CM6500
CM6502

Evaluation Board User's Guide

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Revision Notes

Revision	Date	Description
0.1	2012/01/06	First draft
0.9	2012/01/30	First release

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SECTION 1 OVERVIEW

1.1 Introduction

Cmedia's CM6500 / CM6502 is a highly-integrated USB audio single chip optimized for consumer headset solutions. This document is a user guide for CM6500 / CM6502 evaluation boards (EVB), which describes the board's functions, I/O jacks, LEDs, controls and some user notes.

CM6500 / CM6502 supports standard HID compliant volume control pins and playback control pins. CM6500 / CM6502 also offers playback operation and playback/record mute LED indicators in order that users know the current status.

All necessary analog and digital modules are embedded in CM6500 / CM6502, including stereo DAC, headphone driver, stereo ADC, microphone pre-amp booster, PLL, regulator, and USB transceiver. Moreover, CM6502 integrates 5-band hardware equalizer (EQ) with 4 default preset modes (Default/flat, Communication, Gaming, and Movie). The EQ preset gain parameters can also be customized for compensating the headphone SPL performance or to be complaint with TIA-920 standard.

In addition, embedded Mic Auto-Gain-Control (AGC) function can adjust input gain automatically to avoid large signal clipping or too small input signal level for a stable voice communication recording quality. Optional clipping detection LED also gives users an alert when the near-to-excess large input signal happens. With versatile CM6500 / CM6502-based headsets, users will get better sound experience on PC.

1.2 Evaluation Board Contents

The CM6500 / CM6502 USB Audio controller evaluation board has several hardware features. With each feature's description in Figure 1, the feature's location can be clearly identified.

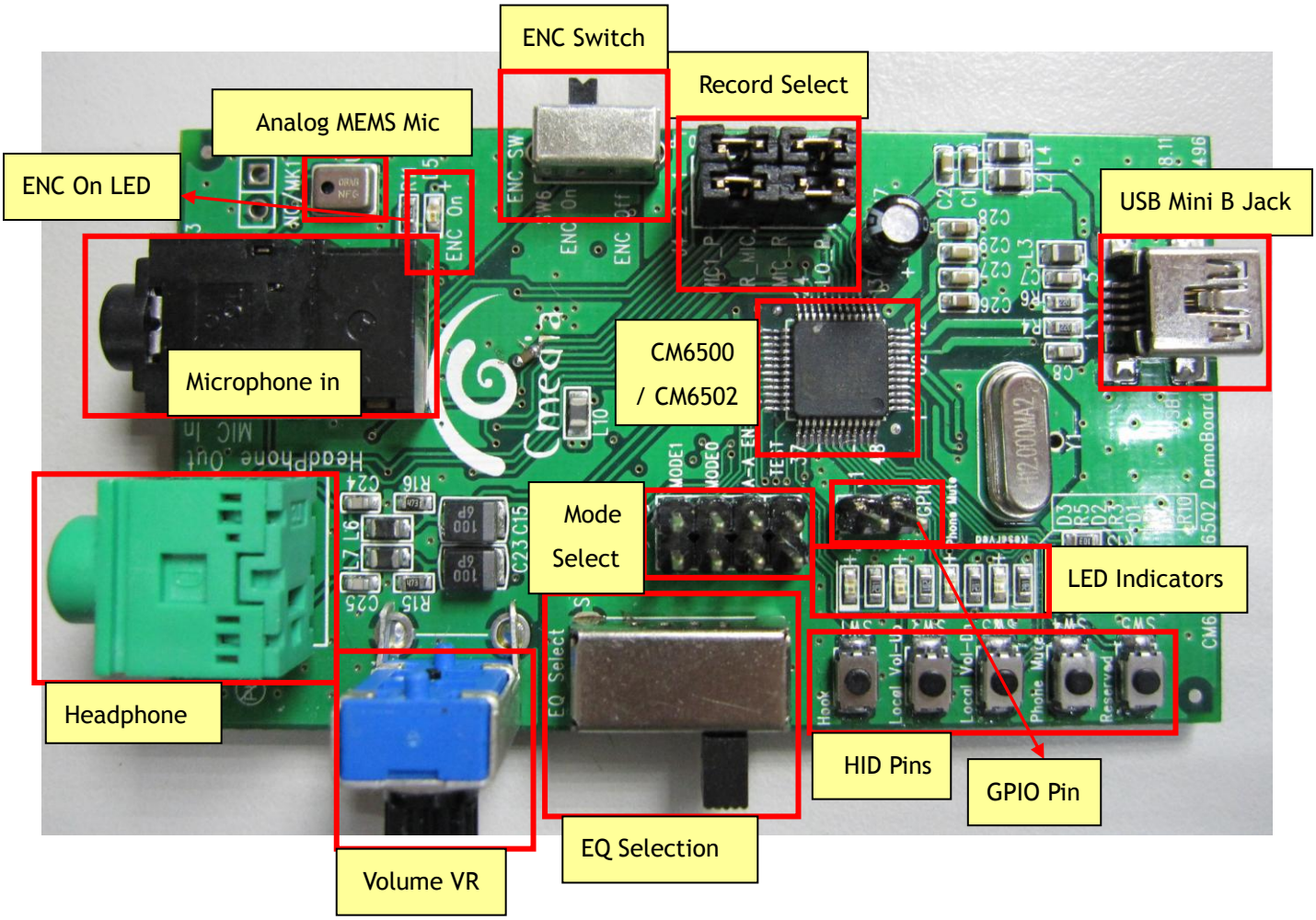


Figure 1

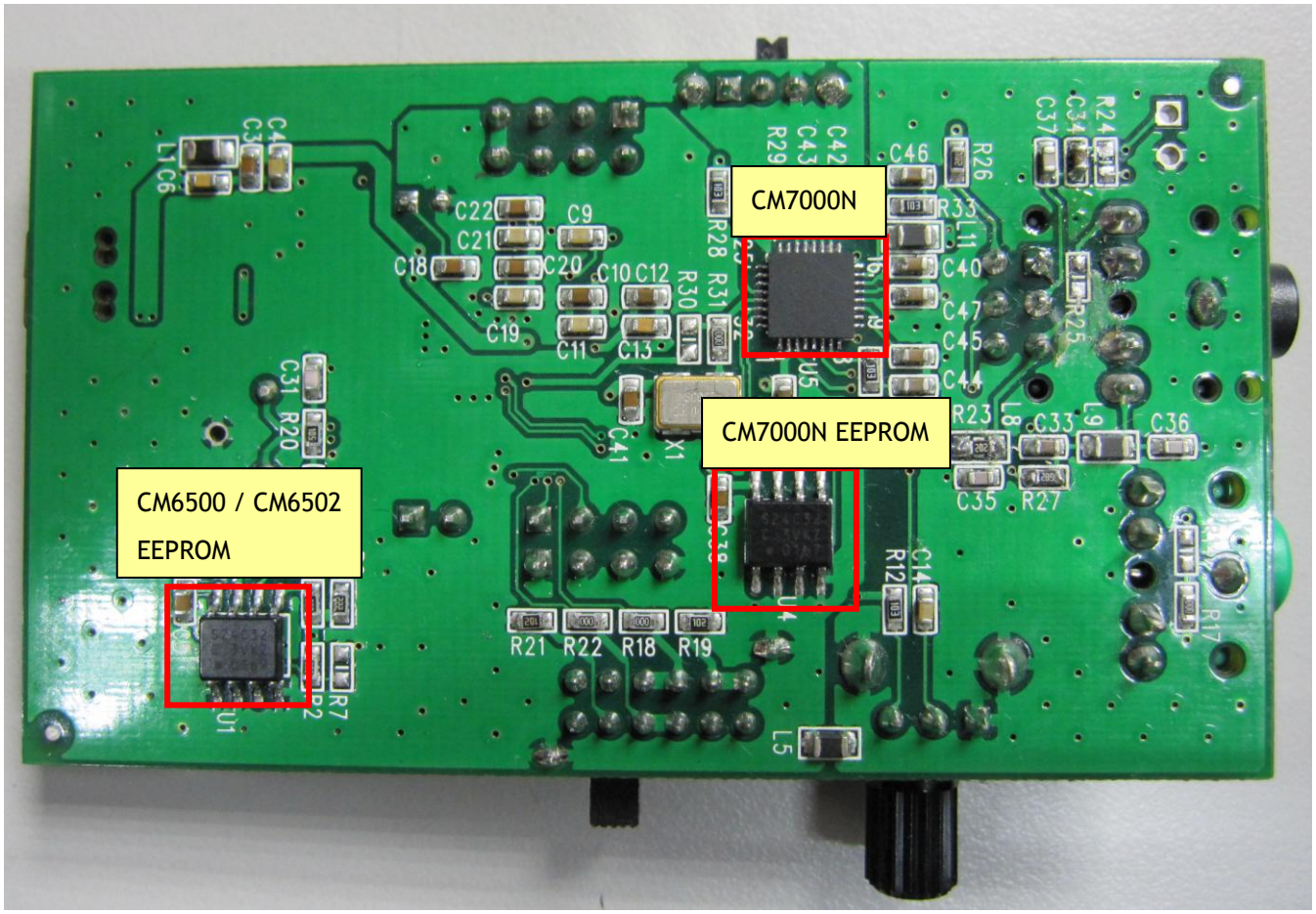
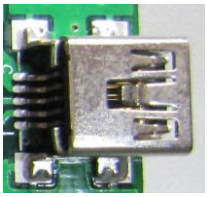


Figure 2

SECTION 2 GETTING STARTED

2.1 Board as USB Audio Device

Connect the EVB to the host by plugging the USB core with a Mini-B type connector, as shown in Figure 3



Mini-B type USB connector

Figure 3 USB connector

2.2 Playback / Recording Functions

2.2.1 Playback Functions

CM6500 / CM6502's playback function includes dual DAC and an earphone driver. The capabilities of playback are listed below.

Device	Audio Out Capability
CM6500 / CM6502 Analog Output	2CH/48K/44.1K/32K/22.05K/16K/11.025K/8KHz sampling rates/ 16bit Resolution (EQ function only on CM6502. When EQ on, only "48/44.1KHz" sampling rates available)

Headphone Output

Headphone out

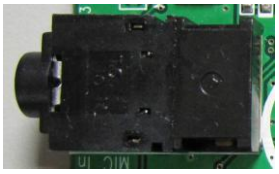
Figure 4 Headphone out jack

2.2.2 Recording Functions

CM6500 / CM6502's recording function supports two-channel multiple sampling rates with 16-bit resolution. The capabilities of recording are listed below.

Device	Audio In Capability
CM6500 / CM6502 Analog Input	2CH/48K/44.1K/32K/22.05K/16K/11.025K/8KHz sampling rates /16bit resolution

Microphone Input



Microphone In

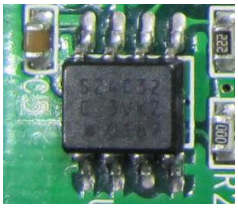
Figure 5 Microphone input jack

2.3 Evaluation Board with peripheral Control

CM6500 / CM6502 embedded external peripheral control and function enable pin.

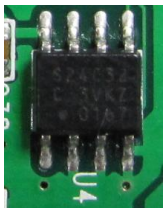
- EEPROM Interface
- HID Buttons
- Microphone In Select Pin
- EQ Select
- LED Indicators
- ENC LED Indicators

2.3.1 EEPROM Interface (U1, U4)



The U1 EEPROM on the EVB for CM6500 / CM6502

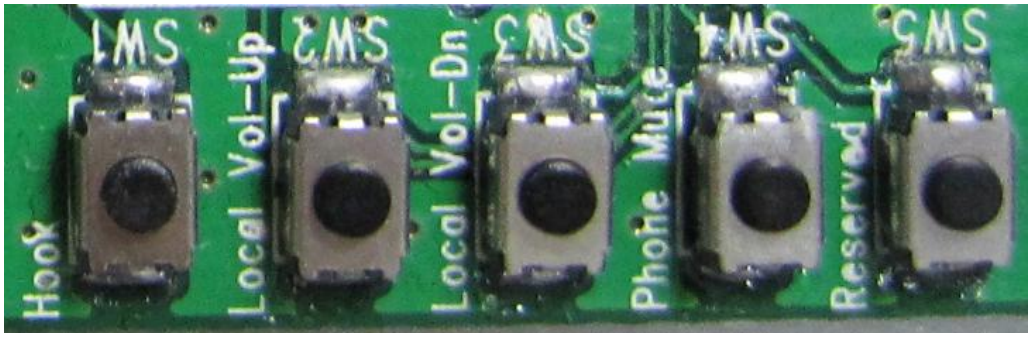
Figure 6 EEPROM Interface



The U4 EEPROM on the EVB for CM7000N

Figure 7 EEPROM Interface

2.3.2 HID Buttons (SW1 ~ SW5)



Symbol	Description
Hook	N.A
Local VoL-Up	Volume Up
Local VoL-Dn	Volume Down
Phone Mute	Microphone Mute
Reserved	Reserved
All the button functions can be replaced by external EEPROM	

2.3.3 HID Pins (J7A1, J7B1)

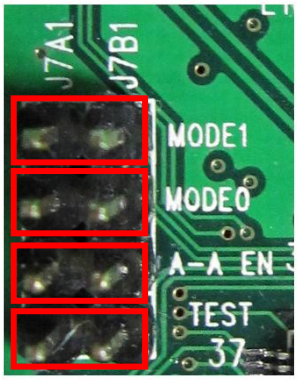


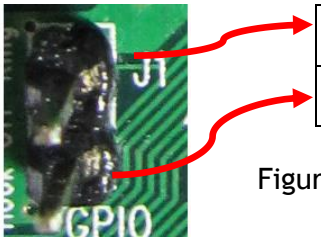
Figure 8 MODE Select Pins

MODE1
MODE0
A-A En
TEST

MODE 0	MODE 1	Description
NC	NC	Docking Mode
Short	NC	Microphone Mode
NC	Short	Speaker Mode
Short	Short	Headset Mode

Symbol	Description
A-A EN	Short the pins A-A function enable.
Test	For IC test.

2.3.5 GPIO Pin (J1)



GPIO
GPIO

Figure 9 GPIO Pins

2.3.4 ENC On Indicators (work with CM7000N for ENC Fouction; D5)

Figure 10 ENC Enable LED

LED	Description(Only work with CM67000N)
ENC On	When Microphone Jack plug In, then function enable.

2.3.6 EQ Selector (SW7), only work in CM6502

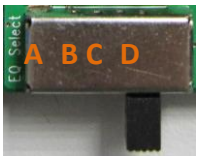


Figure 11 EQ Selector

Selection	Description(Only work on CM6502)
A(11)	Movie
B(01)	Gaming
C(10)	Communication(Voice)
D(00)	Music

2.3.7 LED Indicators (D1 ~ D4)

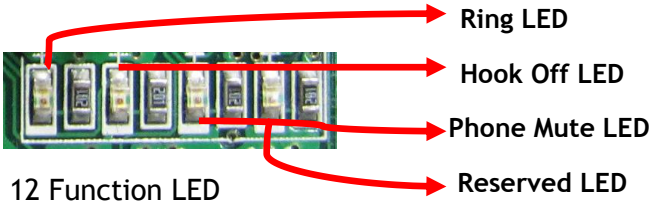


Figure 12 Function LED

LED	Description
Ring LED	Recording Mute indicator
Hook	N.A
Phone Mute LED	N.A
Reserved	Reserved indicator
All the LED can be modified by external EEPROM	

2.3.8 Volume adjuster (VR1), can be used to adjust the volume

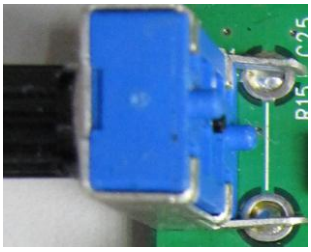
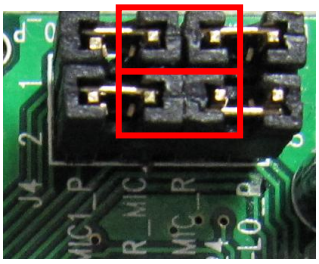


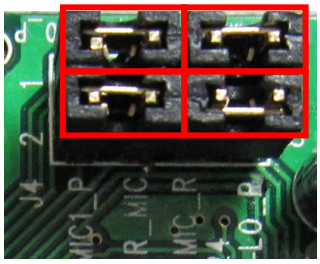
Figure 13 Volume adjuster

VR1	Description
Counterclockwise	N.A
Clockwise	N.A

2.3.9 Record Path Select (J4)



Type A



Type B

Figure 14 Record Path Selector

J4	Description
Type A	CM7000N Bypass
Type B	CM7000N ENC Enable

- Type A need remove U3, C34
- Type B need remove R25

2.3.10 Analog MEMS Microphone (U3)

Figure 15 Analog MEMS Microphone

U3	Description
Analog MEMS Mic	For ENC.