



CM6646X1\_Demo Board

User Manual\_V102

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## Revision Notes

Revision	Date	Description
V100	2023/03/28	First formal release.
V101	2023/12/28	Updated for demo board version V101
V102	2025/10/17	Updated demo board PCB color for version V102.

## TABLE OF CONTENTS

1.1	Introduction.....	- 5 -
1.2	Overview of the Demo Board .....	- 6 -
2.1.	USB Audio Device.....	- 8 -
2.2.	Playback and Recording .....	- 9 -
2.2.1.	Playback Functions.....	- 10 -
2.2.2.	Recording Functions .....	- 10 -
2.2.3.	Digital I2S Interface.....	- 11 -
2.2.4.	LEDs .....	- 12 -
2.3.	Buttons and Others .....	- 13 -
2.3.1.	HID Buttons.....	- 13 -
2.3.2.	Volume Encoder .....	- 13 -
2.3.3.	CM6646X1 all Pin Header .....	- 14 -
2.3.4.	ARGB and SPI_RGB .....	- 14 -
2.3.5.	ESD solution .....	- 15 -

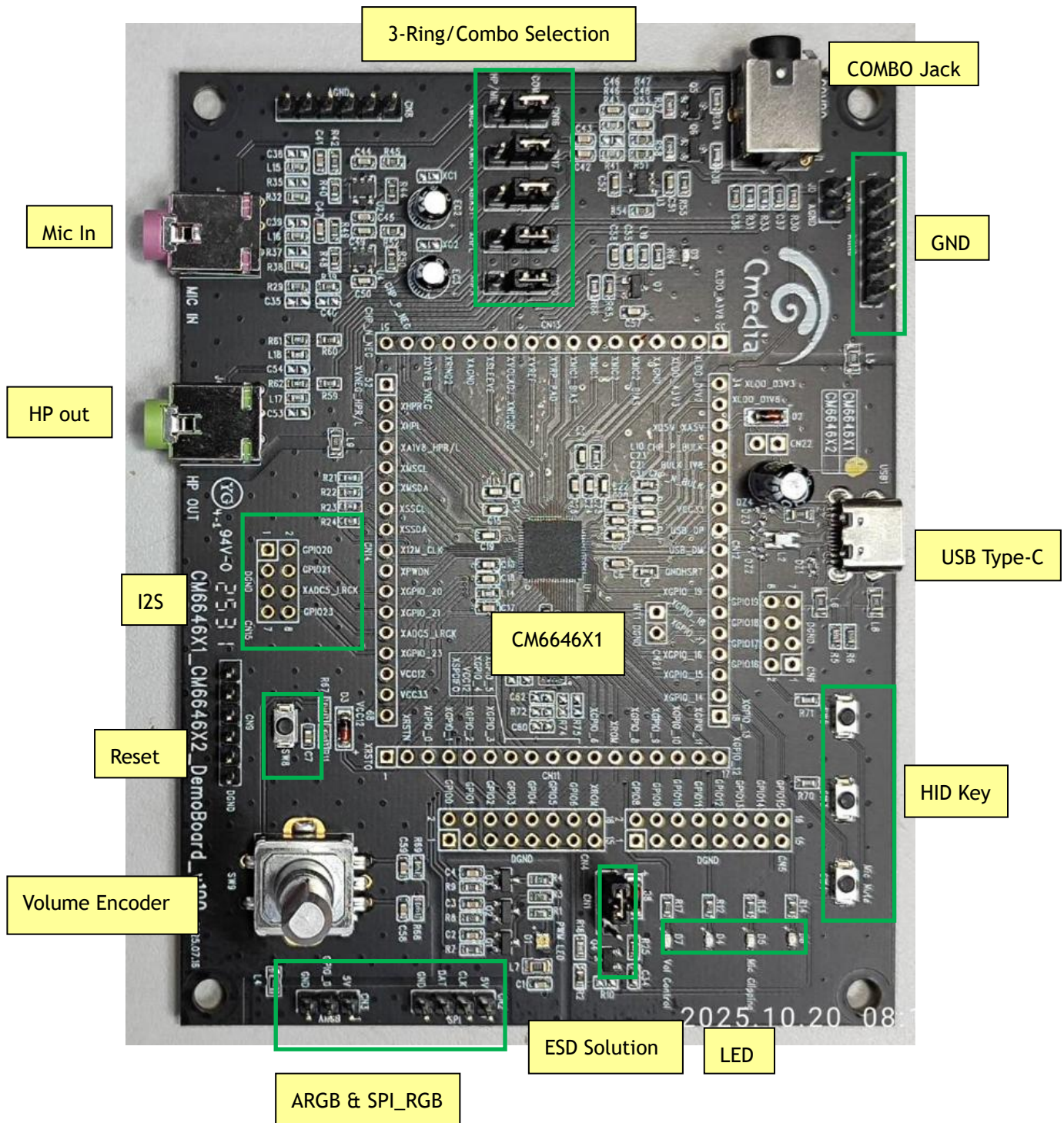
# SECTION 1 OVERVIEW

## 1.1 Introduction

Cmedia CM6646X1 is a USB2.0 high-speed / full speed audio controller that can support latest USB Audio Device Class Definition V3.0 and high-definition audio Playback / Recording capability. CM6646X1 has an embedded High Quality / Low Power 2-channel DAC and 2-channel ADC for Headphone / Headset applications. There is a 8051 MCU inside to support flexibility and functionality with downloadable code via internal serial flash.

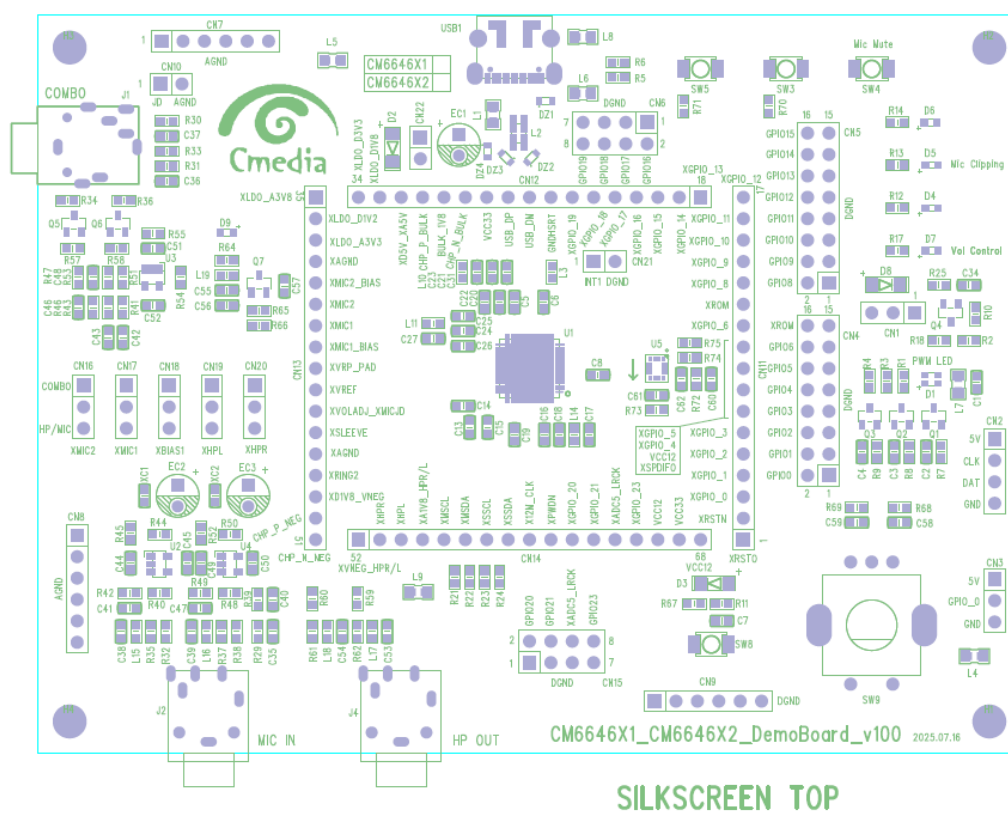
## 1.2 Overview of the Demo Board

The CM6646X1 USB Audio controller evaluation board has several hardware features. With each feature's description in figure, the feature's location can be clearly identified.

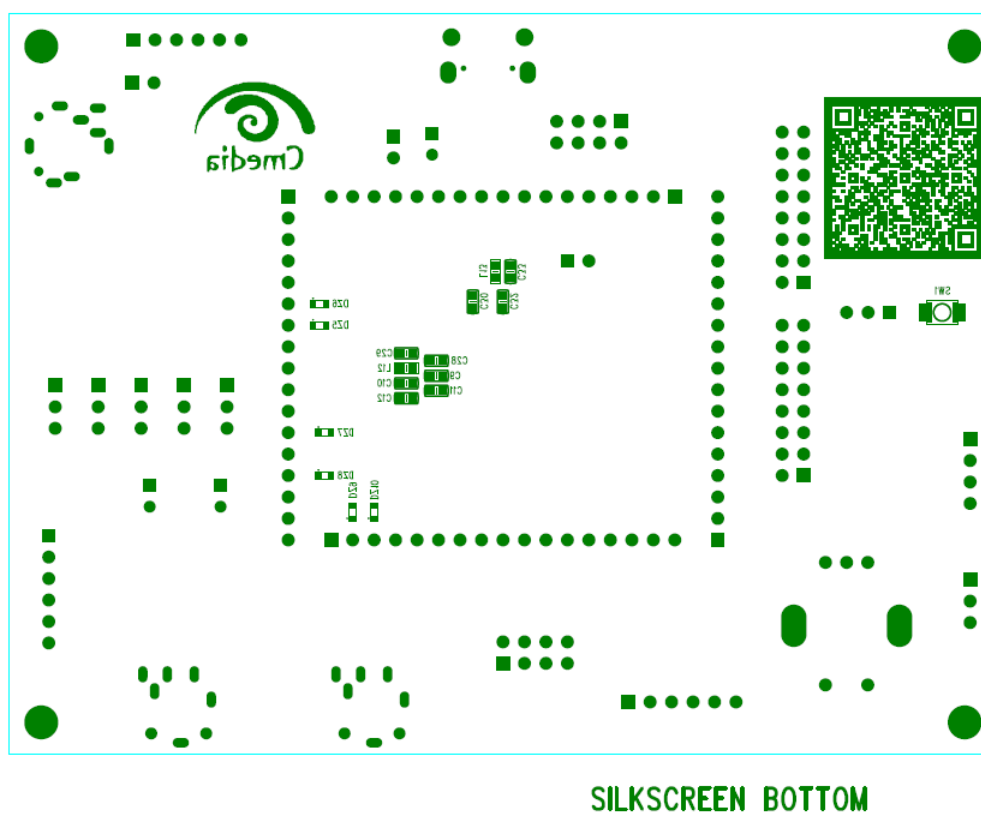


## Component placement

### Top



### Bottom





## SECTION 2 GETTING STARTED

### 2.1. USB Audio Device

Connect to the host by plugging the USB Type-C cable.

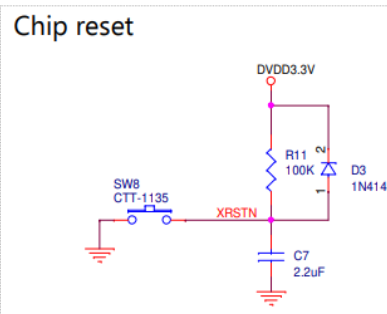


USB Type-C connector

#### Chip Reset



SW8 Reset button, low active



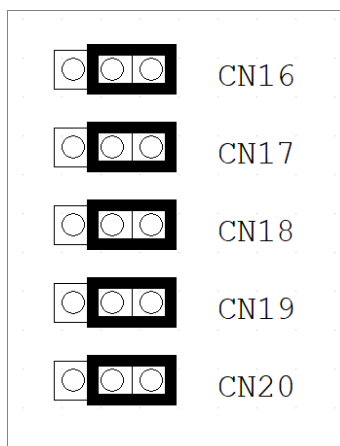
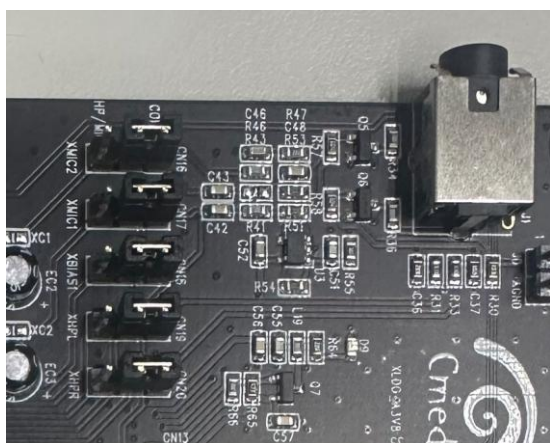


## 2.2. Playback and Recording

Use CN16~CN20 header to select audio signal send to “3-Ring” or “COMBO” audio connector.

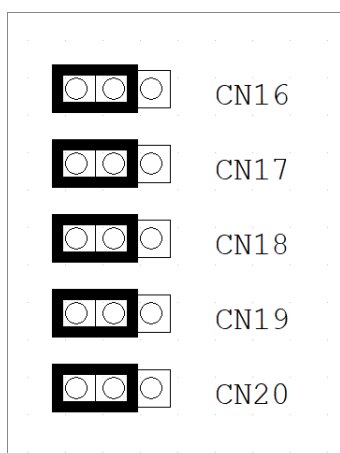
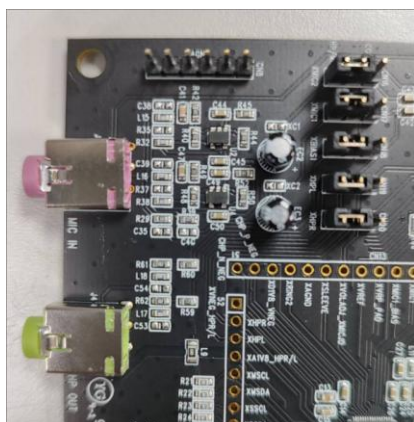
### Option1: Combo Jack

Route Headphone-Out and Microphone-In signals to Combo jack (J1).



### Option2: General audio jack

Route Headphone-Out and Microphone-In signals to 3-Ring general audio jack (J2,J4).



### 2.2.1. Playback Functions

CM6646X1 playback output jack.

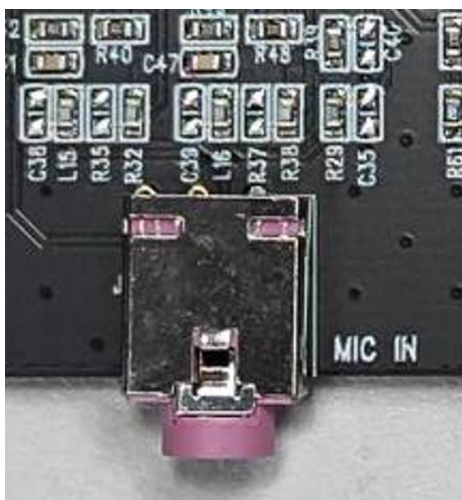
Stereo Headphone Output (**GREEN**, J4)



### 2.2.2. Recording Functions

CM6646X1 Recording input jack.

Stereo Microphone Input (**Pink**, J2)



### 2.2.3. Digital I2S Interface

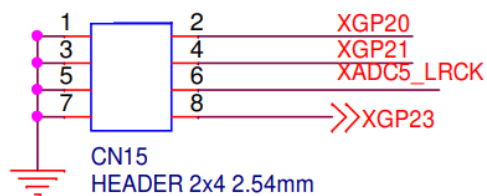
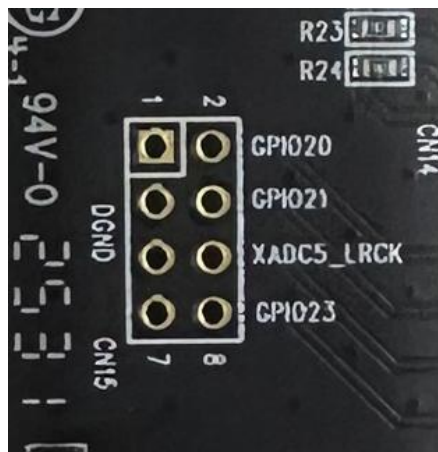
#### I2S ADC5 pin header (CN15)

XGP20: ADC5 master clock output

XGP21: ADC5 bit clock

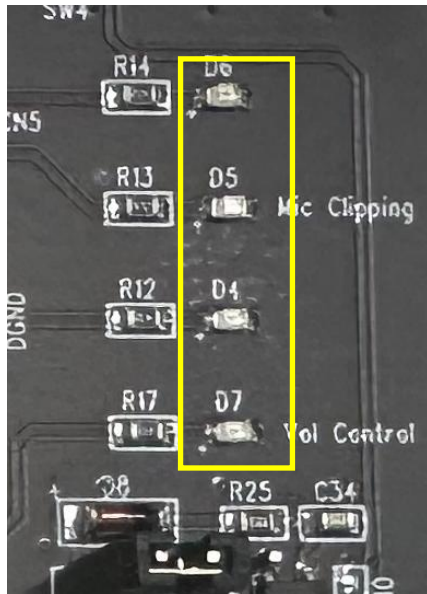
XGP22: ADC5 left/right clock

XGP23: ADC5 serial data input

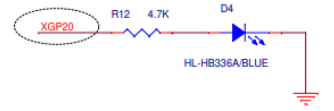


## 2.2.4. LEDs

- D4 Surround HP: Blue color
- D5 MIC Clipping: Red color
- D6 AI Revording: Yellow color
- D7 Volume control: Blue color



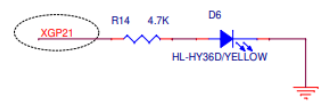
Surround HP



MIC Clipping



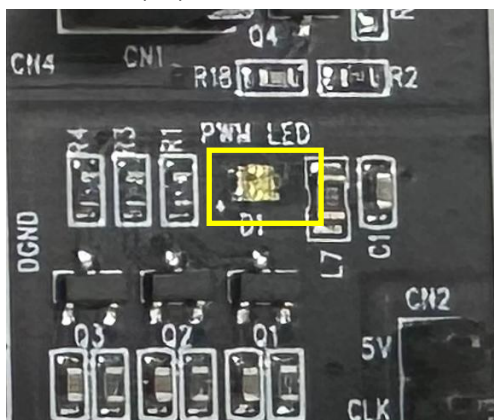
AI Revording



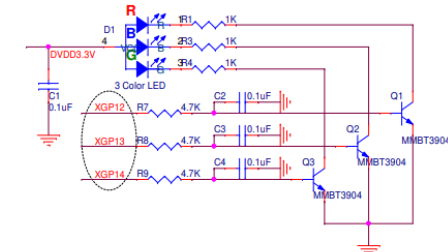
Volume control Indication



3 Colors LED (D1)



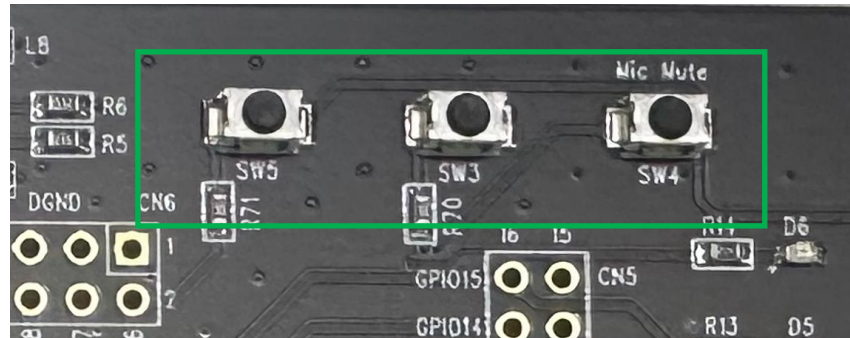
3 Color LED



## 2.3. Buttons and Others

### 2.3.1. HID Buttons

- SW3: Surround HP
- SW4: Microphone Mute
- SW5: AI (Recording)



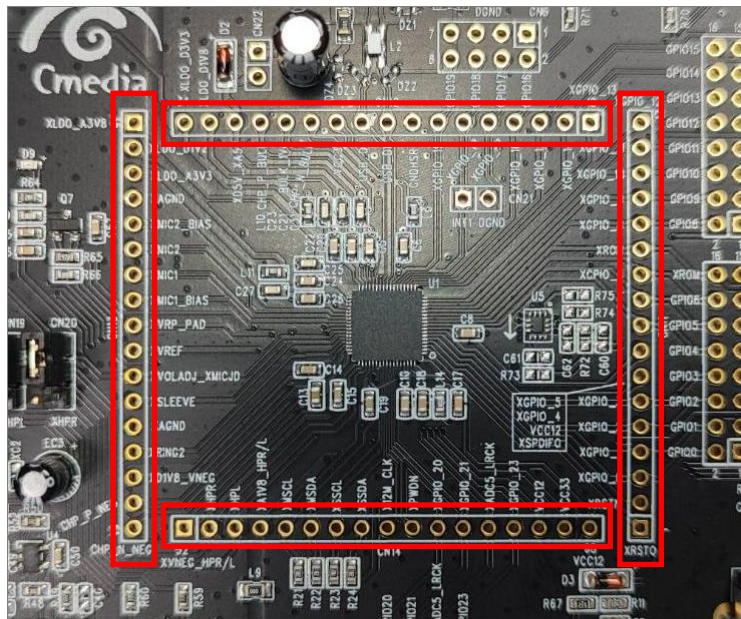
### 2.3.2. Volume Encoder

Rolling the knob to control headphone and communication SPK volume.  
& press the knob to switch Balanced/Master Volume mode.

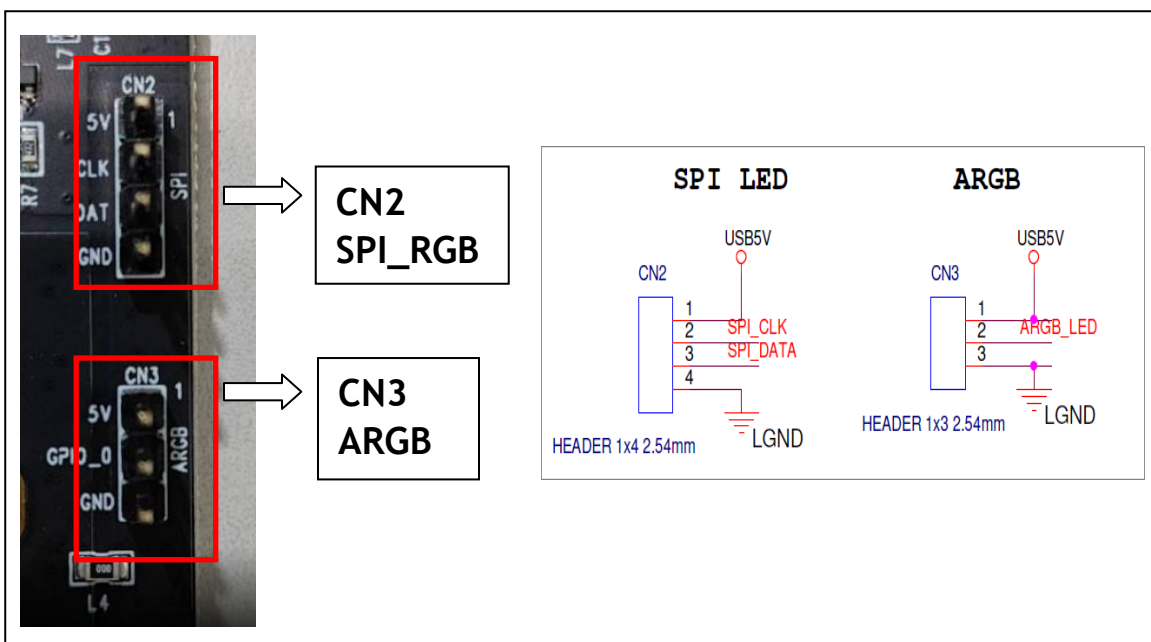




### 2.3.3. CM6646X1 all Pin Header



### 2.3.4. ARGB and SPI\_RGB



### 2.3.5. ESD solution

Short the CN1 pin2/pin3 to enable ESD solution.

