User Manual
GrowHouse - iOS Lighting Application

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1 DOCUMENT DETAILS

1.1 Document History

Version	Author		Reviewer		Approver	
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Draft 0.5	Hiteksha Kathiriya	29-Apr-2019	Hasteen Patel	29-Apr-2019		
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Draft 0.7	Hiteksha Kathiriya	22-May-2019	Dhaval Chikani	27-May-2019		
Draft 0.8	Hiteksha Kathiriya	3-June-2019	Dhaval Chikani	4-June-2019		
Draft 0.9	Hiteksha Kathiriya	6-June-2019	Hasteen Patel	12-July-2019		
Draft 0.10	Hiteksha Kathiriya	12-July-2019	Hasteen Patel	12-July-2019		

Version	Description of Change
Draft 0.1	Created initial draft version
Draft 0.2	Updated screen, separator Group & Delete configuration, Added GrowHouse App diagram
Draft 0.3	Updated App diagram, added reference for how to factory reset
Draft 0.4	Updated App diagram, Mange Device Delete work flow
Draft 0.5	Updated network and group delete figures
Draft 0.6	Added section 4.6.4 for Profiles
Draft 0.7	Updated Dropdown symbols, Updated App diagram with new color configuration
Draft 0.8	Updated screen for Provision work flow
Draft 0.9	Incorporates review comments. Added steps for how to upload install application from test flight
Draft 0.10	Incorporates review comments.

Table 1: Document History

1.2 Definition, Acronyms and Abbreviations

Definition/Acronym/Abbreviation	Description
User	User of GrowHouse
Bluetooth Mesh Network	Bluetooth Mesh is a network, based on the nodes having the capability of relaying the messages across the network.

LED Nodes	Device that control the Light Engine
Provision	Registration process of binding LED node to Bluetooth Mesh networks
Un-provision	Removing LED node from Bluetooth Mesh networks
Networks	The main container in the mesh structure. Network is the owner of nodes and groups.
BLE	Bluetooth Low Energy
Device	LED Node

Table 2: Definition, Acronyms and Abbreviations

1.3 References

No.	Document	Version	Remarks

Table 3: References

2 INTRODUCTION

2.1 About GrowHouse System

Growhouse system has LED Node(s) with BLE connectivity to create BLE Mesh network of LED Nodes. BLE Mesh network of LED Nodes is intended to provide user a flexibility of provisioning and controlling LED Nodes installed in Growhouse without requiring Growhouse Cloud and internet connectivity, just by means of Mobile device.

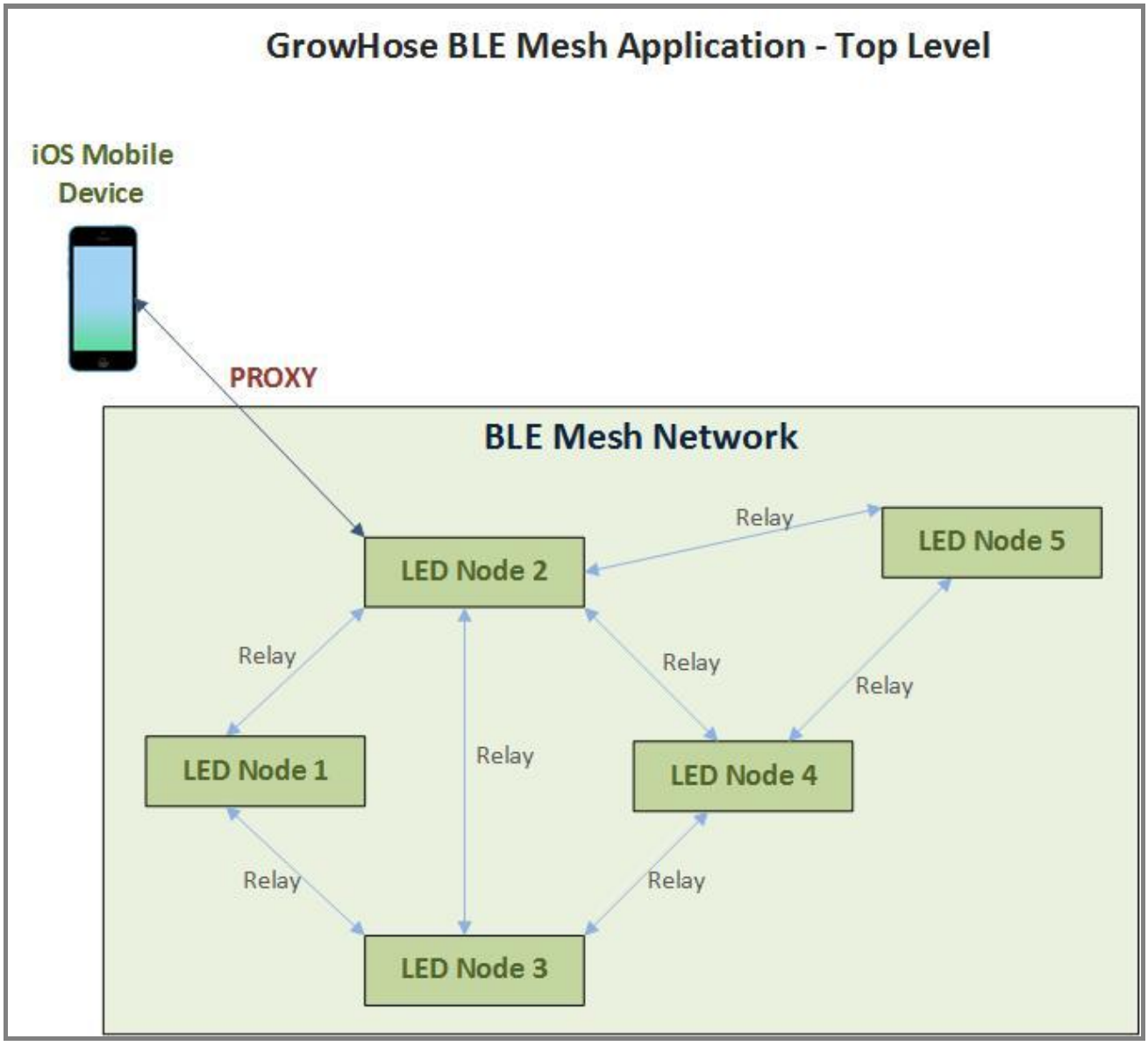

Figure 1: Top Level GrowHouse iOS Bluetooth Mesh Diagram

2.1.1 Key Features

- Network creation
- Group creation with configurable color for LED channels.
- Provisioning of LED Nodes with configurable color options for each channel.
- Un-provisioning of LED Nodes
- Controlling multiple LED nodes via Master control
- Controlling Individual LED nodes via Individual control
- Edit Network, Group & Device configuration
- Light Profile creation with configurable color and Intensity for LED channels

2.2 Kit Contents

NA.

3 SYSTEM REQUIREMENTS

- iPhone with minimum iOS version 12.1 or higher.
- LED Node(s) should be setup during Provisioning. Refer Appendix 9 on setting up of individual Hardware.

3.1 Typical Setup Requirements

- User's permission like Bluetooth services is required.

3.2 Special Configuration and environment

- Bluetooth connectivity is required on iOS Mobile Device.
- LED Node(s) with BLE mesh firmware version 3 or above. Refer section 9.3.4 to know current BLE firmware on LED Node(s) and section 9.3.3 to upgrade BLE mesh firmware on LED Node(s).
- User should be nearer to the LED Node (around 30 meter line of sight radius) that needs to be provisioned during Provisioning.

3.3 Support Documentation list

NA

4 GETTING STARTED

4.1 Splash Screen

- Launch Application from Mobile Device.
- On Application start up, below splash screen will be displayed for a while.

Figure 2: Splash Screen

4.2 Networks Screen (Home Page)

- After splash screen, below screen would be seen as a home screen.
- By Default, one Network by name *'Demo Network'* has been created as shown below (left). User can use this network or rename as required.
- If No Network is available then the below screen (right) will be shown as Home Page.

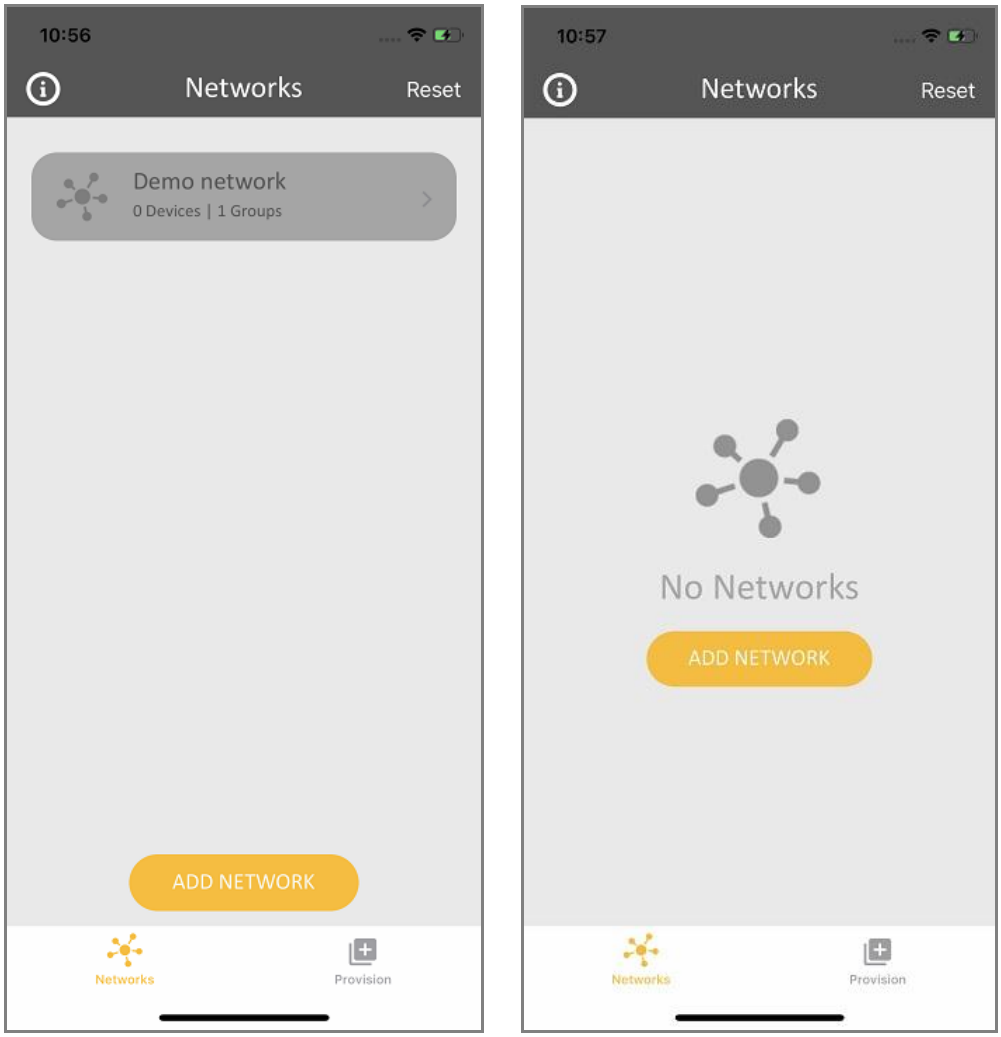

Figure 3: Network Screen when Default Network & Network Screen when no Network created

4.2.1 Add Network

- After clicking on *'ADD NETWORK'* button from above screen, *Add Network* screen will pop up.
- Enter desired name of the Network and click '*OK'* to create network.
- Limitation/Restrictions:
  - User can't create network with same name.
  - Maximum number of networks a user can create is 4.

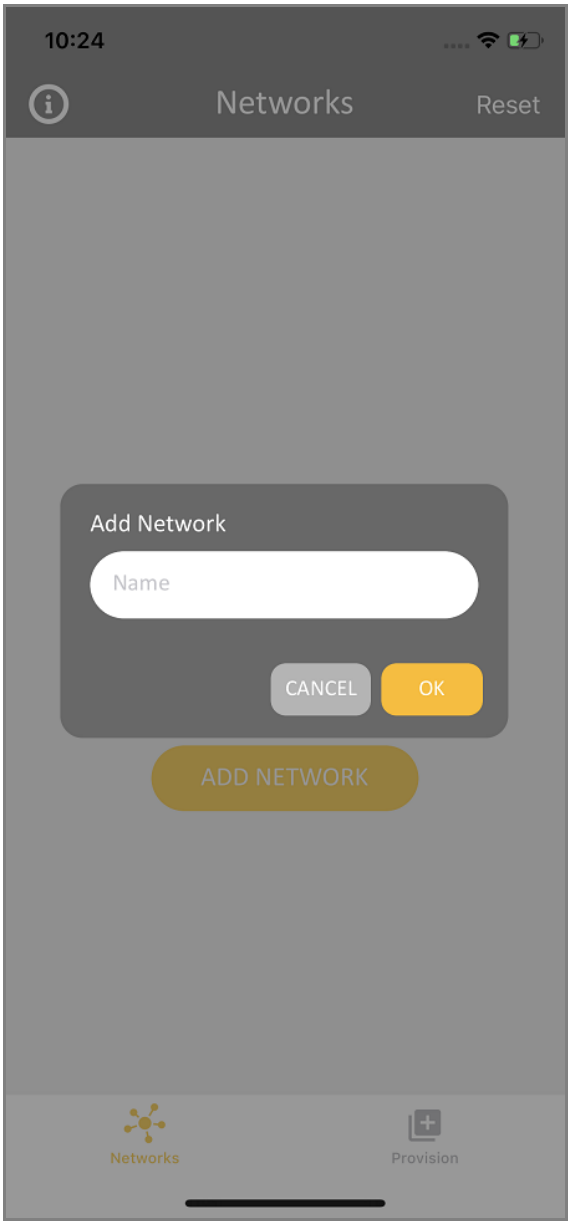

Figure 4: Add Network Screen

4.2.2 Network Listing Screen

- After creating network(s), all the network(s) will be displayed in *Networks* screen, as shown below (left).
- User can edit network name by clicking on '⚙' icon as shown below (right).
- User can delete network by clicking '🗑' icon as shown below (right).

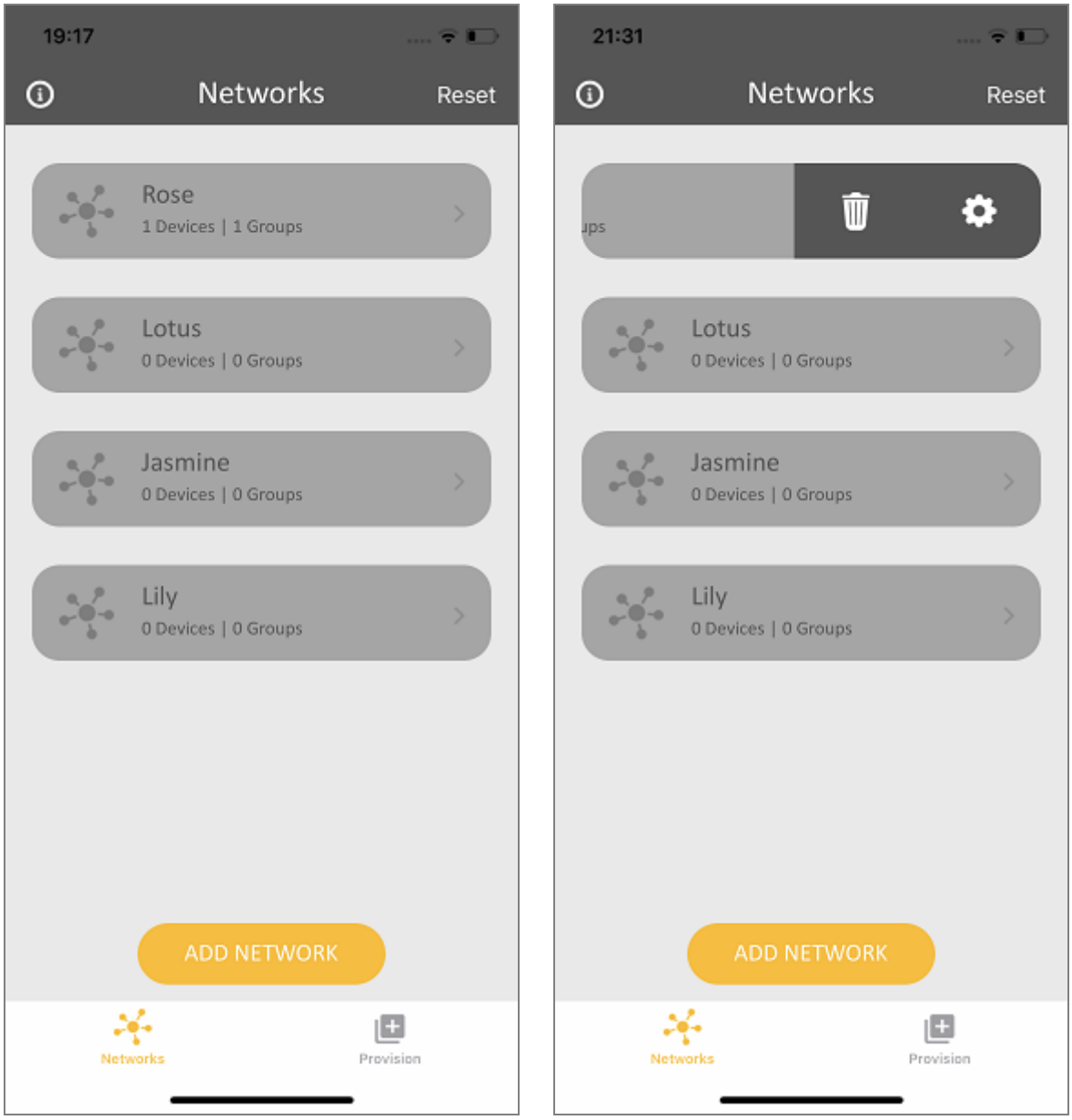

Figure 5: Network listing screen & Network Delete/Edit option

4.2.3 Network Delete

- By clicking on '🗑' icon, an alert will be displayed as shown below (left).
- On clicking '*Ok'*, the network along with its Group(s) and Device(s) will be removed.
- If Network does not have any group or device, 'Network is empty' alert will be displayed as shown below (right).
- On clicking *'Yes'*, the network will be deleted from the application.

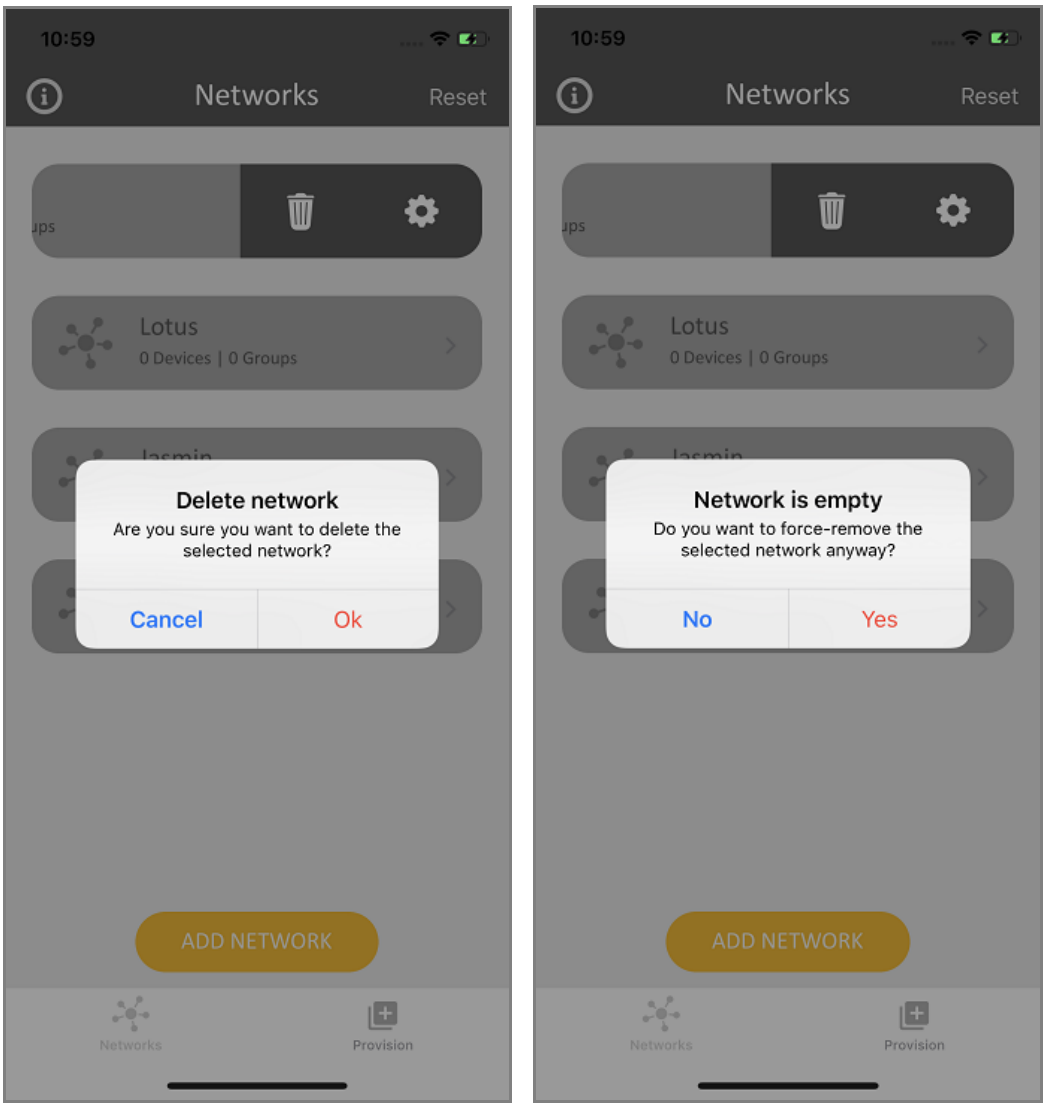

Figure 6: Delete Network

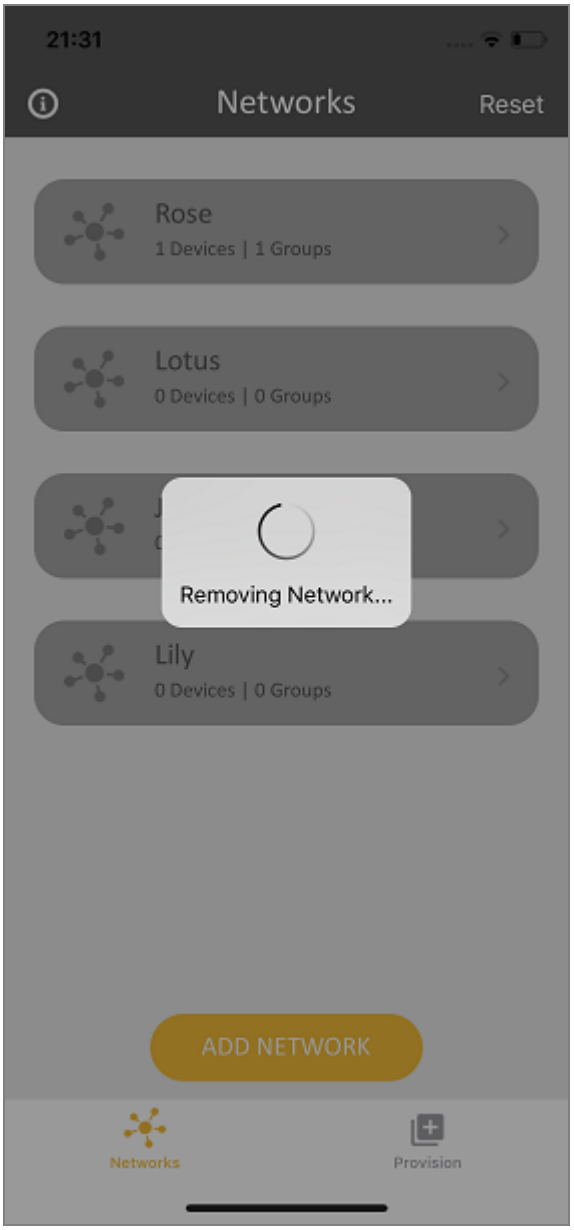

Figure 7: Delete Network Processing bar

- While deleting the network, if any device(s) is not accessible (switched off or out of range), user will be prompted for confirmation to delete network forcefully as per below figure. If user clicks on *'Yes,'* then the network and all the accessible devices within the network will be Un-provisioned & deleted from network. Inaccessible devices will be deleted forcefully from the application but will not be Un-provisioned.
- Such forcefully deleted device(s) would not be Un-provisioned and hence won't be discoverable again. User has to factory reset the device(s) in order to make the device discoverable again. Refer section 9.2.2 on how to factory reset the device.
- If user clicks on *'No'*, all the accessible devices will be Un-provisioned & deleted from network and will be discoverable again. Inaccessible device(s) will not be Un-provisioned and will not be deleted from the network. The network also will not be deleted and will hold all the inaccessible device(s) and its group.

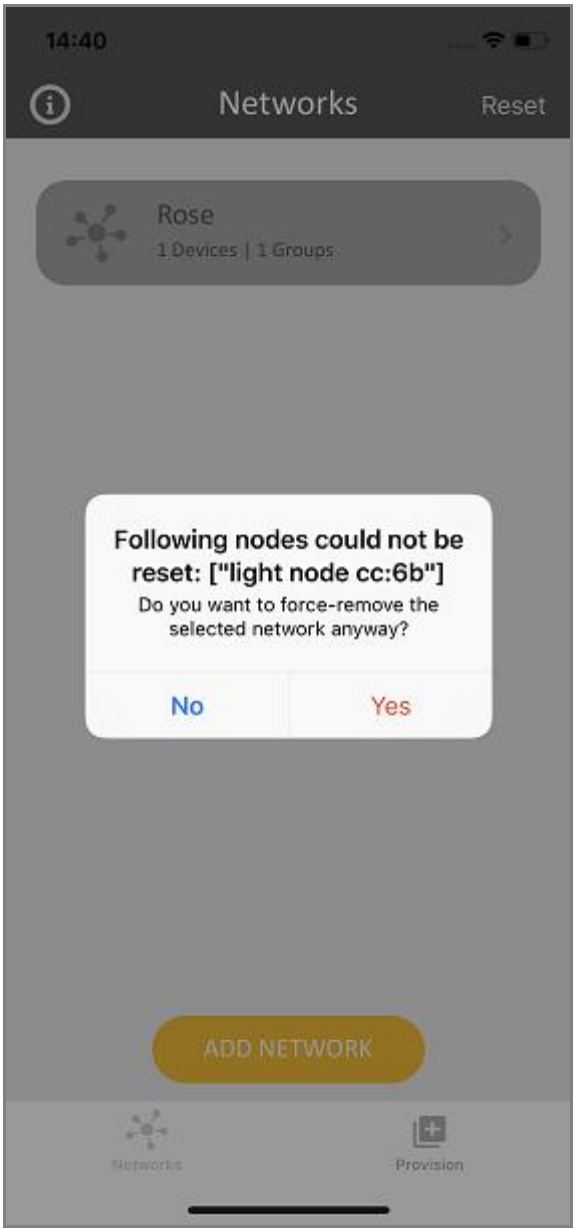

Figure 8: Delete Network - can't connect with any device

- While deleting the network, if all device(s) is not accessible (switched off or out of range), user will be prompted for confirmation to delete network forcefully as per below figure. If user clicks on *'Yes,'* then the network and all the device(s) within the network will be deleted from network. All network devices will be deleted forcefully from the application but will not be Un-provisioned.
- Such forcefully deleted device(s) would not be Un-provisioned and hence won't be discoverable again. User has to factory reset the device(s) in order to make the device discoverable again. Refer section 9.2.2 on how to factory reset the device.
- If user clicks on *'No'*, the network will not be deleted and will hold all the device(s) and its group.

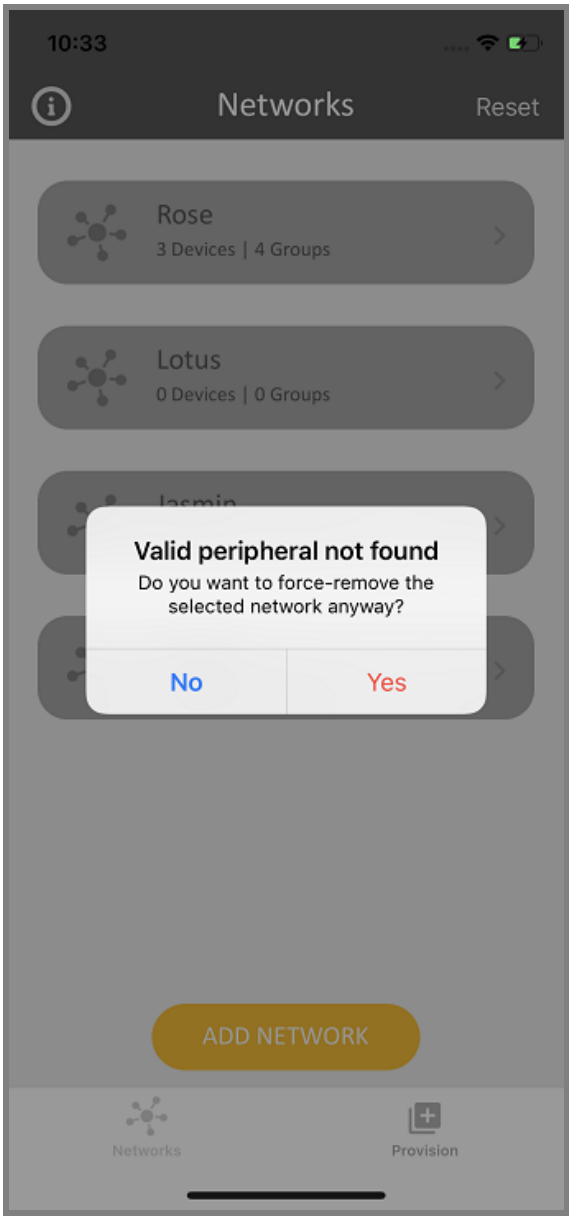

Figure 9: Delete Network - can't connect with all device

4.2.4 Network Edit

- By clicking on Network '⚙' icon, user will be redirected to *Network Configuration* screen as shown in below figure.
- User can change only Network name from here, Network ID and key is just an informative part.

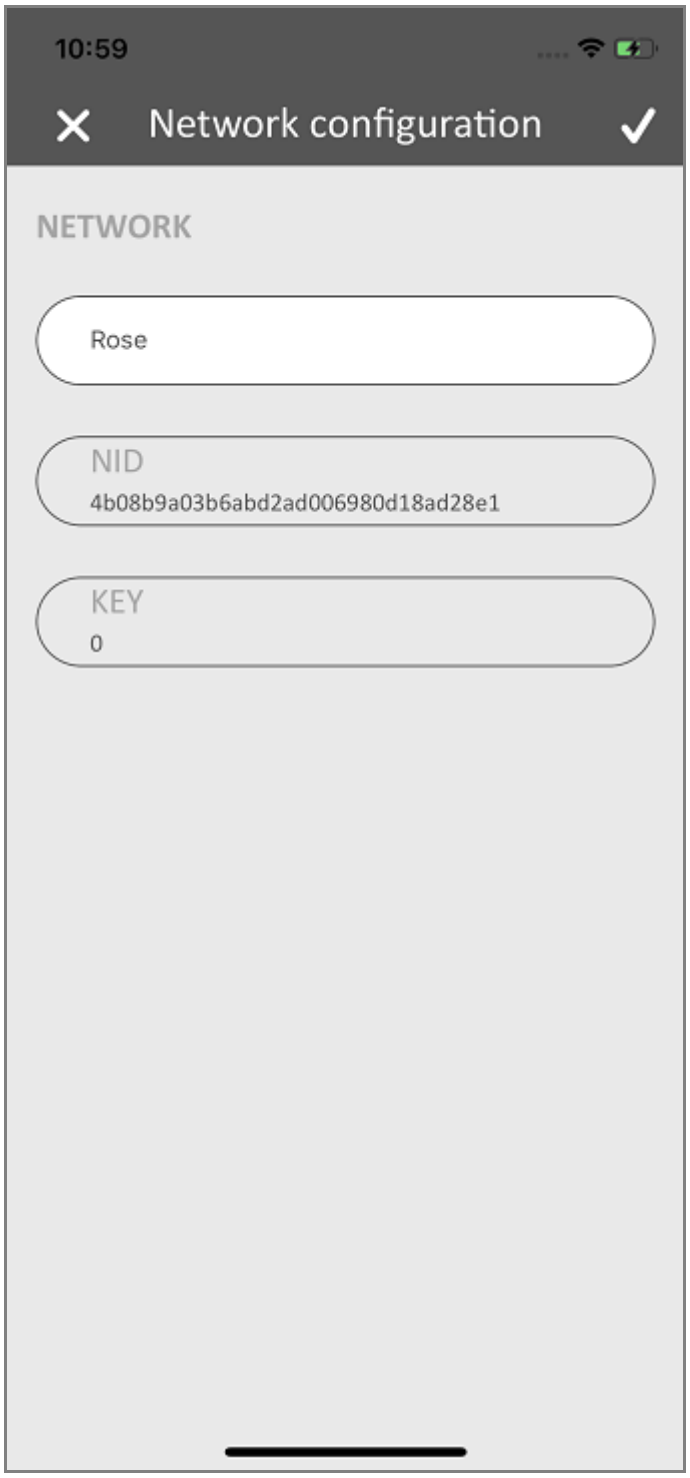

Figure 10: Edit Network

4.2.5 Reset

- Purpose of '*Reset*' button is to reset all the application data including network(s), group(s) and device(s) forcefully.
- By clicking on '*Reset'* Button, application will prompt for confirmation as shown in below figure.
- If user clicks on '*Ok'*, then network(s), group(s) and device(s) will be forcefully deleted from the application. The device(s) would not be Un-provisioned and hence won't be discoverable again. User has to factory reset the device(s) in order to be discoverable again. Refer section 9.2.2 on how to factory reset the device.

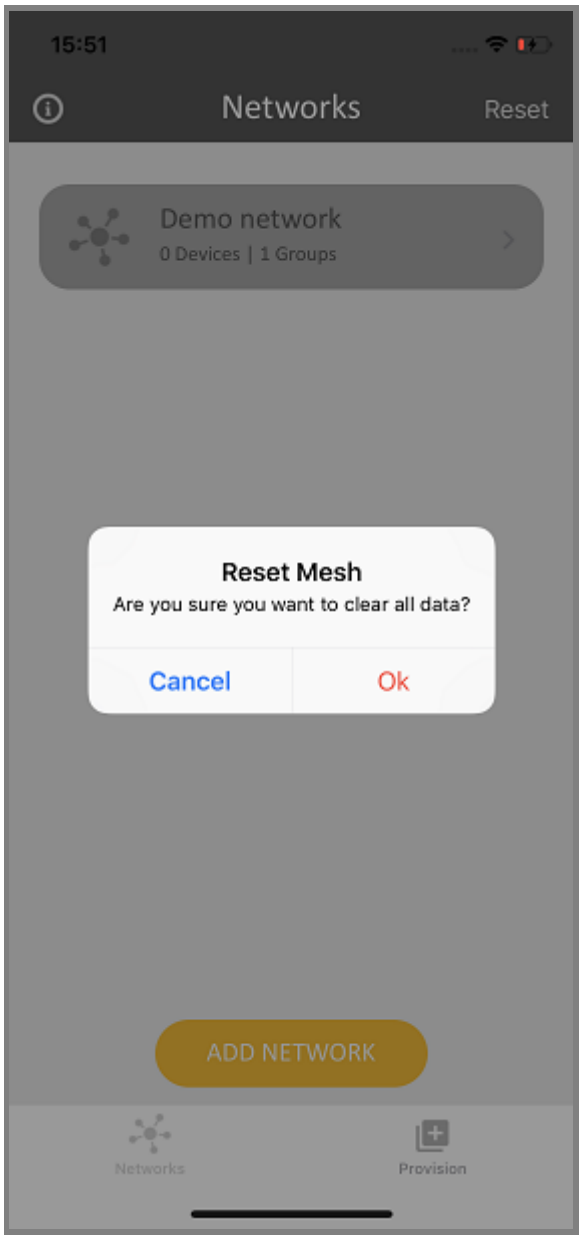

Figure 11: Reset Mesh Confirmation

4.2.6 Application Info

- On clicking 'ⓘ' icon, a screen showing application version will be displayed as shown in below figure.

Figure 12: Version Information

4.3 Groups Screen

- Each network can have one or multiple Groups.
- Each Group will have its own channel configuration. All the Devices (LED Nodes) within this Group must have same channel configuration.

4.3.1 Group Creation

- To create a new Group in a network, click on the specific Network.
- For example: To create a Group within 'Rose' network as shown in figure 5 above, click on 'Rose'. Page as shown below (left) would be loaded.
- Click *'ADD GROUP'* to create a new group. "*Add group*" screen will be displayed as shown below (right).
- Enter desired name for the new Group.
- Select appropriate color configuration for each channel of the group. Table 4 below describes the supported colors for channel configuration.

No.	LED channel configuration	Color
1.	CW	Cool White
2.	NW	Neutral White
3.	WW	Warm White
4.	UV A	UV A
5.	UV B	UV B
6.	UV C	UV C
7.	RB	Royal Blue
8.	B	Blue
9.	G	Green
10.	Y	Yellow
11.	A	Amber
12.	O	Orange
13.	R	Red
14.	DR	Deep Red
15.	FR	Far Red
16.	IR	IR
17.	NC	Not Connected

Table 4: LED Channel Configuration

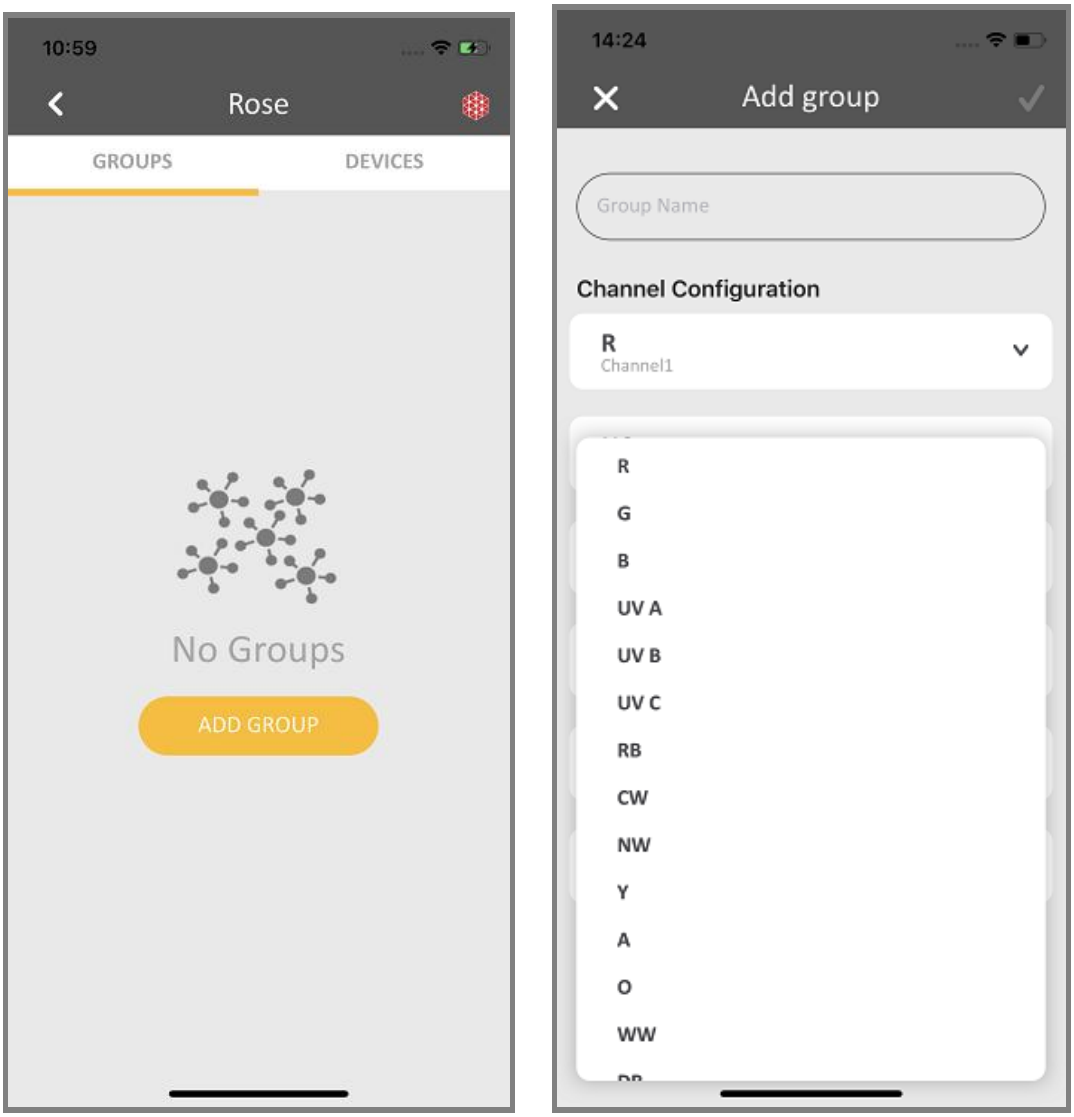

Figure 13: Add Group – Within Network and color selection for channels

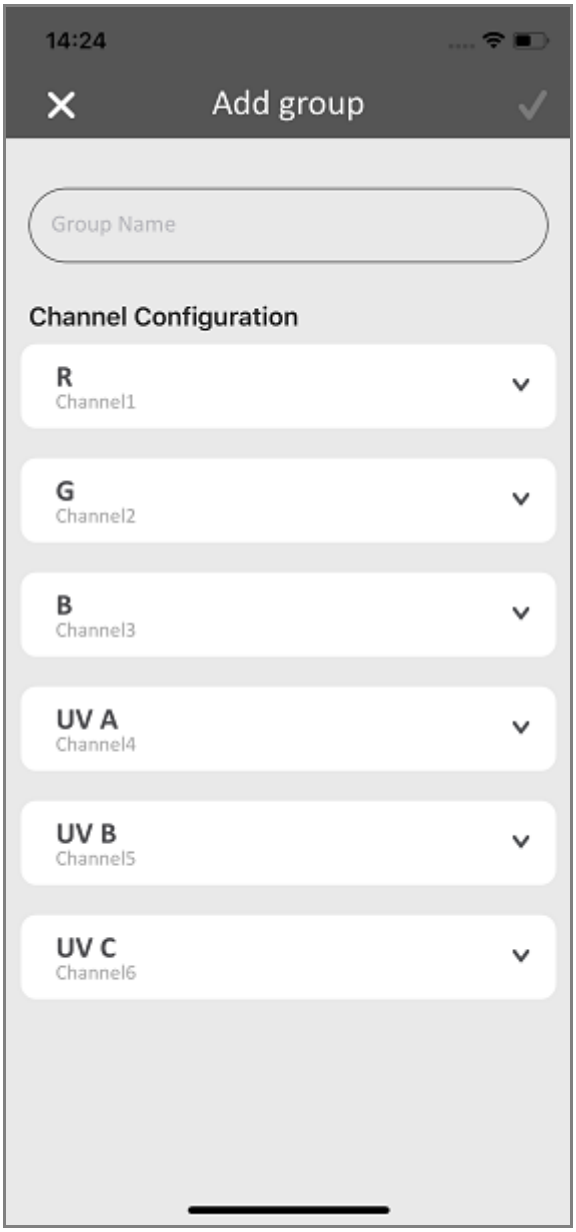

Figure 14: Add Group screen

- Below image (left) shows multiple groups created within ‘Rose’ network.
- Below image (right) shows ‘🗑’ & ‘⚙’ options.

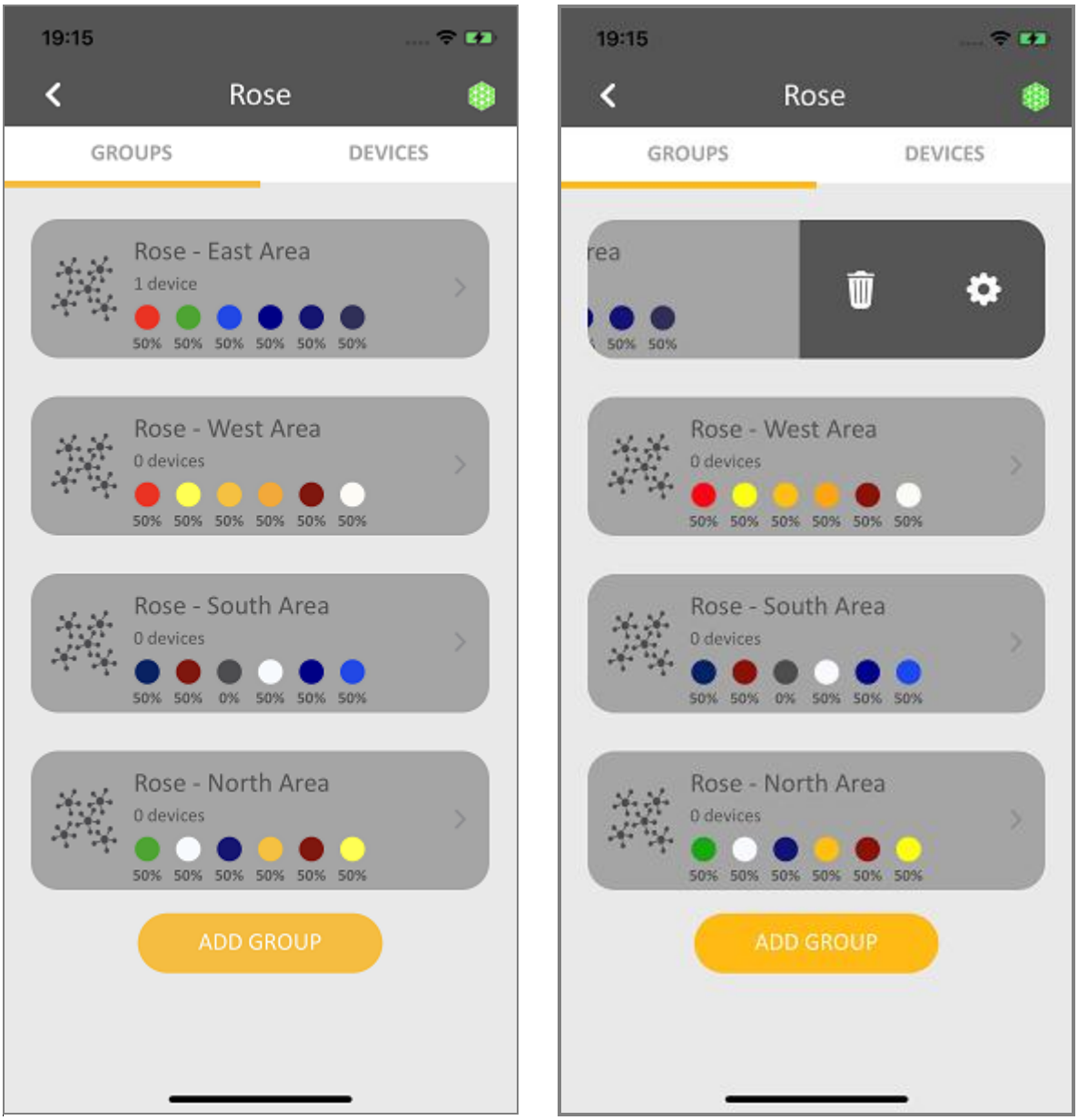

Figure 15: Group list & Group Delete/Setting option

4.3.2 Group Delete

- On clicking '🗑' icon from figure 15 (right), a confirmation popup will be displayed as shown in below image (left). If user clicks on *'Ok'*, group and device(s) within the group will be removed.
- If any device(s) is not accessible (device is switched off or out of range) within the selected group, a pop-up will be prompted as shown in figure 17.
- If user clicks on '*Yes'*, then all the devices will be deleted. Inaccessible device(s) will not be discoverable again. User needs to manually factory reset the device(s). Refer section 9.2.2 on how to factory reset the device.
- If user clicks on '*No*', then all the accessible devices will be Un-provisioned & deleted from group and will be discoverable again. Inaccessible devices will not be Un-provisioned & will not be deleted from the group. The group also will not be deleted and will hold the inaccessible device(s).

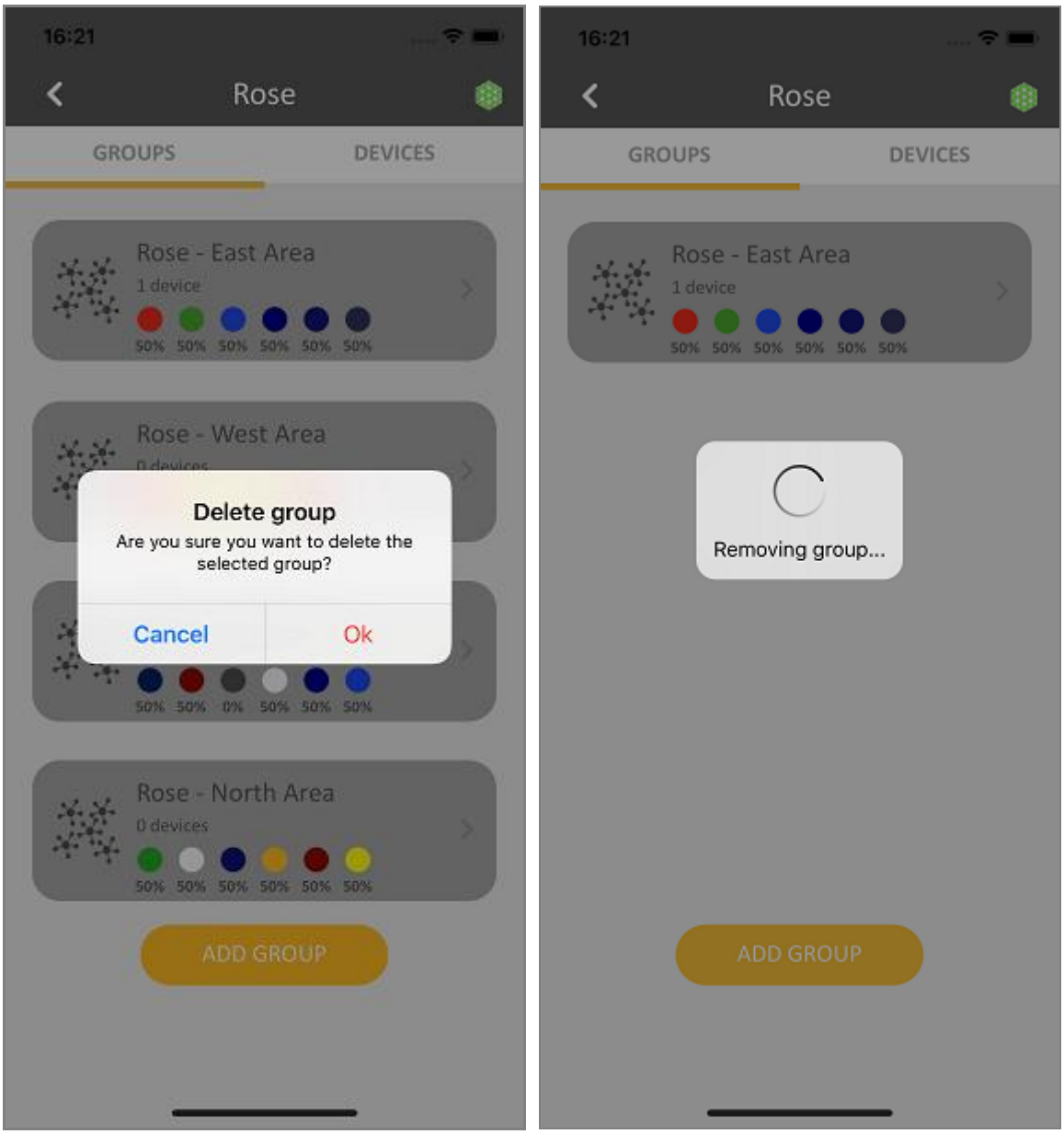

Figure 16: Group Delete confirmation

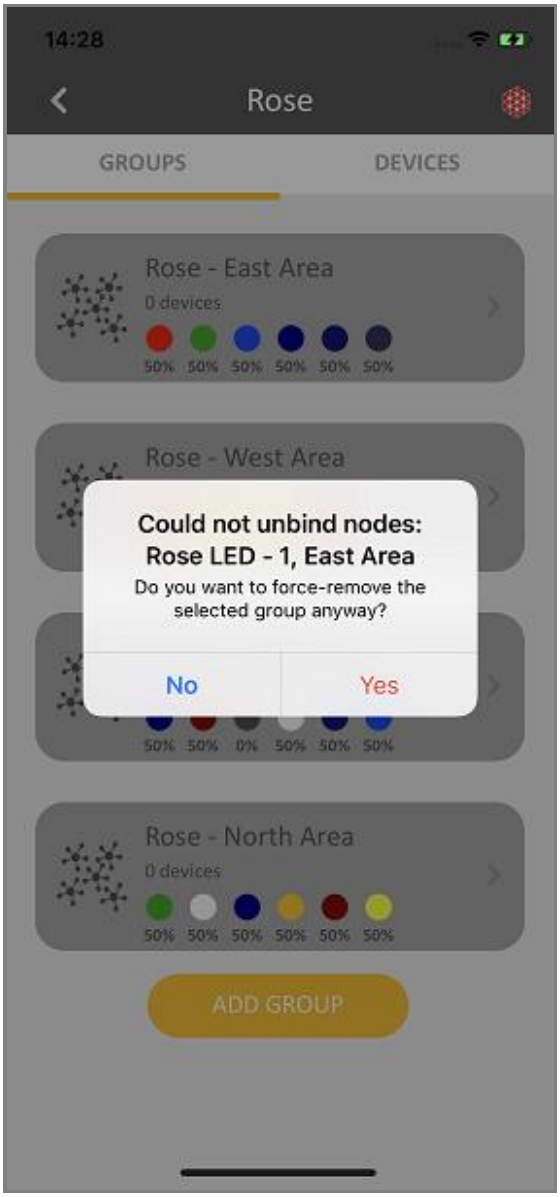

Figure 17: Group Delete confirmation popup while node is not discoverable

- Due to any reason if network is not connected while deleting the group, then user will be prompted with a pop-up that *'Could not remove group, as network is disconnected'* as shown below.
- If user clicks '*Ok*', then group will be deleted but device(s) will not be Un-provisioned and will not be discoverable again. User needs to manually factory reset the device(s). Refer section 9.2.2 on how to factory reset the device.

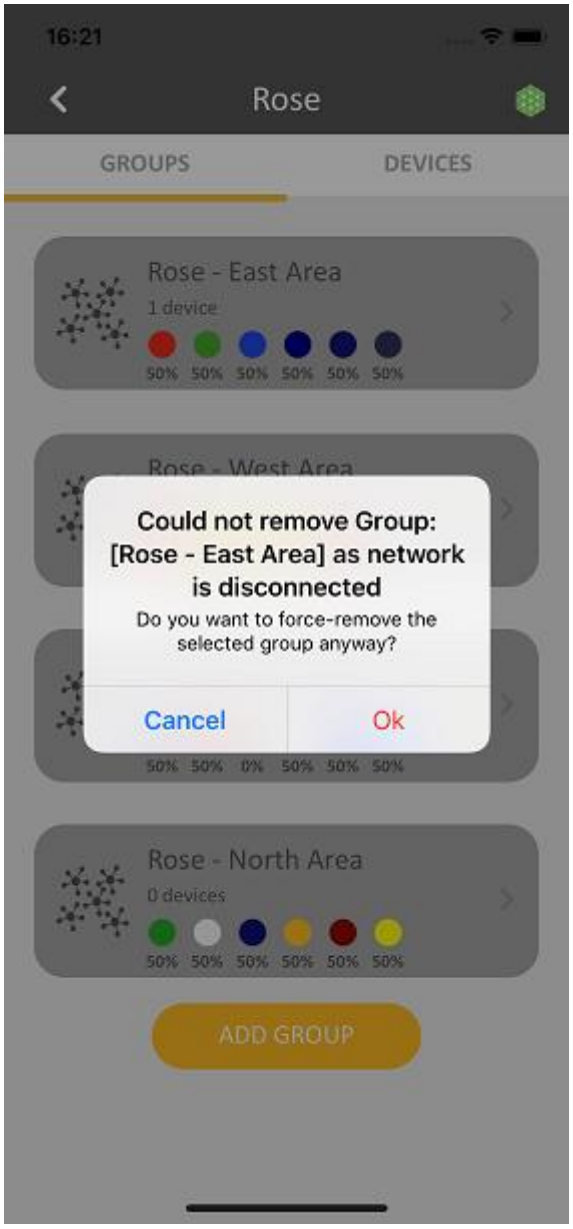

Figure 18: Group Delete confirmation popup when network is not connected

4.3.3 Group Edit

- On clicking '⚙' icon from figure 15 (right), user will be redirected to *Group configuration* screen as shown in below figure.
- Here, user can edit group name only.
- ID, network and channel configuration is just informative.

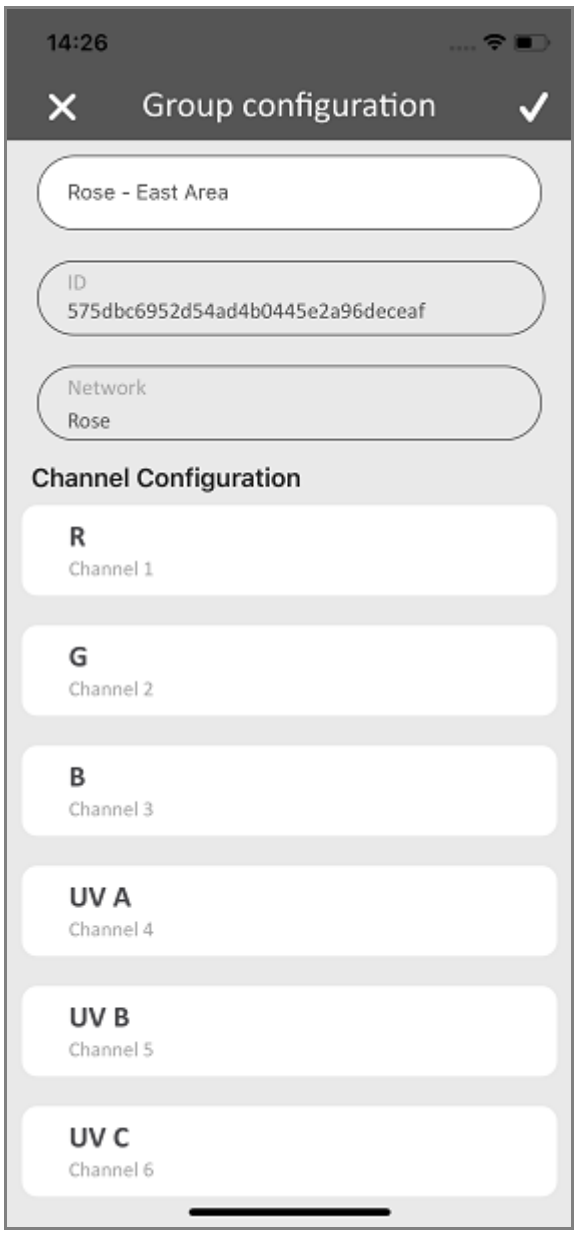

Figure 19: Edit Group

4.4 Provisioning LED Nodes

LED node(s) needs to be provisioned in the Mesh network and group to be able to control channel intensity. Application allows the provisioning of the LED Nodes. LED Nodes are required to be powered on and in the vicinity of user's mobile BLE range.

Refer section 9.1 for LED Node connections and hardware setup.

4.4.1 Provisioning LED Nodes

- Navigate to Provisioning screen by clicking *'PROVISION'* button from Home screen.
- Click *'SCAN'* button, this will start scanning for available LED Node(s) in vicinity and display them as shown in below figure
- Pull to refresh Provision screen to update the scan list.
- Click *'PROVISION'* button against the listed LED Node which needs to be provisioned. Screen shown in figure 22(left) would be loaded on doing so.
- Enter desired name of LED Node.
- Select appropriate channel color configuration for each channel for this LED Node. Table 4 below describes the supported colors for channel configuration.
- If a particular LED Node is already provisioned under Gateway over ZIGBEE, user will not be allowed to modify channel configuration during provisioning process. The channel configuration drop down '⌄'option will be disable as shown in figure 21.
- If user wants to modify the channel configuration of such a LED Node, it has to be removed from Gateway.
- If the channel configuration drop down '⌄ is still disabled after removing the LED Node from Gateway, user can factory reset the ZIGBEE interface of LED Node. Refer section 9.2.1
- Click on *'Network',* this will show all the available networks as shown in figure 23(right).
- Now select the desired network in which the LED Node should be provisioned.
- Come back to page shown in figure 22(left) by pressing **'<'** on top left corner of page shown in figure 22(right) after selecting the Network.
- Now press *'Group'* to add this LED Node in desired Group within the Network.
- If Group with exactly same channel configuration within the selected Network is available, all of those would be shown to user for making selection (in-line with Network selection as shown in figure 22).
- If No Group with exactly same channel configuration is available within the selected Network, user will be allowed to create one as described in section 4.4.2 within the provisioning flow.
- Press **'<'** to go back to device provisioning screen.
- Press **'✓'** to provision the device.
- This will start provisioning process with device and will display the indicator as shown in figure 23. Provision process would take some time to complete.
- Provision all the LED Nodes one-by-one as described above.

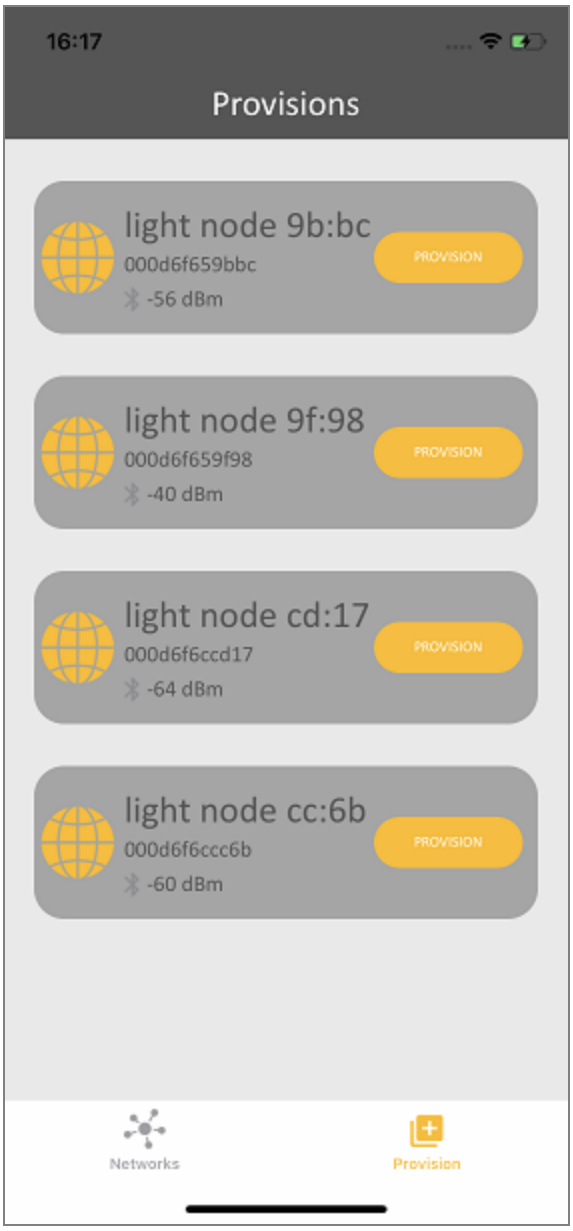

Figure 20: Provision Screen

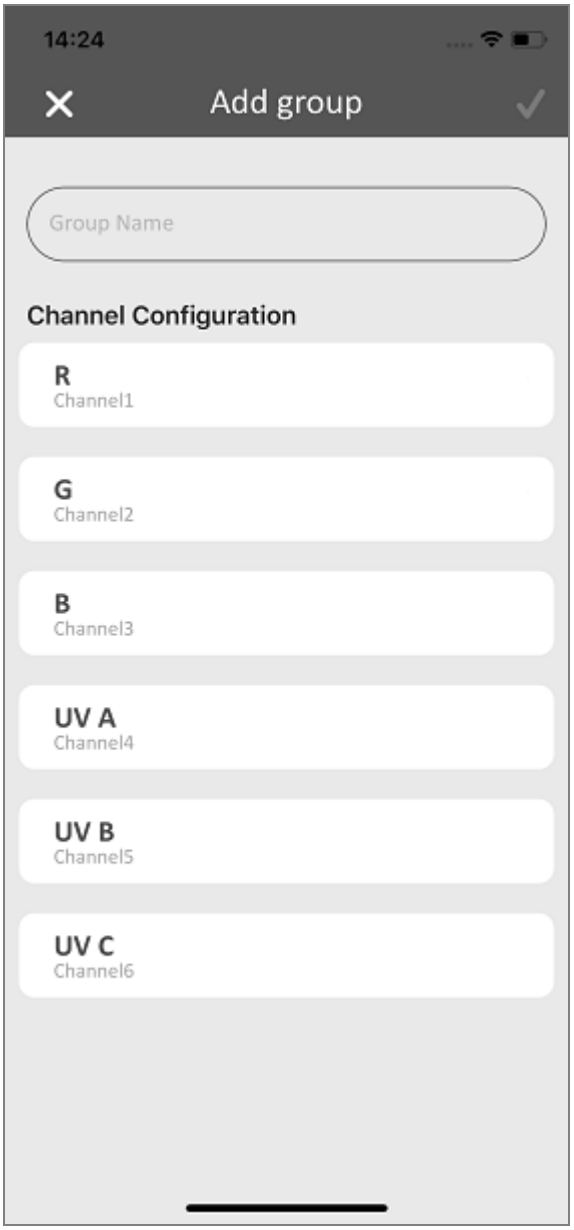

Figure 21: Device Provision when already provisioned on ZIGBEE

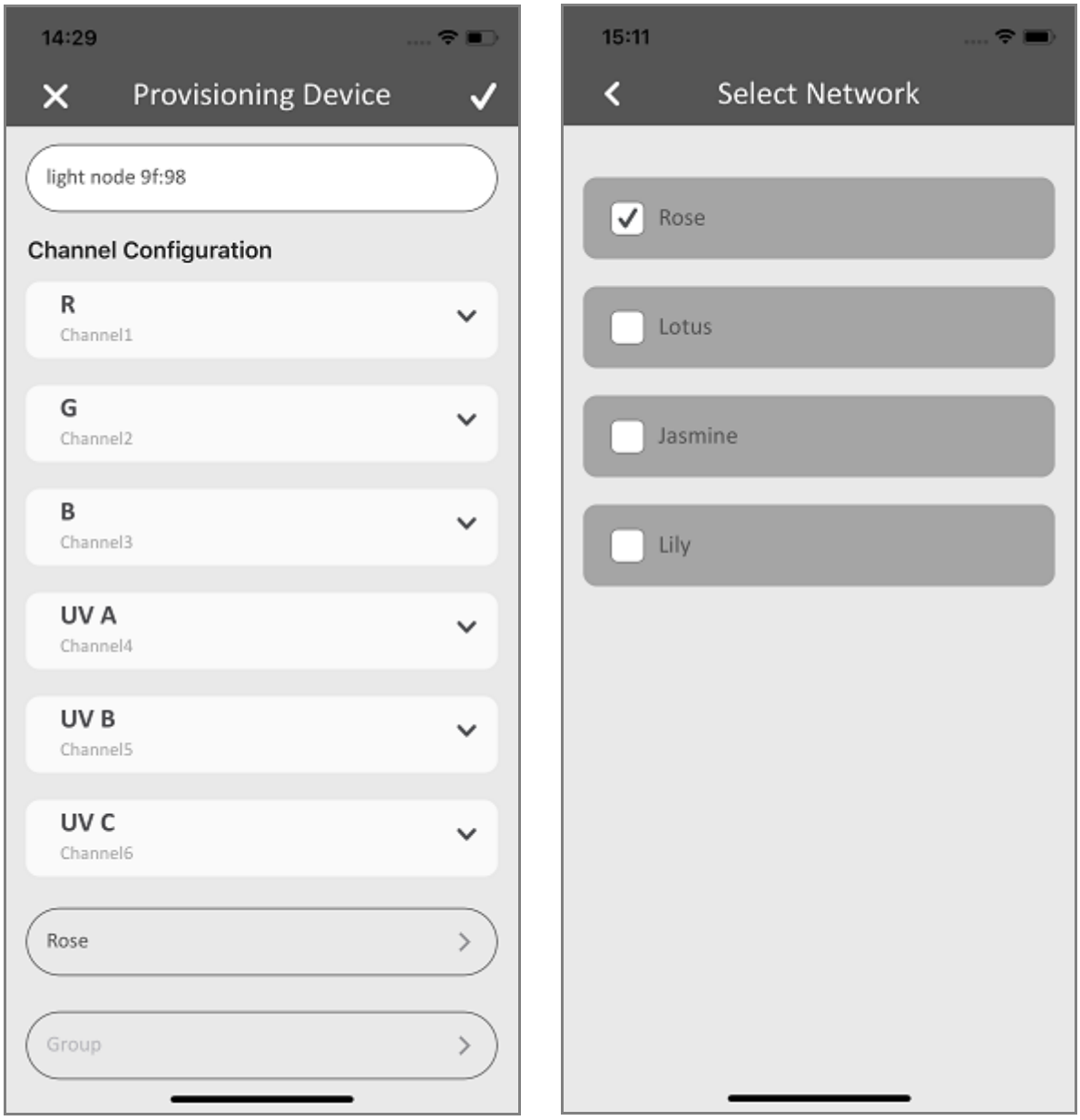

Figure 22: Device Provision screen & Network selection screen

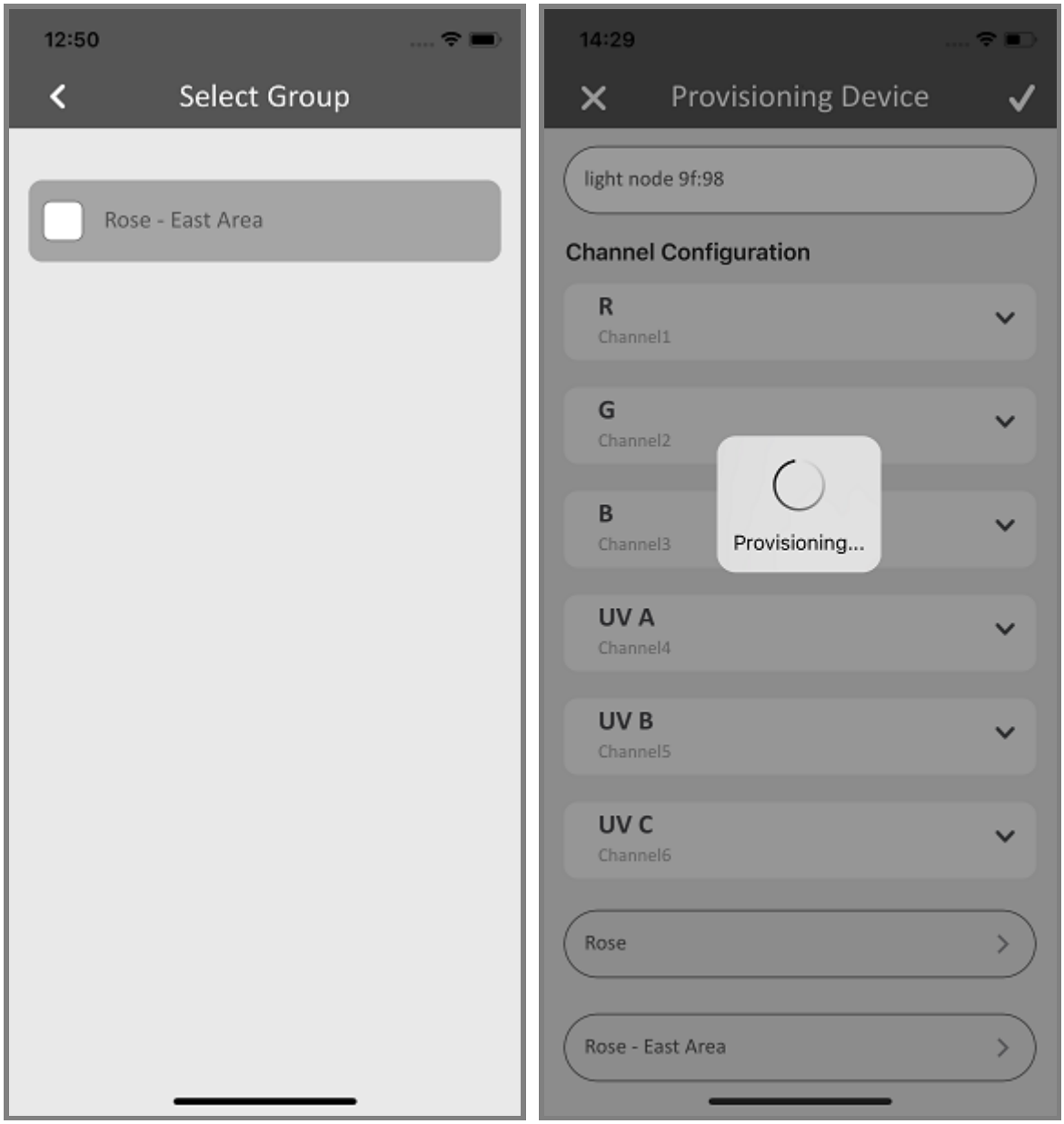

Figure 23: Device Provision – Group selection screen

Note: Provisioning of LED Node might fails sometime with error “Provisioning of the device failed”. After this error, please wait at least 1 minute to rediscover LED node. If LED node is still undiscoverable after 1 minute then to make it re-discoverable, factory reset of the device is required. Refer section 9.2.2 on how to factory reset the device. This error is not frequent and will be faced rarely.

4.4.2 Create Group during device provisioning

Provisioning flow of device allows user to create a new Group in case there is no existing group matching the channel configuration of intended LED Node. During the provisioning process, if such a situation arises, user can follow below steps to add new group with selected color configuration of LED node from provisioning page.

- If No Group with exactly same channel configuration is available within the selected Network, user would be allowed to create one as shown in below figure.
- Pressing *'ADD GROUP'*, would show up screen as shown in below figure.
- Here, exactly same channel configuration will be selected as per the selected color configuration on LED Node that is getting provisioned. Channel configuration drop down and Network selection would be disabled (read-only). User can only set the desired group name.
- Press '✓' to create Group.
- Newly created group would be automatically selected as shown in figure 25(left).
- Press '✓' to start provisioning.
- This will start provisioning process with device and will display the indicator as shown in figure 25. Provision process would take some time to complete.

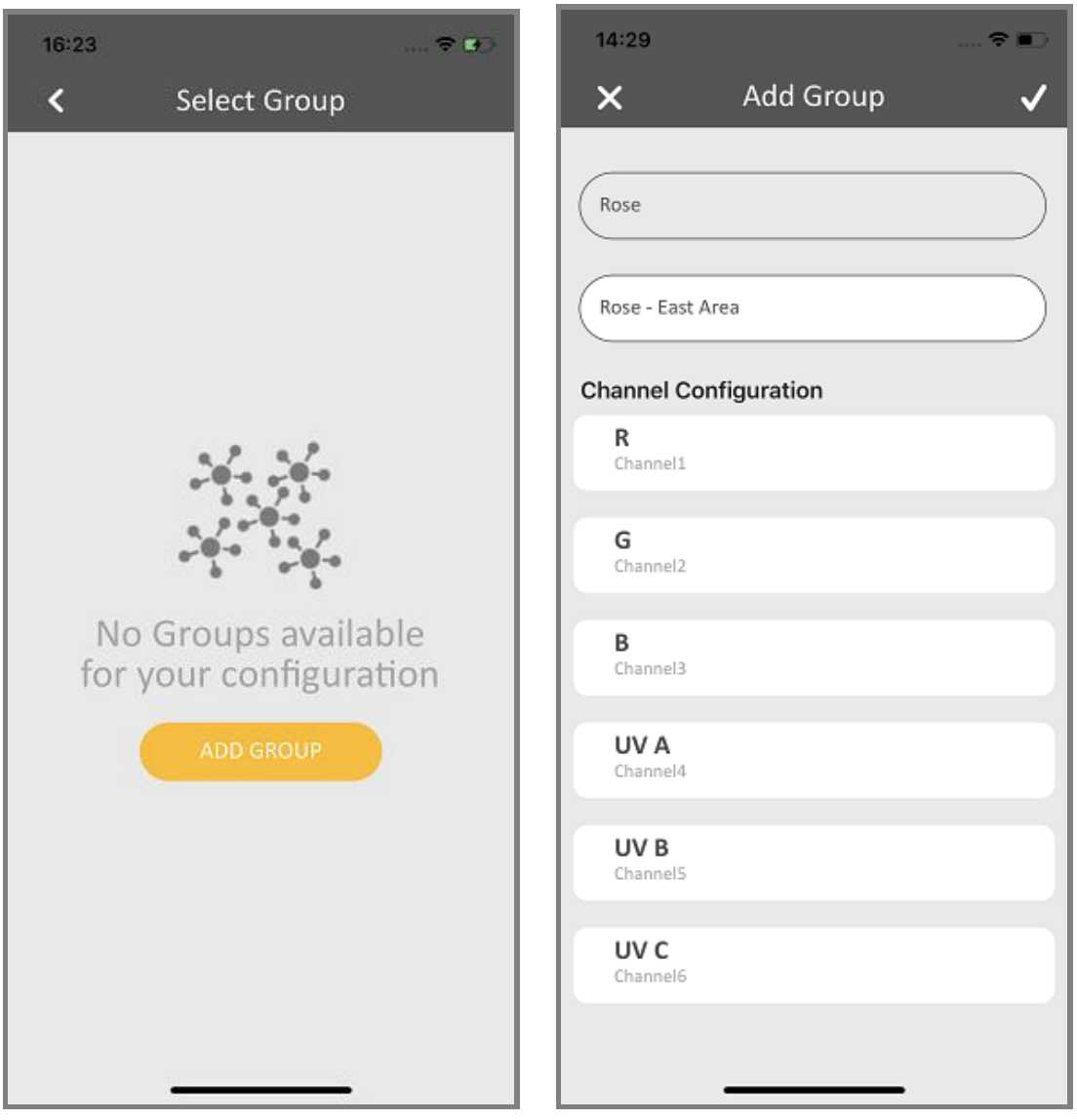

Figure 24: Device Provision - Add Group, if no matching group found while provisioning

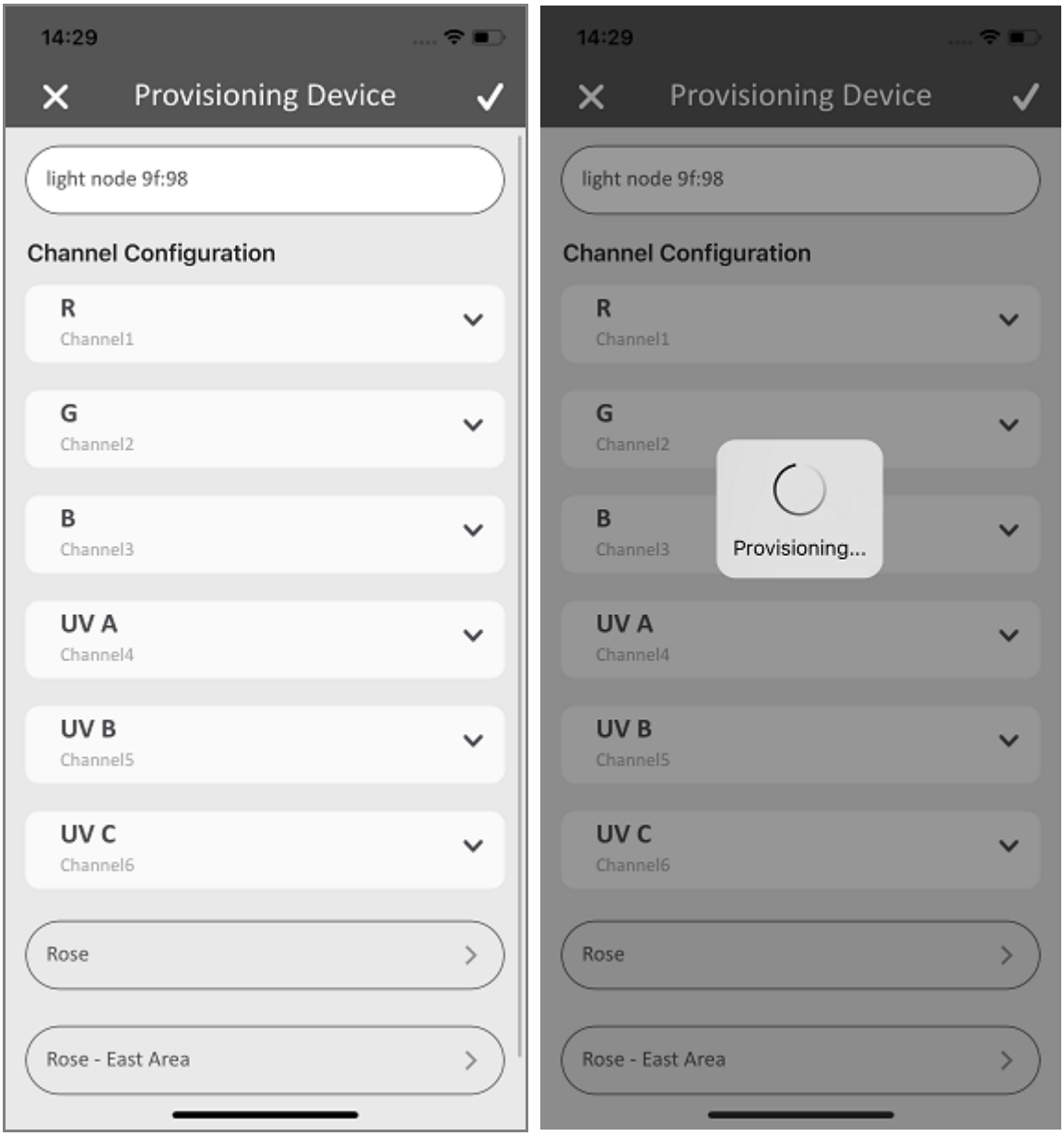

Figure 25: Provisioning process

4.5 Controlling LED Nodes

- LED Nodes can be controlled individually as well as all the LED Nodes within the same group simultaneously.
- To Control all the LED Nodes of a Group, traverse from Home page to respective Group as shown in below figure 26 & figure 27.

4.5.1 Controlling LED Nodes (Master Controls)

- Here at '*Master Control*' varying the light intensity of any channel will be reflected on respective channel of all the LED Nodes of the Group.

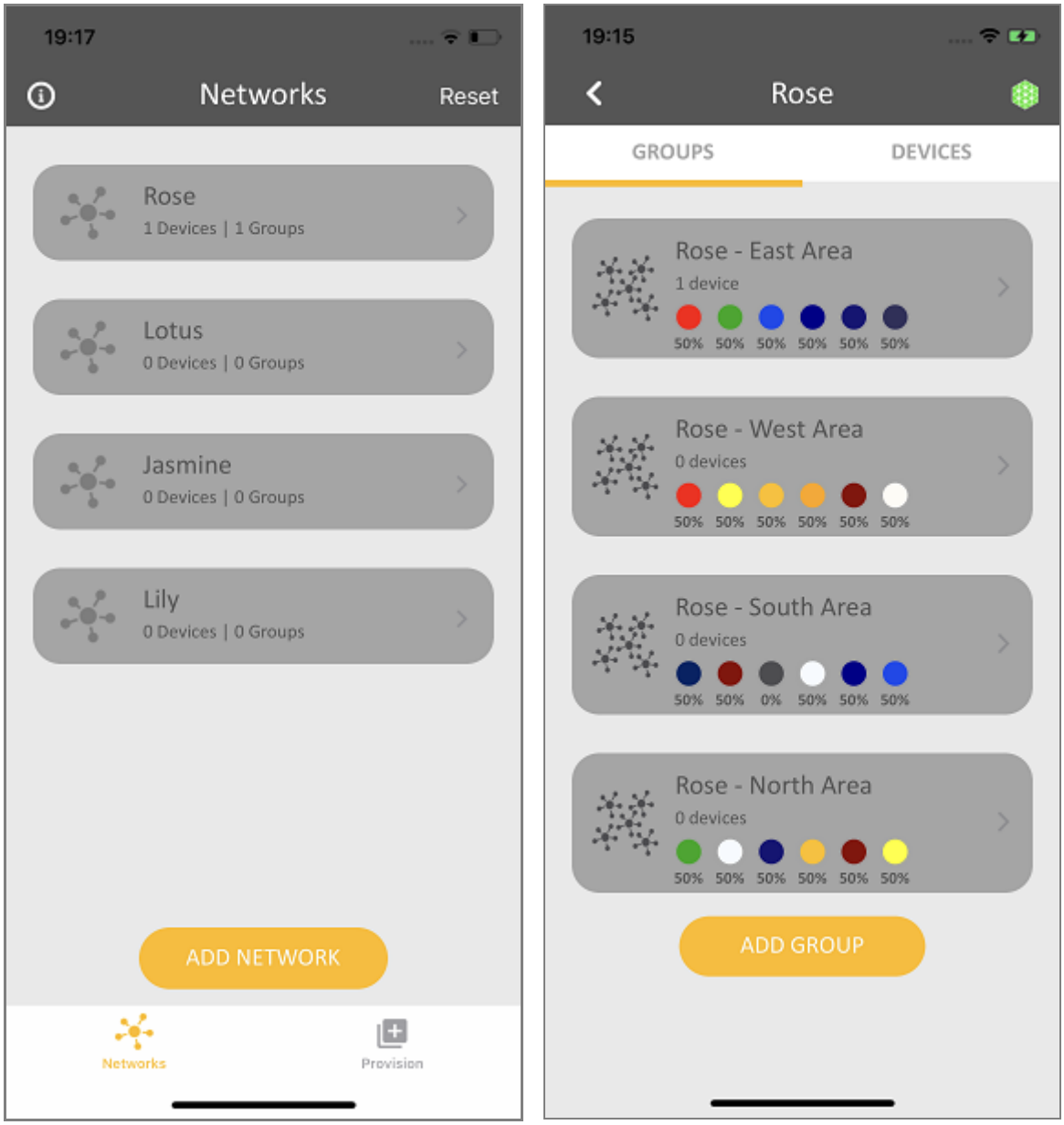

Figure 26: Controlling LED Nodes

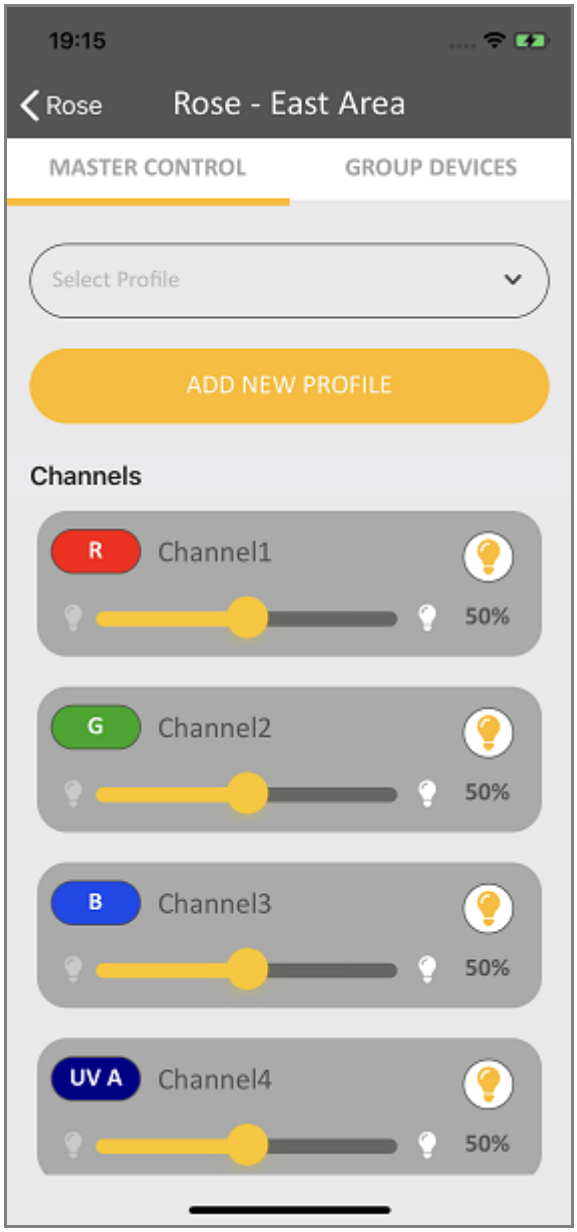

Figure 27: Master Control

4.5.2 Controlling LED Nodes (Individual Controls)

- To control individual LED Node of a Network, traverse from Home page to respective Network as shown in figure 28(left) -> figure 28(right) ->figure 29 (select desired LED Node for individual control)

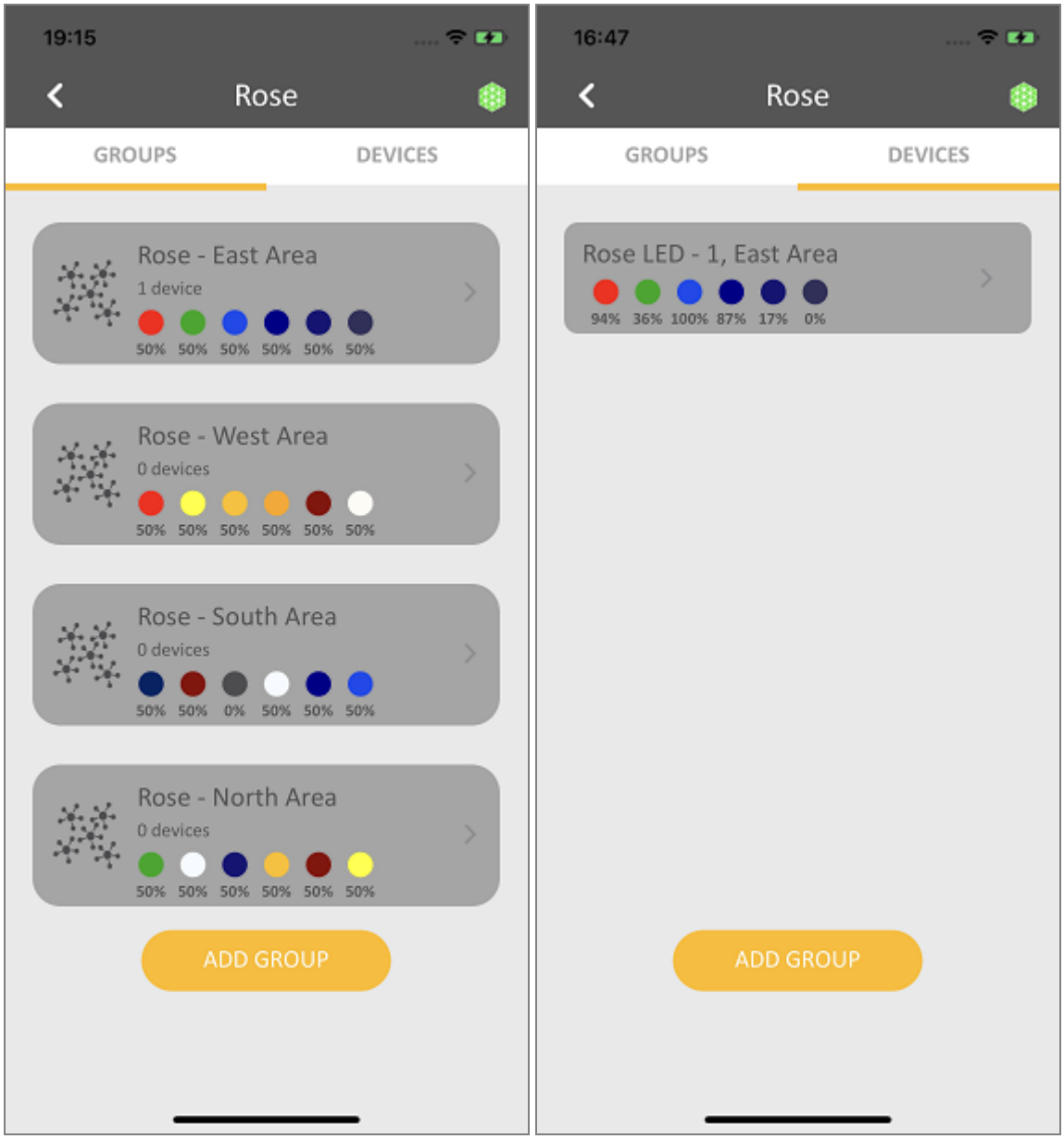

Figure 28: Individual Device Control Navigation

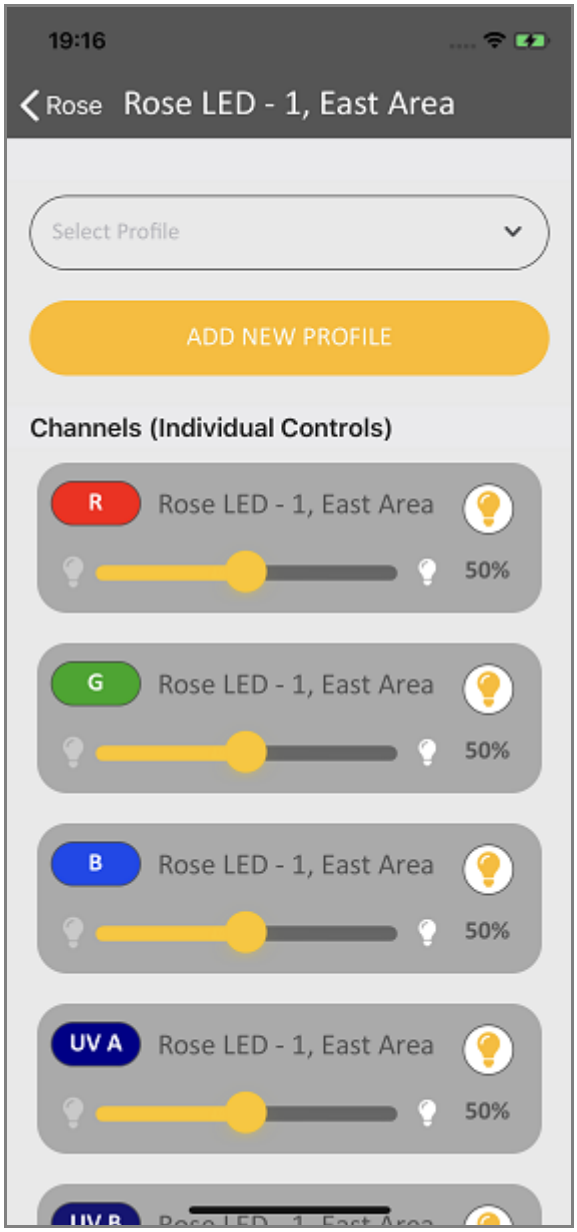

Figure 29: Individual Device Control

4.5.3 Device Delete

- To Delete Device / Un-provision device, traverse from Home screen, (select network under which the specific device is provisioned, it will redirect to Group listing screen) -> figure 28(left) -> figure 28(right) press '🗑' icon after left swipe on desired Device -> figure 30. Page shown in below figure. Press *'Ok'* on confirmation pop up to delete device.
- If the device is a proxy connection for BLE mesh network, then user will be prompted for confirmation as shown in figure 30 (left). If user clicks *'Ok'*, the device will be deleted and Un-provisioned.
- If device is 'out of range' or 'switched off' then user will be prompted for confirmation as shown in figure 31 (right). If user clicks on '*Ok'*, device will be deleted but will not be Un-provisioned and hence will not be discoverable again. User needs to manually factory reset the device. Refer section 9.2.2 on how to factory reset the device.

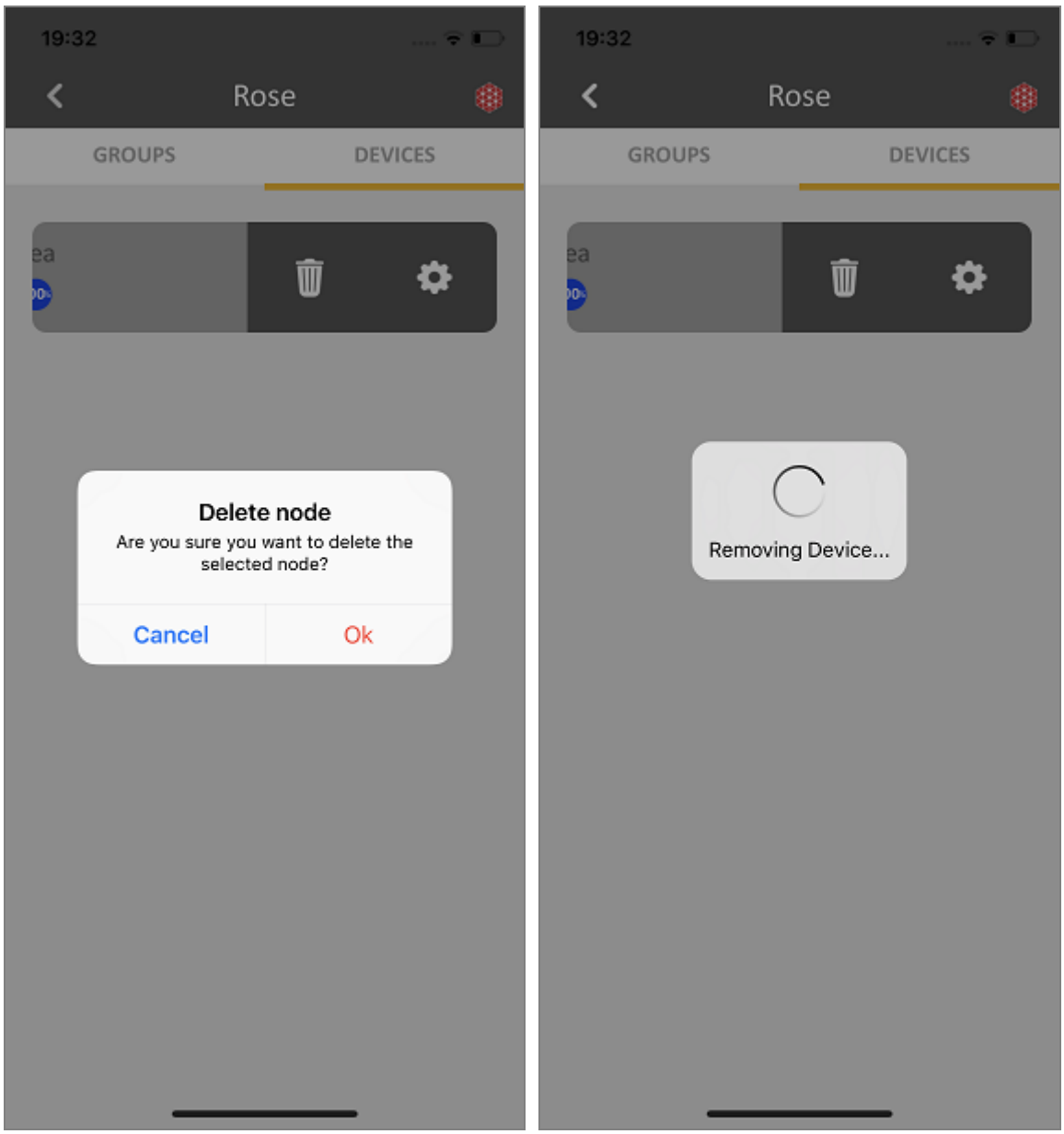

Figure 30: Delete Device confirmation pop-up

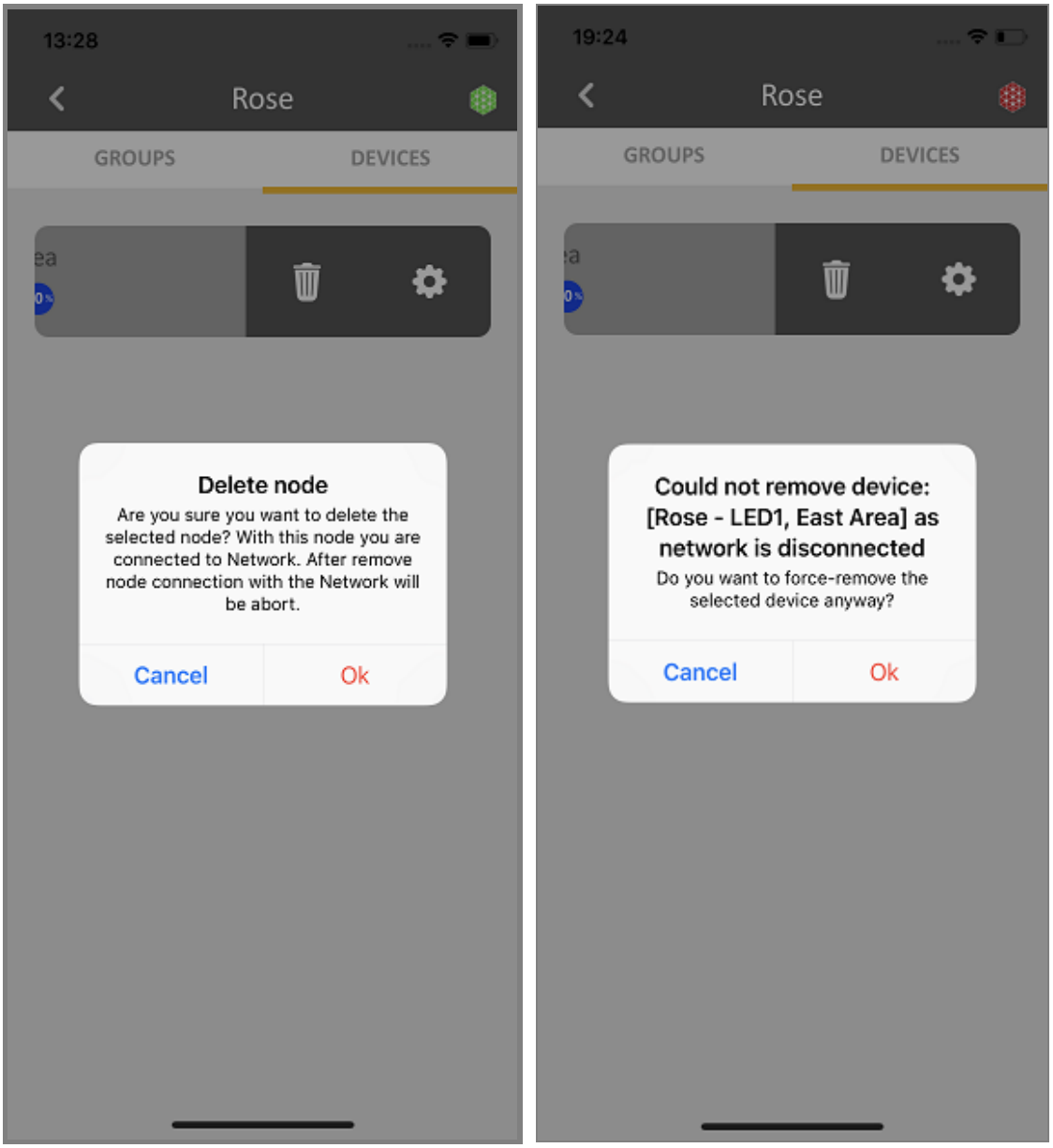

Figure 31: Delete Device

4.5.4 Device Edit

- Only device name (LED Node name) will be editable field in '*Device configuration* page. Device group and channel configuration would be read-only.
- To edit device configuration, traverse from Home screen, (Select network under which the specific device is provisioned, it will redirect to Group listing screen) -> figure 28(left) -> figure 28(right) (press '⚙' icon after left swipe on desired Device). Page shown in below figure will be displayed.
- Edit device name as desired.
- Press '✓' once device name is changed.

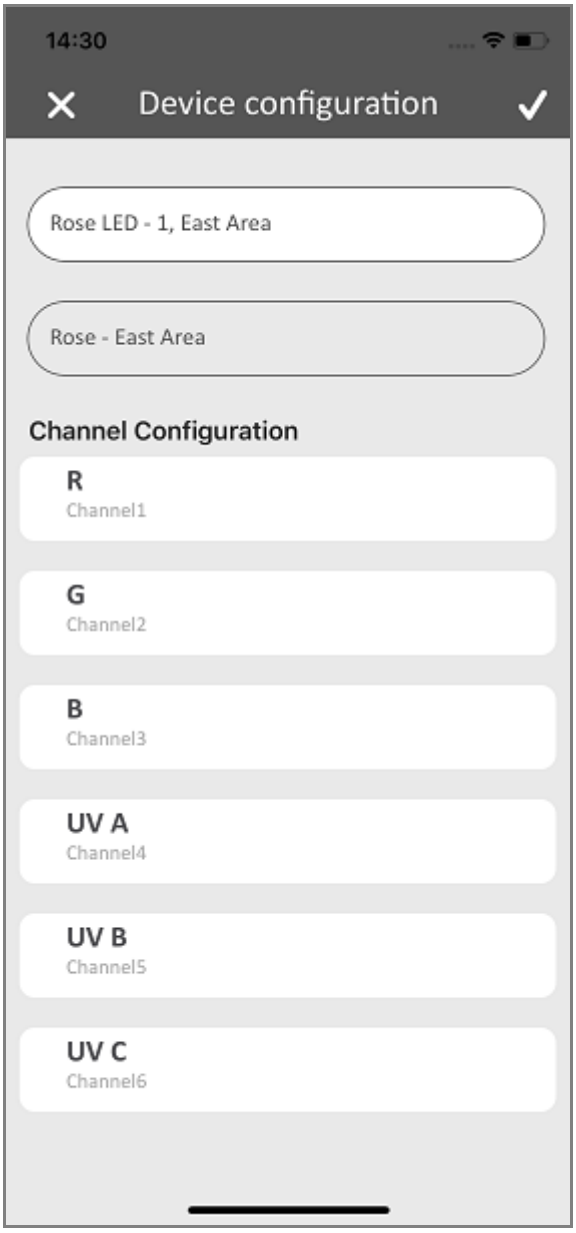

Figure 32: Edit Device

4.6 Profiles

- This feature allows to create multiple profiles so that the channel setting becomes quicker.
- Profiles can be created and applied to a single device (*Individual Control*) within a group or ALL devices (*Master Control*) within a group.
- Profile can be created/applied/deleted from *Master Control* or *Individual Control* screen as described in following sections.

4.6.1 Create Profile

- From *Master Control* or *Individual Control*, press "*ADD NEW PROFILE*" button as per below figure. *Light Profile* page will open up as shown in figure 34.
- Enter desired profile name and brief description for the profile.
- Set intensity of each channel as needed for the profile.
- Press "*SAVE*", this will save the profile.
- The newly created profile can be applied to device(s) from *Master Control* or *Individual Control* page.

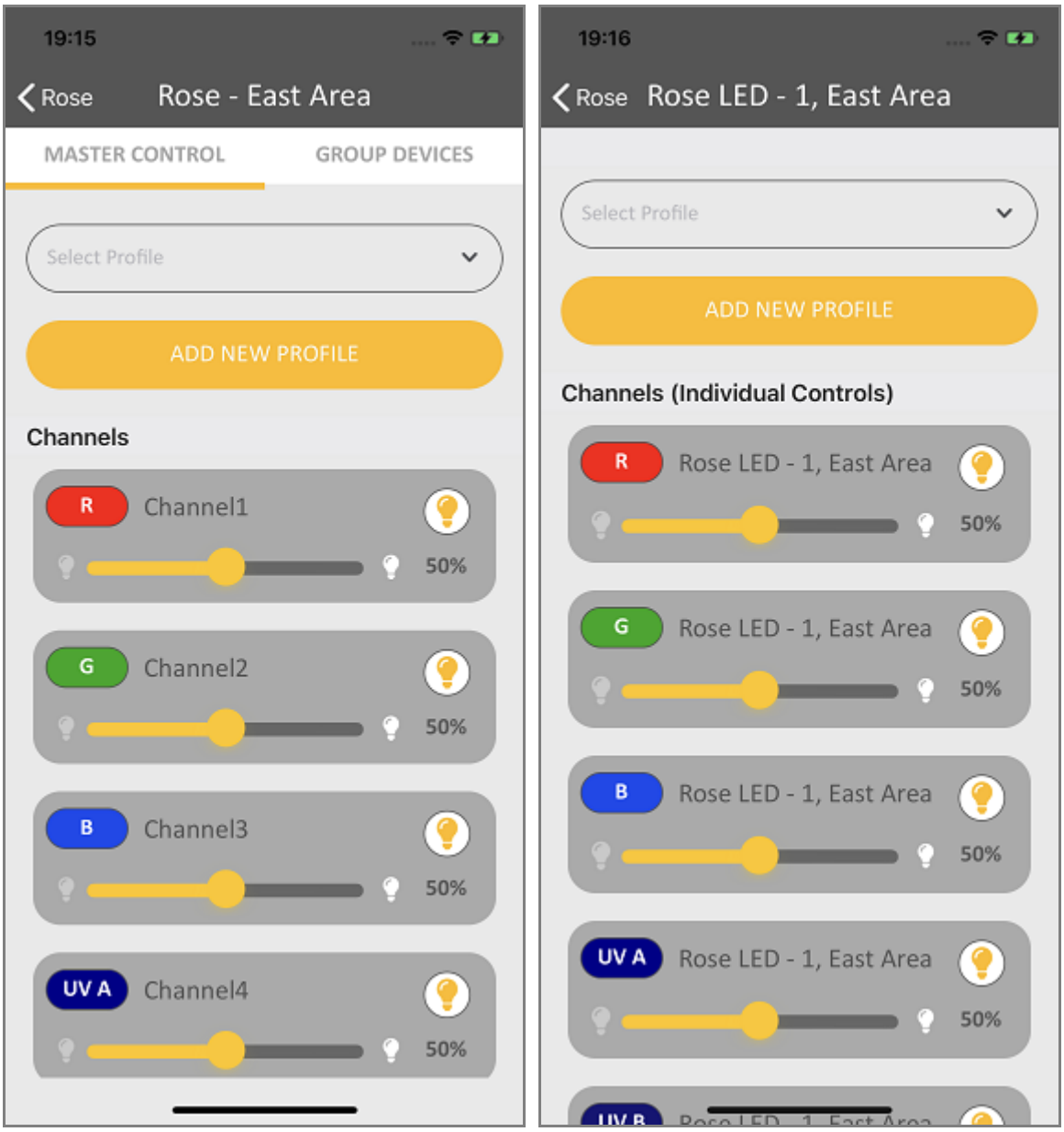

Figure 33: Add new profile option from Master/Individual control

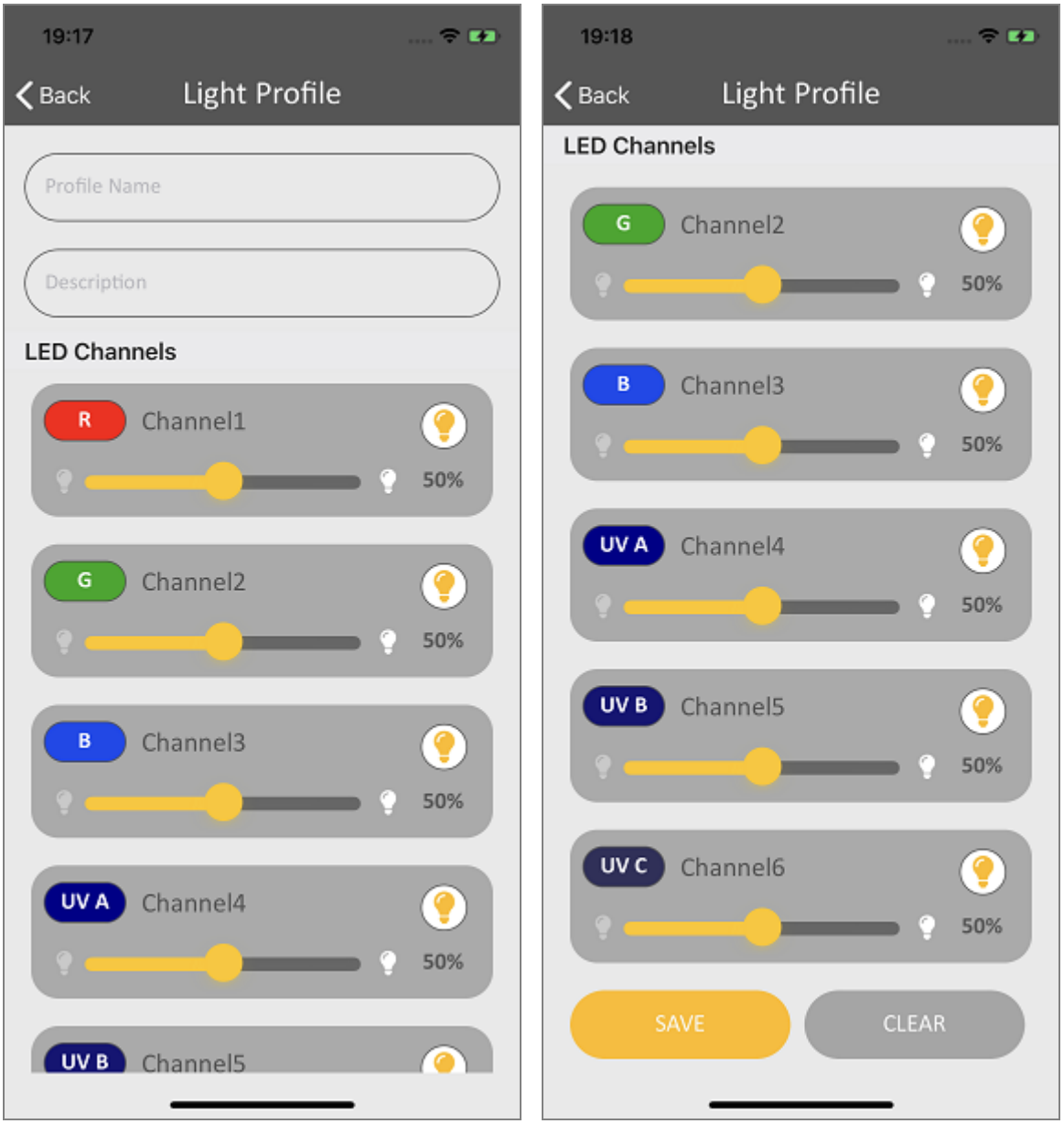

Figure 34: Add new profile screen

4.6.2 Apply Profile

- From *Master Control* or *Individual Control* (figure 33), click on '*Select Profile*' drop down '⌄'.
- Select the desired profile to be applied from the list. This will update the intensity level of ALL LED nodes of particular group as per profile settings.
- When the profile is applied from *Individual Control*, the intensity level of particular LED node will be updated as per profile settings.

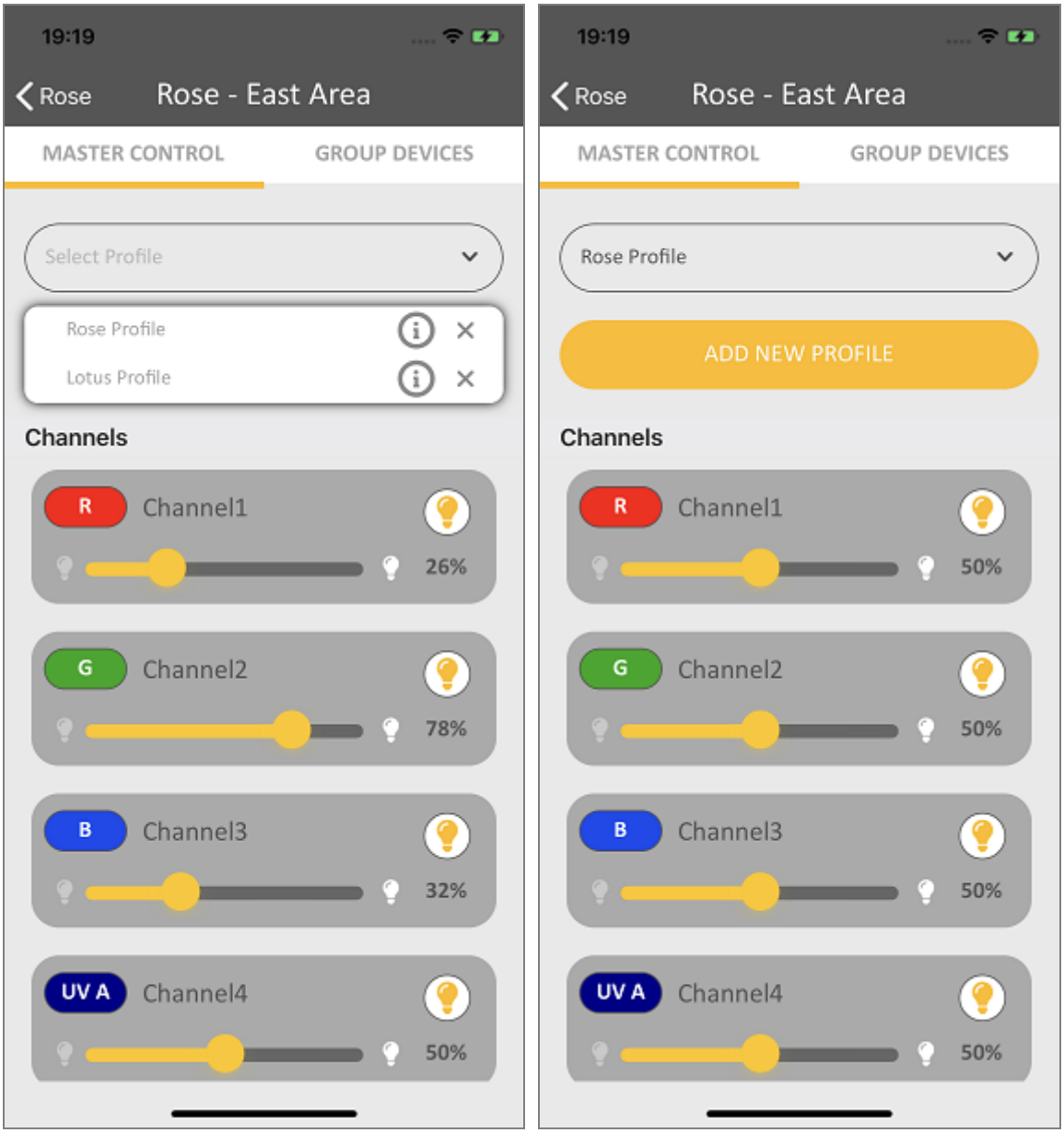

Figure 35: Apply profile

4.6.3 Delete Profile

- From *Master Control* or *Individual Control* (figure 33), click on '*Select Profile*' drop down '⌄'.
- Click on ' × ' icon against profile that needs to be deleted.
- User will be prompted for confirmation as shown in below figure. If user clicks *'Ok'*, profile will be deleted from the list.

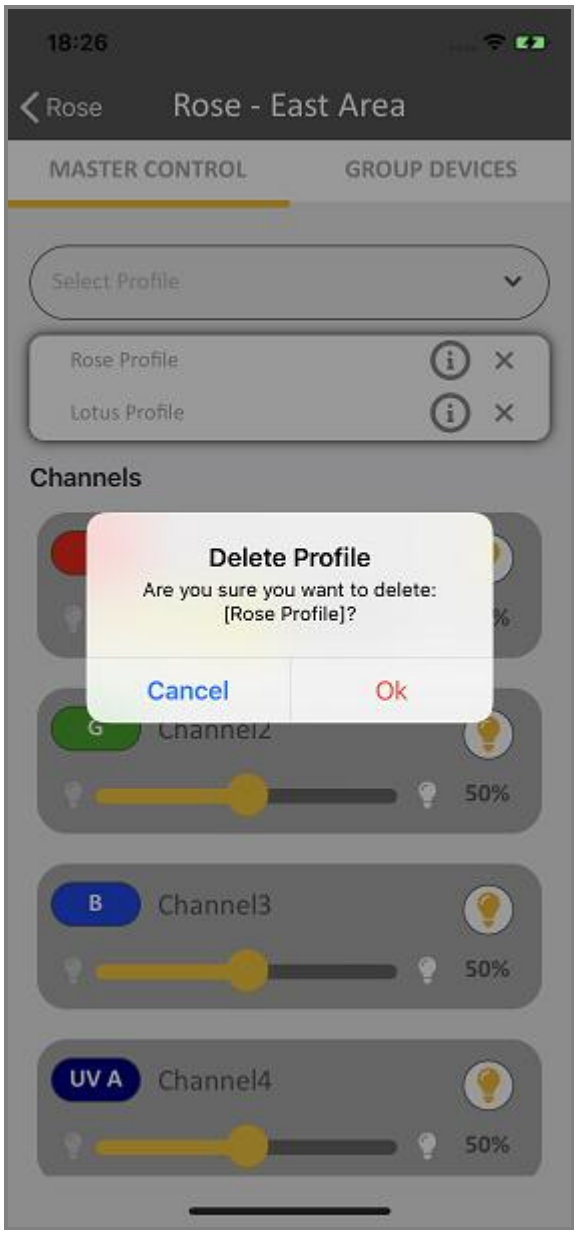

Figure 36: Delete profile

4.6.4 Profile Information

- From *Master Control* or *Individual Control* (figure 33), click on '*Select Profile*' drop down '⌄'.
- Click on 'ⓘ' to see information of a particular profile.
- Profile name and its profile description will be shown to the user.

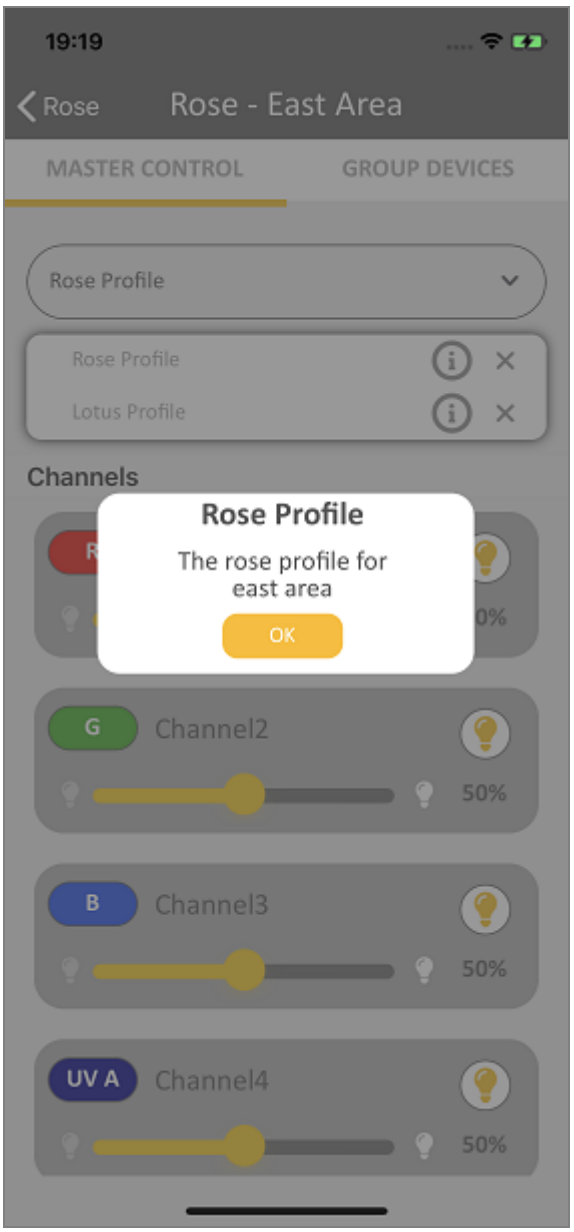

Figure 37: Profile information

4.7 Instructions/Conventions/Errors

Growhouse Lighting application for iOS is provided via Test Flight. TestFlight application needs to be installed on iOS device. This sections describes how to install Growhouse Lighting application on iOS device from TestFlight.

- **Prerequisites:**
  - Test Flight should be installed on iPhone, refer section 4.7.1 if you haven't already.
  - Valid email ID should be required, so Apple can send invitation to test an application via Test Flight.

4.7.1 Installing Test Flight

- The Test Flight app is available on the AppStore. Open the AppStore and search for **Test Flight**

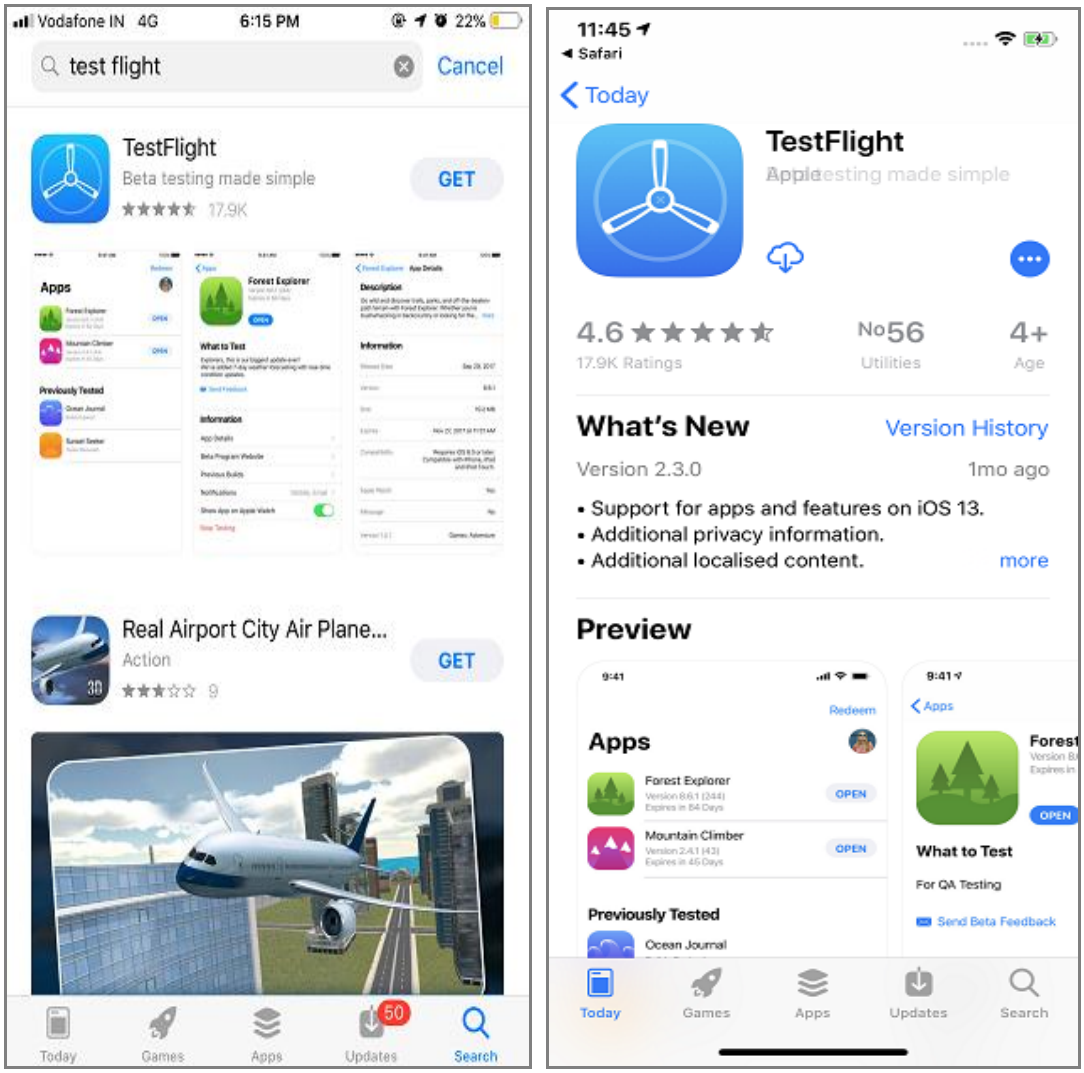

Figure 38: Installing Test Flight from AppStore

- Download the Test Flight app and launch it. When asked to login, sign in with valid Apple ID. This could be the personal Apple ID on your test device and doesn't have to match the email address you added into iTunes Connect.

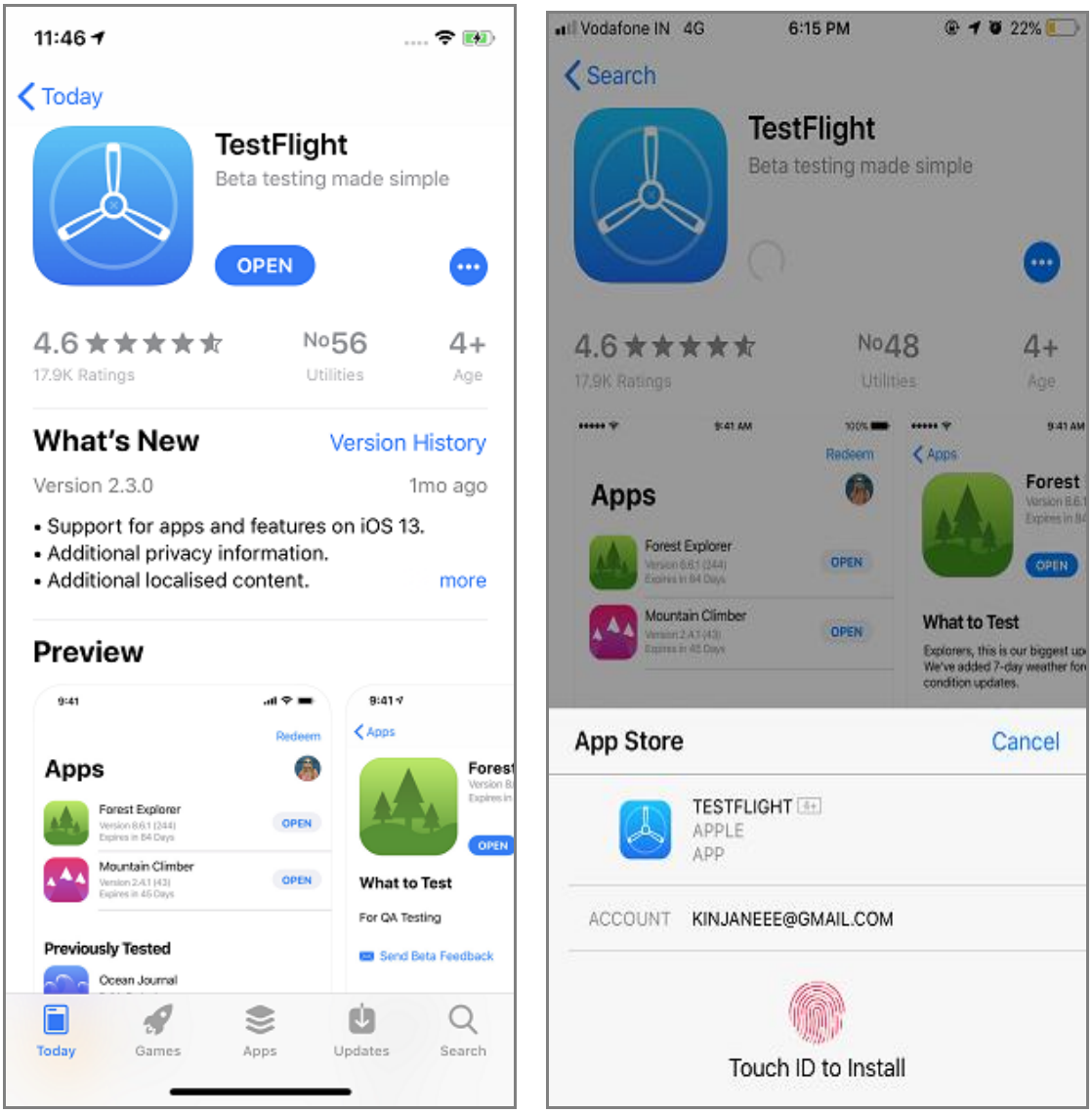

Figure 39: Sign in with any Apple ID

- Tap '*Continue'* for further process, and *'Accept'* Terms and Conditions.

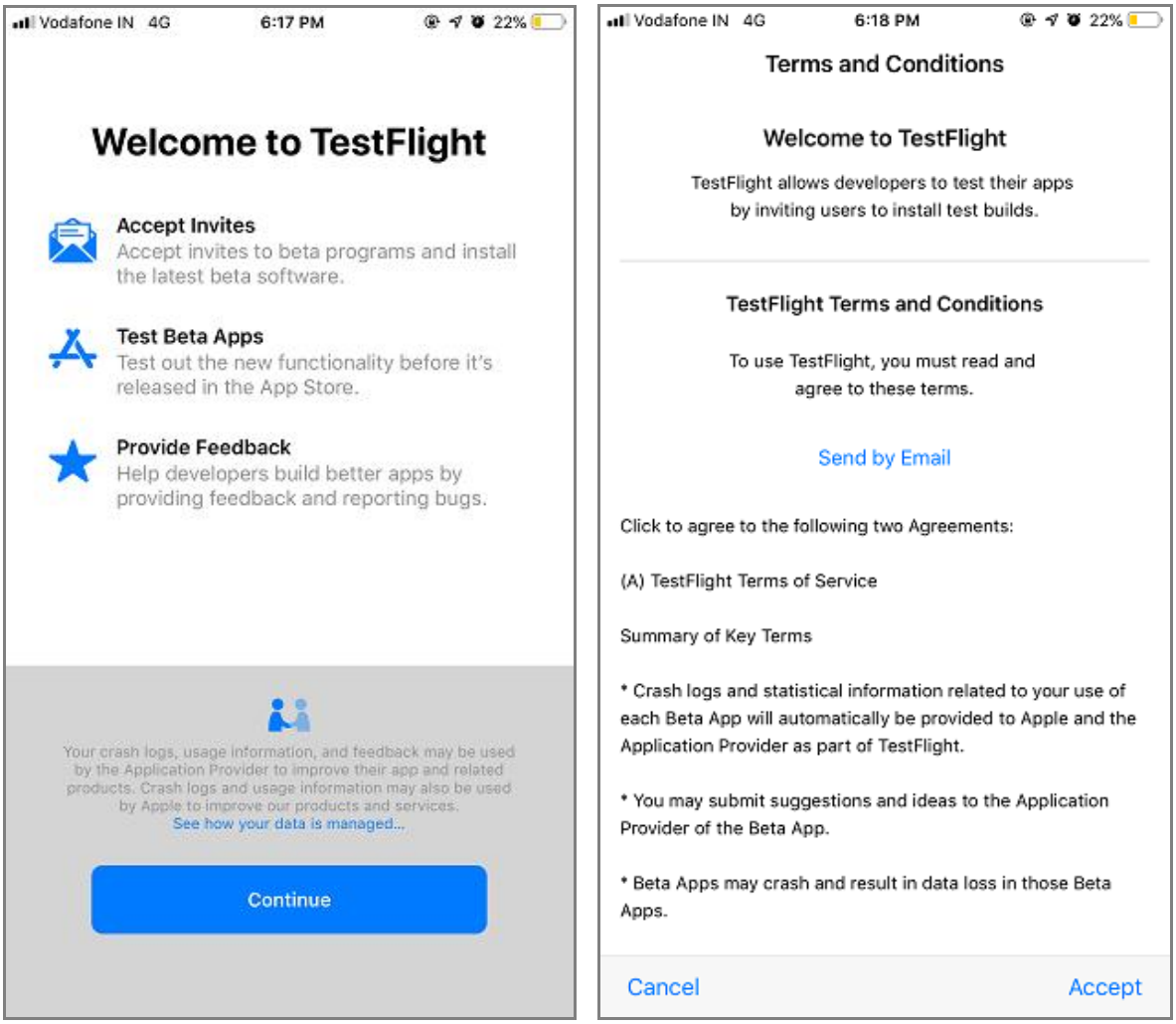

Figure 40: Accept Terms and condition

- Confirmation pop up would appear asking to allow notifications, Press '*Allow'* if you want notification when updates to application (Growhouse Lightening app) are available, otherwise Press '*Don't Allow'*. It is recommended to opt for *"Allow"* option.

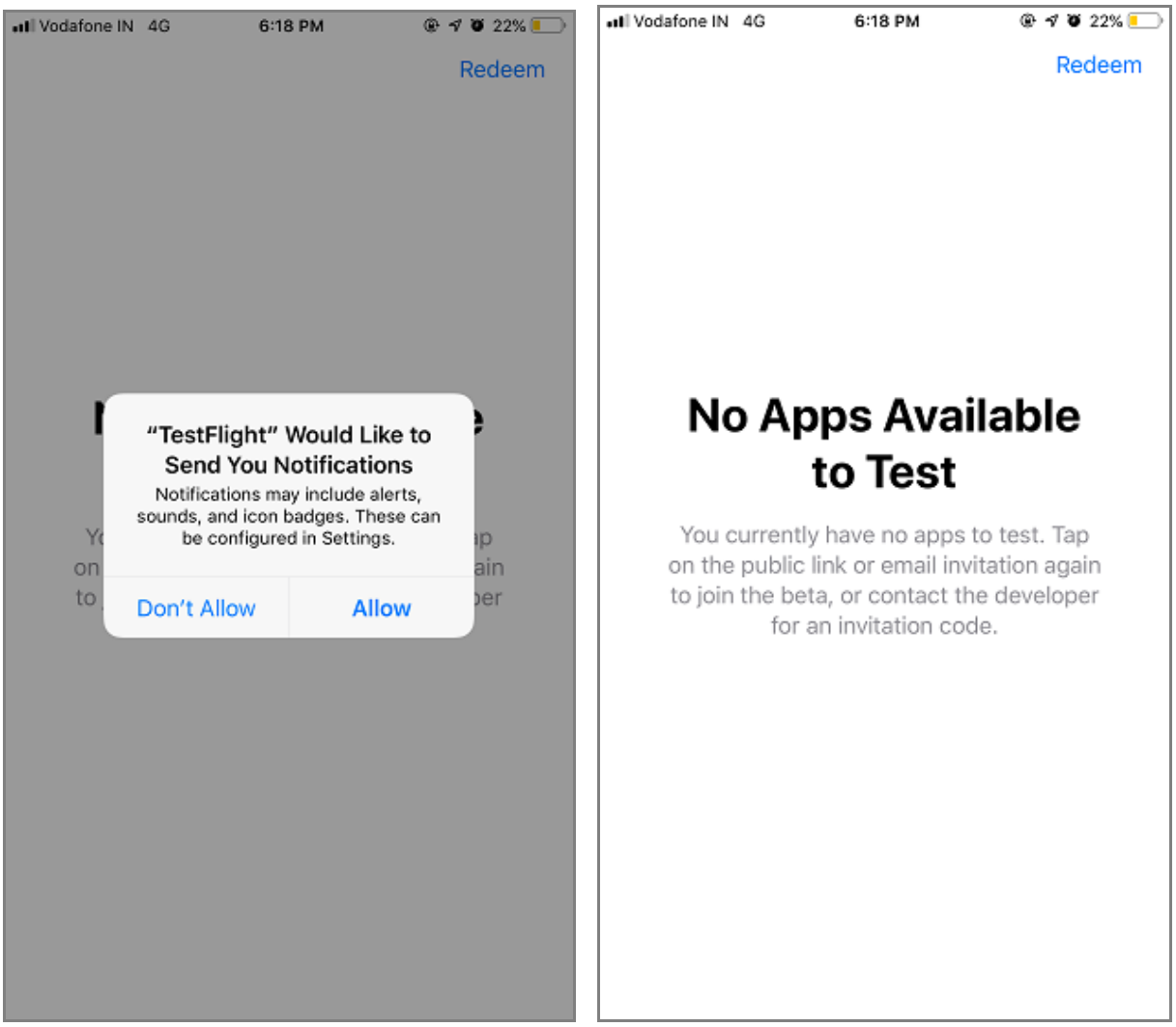

Figure 41: Allow Notifications

4.7.2 Installing Growhouse Lighting Application via Test Flight

- Uninstall the older version of Growhouse Lighting application that is installed via Diawi link.
- New User has to request the invitation to access the application at growhouse@einfochips.com
- User would be sent the invite to use the application.
- When user is added as an external tester, the user will receive an invitation email to access the application via Test Flight.

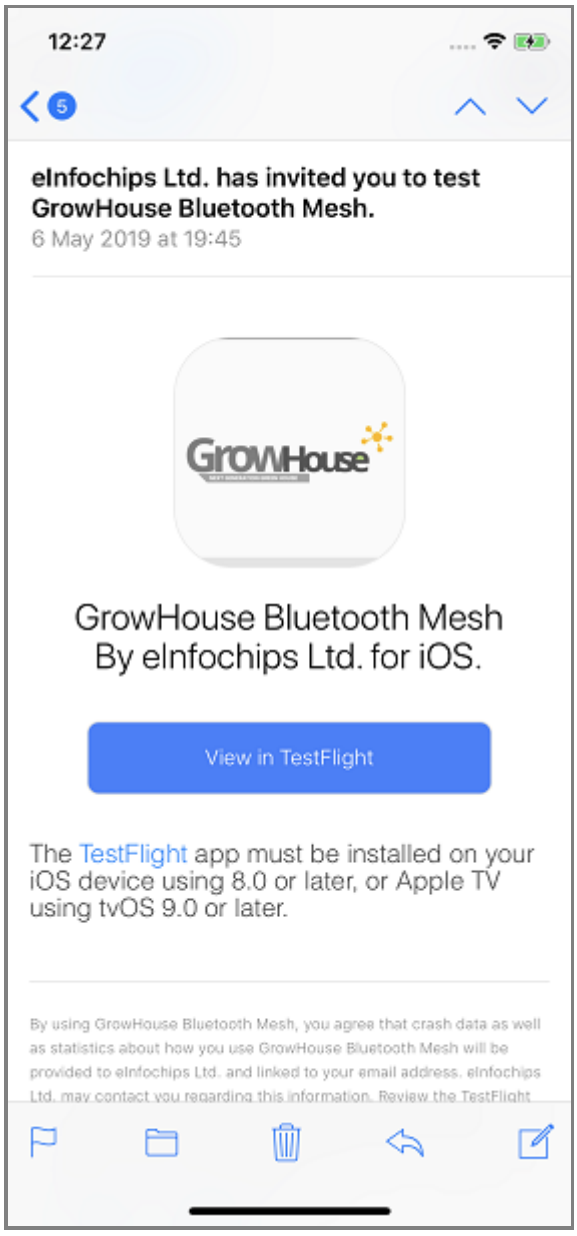

Figure 42: Accept invitation to install App on your phone

- Open this email on iOS device, and click '**View in Test Flight'**. This will launch Test Flight and redeem the invitation using the Apple ID currently in use in the Test Flight app. User will see the following app preview page for app.

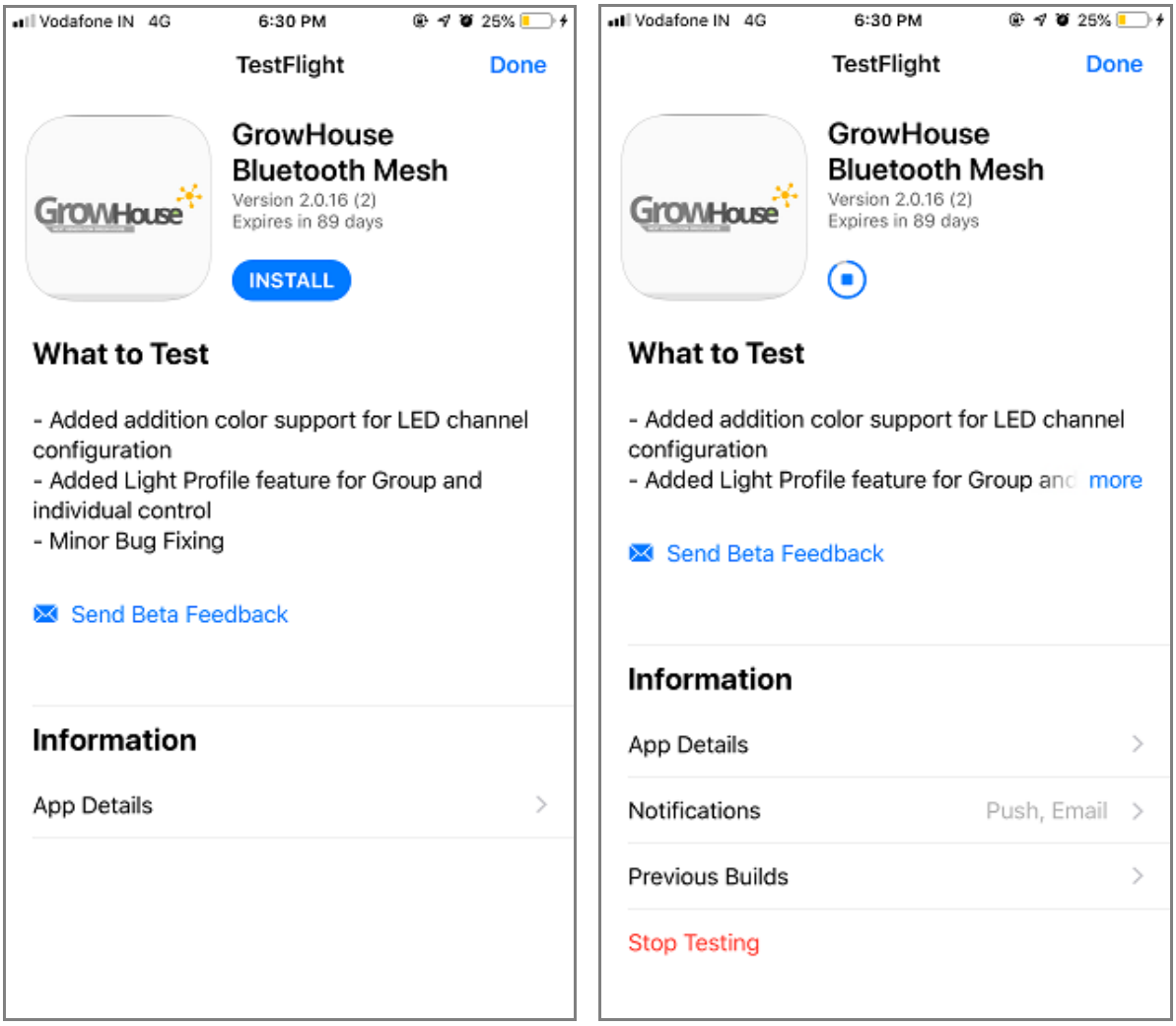

Figure 43: Install GrowHouse Lightning - BLE

- Tap '*INSTALL'* to accept the invitation, and the app will download and appear on your home screen. Now you can treat it just like any other app. It will have an orange dot near the name in Springboard to indicate it is a Test Flight install.

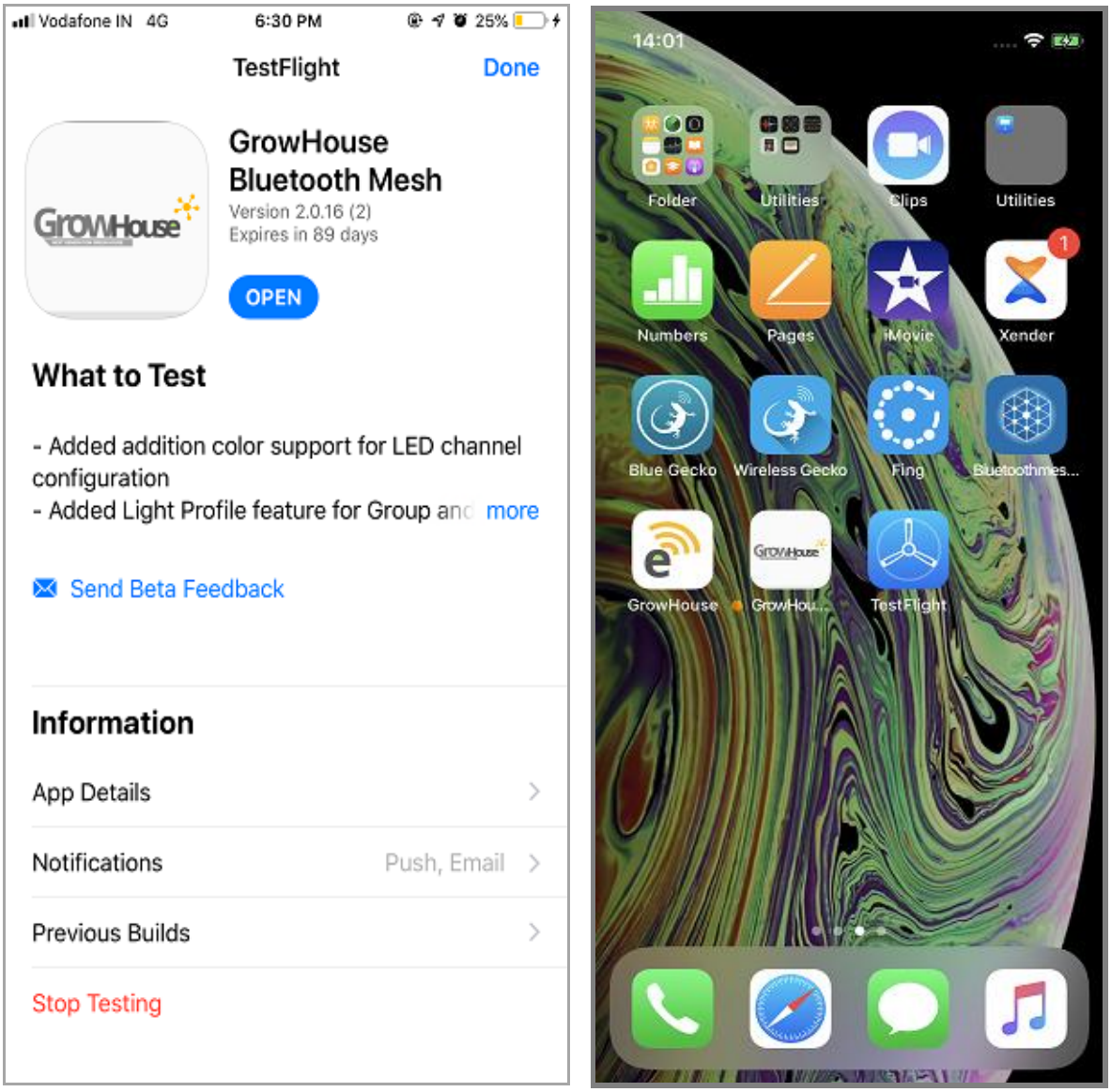

Figure 44: GrowHouse Lightning app available for Testing

- From now on, whenever a new version of this app is available, you'll see a notification from Test Flight. If the notifications are disabled for Test Flight, User needs to open up Test Flight application to check for latest update for Growhouse Lighting app. All you need to do is update your app to latest version.

4.8 Malfunctions

NA.

5 LIMITATIONS AND CONSTRAINTS

- LED Node(s) will not be discoverable again if user deletes LED node(s) forcefully. To make it discoverable again, factory reset of the device is required. Refer section 9.2.2 on how to factory reset the device.
- Provisioning of LED Node might fails sometime with error “Provisioning of the device failed”. When this happens, please wait at least 1 minute to rediscover LED node. If LED node is still undiscoverable after 1 minute then to make it re-discoverable, factory reset of the device is required. Refer section 9.2.2 on how to factory reset the device. This error is not frequent and will be faced rarely.
- While deleting network, sometimes the Application will show up error as shown below. On clicking *“Yes”*, device(s) will be deleted forcefully but will not be Un-provisioned and hence will not be discoverable again. To make the device(s) discoverable again, factory reset of the device is required. Refer section 9.2.2 on how to factory reset the device. If user clicks *“No”*, remaining device(s) will not be deleted and will not be Un-provisioned.

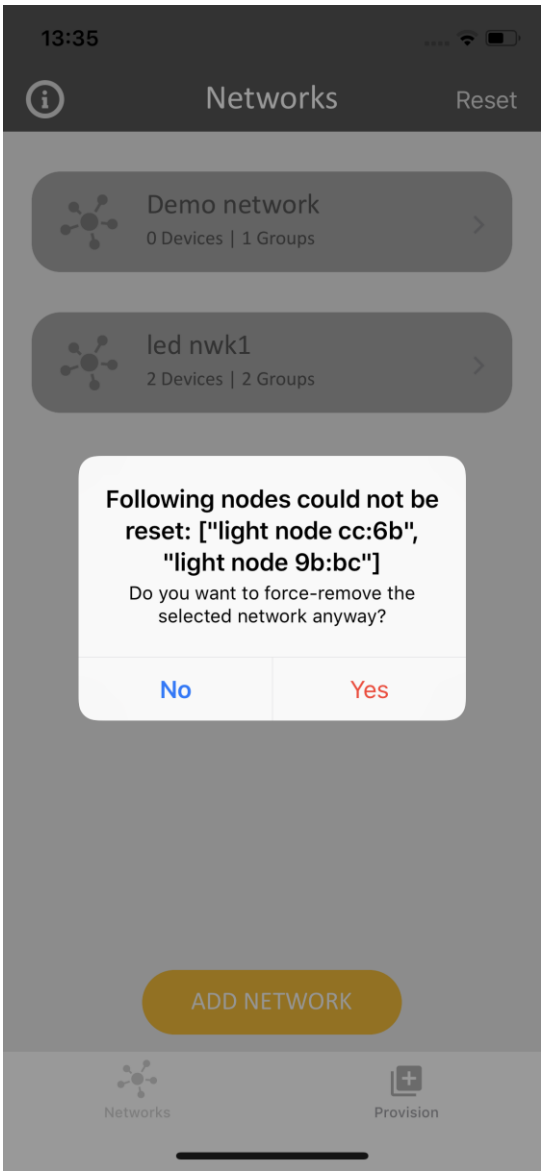

Figure 45: Network Delete issue.

6 WARRANTY AND SUPPORT

NA.

7 UPGRADE AND ADD ON MODULES

NA.

8 TECHNICAL SUPPORT

Email ID: *growhouse@einfochips.com*

9 APPENDIX

9.1 LED Node Hardware Setup

1. A typical LED Node is as shown in below image

Figure 46: LED Node.

2. Connect 2x external antennas. 6x independent 0-10V dimming output channels are provided for connecting to LED power supplies. Utilize as many channels as required. Once all required dimming channels are connected, connect the external power supply (12VDC, 1A) to the power input connection (J9).

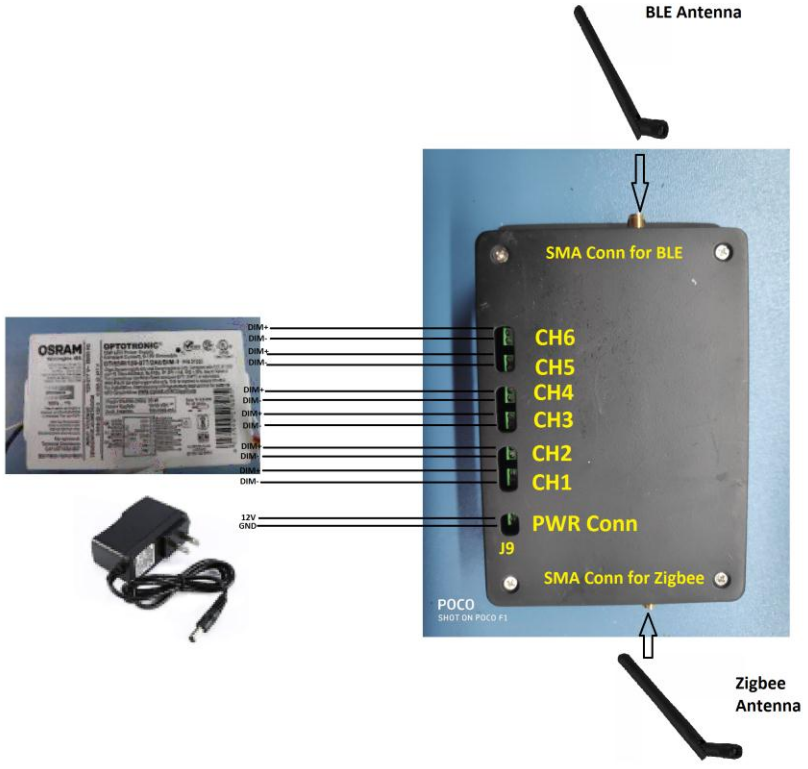

Figure 47: LED Node – Power, Channels & Antenna Connections.

3. Now turn on the switch of external power supply to power up the LED node board. LED node is now ready.

9.2 Factory Reset LED Node

9.2.1 Zigbee

1. Make sure that LED Node is setup and in Power on state. Refer section 9.1.2 on how to setup the LED Node.
2. Press and hold SW4 switch of LED Node for 5 seconds and then release. Refer below image to locate SW4 on LED Node.

Figure 48: LED Node – SW4 location.

9.2.2 BLE

1. Make sure that LED Node is setup and in Power on state. Refer section 9.1 on how to setup the LED Node.
2. Press **SW3** switch of LED Node for 4 seconds and then release. Refer below image to locate **SW3** on LED Node.

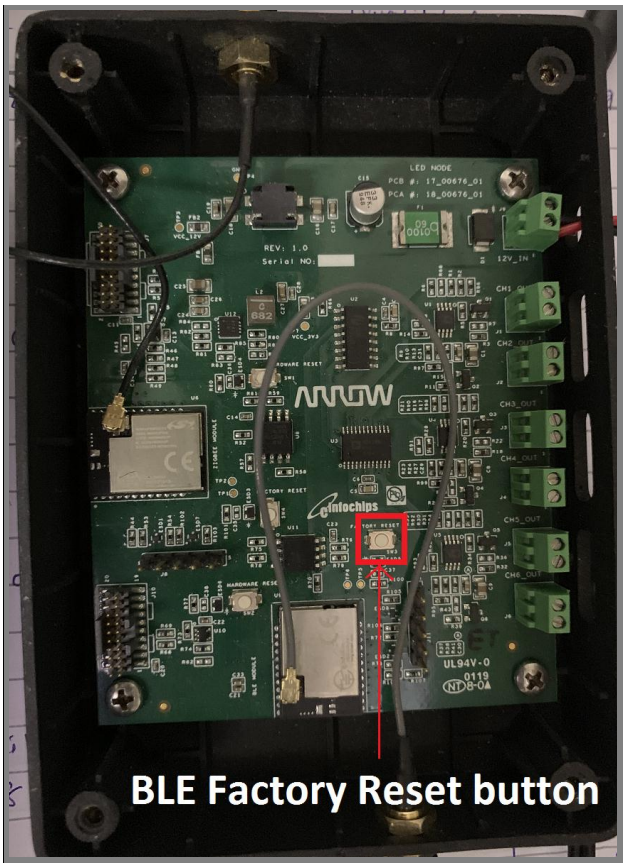

Figure 49: LED Node – SW3 location.

9.3 BLE mesh Firmware upgrade on LED Node

This section describes upgrade of BLE mesh firmware on LED device.

9.3.1 Prerequisite

1. iOS Smartphone with iOS 9.3 or later version.
2. Silicon Lab's "Wireless Gecko" smartphone application for iOS installed on smartphone. Wireless gecko app is available on below link.
   https://itunes.apple.com/us/app/wireless-gecko/id1315784335?mt=8
3. LED Node BLE firmware GBL file with targeted version downloaded on smartphone.
   i.e. LED_Node_BLE_App_V4.gbl

9.3.2 Download BLE mesh Firmware on iOS smartphone.

Download the LED Node BLE firmware upgrade (GBL file image) of application version 4 for OTA firmware upgrade in local phone storage in iPhone having iOS 9.3 or later version.

Below is the SharePoint link to download OTA image of LED Node BLE firmware version 4:
https://arrowelectronics.sharepoint.com/:u:/r/sites/GlobalMktgSales/Shared%20Documents/Growhouse/Development/Beta/Firmware/LED%20Node/BLE%20Firmware/LED_Node_BLE_App_V4.gbl?csf=1&e=ZkhQq6

9.3.3 Steps to perform Firmware upgrade (OTA)

1. Install the “Wireless Gecko” application on smartphone having iOS 9.3 or later from below link.

   https://itunes.apple.com/us/app/wireless-gecko/id1315784335?mt=8

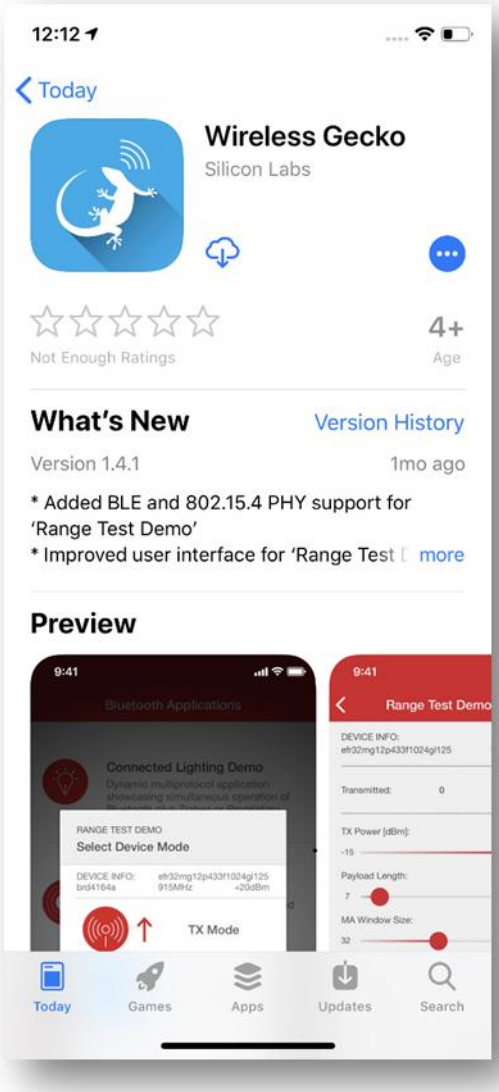

Figure 50 : Wireless Gecko Application from App Store

2. Once application is installed, open the “Wireless Gecko” application in smartphone.

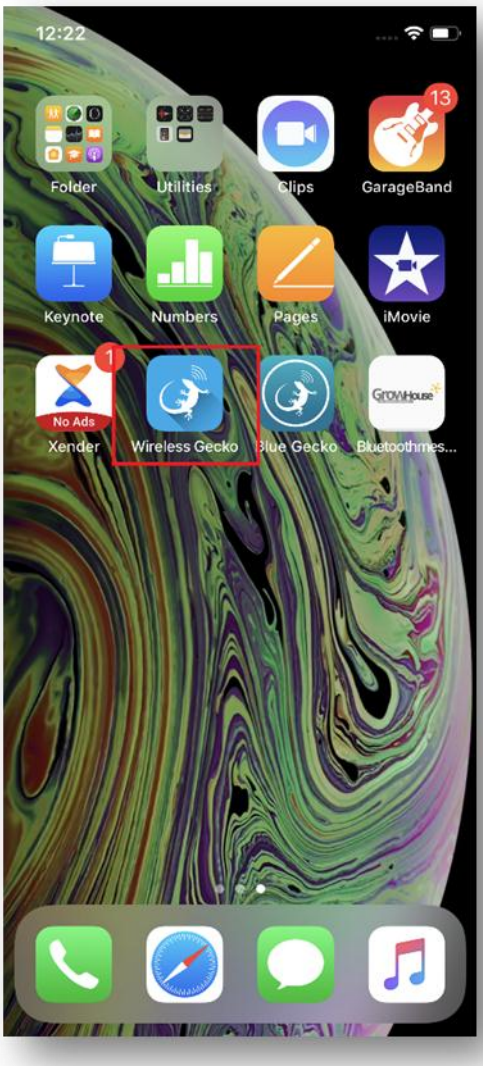

Figure 51 : Open Wireless Gecko Application

3. Start the LED Node and disconnect it from any blemesh application in mobile device before starting the OTA process. Start the “Wireless Gecko” application in smartphone, once application starts click on the “Bluetooth Browser” option from menu as shown below.

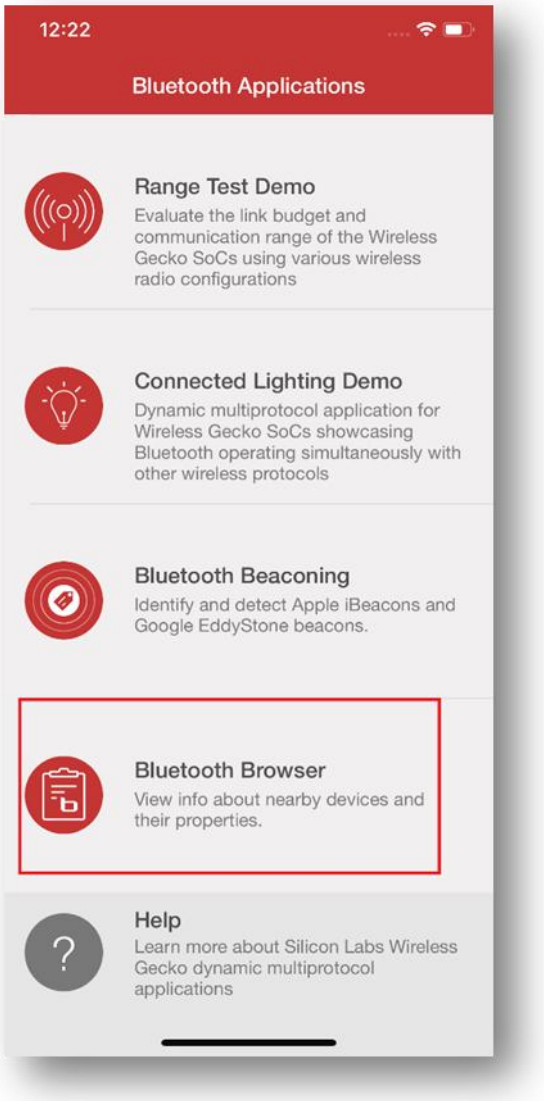

Figure 52 : Bluetooth Browser

4. After step-3 application will start the scan of nearby BLE device and will show the list of all the available devices. Select the LED Node device from the list on which we want to perform the firmware upgrade as shown in below figure.

   Note: If user fail to get the desired device in list then check the device state, it should be power ON state and it should not be connected to BLE mesh application from any smartphone. Also check the distance from LED Node, smartphone should be in BLE range (For line of sight the distance can be max ~40 meter between LED node and iOS smartphone mobile device).

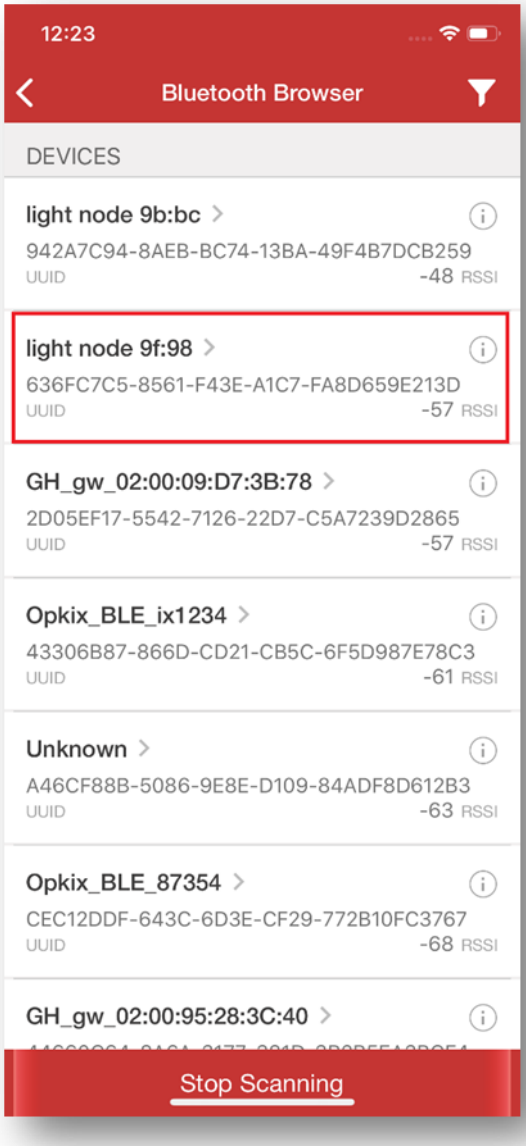

Figure 53 : Scan nearby BLE devices and select

5. After step-4, there will be LED Node device page will be displayed as shown in below figure. Click on the “OTA” button from this screen.

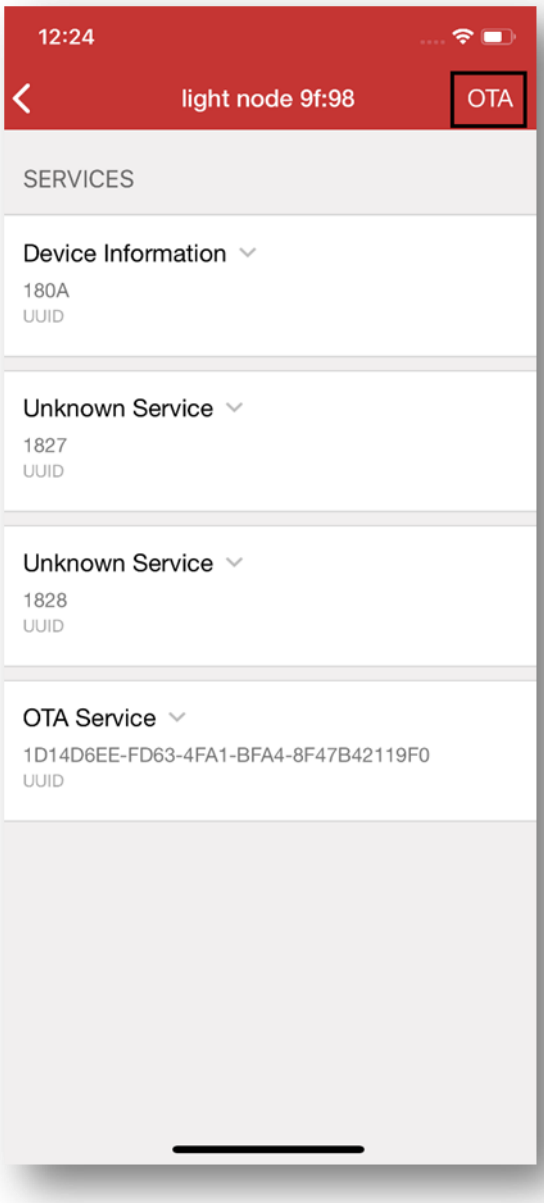

Figure 54 : Select the OTA option for selected device

6. After step-5, OTA page for the specific device will be displayed as shown in below figure. OTA method will be by default selected as “Partial”, no need to change this. Click on “CHOOSE FILE” option from display list.

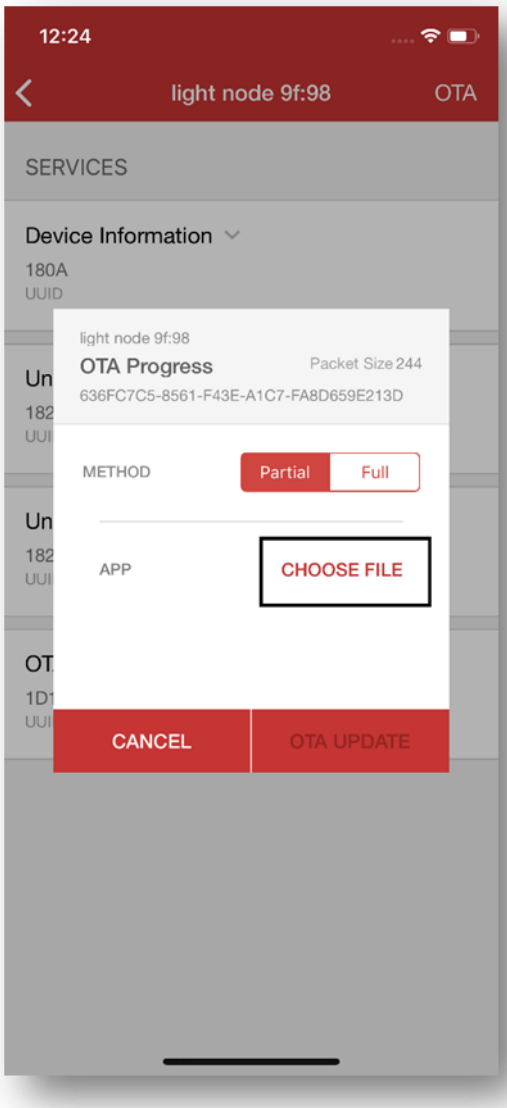

Figure 55 : OTA options

7. After step-6, click on the “Browse” option as displayed in below figure.

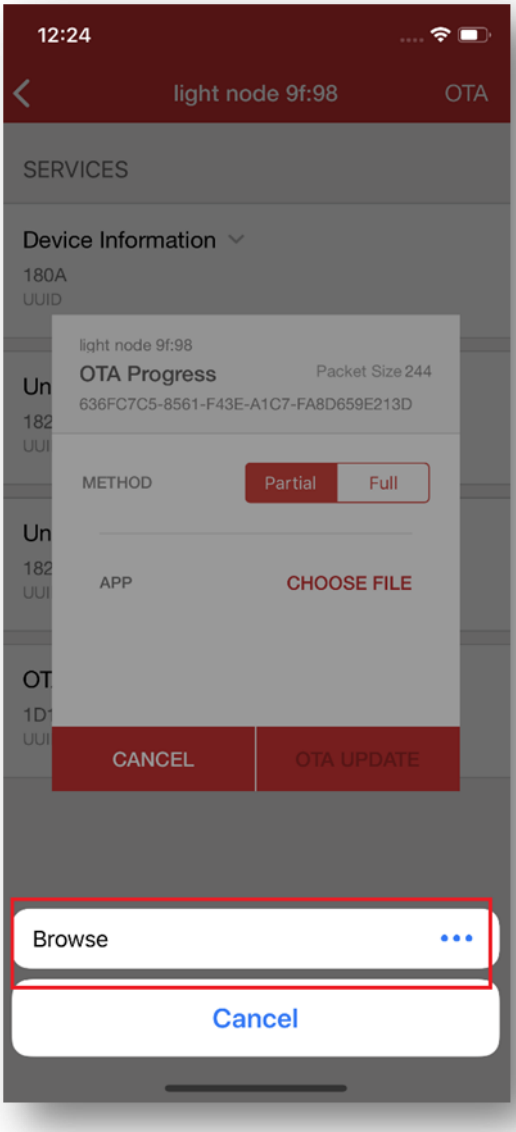

Figure 56 : Browse the OTA firmware

8. After step-7, Select the browse option as “On My iPhone” as shown in below figure.

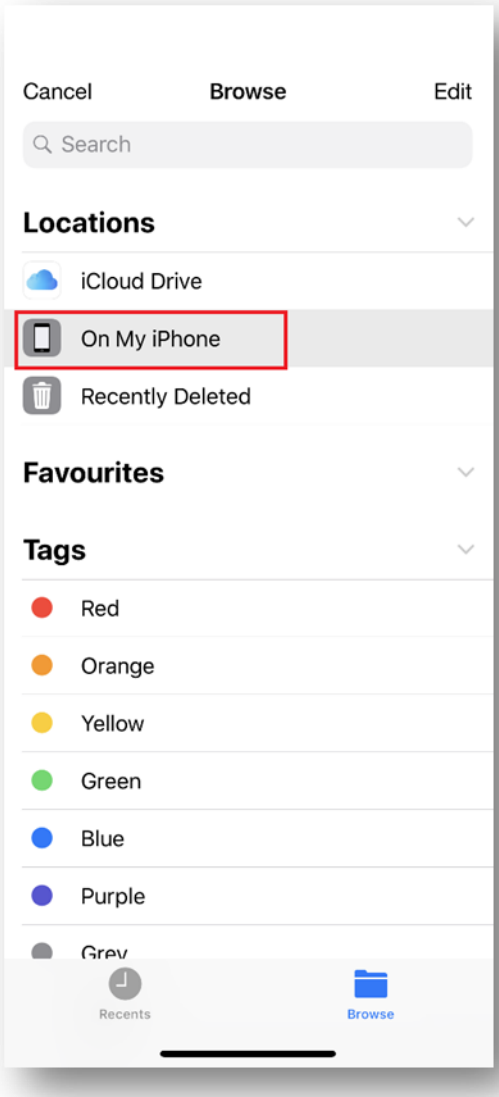

Figure 57 : Select the phone storage to browse the OTA firmware file

9. After step-8, select the LED Node BLE new firmware version GBL file format for OTA. User can search as shown in below figure by name.

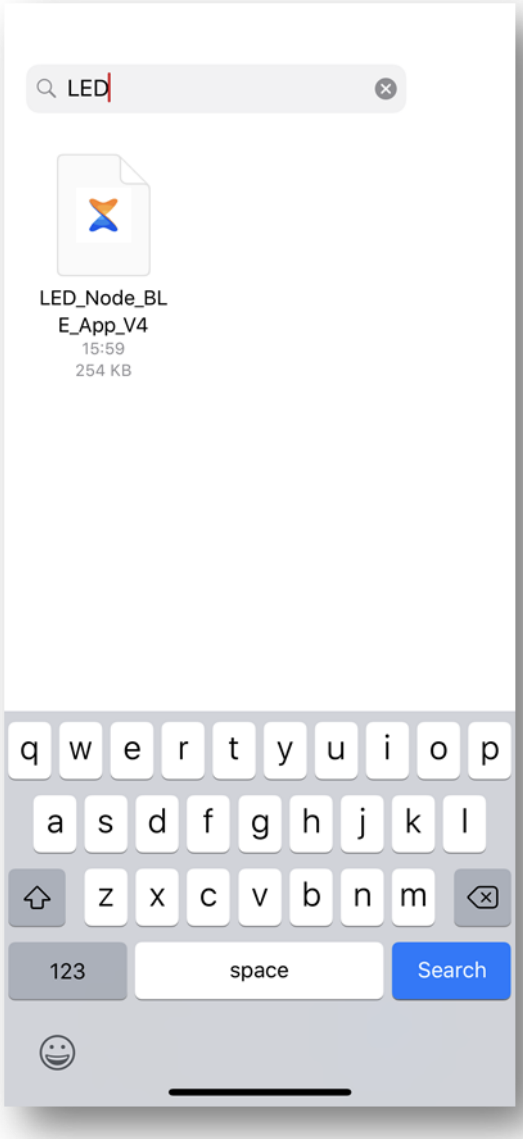

Figure 58 : Search LED Node OTA file from phone storage

10. After step-9, user will see the selected image file against “APP” as shown in below figure. Click on the “OTA UPDATE” button to start the OTA firmware upgrade.

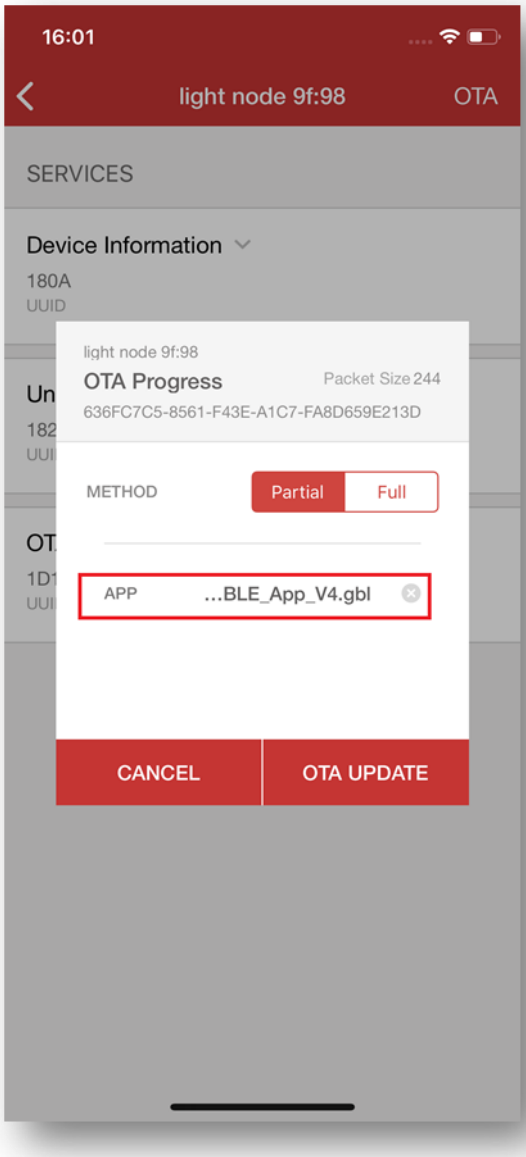

Figure 59 : Start the OTA Update after Selecting OTA file

11. After step-10, OTA firmware upgrade process will be start and progress windows with the percentage of completion will be displayed as shown in the below figure. Wait until process complete to 100%.

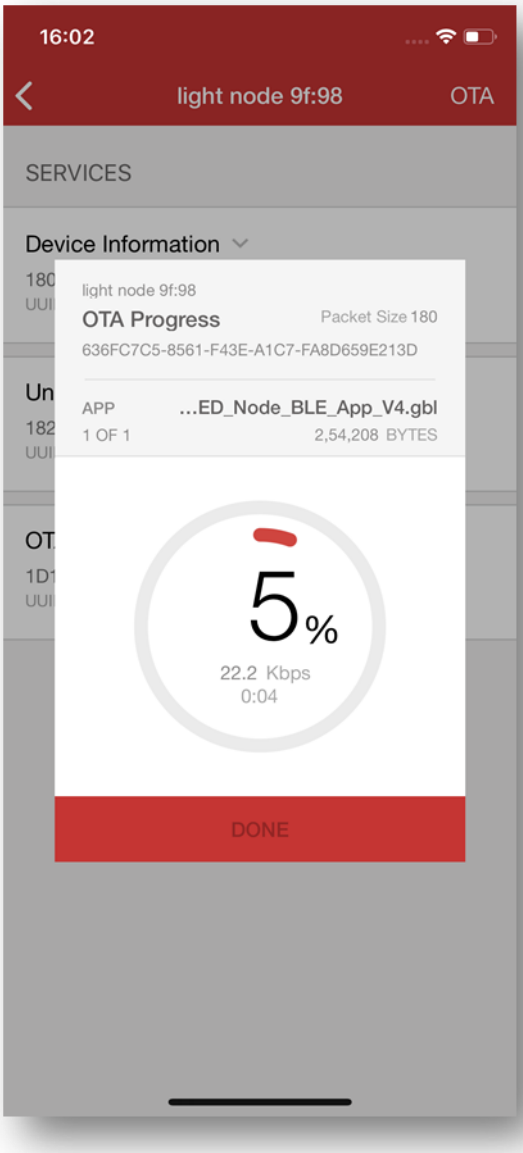

Figure 60 : OTA in progress status

12. Once OTA process complete as shown in below figure, click on the “DONE” button to complete the OTA.

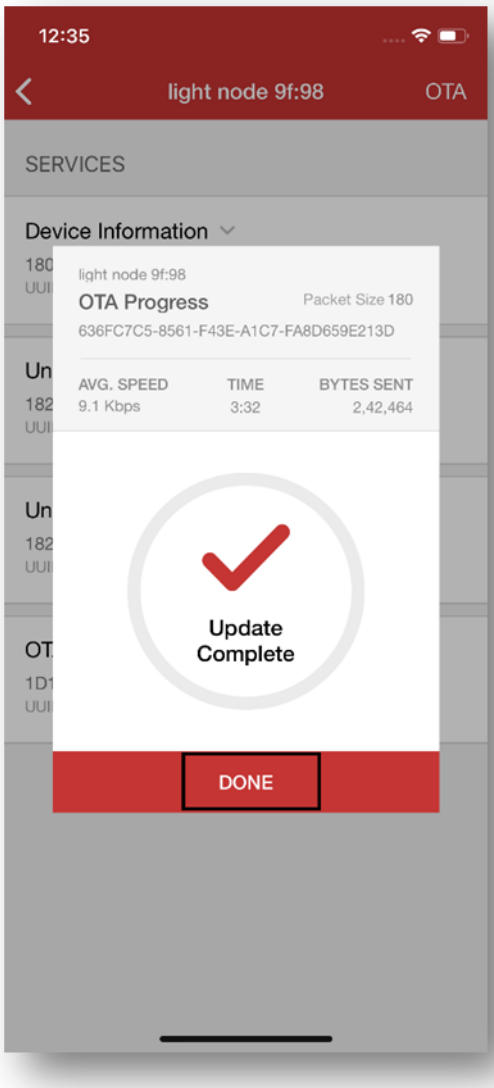

Figure 61 : OTA update complete

13. After step-12, LED Node should start with the upgraded firmware. Close “Wireless Gecko” application.

To check the application firmware version after upgrade follow the steps mentioned in section 9.3.4.

9.3.4 Check current BLE mesh Firmware version on LED Node

Below are the steps to check the LED Node BLE firmware version.

Note: LED Node BLE firmware version check is supported from LED Node firmware version 3, so the LED Node with older firmware version will not show the firmware version before OTA firmware upgrade to newer version.

1 Open the “Wireless Gecko” application in smartphone. Refer section 9.3.1 on how to install “Wireless Gecko” application

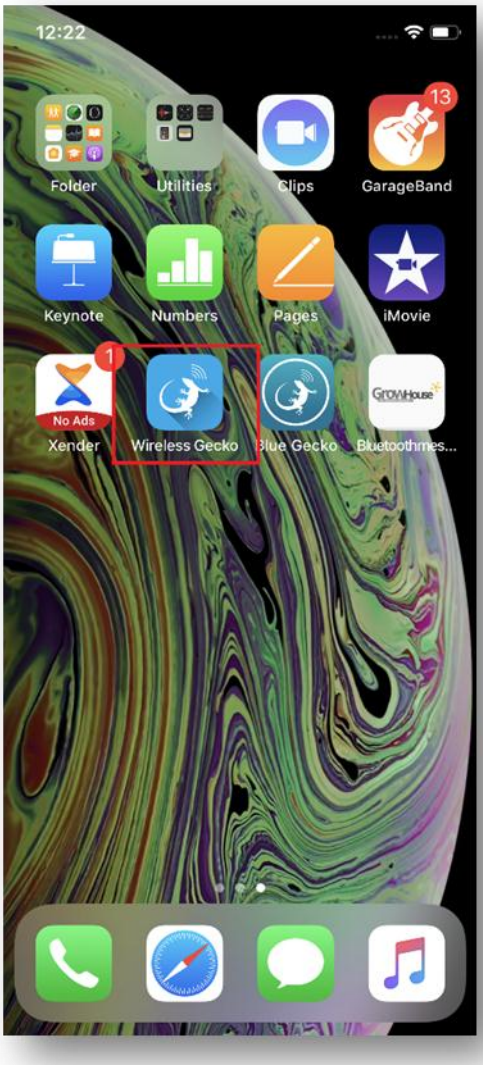

Figure 62 : Open Wireless Gecko Application

2 Power ON the LED Node. Disconnect LED Node from any BLE mesh application from smartphone if connected before proceeding further. Start the “Wireless Gecko” application in smartphone, once application starts, click on the “Bluetooth Browser” option from menu as shown below.

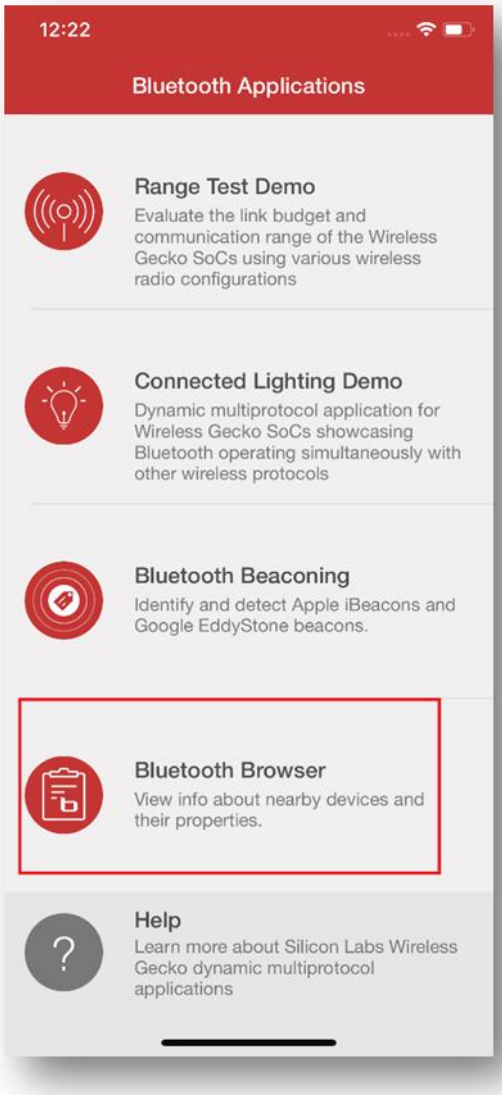

Figure 63 : Bluetooth Browser

3 After step-2 application will start the scanning nearby BLE device and will show the list of all the devices. Select the desired LED Node device from the list.

Note:

a) If user fail to get the desired device in list then check the device state, it should be power on state and it should not be connected to BLE mesh application from any smartphone. Also check the distance from LED Node, smartphone should be in BLE range (For line of sight the distance can be 30-40 meter between LED node and iOS smartphone mobile device).

b) After OTA firmware upgrade, LED Node will be discovered in the “Bluetooth Browser” as the “AppLoader” for the first time connection after firmware upgrade. The UUID of LED Node will be same all the time, so user can identify the LED Node based on UUID and not the device name.

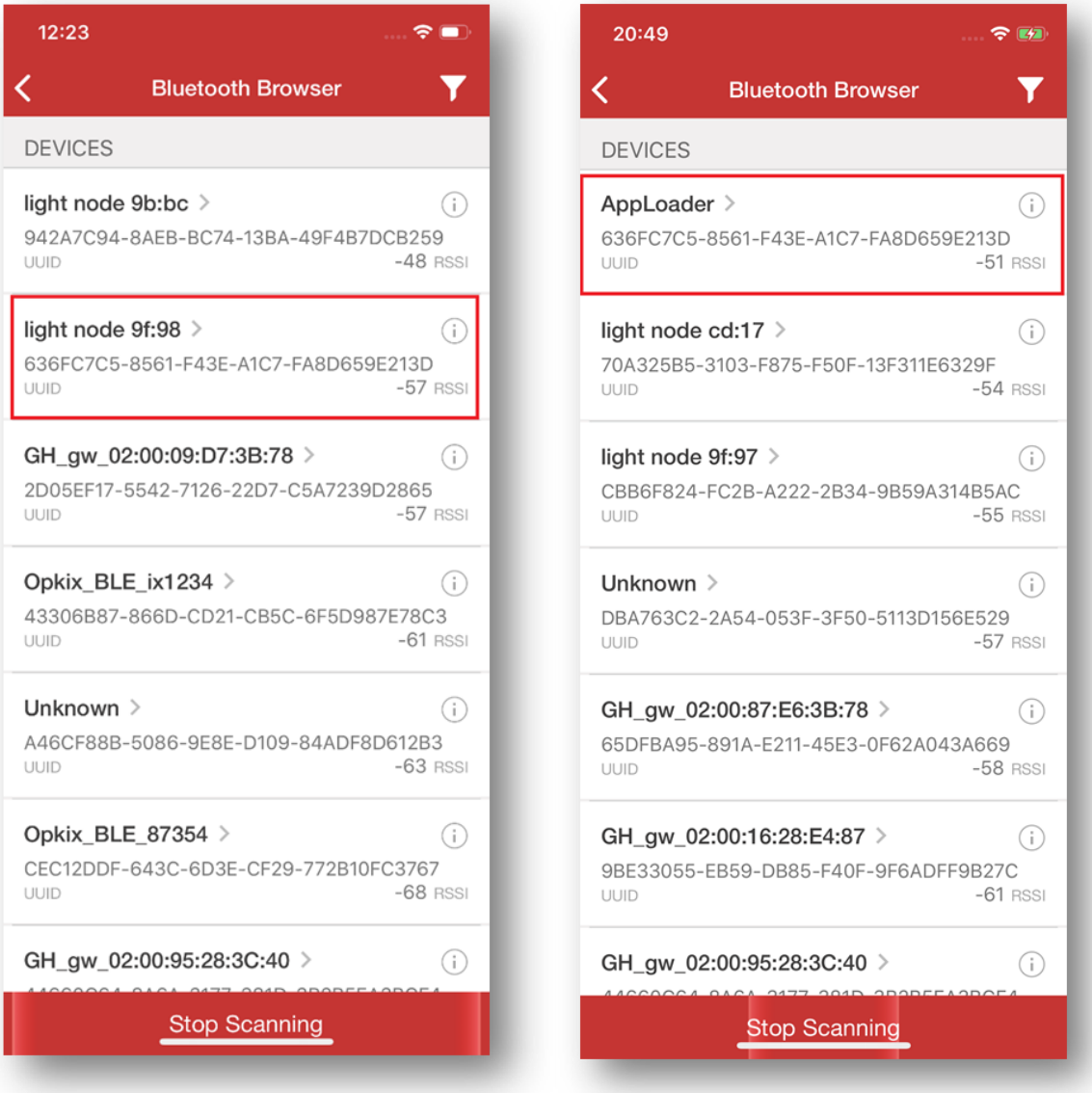

Figure 64 : Scan nearby BLE devices and select

4 After step-3, LED Node device page will be displayed as shown below. Click on the “Device Information” option from BLE GATT services list.

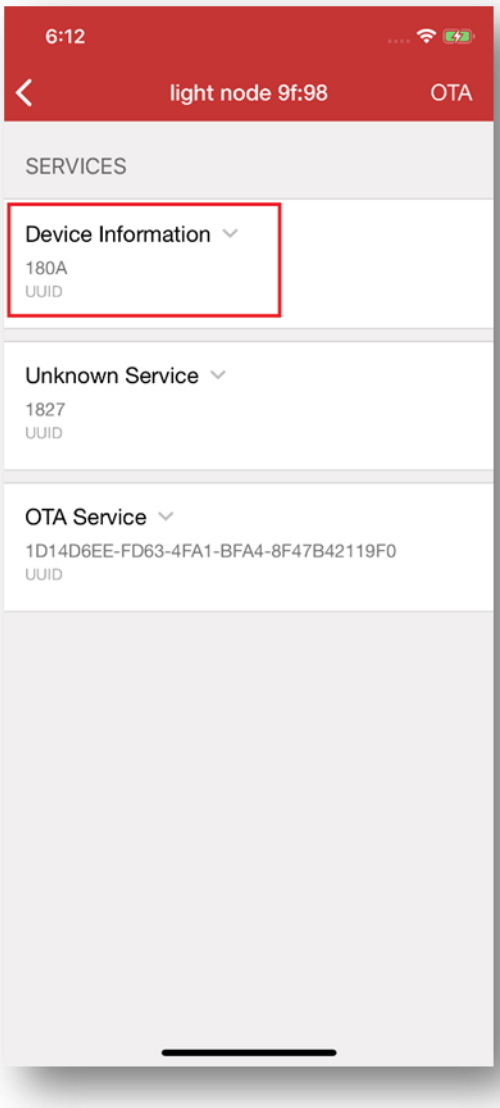

Figure 65 : Select Device Information option for selected device

5 After step-4, LED Node device page will be displayed as shown below. Click on the “Firmware Revision String” button from this screen.

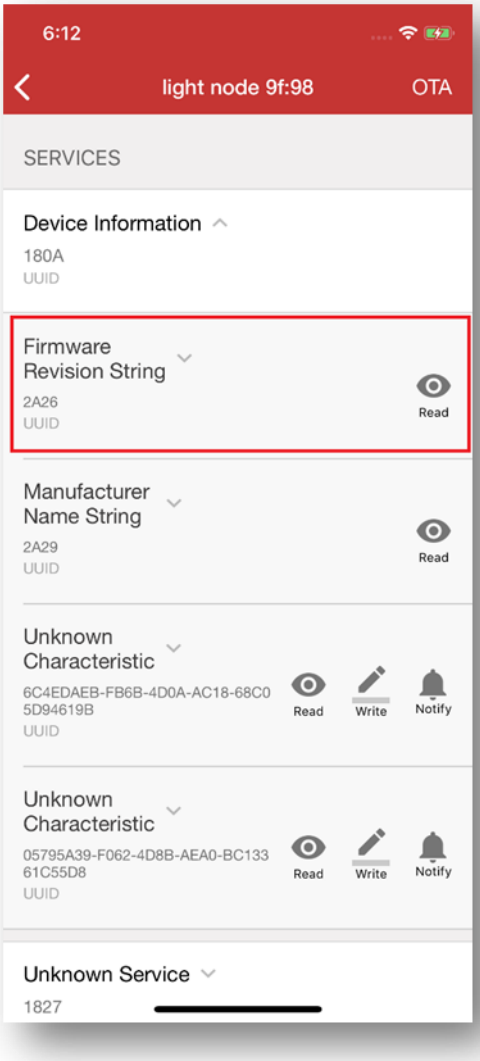

Figure 66 : Select Firmware Revision String characteristics

6 After step-5, LED Node ***"Firmware Revision string"*** will be available as shown below. The firmware revision string will be displayed as ***"btl_version: 1, App_version: 4"***, here ***btl_version*** is the LED Node firmware bootloader version and ***App_version*** is the BLE mesh firmware version.

After OTA only the firmware will be upgraded and it can be verify by ***App_version***.
If ***App_version*** is not displayed, the BLE mesh firmware on LED Node is older than version 3 and needs to be upgraded. Refer section 9.3.3 for upgrading BLE mesh firmware.

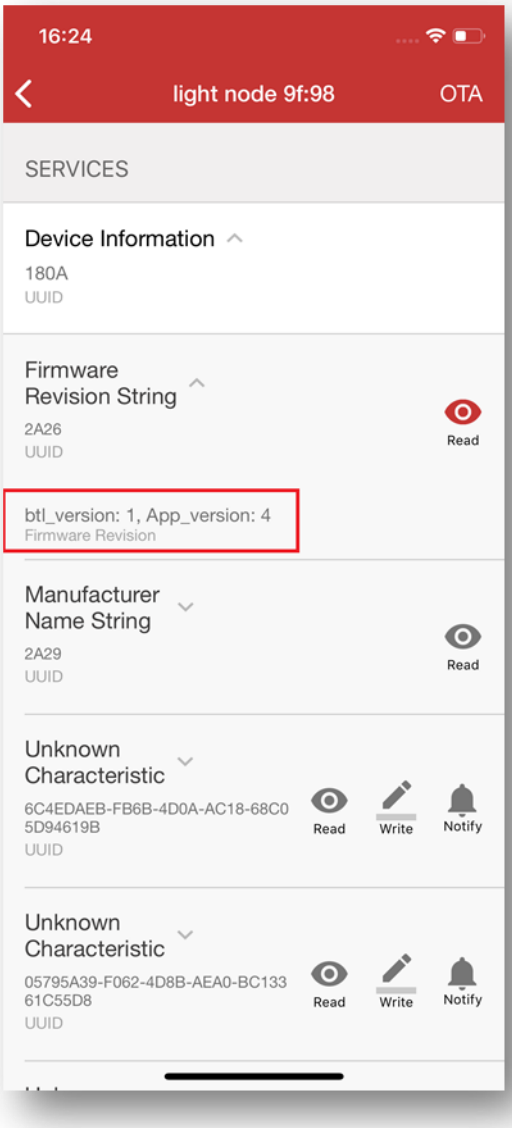

Figure 67 : Firmware revision string for LED Node