

Future Technology Devices International Datasheet ME812AU-WH50R Display Module



General Purpose Multi Media Controller

1 Introduction

The ME812AU-WH50R is a development module for Bridgetek's FT812, Embedded Video Engine (EVE) graphics controller IC. This module behaves as a USB device, with an FT4222H USB to SPI bridge built on-board so that the module can be accessed from a PC or any other USB host.

The ME812AU-WH50R module includes a 5.0 inch 800*480 TFT LCD panel with resistive touch screen, and an audio amplifier to drive 8Ω speaker.

1.1 Features

The ME812AU-WH50R module utilises the FT812, Bridgetek's 2nd generation EVE chip. Graphic, audio and touch functions of the FT812 can be accessed with the ME812AU-WH50R. For a full list of the FT812's features, refer to the [FT81x datasheet](#).

The ME812AU-WH50R has the following features:

- Ready to use 5 inch WVGA LCD module.
- Supports portrait and landscape display mode.
- Bright backlight LED with dimming.
- Supports resistive touch with pressure sensing.
- Supports mono audio from the FT812 or an external source.
- On board audio amplifier for an external 1W speaker.
- Support USB bus power.
- Support USB high speed connection to PC or other USB host.
- Comes with bezel with four mounting holes for easy system assembly.

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2 Ordering Information

| Part No. | Description |
|---------------|---|
| ME812AU-WH50R | FT812 development module, with FT4222H USB interface, 5.0 inch 800*480 TFT LCD resistive touch panel preinstalled. Black bezel. |
| CleO-SPK1 | Accessory - 8Ω 1W speaker enclosure with connecting wires |
| VA-FC-1M-BKW | Accessory - Flat USB A to Micro B Cable 1M- Black and White |
| VA-FC-1M-BLW | Accessory - Flat USB A to Micro B Cable 1M- Blue and White |
| VA-FC-STYLUS1 | Accessory - Resistive Touch Screen Pen Stylus |

Table 2-1 – Ordering information

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3 Board Interface Description

The ME812AU-WH50R module is intended for direct use into existing applications that require a display. This module is suitable for interfacing with a PC or other USB host.

3.1 Board Profile

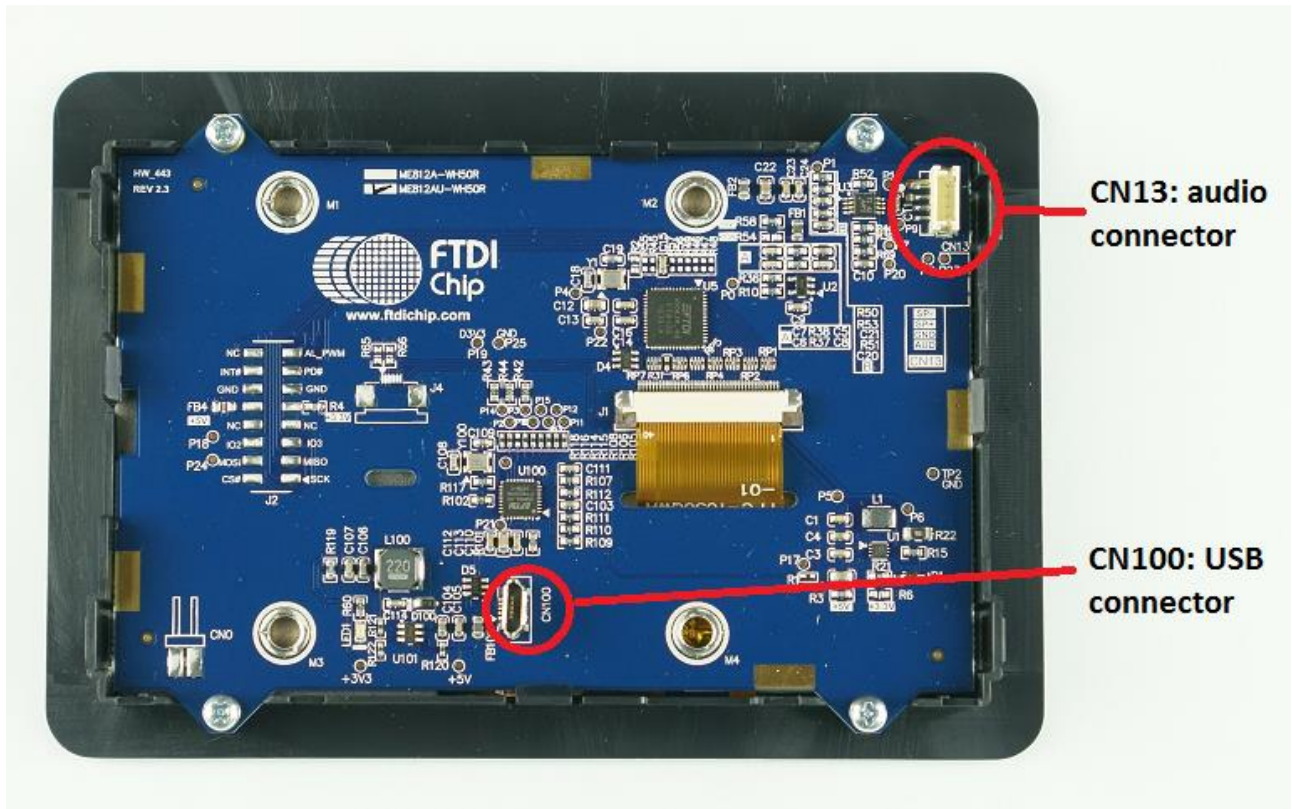


Figure 3-1 – ME812AU-WH50R board bottom view

3.2 CN100- Micro USB receptacle

CN100 is a micro USB connector. When the USB host is connected, the host controls the ME812AU-WH50R module functions through the FT4222H USB-to-SPI bridge.

| Pin No. | Name | Type | Description |
|---------|------|------|---------------------------|
| 1 | VBUS | P | USB VBUS +5V power supply |
| 2 | D- | I/O | USB D- data line |
| 3 | D+ | I/O | USB D+ data line |
| 4 | NC | - | No connection |
| 5 | GND | P | Ground |

Table 3-1 – CN100 pin description

3.3 CN13- Audio connector

The ME812AU-WH50R supports a mono speaker output through CN13. A PWM audio signal from the FT812 goes through a 3-stage RC filter and the audio amplifier, to drive into the 8Ω speaker if connected. Maximum output power to the speaker is 1 Watt. A readymade speaker module (CleO-SPR1) is available from Bridgetek.

An alternative, mono line-in audio input is also provided on CN13. Users can drive their own audio source in to the on board power amplifier.

| Pin No. | Name | Type | Description |
|---------|--------|------|---------------------------|
| 1 | SP- | O | 8Ω speaker minus terminal |
| 2 | SP+ | O | 8Ω speaker plus terminal |
| 3 | AGND | P | Audio ground |
| 4 | AUD_IN | I | Audio Line IN |

Table 3-2 – CN13 pin description

4 Specifications

4.1 Electrical Specification

| Parameter | Description | Minimum | Typical | Maximum | Units | Notes |
|-----------|------------------------|---------|---------|---------|-------|---|
| VCC | VBUS supply voltage | 4.5 | 5.0 | 5.5 | V | USB power |
| Icc1 | VBUS operating current | - | 400 | - | mA | With LCD and Backlight LED on |
| Icc2 | VBUS operating current | - | 800 | - | mA | With 1W speaker (assumes user has powered the module from a USB charging hub or USB3.0 port) |
| T | Operating temperature | -20 | - | +70 | °C | |

Table 4-1 - Operating Voltage and Current

4.2 Display Specification

| Item | Spec | Units | Notes |
|---------------------|------------------------|-------|-------------------|
| LCD Type | TFT active matrix | - | |
| Display Colours | 16.7M | - | |
| Display active area | 108.0(H) * 64.8(V) | mm | 5.0 inch diagonal |
| Number of Pixels | 800(RGB)*480 | dots | |
| Pixel pitch | 0.135(H) * 0.135(V) | mm | |
| LED numbers | 18 white LEDs | - | |
| Touch screen | 4-wire resistive touch | - | |

Table 4-2 - LCD and Touch Information

4.3 Optical Specification

| | | | | | | |
|-------------------------------|----------------|------------------------------------|------------------|------|---|-------------------|
| Brightness (With TP) | Bp | $\theta=0^\circ$ | | 400 | - | Cd/m ² |
| Uniformity | ΔBp | $\Phi=0^\circ$ | 75 | - | - | % |
| Viewing Angle | 3:00 | Cr \geq 10 | - | 60 | - | Deg |
| | 6:00 | | - | 45 | - | |
| | 9:00 | | - | 60 | - | |
| | 12:00 | | - | 60 | - | |
| Contrast Ratio | Cr | $\theta=0^\circ$ $\Phi=0^\circ$ | 300 | 500 | | - |
| Response Time | T _r | | - | 10 | - | ms |
| | T _f | | - | 10 | - | ms |
| Color of CIE Coordinate | W | x | | 0.28 | | - |
| | | y | | 0.33 | | - |
| | R | x | | 0.51 | | - |
| | | y | | 0.34 | | - |
| | G | x | $\theta=0^\circ$ | 0.31 | | - |
| | | y | $\Phi=0^\circ$ | 0.56 | | - |
| | B | x | | 0.15 | | - |
| | | y | | 0.14 | | - |
| NTSC Ratio | S | | 50 | 60 | - | % |

Table 4-3 - 5.0" TFT Optical specification

Note: The definition of viewing angle: refer to the figures below (if looking at the reverse side of the module the FTDI logo on the PCB is facing down).

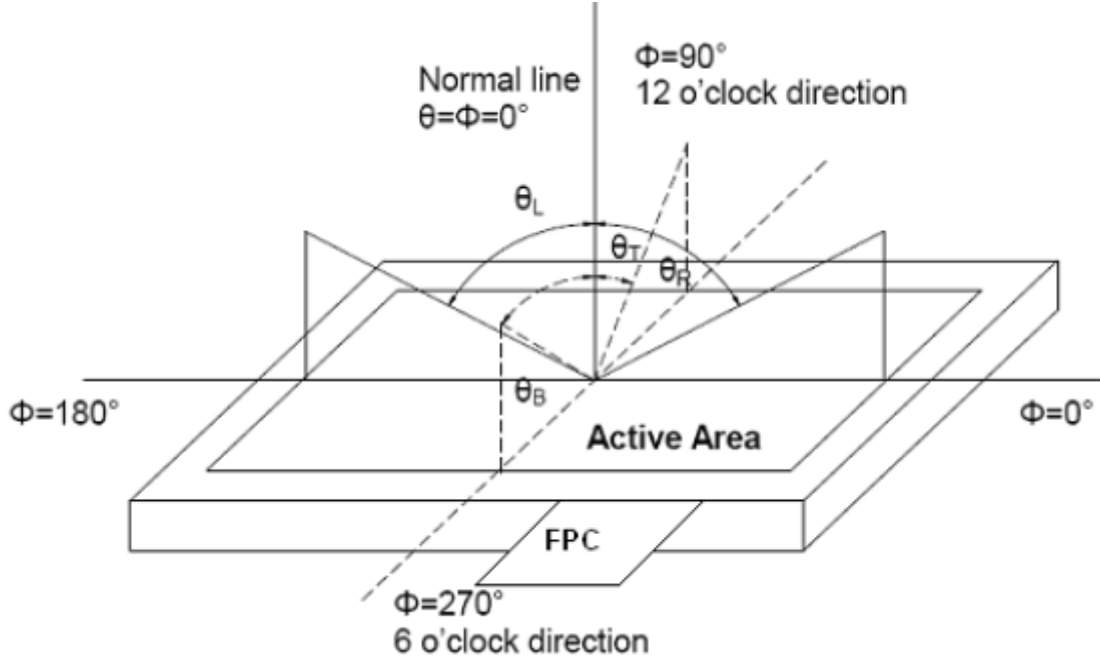


Figure 4-1 – Viewing Angle definition



Figure 4-2 – Module orientation for viewing angle

5 Board Schematics

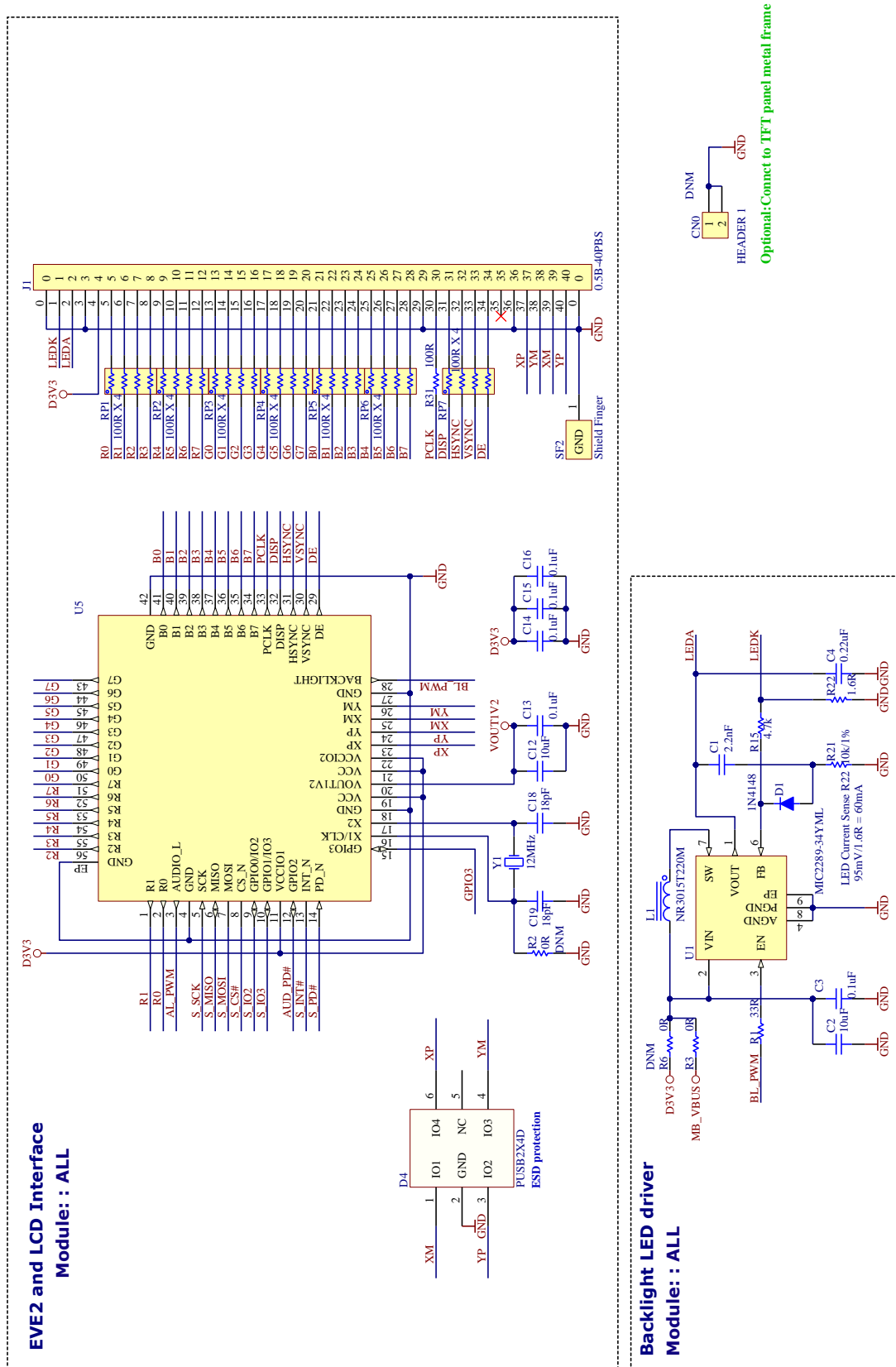


Figure 5-1 – Board Schematic (page 1)

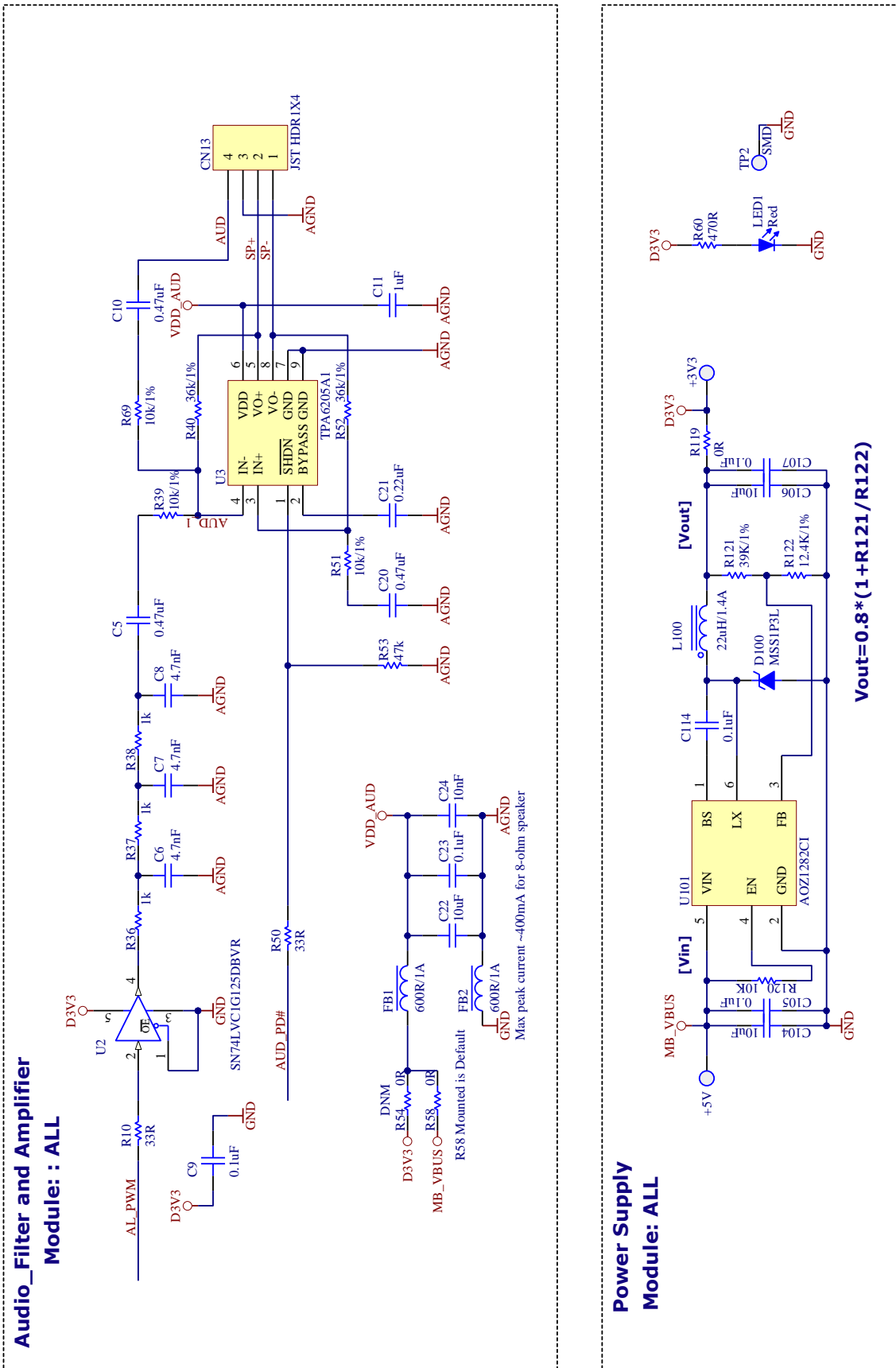


Figure 5-2 – Board Schematic (page 2)

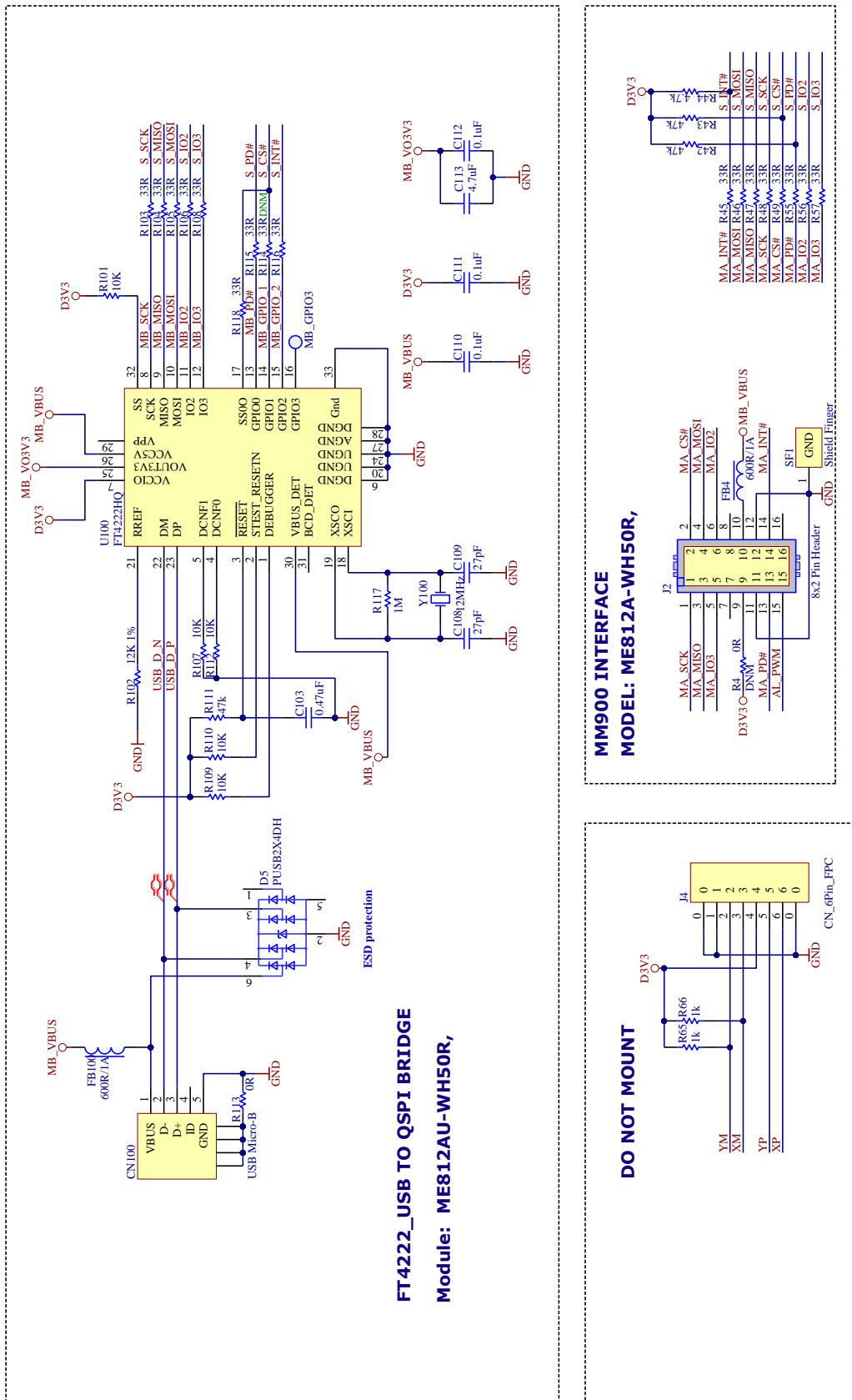


Figure 5-3 – Board Schematic (page 3)

6 Mechanical Dimensions

6.1 Module Dimensions

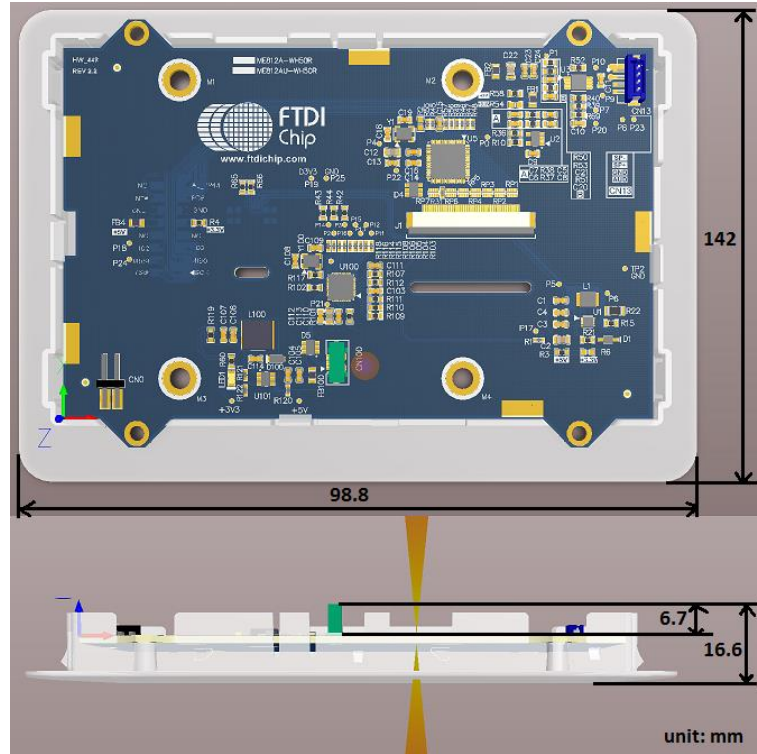


Figure 6-1 – Module Dimensions

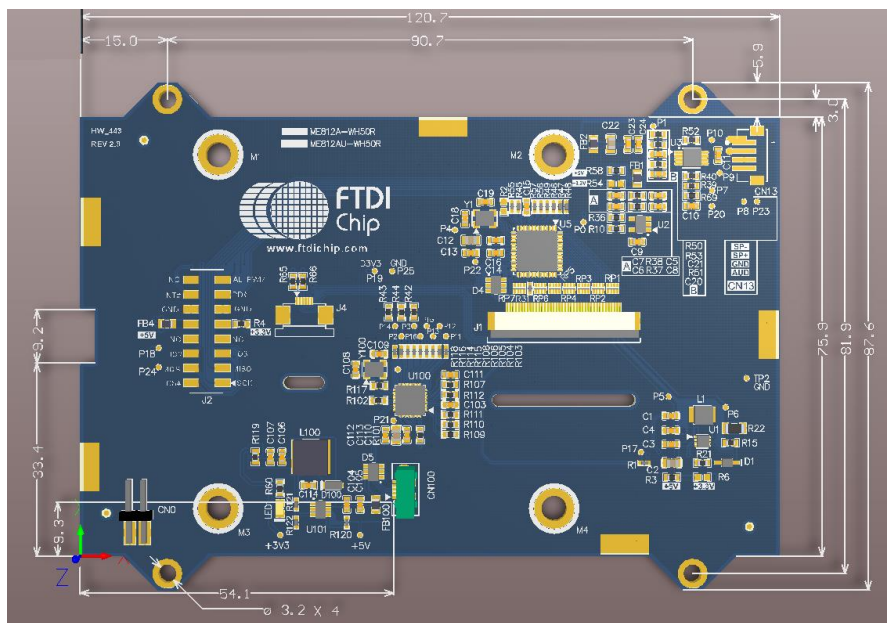


Figure 6-2 – PCB Dimensions

6.2 Bezel Mechanical Drawing

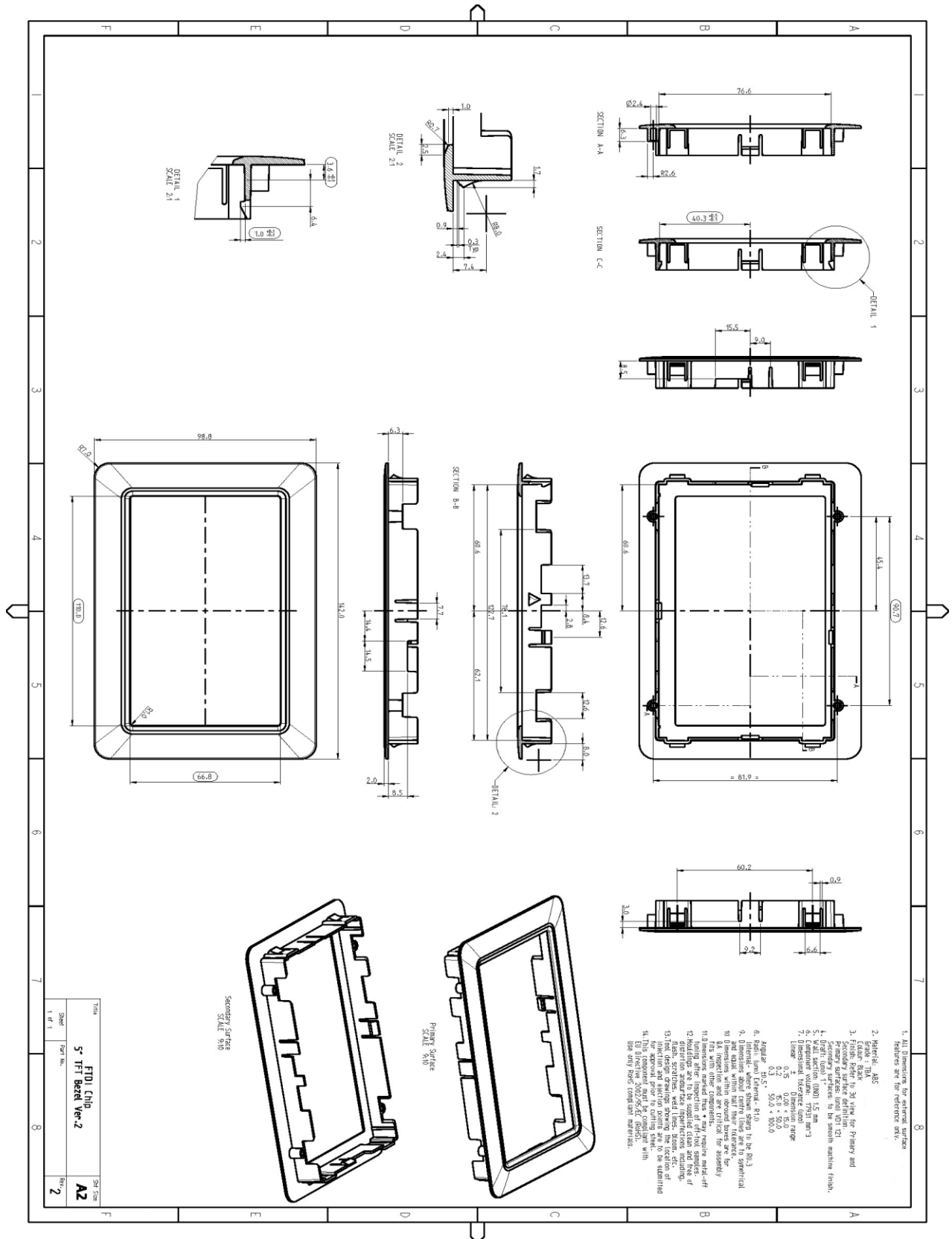


Figure 6-3 – Bezel dimensions

7 Getting Started

7.1 Hardware Setup

Error! Reference source not found. shows the ME812AU-WH50R module connected to the PC USB host port or self-powered hub port through a USB cable (suggest FTDI accessory VA-FC-1M-BKW or VA-FC-1M-BLW). The 1W speaker is optional (suggest Bridgetek accessory CleO-SPK1). Note that if the 1W speaker is used, the USB power shall be able to supply at least 900mA current.

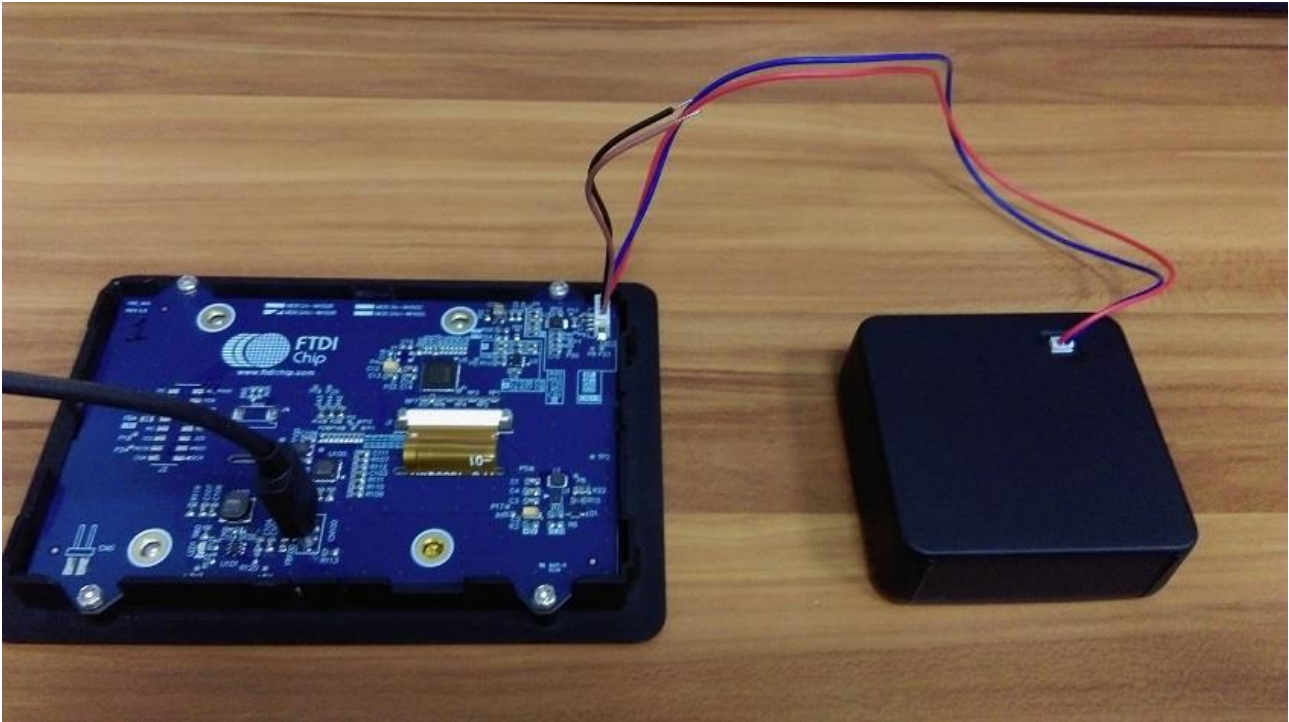


Figure 7-1 – ME812AU-WH50R connects to USB host

7.2 Software Setup

- Download the sample application for ME812AU-WH50R from the Bridgetek website at <http://brtchip.com/eve-projects/>
- Install the FT4222H driver on a Windows PC. (downloadable at <http://www.ftdichip.com/Products/ICs/FT4222H.html>)
- Launch the demo application from the PC.

The sample applications will demonstrate display, touch and audio functions of the ME812AU-WH50R module. Refer to [AN 418 ME81XAU SampleApp PC Introduction](#) for more details.

8 Contact Information

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Appendix A - References

Document References

[DS_FT81x datasheet](#)

[FT81x Series Programmer Guide](#)

[FT4222H Datasheet](#)

[FT81x Sample Applications](#)

Acronyms and Abbreviations

| Terms | Description |
|-------|-----------------------------|
| EVE | Embedded Video Engine |
| IC | Integrated Circuit |
| LCD | Liquid Crystal Display |
| LED | Light Emitting Diode |
| MCU | Micro-Controller Unit |
| PC | Personal Computer |
| PCB | Printed Circuit Board |
| PWM | Pulse Width Modulation |
| SPI | Serial Peripheral Interface |
| TFT | Thin Film Transistor |
| TP | Touch Panel |
| USB | Universal Serial Bus |

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Appendix C – Revision History

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Document Feedback: [Send Feedback](#)

| Revision | Changes | Date |
|----------|-----------------|------------|
| 1.0 | Initial Release | 2017-02-21 |

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