DEVELOPMENT GUIDE

AMOS-825

Android BSP v5.0.3

1.00-05172018-120700

Revision History

Version	Date	Remarks
1.00	05/17/2018	Initial release

Table of Contents

1. Introduction

This Development Guide explains how to set up the necessary build environment in order for users to customize the Android source code and create their own system image for the AMOS-825 system.

The AMOS-825 Android BSP v5.0.3 is developed based on the NXP android_M6.0.1_1.0.0-ga (Android 6.0 Marshmallow) and enables hardware features that are defined on the AMOS-825 system.

1.1 BSP Package Contents

There are four folders in the package as listed below.

Source_code folder	Description
AMOS-825_Android_ source_code_patch.zip	Android source code patch files and Image building script files
Smart_ETK_v1.0_SourceCode.zip	Smart ETK demo program source code
Firmware folder	**Description**
Images_autoinstall_sd.zip	Android EVK system image and installation script files
Document folder	**Description**
AMOS-825_Android_EVK_v5.0.3_Quick_Start_Guide_v1.00_20180517.pdf	Quick Start Guide
AMOS-825_Android_BSP_v5.0.3_Development_Guide_v1.00_20180517.pdf	Development Guide
Smart_ETK_SDK_Programming_Guide_v1.0_20180517.pdf	Smart ETK SDK Programming Guide
Tools folder	**Description**
AMOS-825_Smart_ETK_Demo_v1.0.apk	Smart ETK demo program
BluetoothSPPTest.apk	Bluetooth SPP testing program

AMOS-825 Android BSP contents

1.1.1 Source Code Folder Contents

AMOS-825_Android_ source_code_patch.zip: Includes Android 6.0.1 source code download script files, NXP Android patch file **android_M6.0.1_1.0.0-ga_core_source.tar.gz,** the AMOS-825 Android source code patch file and Image building script files.

Smart_ETK_v1.0_SourceCode.zip: is the Smart ETK demo program source code.

1.1.2 Firmware Folder Contents

Images_autoinstall_sd.zip: The Android EVK system image and installation script files.

1.1.3 Document Folder Contents

AMOS-825_Android_EVK_v5.0.3_Quick_Start_Guide _v1.00_20180517.pdf: The Quick Start Guide provides an overview on how to boot the Android EVK system image on the AMOS-825 system and configure the supported hardware functions in the build.

AMOS-825_Android_BSP_v5.0.3_Development_Guide_v1.00_20180517.pdf: This Development Guide explains how to set up the necessary build environment in order for users to customize the Android source code and create their own system image for AMOS-825 system.

Smart_ETK_SDK_Programming_Guide_v1 .0_20180517.pdf: This Programming Guide explains how to build the Smart ETK program and introduces full function APIs for VIA different boards or systems.

1.1.4 Tools Folder Contents

AMOS-825_Smart_ETK_Demo_v1.0.apk: is the Bluetooth SPP profile test program.

BluetoothSPPTest.apk: is the Bluetooth SPP profile test program.

1.2 Version Information and Supported Features

- U-Boot version: 2015.04
- Kernel version: 3.14.52
- Evaluation image: Android Marshmallow 6.0
- Development based on NXP android_M6.0.1_1.0.0-ga (Android 6.0 Marshmallow)
- Supports SPI with eMMC boot
- Supports 7” Projective capacitive touch monitor (800x480) through I²C interface
- Supports COM as debug port
- Supports two FlexCAN TX/RX
- Supports Gigabit Ethernet
- Supports Mic-in
- Supports IEEE 802.11b/g/n Wi-Fi
- Supports Bluetooth 4.0
  - A2DP and SPP profile
- Supports U-blox MAX-7 GPS/GNSS module
- Supports EMIO-2550 miniPCIe Mobile Broadband module
- Supports Smart ETK v1.0: Watchdog Timer, UART, and FlexCAN
- Supports OTA (Over-the-Air technology)
- Supports shutdown option in Quick Settings
- Supports Ethernet configuration in Settings

2. Build Environment Setup

This section guides you through setting up the build environment for development. All instructions are based on using Ubuntu 14.04 LTS.

To make sure that the build process completes successfully, we recommend at least 120GB of disk space and 15GB of combined memory and swap space on the host machine.

2.1 Configuring Linux Host Machine

The following packages are required for the Android development environment. The required packages can be installed using the commands below. To get more information, please visit the website at **http://source.android.com/source/initializing.html**.

OpenJDK 7 is not included in the Ubuntu 14.04 default installation. The first step is to add a new server manually by using the following command:

```
$ sudo add-apt-repository ppa:webupd8team/java
$ sudo apt-get update
```

To install the OpenJDK 7, use the following command:

```
$ sudo apt-get install openjdk-7-jre
$ sudo apt-get install openjdk-7-jdk
```

The following packages are required for the Android development environment. To install the required packages on the Ubuntu 14.04, use the following command:

```
$ sudo apt-get install git gnupg flex bison gperf build-essential zip curl zlib1g-dev libc6-
dev libncurses5-dev x11proto-core-dev libx11-dev:i386 libreadline6-dev:i386 libgl1-mesa-
glx:i386 libgl1-mesa-dev g++-multilib mingw32 tofrodos python-markdown libxml2-utils xsltproc
zlib1g-dev:i386 uuid-dev liblzo2-dev libz-dev libc6-dev-i386 lib32z1
```

3. Image Build

This section explains how to build the U-Boot binary and Android file system for the AMOS-825 system.

3.1 Extracting the AMOS-825 BSP

Use the following command to extract the contents of the BSP.

```
$ unzip AMOS-825_Android_source_code_patch.zip
```

3.2 Downloading the Source Code of Android 6.0.1

Downloading the Android 6.0.1 source code to the BSP/src folder can take several hours depending on your internet connection.

Use the following commands to download the source code of Android 6.0.1:

```
$ cd Script
$ ./download_source_Android6.0.sh
```

3.3 Installing the Source Code Patch

Use the following command to install the NXP and AMOS-825 source code patch:

```
$ ./patch_fsl_via.sh
```

3.4 Building the Android Image

Use the following commands to build the Android image, the compiling process will take several hours.

```
$ cd ../src
$ source build/envsetup.sh
$ lunch amos825-userdebug
$ make -j8
```

After the compilation, the **src/out/target/product/ amos825/** directory will contain the resulting binaries, as shown in the table below.

Binary	Description
u-boot.imx	U-Boot boot loader for iMX6Q
bspinst-amos825.img	BSP auto install image for iMX6Q
boot- amos825.img	Kernel for iMX6Q
system.img	Android system image
recovery- amos825.img	Recovery image for iMX6Q

Binary files generated

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