GOWARRIOR

GoDroid

GoDroid

Application Notes

USB ADB Debugging

v1.0

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Preface

Overview

This manual provides guidance on how to use GoDroid USB ADB debugger, including USB ADB related settings and some precautions. This manual is organized into the following chapters

- **Chapter 1: USB Debugging and ADB Switch**

This chapter describes how to set GoDroid USB ADB Debugger and ADB switch.

- **Chapter 2: Usage of USB ADB in App Development**

This chapter briefly describes how to run app which is developed by Android Studio on Tiger Board over USB ADB.

- **Chapter 3: Important Notes**

This chapter lists important precautions that need to be taken when using USB ADB Debugger.

- **Chapter 4: FAQ**

This chapter lists frequently asked questions and answers.

Audience

This manual is applicable for the users who wish to setup USB ADB on the TIGER Board. Readers of this manual are assumed to have certain knowledge and background on Android embedded development.

Applicable Products

This manual is applicable for the GoWarrior TIGER Board.

Reference Documents

N/A

Conventions

Typographical Conventions

Item	Format
codes, keyboard input commands, file names, equations, and math	Courier New, Size 10.5
Variables, code variables, and code comments	*Courier New, Size, Italic*
Menu item, buttons, tool names	Ebrima, Size 10.5, Bold e.g. Select USB Debugging
Screens, windows, dialog boxes, and tabs	**Ebrima, Size 10.5, Bold** **Enclosed in double quotation marks** **e.g. Open the "Debug Configuration" dialog box**

Table 1. Typographical Conventions

Symbol Conventions

Item	Description
Caution	Indicates a potential hazard or unsafe practice that, if not avoided, could result in data loss, device performance degradation, or other unpredictable results.
Note	Indicates additional and supplemental information for the main contents.
Tip	Indicates a suggestion that may help you solve a problem or save your time.

Table 2. Symbol Conventions

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For questions regarding GoWarrior, contact our support team at the email listed below:

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1 USB Debugging and ADB Switch

The information about USB driver installation and commonly used commands of USB ADB is described as follows. Please strictly follow the instructions.

For method of using Ethernet ADB, please refer to "*GoWarrior_GoDroid_Developer Guide*". These contents will not be described again in this manual.

1.1 ADB over USB on Windows Machine

ADB Debugger is opened by default, USB ADB Drivers need to be installed on Windows PC to recognize the TIGER Board before using this function is used. Please download USB ADB Driver from Github as follows.

```
git clone git@github.com:GoWarrior/tools.git
```

`usb_driver.rar` can be found in this Git repository, please unzip it to HDD firstly. The directory of the driver is as follows.

Note: The driver works well on Windows7 32 bit/64 bit.

```
amd64

i386

androidwinusb86.cat

androidwinusba64.cat

android_winusb.inf

source.properties
```

1.1.1 USB ADB Installation

The steps are as follows:

1. Connect a USB cable between USB Port 0 on the board as Figure 1 and the USB port on host PC. Your computer will prompt you to insert a new device. You need to install the driver.

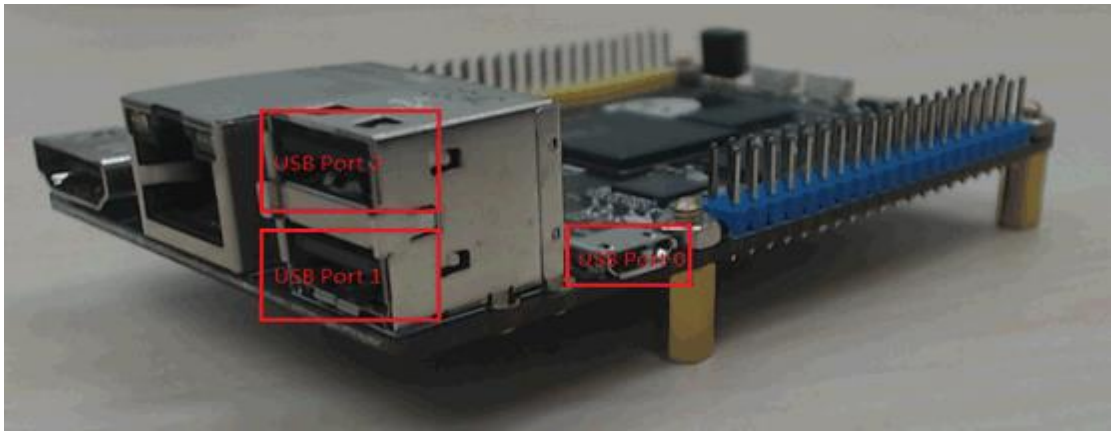

Figure 1. USB Port 0 on the TIGER Board

2. Open "**Device Manager->Other devices**" on PC, then the TIGER Board device will be shown as Figure 2. Click TIGER Board with Right Click, and select "**Update Device Software**".

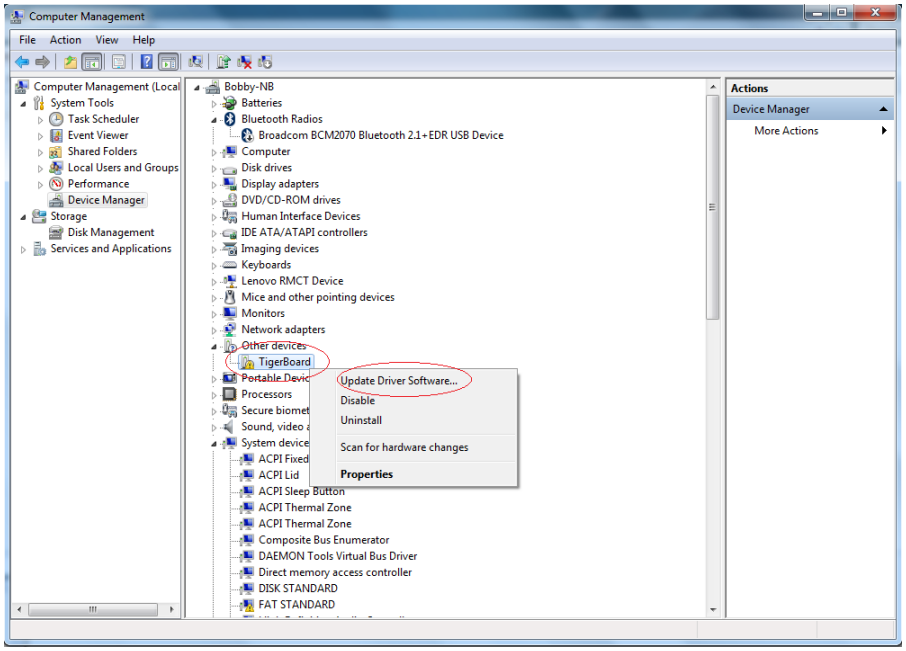

Figure 2. USB Driver Install – Step 2

3. Select "**Browser my computer for driver software**" in the interface as Figure 3.

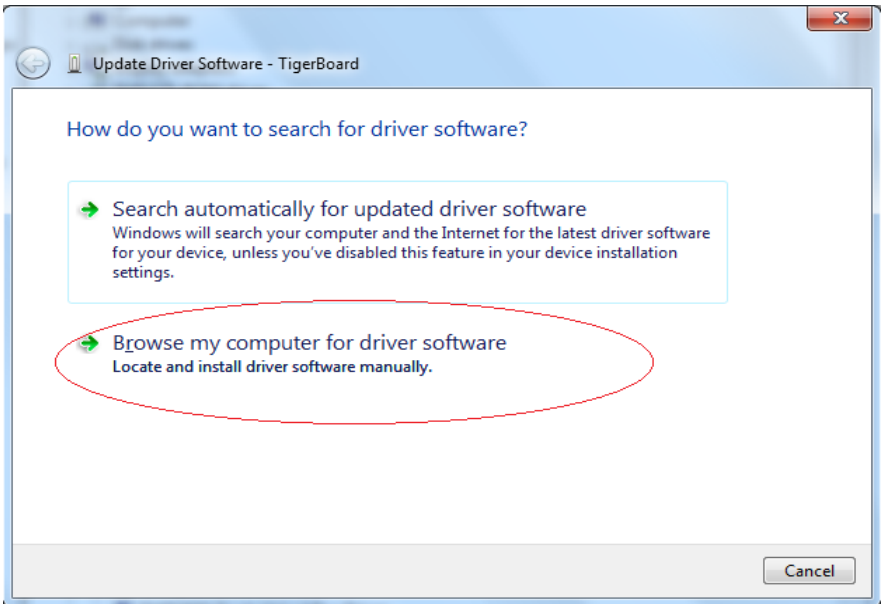

Figure 3. USB Driver Install – Step 3

4. Select "**Let me pick from a list of device drivers on my computer**" in the interface as Figure 4.

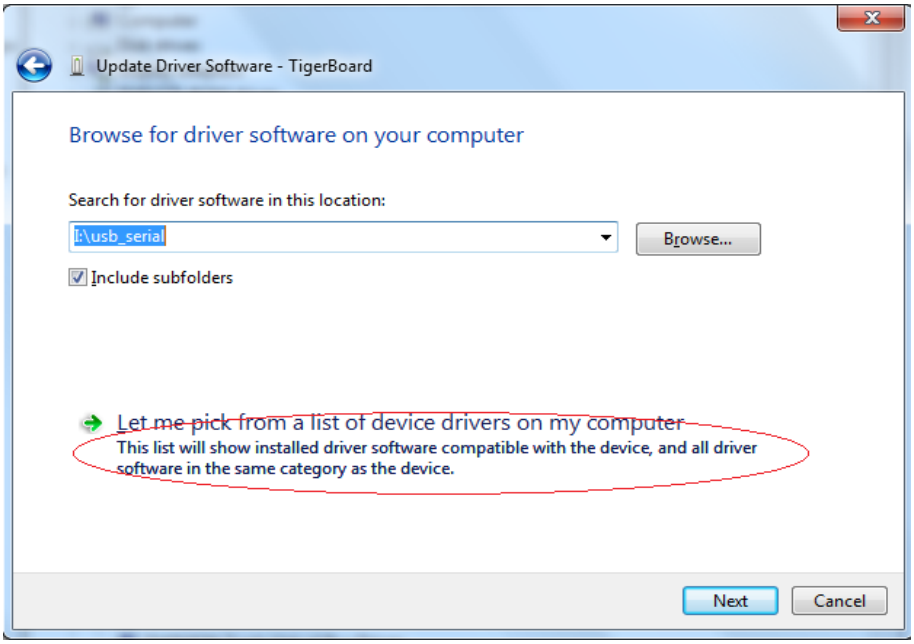

Figure 4. USB Driver Install – Step 4

5. Click "**Next**" in the interface as Figure 5.

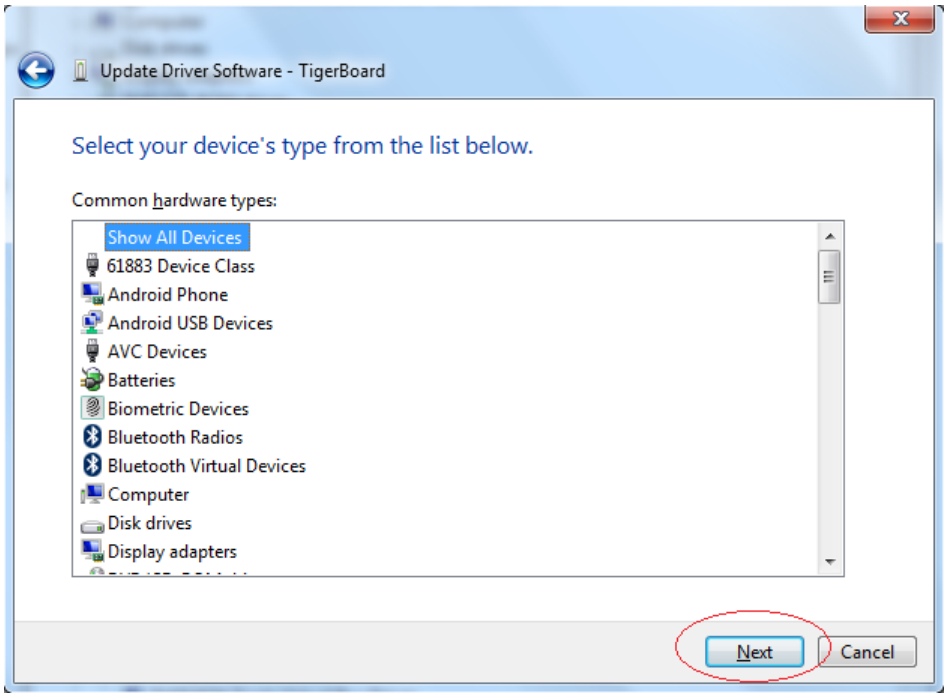

Figure 5. USB Driver Install – Step 5

6. Click "**Have disk**" in the interface as Figure 6.

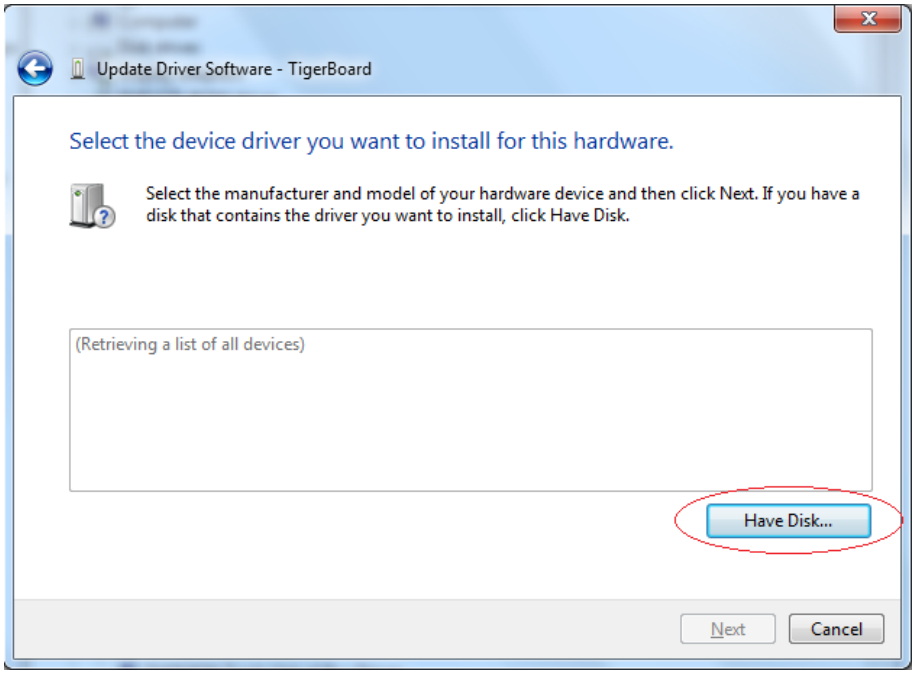

Figure 6. USB Driver Install – Step 6

7. Click "**Browser**" in the interface as Figure 7.

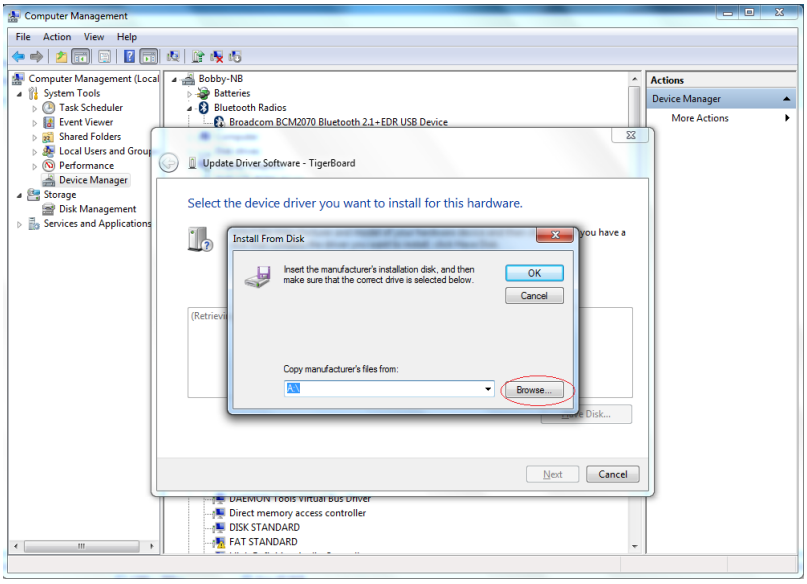

Figure 7. USB Driver Install – Step 7

8. Select "**android_winusb.inf**" in the usb_driver in the interface as Figure 8.

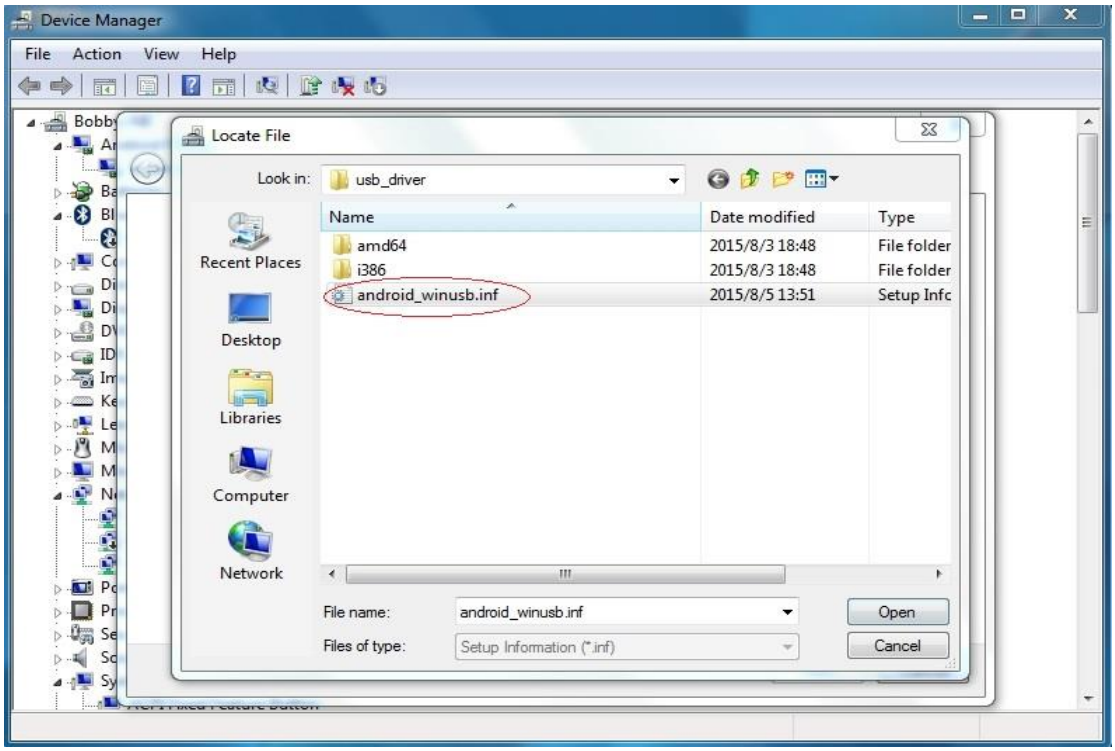

Figure 8. USB Driver Install – Step 8

9. Click "**Next**" in the interface as Figure 9.

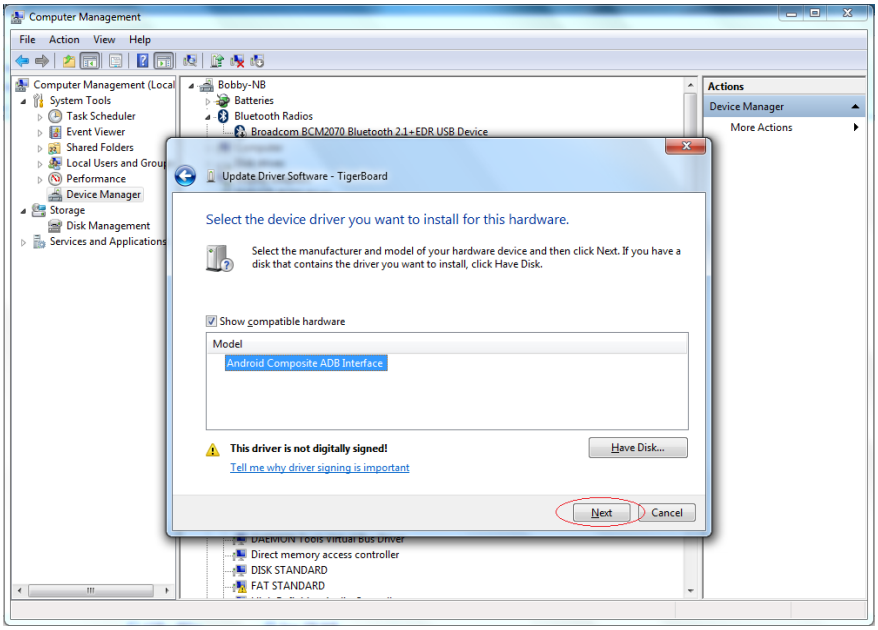

Figure 9. USB Driver Install – Step 9

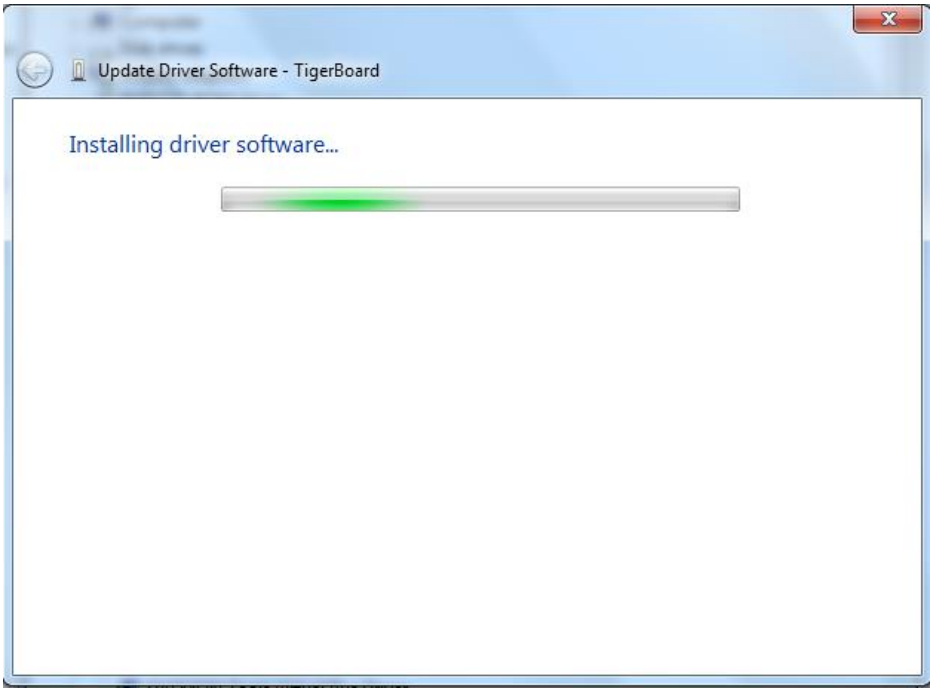

Figure 10. USB Driver Install – Step 9

10. If Figure 11 is shown, click "**Install this driver software anyway**". Then wait a few minutes, the driver is installed successfully.

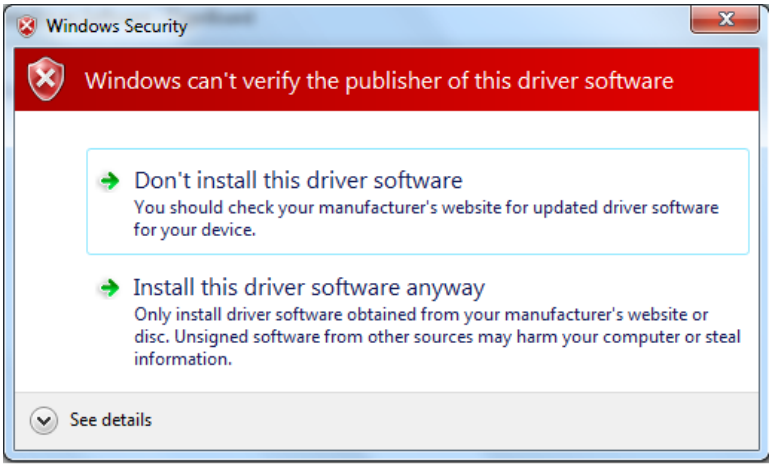

Figure 11. USB Driver Install – Step 10

11. The Android Composite ADB Interface will be added in the **Device Manager** when driver is installed, then USB ADB of the TIGER Board is worked.

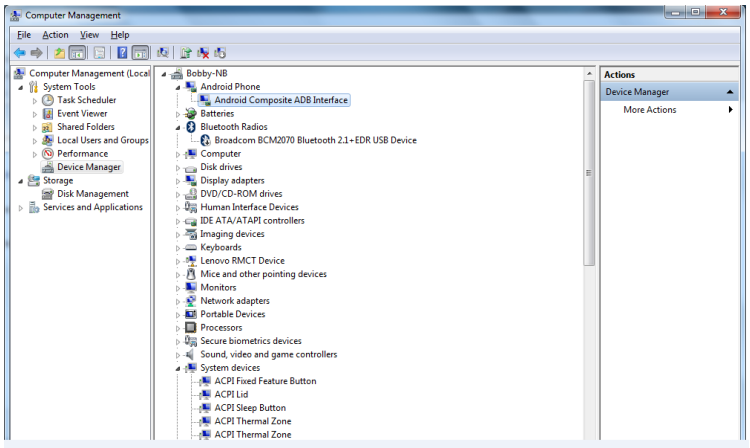

Figure 12. USB Driver Install – Step 11

1.1.2 ADB Tools Usage

The ADB tool is a part of Android SDK package. For an overview of how to install and set up the Android SDK, please refer to the setup instructions in following link: *http://developer.android.com/sdk/index.html*. The Android SDK package looks like this: `adt-bundle-windows-x86-20140321.zip`. The ADB tool is located under `<sdk>/platform-tools` directory which as shown in the Figure 13.

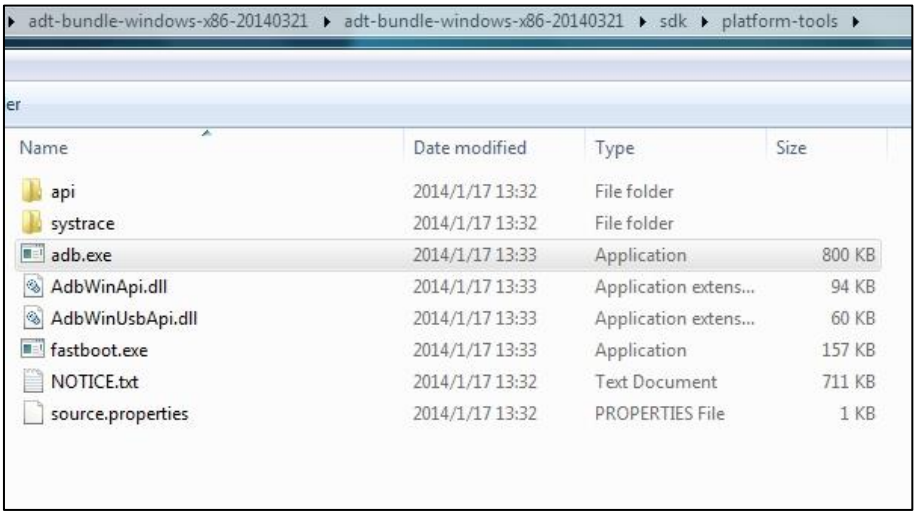

Figure 13. adb.exe in the Windows Android SDK

The directory of `adb.exe` is shown in Figure 13, `AdbWinApi.dll` and `AdbWinUsbApi.dll` is necessary on Windows Host PC.

Use Windows cmd tool, enter the directory of `adb.exe` to use ADB, the interface is shown in Figure 14.

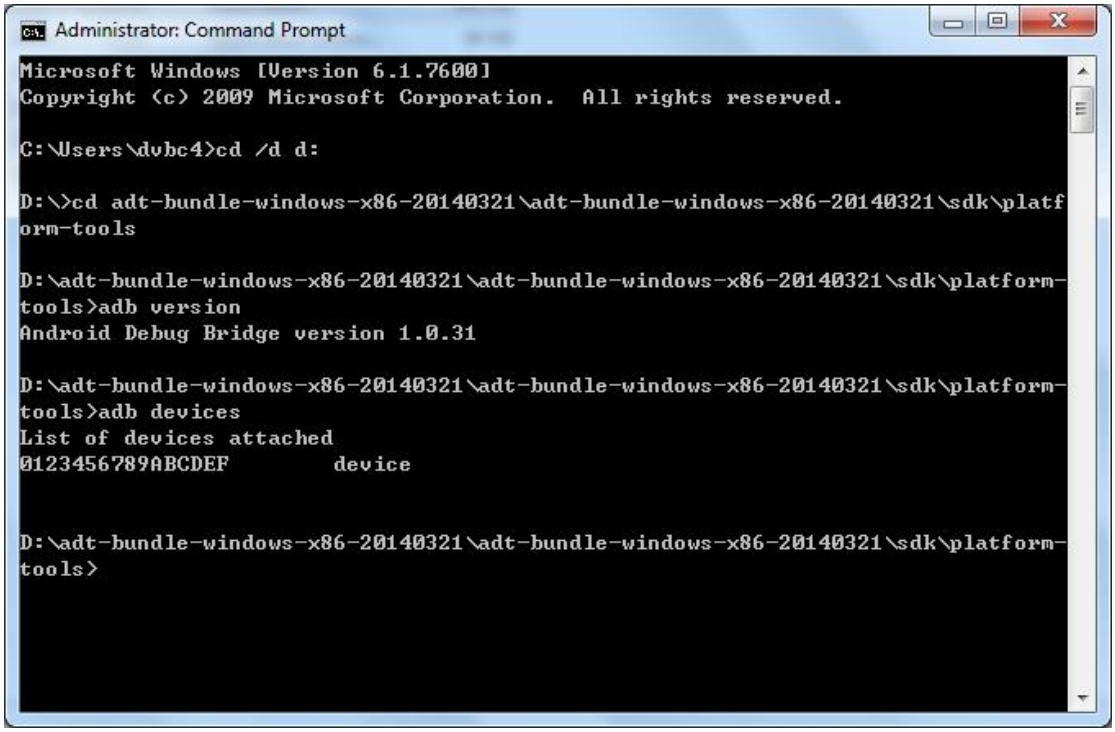

Figure 14. adb.exe Usage on Windows Machine

In the cmd interface, enter `adb.exe` directory, then execute "`adb devices`" command, if the result is as follows, the ADB device is connected successfully.

```
List of devices attached

0123456789ABCDEF       device
```

1.2 ADB over USB on Linux Machine

For a host with Linux systems, for example Ubuntu 12.04, please follow the steps below to install and verify ADB:

1.2.1 USB ADB Settings

Install the ADB driver on a host PC. Actually, there is no need to install drivers on Linux PC. For the detail information of ADB driver on Linux Machine, please visit the Android official link at. *http://source.android.com/source/initializing.html*.

But there are some settings need to be done for Linux PC to recognize ADB device.

The following steps show the detail settings:

1. Use the "root" account to create `e/etc/udev/rules.d/51-android.rules`. Then add the following contents.

```
SUBSYSTEM=="usb", SYSFS{idVendor}=="18d1", MODE="0666"
```

2. Execute the following command to change the user mode of `51-android.rules`.

```
$ chmod a+r /etc/udev/rules.d/51-android.rules
```

3. Restart `udev`.

```
$ /etc/init.d/udev restart
```

1.2.2 ADB Tools Usage

The ADB tool is a part of Android SDK package. For an overview of how to install and set up the Android SDK, please follow download and setup instructions from *http://developer.android.com/sdk/index.html*. The Linux version Android SDK is suitable for Linux PC. The ADB tool is located under `<sdk>/platform-tools` directory.

You can also find the ADB tool at `/out/host/linux-x86/bin/` directory after building ASOP.

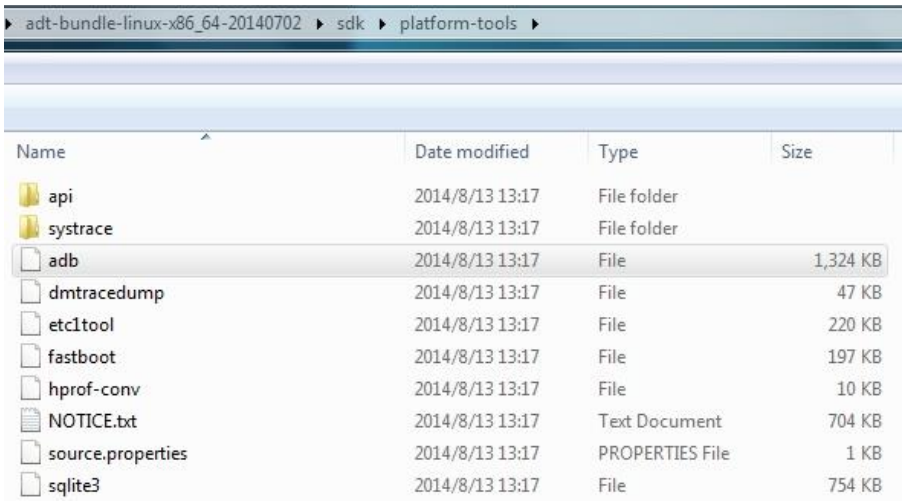

Figure 15. ADB Tool on Linux Android SDK

The ADB tool needs to configure in Ubuntu Linux system, procedures are as follows:

1. Open `~/.bashrc` file.
2. Add the ADB tool path in the end of the file.

```
export ANDROID_HOME=~/adt-bundle-linux-x86_64-20140702/sdk

export PATH=$PATH:$ANDROID_HOME/platform-tools:$ANDROID_HOME/tools
```

3. Save this file, and then execute the following command.

```
source ~/.bashrc
```

4. Execute the following command in Terminal, ADB devices will be shown as Figure 16.

```
adb devices
```

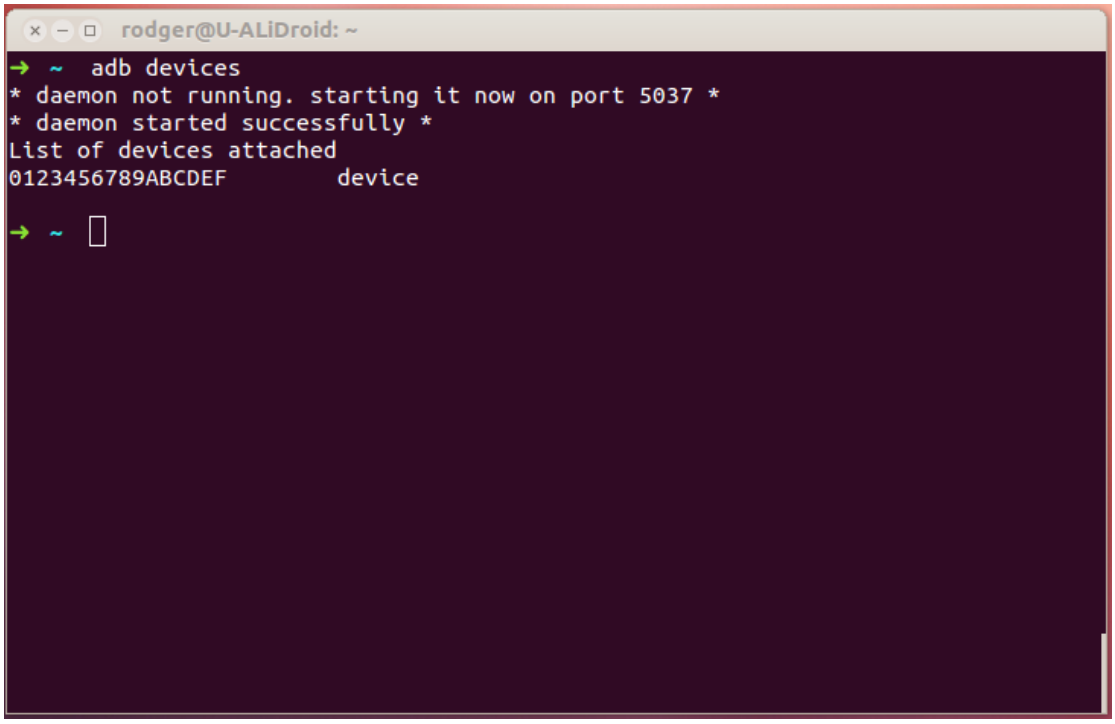

Figure 16. ADB Tool Usage on Linux Machine

1.3 USB Debugger Settings

As TIGER Board series does not support the USB OTG hardware functionality, the Host/Device mode of a USB device is not switched automatically by OTG hardware. It is switched by selecting **Settings**>**Developer options**>**USB debugging**, as shown below.

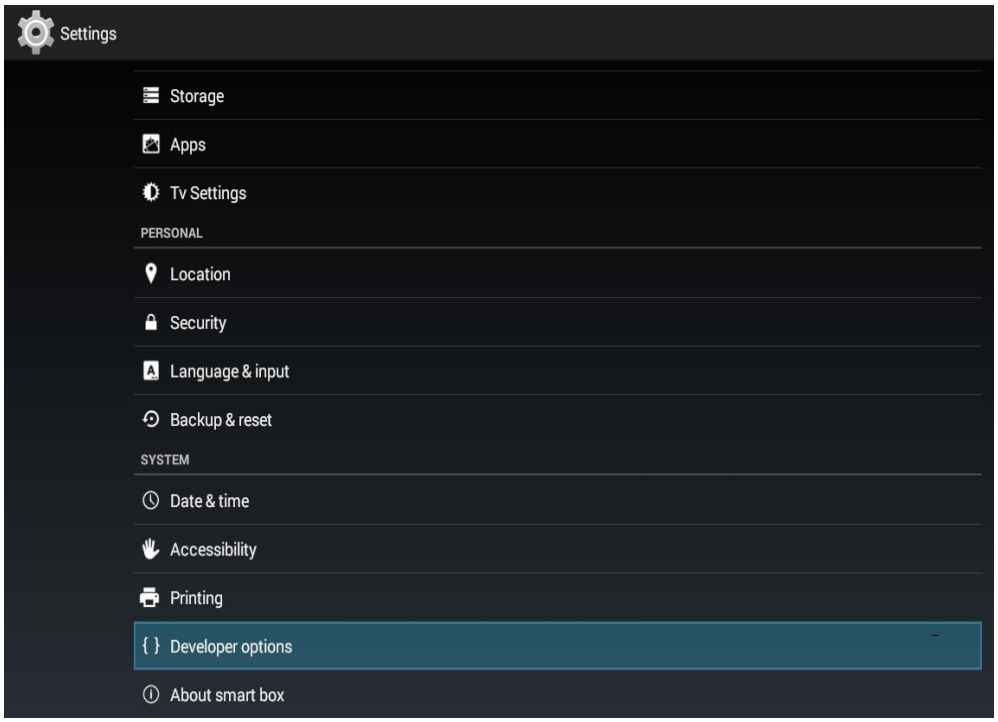

Figure 17. USB Debugging Mode Setting - Step 1

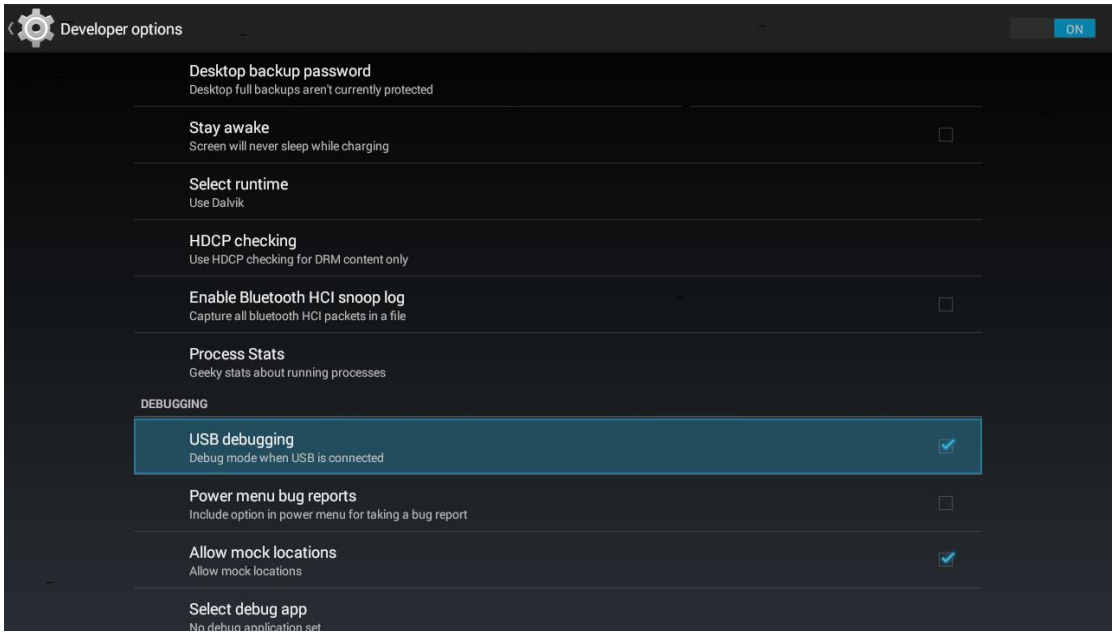

Figure 18. USB Debugging Mode Setting – Step 2

Pay Attention that the USB debugging item is selected by default.

2 Usage of USB ADB in App Development

TIGER Board is used to develop Android App, and App is debugged by USB ADB.

This Chapter explains how to run Android App on TIGER Board, the development environment is Android Studio.

For the detail information of APP development on Android Studio, please refer to Android official documents. After the app is build, please follow the procedures to debug app on TIGER Board.

Procedure:

1. Open Android Studio.
2. If the TIGER Board is connected with Host PC, Android Studio will automatically detect TIGER Board, the logcat will show on Android Studio, as Figure 19.

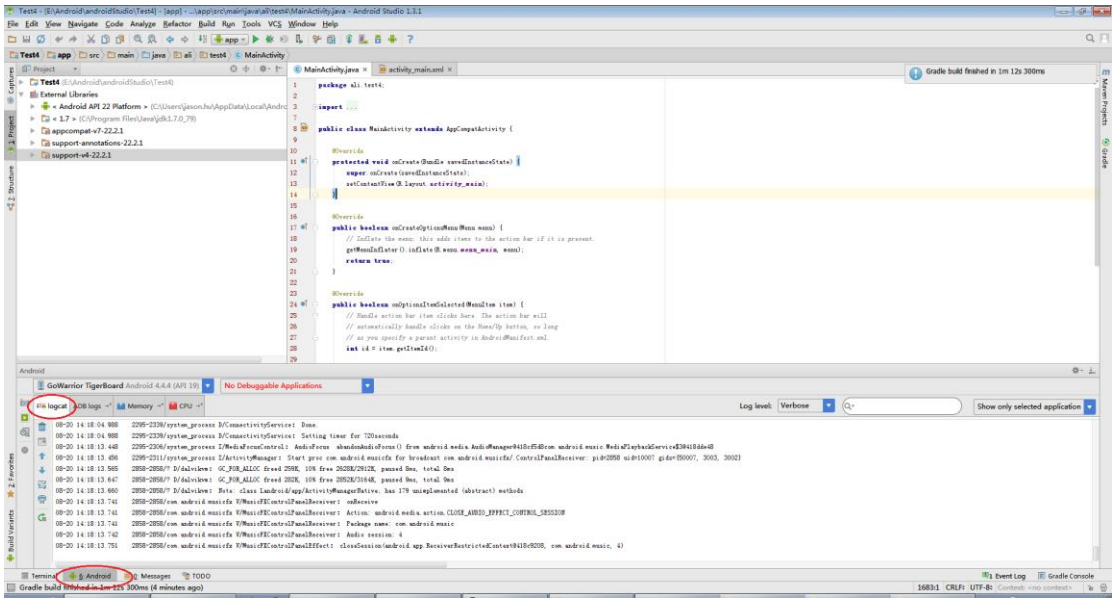

Figure 19. Android Studio Logcat

3. Run Android App, a window "Choose Device" will pop up and show TIGER Board, select "OK", the application will be installed on TIGER Board, as Figure 20, Figure 21.

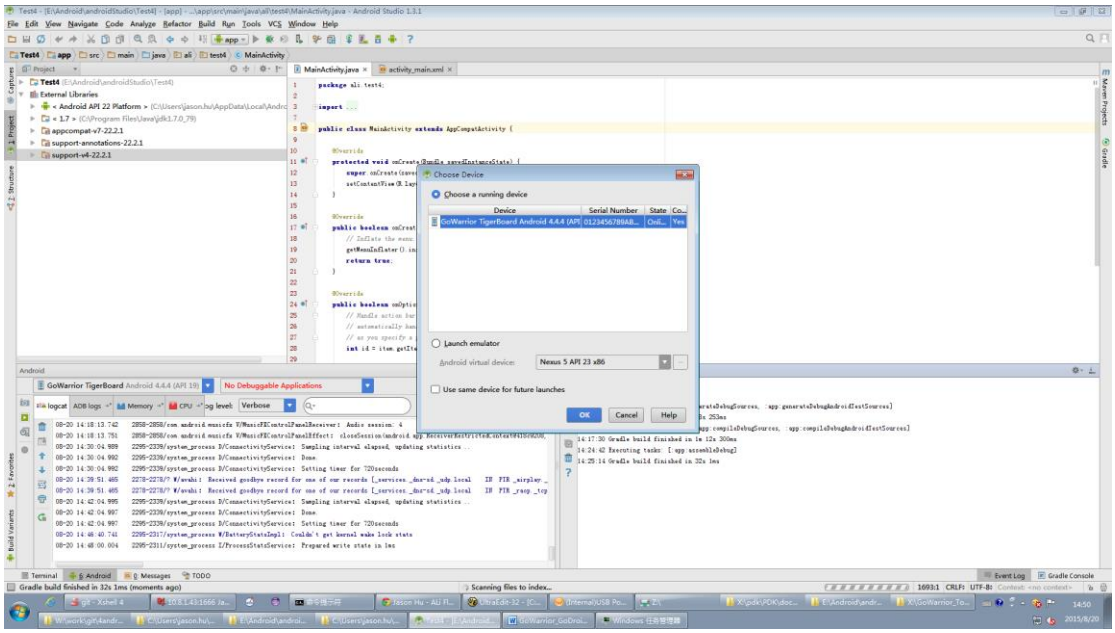

Figure 20. "Choose Device" Window

Figure 21. App Installed on TIGER Board

3 Important Notes

Please pay attention to the following items:

After the "**USB debugging**" option is selected, only USB Port0supports ADB function while USB Port 1 cannot be used and the other one USB ports are still in "**Host**" mode.

4 FAQ

1. Windows driver can't be installed.

For the method of installing USB ADB device driver in Windows, please go to *http://developer.android.com/tools/extras/oem-usb.html#InstallingDriver.*

Please be noted that as Android ADB device is not displayed in the known device list of Windows Device Manager, you need to select Show "**All Hidden Devices**" when installing the driver, and then select the correct `android_winusb.inf`.

2. Windows can't identify the device.

Please enable the USB ADB functionality and plug the USB cable in strict accordance with the method given in No. 1 of *Chapter 3 Important Notes*.

Plug and remove the USB cable again, or reset the USB debugging option or even power on/off the TIGER Board again.

The USB cable cannot be too long. Ensure that it works properly, or try to plug it into other USB ports on the computer, and so on.

3. adb.exe displays "offline" or "No devices".

Please check if the device has been identified by Windows first and then rerun adb.exe, or restart ADB sever by executing the following commands.

```
> adb kill-server

> adb start-server
```

4. Commands like Adb.exe shell do not respond.

The solution is the same as No. 3 in FAQ.

Appendix: Glossary

Abbr.	Full Name
ADB	Android Debug Bridge
OTG	On-The-Go

Table 3. List of Abbreviations

Revision History

Document Change History

Revision	Changes	Date
v1.0	Initial Release	September 07, 2015

Table 4. Document Change History

Software Changes

Revision	Changes	Date
v1.0	Initial Release	September 07, 2015

Table 5. Software Change History

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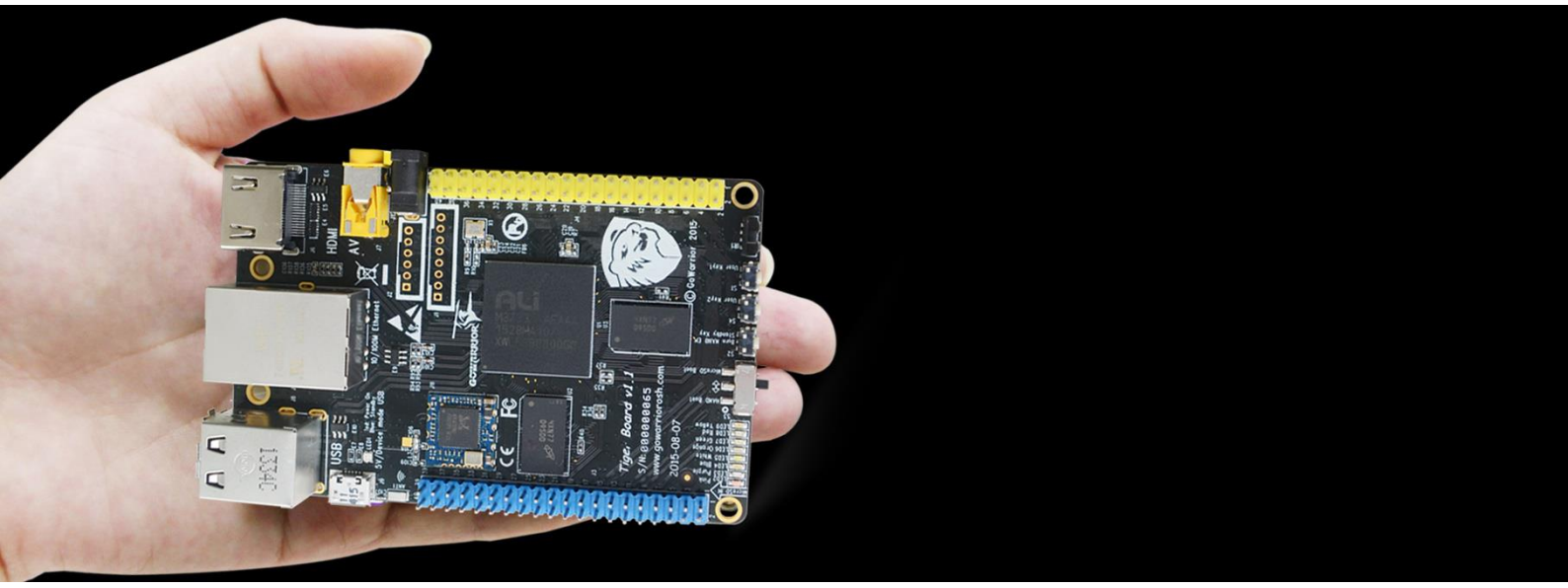
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