

# 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 2<sup>nd</sup> 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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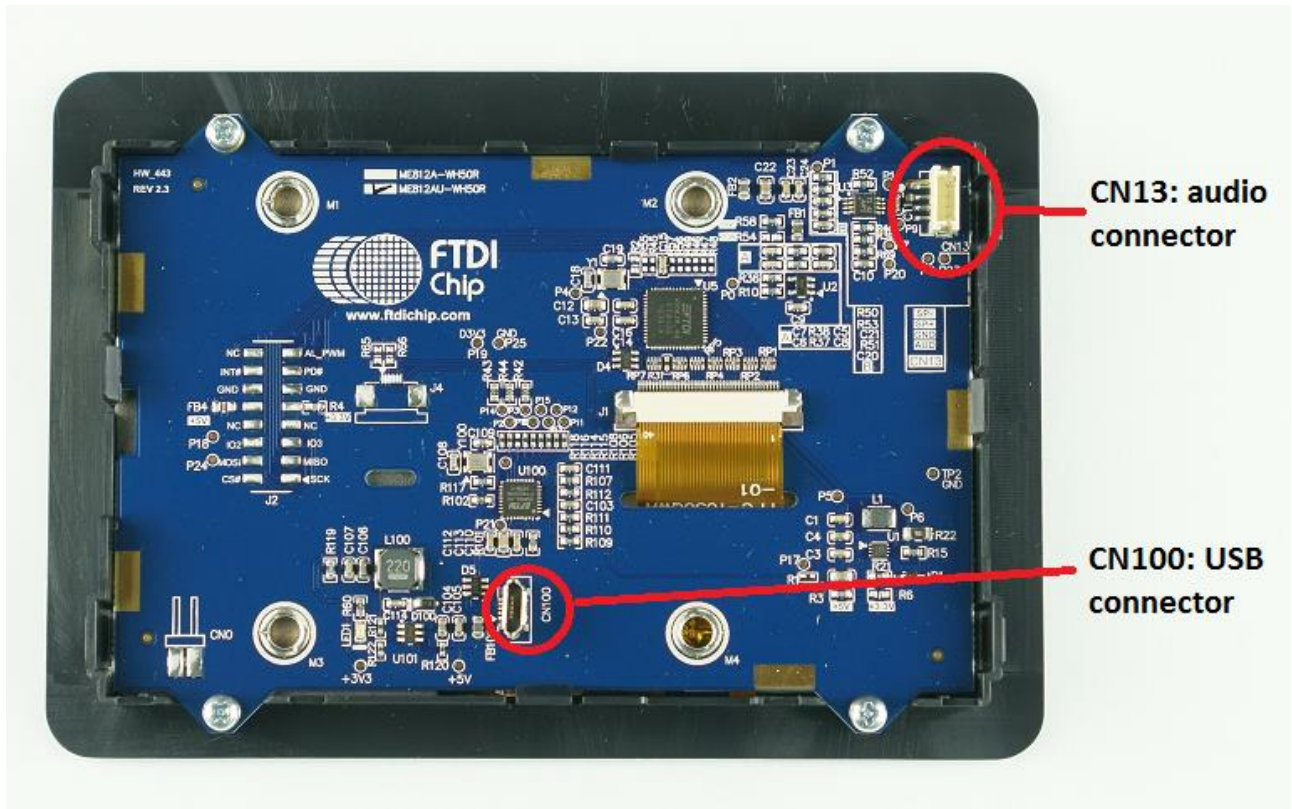
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### 3 Board Interface Description

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 <sup>2</sup>
Uniformity	$\Delta Bp$	$\Phi=0^\circ$	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 <sub>r</sub>		-	10	-	ms
	T <sub>f</sub>		-	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).

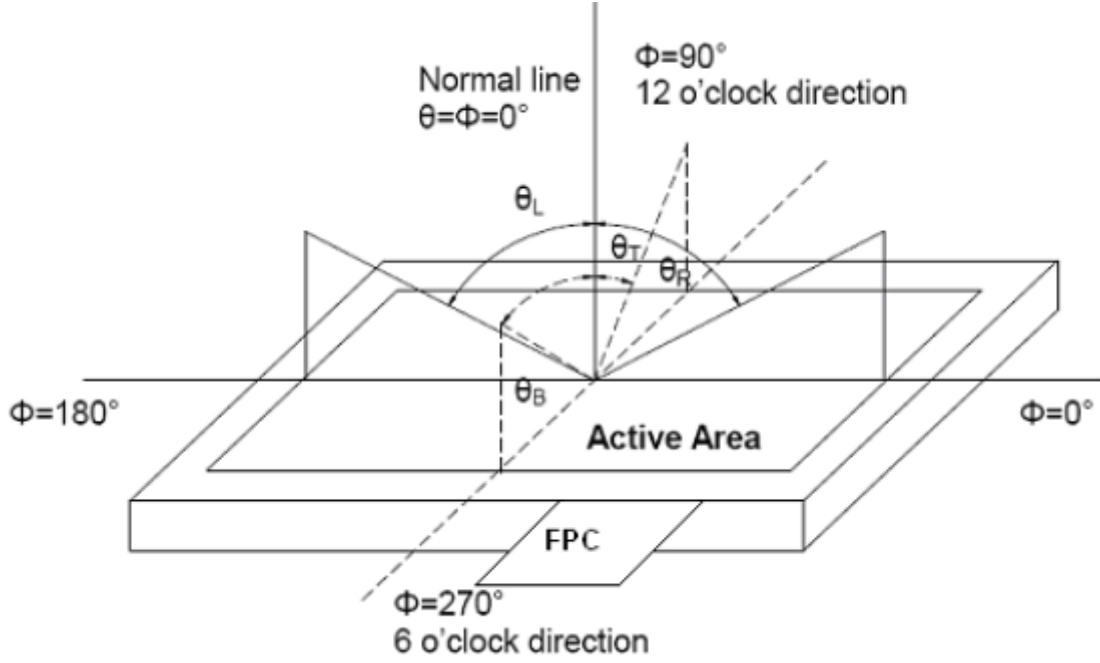


Figure 4-1 – Viewing Angle definition

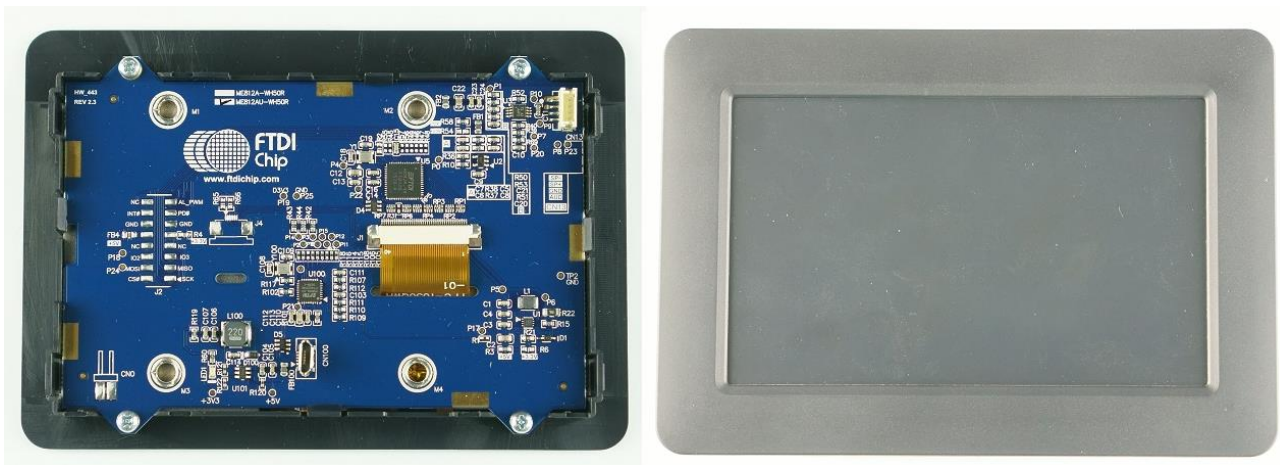
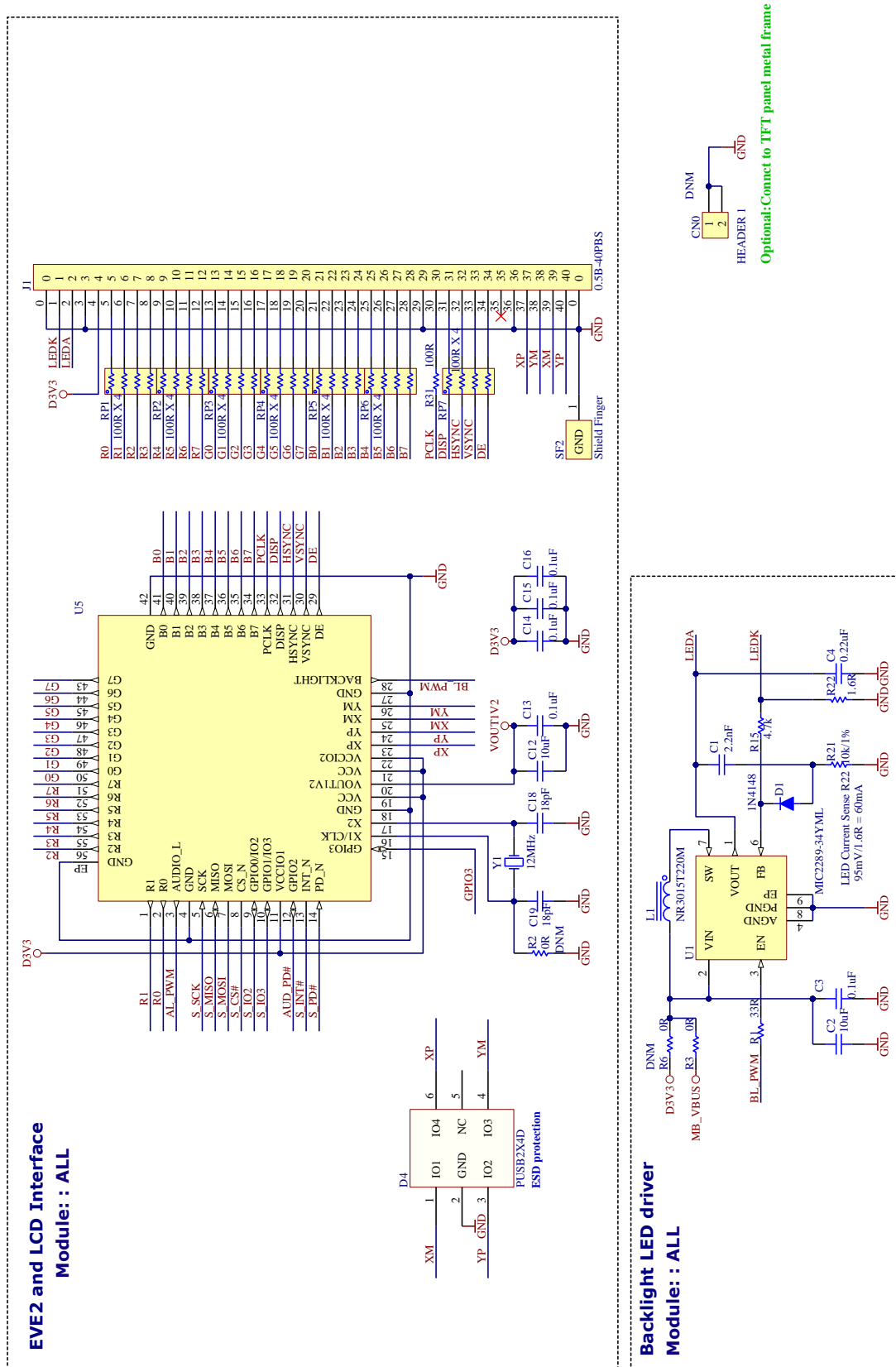


Figure 4-2 – Module orientation for viewing angle



## 5 Board Schematics



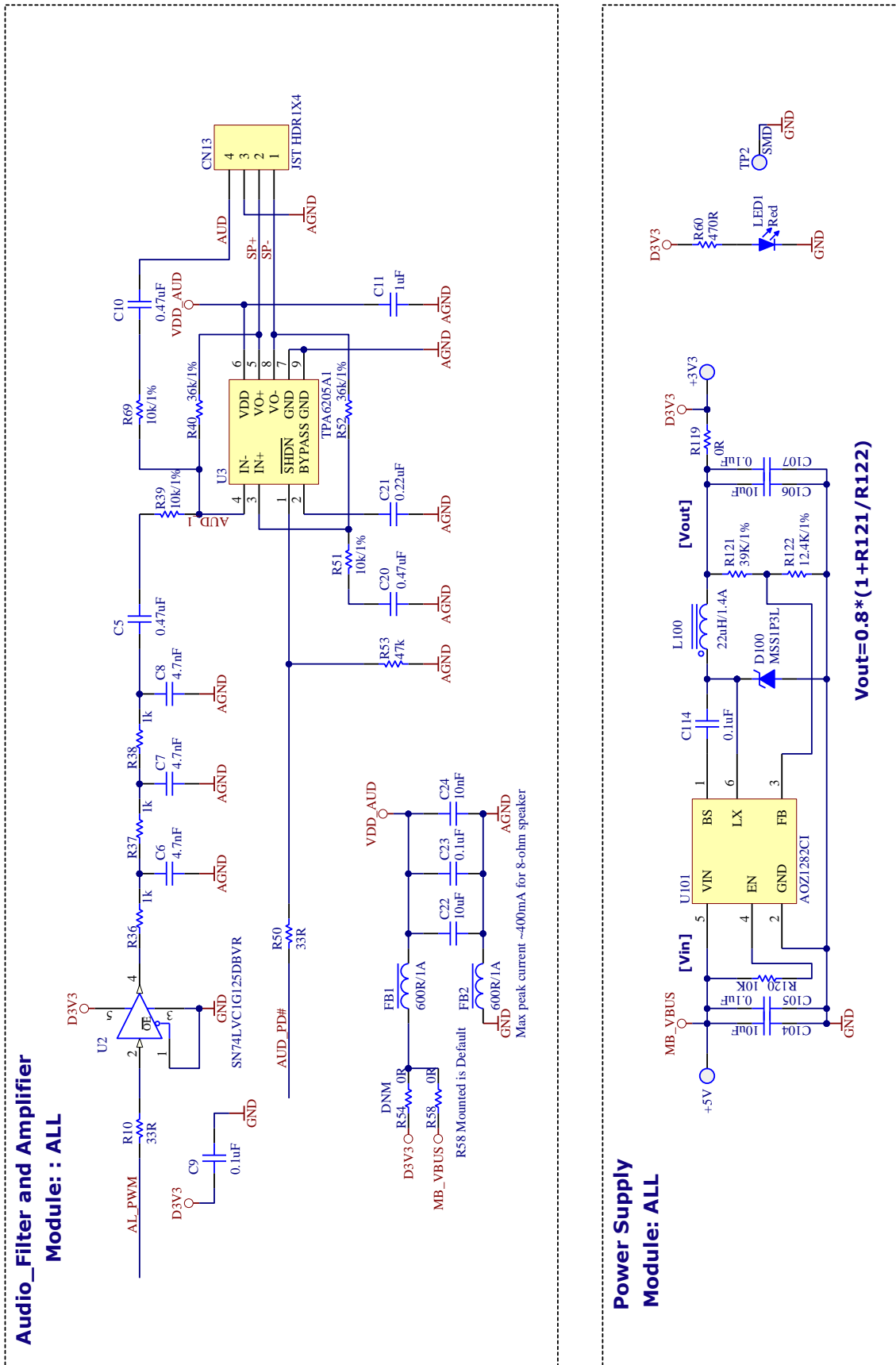


Figure 5-2 – Board Schematic (page 2)

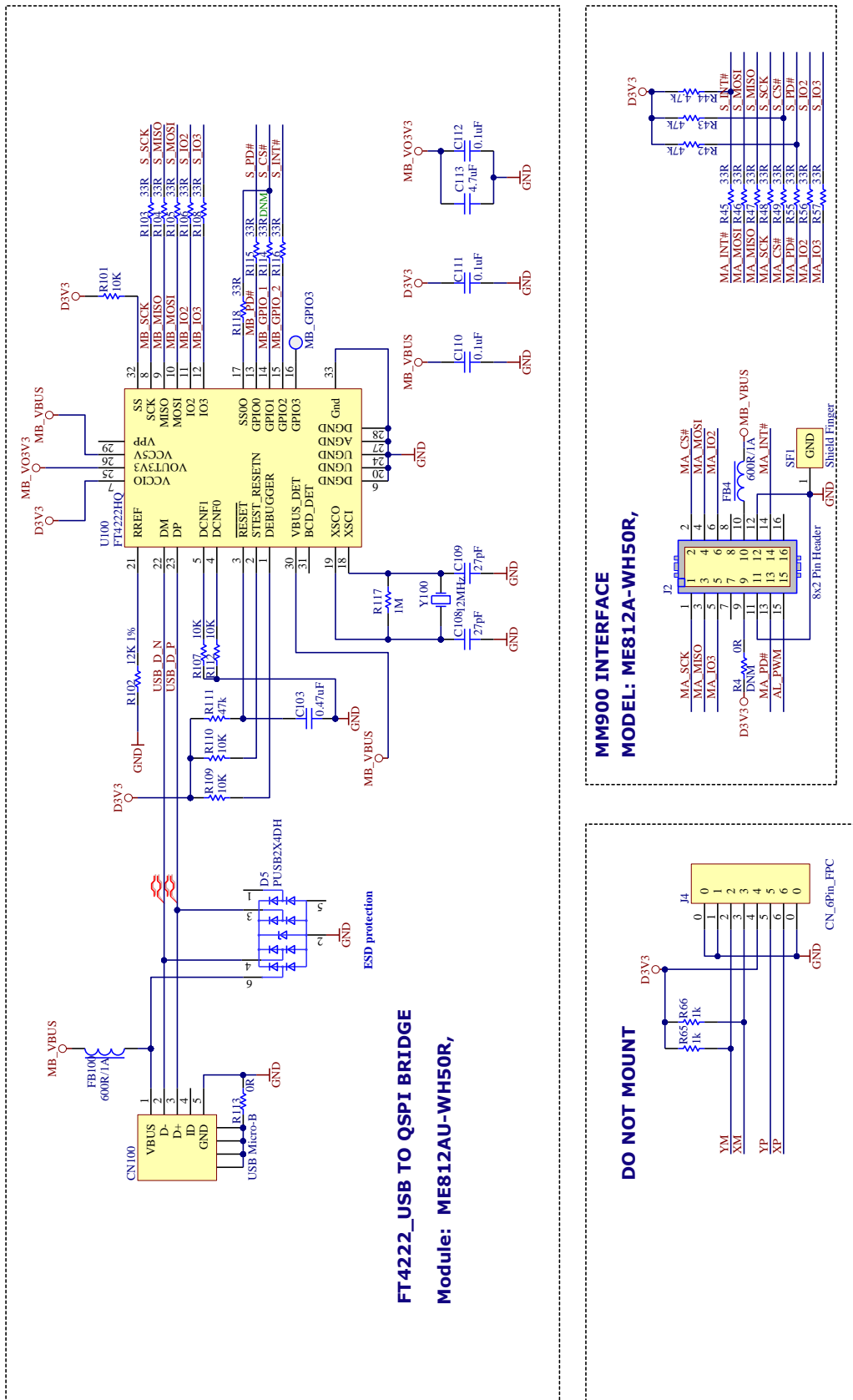
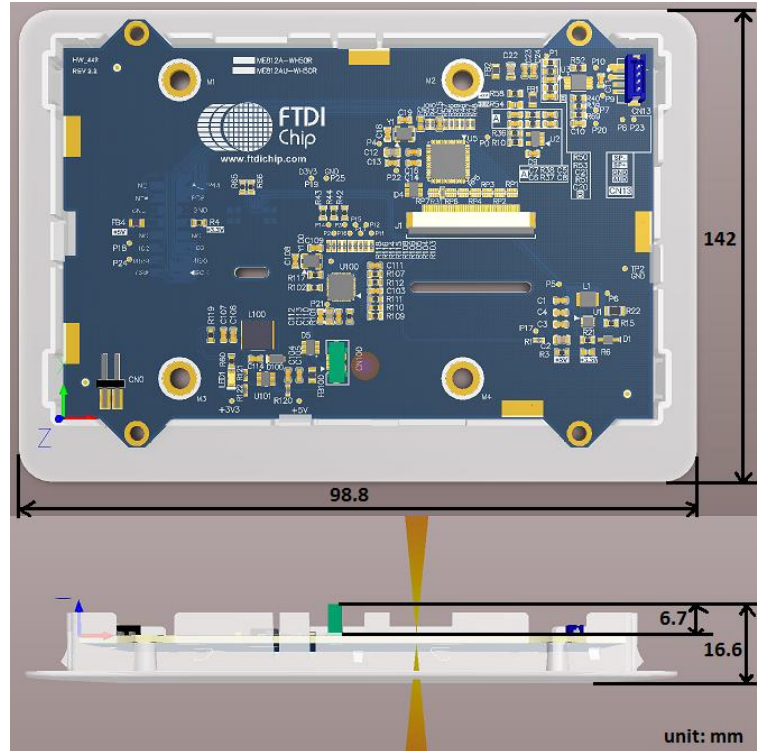


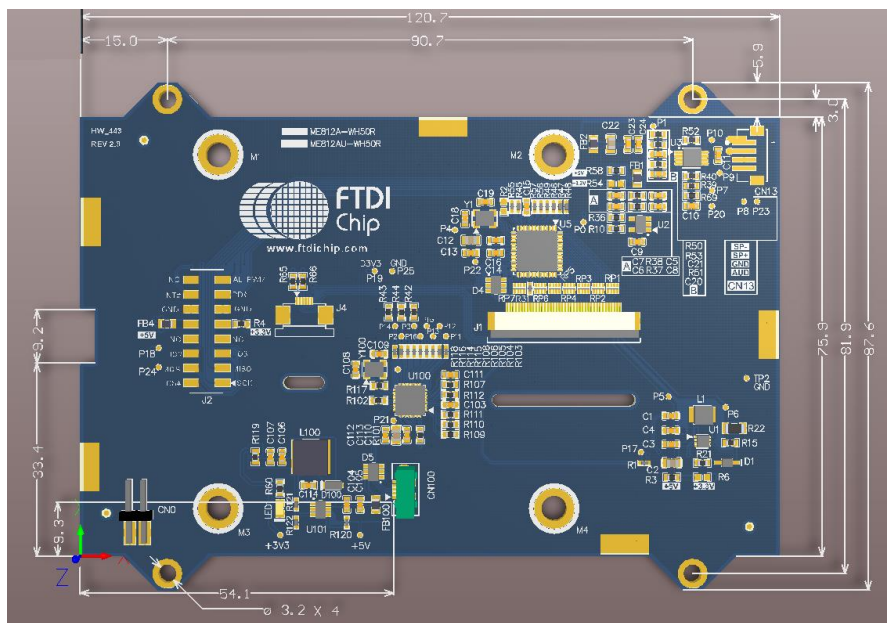
Figure 5-3 – Board Schematic (page 3)

## 6 Mechanical Dimensions

### 6.1 Module Dimensions



**Figure 6-1 – Module Dimensions**



**Figure 6-2 – PCB Dimensions**

## 6.2 Bezel Mechanical Drawing

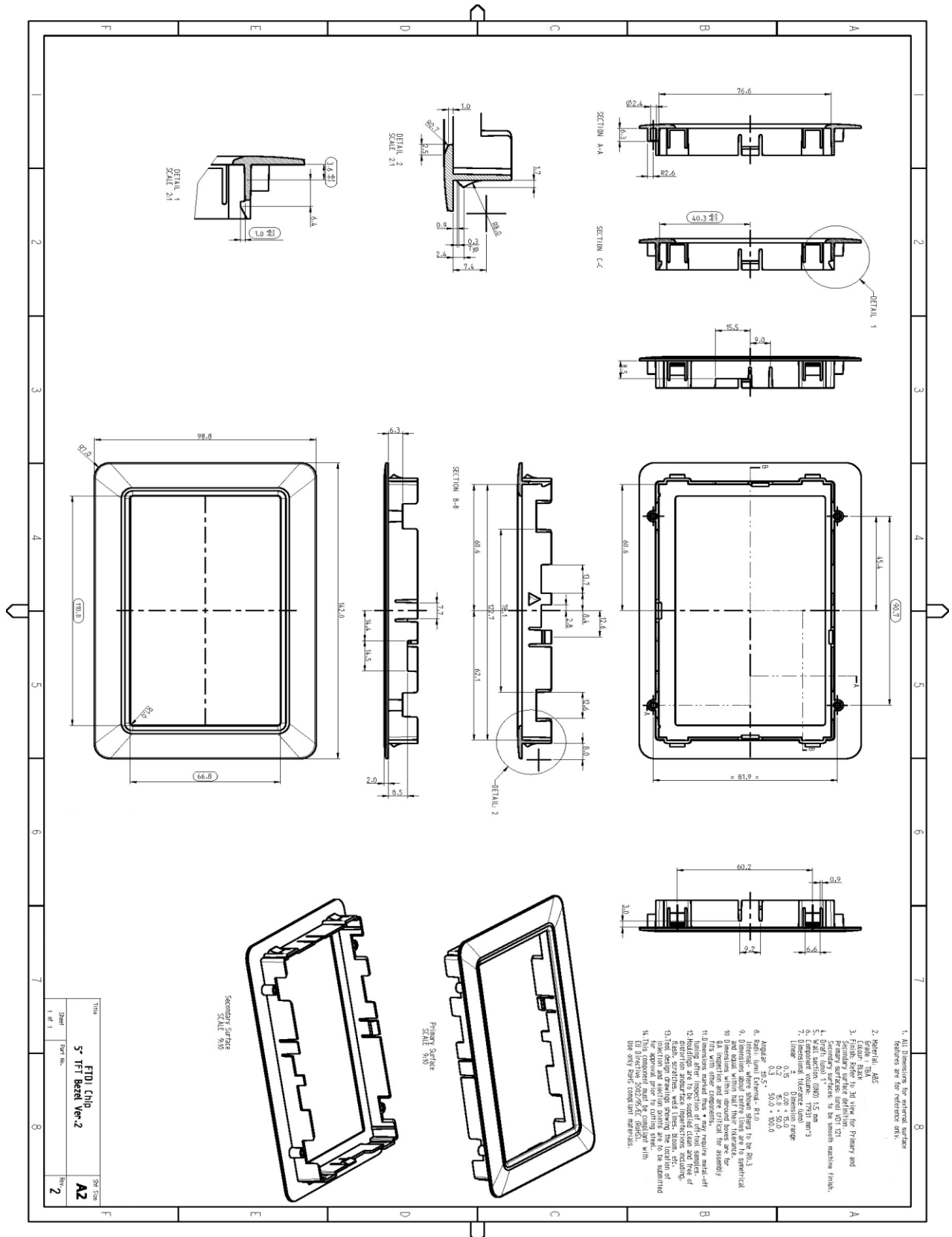
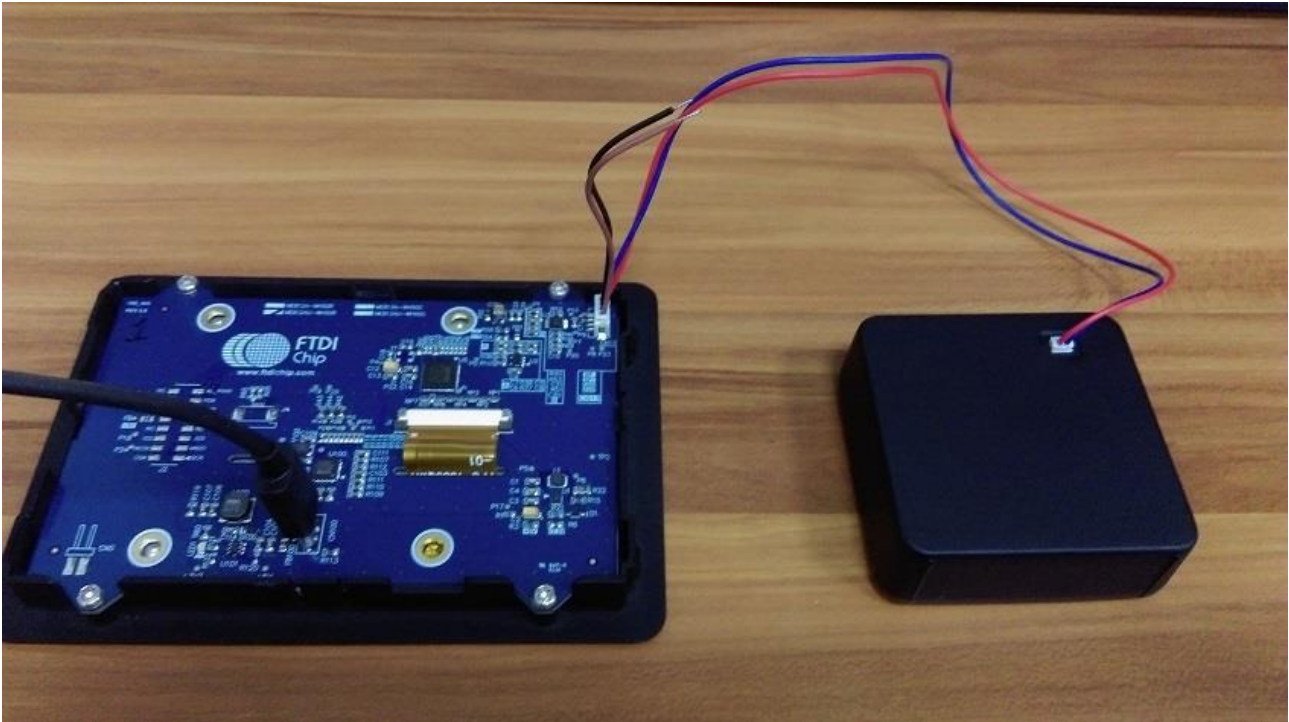


Figure 6-3 – Bezel dimensions

## 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.



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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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