EVALUATION GUIDE

VAB-600 Android BSP

v1.2.0

1.02-04012015-181800

Copyright

Trademarks

Disclaimer

VIA Technologies makes no warranties, implied or otherwise, in regard to this document and to the products described in this document. The information provided in this document is believed to be accurate and reliable as of the publication date of this document. However, VIA Technologies assumes no responsibility for the use or misuse of the information in this document and for any patent infringements that may arise from the use of this document. The information and product specifications within this document are subject to change at any time, without notice and without obligation to notify any person of such change.

VIA Technologies, Inc. reserves the right the make changes to the products described in this manual at any time without prior notice.

Revision History

Version	Date	Remarks
1.00	2015/03/18	Initial external release
1.01	2015/03/19	TIC reviewed
1.02	2015/04/01	Rename to V1.2.0

Table of Contents

1. Introduction

1.1. Overview

This Evaluation Guide provides a practical introduction for the VIA Android™ VAB-600 platform. The documentation mainly helps the user to understand the VAB-600 platform and it provides qualified Android firmware image for system product.

1.2. Package Content

This evaluation package includes two parts:

EVK: Includes the Android evaluation image and the tools.

Documents: Includes the evaluation guide (this document) and any other documents required for evaluation.

2. Making System Booting Media

2.1. Update the VAB-600 Firmware

Steps for Firmware update:

1. Unpack the firmware installer image file to SD card.
2. Power off VAB-600
3. Insert SD card
4. Power on VAB-600
5. The installer will update firmware automatically
6. Remove SD card when update is finished
7. System will reboot in 3 seconds

2.2. Change U-boot default configuration

1. Open [firmware installer image]/bspinst/bspinst.cfg file.
2. Find section [VIA_RDK]
3. Disable default setting by adding the remark “#”

4. Change to new setting by removing the remark “#”

For example: Change HDMI to LVDS

Default:

HDMI

setenv wmt.display.param 4:6:1:1280:720:60

LVDS

#setenv wmt.display.param 2:0:24:800:480:60

Change to:

HDMI

#setenv wmt.display.param 4:6:1:1280:720:60

LVDS

setenv wmt.display.param 2:0:24:800:480:60

3. Functionality

This chapter will describe the features supported by VAB-600 Android evaluation image and how to evaluate these features.

3.1. Multimedia features

To evaluate the multimedia features, you can install the following APK from \EVK\tools\apks\.

- Gallery2.apk: for video and photo playback
- Music.apk: for audio playback

3.2. Network features

Configure the “Settings->Ethernet” in Android system to enable the VAB-600 on board Ethernet function.

3.3. Miscellaneous features

3.3.1. Hiding system bar

When the application requires display of full screen, the system bar on the bottom area will be automatically hidden. For how to write an Android

application that can display full screen, please refer to Android official website or the following website:

http://blog.csdn.net/cjjky/article/details/6337172

3.3.2. ADB

VAB-600 Android BSP supports launching “adb” daemon when starting Android OS. Once the Android OS has completed booting and network is correctly configured, you can use “adb” to connect VAB-600, as mentioned in section 4.4.

3.3.3. USB device and SD card

SD card and USB devices including input devices (mouse and keyboard); as well as storage devices (flash or hard disk), are both supported.

Note:
The BSP cannot identify more than one USB flash/hard disk.
If security package is not enabled, no this limitation

3.4. SmartETK features

SmartETK provides a set of APIs for the Android application to access the services provided by VAB-600 hardware.

The SmartETK for **VAB-600** supports the following features:

- Watch Dog
- RTC Power On
- Programmable GPIO
- Serial Ports

WatchDog: a timer helps the application/system to recover from dead circle or breakdown. When it is set, it will reboot the system if no “Feeding dog” signal is received.

RTC Power On: provides auto Power On feature by setting RTC auto wake up timer.

Programmable GPIO: provides high level interface for the applications to control the low level GPIO.

Serial Ports: provides serial port communication capability for Android applications.

All the features can be examined through the demo application “BoardSupportICS.apk”.

The home UI of “SmartETK_sample.apk” is shown as Fig. 3-1.

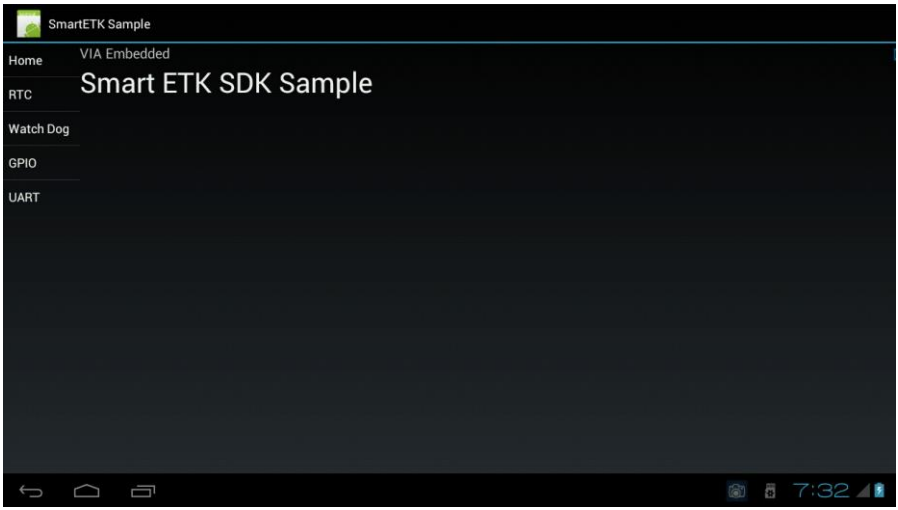


Fig. 3-1

3.4.1. RTC

Click “RTC” to enter its UI as shown in Fig. 3-2. Follow the steps to test RTC function.

a) Start “SmartETK sample“

b) Enter the RTC page

c) Set date, hour and minute

d) Click “Set and Enable“ button

e) Turn off the system

f) Wait for RTC auto boot

Note:

1. If wake-up time arrives at the same time when system is running, the system will automatically reboot. Please make sure the wakeup is disabled when the system is running.
2. Please reset the wakeup time after you adjust the system time, date or timezone through "Setting-> Date&Time". Otherwise, the system may be automatically waked up on an unexpected time.

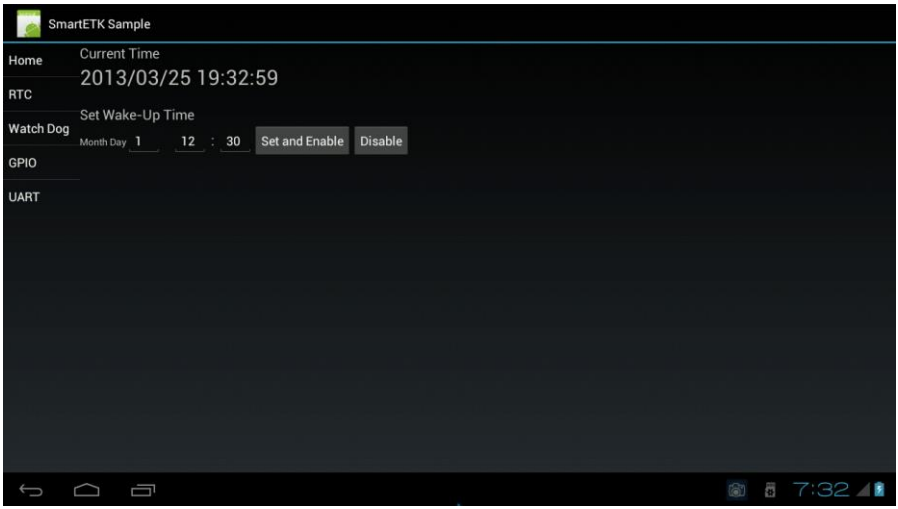


Fig. 3-2

3.4.2. WatchDog

Click "WatchDog" to enter its UI as shown in Fig. 3-3. Follow the steps to test WatchDog function.

a) Start "SmartETK sample"

b) Enter the Watch Dog page

c) Set seconds

(need to refresh in # seconds, otherwise the system will reboot)

d) Click “Start“ button

e) Click “Refresh“ to reset timer

f) Wait for the system reboot

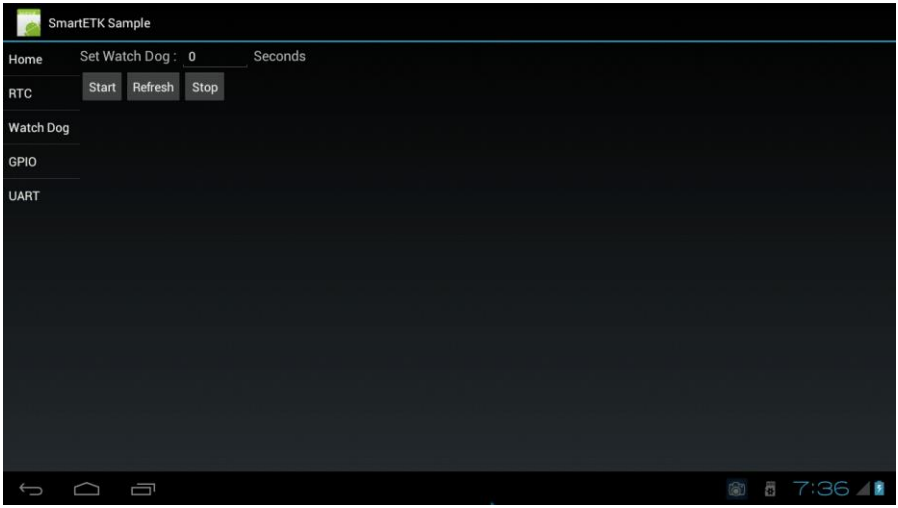


Fig. 3-3

3.4.3. GPIO

Click “GPIO” to enter its UI as shown in Fig. 3-4. Follow the steps to test GPIO function.

VAB-600 provides eight GPIO pins. Test GPIO function by using SmartETK_sample.apk.

There are two modes in the SamrtETK sample application.

Mode 1: pin 0 to pin 3 are GPO, pin 4 to pin 7 are GPI

Mode 2: pin 0 to pin 3 are GPI, pin 4 to pin 7 are GPO

Pull-Up: default GPI state is pull-up

Pull-Down: default GPI state is pull-down

a) Start “SmartETK sample“

b) Enter the GPIO page

c) Click “Enable“ button

d) Switch between mode 1 and mode 2

e) Change GPO switch to ensure GPI status is correct

Fig. 3-4

3.4.4. Serial Ports

Click “Serial Ports” to enter its UI as shown in Fig. 3-5. Follow the steps to test serial port function.

VAB-600 supports uart 2 and external EXAR 4-channel USB to serial device.

Use SmartETK_sample.apk to test the UART function.

a) Connect com port between VAB-600 and PC

b) Open terminal on PC site and set baud rate as 115200

c) Start “SmartETK sample“

d) Enter the UART page

e) Set dev note (ttyS2, ttyUSB0 ~ 3)

f) Click “Connect“ button

g) Click “Disconnect“ button

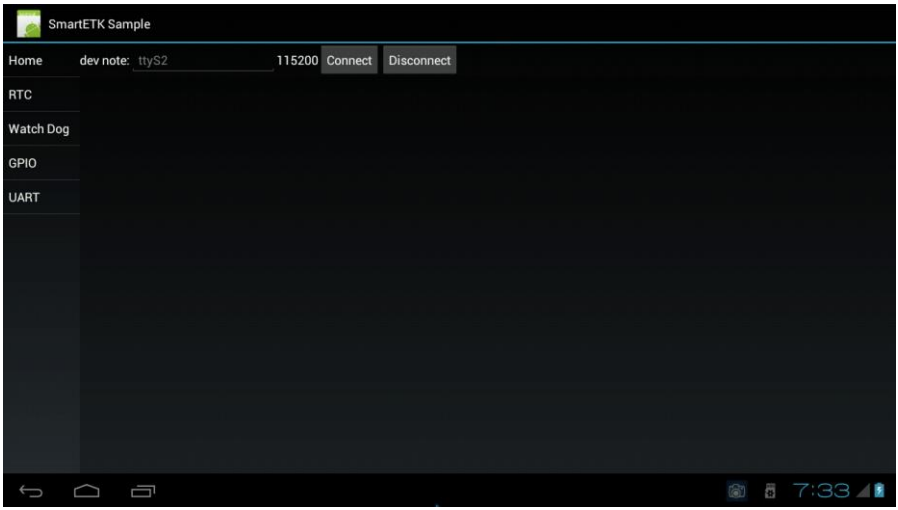

SmartETK Sample
Home
dev note:
ttyS2
115200
Connect
Disconnect
RTC
Watch Dog
GPIO
UART
7:33

Fig. 3-5

4. Debug Message

4.1. U-Boot Parameters

There is default parameters file in the firmware installer.

```
$(SD card)/bspinst/bspinst.cfg
```

The **bspinst.cfg** file structure has four segments.

- **Scenario**: board model and boot method
- **Common**: general setting
- **Target (board models)**: specific setting for each target
- **Routine:** parameters of boot method

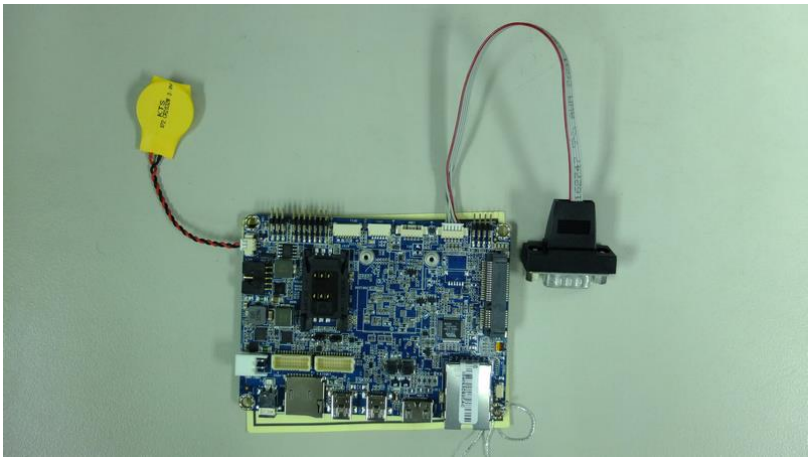
4.2. U-Boot Environment

VAB-600 android platform can stop booting to enter u-boot environment.

The u-boot will initiate hardware at earlier stage by those parameters.

1. Connect debug port

Using terminal application on PC site



Comm speed: 115200

Comm parity: None

Comm data: 8

Comm stopbits:1

2. Enter U-Boot

The u-boot will wait 3 seconds to stop booting after power on by pressing any key. When booting is stopped, the prompt sign “WMT #” will be shown on terminal screen.

U-Boot is like a tiny operation system that has its own commands. Here it describes some important commands and parameters.

4.3. U-Boot Parameters Example

- Print online help

```
WMT # help
```

- Change display mode and resolution
  - LVDS output

```
WMT # setenv wmt.display.param 2:0:24:800:480:60
```

  - HDMI output

```
WMT # setenv wmt.display.param 4:6:1:1280:720:60
```

- Save changed parameters

```
WMT # saveenv
```

4.4. Setup ADB

The ADB is the debug tool for Android application development.

1. PC and VAB-600 must be in the same network domain
2. Connect PC to VAB-600
   a. PC site: $ ./adb tcp
   b. PC site: $ ./adb connect [VAB-600 IP]
3. Install application
   a. PC site: $ ./adb install [name].apk
4. Test Shell

a. PC site: $ ./adb shell ls

b. PC site: $ ./adb shell ls -l

Appendix A: Definitions

ADB	Android Debug Bridge
Android	Android is a trademark of Google Inc.
ARM	ARM is a trademark of ARM Inc.
BSP	Board Support Package
Eclipse	An Integrated Development Environment for Android Applications
HDMI	High Definition Multimedia Interface
RTC	Real Time Clock
SD	Secure Digital Multimedia Card
VAB-600	The Target Product Name
VIA	VIA Technologies, Inc.