EarStudio: Manual

Buttons / LED / How to Connect / App Features / DFU

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[Buttons]

[Power Button]

Power On/Off

- **Power On: Press&hold for more than 2 seconds**
  - BLUE LED blinks once when power is on. “power-on sound” plays when it is on.
  - Automatically connects to a device that has been connected before. GREEN LED blinks once every 3 seconds after the “connection sound.”
  - Enters Discoverable Mode/Paring Mode when there’s no device that has been connected before. GREEN LED blinks twice every 0.5 seconds.

- **Power Off: Press&hold for more than 4 seconds**
  - RED LED blinks once right before power off. “power-off sound” plays when it is off.

Play/Pause

- **Play: Press once**
  - GREEN LED slowly blinks once every 3 seconds during Bluetooth/USB playback.

- **Pause: Press once**

Hands-free Calling

- **Receiving Incoming Call: Press once**
  - BLUE LED slowly blinks once every 3 seconds
  - “Call-receiving sound” when received.

- **Rejecting Incoming Call: Press&hold for more than 2 seconds**
  - “Call-rejection sound” when refused.

- **End Call: Press once**
  - “Call-end sound” when ended.

[Next Track Button]

Playback Control

- **Next Track: Press once**

[Previous Track Button]

Playback Control

- **Previous Track: Press once**

Pairing mode

- **Enter Discoverable mode/Pairing mode: Press&hold for more than 2 seconds**
  - GREEN LED blinks twice every 0.5 seconds after “enter paring-mode sound.”
  - Disconnects from the current connected device when entering this mode.

[Volume Up Button]

Volume Control

- **Volume Up: Press once/Press multiple times/Press&hold**
  - Volume increases by 2dB for each press.
  - Press&holding the button increases the volume consistently up to 6dB.

[Volume Down Button]

Volume Control

- **Volume Down: Press once/Press multiple times/Press&hold**
  - Volume decreases by 2dB for each press.
  - Press&hold the button decreases the volume consistently down to -52dB.
  - Pressing the button at the minimum volume turns to a mute level.

[LED]

Discoverable mode / Pairing mode: GREEN - Blinks twice every 0.5 sec.
Bluetooth Connected: GREEN - Blinks once every 3 sec.

Incoming Call: BLUE - Blinks 3 times every 2 sec.
Outgoing Call: BLUE - Blinks 3 times every 2 sec.
Active Call: BLUE - Slowly blinks once every 3 sec.

Bluetooth Playback: GREEN - Slowly blinks once every 3 sec.
USB Playback: GREEN - Slowly blinks once every 3 sec.

Battery Low: RED - Maintains the regular LED pattern. The LED-off phase changes to RED
Charging: RED - Maintains the regular LED pattern. The LED-off phase changes to RED.
Charging Complete: GREEN - Maintains the regular LED pattern. The LED-off phase changes to GREEN.

(Ex. LED changes during Bluetooth playback:
GREEN LED slowly on - LED Off repeats every 3 seconds.
LED changes during Bluetooth playback while battery low state:
GREEN LED slowly on - RED LED repeats every 3 seconds.

[How to Connect]

[Connecting Bluetooth]

1. Turn on EarStudio (Press Power button for 2 seconds)

2. Once the power is turned on, It automatically enters into Pairing mode. GREEN LED blinks twice every 0.5 seconds during Pairing mode. Then, select EarStudio from the Settings from the Smartphone.

   (When EarStudio is already connected to the other Smartphone and when it is not in Paring mode, please press the Previous Track Button for over 2 seconds to enter into Pairing mode)

3. When it is successfully connected, EarStudio appears on the list of MY DEVICES.
   It is now able to play audio streaming is through Smartphone music/video player.

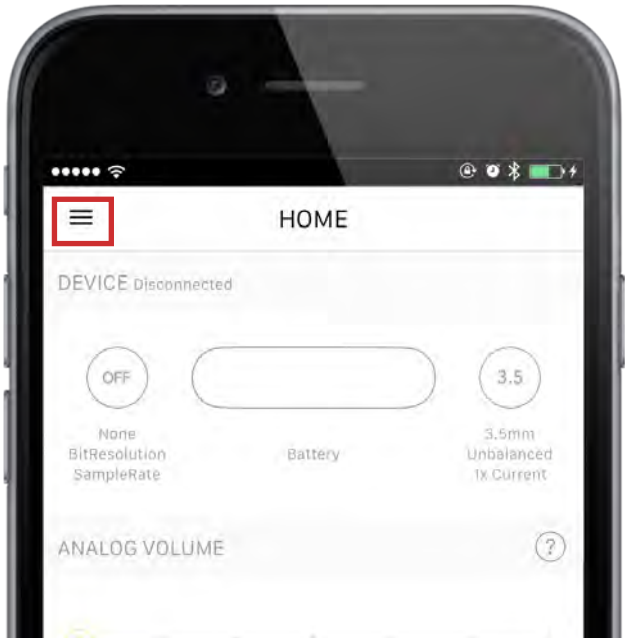
※ **WARNING (iOS only)**

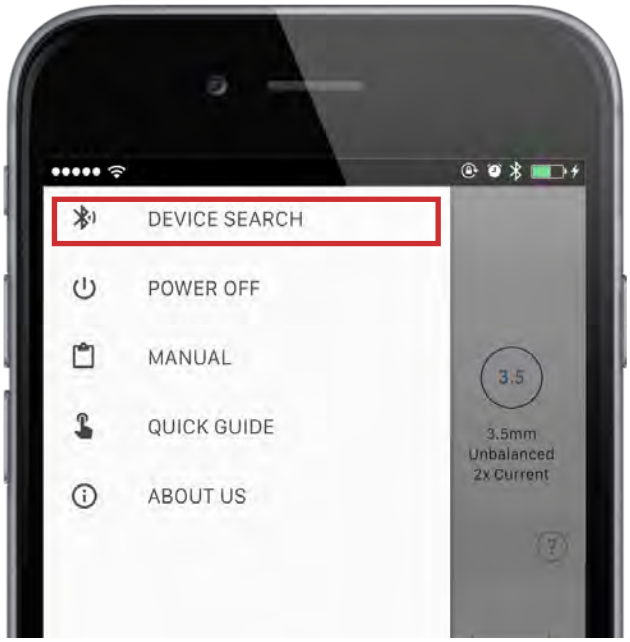
From the list of MY DEVICES,
'i' button behind 'Connected' means connection available for Audio Streaming,
"Connected' without 'i' button means connection available for App Control.

<u>If you only have a connection to app control, you can not play music/movies on your Smartphone with EarStudio.</u>

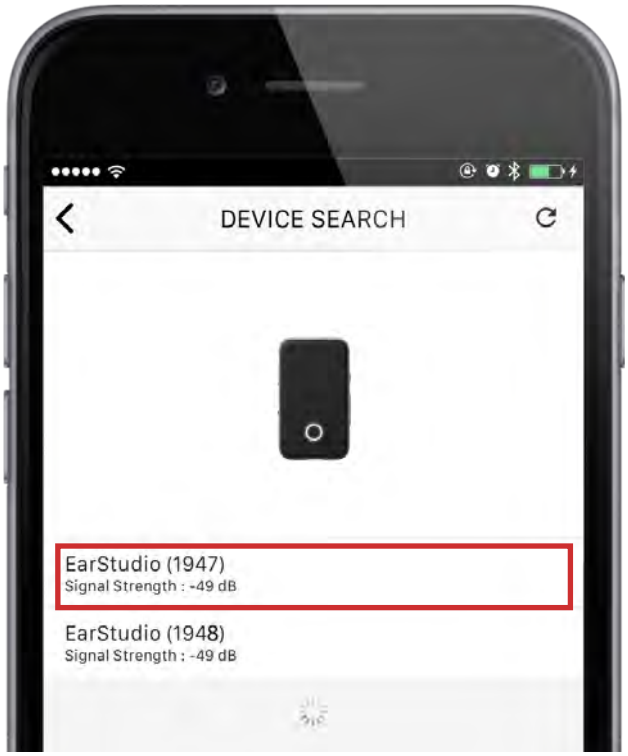
[App Connection]

1. Menu button on the top left - DEVICE SEARCH

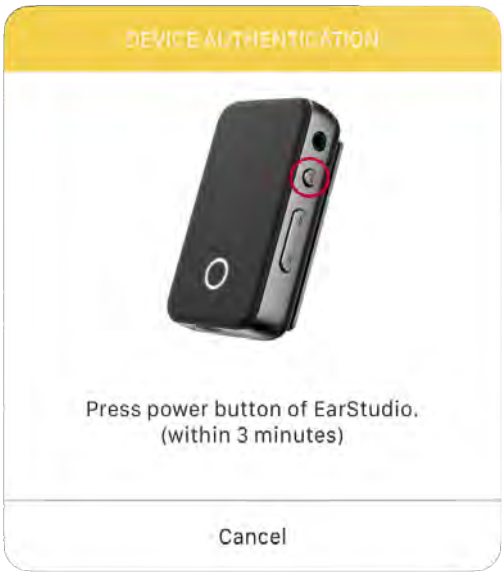




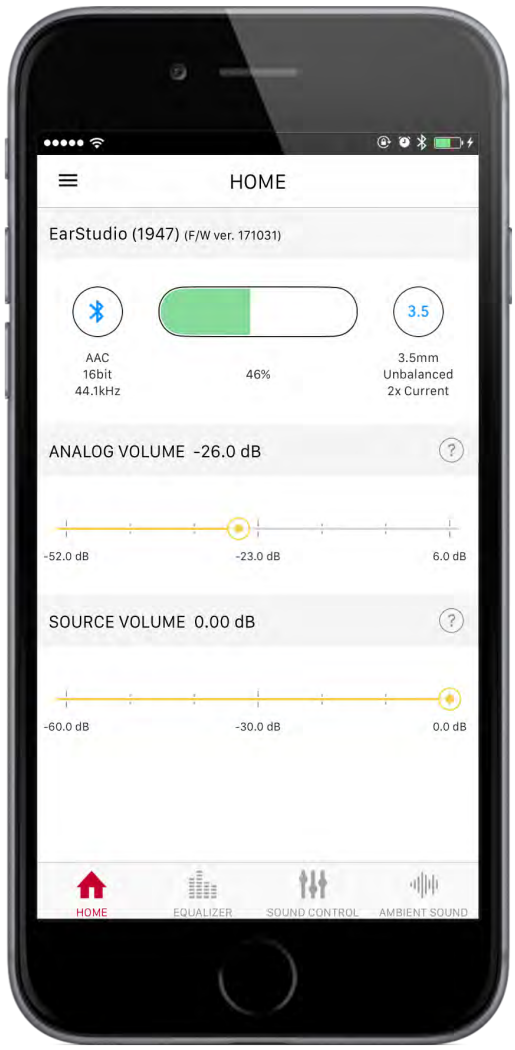
2. Select EarStudio from the list.



3. Press Power button once, when Device Authentication window appears on the screen.



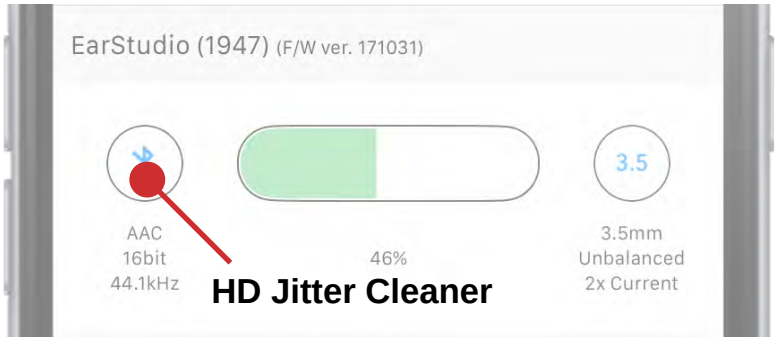
4. When the connection is successfully completed, the App screen is activated.
   You can now control your EarStudio settings with the App.



[App Features]

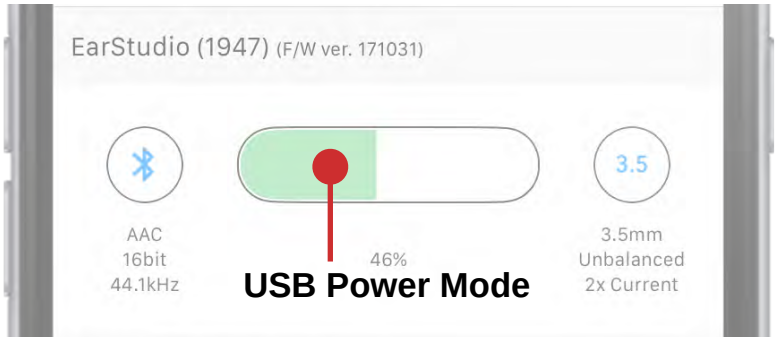
[Home Tab]

- **HD Jitter Cleaner**



- HD Jitter Cleaner enhances the phase accuracy, removing the additional jitter caused by the inter clock mismatch between source and sink devices.
- Able to set the values for Bluetooth playback and USB playback separately.
- Cannot control while on a call.

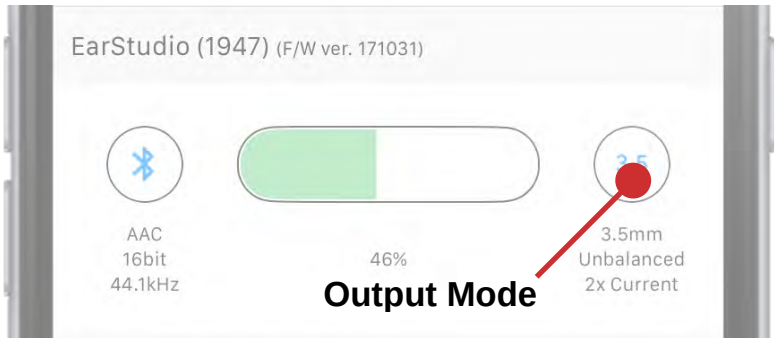
- **USB Power Mode**



- EarStudio's USB Power Mode can be set to Self-Powered Mode.
  Use it when USB Host requires Self-powered Mode when connecting to an iPhone using an Apple Camera Kit
- When Battery is low, the Self-Powered mode is automatically released when the USB cable is connected.

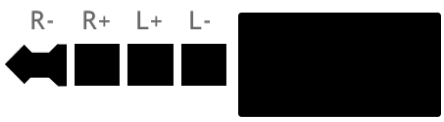
※ **WARNING**
In Self-Powered mode, EarStudio will not charge even when the charger is connected, so you must manually set it to Normal Mode before charging.

- **Output Mode**



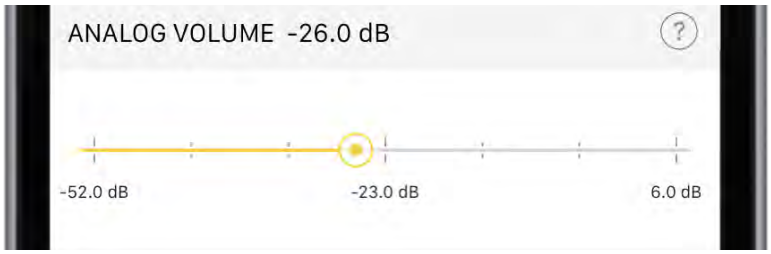
- 3.5mm/2.5mm Output Modes PDF Link
- Cannot control while on a call.

※ **2.5mm Pin-out Configuration**



Pin-out Configuration for the 2.5mm Full-differential Port: R- / R+ / L+ / L-, starting from the tip of the jack as shown above.

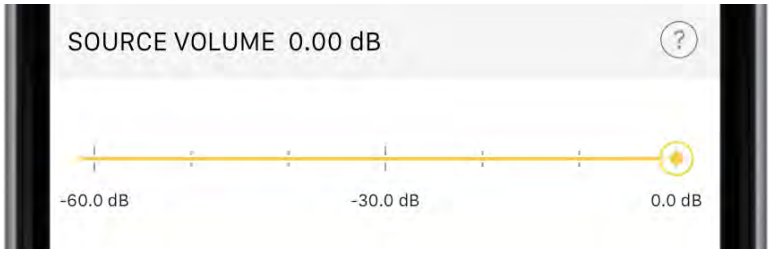
- **Analog Volume**

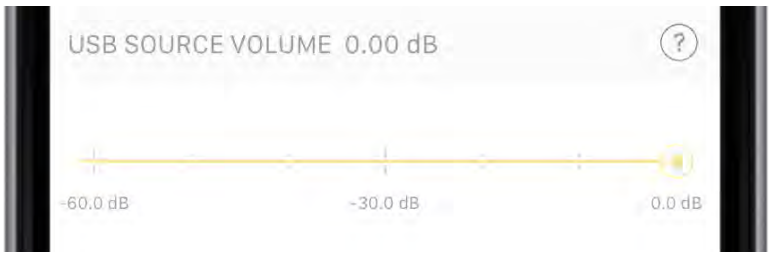


- Volume Control PDF Link
- EarStudio's Hardware Volume
- Able to set the volume during a call and during music play separately.

  Audio volume during a call can be controlled only during a call.

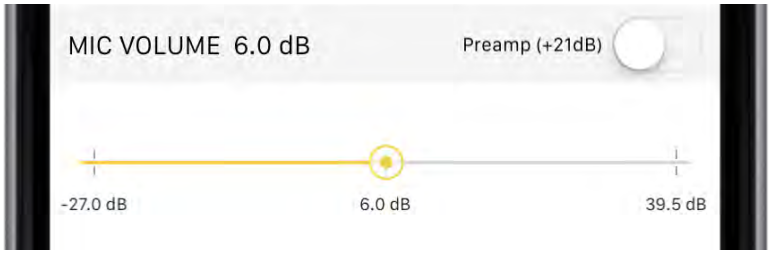
- **Source Volume**





- When USB Streaming is playing, the volume of the USB Host is displayed. Otherwise, the Smartphone Volume is displayed.
- USB Source Volume cannot be controlled on the App.
- Keep the source volume at the maximum level for the best audio performance.

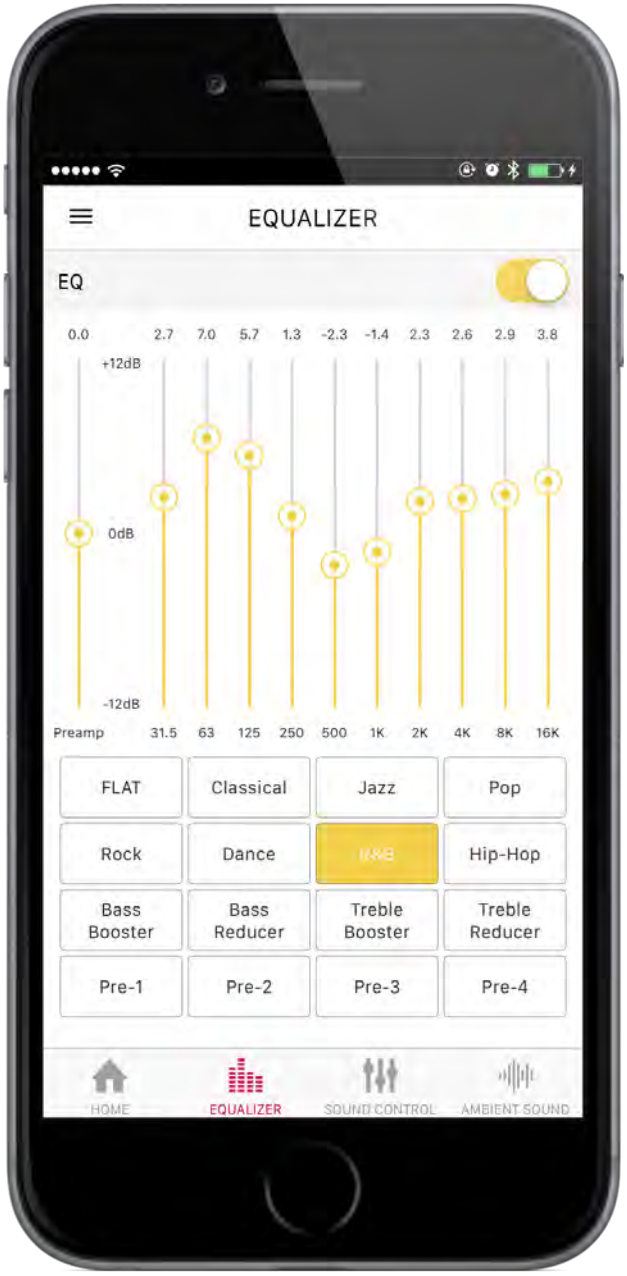
- **Microphone Volume while on a call**



- Cannot control while on a call.
- While on a call with EarStudio, the Source Volume is automatically changed to control Microphone Volume.
- Setting Preamp on increases the volume by 21dB.

[Equalizer Tab]

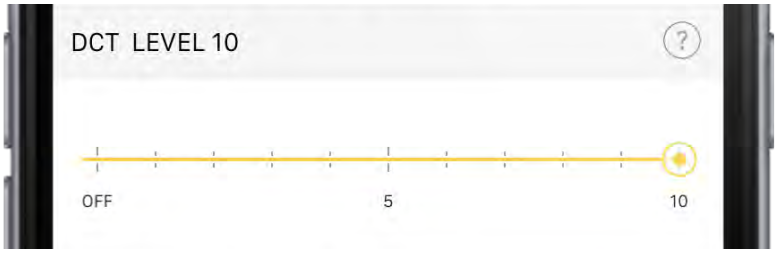
- **Equalizer**



- There are 12 basic Presets and 4 User Presets that can be set by the user.
- To save the User Preset, move the slider to the desired value and press User Preset button for 3 seconds or more.
- Cannot control while on a call.

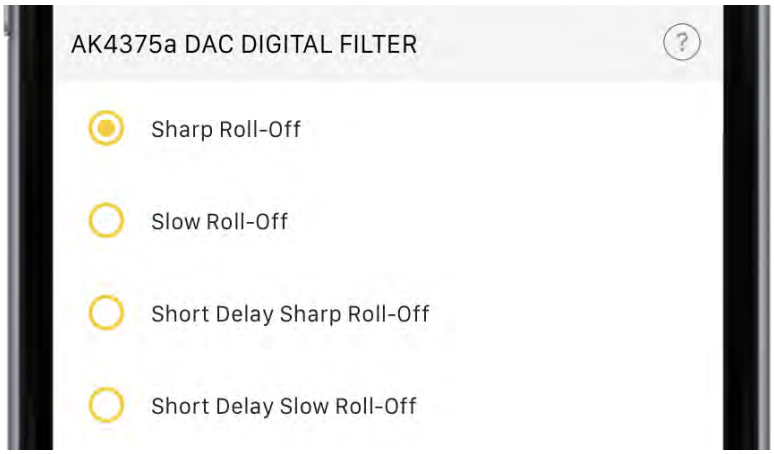
[Sound Control Tab]

- **DCT**



- DCT eliminates subtle digital noise inherent in all digital sound sources and restores sound details to provide music with originally intended sound quality. The higher the level, the greater the DCT intensity.
- Cannot control while on a call.

- **DAC Digital Filter**



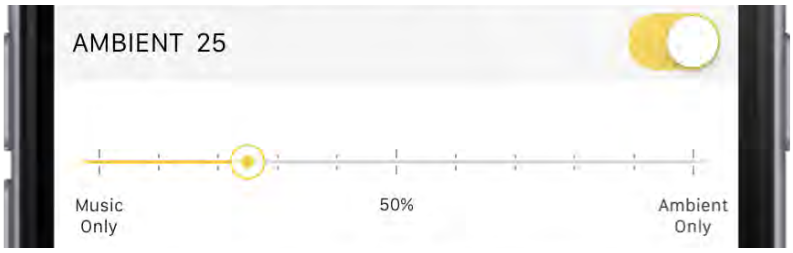
- Able to set Digital filter of the built-in AK4375a DAC.

Sharp Roll-off	: Pre and post echoes make powerful sound.
Slow Roll-off	: Minimal echo reproduces original sound.
Sharp Delay Sharp Roll-off	: Post echo enhances bass sound.
Slow Delay Sharp Roll-off	: Minimal echo reproduces original sound.

- Cannot control while on a call.

[Ambient Sound Tab]

- **Ambient Sound**



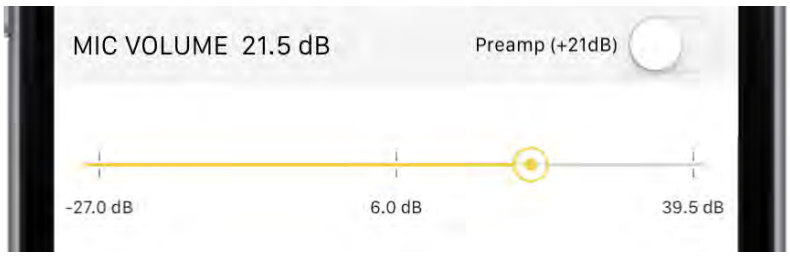
- In the Ambient mode, DSP mixes up streamed music over Bluetooth and ambient sound captured from the built-in microphone of EarStudio.

  Music Only : music only. ambient sound 0%.

  50% : music (50%) + ambient sound (50%)

  Ambient Only : ambient sound only. music 0%
- It can be useful when you are on a bicycle or to catch an announcement on the subway or so.
- Cannot control while on a call.

- **Ambient Sound Microphone Volume**



- Able to adjust the volume of the Ambient Sound before the DSP mixer. The larger the volume, the louder the sound captured by the microphone.
- Setting Preamp on increases the volume by 21dB.
- Not the same as Microphone volume during a call.
- Cannot control while on a call.

[Device Firmware Upgrade]

Entering DFU mode

- **While press-and-holding the Power Button, connect EarStudio to <u>Windows PC</u> through the USB data cable**
  - LED will be off, if entered DFU mode successfully.

Run batch file

- **Download and unzip the latest update archive for EarStudio**
  - e.g.) EarStudio_20160622_Build_1.zip
  - When unzipped, you will see 5 files as below:

    EarStudio_Device_Firmware_Upgrade.bat

    EarStudio_Image.bin

    HidDfu.dll

    HidDfuCmd.exe

    readme.txt

- **Run EarStudio_Device_Firmware_Upgrade.bat**

```
HidDfuCmd.exe, version 2.6.4.1024 Release
Copyright (c) 2012-2016 Qualcomm Technologies International, Ltd.
All Rights Reserved.
Qualcomm Technologies International, Ltd. Confidential and Proprietary.

Found 1 devices. Do you want to upgrade all? (y/n) y
72% completed
```

```
HidDfuCmd.exe, version 2.6.4.1024 Release
Copyright (c) 2012-2016 Qualcomm Technologies International, Ltd.
All Rights Reserved.
Qualcomm Technologies International, Ltd. Confidential and Proprietary.

Found 1 devices. Do you want to upgrade all? (y/n) y
upgrade succeeded
Device reset succeeded
```

- Wait until says **“Found 1 device”**
- Enter **“y”**
- Wait while DFU is in progress.
- Keep the device connected until getting the message:

  “upgrade succeeded / Device reset succeeded”
- EarStudio will reset automatically when DFU is finished.

FCC Information to User
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is con−nected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution
Modifications not expressly approved by the party responsible for compliance could void the user’ s authority to operate the equipment.

FCC Compliance Information : This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

RF Exposure Statement

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter used in other systems. This device complies with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines. This equipment has very low levels of RF energy that is deemed to comply without testing of specific absorption rate (SAR).