

AM335x-TAB **User guide**

Version 1.0



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1. Introduction

This document is the user guide for the **AM335x-TAB reference design kit**. The document contains all the information you need to set up and use **AM335x-TAB**. It describes all the features of the AM335x-TAB in an easy-to-read yet thorough manner.

2. Welcome

Thank you for purchasing **AM335x-TAB** reference design kit from **AllGo Embedded Systems**.

AM335x-TAB offers you total convenience for your business (logistics, retail, health care, hospitality and education market segments ..etc) and personal entertainment needs ,

The AM335x-TAB reference design kit (RDK) runs on Texas Instruments AM3354 processor with high performance ARM Cortex A8 core & PowerVR 3D graphics,AM335x-TAB has a 7" capacitive touch display and Android 4.0 Ice Cream Sandwich operating system,

Before you start using the AM335x-TAB, please read this User Manual carefully .

AM335x-TAB Features:

	Feature
Processor	TI's AM3354 ARM Cortex®-A8 microprocessor (up to 1 GHz)
Memory	• Micro SD Card - 4GB (Boot + Storage) • DDR 3 Memory - 512MB
Battery	Li-Ion 3400 mAh capacity
Display	7" WVGA TFT LCD
Touch panel	5-Touch Capacitive Touch panel
Power	5V, 2.5A DC Adapter
Operating System	Android ICS 4.0
Wi-Fi	Integrated WLAN 802.11 b/g/n
Bluetooth	Bluetooth 2.1 + EDR
USB Interfaces	• USB High Speed Host Port • USB OTG - ADB and Debug purpose
Audio	• Stereo Headphone • Internal MIC • Internal Mono Speaker
Sensors	• Accelerometer
Keys or Buttons	• Single Button for Back and Home screen • Reset Switch • Power On/Off Button • 8 Second Hardware Shutdown using Power Button

Table.1 AM335x-TAB - features

3. Precautions

- Kindly Charge the device for 2 to 3 hours before using
- Do not dismantle the AM335x-TAB by yourself, and do not use alcohol, thinner or benzene to clean its surface
- Do not drop the AM335x-TAB or slam it down on a hard surface as this may damage the screen.
- If AM335x-TAB hangs during any operation then hard power off the device by pressing and holding power button for 8 seconds , do not use reset button
- If AM335x-TAB is not powering on , try to remove the SD card form SD slot and reinsert it due to which device will power on

4. Box Contents

- AM335x-TAB Android Tablet
- Micro-SD Card with Android ICS pre loaded
- Device charger (DC / 5V – 3000mA)
- Instruction manual

5. Setup

5.1 Getting Pre-built Images

Prebuilt images can be obtained from

- [AM335x-TAB-Android-ICS-4.0.3-RDK-1.0.tar.gz](#)

Use below commands to untar/uncompress the pre-built image

```
$ tar -xzf AM335x-TAB-Android-ICS-4.0.3-RDK-1.0.tar.gz
```

```
$ cd AM335x-TAB-Android-ICS-4.0.3-RDK-1.0.tar.gz
```

tree structure for uncompressed pre-built image directory will look like:

```
<AM335x-TAB-Android-ICS-4.0.3-RDK-1.0>
|-- Boot_Images
| |-- MLO
| |-- u-boot.img
| |-- uEnv.txt
| |-- uImage
|-- Filesystem
| |-- rootfs.tar.bz2
|-- Media_Clips
| |-- Audio
| |-- Images
| |-- Video
| |-- Reports
| |-- CTS
|-- README.txt
|-- mkmmc-android.sh
```

5.2 Flash prebuilt images to MMC/SD Card

- Get an SD Card of minimum size 2GBytes (Class4 minimum) and a USB Card reader
- Insert the USB SD Card reader (with SD Card) in your host Linux PC
- Prepare the MMC/SD card with pre-built images:
 - \$ AM335x-TAB-Android-ICS-4.0.3-RDK-1.0
 - \$ chmod 777 mkmmc-android.sh
 - \$ sudo ./mkmmc-android.sh /dev/sd<mount-point> u-boot.img ulmage uEnv.txt rootfs.tar.bz2

Above step will create a bootable MMC/SD card which can be used to boot up the device.

5.3 Device Information

- SD card slot : MMC/SD card with pre-built images can be put in sd card slot to boot the device from sd card
- Power button : Power button can be used to power on ,poweroff or to suspend/wakeup the device
 - Power On : Press and hold power button for 2 seconds to Power on the device
 - Soft power off : Press power button for 2 second and select OK to power off the device in the pop up window
 - Hard power off : Press the power button for 8 second to hard power off the device
 - Suspend : Press power button for 1 second to put the device in to suspend mode
 - Wakeup : Press power button for 2 second when device in suspend state to wakeup the device
- Back button : To go to previous opened item use back button
- Reset button : To Reset the device
- Power supply : DC 5V---3000mA
- Display : LCD display with Capacitive Touch screen



Figure.1 AM335x-TAB - front view



- 1. Reset button
- 2. Power button
- 3. SD card slot
- 4. USB port

Figure.2 AM335x-TAB - Top view



Figure.3 AM335x-TAB - Usb debug access port

5.4 AM335x-TAB Booting

- Flash the prebuilt images to MMC/SD
- Insert the Micro/SD Card into the sd card slot of AM335x-TAB
- Press and hold power button for 2 seconds to Power on the device
- Wait for 50sec to get Android up on the UI screen

NOTE: For the first time boot the System might take few minutes to boot.

6. Application Demo

6.1 Multimedia Experience

- Using browser and android applications

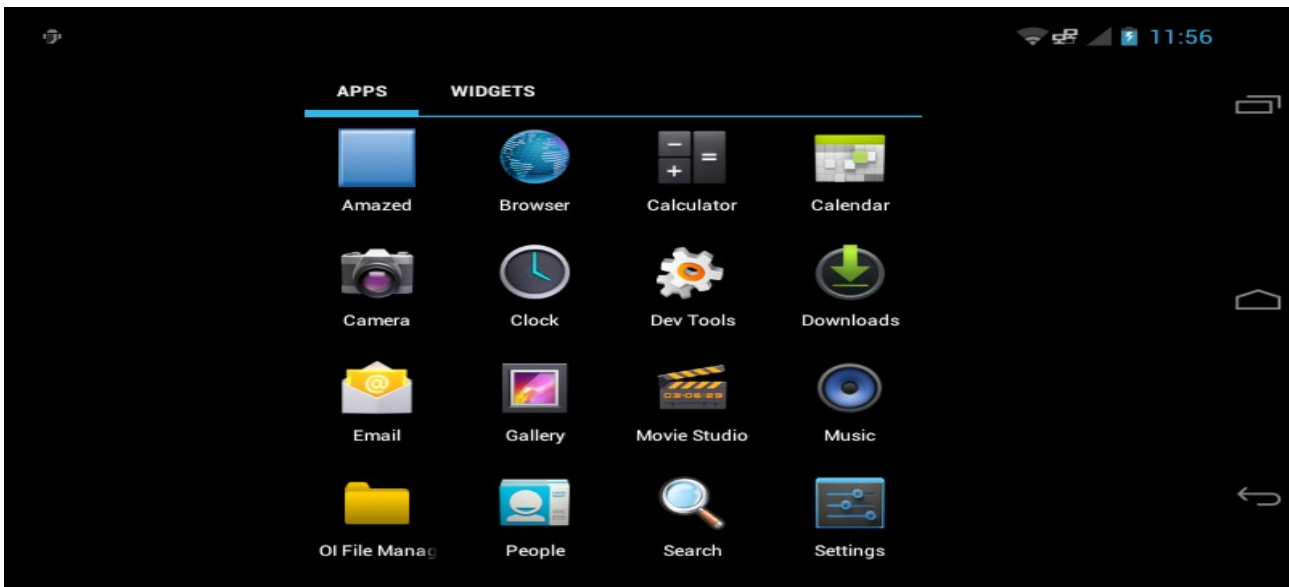


Figure.4 AM335x-TAB - Applications screen

- Swipe across the screen to access more applications and widgets.
- Image browsing and media playback

6.1.1 View Image

Select "App Launcher" -> "Gallery" -> "Images". Click any thumbnail to view the image.

- Double click the image to zoom in/out.
- Slide the image to view next image.
- Press Delete icon to delete the image



- Press share button to share the image through Bluetooth to another bluetooth enabled device

Figure.5 AM335x-TAB - View gallery Images

6.1.2 Play Video

Select "App Launcher" -> "Gallery" -> "Video". Click any thumbnail to play the video.

You can use the UI controls to Pause/Play/Seek the video. To stop playback and exit press the back key button.



Figure.6 AM335x-TAB - Video playback

6.1.3 Play Music

Select "App Launcher" -> "Music" -> "<Artist>" -> "<song-name>" to experience the music.

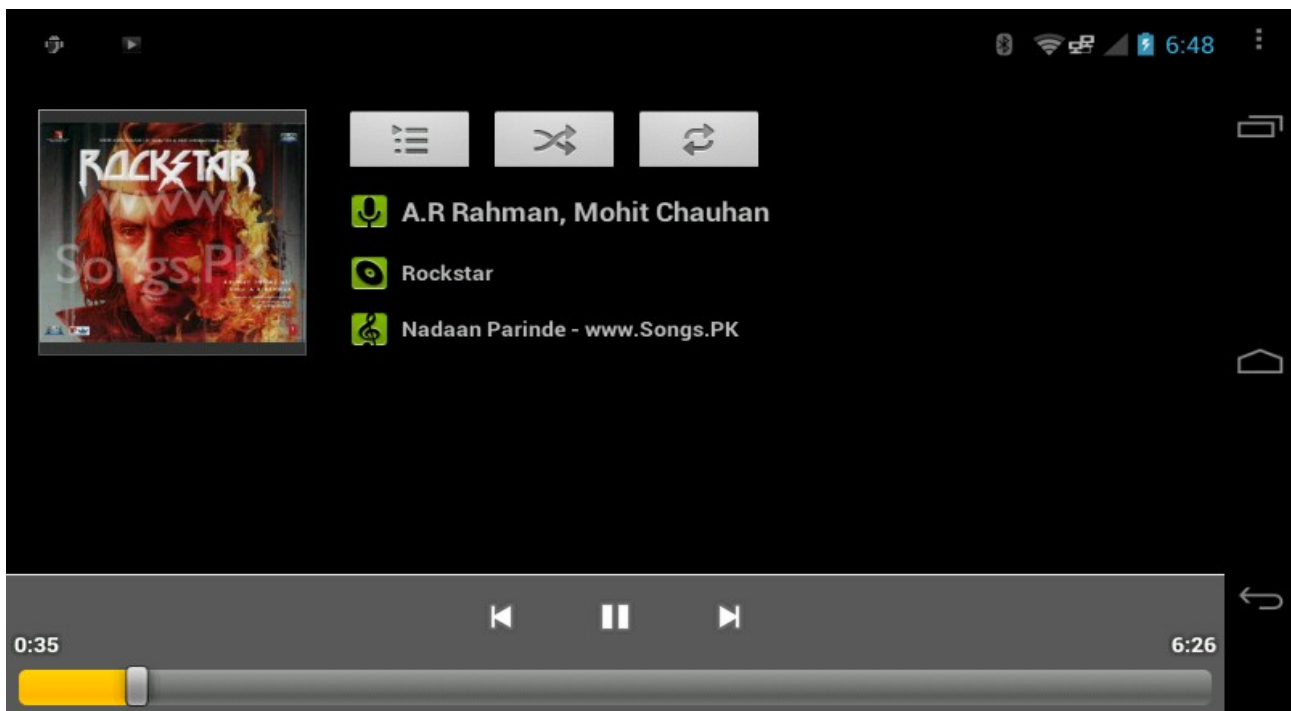


Figure.7 AM335x-TAB - Music playback

6.1.4 Control Volume

- Select "App Launcher" -> "Settings" -> "Sound" -> "Volumes"

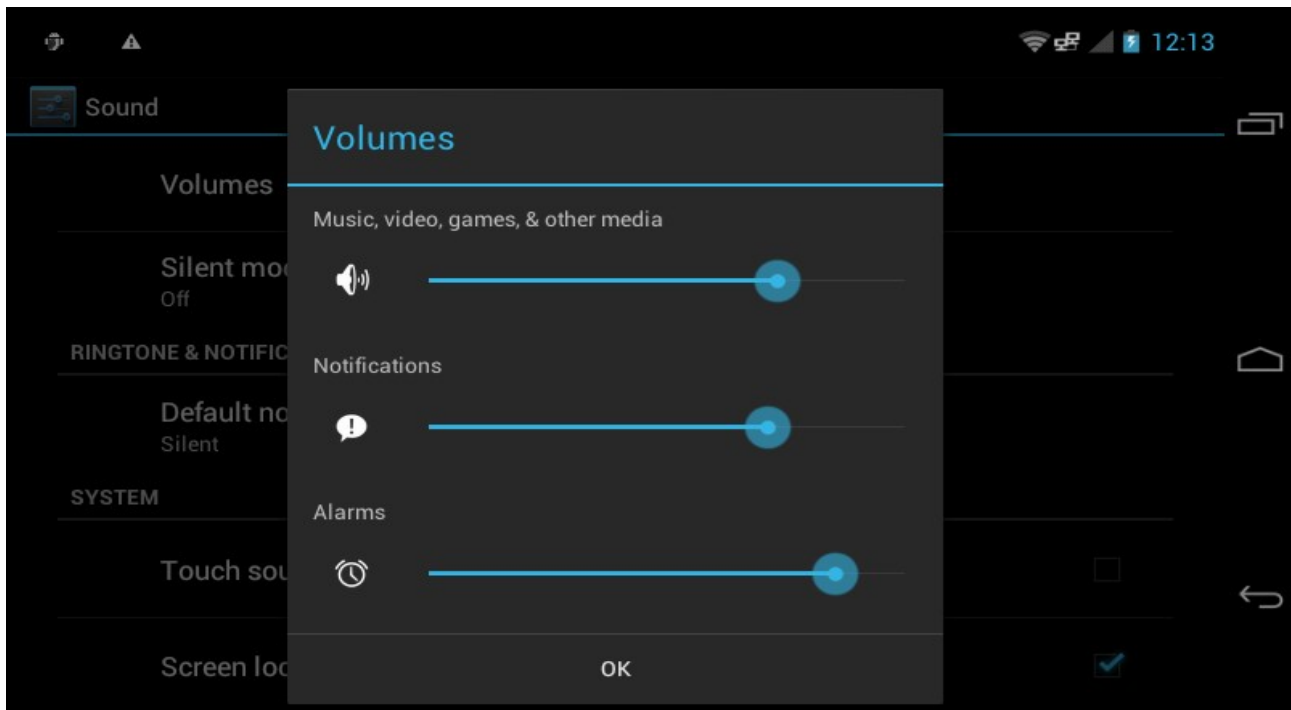


Figure.8 AM335x-TAB - Volume control

6.1.5 Control Brightness

- Select "App Launcher" -> "Settings" -> "Display" -> "Brightness" to increase or decrease the brightness level or Select check box for Automatic brightness control

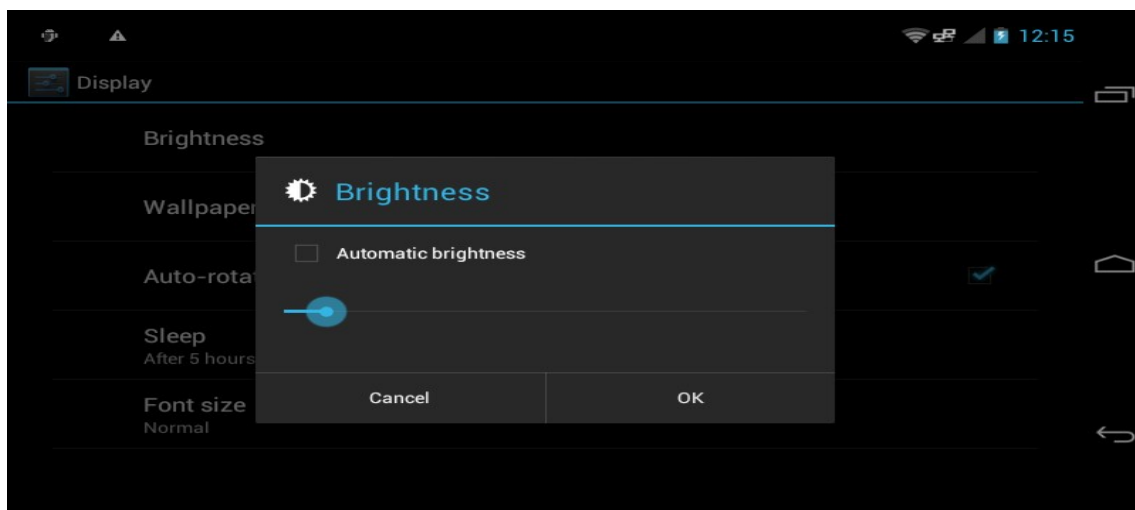


Figure.9 AM335x-TAB - Brightness control

6.1.6 Record Sound

Select "App Launcher" -> "Sound Recorder". Press Record button to start recording audio. Press Stop button to stop recording.

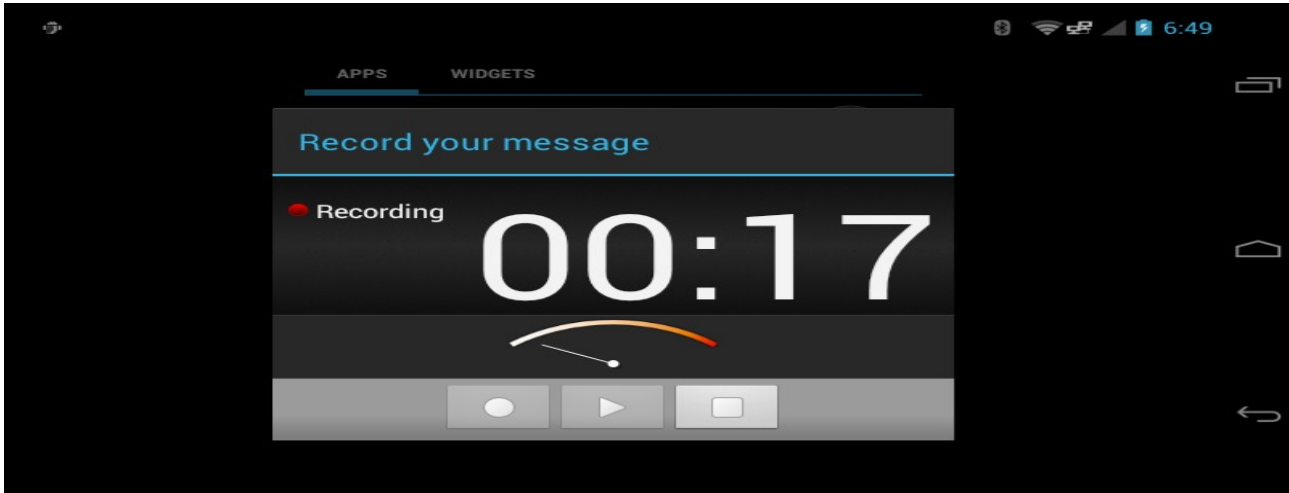


Figure.10 AM335x-TAB - Sound recording

Playback the recorded audio by pressing Play button on Sound Recorder GUI.

6.2 Wireless

AM335x-TAB supports Wi-Fi , Bluetooth and USB 3G on Android.

6.2.1 Wi-Fi

6.2.1.1 Enabling Wi-Fi

- To turn on Wi-Fi, browse to "App Launcher" -> "Settings" -> "Wi-Fi".
- Enable Wi-Fi by sliding the ON/OFF tab to the ON position and wait for few seconds.

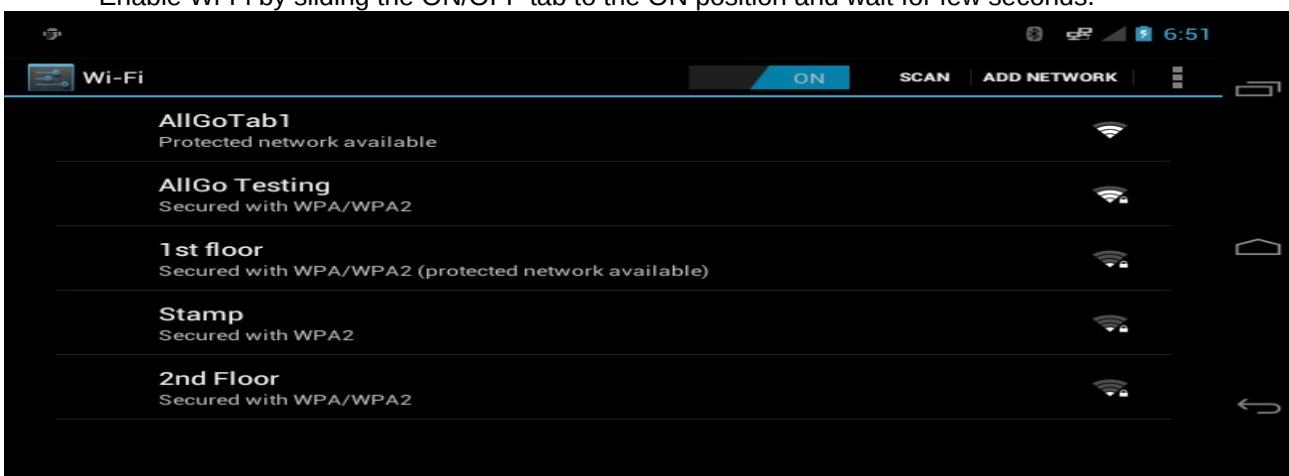


Figure.11 AM335x-TAB - Wi-Fi Enable

- The device scans for the available APs and displays them.
- Connect to desired AP by clicking on its name and enter required details (username/key etc) and click Connect

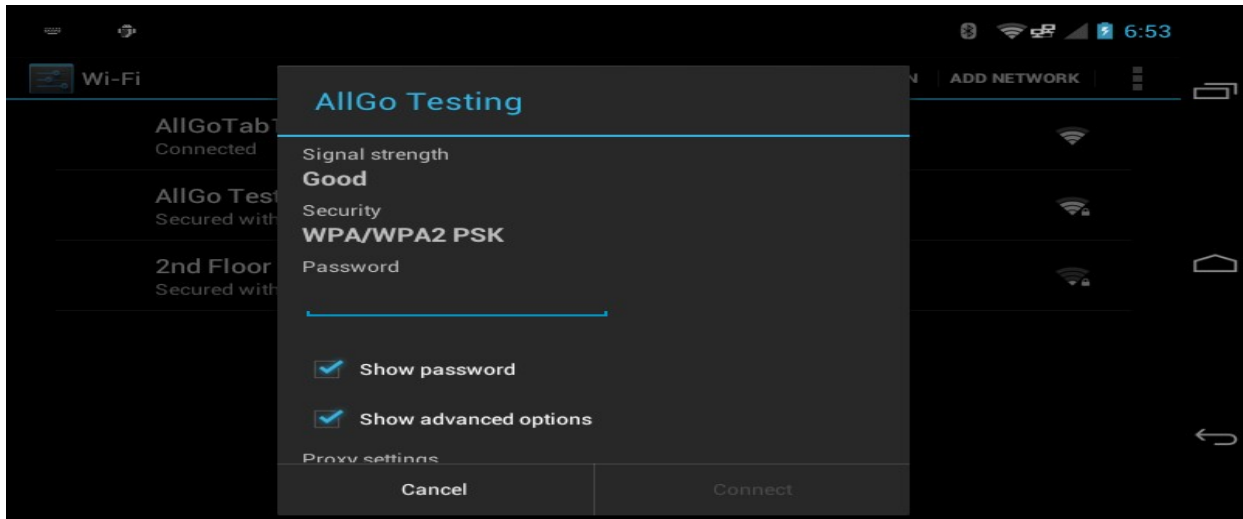


Figure.12 AM335x-TAB - Wi-Fi Authentication

- when successfully connected, you will see status as connected under the respective AP name

6.2.1.2 Disabling Wi-Fi

- To turn off Wi-Fi, browse to "App Launcher" -> "Settings" -> "Wi-Fi".
- Disable Wi-Fi by sliding the ON/OFF tab to the OFF position.
- Following message appears on console and the Wi-Fi status is shown as OFF.

6.2.1.3 Wi-Fi Hotspot

- To turn on Wi-Fi hotspot go to "App Launcher" -> "Settings" -> "More"->"Portable hotspot".

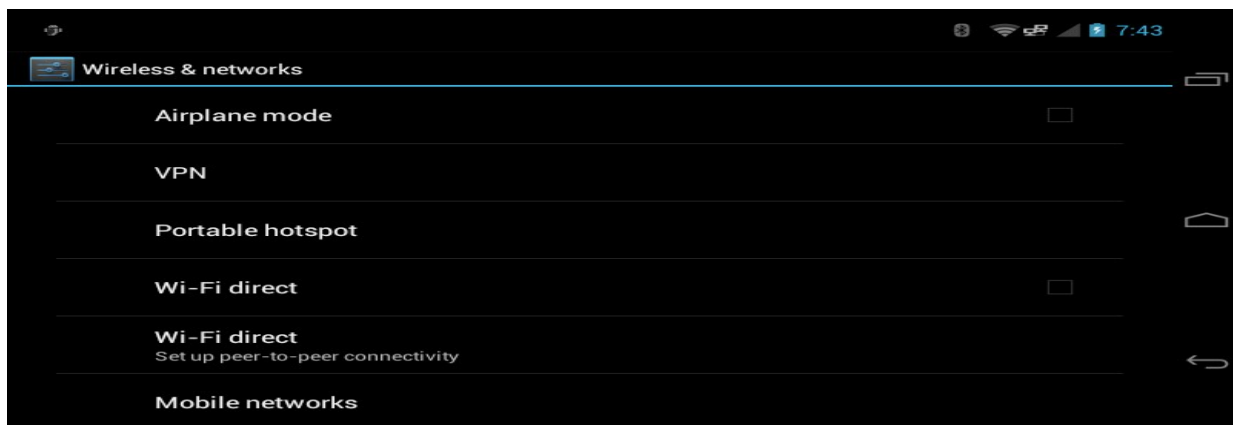


Figure.13 AM335x-TAB - Wi-Fi hotspot selection

- Select Configure Wi-Fi hot spot ,and enter below mentioned fields and save the configuration
 - ✓ Network SSID,
 - ✓ Security type to be used (Open,WPA/WPA2),
 - ✓ Password for connection



Figure.14 AM335x-TAB - Wi-Fi hotspot configure

- To enable portable hot spot, tick on portable WI-FI hotspot option,now the Wi-Fi teethering will be active

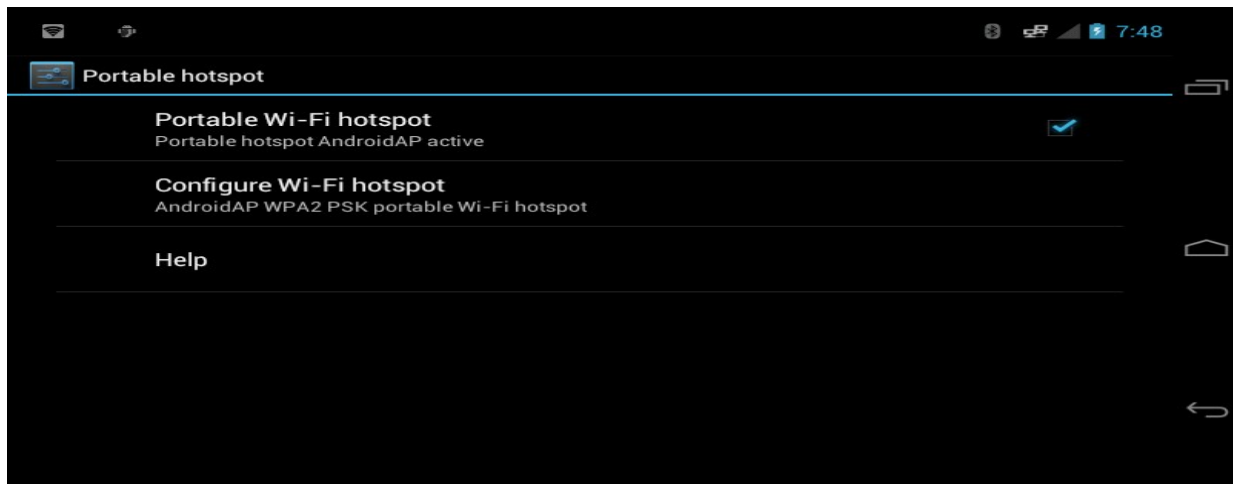


Figure.15 AM335x-TAB - Wi-Fi hotspot enable

- Open the task bar to check the teethering is active or not

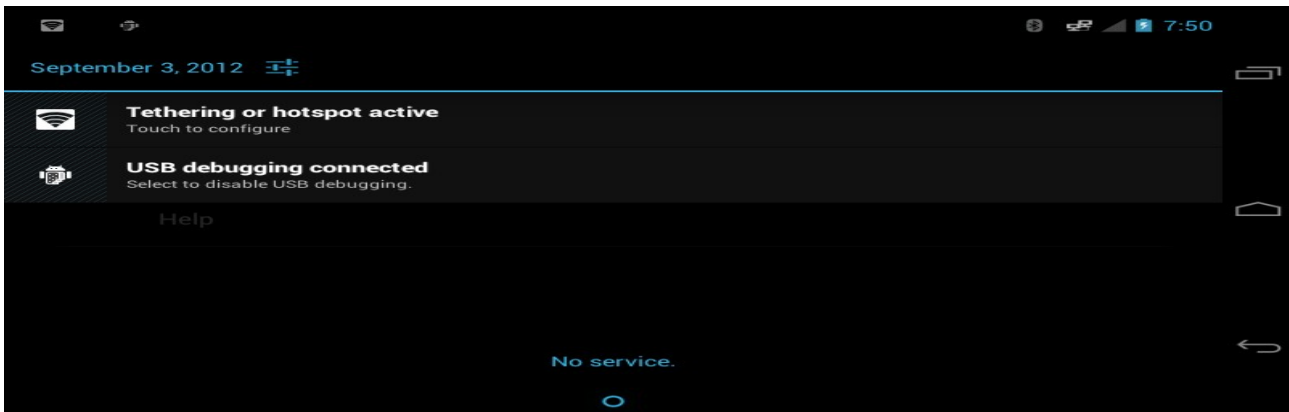


Figure.16 AM335x-TAB - Wi-Fi hotspot verification on notification panel

6.2.1.4 Wi-Fi Static IP

- Connect to one of the wi-fi network available in range

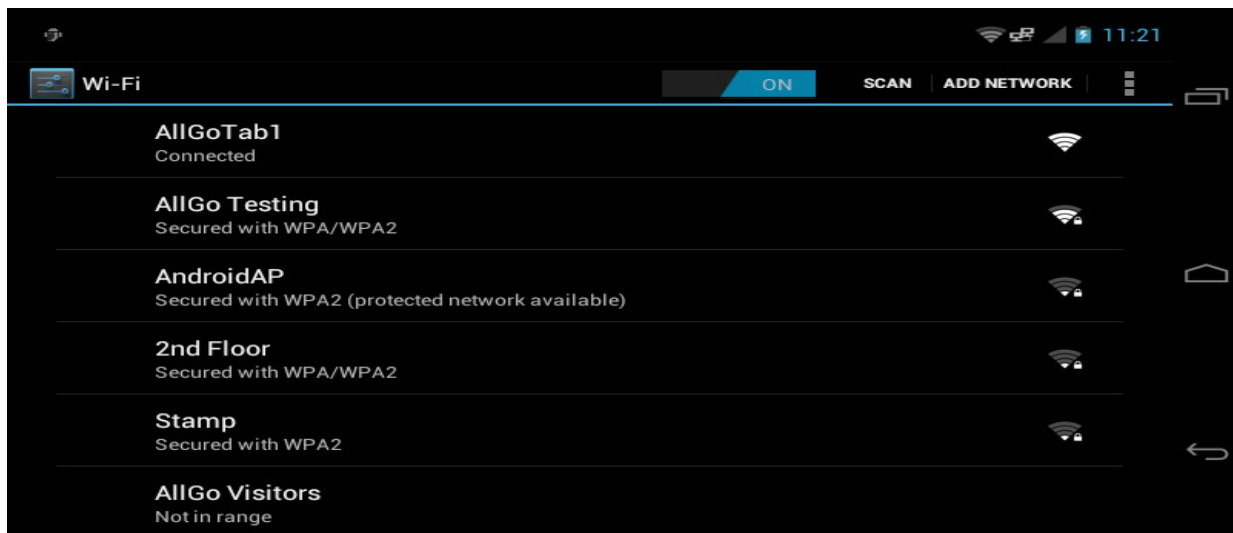


Figure.17 AM335x-TAB - Wi-Fi connected networks

- Press and hold on the connected network for two seconds, pop up will be displayed, select "Modify Network"

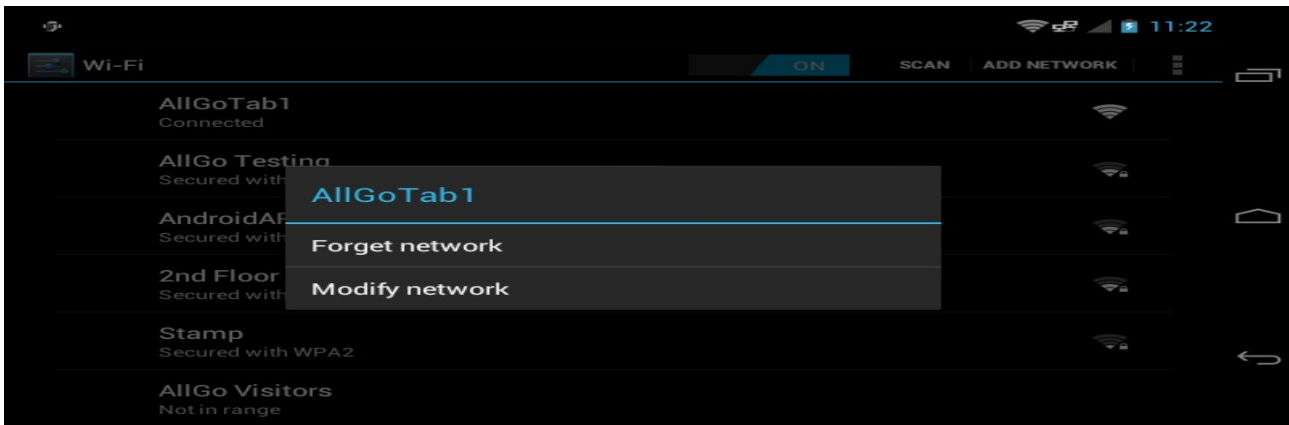


Figure.18 AM335x-TAB - Wi-Fi Modify network for static ip

- Select “Show advanced options” and slide down to view the options available

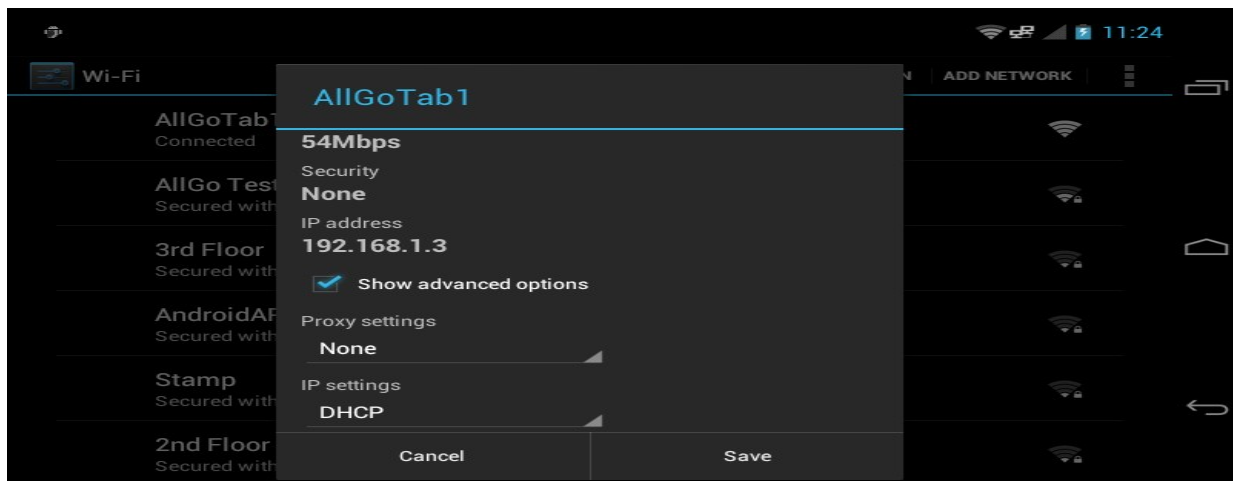


Figure.19 AM335x-TAB - Wi-Fi static ip selection

- Select “Static” options in IP settings ,slide down further and enter the IP,Gateway,DNS1,DNS2 details and save to connect to wifi network using static ip

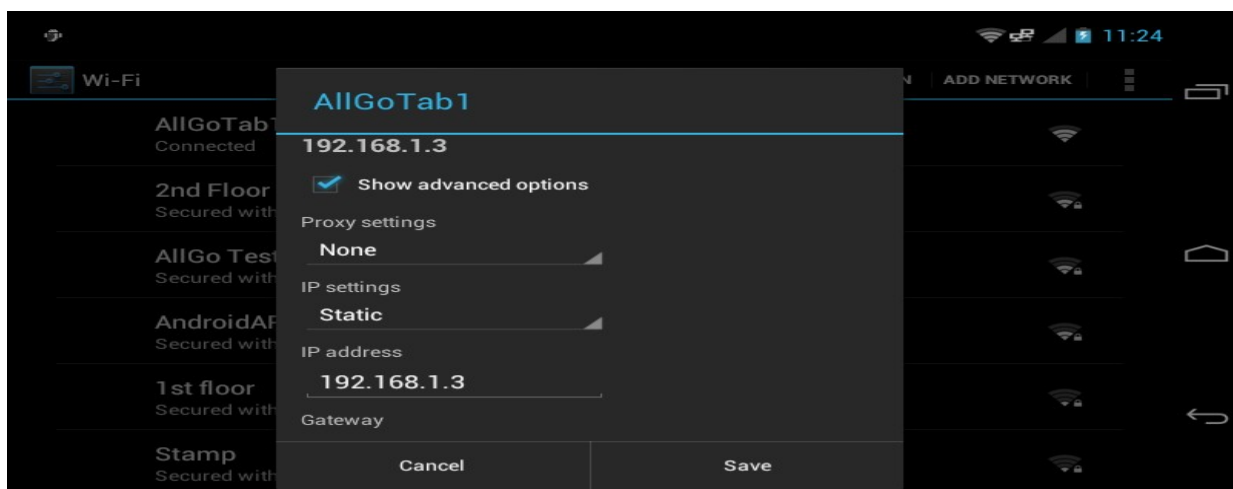


Figure.20 Wi-Fi static ip configure

6.2.2 Bluetooth

6.2.2.1 Enabling Bluetooth

- To turn on Bluetooth, browse to "App Launcher" -> "Settings" -> "Bluetooth".
- Enable Bluetooth by sliding the ON/OFF tab to the ON position and wait for few seconds.
- Bluetooth icon appears on taskbar.
- When BT is enabled the status shows Turning Bluetooth ON and lists out the available Bluetooth devices.

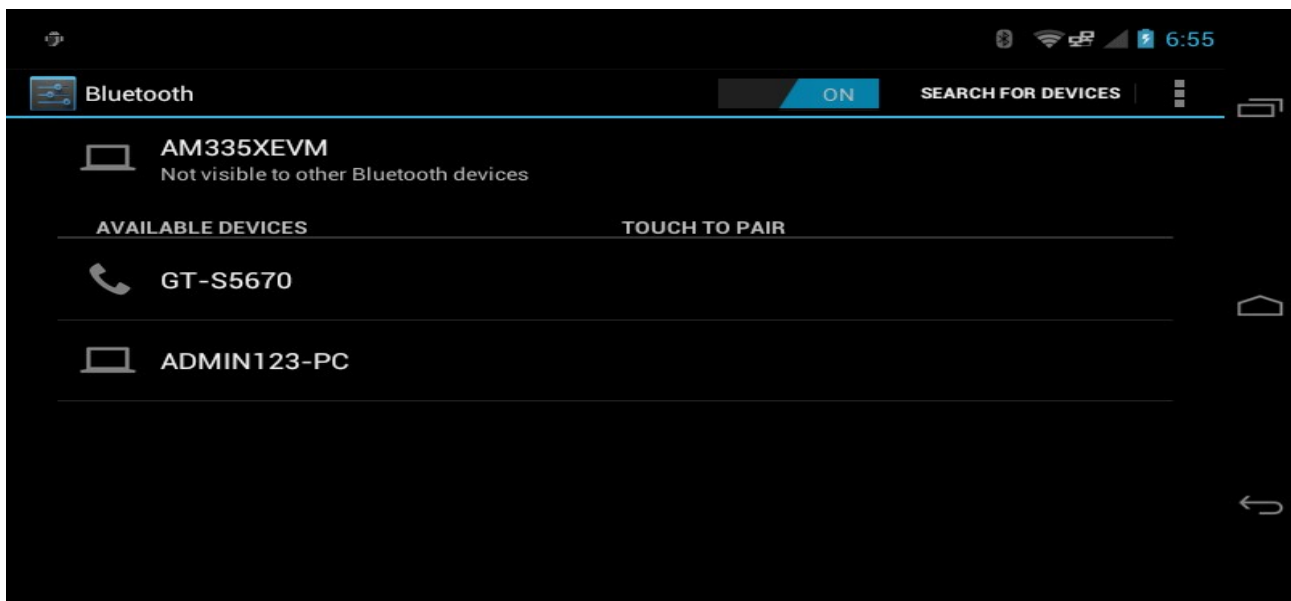


Figure.21 AM335x-TAB - Bluetooth enable

- Select the desired device to pair with.
- A popup dialog with pin will appear.

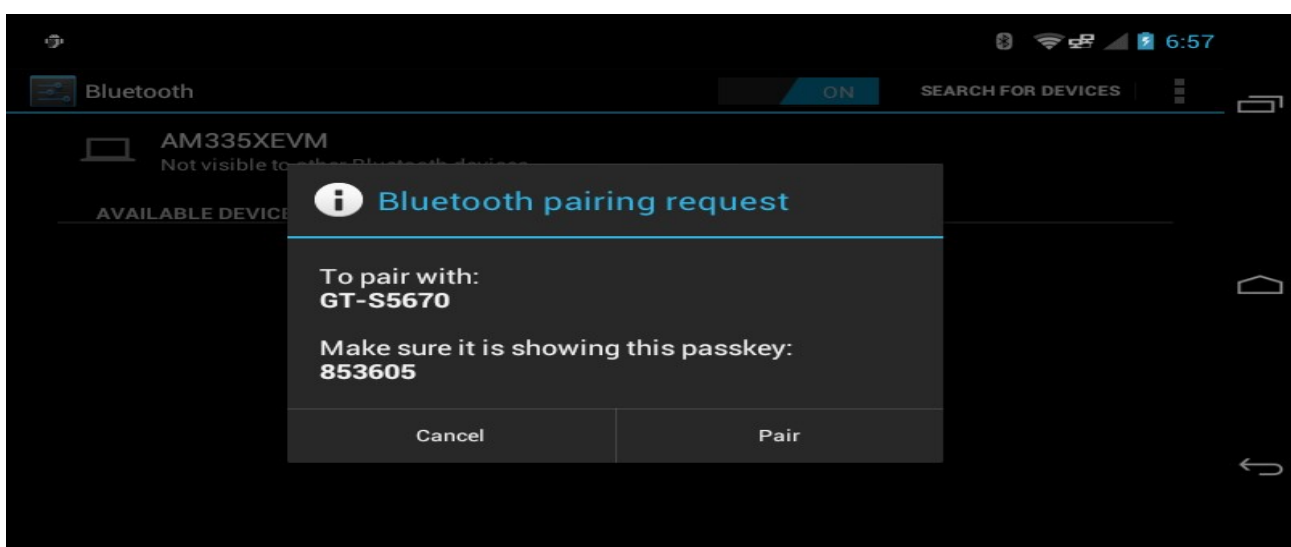


Figure.22 AM335x-TAB - Bluetooth pairing

- Click Pair button to confirm pairing.
- Verify that the desired device shows the same pin. click OK. And then the device gets listed under the paired devices category.

Note: When pairing with Bluetooth headset, pin may not be displayed. Android attempts to pair automatically with Bluetooth headsets. Pin dialog will be shown only if auto-pairing fails.

6.2.2.2 Disabling Bluetooth

- To turn off Bluetooth, browse to "App Launcher" -> "Settings" -> "Bluetooth".
- Disable Bluetooth by sliding the ON/OFF tab to the OFF position.

6.2.2.3 Bluetooth Object Push profile

Using Bluetooth, it is possible to send / receive files (pictures, media files etc).

Sending files

Note: 'Share using Bluetooth' is not enabled by default in the Gallery app. You need to install a third party application like BlueFTP to enable the sharing option. Follow the instructions from <http://www.medieval.it/blueftp-android/menu-id-68.html> to download BlueFTP

- browse to "App Launcher" -> "Gallery" -> "Images".
- Select a picture to share.
- Click share icon (top bar), select bluetooth from the options
- select paired BT device to send to.
- The BT device will prompt to accept. Accept incoming file at the other device.
- Once download finishes, check file.

Receiving files

- On paired device (e.g. phone), select send via Bluetooth, select the AM335x-TAB in list.
- On AM335x-TAB, notification appears about incoming connection

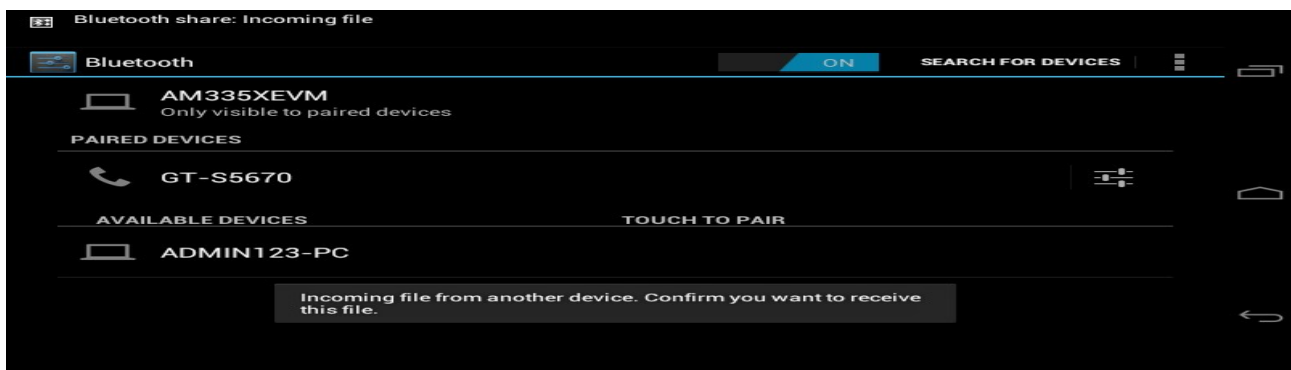


Figure.23 AM335x-TAB - Bluetooth OPP file receiving

- Open the task bar and select "Bluetooth share: Incoming file".

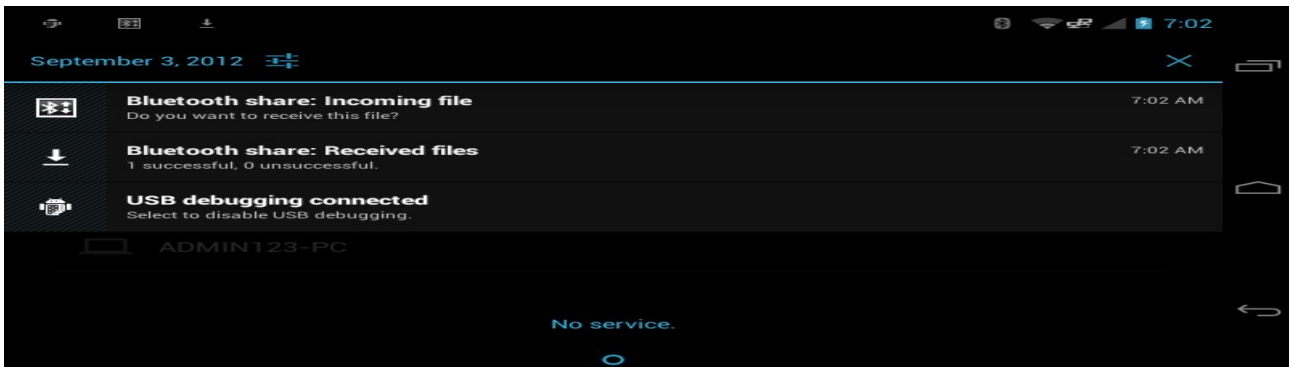


Figure.24 AM335x-TAB - Bluetooth OPP file receiving display on notification panel

- A pop up appears asking for confirmation. On popup click Accept.

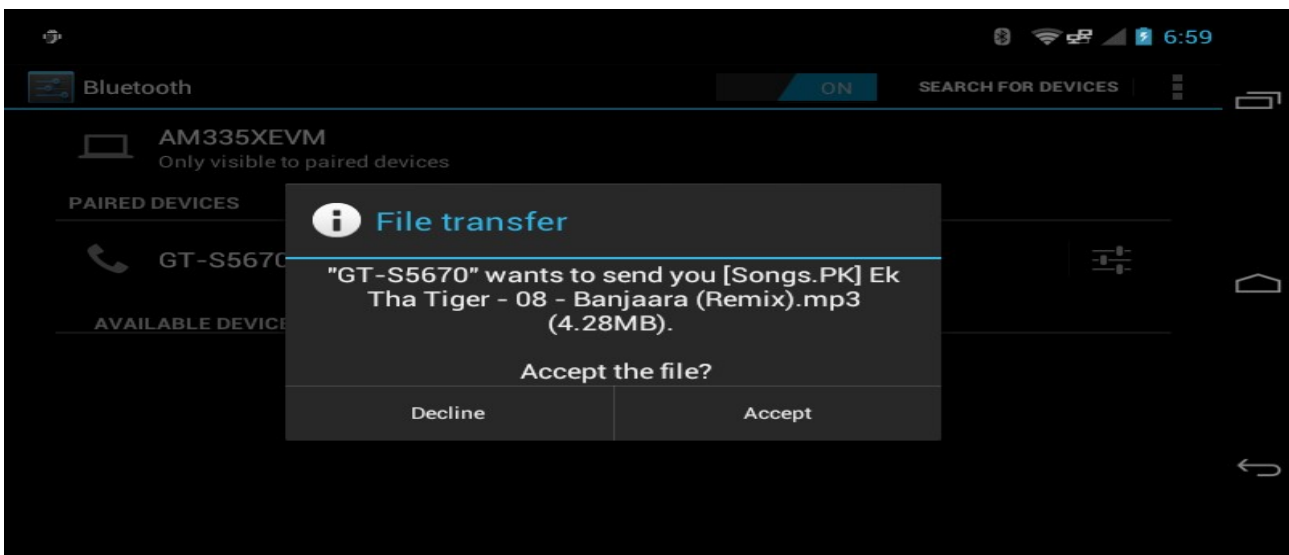


Figure.25 AM335x-TAB - Bluetooth OPP file receive confirmation

- To see the receiving status open status bar

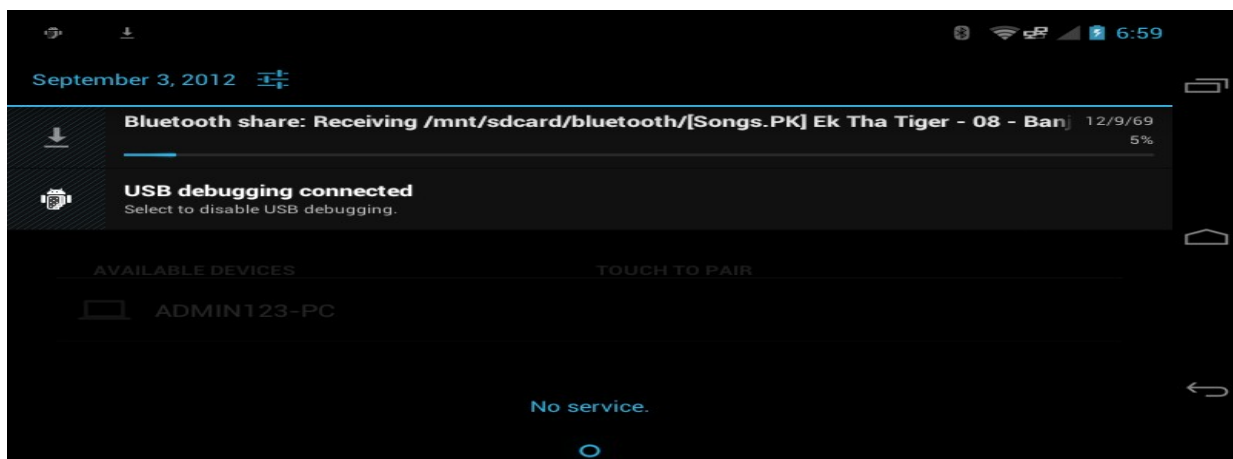


Figure.26 AM335x-TAB - Bluetooth OPP file receiving status on notification panel

6.2.2.4 Bluetooth A2DP profile

Using Bluetooth A2DP profile you can listen to media audio on paired bluetooth enabled headphone.

- Pair A2DP capable bluetooth headset with device. Android uses the stereo headset icon to denote A2DP headset (blue icon on status bar).
- After pairing succeeds, the status is updated to 'Connected'

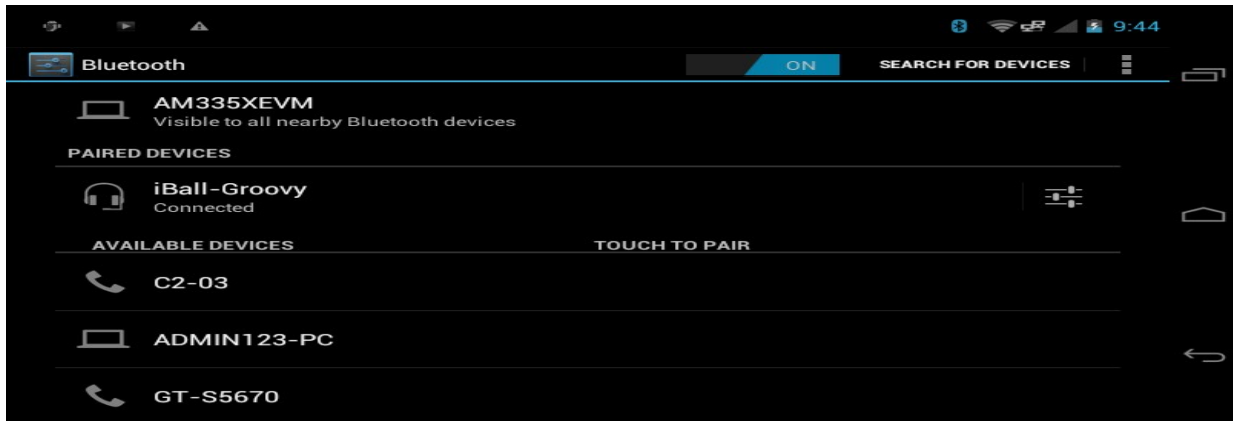


Figure.27 AM335x-TAB - Bluetooth head phone connection

- Open Music player and play any audio clip.
- Audio will be heard on the Bluetooth headset.

6.2.2.5 Bluetooth AVRCP profile

Using AVRCP profile you can control Media playback with Media player keys on Bluetooth headset

- Pair A2DP and AVRCP capable bluetooth headset with device.
- Open Music Player ,add multiple files to current playing playlist and start playback .
- Press the Play/Pause button on the BT headset - able to play and pause the currently playing track .
- Press the Next button on the headset; the next track in the playlist begins to play on the headset.
- Press the Prev button on the headset; the currently playing track restarts from the beginning
- Press the Volume Increment/Decrement button on the headset; volume level changes according to user input from bluetooth headset

6.3 USB Devices

6.3.1.1 USB 3G

Using usb 3G we can access the internet without needing wifi connection on AM335x-TAB

- Select "App Launcher" -> "Settings"->"More"->"Mobile networks" ->"Access Point Names"

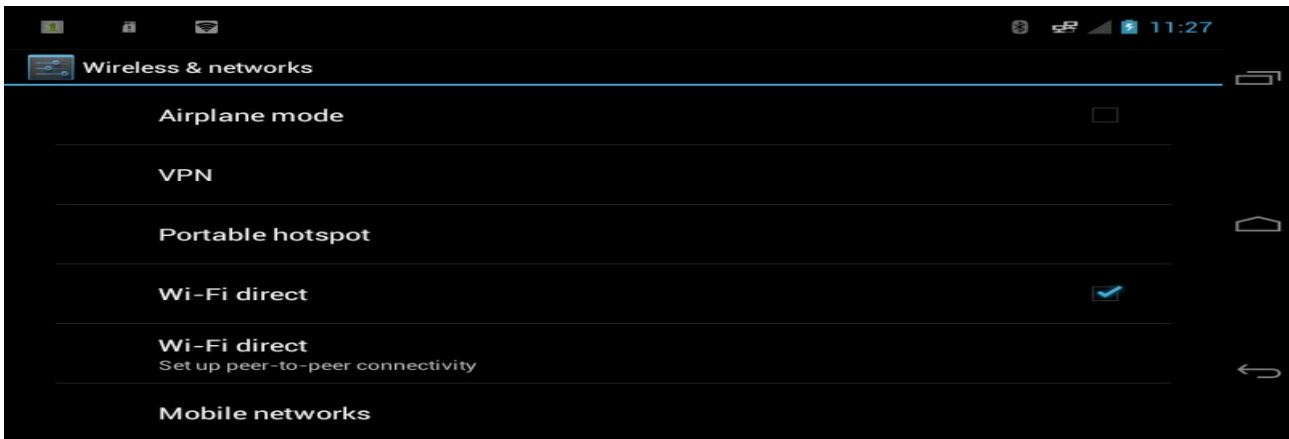


Figure.28 AM335x-TAB - selecting mobile networks for USB 3G

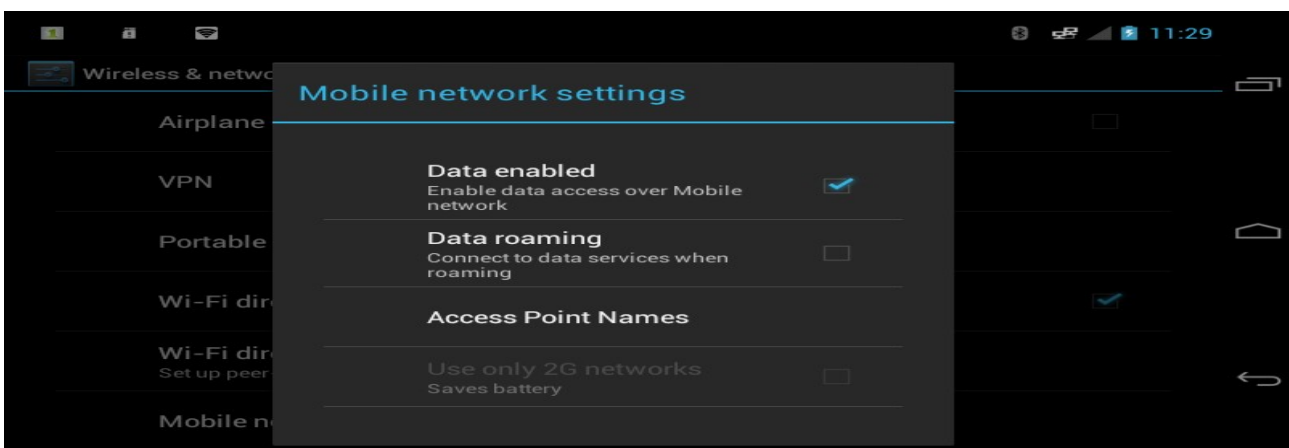


Figure.29 AM335x-TAB - selecting access points for USB 3G

- Open settings menu present on right corner (3 vertical dotted line)

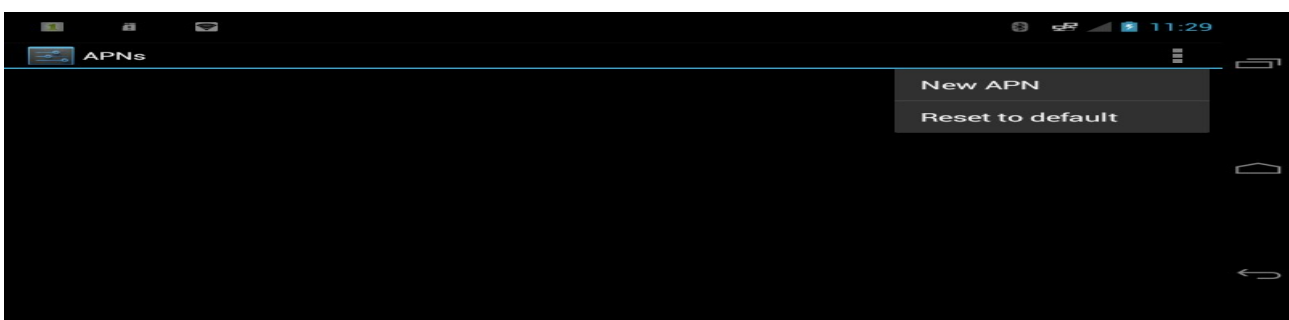


Figure.30 AM335x-TAB - USB 3G APN settings menu

- Select "New APN" to add new entry or select "Reset to default" to remove all entries

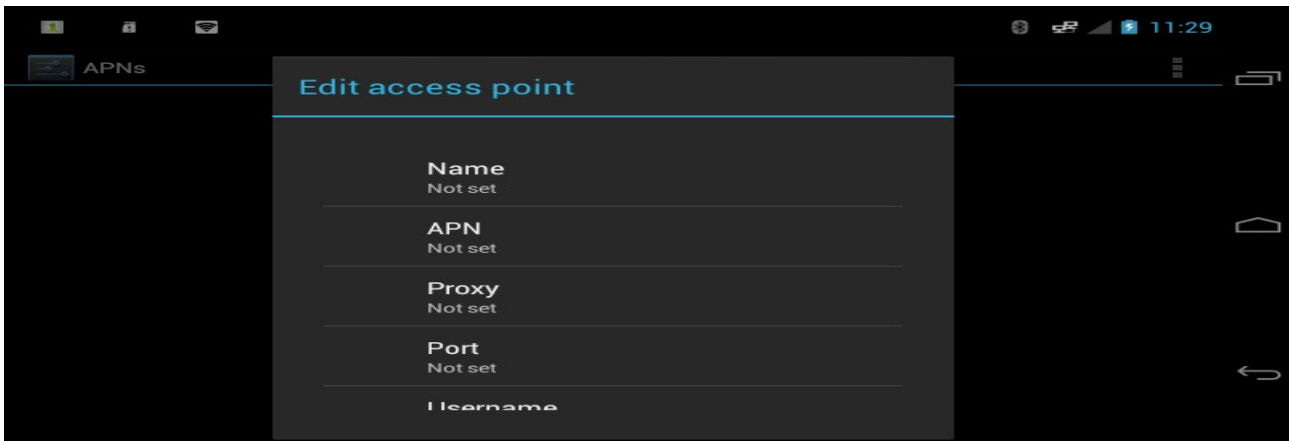


Figure.31 AM335x-TAB - Edit APN details for USB 3G

- For New APN entry enter Name field and APN (eg: airtelgprs.com) and press back button

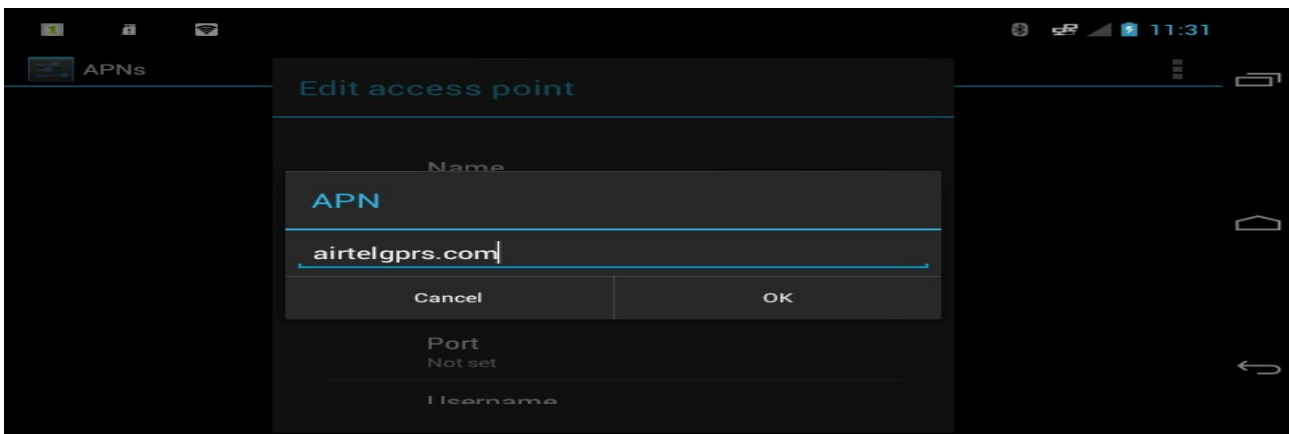


Figure.32 AM335x-TAB - Set APN for USB 3G

- Select APN which through which you want to connect to 3G dongle

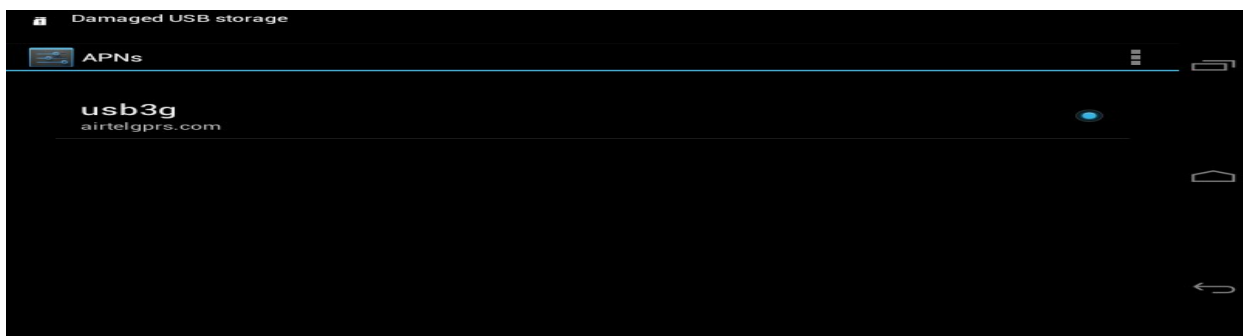


Figure.33 AM335x-TAB - Select the APN from list for USB 3G

- Connect 3G dongle to the device ,you can see 3G icon on status bar once connection successful

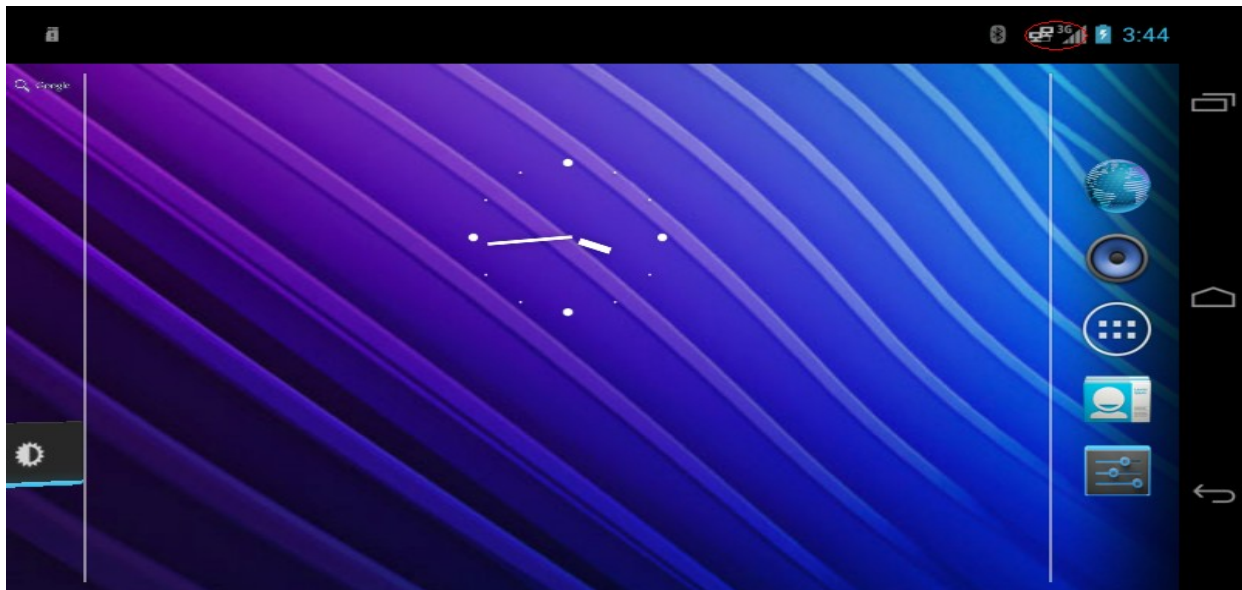


Figure.34 AM335x-TAB - USB 3G connected notification on status bar

Note : Tested 3G feature only with airtel 3g dongle

6.3.1.2 USB Mass storage

- Connect the USB mass storage device to USB Host port
- USB msc and SD card contents can be viewed through File Browser app.

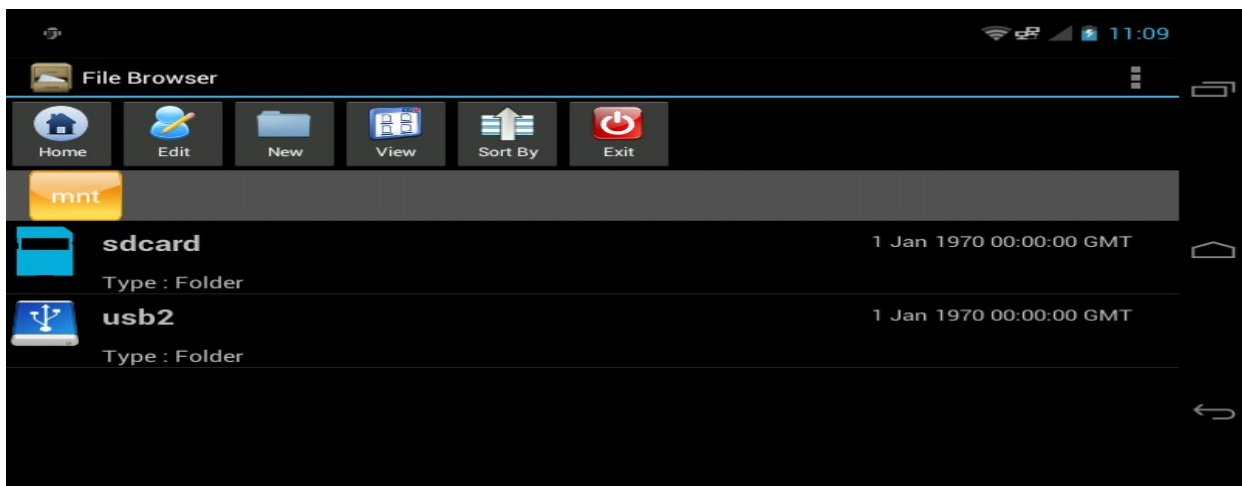


Figure.35 AM335x-TAB Filemanager display SD and USB contents

- Select "sdcard" to view SD card contents ,Select "usb2" to view USB contents .
- To copy data between USB and SD card viceversa , select the file that need to be copied/moved and choose appropriate option in popup window.

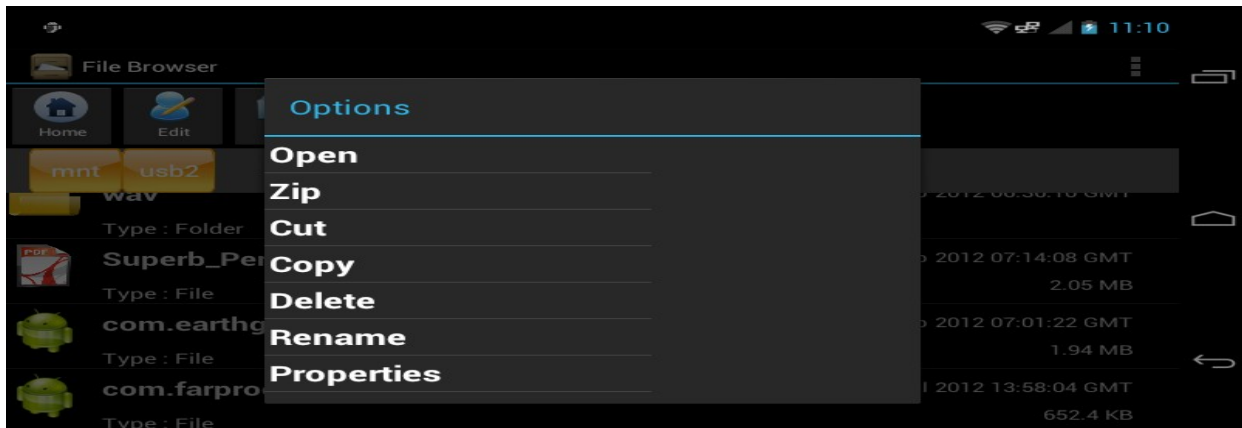


Figure.36 AM335x-TAB Filemanager Open files present in SD or USB

6.3.1.3 USB Keyboard and Mouse

- USB Keyboard can be connected to USB host port
- USB Mouse can be connected to USB host port and can control device using mouse

6.4 Accelerometer Sensor

- AM335x-TAB supports the accelerometer sensor

6.4.1 Auto-rotate screen

- Browse to the "App Launcher" -> "Settings" -> "Display".
- Enable the "Auto-rotate screen" feature. Ensure the Check box gets ticked.
- Now hold the device in horizontal or vertical orientation to find the screen getting rotated.

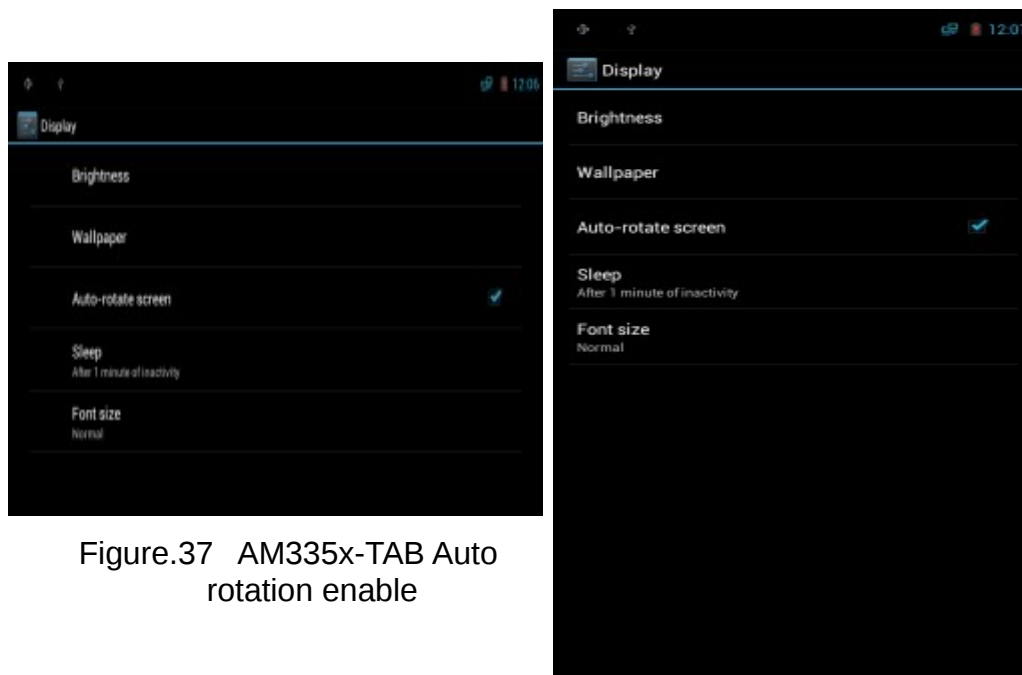


Figure.37 AM335x-TAB Auto rotation enable

6.5 Power Management

Power management is supported on AM335x-TAB.

Below are the features supported in AM335x-TAB:

To go in suspend mode

- Press POWER key on the keypad or wait for screen time out.

To resume from suspend mode

- Hold Power button or back button for 2 seconds

To set the Screen Timeout to go suspend

- Select "App Launcher" -> "Settings" -> "Display" -> "Sleep"
- Select one of the options from the list.

To set the screen always on preventing suspend

- Select "App Launcher" -> "Settings" -> "Developer options" -> "Stay awake"

To set Screen Brightness

- Select "App Launcher" -> "Settings" -> "Display" -> "Brightness"

Auto brightness Control

- Select "App Launcher" -> "Settings" -> "Display" -> "Brightness" > "Automatic brightness"

To set Alarm in Android

- Select "App Launcher" -> "Clock "
- Click "Set alarm" -> "Add Alarm". Set the alarm as per requirements.

Device will be woken up from suspend at Alarm Time.

6.6 ADB Android Debugger & Downloader

Android Debug Bridge (adb) is a versatile tool lets you manage the state of the Android-powered device. For more information about what is possible with adb, see Android Debug Bridge page at <http://developer.android.com/guide/developing/tools/adb.html>. The ADB tool can be used to

- Download an application from a host machine, install & run it on the target board.
- Start a remote shell in the target instance.
- Debug applications running on the device using the debugging tool DDMS (Dalvik Debug Monitor Server) which runs on top of adb connection.
- Copy files to and from the board to host machine

Downloading "ADB" & Host setup

The adb tool is a part of Android SDK package located at <http://developer.android.com/sdk/index.html>. For an overview of how to install and set up the Android SDK, follow download & setup instructions from <http://developer.android.com/sdk/index.html>.

The adb tool is located in platform-tools/ directory under the Android SDK installation. Export the platform-tools and tools directory path as shown below.

```
$ export PATH=<android_sdk_path>/platform-tools/:<android_sdk_path>/tools/:$PATH
```

6.6.1 Connecting Host machine & board through adb

This release of AM335x-TAB has been tested for connecting adb over USB

6.6.2 adb over USB

- Make sure that the mini-usb cable is connected between the host usb port and the target's USB OTG port
- Turn on "USB Debugging" on your AM335x-TAB. On the AM335x-TAB (UI screen)-
 - Browse to "App Launcher" -> "Settings" -> "Developer options".
 - Enable "USB debugging". Select OK for confirmation. Ensure the Check box gets ticked.
- Setup host machine to detect the AM335x-TAB (sdk installation on host machine).
 - Verify the adb connectivity between host and AM335x-TAB
\$ adb devices

If device is connected, then output on screen should list the device, example:

```
List of devices attached
20100720 device
```

6.6.3 Operations over ADB

The Root File System provided in this AM335x-TAB release contain only standard Android components and applications.

To install and run Android application follow steps mentioned below:

6.6.3.1 Installing (.apk files) application on AM335x-TAB

- From the host: You can use adb tool for package installation.

```
$ adb install <package>.apk.
```

NOTE: Use -s option with the adb tool, to install the package on external storage.

On successful installation adb tool will report SUCCESS on host terminal, and the application would be listed on the android main menu.

6.6.3.2 Un-installing applications (.apk) using adb

- To un-install non-default components (that were installed later)
 - Method 1: On the host machine execute the following

```
$ adb shell pm list packages
```

```
$ adb uninstall <package name>
```

- Method 2: On target:

Main menu -> Menu -> Settings -> Applications -> Manage applications -> Find the package Tap on it -> Uninstall -> OK -> OK

- On successful removal, the application would have been removed from the android main menu. All the short-cuts to the application also removed.

- To un-install default components, use the following commands from abd on host machine

```
$ adb shell  
# rm /system/app/app.apk
```

On successful removal, the application would have been removed from the android main menu.

6.6.3.3 Copy any files to and from the board over ADB

- Using the adb commands "pull" and "push" copy files to and from the board.
- Unlike the install command, which only copies an .apk file to a specific location, the pull and push commands let you copy arbitrary directories and files to any location on the board.
- To copy a file or directory (recursively) from the board, use

```
$ adb pull <remote> <local>
```

- To copy a file or directory (recursively) to the board, use

```
$ adb push <local> <remote>
```

In the commands, <local> and <remote> refer to the paths to the file or directory on your development host (local) and on the target instance (remote).

Here's an example:

```
$ adb push foo.txt /sdcard/foo.txt
```

6.6.3.4 Log checking

- Using the adb command "logcat" device log can be verified

```
$ adb logcat
```

7. CTS

- Compatibility Test Suite of android has been executed on the device , details are listed below

Android version	4.0.3 Ice Cream Sandwich
CTS version	Android_CTS_4.0.3_r2
Build model	Am335XEVM
Android Platform Version	15
Total test cases	17317
Test Passes	17215
Test Failed	102

CTS Results can be found in "AM335x-TAB-Android-ICS-4.0.3-RDK-1.0/Reports/CTS/".

For an overview of how to set up device and execute CTS test suite refer to the following link
<http://source.android.com/compatibility/cts-intro.html>

8. Write to us

For any queries please mail us at contact@allgosystems.com

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