



# **Airoha IoT SDK for BT Audio FOTA Application Note**

Version: 1.2  
Release date: 3 May 2023



## Airoha IoT SDK for BT Audio FOTA Application Note

### Document revision history

---

Revision	Date	Description
1.0	19 January 2022	Initial version
1.1	17 March 2023	Update Android APP UI
1.2	3 May 2023	Added support for AB1627 and renamed the documentation to Airoha IoT SDK for BT Audio FOTA Application Note.



# Airoha IoT SDK for BT Audio FOTA

## Application Note

## Table of contents

---

<b>1.</b>	<b>Introduction.....</b>	<b>1</b>
1.1.	Overview.....	1
<b>2.</b>	<b>FOTA Application Flow.....</b>	<b>2</b>
2.1.	Flow chart for a single device .....	2
2.2.	Flow chart for dual devices.....	3
<b>3.</b>	<b>Generating the FOTA Package.....</b>	<b>4</b>
3.1.	Starting the Airoha FOTA package tool .....	4
3.2.	Generating the FOTA package .....	5
<b>4.</b>	<b>Android FOTA Application User Guide .....</b>	<b>6</b>
4.1.	Pairing the device through Bluetooth settings .....	6
4.2.	Software Update.....	7
4.3.	Select FOTA package file.....	8
4.4.	FOTA Operation .....	9
4.5.	Checking whether the FOTA process is successful .....	12
<b>5.</b>	<b>iOS FOTA Application User Guide.....</b>	<b>13</b>
5.1.	BLE device connection .....	13
5.2.	FOTA mode selection (Single/ MCSync) .....	13
5.3.	Downloading the FOTA package.....	14
5.4.	FOTA configuration.....	16
5.5.	FOTA state and corresponding operation .....	17
5.6.	Exporting the application log.....	19



### Lists of tables and figures

---

Figure 2-1. FOTA application flow chart for single device .....	2
Figure 2-2. FOTA application flow chart for dual devices .....	3
Figure 3-1. Starting the Airoha FOTA package tool.....	4
Figure 3-2. FOTA package tool UI.....	5
Figure 4-1. Pair the Airoha device via System Bluetooth Setting.....	6
Figure 4-2. Software Update.....	7
Figure 4-3. Selecting FOTA package file .....	8
Figure 4-4 Start FOTA.....	9
Figure 4-5 Cancel FOTA.....	10
Figure 4-6 FOTA commit .....	11
Figure 4-7. Version setting in FOTA package tool .....	12
Figure 4-8. Checking the firmware version .....	12
Figure 5-1. BLE Device Connection .....	13
Figure 5-2. iOS FOTA Mode Selection .....	14
Figure 5-3. Downloading the FOTA package .....	15
Figure 5-4. FOTA Configuration.....	16
Figure 5-5. FOTA state.....	17
Figure 5-6. FOTA Operation .....	18
Figure 5-7. Export application log .....	19



# Airoha IoT SDK for BT Audio FOTA Application Note

## 1. Introduction

---

### 1.1. Overview

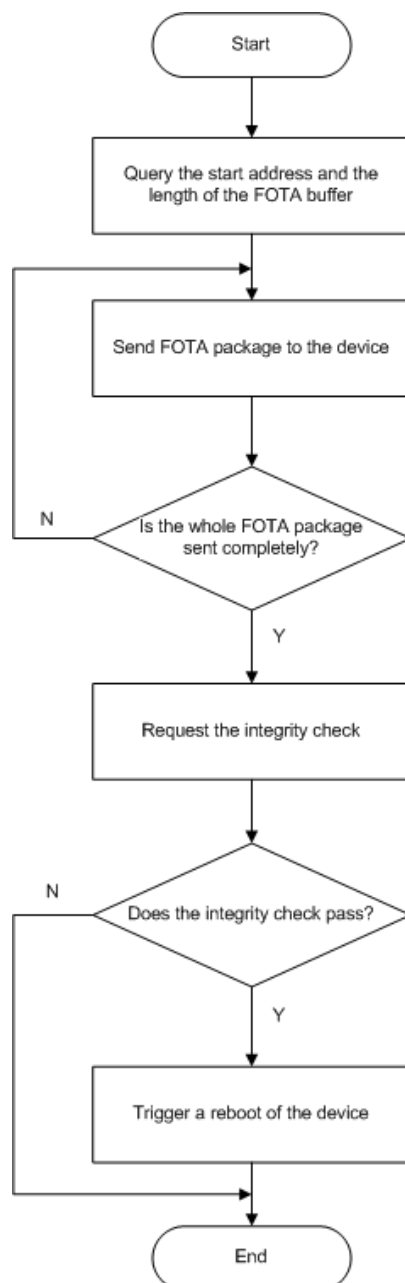
This FOTA application note contains the following information:

- 1) The Firmware Over-the-Air (FOTA) application process;
- 2) How to generate the FOTA package;
- 3) Android FOTA application user guide; and
- 4) iOS FOTA application user guide.

## 2. FOTA Application Flow

---

### 2.1. Flow chart for a single device



**Figure 2-1. FOTA application flow chart for single device**

## 2.2. Flow chart for dual devices

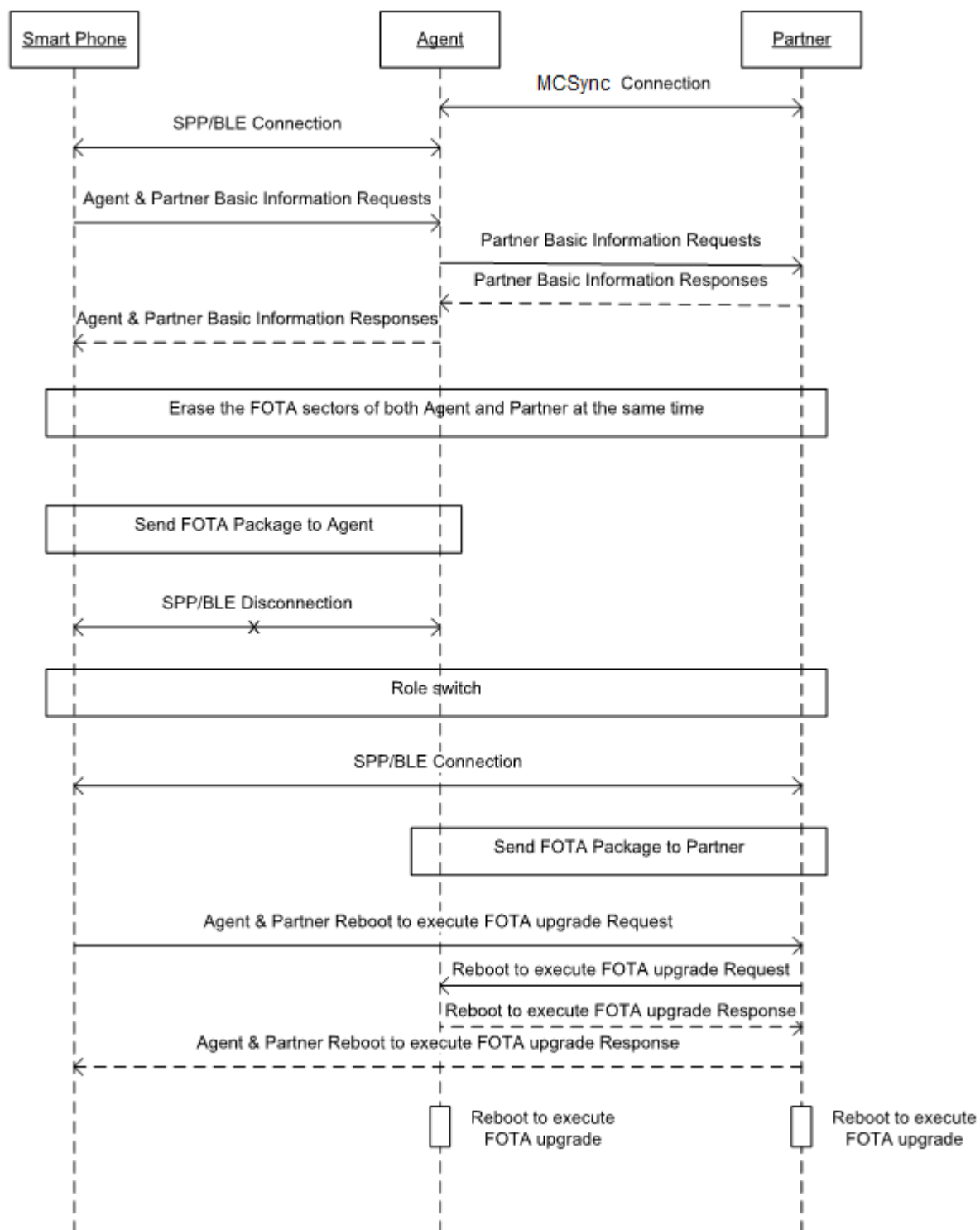
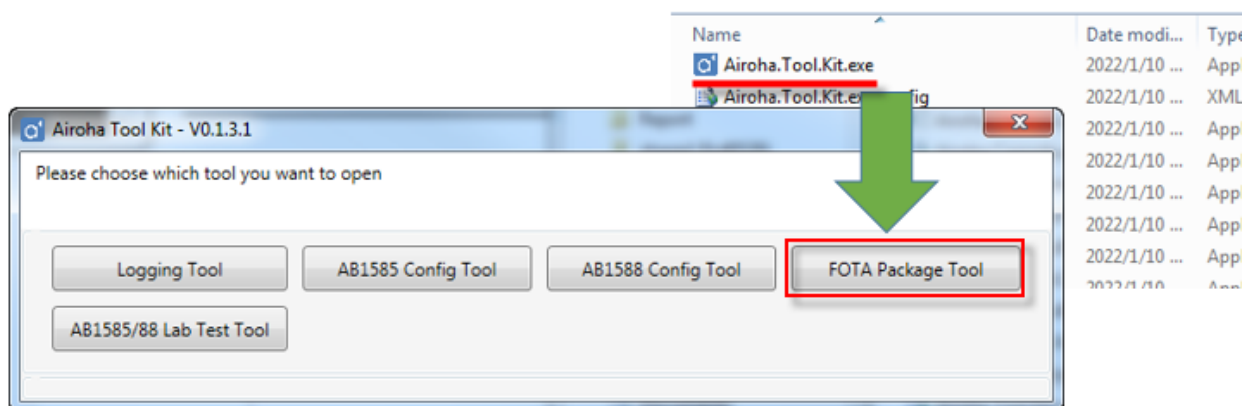


Figure 2-2. FOTA application flow chart for dual devices

### 3. Generating the FOTA Package

---

#### 3.1. Starting the Airoha FOTA package tool



**Figure 3-1. Starting the Airoha FOTA package tool**



### 3.2. Generating the FOTA package

The FOTA package tool helps the user to generate the FOTA package.

The screenshot shows the FOTA Package Tool-0.0.0 window. It has a title bar with standard Windows controls. Below the title bar is a 'Password:' field and a 'Login' button. The main area is divided into three steps, each with a blue header bar.

**Step 1. Load Partition info. from ...**

There is a radio button labeled 'from flash\_download.cfg' which is selected. Next to it is a text field containing the path: 'H:\\_fw\_158x\feature\_85\_evk\default\flash\_download.cfg'.

**Step 2. Select partitions**

Below this header is a table with 7 columns: Selection, Partition Name, SourceType, Offset, Length, Target Address, and Source Filename. There are four rows of data, each with a checked checkbox in the 'Selection' column.

Selection	Partition Name	SourceType	Offset	Length	Target Address	Source Filename
<input checked="" type="checkbox"/>	DSP_FW	Partital	0x8013000	0x064000	0x0x8013000	H:\_fw_158x\feature...
<input checked="" type="checkbox"/>	MCU_FW	Partital	0x8133000	0x10C000	0x0x8133000	H:\_fw_158x\feature...
<input checked="" type="checkbox"/>	ROFS	Partital	0x8450000	0x042000	0x0x8450000	H:\_fw_158x\feature...
<input checked="" type="checkbox"/>	NVDM_OU	Partital	0x8492000	0x018000	0x0x8492000	H:\_fw_158x\feature...

Below the table is a scrollbar.

**Step 3. Set options and generate FOTA package**

There are two checked checkboxes: 'Enable LZMA' and 'Enable AES'. To the right of 'Enable AES' are two text fields: 'AES Key: 0x 000102030405060708090a0b0c0d0e0f' and 'AES IV: 0x 62633636633839306334636432383763'. Below these is a 'Version:' label and a text field containing 'v1.0.0'. At the bottom left is an unchecked checkbox labeled 'reserved nvdm item update'. On the right side of this section is a 'Generate FOTA package' button.

**Figure 3-2. FOTA package tool UI**

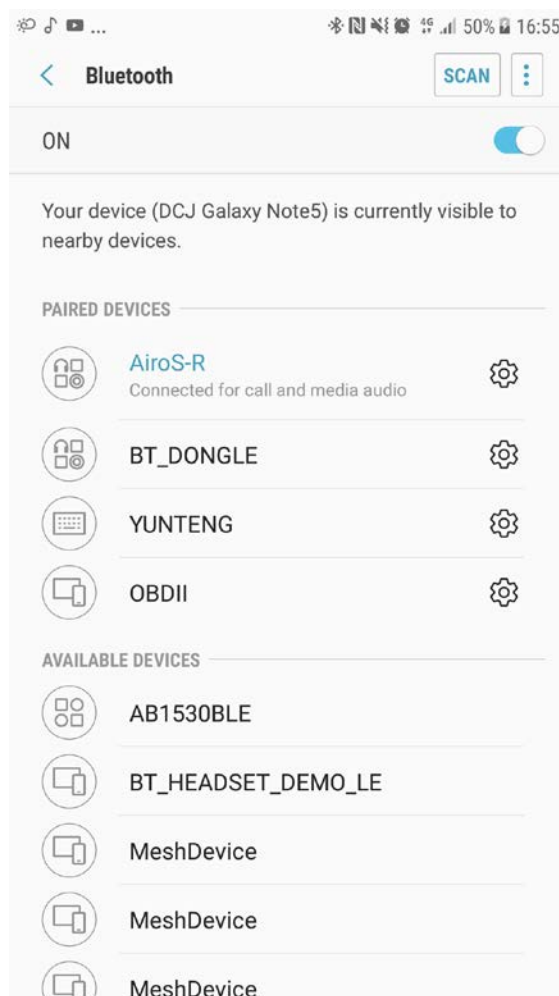
To generate the FOTA package:

- 1) Load the partition info. from a flash\_download.cfg file.
- 2) Select the partitions to update.
- 3) Set the FOTA package options and generate the FOTA package.

## 4. Android FOTA Application User Guide

### 4.1. Pairing the device through Bluetooth settings

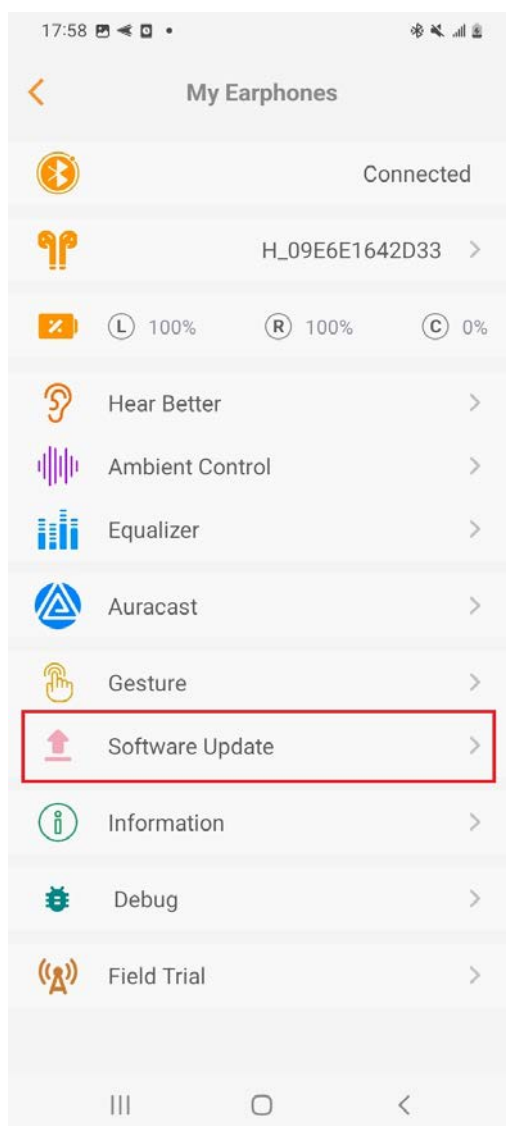
You must pair the device through the system Bluetooth settings before using the application to connect to the Serial Port Profile (SPP) due to Android's security policy.



**Figure 4-1. Pair the Airoha device via System Bluetooth Setting**

## 4.2. Software Update

Tap **Software Update** to do device firmware update.



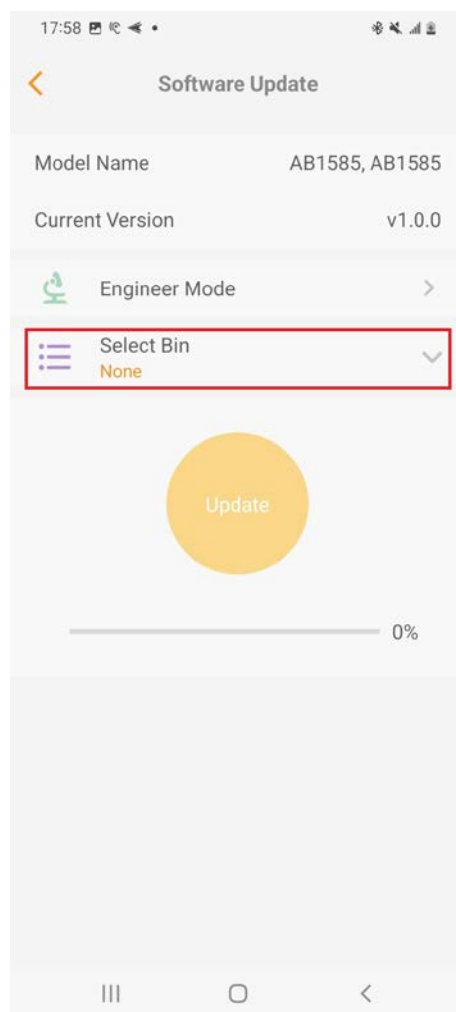
**Figure 4-2. Software Update**



## Airoha IoT SDK for BT Audio FOTA Application Note

### 4.3. Select FOTA package file

You can select the FOTA package file from mobile storage.



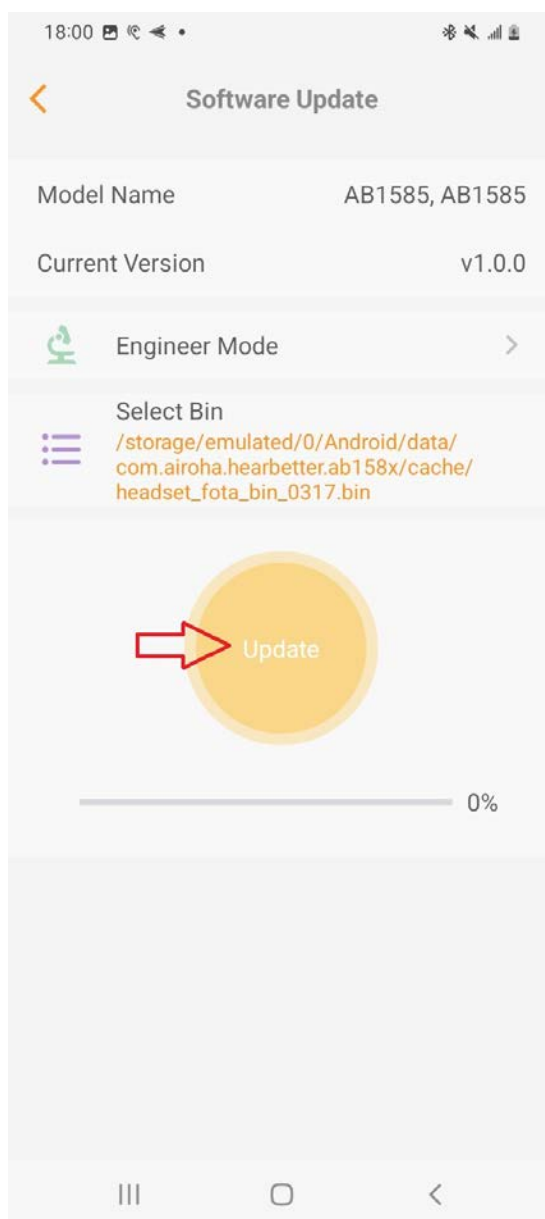
**Figure 4-3. Selecting FOTA package file**



## Airoha IoT SDK for BT Audio FOTA Application Note

### 4.4. FOTA Operation

Tap **Update** to start the FOTA process when the file is selected.

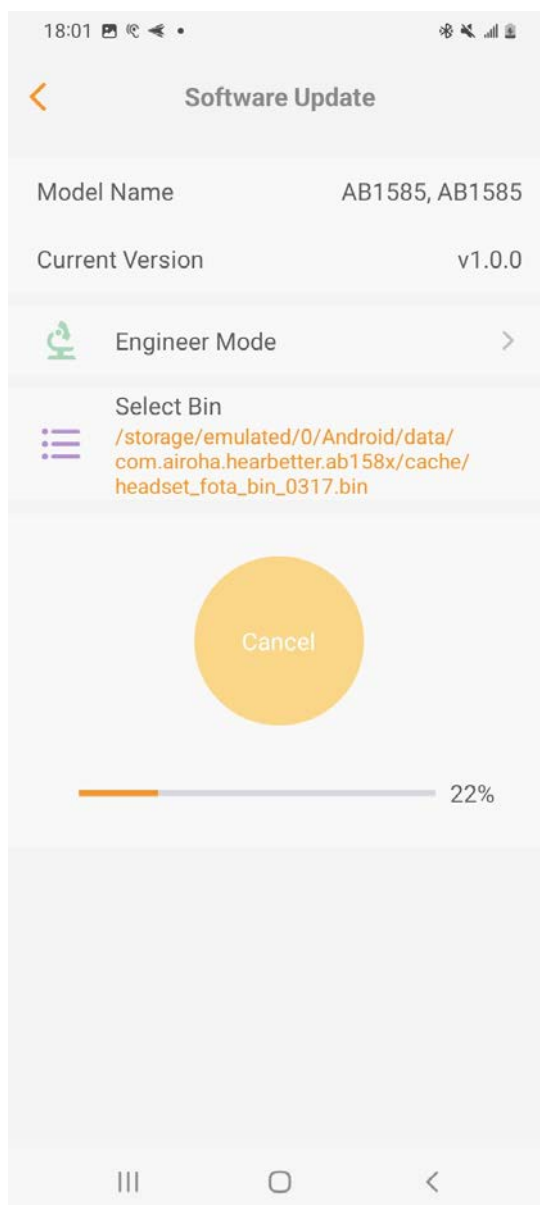


**Figure 4-4 Start FOTA**



## Airoha IoT SDK for BT Audio FOTA Application Note

Once the FOTA starts running, you can cancel it during the process.

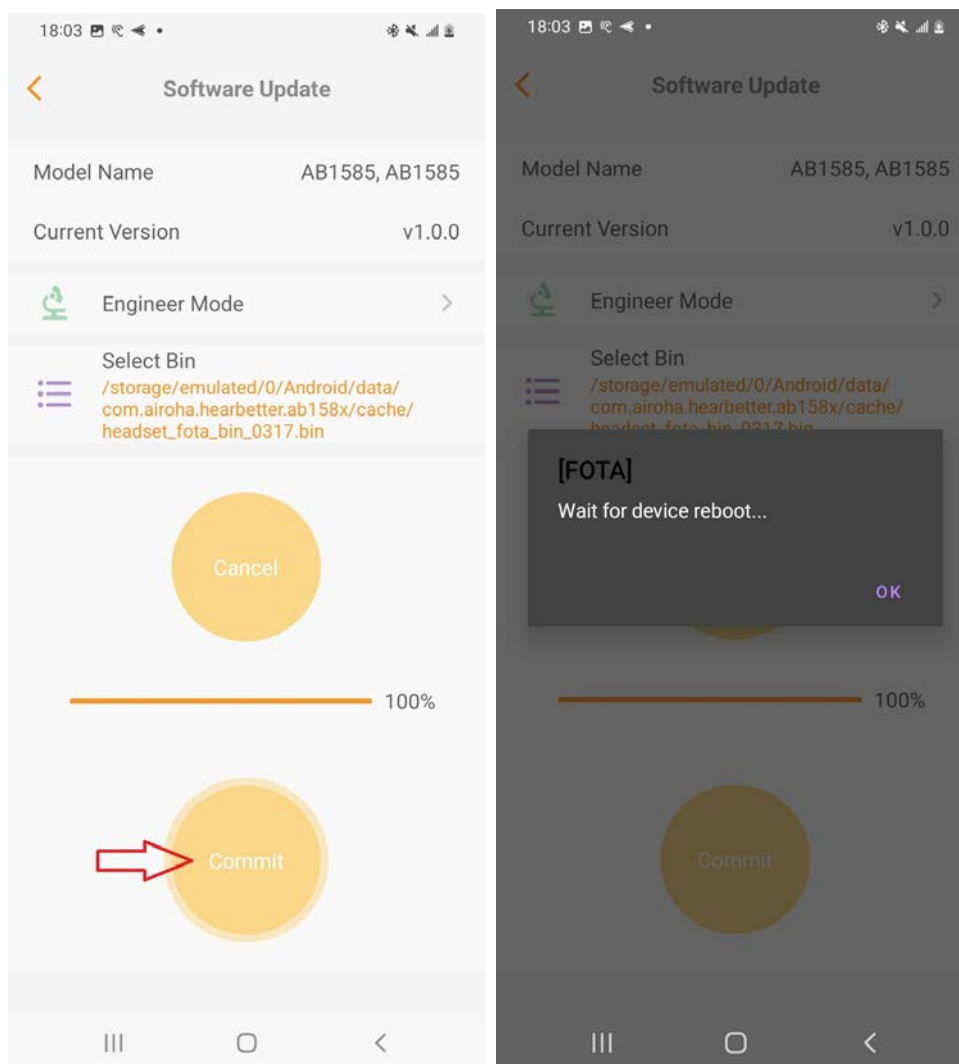


**Figure 4-5 Cancel FOTA**



## Airoha IoT SDK for BT Audio FOTA Application Note

When the FOTA transfer is complete, tap “Commit” to trigger the device reboot and FOTA upgrade.

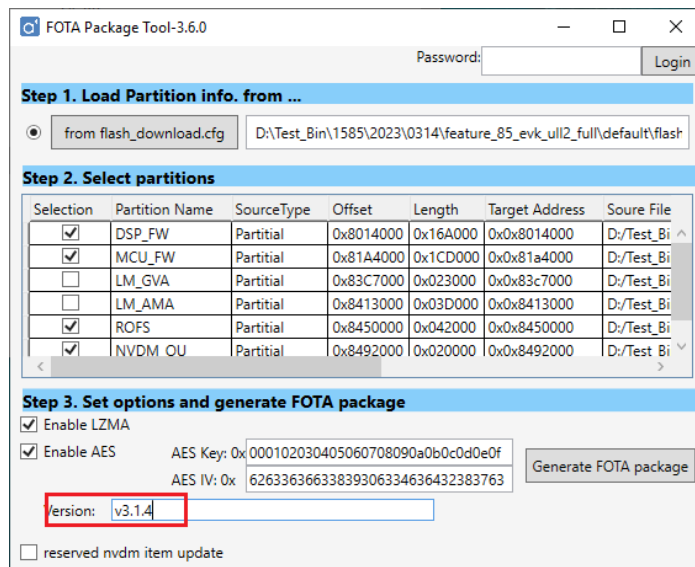


**Figure 4-6 FOTA commit**

## 4.5. Checking whether the FOTA process is successful

To check if FOTA is successful:

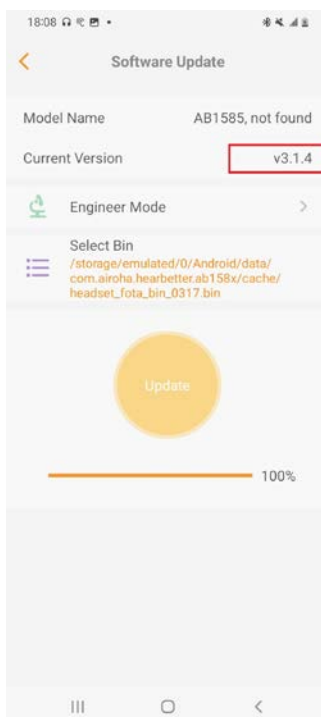
- 1) Modify the firmware version when you first generate the FOTA package.



**Figure 4-7. Version setting in FOTA package tool**

- 2) Make sure the version number is updated when the FOTA process is complete.

You can check the firmware version when the FOTA process is complete.






**Figure 4-8. Checking the firmware version**



## 5. iOS FOTA Application User Guide

### 5.1. BLE device connection

The application starts searching for any nearby BLE devices. Select the AB1585 device for the FOTA process.

Edit	Airoha Unify UT	
<b>Protocol Type</b>		
BLE		
GATT over EDR		
<b>Please Connect the EDR link first</b>		
LE-abcd		-65 dBm
LE-H_CFB27FBB62E6		-75 dBm
LE_WF-1000XM4		-79 dBm
LE_WF-1000XM4		-80 dBm

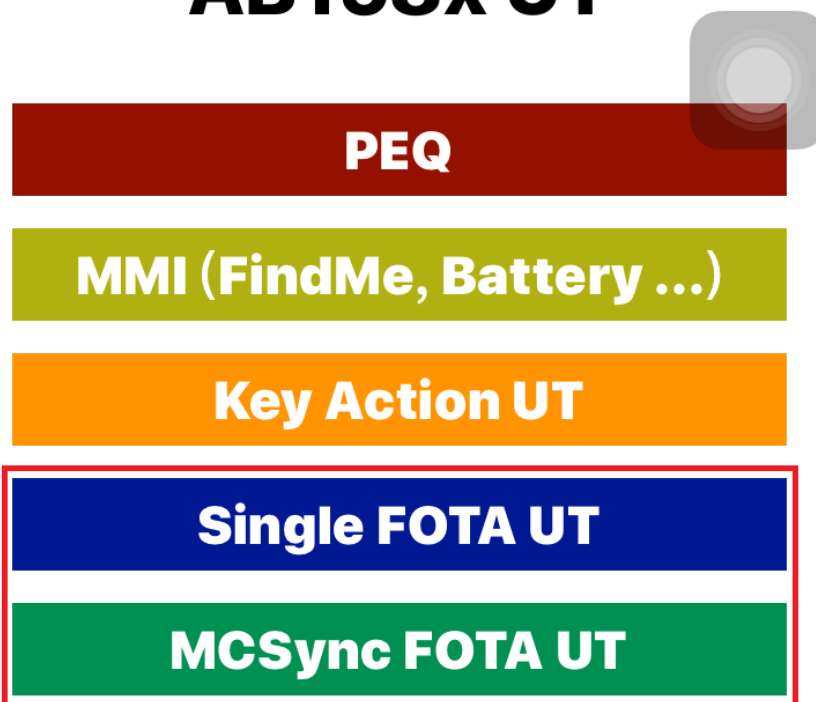
*Figure 5-1. BLE Device Connection*

### 5.2. FOTA mode selection (Single/ MCSync)

Select the FOTA mode according to the Bluetooth device you have.

AB158x UT

# AB158x UT



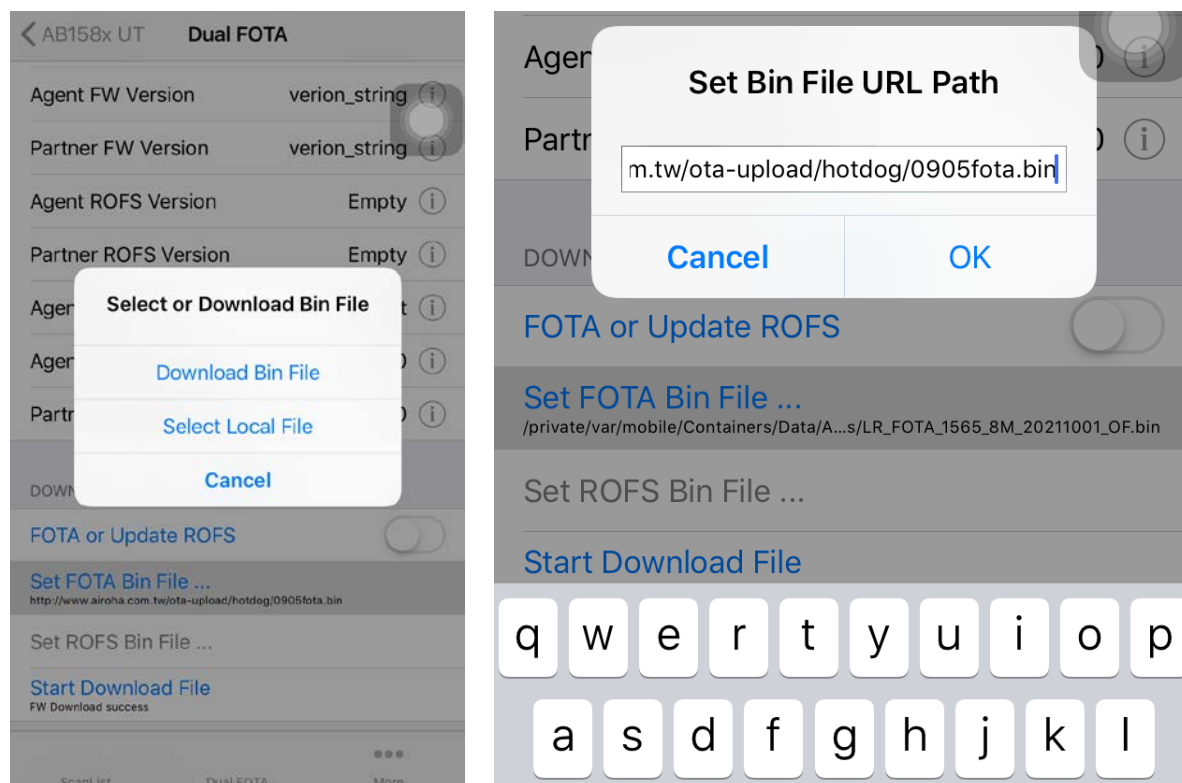
*Figure 5-2. iOS FOTA Mode Selection*

## 5.3. Downloading the FOTA package

To download the FOTA package, set the FOTA bin file and select **Start Download File**. The FOTA package is ready when the application shows the message that the firmware was successfully downloaded.



## Airoha IoT SDK for BT Audio FOTA Application Note



**Figure 5-3. Downloading the FOTA package**

## 5.4. FOTA configuration

The default settings are applicable for the FOTA process. It is not necessary to change these settings.



**Figure 5-4. FOTA Configuration**

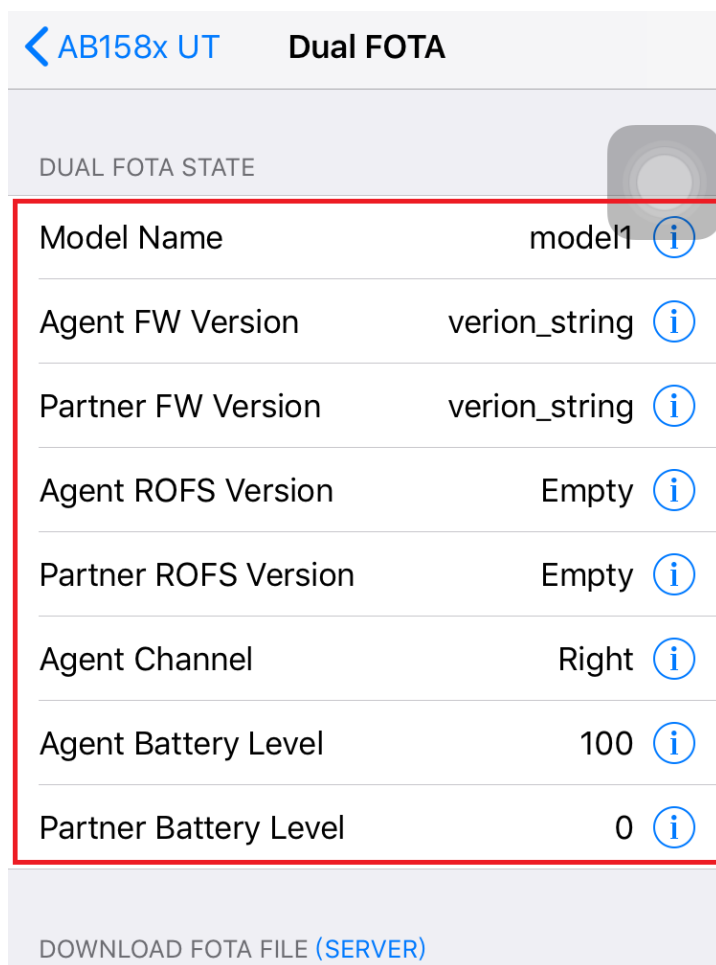
**ACTIVE OR IDLE MODE** – Selecting Idle Mode allows the FOTA operation and listening to music at the same time. Otherwise, the application sends an active FOTA preparation command to avoid interference during the FOTA process.

**Set Battery Threshold** – The application uses the value as the battery level check threshold to avoid an incomplete update process because the battery level is too low.

**Program Interval (Idle Mode)** – The application uses the value as the interval of program command to send to the device.

## 5.5. FOTA state and corresponding operation

The FOTA state is automatically queried when BLE is connected.



DUAL FOTA STATE	
Model Name	model1 ⓘ
Agent FW Version	verion_string ⓘ
Partner FW Version	verion_string ⓘ
Agent ROFS Version	Empty ⓘ
Partner ROFS Version	Empty ⓘ
Agent Channel	Right ⓘ
Agent Battery Level	100 ⓘ
Partner Battery Level	0 ⓘ

DOWNLOAD FOTA FILE ([SERVER](#))

**Figure 5-5. FOTA state**

**Model Name** – The model name of the device.

**Agent FOTA State** – A UInt16 value represents the agent device state of FOTA.

**Partner FOTA State** – A UInt16 value represents the partner device state of FOTA.

**Agent FW Version** – Shows the agent device FW version.

**Partner FW Version** – Shows the partner device FW version.

**Agent Channel** – Shows the agent device is right or left channel.

**Agent Battery Level** – Shows the agent device battery level. The FOTA process cannot start if the battery level is less than 70%.

**Partner Battery Level** – Shows the partner device battery level. The FOTA process cannot start if the battery level is less than 70%.



## Airoha IoT SDK for BT Audio FOTA Application Note

There are two FOTA operations.



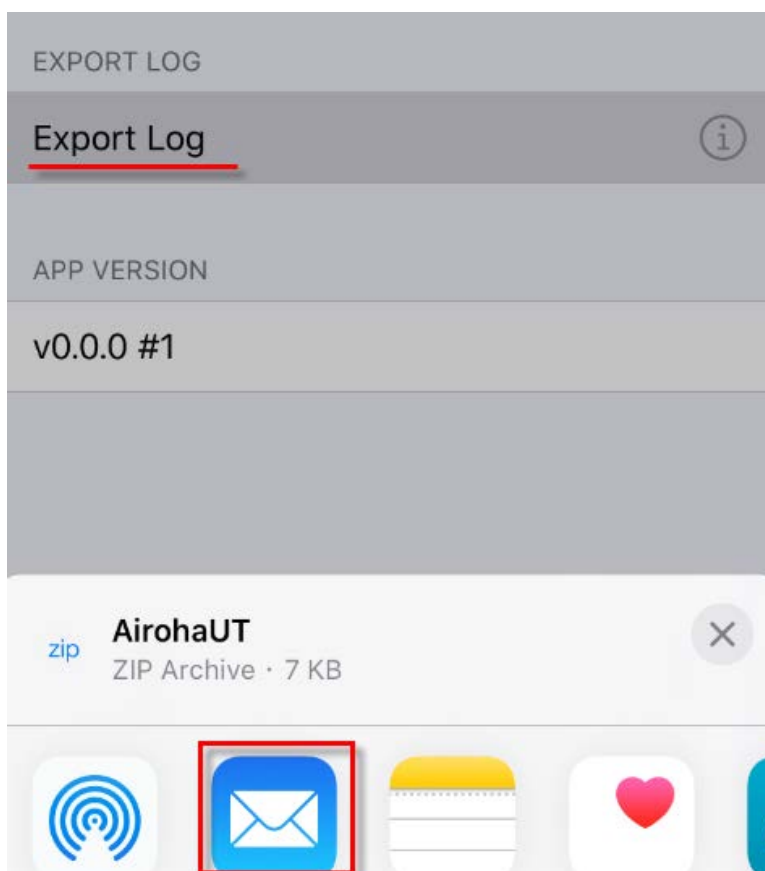
**Figure 5-6. FOTA Operation**

**Start FOTA** – Starts the FOTA process.

**Cancel** – Cancels the FOTA process.

## 5.6. Exporting the application log

If there is an issue during the FOTA process, please click **Export Log** to export the log and then send it to the Airoha support team for debugging.



*Figure 5-7. Export application log*