Android

How to Change LCD DPI

Android-ALL-V0.01E-How to Change LCD DPI

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Telechips

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Revision History

Date	Version	Description
2011-05-23	0.01	Initial release

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1 Introduction

This document provides how to change dpi depending on LCD resolution and helps the user to achieve a wanted resolution in a nice and easy way.

The reason why proper dpi should be used according to resolution is to get LCD output without image quality degradation or icon coordinate change for UI and view.

In Android, images and icons in UI and view exist as a file in a certain directory per dpi of LCD device within Android System and these are called drawable resources.

Types of drawable resources used in Android are as follows.

- ldpi : Low density
- mdpi : Medium density
- hdpi : High density
- xhdpi : Extra High density

2 Drawable Resource Display of LCD in Android

In order for icons, texts and images to be drawable in an optimized state per dpi of a device, Telechips performs various tests and suggests optimized dpis and drawable resource paths as the below table.

	LCD resolution	Number of DPI (density)	drawable resource path
1	WQVGA (240 x 480)	120 dpi	ldpi : Low density
2	HVGA (320 x 480)	160 dpi	mdpi : Medium density
3	WVGA (800 x 480)	200 dpi 240 dpi	hdpi : High density
4	960 X 640	320 dpi	xhdpi : Extra High density

Table 1 Dpi According To LCD Resolution and How To Set Drawable Resource Path

3 How To Change Dpi and To Set Drawable Resource Path

For the Android platform modified by Telechips, once the user selects the dpi and drawable resource suitable for LCD resolution, the system displays corresponding icons, texts and images.

ex) If WVGA (800 x 480) LCD is used, set as follows.
density ➔ 240 dpi
drawable resource path ➔ hdpi (High density)

The followings are how to change dpi and drawable resource path in TCC892x.

3.1 Changing Dpi

In order to change dpi applied to a device, move to the following path.

```
$ cd ~/mydroid/android/device/telechips/tcc8920/
$ vi device_base.mk
```

The default dpi provided by Telechips is '120 dpi'. The user can change this by using `ro.sf.lcd_density`.

```
ro.sf.lcd_density = 240
```

3.2 Changing Drawable Resource Path

By using the following path, check the drawable resource path in use.

```
$ cd ~/mydroid/android/device/telechips/tcc8920/
$ vi device_base.mk
```

In the case that a test is supposed to be performed, once all drawable resource paths are registered as follows, the user can see icons, texts and images displayed differently according to dpi change.

```
PRODUCT_AAPT_CONFIG := xhdpi hdpi mdpi ldpi
```

However, in terms of binary images for distribution use, once all drawable resource paths are added, the code sizes of the binary images get big. Therefore, the user should select a proper drawable resource path for user's wanted dpi by referring to Table 1 and change it as follows.

For 320 dpi

```
PRODUCT_AAPT_CONFIG += xhdpi
```

For 240 & 200 dpi

```
PRODUCT_AAPT_CONFIG += hdpi
```

For 160 dpi

```
PRODUCT_AAPT_CONFIG += mdpi
```

For 120 dpi

```
PRODUCT_AAPT_CONFIG += ldpi
```

3.3 Checking Dpi Applied To A Device After Building Android Framework

The user can check dpi applied to a device after building Android framework.

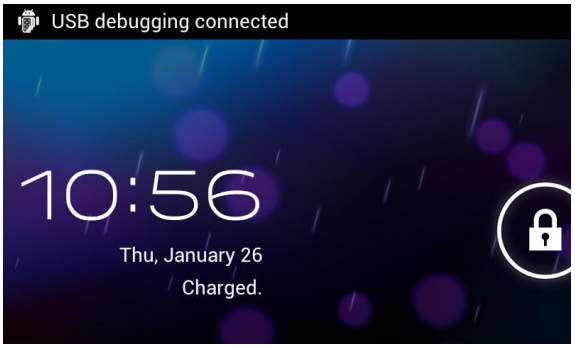
```
$ cd ~/mydroid/android/out/target/product/tcc8920/system
$ vi build.prop
```

```
ro.sf.lcd_density = 240
```

※ If dpi is not changed as set by the user, remove build.prop file in the following path and rebuild Android framework.

```
$ cd ~/mydroid/android/out/target/product/tcc8920/system
$ rm -rf build.prop
```

4 Dpi Per Resolution And LCD Output Change After Setting Drawable Resource Path



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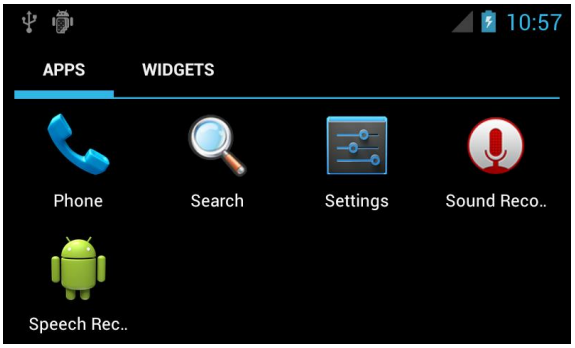

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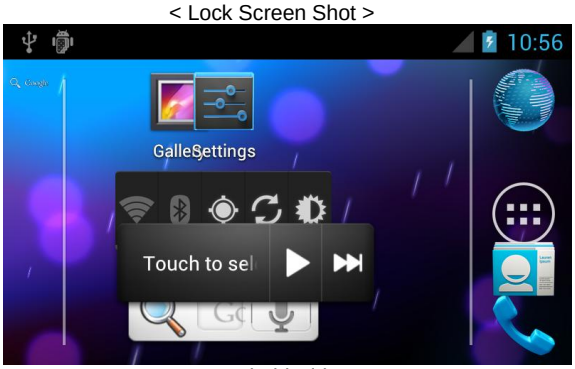

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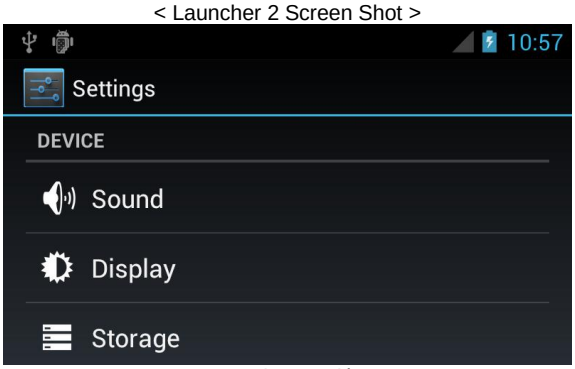

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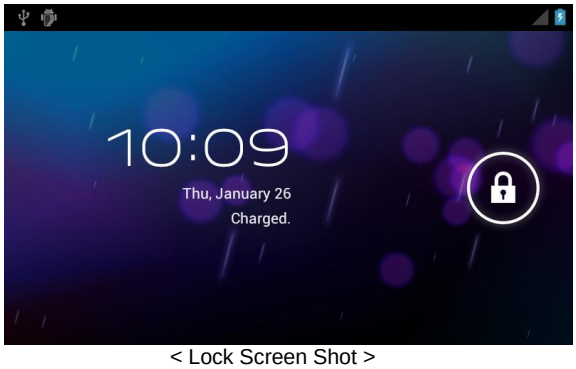
< WVGA resolution (960 X 640) 320 dpi >



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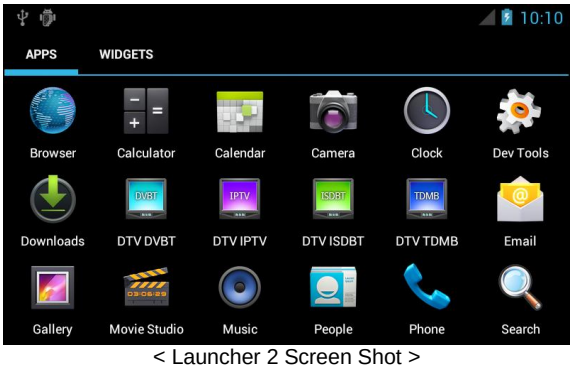

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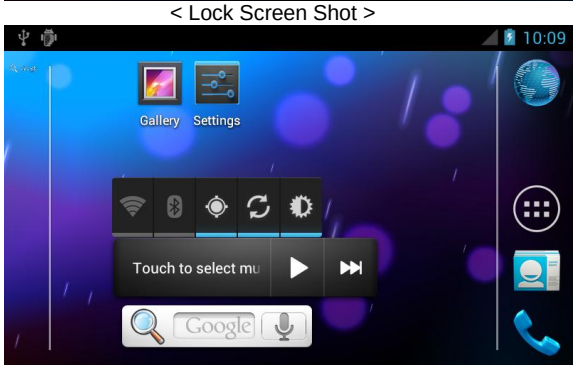

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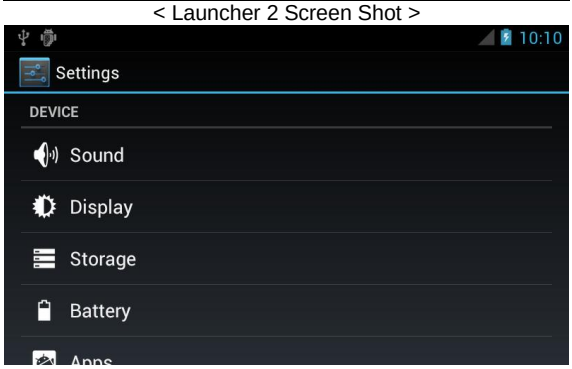

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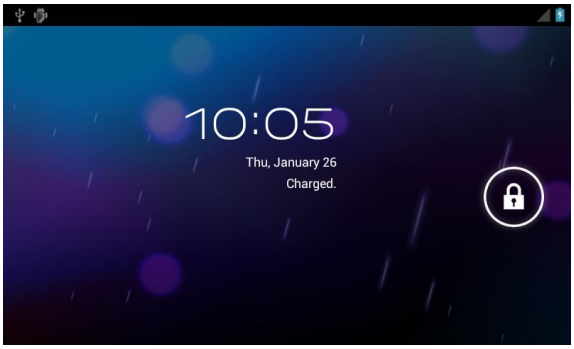

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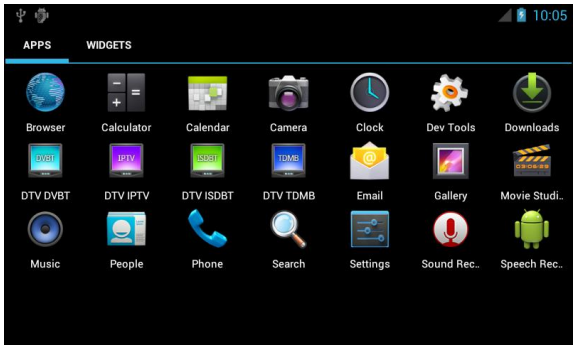

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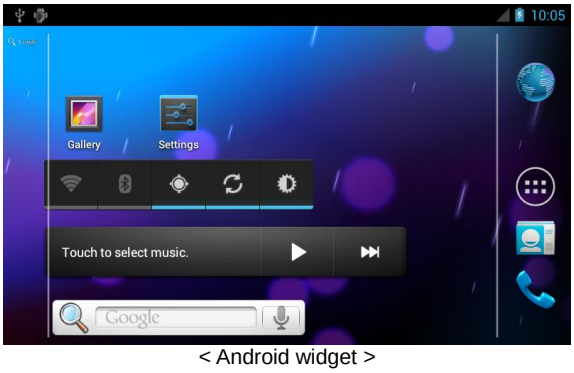

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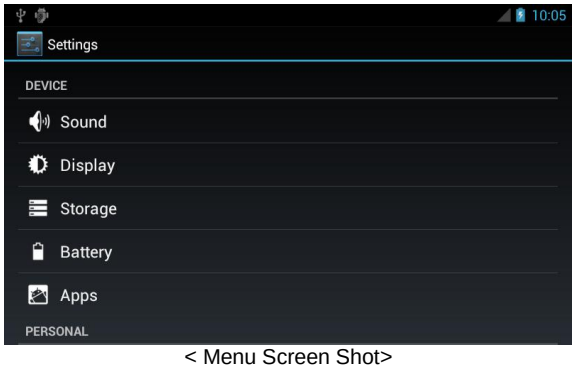

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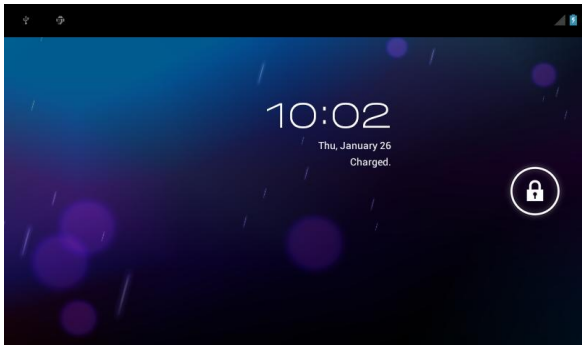

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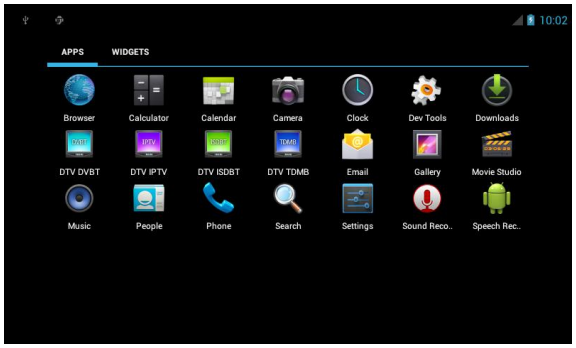

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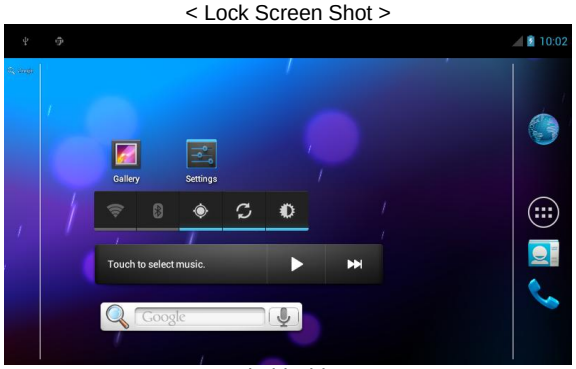

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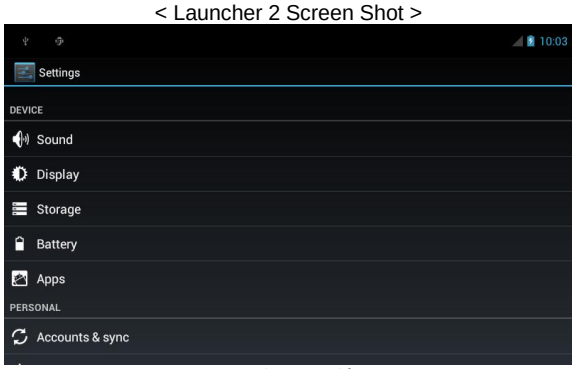

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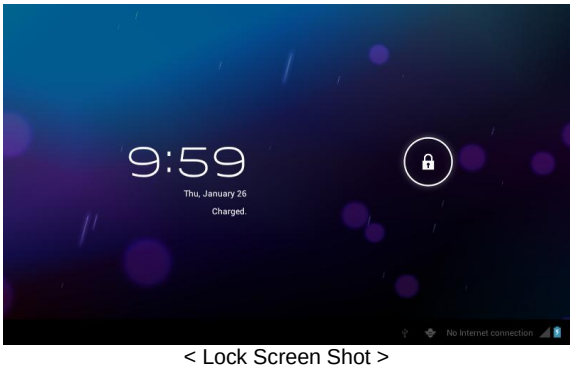
< HVGA (320 x 480) 160 dpi >



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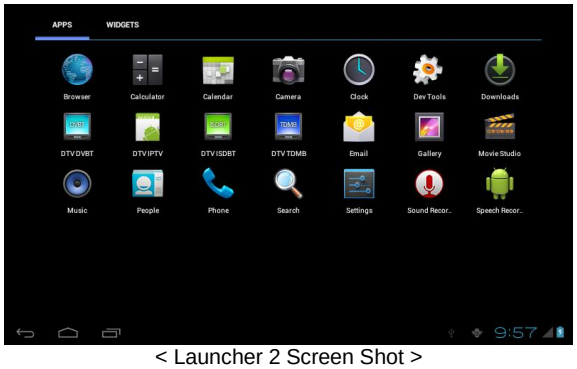

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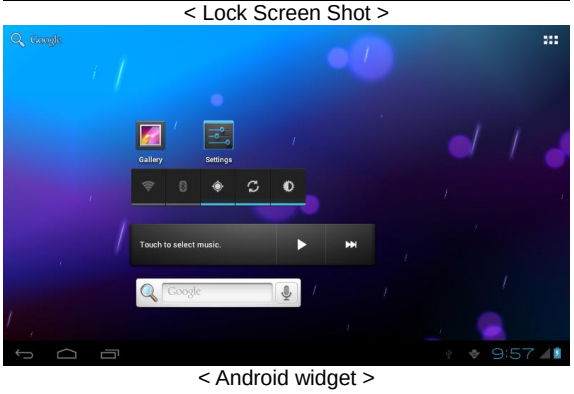

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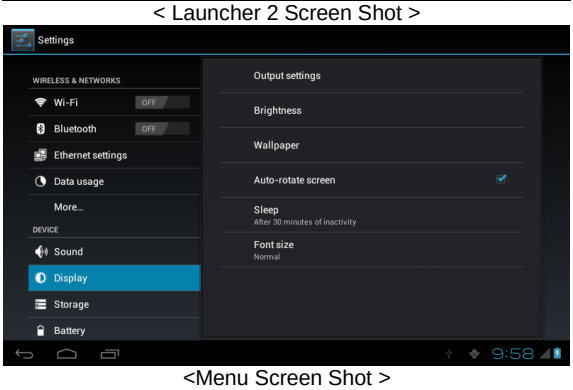

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< WQVGA (240 x 400) 120 dpi >