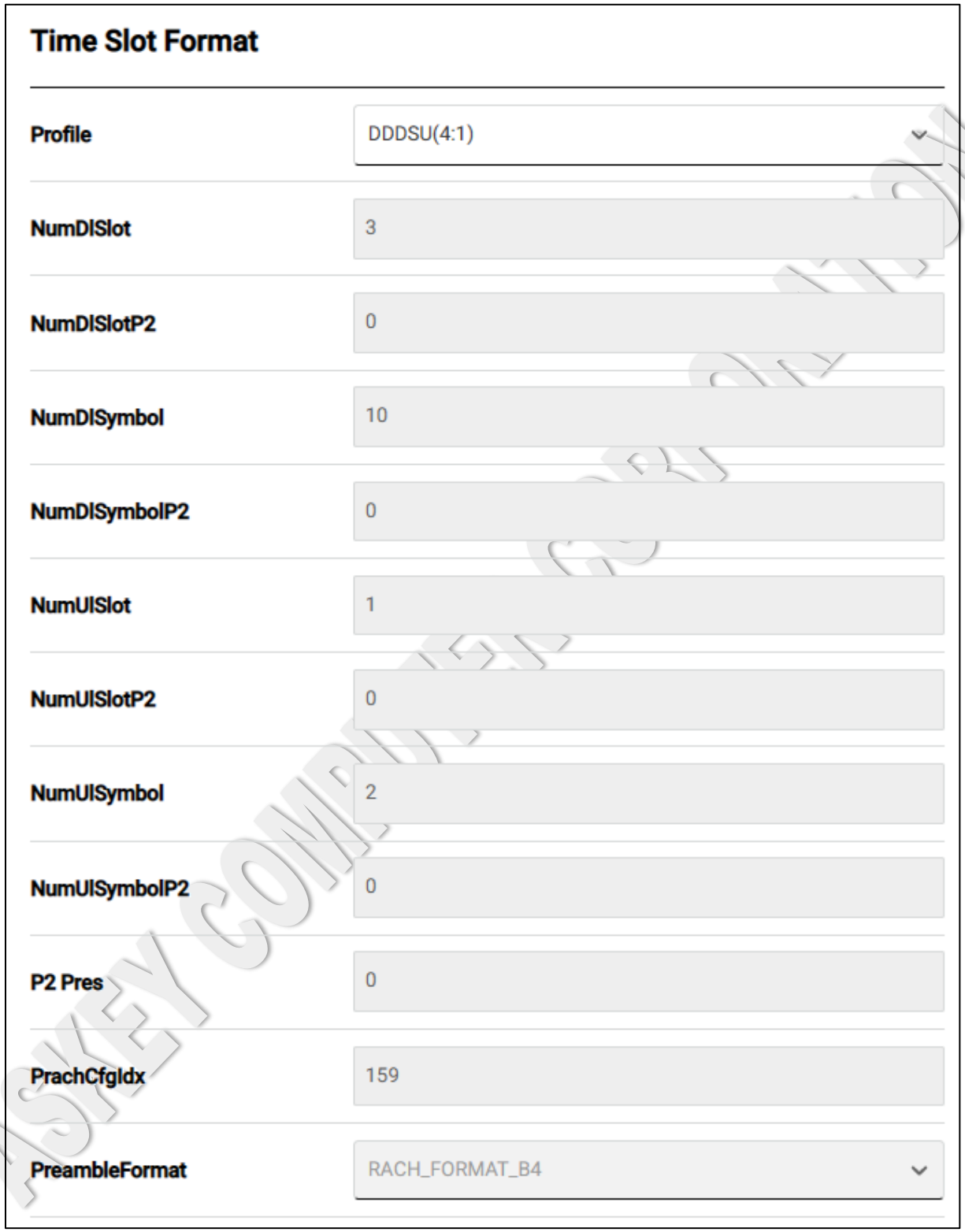

Figure 41. The Askey 5G NR Small Cell DU Configuration – Time Slot Parameters

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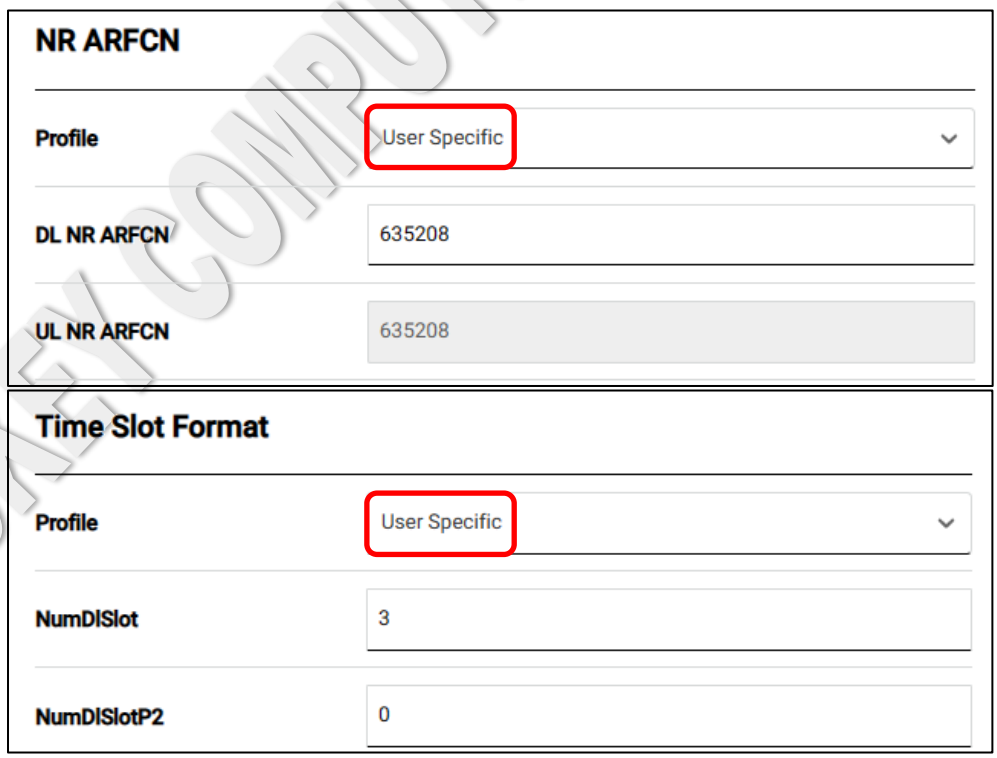
Table 10. The Askey 5G NR Small Cell DU Configuration – Time Slot Format

Items	Descriptions
Profile	Lists common time slot patterns and provides default values for detailed settings.
numDlSlot	The number of downlink slots.
numDlSlot2	The number of P2 downlink slots.
numDlSymbol	The number of downlink symbols for the slot format.
numDlSymbolP2	The number of P2 downlink symbols for the slot format.
numUlSlot	The number of uplink slots.
numUlSlotP2	The number of P2 uplink slots.
numUlSymbol	The number of uplink symbols for the slot format.
numUlSymbolP2	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**'.



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CBSD

If the Askey 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/SCU2080.

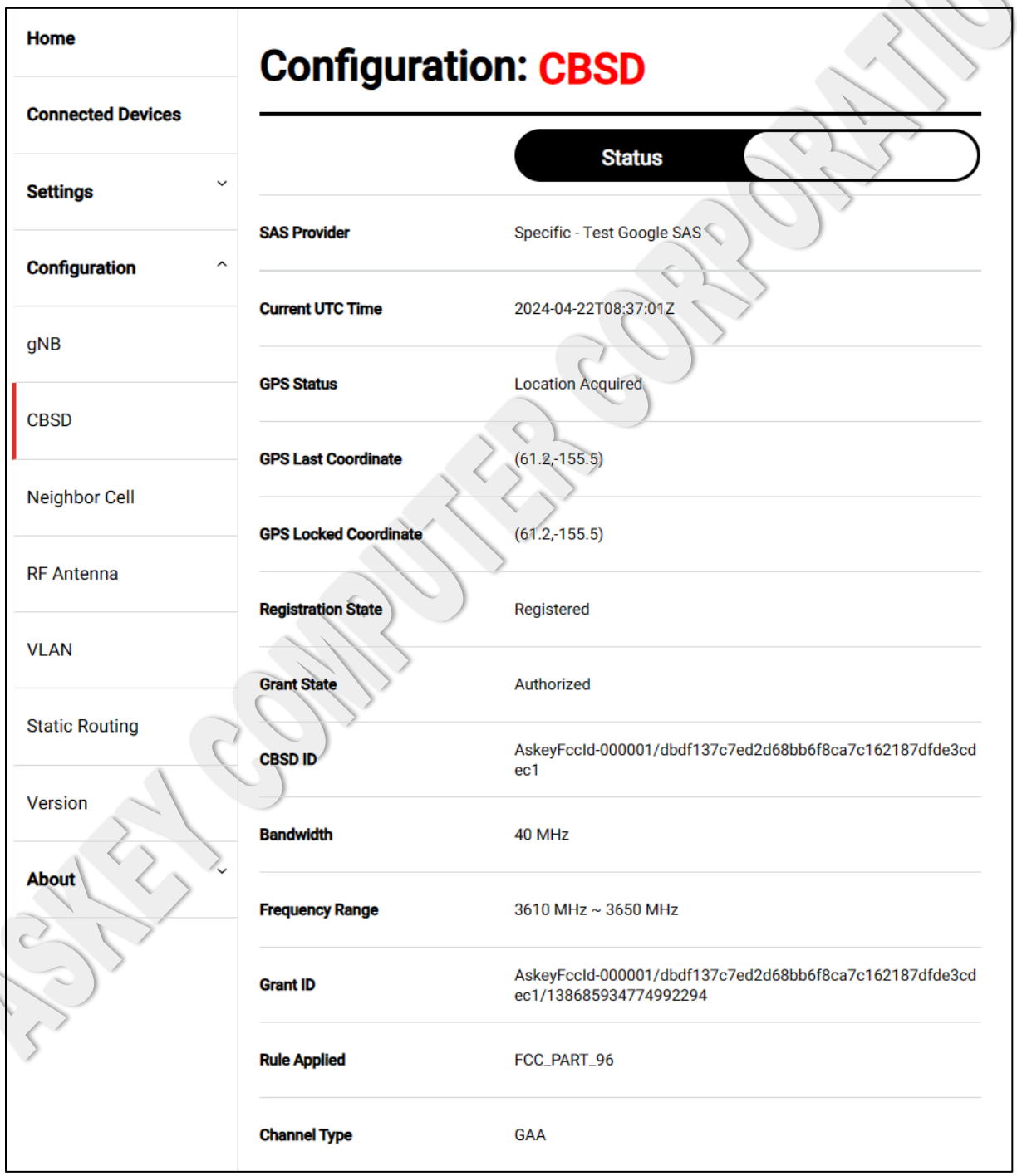

Figure 42. The Askey 5G NR Small Cell DU Configuration – CBSD Status

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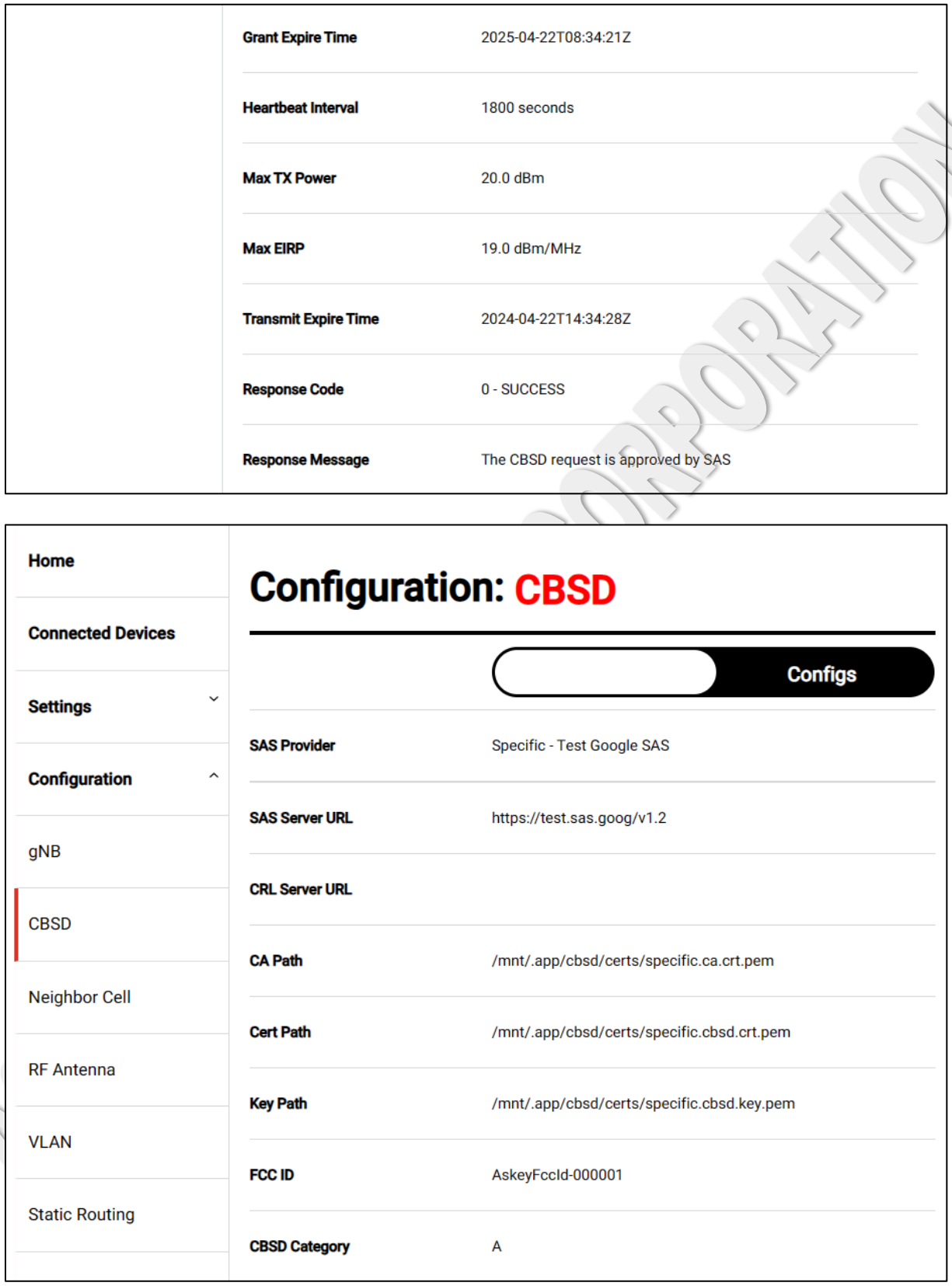

Figure 43. The Askey 5G NR Small Cell DU Configuration – CBSD Configurations

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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

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Neighbor Cell

The Askey 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.

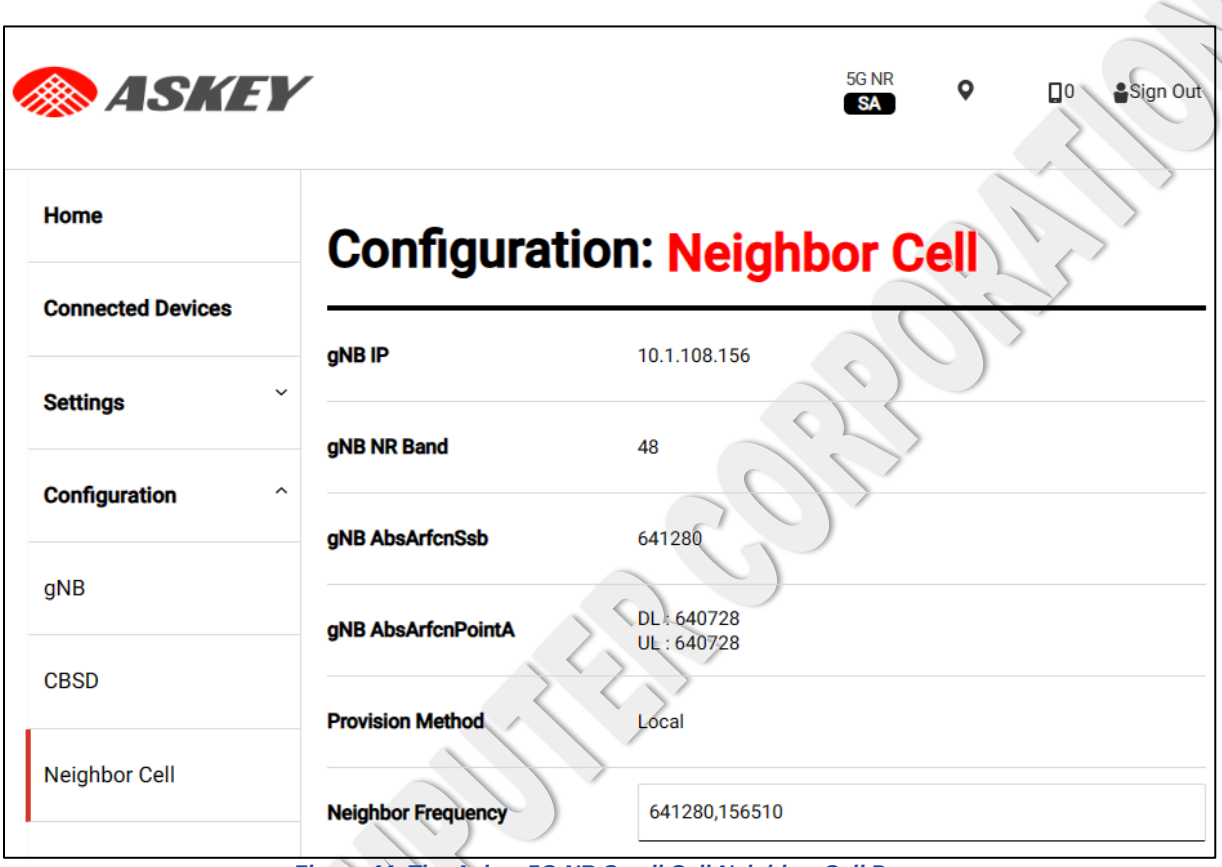

Figure 44. The Askey 5G NR Small Cell Neighbor Cell Page

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.

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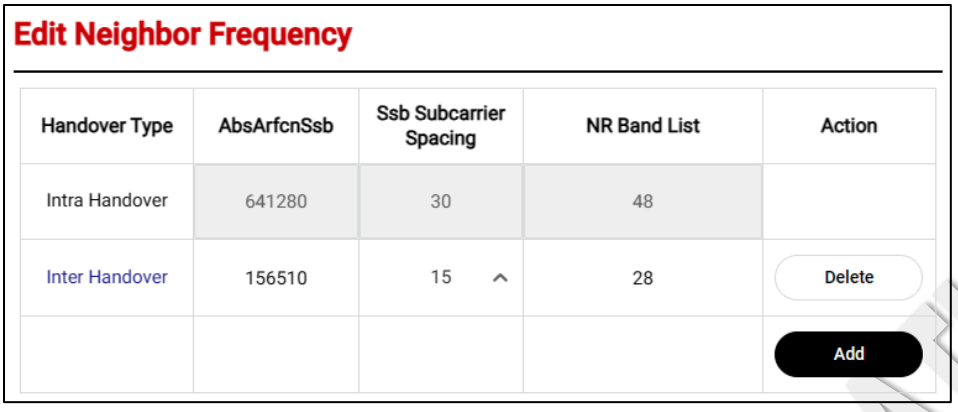

You can also configure parameters related to handover events A1, A2, and A5.

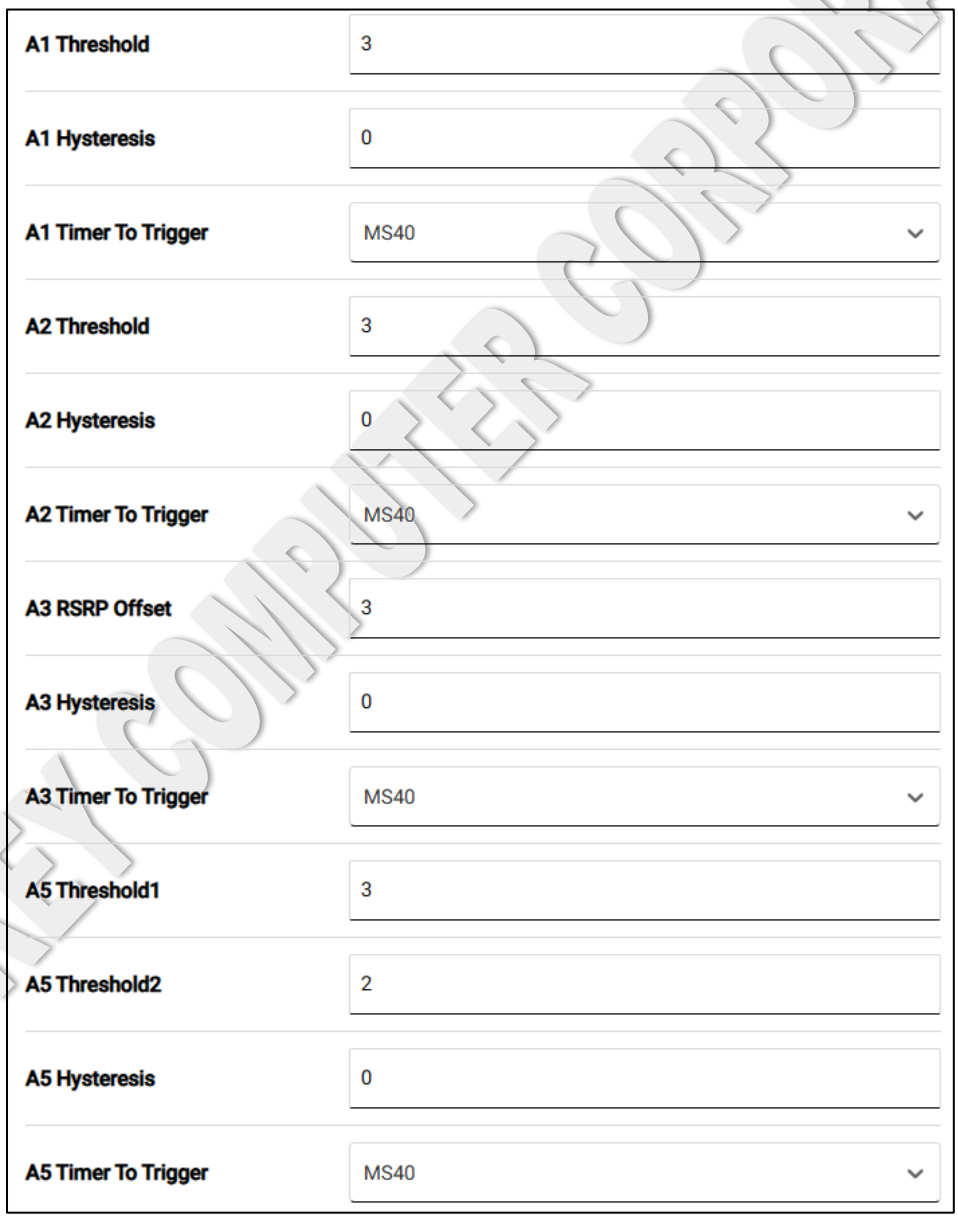

Figure 45. The configurations of A1, A2, and A5 events regarding the Neighbor Cell

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

Table 11. The Askey 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.

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RF Antenna

The Askey 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/SCU2080)

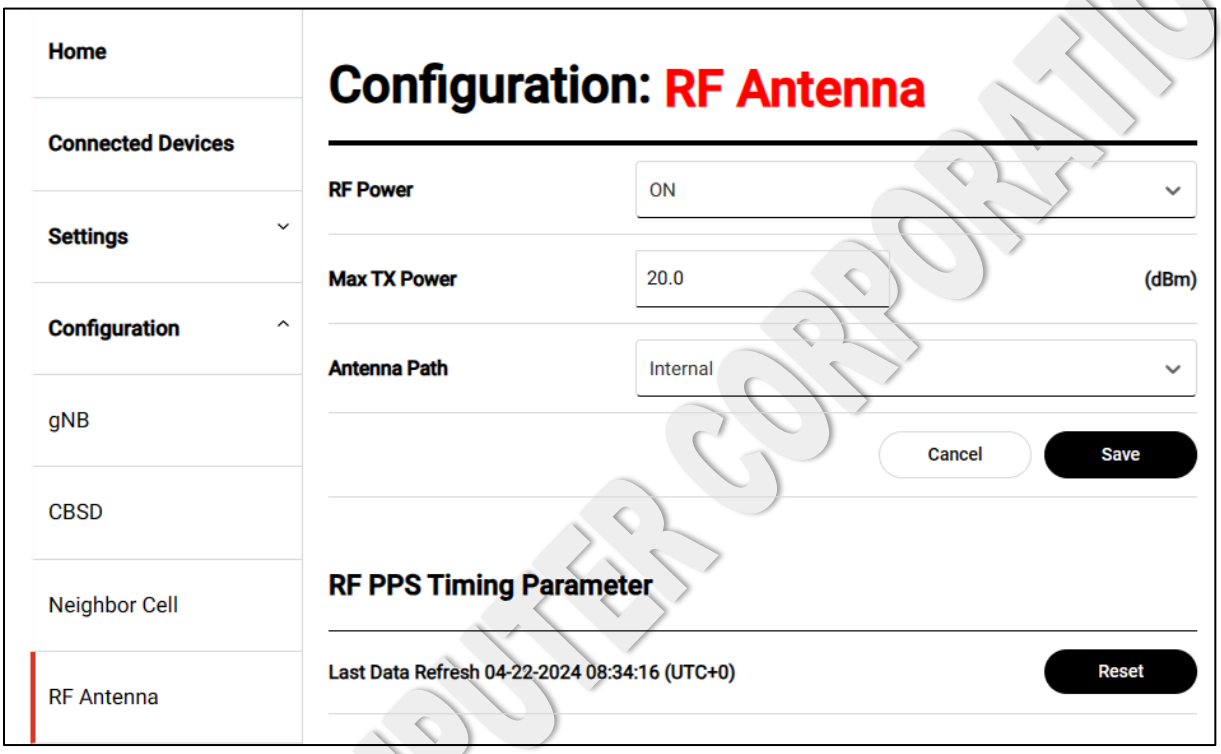
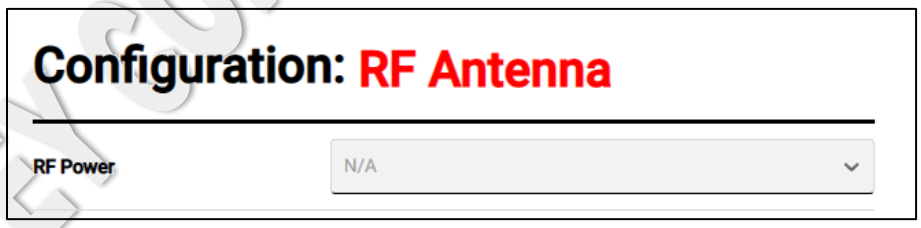


Figure 46. The Askey 5G NR Small Cell RF Antenna Page

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



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.

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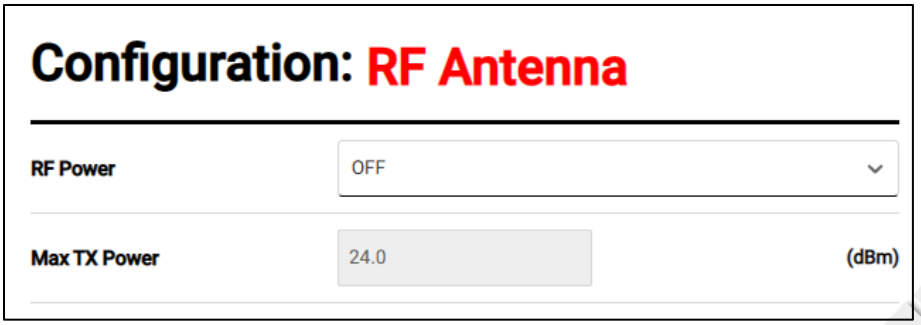
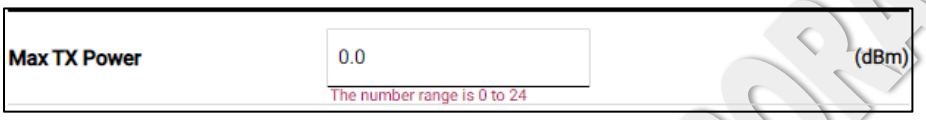


The MAX TX power is a decimal number, allowing one decimal place precision. The range for this value is from 5.0 to 24.0. If CBSD is supported, the range becomes 0.0 to 20.0



This “Antenna Path” switching option is ONLY available for models SCE2120/SCE2200/SCU2140, and not available for models SCU2050/SCU2000/SCU2060/SCU2070/SCU2080.

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

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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.

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VLAN

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

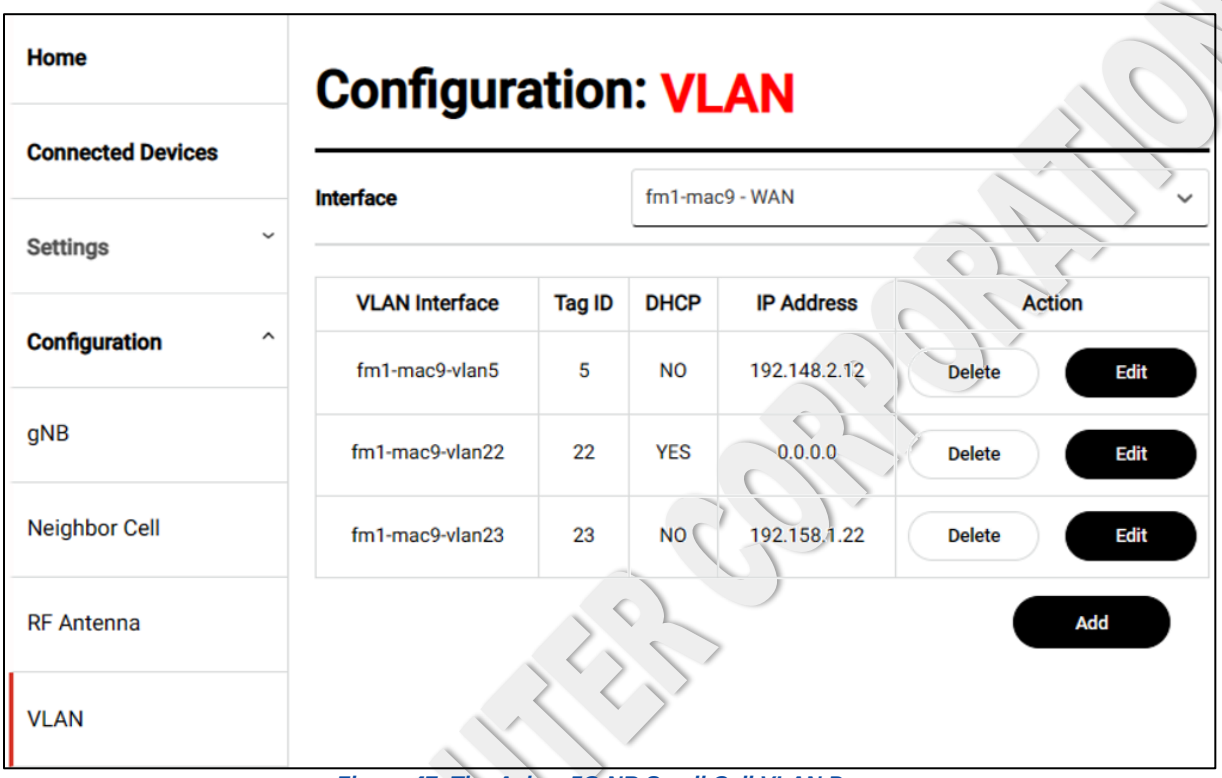
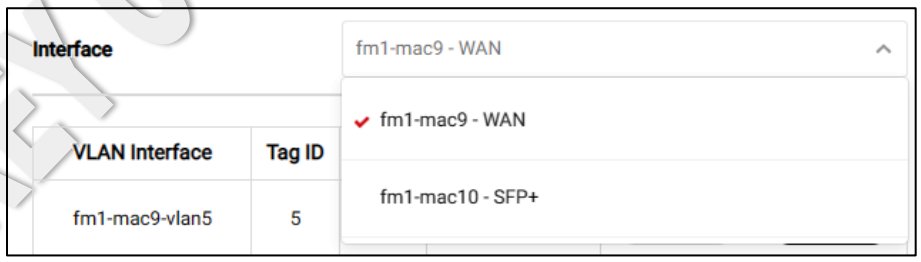


Figure 47. The Askey 5G NR Small Cell VLAN Page

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.



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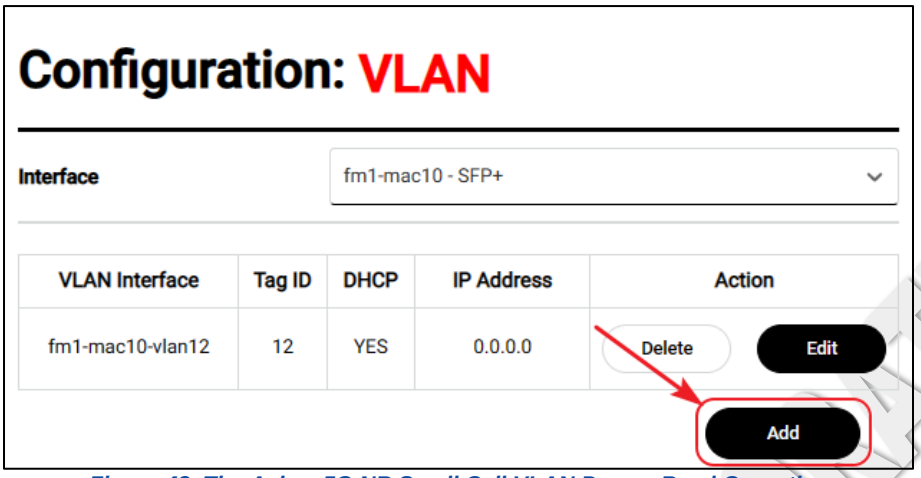

Figure 48. The Askey 5G NR Small Cell VLAN Page – Read Operation

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.

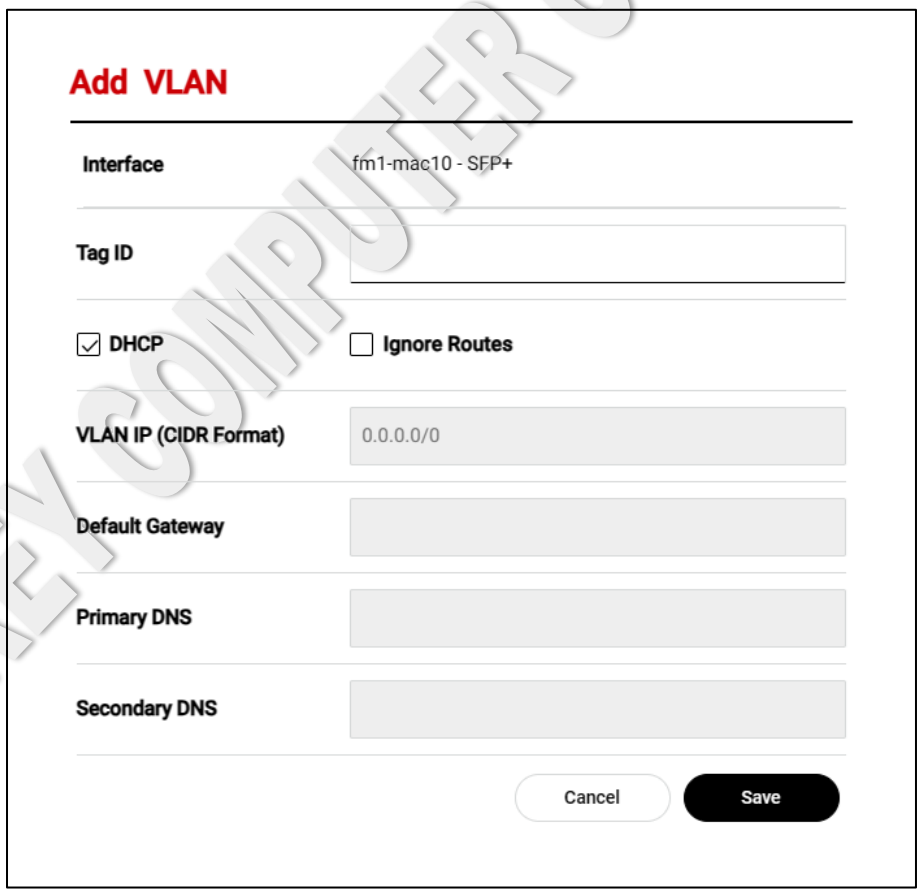

Figure 49. The Askey 5G NR Small Cell VLAN Page – Create Operation

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

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

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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.

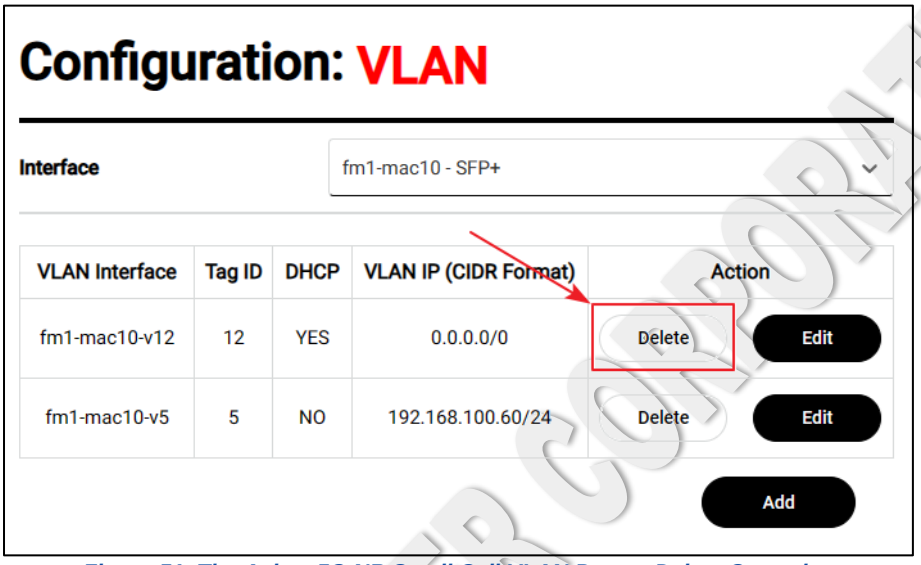

Figure 51. The Askey 5G NR Small Cell VLAN Page – Delete Operation

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Static Routing

The Askey 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.

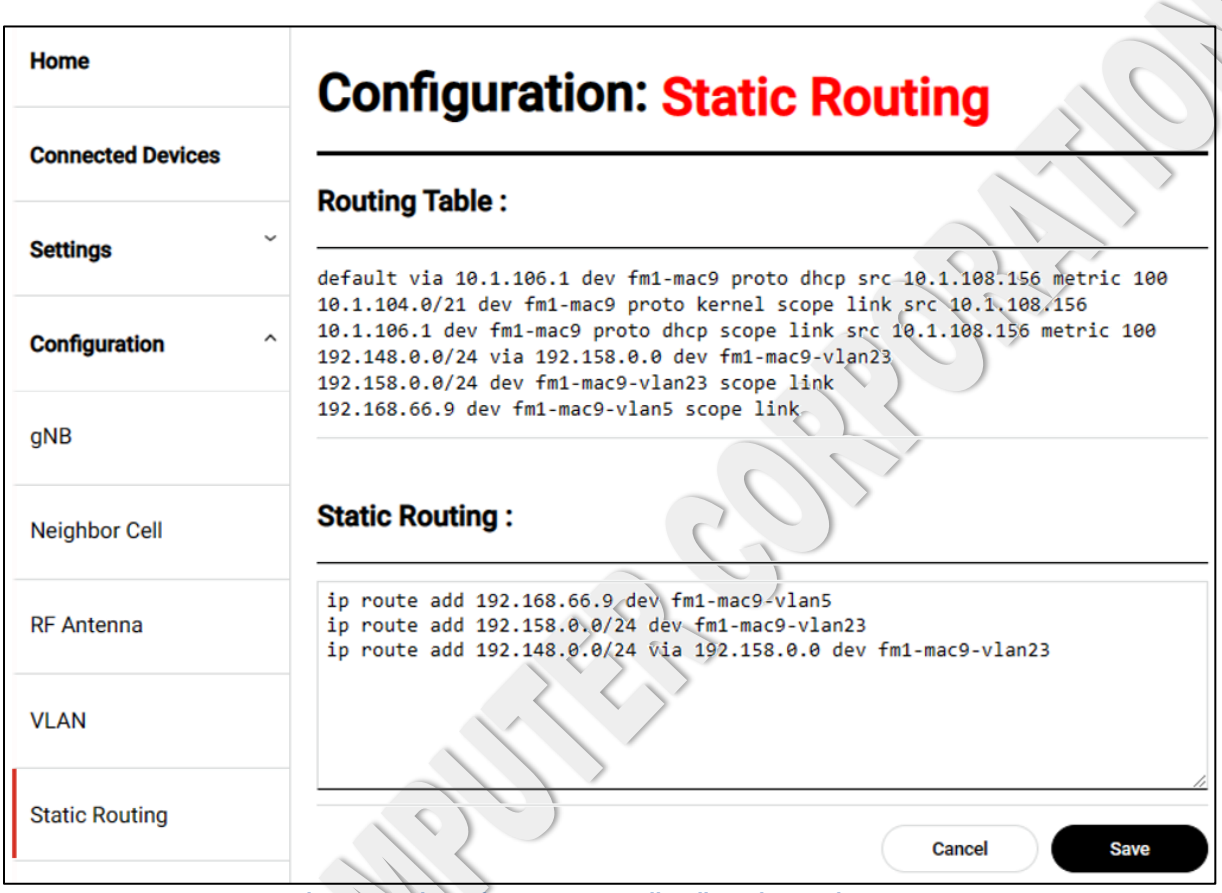

Figure 52. The Askey 5G NR Small Cell Static Routing Page

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Version

This Askey 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 Askey 5G NR Small Cell.

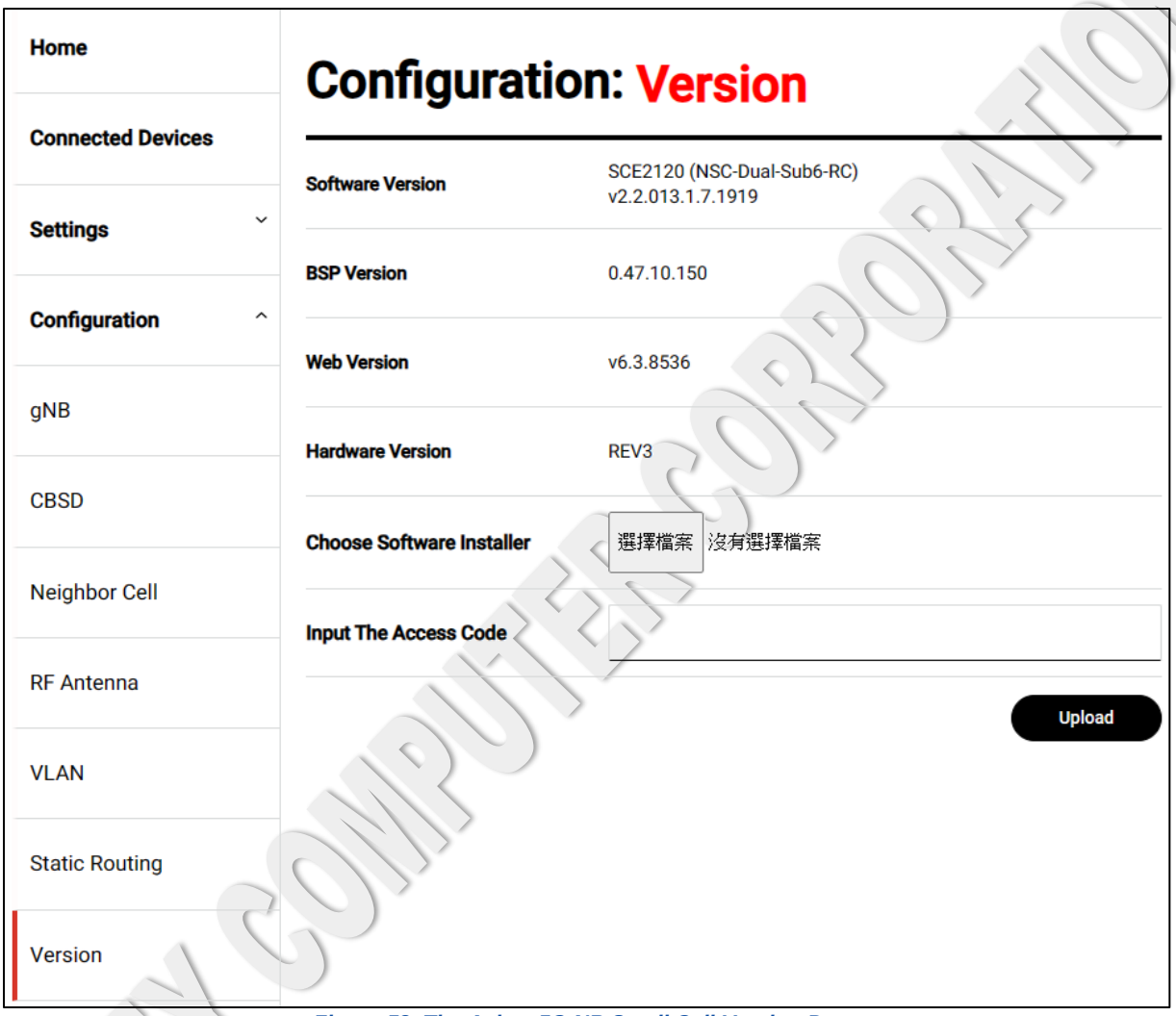

Figure 53. The Askey 5G NR Small Cell Version Page

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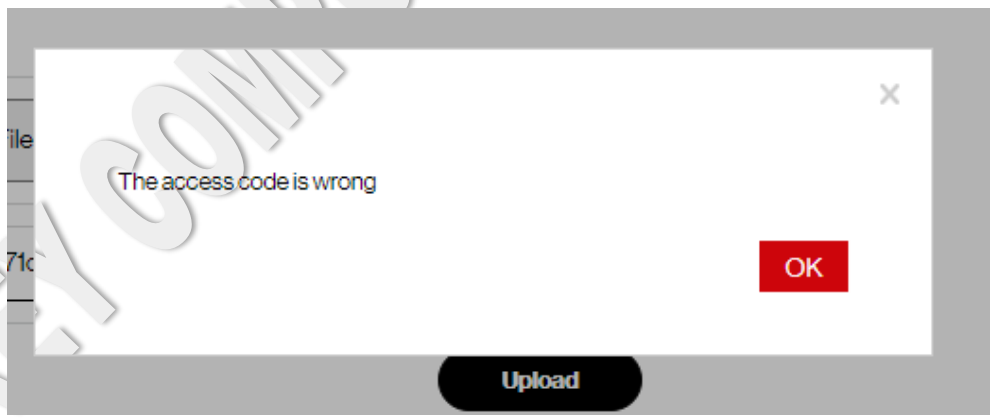
Firstly, you need to select the encrypted software installer and enter the access code provided by Askey. After clicking the 'Upload' button, the installer will be uploaded to the DUT.

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 Askey 5G NR Small Cell will then commence the software upgrade process.

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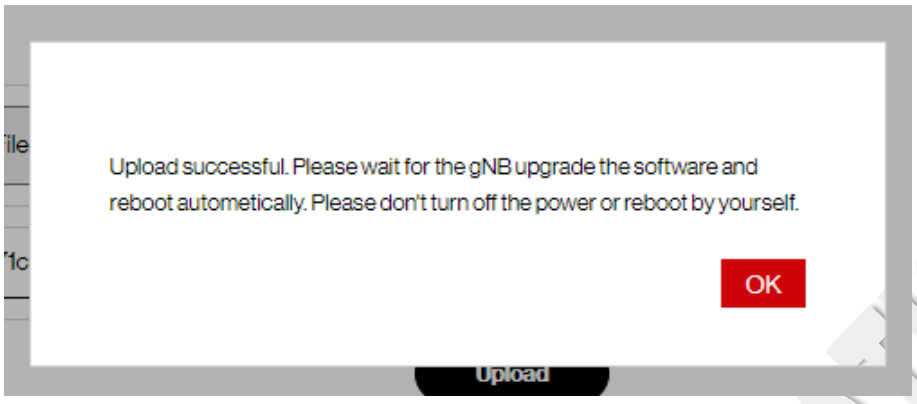

During this process, the API server decodes the installer and initiates the local upgrade. As a result, clicking the 'OK' button will temporarily disable other operations on the Web GUI, as depicted below.

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 Askey 5G NR Small Cell is complete. Clicking the “OK” button will redirect you to the login form to access the Admin Website.

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About

GPS

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

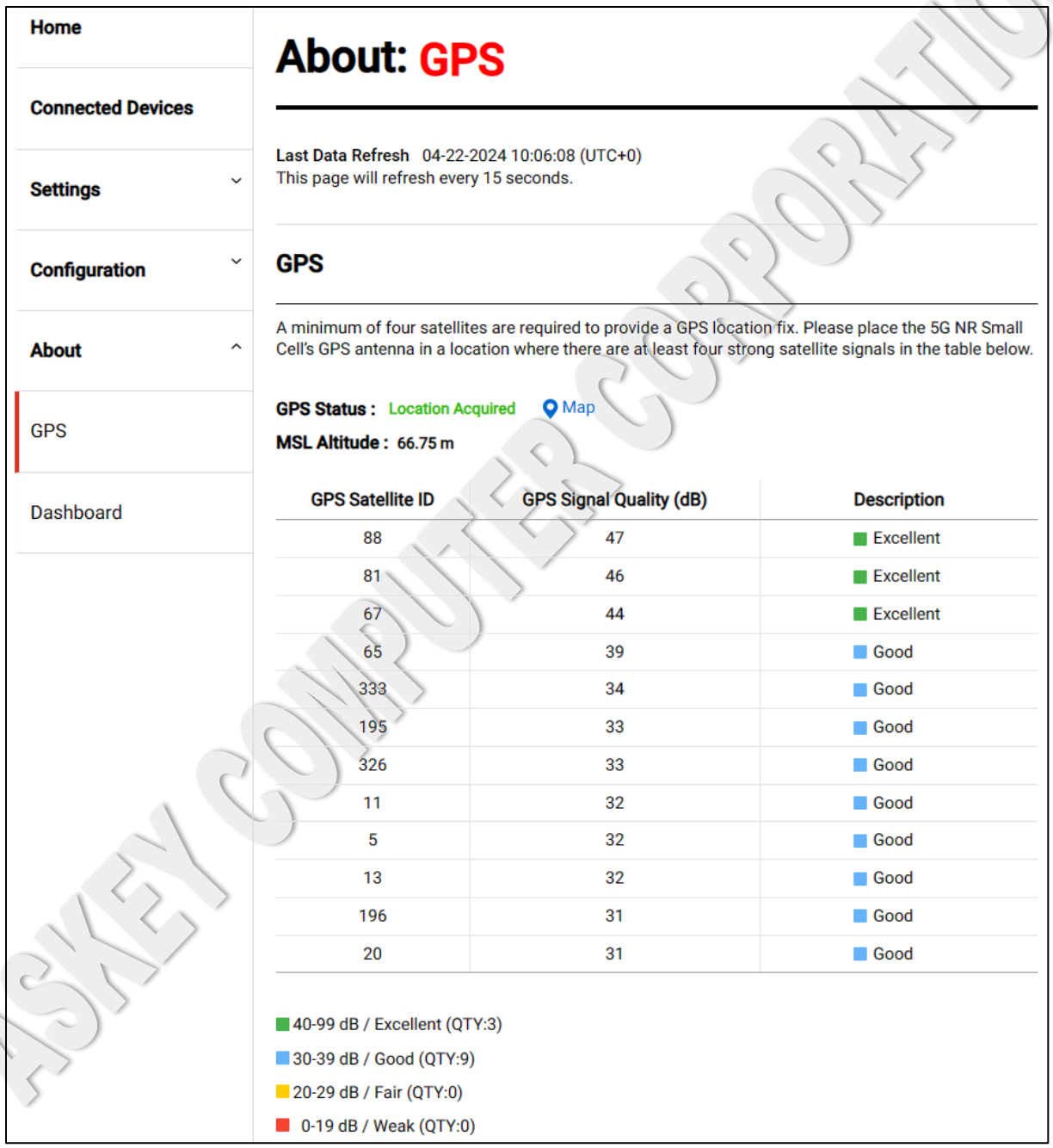

Figure 54. The Askey 5G NR Small Cell GPS Page

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Table 12. The Askey 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 Askey 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

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Dashboard

The Askey 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.

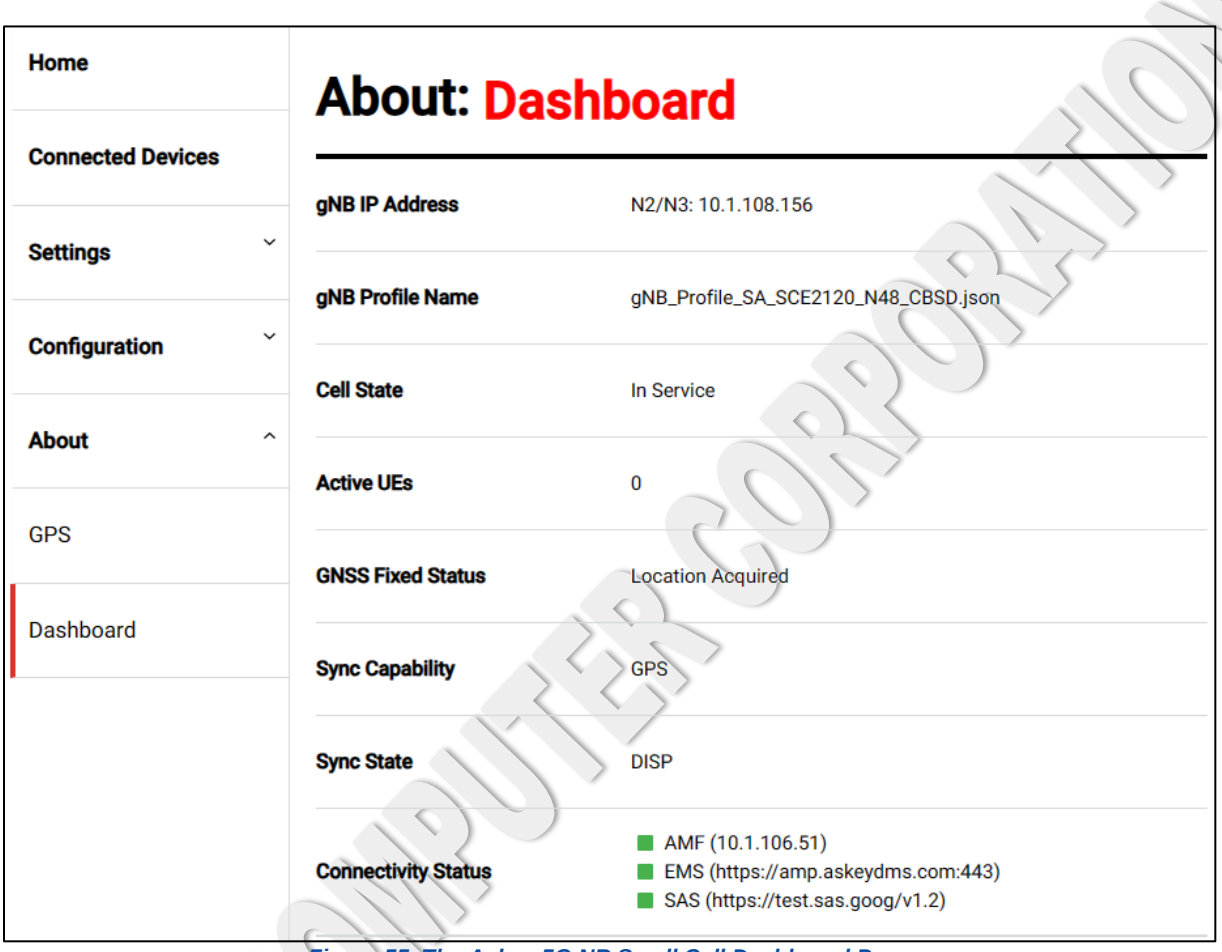

Figure 55. The Askey 5G NR Small Cell Dashboard Page

Table 13. The Askey 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 Askey 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 Askey 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**.**

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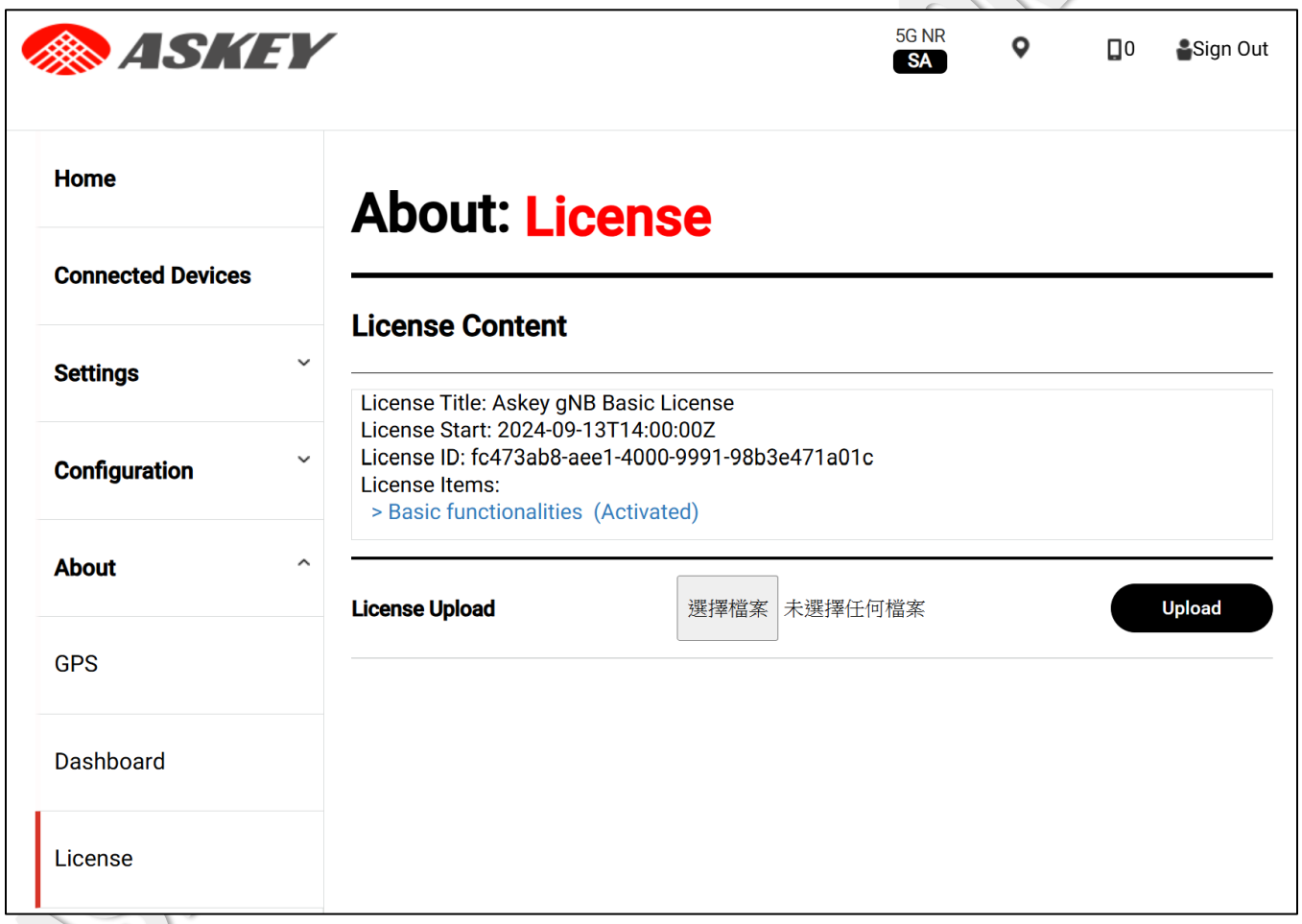
Sync Capability	The synchronization capability of the device.
Sync State	Indicates the current synchronization state, which could be **INIT**, **HARD_SYNC**, **DISP**, **RESYNC**, or **HOLDOVER**. The cell processes will continue until the sync state is **DISP**.
Connectivity Status	Check the network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

License

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



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Chapter 2 The Askey Small Cell Support Utilities

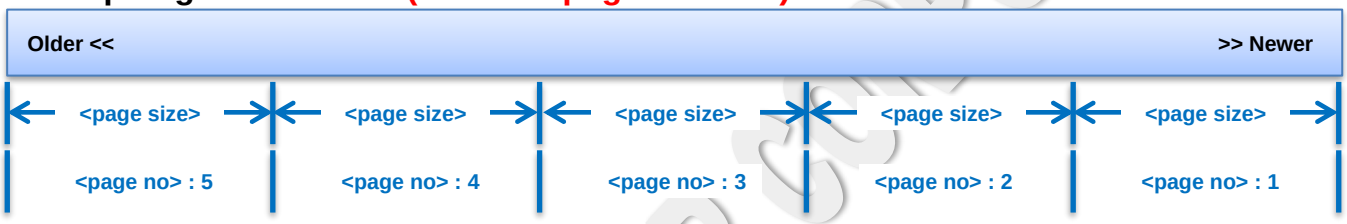
Small Cell Log Download Mechanism

You can download the runtime or backup log files by the following HTTPS linking URL and send them back to the Askey 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/TwpEceURn15qxDYSW88IJddB7LAsiOr64HNg

Backup Log:

https://<ip address>/api/logs/TwpEceURn15qxDYSW88IJddB7LAsiOr64HNg/<page size>

https://<ip address>/api/logs/TwpEceURn15qxDYSW88IJddB7LAsiOr64HNg/<page size>/<page no>

Examples:

https://10.1.108.15/api/logs/TwpEceURn15qxDYSW88IJddB7LAsiOr64HNg
➔ Runtime log:
askeylog_280375459184643_20221025-092816_nsc.tgz.enc

https://10.1.108.15/api/logs/TwpEceURn15qxDYSW88IJddB7LAsiOr64HNg/3
➔ Backup log (page size 3, page no 1):
askeylog_280375459184643_20221025-092825_nsc_last_01-03.tgz.enc

https://10.1.108.15/api/logs/TwpEceURn15qxDYSW88IJddB7LAsiOr64HNg/3/3
➔ Backup log (page size 3, page no 3):
askeylog_280375459184643_20221025-092902_nsc_ last_07-09.tgz.enc

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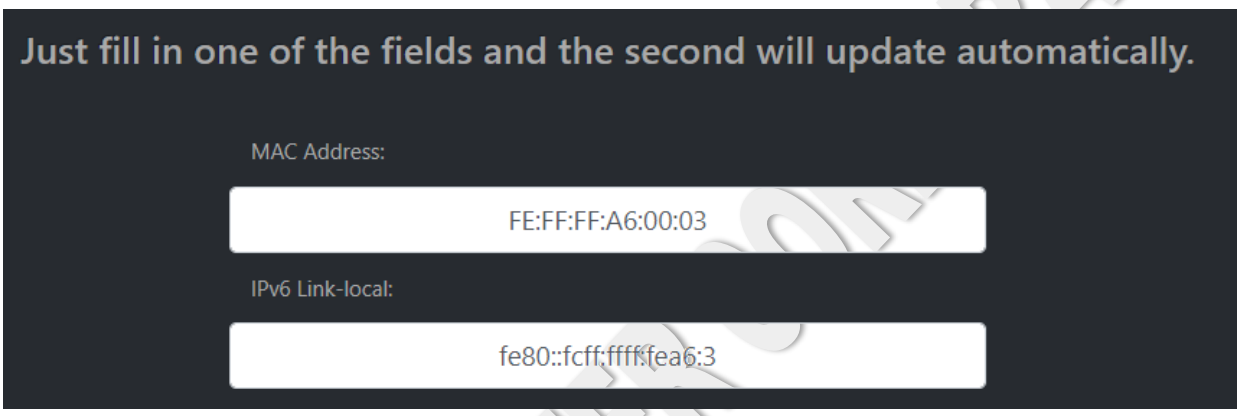
Access the Admin Website by IPv6 Link-Local Address

If the network settings of the Askey 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 Askey 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:.



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		
SCU2080	V		V		V

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