M55M1 Codec Control Board
Quick Start Guide

The information described in this document is the exclusive intellectual property of Nuvoton Technology Corporation and shall not be reproduced without permission from Nuvoton.

Nuvoton is providing this document only for reference purposes of NuMicro microcontroller based system design. Nuvoton assumes no responsibility for errors or omissions.

All data and specifications are subject to change without notice.

For additional information or questions, please contact: Nuvoton Technology Corporation.

www.nuvoton.com

TABLE OF CONTENTS

1 OVERVIEW 3
2 GET STARTED WITH A KEIL PROJECT 4
3 HARDWARE CHECK AND CONNECTTION 5
4 INSTALL GUI 7
5 CONNECT TO GUI 10
6 OPERATE THE GUI TO CONFIGURE THE CODEC 11

1 OVERVIEW

The NuMaker-X-M55M1 is the evaluation board for M55M1H2LJAE. This board integrates an NAU88C22 codec, a 3.5 mm audio jack, and a microphone, making it suitable for audio development and evaluation.

To accelerate user development with the NAU88C22, firmware is provided to enable the NuMaker-X-M55M1 to function as a USB control board. With this firmware, users can:

- Access and configure NAU88C22 registers via I2C.
- Perform audio playback and recording via I2S.

In combination with the NuvotonAudioGUI, users can quickly set up and operate the NAU88C22 on their PCs with a graphical interface.

This document provides:

- Instructions for flashing the firmware.
- Guidelines for connecting the NuMaker-X-M55M1 to a PC.
- A basic user guide for NuvotonAudioGUI.

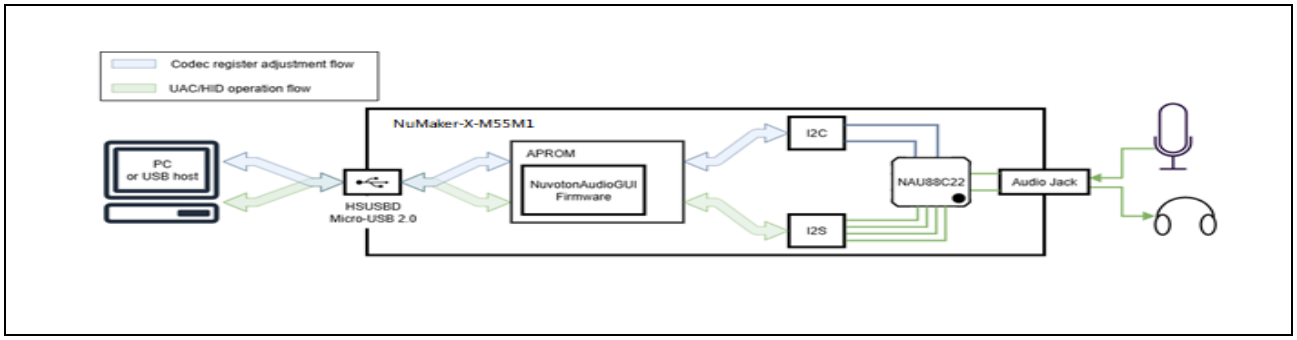
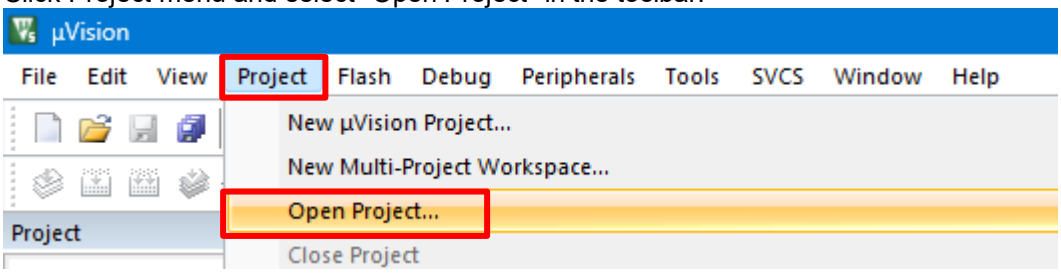


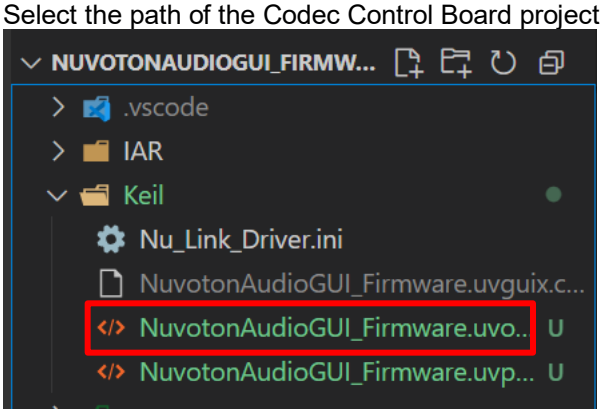
Figure 1-1 Block Diagram

2 GET STARTED WITH A KEIL PROJECT

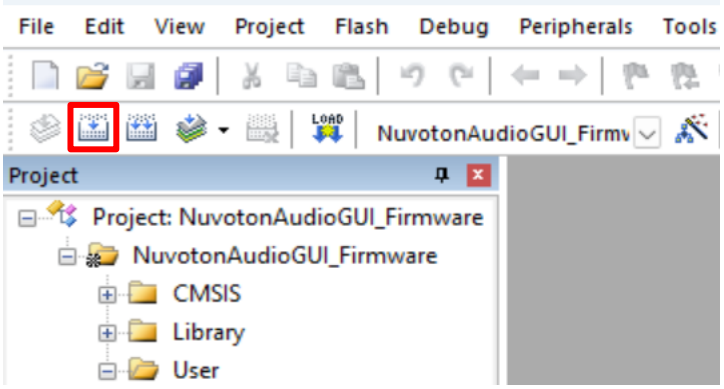
1. Click Project menu and select "Open Project" in the toolbar.



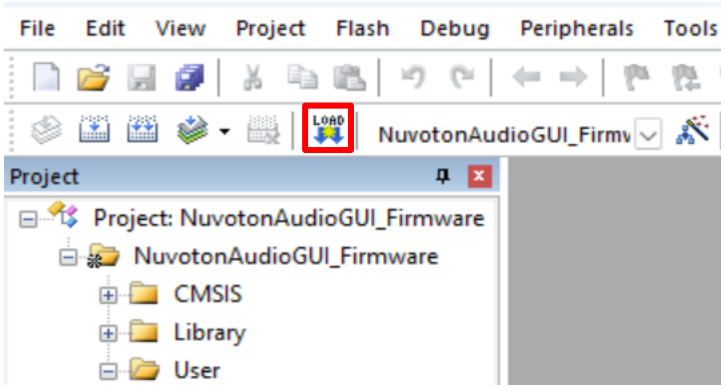
2. Select the path of the Codec Control Board project as below.



3. Click “Build” icon to build the project.



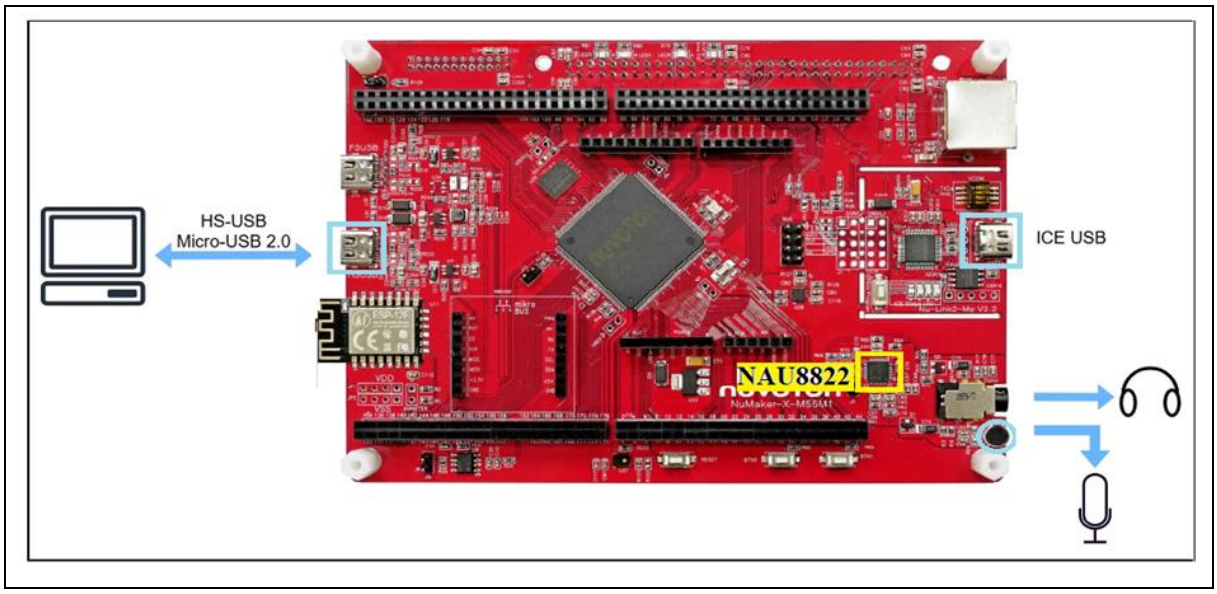
4. Click “Download” icon to download code.



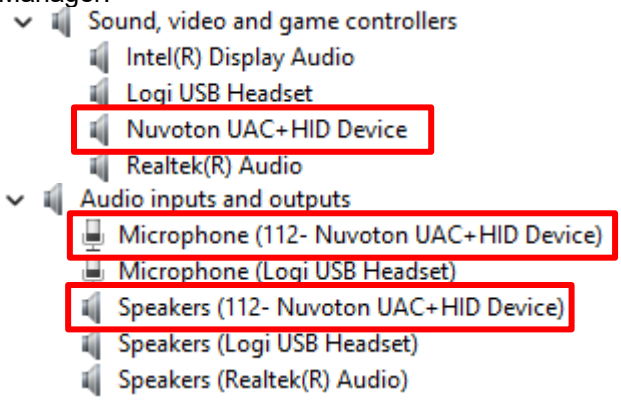
3 HARDWARE CHECK AND CONNECTTION

Before using NuvotonAudioGUI, please confirm the hardware configured as follows before connecting to a Windows based PC.

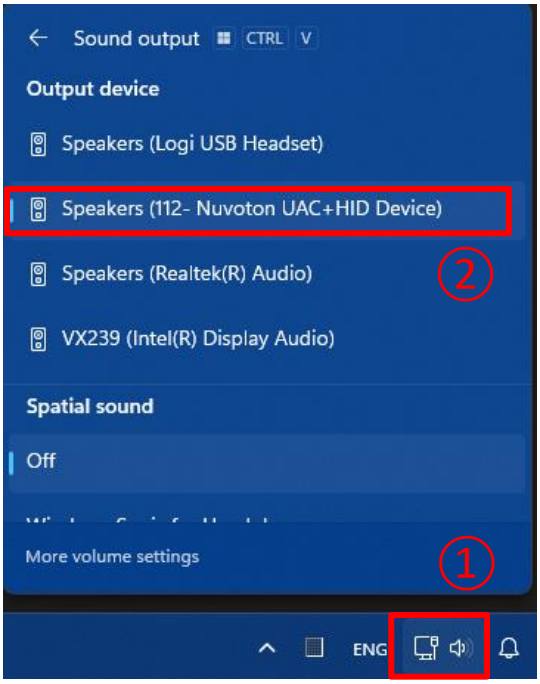
1. Plug in the Micro-USB 2.0 connector on NuMaker-X-M55M1.



2. After successfully recognizing the device, "Nuvoton UAC+HID Device" can be seen in Device Manager.

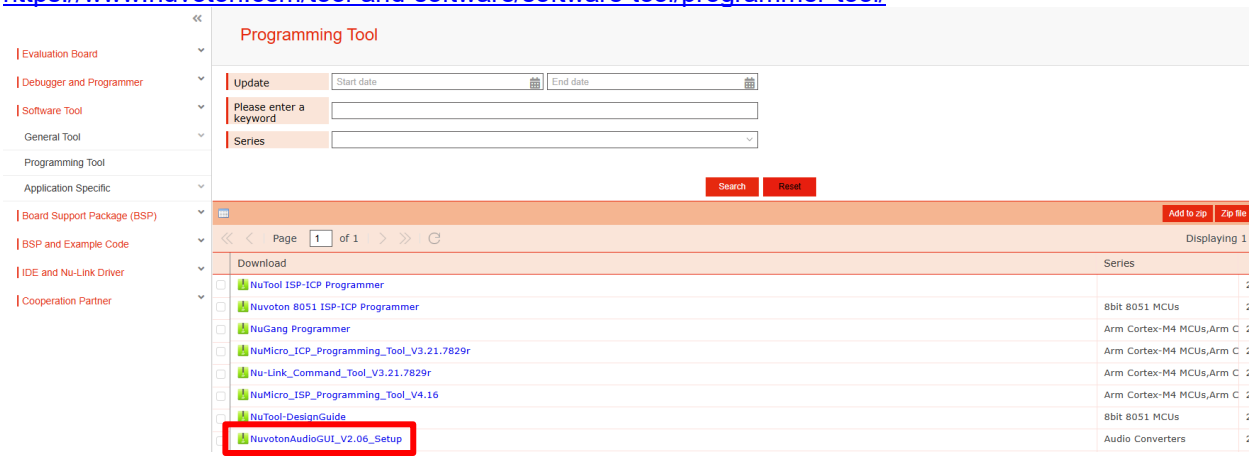


3. Select the audio device on the PC as "Nuvoton UAC+HID Device".



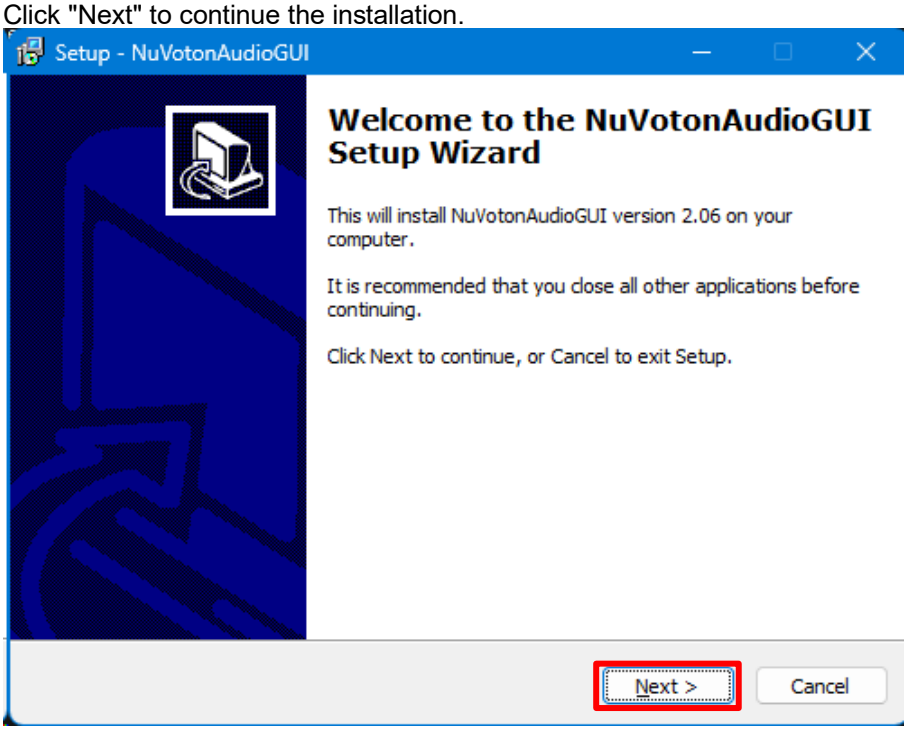
4 INSTALL GUI

1. Visit Nuvoton Website.
   Download NuvotonAudioGUI software.
   https://www.nuvoton.com/tool-and-software/software-tool/programmer-tool/

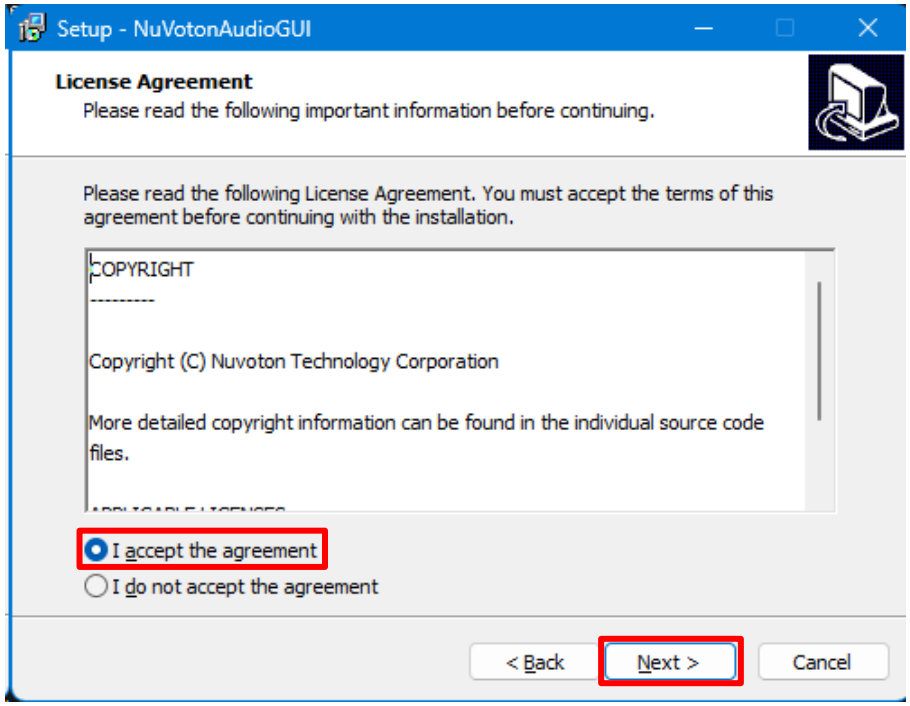


2. Run the NuvotonAudioGUI installer.

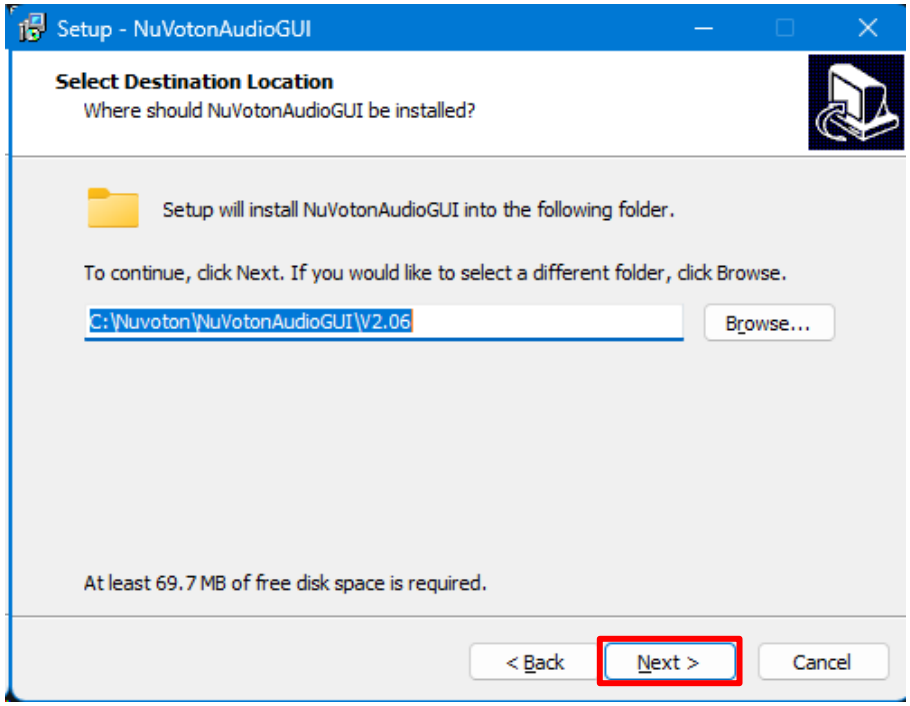
3. Click "Next" to continue the installation.



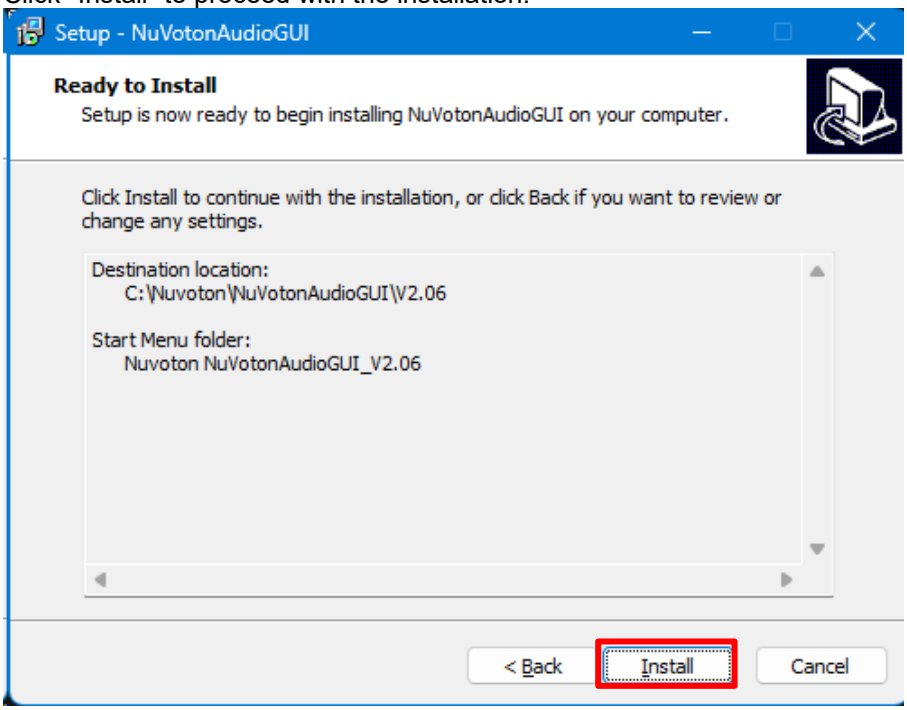
4. Click "Next" to continue the installation.



5. Click "Next" to continue the installation.

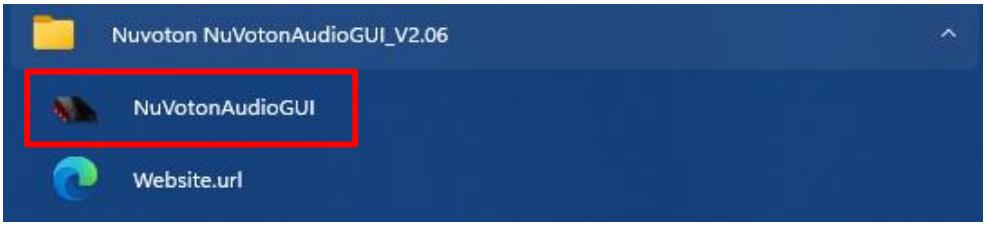


6. Click "Install" to proceed with the installation.

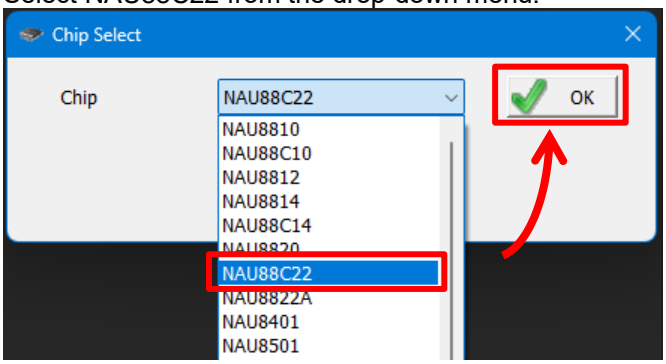


5 CONNECT TO GUI

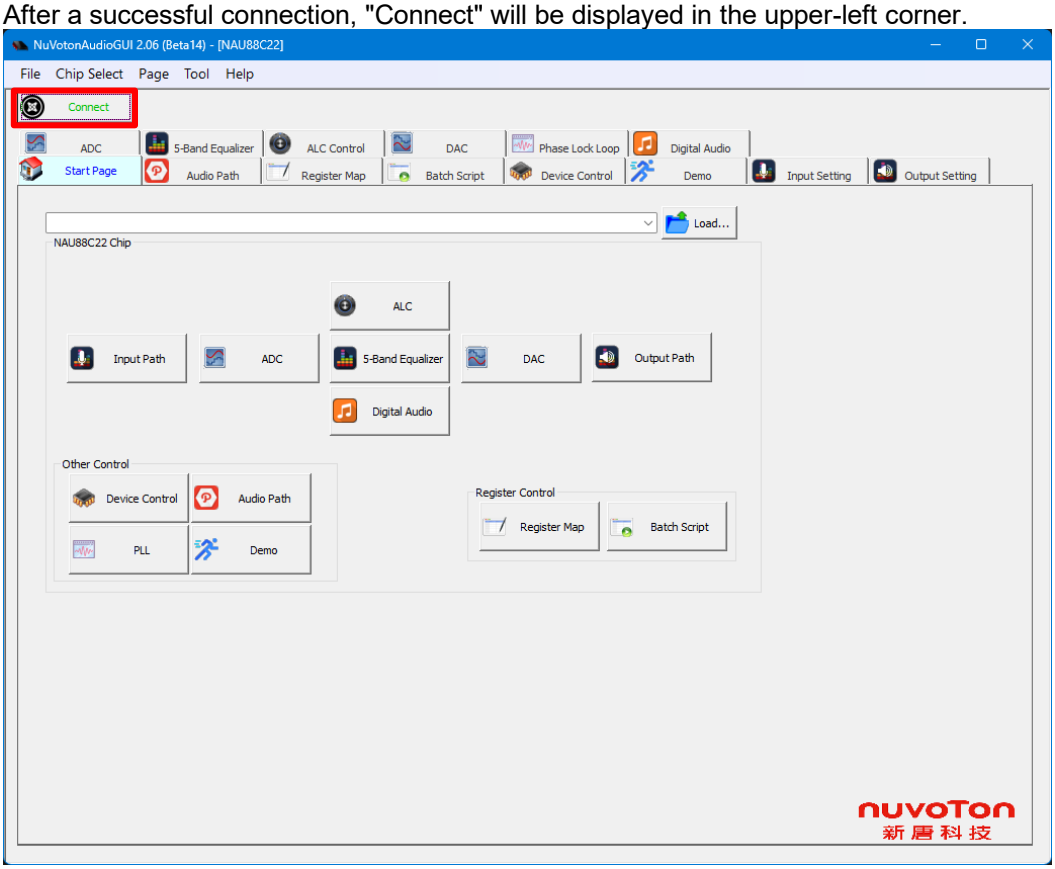
1. Left-click to run NuvotonAudioGUI in Start Menu.



2. Select NAU88C22 from the drop-down menu.

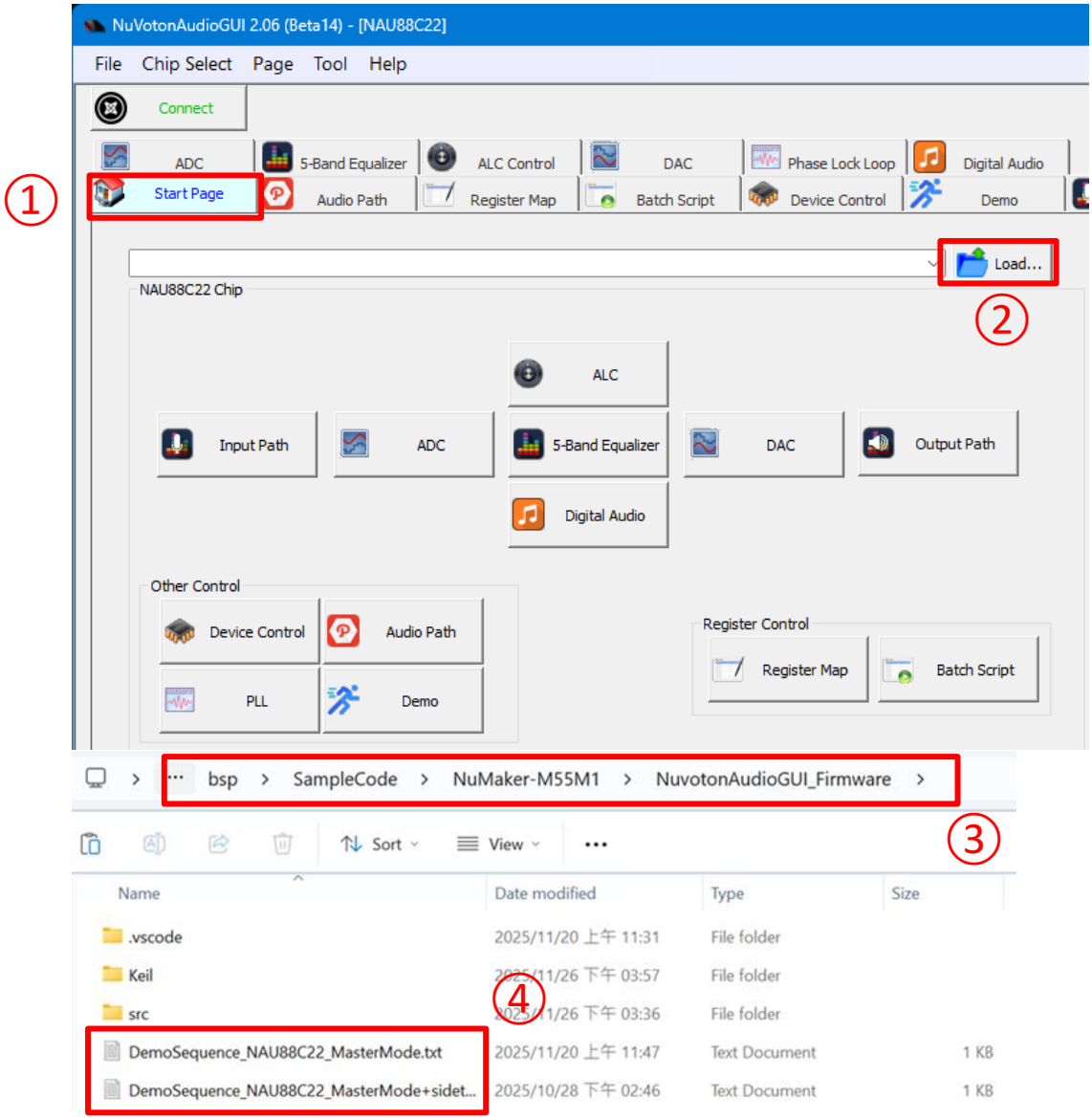


3. After a successful connection, "Connect" will be displayed in the upper-left corner.



6 OPERATE THE GUI TO CONFIGURE THE CODEC

1. **Start Page**: Import default or customized codec parameters to play/record audio files through the codec.



2. This sample code provides two sets of settings for users to choose from: DemoSequence_NAU88C22_MasterMode and DemoSequence_NAU88C22_MasterMode+sidetone.

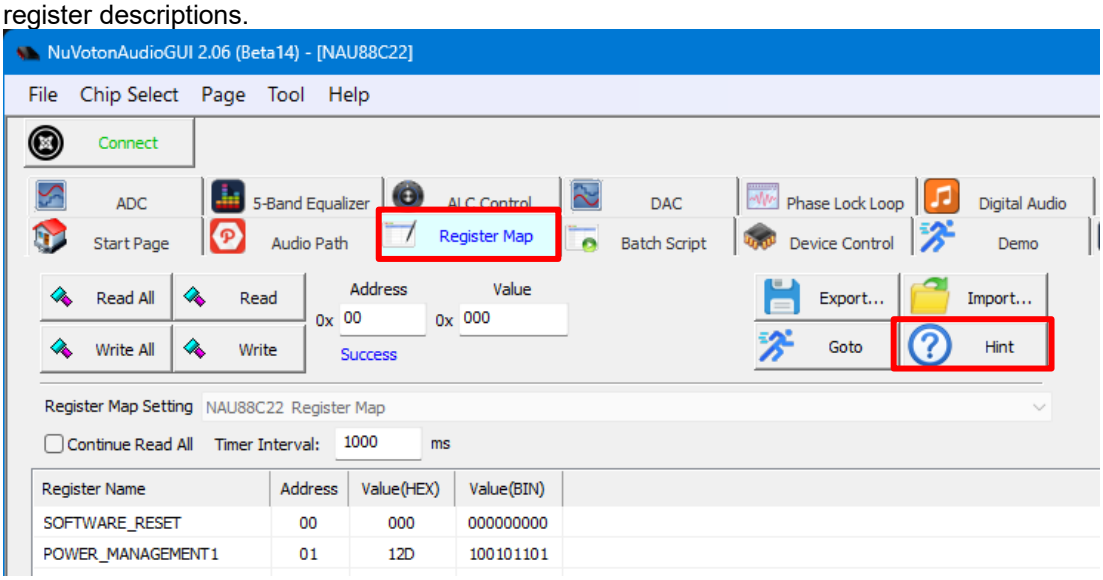
   - DemoSequence_NAU88C22_MasterMode

     This setting enables the MIC IN (ADC function), SPK OUT (DAC function) functions of the NAU88C22 and sets the internal PLL oscillator output as master clock. Users can play their desired audio files using the playback device on the PC with the system playback device set to "Nuvoton UAC+HID Device". The audio will then be heard through the audio jack installed on NuMaker-X-M55M1.

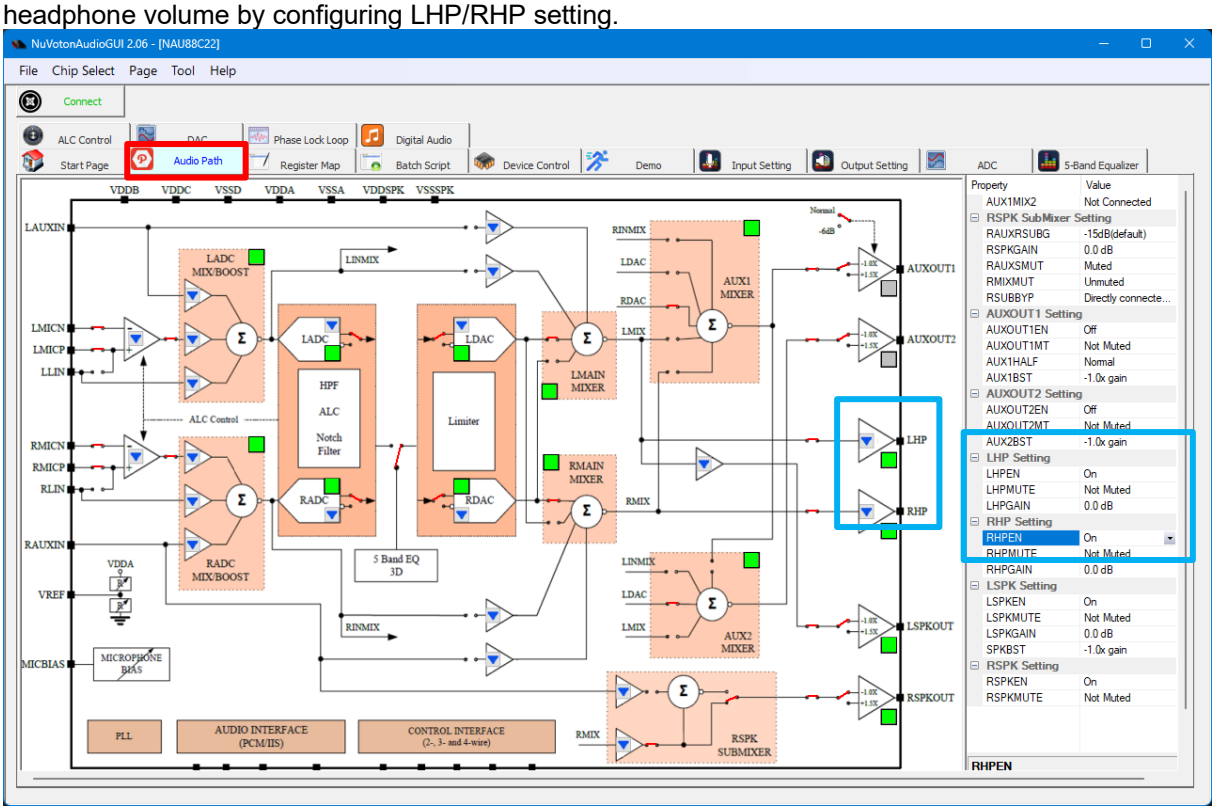
- DemoSequence_NAU88C22_MasterMode+sidetone

  This setting is almost identical to DemoSequence_NAU88C22_MasterMode, with the difference being that the speakers or headphone can directly play the sound received by the microphone.

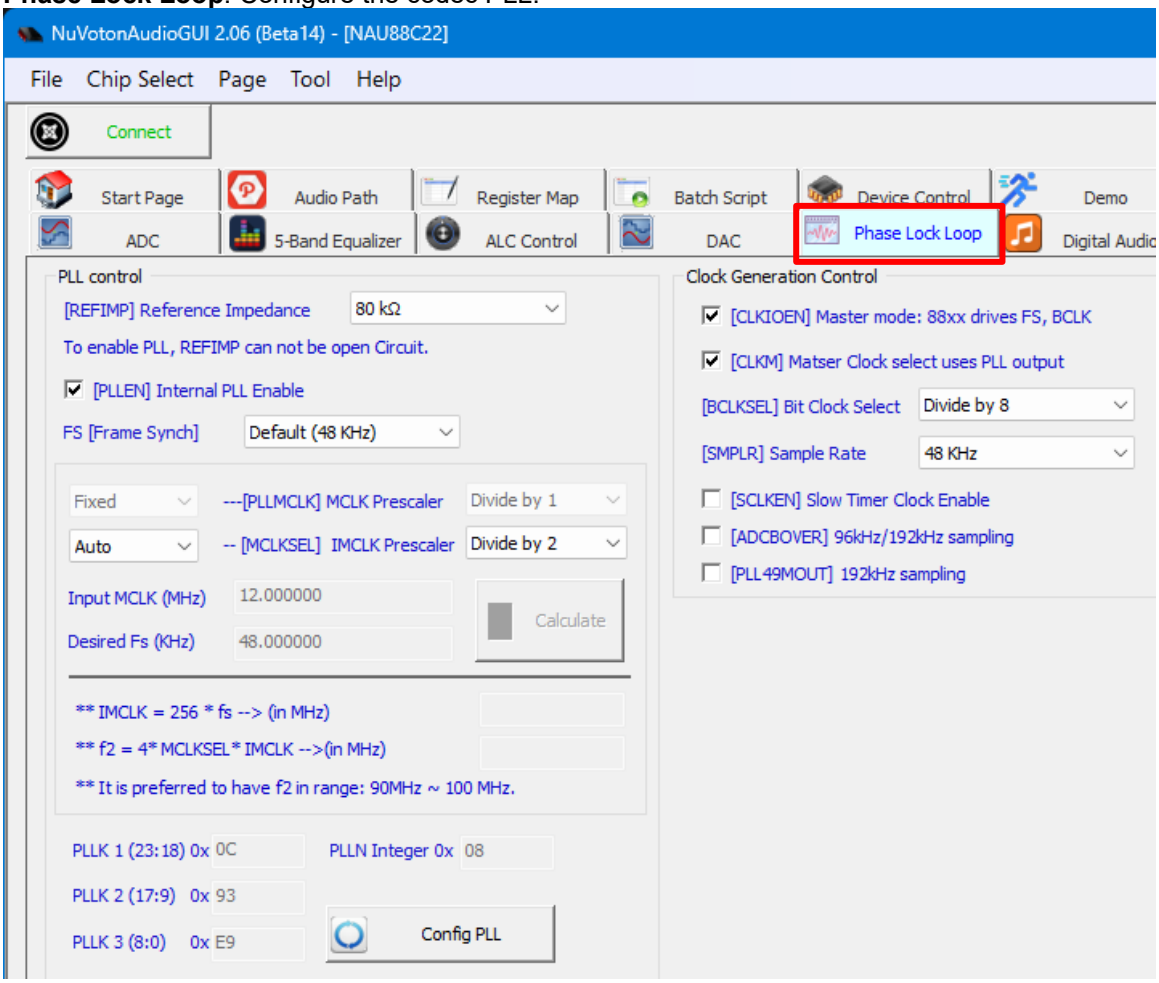
3. **Register Map**: Read Codec registers. User can modify the register. Click "Hint" to view register descriptions.



4. **Audio Path**: Control codec settings and pins through the graphical interface. User can adjust headphone volume by configuring LHP/RHP setting.



5. **Phase Lock Loop**: Configure the codec PLL.



REVISION HISTORY

Date	Revision	Description
2025.12.08	1.00	1. Initially version.

Important Notice

Nuvoton Products are neither intended nor warranted for usage in systems or equipment, any malfunction or failure of which may cause loss of human life, bodily injury or severe property damage. Such applications are deemed, "Insecure Usage".

Insecure usage includes, but is not limited to: equipment for surgical implementation, atomic energy control instruments, airplane or spaceship instruments, the control or operation of dynamic, brake or safety systems designed for vehicular use, traffic signal instruments, all types of safety devices, and other applications intended to support or sustain life.

All Insecure Usage shall be made at customer's risk, and in the event that third parties lay claims to Nuvoton as a result of customer's Insecure Usage, customer shall indemnify the damages and liabilities thus incurred by Nuvoton.

Please note that all data and specifications are subject to change without notice.
All the trademarks of products and companies mentioned in this datasheet belong to their respective owners.