TCCxxx Telechips Android Broadcasting Application Guide

Android Broadcasting Application Guide

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Telechips

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Revision History

Date	Version	Description

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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 libraries

Each DxB Broadcast has JAR library, and JAVA application can operate each DxB Broadcast with methods which are provided by JAR library.

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

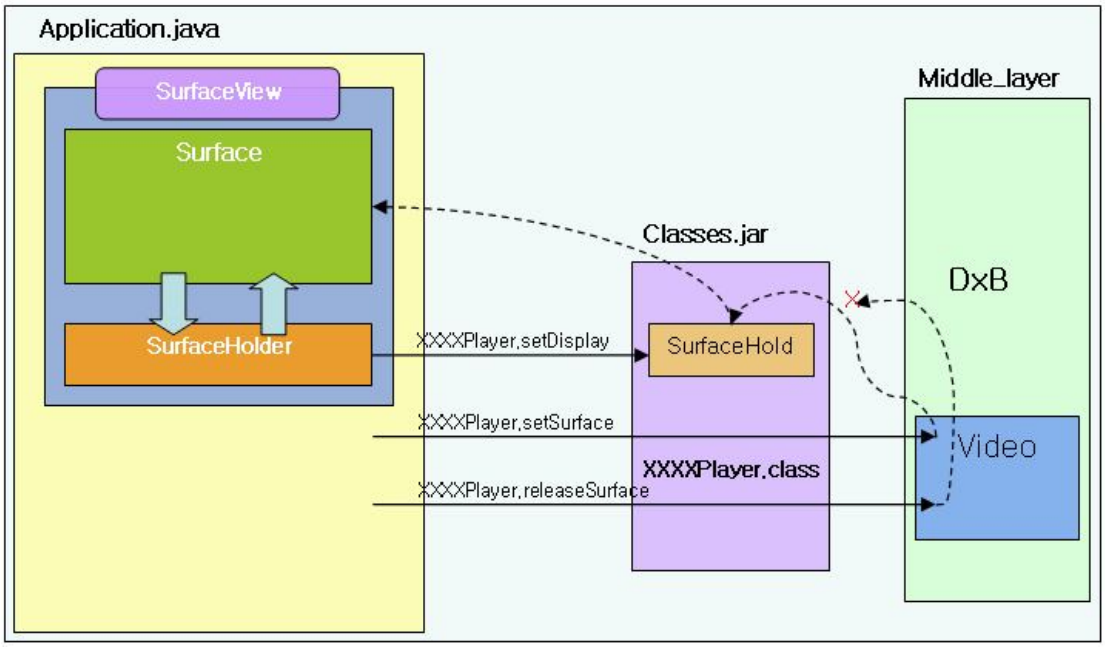
Set DABDLSDataUpdateListener.

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.

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

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”.

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”.

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.
The font included in SDK for ISDB-T broadcasting system is copyright protected.
Please contact to SANDOLL Communications Inc. (www.sandoll.co.kr)

5.1.1. Service Table

Service Information of ISDB-T is stored to ISDBT.db.

Table name	Column Name	Data Type
channels	_id	integer
	channelNumber	integer
	countryCode	integer
	audioPID	integer
	videoPID	integer
	subtitlePID	integer
	PMT_PID	integer
	remoconID	integer
	serviceType	integer
	serviceID	integer
	regionID	integer
	threedigitNumber	integer
	TStreamID	integer
	berAVG	integer
	channelName	text

5.1.2. EPG – PF Table

EPG of ISDB-T is stored to ISDBT.db.

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

5.1.3. EPG – Schedule Table

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

5.2. ISDBT full-seg

5.2.1. Service Table

Full-seg solution supports the following

- ✓ Closed Caption
- ✓ Super Impose
- ✓ B-CAS
- ✓ H/W Multi2 descramble
- ✓ TC90517 tuner

5.2.2. Limitation

There are some limitations as like the below

- ✓ Usable output is limited to FullHD (1920x1080) HDMI or LCD of TCC8801F EVB
- ✓ Some features of Closed caption is not useful, for example ORN,SCR,Roll-up and so on.
- ✓ Closed caption of which size is 720x480 is not useful.
- ✓ Not supportable data service

5.2.3. kernel configuration

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

Device Drivers -> Character devices -> Serial Drivers -> [*] Telechips TCC88xx Smartcard driver support

6. Select Tuner and BaseBand chipset

6.1. TDMB & DVBT

You can select Tuner and BaseBand chipset by using system property. SDK provides Shell Script for your convenience.

Property name	value	Base band
tcc.dxb.tdmb.baseband	1	TCC3150
	2	TCC351X
	3	TCC3161

Property name	value	Base band
tcc.dxb.dvbt.baseband	1	Dibcom9090
	2	TCC351X_CSPI_STS
	3	TCC351X_I2C_STS

You can refer /system/bin/setup_dxb.sh for more in detail. Below is capture when setup_dxb.sh is executed from console.

```
#
# busybox sh /system/bin/setup_dxb.sh
This is setup shell for broadcasting
Please select broadcasting standards
1.TDMB
2.DVBT
3.IPTV

Select : 2
standards is (DVBT)
Please select broadcasting baseband type
1.Bibcom9090M
2.TCC351X_CSPI_STS
3.TCC351X_I2C_STS
Select : 2
baseband is 2(TCC351X_CSPI_STS)
#
```

6.1.1. DVBT Tuner Interface setting – Input module setting

You can change dvbt tuner and tuner interface. In this case, you should modify demux input module. Please refer demux_input_entry.c at
dxb/framework/dxb_components/demuxers/omx_dvbdemux_component/demux_input
demux_input_entry.c defines APIs for demux input module. You can modify APIs for your new tuner interface.

- **DEMUXINPUT_Init** Initialize input module.
- **DEMUXINPUT_Open** Open input module. In case of Linux driver, you can call open system call.
- **DEMUXINPUT_Close** Close input module.
- **DEMUXINPUT_SetPID** If input module supports pid filtering function, Add pid at the filter.
- **DEMUXINPUT_RemovePID** Remove pid from filter.
- **DEMUXINPUT_ReadData** Read TS stream data from input module.
- **DEMUXINPUT_GetSTC** Request system time on input module. This time used for A/V synchronization.

6.2. ISDBT

In ISDBT, JAVA application can set specific information include Tuner and BaseBand chipset. You can check it from prepare() in DxbPlayer_Control.Java. (Set i_isdbt_default_feature variable)
Please refer below for ISDBT specific information.

Bit Num	Property
Bit[31]	13seg
Bit[30]	1seg
Bit[29]	Japan
Bit[28]	brazil
Bit[27:24]	Reserved for ISDBT feature
Bit[23:16]	Reserved for UI
Bit[15:06]	Reserved
Bit[05:00] (BaseBand)	BaseBand none = 0
	TCC351x_CSPI_STS = 1
	Dibcom = 2
	TCC351x_I2C_STS = 3
	NMI326 = 4
	MTV818 = 6
	TC90517 = 7
	BaseBand Max = 63