Android

Release Note

TCC892x-STB-Android-IceCreamSandwich-V1.05E-Release Note

June 25, 2012

Telechips

Preliminary

DISCLAIMER

All information and data contained in this material are without any commitment, are not to be considered as an offer for conclusion of a contract, nor shall they be construed as to create any liability. Any new issue of this material invalidates previous issues. Product availability and delivery are exclusively subject to our respective order confirmation form; the same applies to orders based on development samples delivered. By this publication, Telechips, Inc. does not assume responsibility for patent infringements or other rights of third parties that may result from its use.

Further, Telechips, Inc. reserves the right to revise this publication and to make changes to its content, at any time, without obligation to notify any person or entity of such revisions or changes.
No part of this publication may be reproduced, photocopied, stored on a retrieval system, or transmitted without the express written consent of Telechips, Inc.
This product is designed for general purpose, and accordingly customer be responsible for all or any of intellectual property licenses required for actual application. Telechips, Inc. does not provide any indemnification for any intellectual properties owned by third party.
Telechips, Inc. can not ensure that this application is the proper and sufficient one for any other purposes but the one explicitly expressed herein. Telechips, Inc. is not responsible for any special, indirect, incidental or consequential damage or loss whatsoever resulting from the use of this application for other purposes.

COPYRIGHT STATEMENT

Copyright in the material provided by Telechips, Inc. is owned by Telechips unless otherwise noted.
For reproduction or use of Telechips' copyright material, permission should be sought from Telechips. That permission, if given, will be subject to conditions that Telechips' name should be included and interest in the material should be acknowledged when the material is reproduced or quoted, either in whole or in part. You must not copy, adapt, publish, distribute or commercialize any contents contained in the material in any manner without the written permission of Telechips. Trade marks used in Telechips' copyright material are the property of Telechips.

Important Notice

This product may include technology owned by Microsoft Corporation and in this case it cannot be used or distributed without a license from Microsoft Licensing, GP.

For customers who use licensed Codec ICs and/or licensed codec firmware of mp3:
"Supply of this product does not convey a license nor imply any right to distribute content created with this product in revenue-generating broadcast systems (terrestrial. Satellite, cable and/or other distribution channels), streaming applications(via internet, intranets and/or other networks), other content distribution systems(pay-audio or audio-on-demand applications and the like) or on physical media(compact discs, digital versatile discs, semiconductor chips, hard drives, memory cards and the like). An independent license for such use is required. For details, please visit http://mp3licensing.com".

For customers who use other firmware of mp3:
"Supply of this product does not convey a license under the relevant intellectual property of Thomson and/or Fraunhofer Gesellschaft nor imply any right to use this product in any finished end user or ready-to-use final product. An independent license for such use is required. For details, please visit http://mp3licensing.com".

For customers who use Digital Wave DRA solution:
"Supply of this implementation of DRA technology does not convey a license nor imply any right to this implementation in any finished end-user or ready-to-use terminal product. An independent license for such use is required."

For customers who use DTS technology:
"Supply of this implementation of DTS technology does not convey a license, exhaust DTS' rights in the implementation, or imply a right under any patent, or any other industrial or intellectual property right of DTS to use, offer for sale, sell, or import such implementation in any finished end-user or ready-to-use final product. Notice is hereby provided that a license from DTS is required prior to such use."

"This product made under license to U.S. Patents 5,451,942; 5,956,674; 5,974,380; 5,978,762; 6,487,535; 6,226,616 and/or foreign counterparts."

"© 1996 – 2010 DTS, Inc."

Revision History

Date	Version	Description
2012-01-27	1.00	Release note for ICS alpha release
2012-02-20	1.01	Release note for ICS beta release
2012-03-01	1.02	Release note for ICS v12.03_r1-tcc-android-4.0.3 official release
2012-04-20	1.03	Release note for ICS v12.04_r1-tcc-android-4.0.4 official release
2012-05-21	1.04	Release note for ICS v12.05_r1-tcc-android-4.0.4 official release
2012-06-25	1.05	Release note for ICS v12.06_r1-tcc-android-4.0.4 official release

TABLE OF CONTENTS

Contents

1 v12.06_r1-tcc-android-4.0.4 Release

You can check below comments from each repositories except hardware/telechips/tcc892x, hardware/telechips/dxb, device/telechips repositories. Please understand there may be some spelling mistakes and it can be found comments from GIT server, also.

1.1 Notice

- Support UVC Camera
- Support Wi-Fi Direct function
- Update MALI Driver – MALIr3p0_04rel0
- Optimize multimedia functions
  : Local & Streaming playback

1.2 Function Limitations

In the **v12.06_r1-tcc-android-4.0.4** Release, there are some function limitations. And for more information, refer to the following description.

No	Function	Description
1	**WIFI**	WIFI Direct function is supported. : In case of Atheros WIFI, it doesn't support this function yet.
		Support Broadcom BCM4330 (include Wi-Fi Direct) Support Realtek RT8189ES (include Wi-Fi Direct) Support WPS operation using push button.
2	**UVC Camera**	UVC Camera is supported and supported format is MJPEG and YUYV.
3	**SD Boot**	Support SD Card erase command
4	**FWDN**	In case of low format by FWDN, it was supported only eMMC before. But it supports SD/T-Flash from this version.
5	**File system**	Support EXT4 file system on NAND FTL Driver(V8).

[표1. Function limitations in v12.06_r1-tcc-android-4.0.4 Release]

1.3 Changes History

The following items are main items which changed from this version.

1.3.1 System Part

- **System**
  - ✓ Add Broadcom BCM4330 bluetooth function.
  - ✓ Optimize driving strength & ODT setting of DDR3
  - ✓ Change dirty_ratio set 0 to 5 when connect ums
    : when ums connected dirty_ratio set to 0 but it regress io performance so change dirty_ratio set to 5
  - ■ Update RN5T614G PMIC Driver
  - ■ Fix the problem which dev/tmem device opened count is increased repeatedly
  - ■ Bug fix: to increase UMP_memory when playing next/prev files with different resolution
  - ✓ Update GPU scaling process(but this feature is disabled now)
  - ✓ Support SD/MMC Erase function.
  - ✓ Fix the problem that the eCompass module can be slept for a long time.
  - ✓ Bug fix: folder be recognized by media's file when folder's last name was media's extension.
  - ✓ Support eMMC low format and erase command function
  - ✓ Bug fix: UMP allocation failed problem when wake-up work just after LCD start dimming
  - ✓ Insert supplement code for shutdown
  - ✓ Update PMIC(AXP192/RN5T614) drivers
    :set the LDO voltage level on bootloader, only control enable/disable in kernel
  - ✓ Add a protection code while repeating plug-in/out UMS on USB host
  - ✓ Change dalvik.vm.heapsize(256->368)
  - ✓ Remove Phone and TelephonyProvider package on WiFi only devices
  - ✓ Add Nanya-NT5CB256M8GN_CG,Innoways-IN5CB256M8BN_CB ddr3 init code
  - ✓ Support SD/eMMC booting at M805S board
  - ✓ Update ADC touch driver and add save external interrupt selection register.

- **Network**
  - ✓ Add BCM4330 WIFI functions.
  - ✓ Update WIFI driver for Realtek-rt8189es.
  - ✓ Add BCM4330 firmware related to WIFI
  - ✓ Add WIFI power control function
  - ✓ Add tethering function using Realtek WIFI module
  - ✓ Update Realtek WiFi (RT8188CUS/RT8189ES) for WiFi direct function

- **SD Card**
  - ✓ Fix the problem – SDIO timeout error occurred during wakeup at tcc8923(0x1008) evm.

- **Filesystem**
  - ✓ Support NAND version 8 driver and EXT4 file system on NAND.
  - ✓ Fix the problem that was not displayed storage space on "Settings → Apps" menu.
  - ✓ Updated UI related to NTFS format on Factory Data Reset menu.

✓ Fix fastboot erase command

1.3.2 Multimedia Part

- **Audio**
  - ✓ Update AAC Decoder library to v3.18.08.\
  - ✓ Improvement audio driver
  - ✓ Fix bug that sound didn't out after recording using RT5633
  - ✓ Update audio HAL for RT5625 codec
  - ✓ Bug fix: CPU usage increased up to 95% at SPDIF out mode
  - ✓ Add interface for adjusting the sampling rate
  - ✓ Bug fix: Wave file recognition problem
  - ✓ Update DDP(to DD) passthru and DRC control
  - ✓ Fix bug that is related with high frequency WMA contents
    :Some WMA contents with high frequency over 48KHz is played so fast, because WMA decoder out the pcm downsampling it.
  - ■ Improve audio quality

- **Video**
  - ✓ Bug fix: broken display of first frame just after LCD is off/on during playback.
  - ✓ Bug fix: video editor error when inserting clip and playing video after inserting clip.
  - ✓ Update VPU library (v2.5.0.03) for TCC892x.
  - ✓ Add skip process when 30fps interlace video output to 50Hz.
  - ✓ Support UVC Camera function.
  - ✓ Bug fix: In case of specific video apk, timeout is happened during suspend/resume function.
  - ✓ Update WMA & WMV Decoder library.
  - ✓ Bug fix: unsmooth video play when vsync enable and wrong audio media time – ignore the difference between audio media time and real time
  - ✓ Update FLV Demuxer library (v0.3.12)
  - ✓ Modify to control VPU clock in detail
  - ✓ Add a function to move a subtitle position in TCCVideoPlayer
  - ✓ Support fast start playback of TS file format
    : increase mem size for m2m scaler use when video vsync
  - ■ Modify deinterlace when video is played through HWC renderer on LCD mode
  - ■ Bug fix: position problem in case SurfaceTexture reuse even though resolution of contents is changed
  - ■ Update transcoder API
  - ■ Modify to restore VPU when init function is failed
  - ■ [TCCVideoPlayer] bug fix: after preview is finished, application is crashed.
  - ■ Support HWC renderer mode when playing video on LCD
  - ■ Update MPG library to v1.83.5
  - ■ [Subtitle]Modified to display subtitle on UI layer.
  - ■ [Subtitle]Fixed an error what display red screen when play start
  - ■ [Subtitle]Modified to support RGB565 format when using CCFB driver
  - ■ Update MPG library v1.83.4

- **Streaming Play**
  - ✓ Update RTSP pause/resume logic.
  - ✓ Enhance playback of RTSP, HTML5, HLS, HPS

        :Make HLS/RTSP seek stable

        :Enhance interoperablility of a various kind of HTML5 video apk.

        :Avoid android audio track from hanging media player up.

- ✓ Upload patch files to block ads before movie on Chinese flash video site.
- ✓ Add HTTP Streaming service data.
- ✓ Modify connection control value for RTSP
- ✓ [HLS] Add safety code to clean connecting data source up fast
- ✓ [HLS] Add 'vice versa' case of www.56.com
  : Cover the HLS video clip that its url has not an m3u8 token but real service is HLS
- ■ [HLS] Add more safety code for HTTP connection while playing
- ■ [HTTP Streaming] Make heap memory of streaming cache and cdk demuxer thread to be cleaned up strictly
- ■ [HPS] Change AVI init. Option for streaming
- ■ Bug fix: Playing flash audio using OpenMax AL would be hung up if audio decoder returns time out
  :ignore time out is comes from OMXCodec, because it will be decoded next time in common cases.
- ■ [HPS] Enhance playback stuttering protection
  - ◆ Create new demux thread for HPS
  - ◆ Remove the property tcc.parser.sequential
  - ◆ Tune delayed thread triggering time against caching underrun
  - ◆ Minimize playback stuttering
  - ◆ Fix the problem that webm files may not be recognized at SniffTCCMedia.a
    : Webm files don't have 0x42 0x82 0x88 sequence at header
- ■ Media Streaming: Bug fix for misextraction of the duration of sequential mode buffer.
- ■ Update RTSP Seek operation(VOD)
- ■ Bug fix: seek operation didn't work correctly when playing flash video or Netflix
  :Reset timestamp when all ports of video decoder component are flushed. Because previous timestamp and data in vpu buffer are useless.
- ■ [HTML5] consider more of resume-seek in HTML5VideoView
  :solve display time mismatch problem at re-entering the same clip when this clip can't support seek.
- ■ [HLS]bug fix for playlist reloading routine
  :prevent playlist sequence number from being overwrite by old one
- ■ Add ASF mime type for HTTP streaming
- ■ Optimize overall of HTML5/HLS/HPS
- ■ Media streaming: Tune media seek determination time not to run media seek while dragging progress thumb.
- ■ [HLS]Fix the excessive auto-pause/resume in HLS 'live' playback
- ■ [HLS]Tune configuration to endure http keep alive session
- ■ [HLS]support live.cntv.cn playback
- ■ [HPS]Add wav/mp4/general test code for DLNA
- ■ [HPS]Support wma/wmv/wav/mp4/mpg for DLNA specific server configurations.

- ● **HDMI / Composite**
  - ✓ Modify to support auto-detection mode for HDMI
  - ✓ Change HDMI power control, HDMI power doesn't be controlled off at HDMI resolution is changed
  - ✓ Check ECID. If TCC8925K and STB is used, HDMI is set 480p
  - ■ Modify video scale condition of bypass

- Fix display problem when HDMI is disconnected
- Fix clock setting of HDMI audio for SPDIF output
- Fix default resolution of auto-detect when device have wrong EDID
- Fix video resize problem of component and composite output

1.3.3 Graphic Part

- **MALI**
  - **Update MALIr3p0_04rel0.**

- **Display**
  - ✓ Added alphablending to tcc scaler driver
  - ✓ Improve low quality of UI when rotation UI.
  - ✓ Remove ldpi in PRODUCT_AAPT_CONFIG
  - ✓ Fix the problem : Shaking display issue when 25fps video output to 60Hz
  - ✓ Modify to prevent LCD tearing
  - ✓ Bug fix: the problem is that UV order is changed if there is offset to crop source image [TCCC892x]
  - ✓ Support simple deinterlace block on LCD and VIQE deinterlace block on HDMI
  - ✓ Modify to align UMP offset when playing video with specific resolution of YUV420 semi-planar.

1.3.4 Broadcasting part

- **Common**
  - ✓ Update GPSB-TSIF driver for suspend/resume.
  - ✓ Set default PTS interval & framerate. It is for default video delay value.
  - ✓ Update tcc_dxb_drv.ko and linuxtv component
  - ✓ Add file play function while recording
  - ✓ Update tcc_dxb_drv.ko (linuxtv driver)
  - ✓ Update TCCSWDemuxer_V2_018 for resolution change while playing
  - ✓ [TCC316X] Asm update for T-DMB(version 1.5.23)
    : bug fix TDMB TS Align problem
  - Modify to improve the speed of channel change
  - Update LATM parser
  - Update BSAC decoder
  - Bug fix: after channel scan, no audio output
  - Update tcc_gpsb_tsif
  - Fixed full view size in status bar hide
  - [IPTV]Add protection code while parsing RTP header

- **ISDB-T**
  - ✓ Add an area-code field in channel DB.
  - ✓ Add a channel of "open university of Japan" to preset of Kanto wide-area.
  - ✓ Update IC-card driver for TCC8925_M805S_D3_08X4_2CS_V1.4 board.
  - ✓ Arrange source for libISDBTDemux.Input.so, not code change.
  - ✓ Add EPG_3List.
  - ✓ Update asm (MPW version 2, MPW version 1) – Improve stability
  - ✓ Support MPW version 2 and 2-Diversity.
  - ✓ Add a routine to discard the statement of caption & superimpose

which has CS but non-whitespace characters within 0.5s form a previous one.
- ✓ Change a channel name of yomiuri broadcasting system in kagoshima (traditional Chinese → simplified chines)
- ✓ Modified to save a handover information in channel DB.
- ✓ Modified to save EPG information of all services in same channel number
- ✓ Set a default code table of closed caption on SBTVD full-seg
- ✓ Indicate a display port when caption will be shown on LCD
- ✓ Modified DEMUXINPUT_ReadData function
- ✓ Applied SUPPORT_SMART_STARTDMA to isdbt demux component
- ✓ Add an EPG function that EPG data is accrued on SQL database
- ✓ Modified to control a CCFB driver because CCFB driver is modified

- **DVB-T**
  - ✓ Fix a bug for iso6937 conversion at parsing EPG.
  - ✓ Add TsParse_DVB.c to middleware, remove libTSProcDVB_XX.a

2 v12.05_r1-tcc-android-4.0.4 Release

You can check below comments from each repositories except hardware/telechips/tcc892x, hardware/telechips/dxb, device/telechips repositories. Please understand there may be some spelling mistakes and it can be found comments from GIT server, also.

2.1 Notice
● This version is 3rd official release for TCC892x@ICS (Android 4.0.4), STB.
● Support new Wi-Fi chip - Realtek RTL8189ES.
● Add the function and menu for native frame-rate mode.
● Add the setting items to HDMI resolution menu (1080p/50Hz, 1080i/50Hz, 720p/50Hz, 576p/50Hz).
● Update the resizing function for UI and video screen.
● Update NTP function.

2.2 Function Limitations

In the **v12.05_r1-tcc-android-4.0.4** Release for TCC892x STB, there are some function limitations. And for more information, refer to the following description.

No	Function	Description
1	**UVC**	- UVC Camera is not yet supported.
2	**SD**	- SD Erase is not yet supported. Only eMMC Erase is supported.
3	**MTP**	- MTP is not yet supported. Currently, UMS is supported.

[表1. Function limitations in v12.05_r1-tcc-android-4.0.4 Release for TCC892x STB]

2.3 Known Issue

In the **v12.05_r1-tcc-android-4.0.4** Release for TCC892x STB, there is some Known Issue. And for more information, refer to the following description.

Function	Description
Wi-Fi	If customer's EVM board use Realtek WIFI module (RTL8188) and it use USB interface, When System wakeup after suspend mode, sometimes Wi-Fi connection will be delayed

[표2. Known Issue in v12.05_r1-tcc-android-4.0.4 Release for TCC892x STB]

2.4 Changes History

The following items are main items which changed about TCC892x@ICS, STB from this version.

2.4.1 System Part

- **Application**
  - ✓ When Compatibility of application running, Change to install of Compatibility Applications.
  - ➔ segmentation fault : 15ea
  - ➔ failure (install_failed_missing_shared_library) : 1ea
  - ➔ /system/bin/sh: no closing quote : 1ea

- **Power**
  - ✓ insert supplement code for shutdown (TCC892x)

- **DDR**
  - ✓ add innoways IN5CB256M8BN_CG ddr3 init code (TCC892x)
  - ✓ add Nanya NT5CB256M8GN_CG ddr3 init code (TCC892x)

- **USB**
  - ✓ When UFD insert and remove of UFD, Changed to notification display of status removed UFD.

- **Display**
  - ✓ When select of menu, stricmode disable.

- **Network**
  - ✓ Update NTP(Network Time protocol) function.

- **Wi-Fi**
  - ✓ Add RT8189ES drive.
  - ✓ Support Wi-Fi Direct, Realtek Wi-Fi module.

- **Graphic**
  - ✓ Update MALI driver to r2p4_02rel1
  - ✓ bug fixed : U plane was broken issue when playing video with specific resolution

- **eMMC**
  - ✓ Support Erase of eMMC, only.
  - ✓ Support Recovery mode (eMMC, SD/MMC booting).

2.4.2 Multimedia Part

- **Audio**
  - ✓ Fix bug that some WMA contents with over 48KHz sampling rate was played at 2x speed.
  - ✓ Fix bug that AudioResempler had poor quality. It was caused by supporting high sampling rate over 96KH.

- **Video**
  - ✓ VPU library to v0.0.60
    - Add m_iEncQualityLevel, in enc_rc_init of Encoder
      : Control for image quality in Encoded stream

```
        Field about Trade off
           of image quality and bit rate control performance.
```
✓ Bug Fixed: Fix seek problem on Netflix and Flash video player.
✓ Bug fixed: display problem when Flash is played with negative
  position on HDMI.
✓ Bug fixed: Encoder failed problem when User choose "Export Movie"
  function after editing video on Movie studio.
✓ Bug fixed: playback failed problem when contents with strange
  resolution is failed when trying to play.
✓ Bug fixed: playback color problem when contents with strange
  resolution is played.
✓ Bug fixed: UV order problem when playing flash with cropping.
✓ New function added: HWC renderer will be used when video or
  camera is displayed on LCD.
✓ v.1.0.0.52 -> v.2.1.0.00 (TCC892x)
  - When play H.264 progressive contents, changed the issue of
    hang-up.
  - In case of field stream, changed the way of count FPS (Frame
    rate).
  - Add m_iEncQualityLevel, in enc_rc_init of Encoder
  - Increasing stability of H.264 decoder and using external ps
    buffer
  - When Dvix3 contents playback and seek, changed the issue of
    screen image tearing
  - Changed the issue of abnormal play about MVC dependent view.
  - Add output option about H.264 one field.
  - Support multi-speed playback about China Telecom IPTV
✓ In this version, there are some unstable issue about Encoder and
  Multi-instance (TCC892x)

● **HTML5**
✓ Change the way of displaying live broadcast playback
  time/duration in media progress bar.
✓ Prevent user from dragging the seek thumb in media progress bar
  during live broadcast playback.

● **HTTP**
✓ Enhance overall HLS LIVE streaming playback.
✓ Change HLS default aac decoder from Google's to TCC's.
✓ Fix the HLS AV Sync. problem in some HTML5 sites.
✓ Support L16 audio streaming playback using DLNA.

● **RTSP**
✓ Enhance RTSP seek functionality.

● **Transcoder**
✓ Support API to using of Transcoder Module.

● **HDMI**
✓ Fixed bug: When playback of video, UI had been enabled display on
  HDMI for display of subtitles.

2.4.3 Broadcasting part

● **Common**
✓ Fix run-time bugs

✓ Improve capture function

● **ISDB-T**
✓ ISDB-T Caption – support PNG image of caption and super-impose. (892x)

3 v12.04_r1-tcc-android-4.0.4 Release

You can check below comments from each repositories except hardware/telechips/tcc892x, hardware/telechips/dxb, device/telechips repositories. Please understand there may be some spelling mistakes and it can be found comments from GIT server, also.

3.1 Notice
● Updated – Android 4.0.4
● Support SD Boot function
● Optimized CTS test functions
● Changed the layout of partitions for eMMC
    ➔ Refer to "eMMC Boot Qucik Start Guide"

3.2 Function Limitations

In the **v12.04_r1-tcc-android-4.0.4** Release, there are some function limitations. And for more information, refer to the following description.

No	Function	Description
1	**WIFI**	WIFI Direct function is not yet supported.
3	**UVC**	UVC Camera is not yet supported.
4	**eMMC**	MTP is not yet suppored on eMMC Recovery mode is not yet supported on eMMC

[표1. Function limitations in v12.04_r1-tcc-android-4.0.4 Release]

3.3 Known Issue

In the **v12.04_r1-tcc-android-4.0.4** Release, there are some Known Issue. And for more information, refer to the following description.

Function	Description
VPU	In this version, there are some unstable issue about Encoder and Multi-instance
	When doing seek operation, sometimes display is broken in special contents.

[⽤2. Known Issue in v12.04_r1-tcc-android-4.0.4 Release]

3.4 Changes History

The following items are main items which changed from this version.

3.4.1 System Part

- **Power**
  - ✓ Added pmic option of RN5T614(RICOH)
  - ✓ Changed coreA voltage from 1.25v to 1.35v using ricoh pmic
  - ✓ Added regulator(pmic) control process in pm.c file

- **Clock**
  - ✓ Set mem bus to 600Mhz for decoding FHD
    - ➔ some broadcasting FHD stream needs maxinum mbus speed

- **USB**
  - ✓ Changed EHCI/OHCI driver kernel compile option to built-in
  - ✓ Moved usb host power control to ehci-tcc

- **Display**
  - ✓ Add new LVDS Driver (hv070wsa :1024*600)
  - ✓ Fixed bug prev frame is displayed after resuming

- **Scaler**
  - ✓ Added alphablending to tcc scaler driver.
  - ✓ Changed crop condition , to made getting image address source
  - ✓ Update MtoM scaler function for STB solution.
    Changed wmix path to 'mixing' path for MtoM scaler(tcc_scaler2.c).

- **Network**
  - ✓ WIFI : Added power control for m805_8925
  - ✓ WIFI: ar6103 / rt8188cu don't support dual band
  - ✓ Ethernet : Update GMAC driver for multicasting
  - ✓ Ethernet :
    Fixed the problem that ethernet setting is chaned wine rebooting
    wit static Ip
  - ✓ Remove mobile network attributes & add config_voice_capable / con
    fig_sms_capable to false

- **SD Card**
  - ✓ tcc892x_stb: Fixed the SD port power consumption issue in the sus
    pend state

- **Graphic**
  - ✓ Update MALI driver to MALIr2p4_02rel

- **Filesystem**
  - ✓ Support NTFS type format

- **eMMC**
  - ✓ Improved the compatibility of eMMC(iNAND)boot.
  - ✓ Changed layout of eMMC partition
    Changed max partition mount to 16 for emmc and sd mmc

- **Nand**
  - ✓ Updated NAND Driver(V7)

```
        -  V7 : TNFTL V7081
   ✓ Fixed NAND Cycle restore problem
```

3.4.2 Multimedia Part

● **Audio**
- ✓ Added the audio driver for rt5633, rt5625 and rt5631
- ✓ Update rt5633 audio driver from alsa 1.0.23 to 1.0.24
- ✓ Update audio HAL for specific codecs.
- ✓ Audio Channel0 and Channel1 use(Channel0:DAI, Channel1:SPDIF Opti cla/HDMI)
- ✓ Added SPDIF Compressed Data flag
- ✓ Add SMOOTH_PLAYBACK_TUNE code for HBR passthru

● **Video**
- ✓ Updated VPU library to v1.5.0
  Support decoding MJPEG/VP8
  Fixed the problem of decoding H.264 BP in streaming playback
  Fixed the problem of special contents with H.264
  Fixed bug of Divx B-frame skipping
- ✓ Updated ASF DMX library to v02.004.003
- ✓ Updated the TS demuxer library to ver0.11.07
- ✓ Updated AVI Demuxer Library to v2.8.5
- ✓ Support hardware decoding of VP8 on TCC892x
- ✓ Added external function to use remote-player and linphone
- ✓ Update mp4 demuxer library to v3.01.13
- ✓ Update Internal Subtitle
- ✓ Update PGS Decoder
- ✓ Changed to using YUV420 Semi-Planar on VPU and Gralloc-buffer
- ✓ Add property related with fullview mode on Web playback
- ✓ Fixed video performance issue caused by UI update
- ✓ Fixed An error occurs when video editor exports output
  only in decoding process, skimming related code operates
- ✓ Increase sleep time from 100us to 50ms at MediaPlayer::disconnect
  to give a sufficient releasing time.
  Meridian application could not play files repeatedly.
  Because previous media player client was not released.
- ✓ Fixed the problem that video frame is dropped during UI update at
  tcc.video.surface.support 1
- ✓ Fixed incorrect time adjustment
  In case of sequential mode, if an audio stream is shorter and end
  ed than a video stream, we should need to adjust incorrect time
- ✓ Fixed
  A/V sync problem when performance is poor and vsync is enabled.
- ✓ Fixed incorrect routine in not-supported audio stream
  In case of not-
  supported audio stream, there is a problem changing demuxer mode
  from sequential to selective
- ✓ Added some codes to support VP8 in webM file.
- ✓ Supported VP8 h/w codec in case of google demuxer + vpu codec.
- ✓ Changed the routine of vsync frame drop
- ✓ Added MVC codec.
- ✓ Added Checking ogg video file
- ✓ Improved stability during multi-instance operation.
- ✓ Changed vpu_manager drivers to platform device to prevent system
  being hangup.
- ✓ Fixed decoding error on Youtube with no HQ mode

- **HTML5**
  - ✓ Do not stop sites playing fullscreen video in the onload handler to support a webpage which does not use HTML5 video tag.
  - ✓ Add workaround related that video view is not hidden after finish ing playback.

- **HTTP**
  - ✓ Support http playback with fast open/seek for some TS files as optional mode.
  - ✓ Enhance overall HTTP streaming playback.
  - ✓ Prohibit buffer filled timeout during streaming playback.
  - ✓ Fix HLS error related to abnormal timestamp mapping in some TS encoding cases.
  - ✓ Support TS http streaming playback in case of http1.0 response wi thout content length.
  - ✓ Enhance error resilience related to receiving chunked transfer en coding data.
  - ✓ Make HLS playback to run in Stagefright AwesomePlayer instead of NuPlayer because of website video compatibility and performance.

- **RTSP**
  - ✓ Enhance RTSP error resilience related to timestamp discontinuity, broken image.
  - ✓ Make RTSP playback to run in Stagefright AwesomePlayer instead of NuPlayer because of google CTS and various kinds of RTSP APK compatibility issues.

- **V2IP**
  - ✓ Added V2IP Api v0.5
  - ✓ Added direct renderer interface.
  - ✓ Added 3-way video call func.
  - ✓ Support hdmi during video call.

- **HDMI**
  - ✓ Added the option for rotation when display to HDMI device
  - ✓ Fixed bug of HDMI auto detect during video playback
  - ✓ Added Interlaced Video Bypass code at 1080i output setting
  - ✓ "hdmi 720p fixed" function doesn't work & camera hdmi support pro blem fix

- **Display ETC**
  - ✓ Added Deinterlace_S block to use crop function for interlace imag e
    - ➔ because of black screen issue of viqe block, use Deinterlace_S block instea
  - ✓ VIQE always ON, add viqe bypass mode
  - ✓ fixed a display error of prograssive frames when Deinterlace_S bl ock was enabled
  - ✓ Fixed the problem that video display is sometimes stoped at video channel change
  - ✓ To support VSync mode whenever HWC is used
    Generally, It is difficult to check if VSync mode can be used in AweSomePlayer layer.
    It is why the playback like youtube/flash/streamming can't know i f HWC is used or not.

```
So, The location to decide VSync mode is moved HWC layer.
```
✓ Vsync is skip frame state while renderer is disabled.
✓ Added function of crop image onthefly
✓ Modified to
   always support VSync mode except some case like web playback unde
   r inline mode

3.4.3 Broadcasting part

● **Common**

✓ Added TCC353X Tuner component
✓ Compiled with TCC88XX
✓ Supported HDMI Hotplug in/out
✓ Java application updated for all standards

● **ISDB-T**
✓ Supported PNG Decoder at ISDBT
✓ Dump-utility updated for ISDBT
✓ Updated function for subtitle at ISDBT
✓ ISDBT functional update - superimpose, subtitle, handover, BCAS
   message
✓ Recoding/Capture function updated for ISDBT

● **DVB-T**
✓ Improved function for passing command at DVB-T demux component
✓ Recoding/Capture function updated for DVBT

4 v12.03_r1-tcc-android-4.0.3 Release

You can check below comments from each repositories except hardware/telechips/tcc892x, hardware/telechips/dxb, device/telechips repositories. Please understand there may be some spelling mistakes and it can be found comments from GIT server, also.

4.1 Notice

4.2 Function Limitations

In the v12.03_r1-tcc-android-4.0.3 Release, there are some function limitations. And for more information,
refer to the following description.

No	Function	Description
1	WIFI	WIFI Direct function is not yet supported.
2	UVC	UVC Camera is not yet supported.
3	VPU	MJPEG codec is not yet supported.
4	Video	Image subtitle(PGS) is not yet supported.
5	NuPlayer (HTTP live streaming)	Streaming playback compatibility in each web site is not yet.

[표1. Function limitations in v12.03_r1-tcc-android-4.0.3 Release]

4.3 Known Issue

In the v12.03_r1-tcc-android-4.0.3 Release, there are some Known Issue. And for more information, refer to the
following description.

Function	Description
WiFi	In case of using Realtek(RT8188CU) WiFi module, when system resume after suspend, sometimes AP connection time may take over 5 sec.
VPU	In this version, there are some unstable issue about Encoder and Multi-instance
	When doing seek operation, sometimes display is broken in special contents.
Audio Pass-thru	Audio can be passed-thru SPDIF and HDMI at the same time.
System	DVFS function is not supported in this version.

[표2. Known Issue in v12.03_r1-tcc-android-4.0.3 Release]

4.4 Changes History

The following items are main items which changed from this version.

4.4.1 System Part

- **HDMI**
    - ✓ Add HDCP function.
    - ✓ Add audio pass-thru of HDMI.
    - ✓ Update interlaced output.

- **WIFI**
    - ✓ Change default WIFI setting to AR6103
    - ✓ Update AR6003 driver (3.1_RC.573)
    - ✓ Update wpa_supplicant 0.8x
    - ✓ Add defined for WIFI power control : "CONFIG_WIFI_PWR_CTL"
    - ✓ Tethering : Change upstream interface search to Ethernet.

- **Ethernet**
    - ✓ Update the connection scenario between Ethernet and WIFI.

- **I2C**
    - ✓ Make I2C Core1 clock as 400KHz. Because Core1 can be used at broadcasting – it makes slow booting problem.
    - ✓ Fix I2C fail issue when system enter suspend mode in battery thread.

- **Clock**
    - ✓ Current maximum clock information : 932MHz/600MHz
    - ✓ Fix the problem related to HDMI clock setting.

- **USB**
    - ✓ Fix the problem that sometimes UMS fail is happened while USB storage is connected.
    - ✓ Increase USB compatibility
      : Added USB_EHCI_TT_NEWSCHED config option and update ehci-hcd/ ohci-hcd ko file.

- **FWDN**
    - ✓ FWDN download speed improvement
      → Enable external L2 cache and adjust CPU clock.

- **SD Card**
    - ✓ SD 3.0(UHS) T-Flash was modified to operate as a High-Speed mode.

4.4.2 Multimedia Part

- **Audio**
    - ✓ Delete Audio Output menu in "Setting→Sound" temporally. Because this function don't need on MID platform.
    - ✓ Add audio direct path for VoIP.
    - ✓ Update multi-audio selection routine to support arbitrary selection of audio track.
    - ✓ Add selected audio track number by audio list.

    ✓ Add property for SPDIF setting enable
    ✓ Music application issue
       Fix a bug for Music app when sdcard is inserted or removed.
       : When sdcard is inserted or removed, Music App doesn't stop
       properly. It allows inappropriate actions to user.

- **Video**
  - ✓ Fix memory alignment between decoder and renderer in HDMI case
  - ✓ Modify to avoid frame drops for high fps video
  - ✓ Added routine related to Fastplay and Skimming
  - ✓ Bug fix : System hang-up is happened when HDMI video play → HDMI plug out → early suspend → late resume → HDMI plug in.
    - → Add initializing RDMA interrupts mask register when using HDMI video playback.
  - ✓ Fix the problem that cannot load video content which is recorded by MPEG4 format in Video editor application.
  - ✓ Deinterlace function
    - Support deinterlace on video playback through HDMI
    - Modify on-the-fly mode of deinterlace
  - ✓ MP4 Demuxer
    - Update MP4 demuxer library to v3.01.12
    - Add getting MP4 demuxer meta data and key map.
  - ✓ Video Output
    - Modify composite and component for vsync
    - Fix video problem of composite
  - ✓ Update 3D UI display for 3D MKV file
  - ✓ Support YCbCr_SP format display in MALI driver
  - ✓ Remote Player
    - Update remote player function for ICS
  - ✓ Fix the problem that cannot play flash contents through HDMI
  - ✓ If video contents have over 60fps, VPU clock work as Full-HD clock.

- **HTML5**
  - ✓ Bug fix : When turning off 2D hardware acceleration, inline HTML5 Video was not rendered.
    If 2D hardware acceleration is not supported, then inline HTML5 Video will be played as full screen.

- **RTSP**
  - ✓ Fix RTSP connection fail issue

- **Skype V2IP**
  - ✓ Support Skype V2IP about camera preview in MALI driver.

- **Exception handling**
  - ✓ Add exception handling about unsupported or unknown video codecs.

- **Gallery**
  - ✓ Remove Fisheye filter function temporally.
    : If MALI driver support it, this function will be included.

4.4.3 Camera Part

- **JPEG**
  - ✓ Support EXIF JPEG header format

- **Stability**
  - ✓ Added supplement code in camera capture part.

- **Memory buffer**
  - ✓ Extended JPU encoded buffer size because of big encoded file.
    : In case of noise image, it can be produced big encoded file. So we extended the size of encoded buffer.

- **Bug fix**
  - ✓ Add prevent exception code during deque buffer.
    → Error occurs during CTS test when deque buffer. To prevent this problem, add retry code.

4.4.4 Broadcasting part

- **ISDB-T**
  - ✓ Modify ISDB-T smart T1 protocol

- **UI**
  - ✓ Modify top position error of screen mode
  - ✓ Remove capture code at fbsink component. It move to dxb_service
  - ✓ Modify black screen issue when changing fullview of dxb

- **Audio**
  - ✓ Update CDK audio setting

- **Image**
  - ✓ Support JPEG encoder on JPU
  - ✓ Update capture function

- **Subtitle**
  - ✓ Update ISDB-T subtitle for ICS

5 Beta Release

You can check below comments from each repositories except hardware/telechips/common, hardware/telechips/dxb, device/telechips repositories. Please understand there may be some spelling mistakes and it can be found comments from git server, also.

5.1 Function Limitations

In the Beta Release, there are some function limitations. And for more information, refer to the following description.

No	Function	Description
1	NuPlayer (http live streaming)	Seek compatibility with video player in each web site of HTML5.
		Currently, it is only supported in android HTML5 video player UI of full screen.
		Streaming playback compatibility in each web site is not yet.
2	VPU	MJPEG codec is not yet supported.
3	UVC (USB Video Class)	UVC Camera is not yet supported.
4	Video	Multi speeds playback is not yet supported. Internal subtitle is not yet supported. (PGS subtitle) Deinterlace function is not yet supported.
5	Wi-Fi	Wi-Fi Direct function is not yet supported
6	DXB	Not support ISDB-T Full seg

[Table 1. Function limitations in Beta Release]

5.2 Known Issue

In the Beta Release, there are some Known Issue. And for more information, refer to the following description.

Function	Description
VPU	MPEG-2 field (interlaced) is unstable.
	I-frame search and PB-frame skip is unstable.
	H.264 Encoder abnormal at the high clock (over 250MHz)
	H.264 Enc/Dec Hang up when using multi-instance
	Previous image display when I-frame search

	I-frame serch/PB-frame skip(Divx3 / AVS)
Ethernet(Gigabit)	Ethernet Gigabit can't enable.
Nand	64bit Random access error
	Long name symbolic link error

[Table 2. Known Issue in Beta Release]

5.3 Repository

5.3.1 packages/apps/Settings repository
- first storage is mounted at '/mnt/sdcard'
- Disply Output Setting Modify.
- fix ethernet setting error in user mode

5.3.2 device/telechips/common repository
- to apply final concept related with HWC in playback.
  1. In LCD playback mode, All decoded frame is displayed by Mali.
  2. In HDMI mode, All decoded frame is displayed by HWC with VSync mode.
- if can't find update file, output toast message
- Added Property Initial for Camera
- for V2IP(initial update).
- [Firmware update] support internal FTL Area for firmware update. change default cache to nand ftl area for update
- prevent to update after copy update file to /cache
- Modify firmware upgrade list. Get list from StorageManager.

5.3.3 kernel repository
- scaler 2 device driver add
- update seek function of vsync
- VPU Version check structure is modified in tcc_vpu_ioctl.h for TCC8920/8800
- wrong flow control setting fixed tca_serial.c
- support the PM_CONSOLE_NOT_SUSPEND.
- adjust pm function map size
- change location of sstlio retention for sleep mode
- Fix composite and component problems.
- G2D interrupt enable at overlay mixing function
- change vsync setting (default)
- bug fix for CTS
- Modified the PM_CONSOLE_NOT_SUSPEND option.
- Fix HDMI PHY config setting.
- SPDIF PCM Fuction add
- fix iperf tx issue and change drvier strengh of TxClk,TxD
- audio peri clock disalbe at suspend mode.
- insert usb otg ip power control
- Fix the SD driver for avoid the NULL pointer.
- audio codec dosen't go into standby mode
- Displaying video frame vy hw vsync interrupt enalbed as default
- Add 3D UI display for 3D mkv file. Add 3D UI(SBS/TNB) display for 3D mkv file.
- [tcc8920st]add control core1_on, core2_on, sleep_mode_ctl, vddq_mem_on at sleep & shutdown
- for PowerManagement debugging, skip the "event wake_lock" debug message.

- Add Cipher Drvier & SmartCard Driver
- SPDIF port setting of tcc8920st.
- video vysnc bug fix. video display stoped when HDMI plug in/out at video playing
- video vsync bug fix. plung out hdmi int end of video play then extend lcd controller is death. so this code prevent this situation
- update GMAC driver for power control
- remove code to make Phyreset port pull down
- bug fix scaler plug in
- Change HDMI audio clock setting sequence for tcc892x
- add on-the-fly mode in deinterlace
- Support the WakeUp by Short Power Key.
- Add gpio control of suspend/resume for tcc8920st.
- update remote control driver. sleep & wake-up when using the PBUS Clock
- WDMA config function modify
- fix hdmi audio clock setting by using spdif and spdif port setting for tcc8920st.
- fix component vioc disp swreset.
- sleep mode enable
- Disply Output Resize Motify
- [isdbt] modify return value of quering dxb i2c port of STB
- Fix the problem of composite output.
- fix tcc8925st_dongle_defconfig and tcc8920st_hdb892s_defconfig
- Image1 can not display when a/v play. Changed overlay priority.
- HDCP support for TCC892X
- Change OTG0_MODE SET pin for HDB892S board.
- uart port has loss current
- update defconfig for xt_qtaguid

5.3.4 frameworks/base repository
- [HPS] Add MOV Mime type
- Replace the AudioPlayer class with the TCCAudioPlayer class in stagefright.
- to apply final concept related with HWC in playback.
- kernel mouse pointer performance improvement
- Support high audio samplingrate over than 48 Khz.
- check output mode when setting vsync
- Support mkv internal subtitle
- first storage is mounted at '/mnt/sdcard'
- SPDIF PCM Fuction add
- SPDIF Pass-Through Fuction add
- Multi-audio selection routine for ICS has been added.
- [Subtitle] modified a setSubtitle function.
- lplayback property issue
- [Subtitle] Fixed an error of CTS test
- Use Stagefright instead of NuPlayer
- android reset when device is going to shutdown
- Long push key buttun(Shut off) function enable modify.
- for V2IP(initial update).
- [Subtitie] Fixed an error
- Inferface example for V2IP
- [bugfix] Virtual Mouse is not displayed
- Add window flag for hiding status bar
- app size issue when Status Bar is hidden.
- SIGSEGV error by glDrawElements
- App Screen Size Issue
- add function and text for remoteplayer
- [Subtite]Fixed an error in MediaController.java. Fixed an exception

error when play content on m.youtube.com site.
- [RTSP] Modify bug of rtp url in SDP
- CTS fail - android.text.method.cts.TouchTest
- Fix browser can't find some bitmap resources when ldpi resources are included
- APK Installation for SD Card
- non-media file filtering (ex. dat text file)
- block log code

5.3.5 device/telechips/tcc892x-common repository
- vpu modules are changed due to the change of version check structure.
- realtek: update driver. enable CONFIG_MINIMAL_MEMORY_USAGE
- add camcorder parameter for CTS test
- vpu v0.67 is updated for TCC892x
- Not use HWUI because of browsing speed

5.3.6 bootable/bootloader/lk repository
- Fixed the problem that not supported the OTA package update.
- default wifi is off
- Fix HDMI PHY config setting.
- remocon update for tcc8920st
- sleep mode update for remocon boot
- remove port configuration of UART
- NAND Driver Updata [V7079]
- Change default core voltage of hdmi dongle board to 1.35V.
- Modify memory size to double for ccfb.
- image1 can not display when a/v play. changed overlay priority.
- Change OTG0_MODE SET pin for HDB892S board.

5.3.7 hardware/telechips/common repository
- Replace the AudioPlayer class with the TCCAudioPlayer class in stagefright.
- to always work HWC in HDMI mode.
- Google AMR decoder component do not support config data. It decodes config data as a audio frame. So, it will cause decoding error.
- to apply final concept related with HWC in playback.
- to move private data region in gralloc buffer.
- Wrong metadata is retrieved from WMA file.
- Support mkv internal subtitle
- update deinterlace routine by "to always work HWC in HDMI mode"
- change vsync setting (in default, onthefly)
- bug fix for CTS test
- Fix HDMI PHY config setting.
- SPDIF PCM Fuction add
- SPDIF Pass-Through Fuction add
- If duration of video file is smaller than 1 sec, divide by zero error occurred.
- 1. add init value for gralloc buffer 2. add default parameter for CTS
- add check condition of tcc8920 vsync ontherfly
- Multi-audio selection
- SPDIF write method add
- Update RM DMX library to v0.5.9
- Update HOW_TO_BUILD_MEDIA_LIBS.
- Fix bug that is a side-effect of SPDIF driver.
- for V2IP(initial update).
- Interface example for V2IP.
- tcc-interface minor error is fixed.
- add on-the-fly mode in deinterlace
- add checking mCropRgn_changed at HDMI

- Update mp4 demuxer library to v3.01.10
- [vsync]add vsync re-sync codes(end & start vsync) when buffer_id &0x8000000
- apply mp4 rotation info
- Fixed Preview Buffer Interface to support V2IP and Blocked HDMI while Camera uses
- add RawImageNotify callback
- add remoteplayer
- API for VideoCall interface.
- video call library.
- make sure that videocall interface become library.
- fix composite output problem of tcc8920
- add remoteplayer libaray
- AVI DMX Library Update. Replacing AVI DMX Library to v2.8.3.
- to set callback function to receive RTP packet.
- update screen mode function for ICS
- HDCP support.
- API for VideoCall interface in detail.
- Renderer can't use more than one because of insufficient scaler h/w block.
- Fixed Preview Callback Format for CTS test
- to change fps/bps properly.
- to ignore negative position value in renderer
- add support preview format for CTS
- To add keyInterval value for V2IP interface.
- change the difinition for codec_type.
- Fixed the number of Preview Buffer

5.3.8 device/telechips/tcc8920st repository
- enable ums of nand&sdcard
- primary storage. first storage is mounted at '/mnt/sdcard'
- multi-partition mount setting
- delete init.tcc8920st_dongle.rc file.
- [tcc_dxb_service]add graphics group
- make BOARD_VIDEO_DISPLAY_BY_VSYNC_INT_FLAG true as default
- Long push key buttun(Shut off) Properties Add.
- VSYNC Enable
- Add ldpi to PRODUCT_AAPT_CONFIG
- OSD Active Property Add
- add script to start remote_player_service
- APK Installation for SD card
- remote player service is started by Remote Player Controller

5.3.9 system/vold repository
- primary storage. first storage is mounted at '/mnt/sdcard'
- checkdisk skip. if property set, mount without checkdisk
- APK Installation for SD Card

5.3.10 hardware/telechips/omx repository
- VPU Version check routine is modified.
- When playing a video has 48kHz audio, sound is slowing down.
- to apply final concept related with HWC in playback.
- to copy decoded and private data into gralloc buffer.
- update deinterlace routine by "to always work HWC in HDMI mode"
- fps changing error in MPEG4 case.
- to prevent seqmentation fault and encoder init fail.
- to give appropriate data.
- vpu v0.64 is updated for TCC892x
- for V2IP(initial update).

- Log message is removed when field picture is decoded.
- video display device(HDMI <->LCD) change function add
- to debug video component.

5.3.11 packages/apps/TCCVideoPlayer repository
- fix the problem that vsync don't stop after stopping video. make videoview surface invisible and visible
- hide status bar in preview
- modify back key event
- fixed null pointer error
- Remove unused code and show status bar
- Hide MENU by ESC key
- [revert] Remove unused code and show status bar
- Add window flag for hiding status bar
- fixed performance issue
- Subtitle On/Off, Font Size
- Repeat play error
- Prevent to restart app when Keyboard is plug-in/out
- Menu Icon Change
- Audio Track Change

5.3.12 system/core repository
- SPDIF PCM Fuction add
- SPDIF Pass-Through Fuction add
- make mediaserver have permission of graphics group
- for V2IP(initial update).
- add permission for tcc.xxx property

5.3.13 packages/apps/Gallery2 repository
- [HPS] Add FLV Mime type
- [Subtitle] Modified a default setting
- add to vsync function
- remove unsupport function of Image Editor. (Face Glow, Face Tan)

5.3.14 bootable/recovery repository
- [Firmware update] change random device to urandom

5.3.15 hardware/telechips/nand repository
- correct gpio setting of rst_irq
- NAND Driver Update [V7079]
- adjust port for only 1cs nand

5.3.16 packages/providers/MediaProvider repository
- [bug fixed] In the gallery3d, file is not delete.
- [bug fixed] duplicate image displayed in Gallery3D

5.3.17 hardware/libhardware_legacy repository
- add power control
- SPDIF PCM Fuction add
- SPDIF Pass-Through Fuction add

5.3.18 build repository
- Add missing JNI library for PinyinIME

6 Alpha Release

This version is a first release version, so there is no history.

6.1 Function Limitations

In the Alpha Release, there are some function limitations. And for more information, refer to the below descriptions.

Function	Description
DxB (Broadcast)	DxB is not yet supported.
Video	- Multi speeds playback is not yet supported. - Internal subtitle is not yet supported. (text : *.ssa, *.srt) - Deinterlace is not yet supported. - Video Vsync with 60Hz is not yet supported. - Cinema mode (HDMI with 23.976Hz) is not yet supported
Audio	- SPDIF PCM/passthrough is not yet supported. - HBR (High bitrate) is not yet supported. - Selecting audio tracks is not yet supported. - Contents of AMR audio codec in MP4 format is not yet.
DVFS	DVFS is not yet supported
NuPlayer (HTTP live streaming)	- Seek compatibility with video player in each web site of HTML5. Currently, it is only supported in Android HTML5 video player UI of full screen. - Streaming playback compatibility in each web site is not yet.
VPU	MJPEG codec is not yet supported.
UVC (USB Video Class)	UVC Camera is not yet supported.

[Table 1. Function limitations in Alpha Release]

6.2 Known Issue

Function	Description
Video	During play video file, there can be UI around video.
VPU	- RMVB resolution change is not yet. - H.263, Sorenson spark, MPEG-4, Divx4.x~6.x is unstable. - MPEG-4 : Packed PB-frame control and GMC error control - MPEG-2 field (interlaced) is unstable. - I-frame search and PB-frame skip is unstable.
Composite /Component	In interlace output (HDMI 1080i, Composite(NTSC/PAL), Component 1080i), top-field is reversed image data against Bottom-filed.
Ethernet(Gigabit)	Ethernet Gigabit can't be enabled.
Suspend/resume	Sleep mode is implemented but default mode is shutdown mode.