TCCxxx Telechips Android Broadcasting Application Guide

Android Broadcasting Application Guide

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Telechips

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Revision History

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1. Introduction

This document describes Telechips Android Broadcasting SDK and Java Application.
DxB middleware sources are not included and only JAVA application sources and tuner components sources are included in SDK.

2. Broadcasting Java APIs

Each DxB Broadcast has basic APIs as following. The java application uses below APIs. It can be different between broadcasting standards (DVBT, TDMB, and ISDBT).

2.1. listener setting

Setting necessary listener.

2.1.1. public void setOnErrorListener(OnErrorListener listener)

Set ErrorListener.

2.1.2. public void setOnPreparedListener(OnPreparedListener listener)

Set PreparedListener.

2.1.3. public void setOnChannelUpdateListener(OnChannelUpdateListener listener)

Set ChannelUpdateListener.

2.1.4. public void setOnSearchCompletionListener(OnSearchCompletionListener listener)

Set SearchCompletionListener.

2.1.5. public void setOnSearchPercentListener(OnSearchPercentListener listener)

Set SearchPercentListener.

2.1.6. public void setOnVideoOutputListener(OnVideoOutputListener listener)

Set VideoOutputListener.

2.1.7. public void setOnRecordingCompletionListener(OnRecordingCompletionListener listener)

Set RecordingCompletionListener.

2.1.8. public void setOnDABDLSDataUpdateListener(OnDABDLSDataUpdateListener listener) – TDMB Only

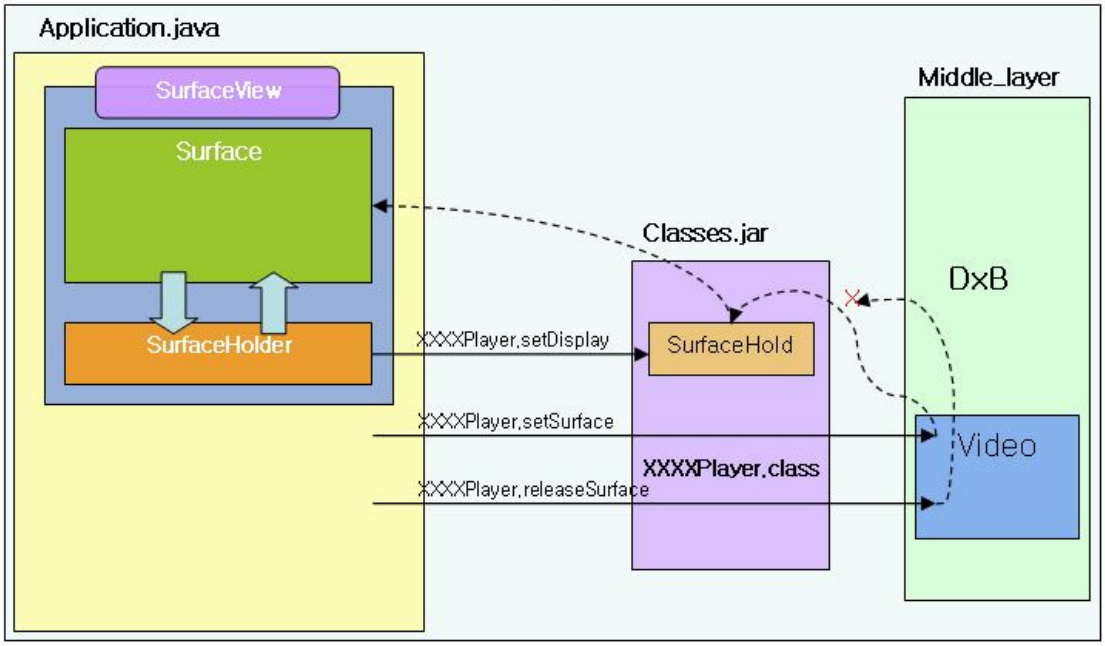
Set DABDLSDataUpdateListener.

2.2. Connect with SurfaceView

Connect with Middle_layer to display video on SurfaceView which are created by JAVA Application.

2.2.1. public void setDisplay(SurfaceHolder sh)

Register SurfaceHolder which is created by JAVA application.



2.2.2. public void setSurface()

Set parameters to display video by registered SurfaceHolder.

2.2.3. public void releaseSurface()

Release to stop displaying video.

2.3. Basic Flow

APIs to support DxB play.

2.3.1. public void prepare()

Execute prepare.

2.3.2. public void start(int country_code)

Initialize DxB Application with country_code.

2.3.3. public void setScreenOnWhilePlaying(boolean screenOn)

Set setKeepScreenOn on SurfaceHolder.

2.3.4. public void searchCancel()

Scan broadcast channel.

2.3.5. public void searchCancel()

Stop scan broadcast channel.

2.3.6. public void setChannel(int channel)

Select channel.

2.3.7. public void stop()

Release selected channel.

2.3.8. public void release()

Release DxB Application.

2.3.9. public void setChannelCancel() – TDMB Only

Channel selection.

2.3.10. public void setDisplayEnable() – TDMB Only

Enable display output.

2.3.11. public void setDisplayDisable() – TDMB Only

Disable display output.

2.4. Others

APIs to support other operations.

2.4.1. public int getSignalStrength()

Get current channel signal strength.

2.4.2. public native int setLCDUpdate()

Output data in video buffer.

2.4.3. public void setVolume(float leftVolume, float rightVolume)

Set volume.

2.4.4. public int setCapture(String filePath)

Capture video and save it to filePath path.

2.4.5. public int setRecord(String filePath)

Start record DxB and save it to filePath path.

2.4.6. public int setRecStop()

Stop DxB recording.

2.4.7. public int playSubtitle(int onoff) – DVB-T only

Turn on/off DxB subtitle.

2.4.8. public int getPCBERStregth() – TDMB Only

Get current channel's BER.

2.4.9. public int getSNRStregth()– TDMB Only

Get current channel's SNR.

3. TDMB

3.1. TDMB Database Table

3.1.1. Service Table

Service Information of T-DMB is saved to TDMB.db. It can be different with SDK.

Table name	Column Name	Data Type
channels	_id	integer
	ensembleName	text
	ensembleID	integer
	ensembleFreq	integer
	serviceName	text
	serviceID	integer
	channelID	integer
	type	integer
	bitrate	integer
	reg0	integer
	reg1	integer
	reg2	integer
	reg3	integer
	reg4	integer
	reg5	integer
	reg6	integer

4. DVBT

4.1. DVBT Database Table

There could be patent issues about EPG. For the patent about EPG, Telechips doesn't guarantee anything, and it should be handled by customer themselves.

4.1.1. Service Table

It can be different with SDK.

Table name	Column Name	Data Type
channels	_id	integer
	channelNumber	integer
	countryCode	integer
	serviceType	integer
	audioPID	integer
	videoPID	integer
	serviceID	integer
	uiLogicalChannel	integer
	channelName	text

4.1.2. EPG – PF Table

DVB-T EPG is saved at “DVBTEPG.db”. It can be different with SDK.

Table name	Column Name	Data Type
EPG_PF	_id	integer
	uiTableId	integer
	uiCurrentChannelNumber	integer
	uiCurrentCountryCode	integer
	ucVersionNumber	integer

	ucSection	Integer
	ucLastSection	integer
	ucSegmentLastSection	integer
	OrgNetworkID	integer
	TStreamID	integer
	usServiceID	integer
	EventID	integer
	Start_MJD	integer
	Start_HH	integer
	Start_MM	integer
	Start_SS	integer
	Duration_HH	integer
	Duration_MM	integer
	Duration_SS	integer
	iLen_EvtName	integer
	EvtName	text
	iLen_EvtText	integer
	EvtText	text
	iLen_EvtText_extn	integer
	EvtText_extn	text
	iGenre	integer
	iRating	integer

4.1.3. EPG – Schedule Table

DVB-T EPG is saved at “DVBTEPG.db”. It can be different with SDK.

Table name	Column Name	Data Type
EPG_Schedule	_id	integer
	uiTableId	integer
	uiCurrentChannelNumber	integer
	uiCurrentCountryCode	integer
	ucVersionNumber	integer
	ucSection	integer
	ucLastSection	integer
	ucSegmentLastSection	integer
	OrgNetworkID	integer
	TStreamID	integer
	usServiceID	integer
	EventID	integer
	Start_MJD	integer
	Start_HH	integer
	Start_MM	integer
	Start_SS	integer
	Duration_HH	integer
	Duration_MM	integer
	Duration_SS	integer
	iLen_EvtName	integer
	EvtName	text
	iLen_EvtText	integer
	EvtText	text
	iLen_EvtText_extn	integer
	EvtText_extn	text
	iGenre	integer
	iRating	integer

5. ISDBT

5.1. ISDBT Database Table

There could be patent issues about EPG. For the patent about EPG. Telechips doesn't guarantee anything, and it should be handled by customer themselves.

5.2. ISDBT full-seg

5.2.1. Functions

Full-seg solution supports the following

- ✓ Audio/Video playback
- ✓ EPG
- ✓ Closed Caption
- ✓ TCC3531 tuner

5.2.2. Limitation

There is a limitation as like the below

- ✓ Not supportable data service

5.2.3. kernel configuration

To play scrambled channel, in kernel configuration, the below option should be selected.

Device Drivers -> Character devices -> Serial Drivers -> [*] Telechips Smartcard driver support

6. Select Tuner and BaseBand chipset

6.1. DVBT

You can select Tuner and BaseBand chipset by using system property. SDK provides Shell Script for your convenience. It defined at hardware/Telechips/dxb/tcc_dxb.mk.

Property name	value	Base band
tcc.dxb.dvbt.baseband	1	DVBS(2)
	2	TCC351X_CSPI_STS
	3	TCC351X_I2C_STS
	4	MxL101SF@Yaojin Board
	5	MN88472@Yaojin Board –T2

You can change by running “setprop” command. For example type “setprop tcc.dxb.dvbt.baseband 2” for TCC351X_CSPI_STS (TCC351X, Data(TSIF), Command(SPI))

6.2. TDMB

In TDMB, JAVA application can set specific information which includes selecting baseband. You can find it from setPrepare method of DxbPlayer.java

value	Base band
1	TCC3150
2	TCC3510 CSPI+STS
3	TCC3510 or TCC3161 I2C+STS
4	TCC3171 I2C+STS

6.3. ISDBT

In ISDBT, JAVA application can set specific information which includes selecting baseband chipset and selecting profile of ISDB-T broadcasting system and so on. You can find it from preparePlayer method of DxbPlayer.java
Please refer below for ISDBT specific information.

Bit Num	Property
Bit[31]	13seg
Bit[30]	1seg
Bit[29]	Japan
Bit[28]	brazil
Bit[27:06]	Reserved for ISDBT feature
Bit[05:00] (BaseBand)	BaseBand none = 0
	TCC351x_CSPI_STS = 1
	TCC351x_I2C_STS = 3
	TCC353X_CSPI_STS=8
	TCC353X_I2C_STS=9

6.3.1. LinuxTV for Brodcasting

From Jellybean (Android SDK) We support LinuxTV modules(www.linuxtv.org) at ISDBT & DVBT. Telechips linuxtv modules is in /system/lib/modules/tcc_dxb_drv.ko. tcc_dxb_drv.ko installed while booting time. And it makes /dev/dvb0.XXXX driver files. Telechips demuxer use those files. For more information please visit www.linuxtv.org.

7. Removing Broadcasting Application

In order to remove broadcasting applications such as DTV ISDBT, DTV TDVBT. Please delete below

folder, or modify Android.mk as following in hardware/telechips/dxb.

- #rm -rf hardware/telechips/dxb
  or
- Android.mk @ hardware/telechips/dxb
  #include $(call first-makefiles-under,$(LOCAL_PATH))