DTS-M6 Audio Decoding Library

User Guide

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About This Document

Purpose

This document provides guidance for users on how to use the DTS-M6 audio decoding library. It also describes the precautions to be taken.

Related Version

The following table lists the product version related to this document.

Product Name	Version
HiSTBAndroid	V600R001

Intended Audience

This document is intended for:

- Technical support personnel
- Software development engineers

Change History

Changes between document issues are cumulative. Therefore, the latest document issue contains all changes made in previous issues.

Issue 00B01 (2014-11-15)

This issue is the first draft release.

Contents

Figures

1 Overview

The functions implemented by the DTS-M6 decoding library (**libHA.AUDIO.DTSM6.decode.so** in **HiSTBAndroidV600R001CxxSPCxxx_dtsm6.tar.gz**, provided by HiSilicon) are similar to those implemented by the DTS-HD genuine library. It is used to decode DTS streams. The DTS-M6 decoding library does not require the chip to support the DTS one-time programmable (OTP) flag bit, which is different from the DTS-HD genuine library. The customer can use the DTS-M6 decoding library by following procedures described in chapter 2 "Uses" after purchasing the authorized files (including three parts) from DTS, Inc.

CAUTION

- The DTS-M6 decoding library applies to HiSTBAndroid V500R001C01SPC020 and later.
- Do not release the DTS-M6 decoding library to the customer if the customer did not purchase the authorized files (the binary license file **omx-dts.dat** and some additional header files and a static library).

After authorized by DTS, Inc., the customer can obtain a software package mainly containing the following files:

- Header files
- Static library (**libdtshd-decoder.a** for Android)
- License (**omx-dts.dat**)

2 Uses

To use the DTS-M6 decoding library, perform the following steps:

Step 1 Copy the **device\hisilicon\bigfish\sdk\source\component\ha_codec\src\dtsm6\2customer** directory to the **device\hisilicon\bigfish\frameworks\hiaudio** directory.

Step 2 Copy the following header files to the **device\hisilicon\bigfish\frameworks\hiaudio\2customer\include** directory:

- dts_package_version.h
- dtshd_dec_configuration.h
- dtshd_parser_api.h
- dtshd_frame_player_api.h
- dts_types.h
- dtshd_dec_api_common.h

Step 3 Copy the static library **libdtshd-decoder.a** to the **device\hisilicon\bigfish\frameworks\hiaudio\2customer\lib** directory.

Step 4 Copy the DTS-M6 decoding library (**libHA.AUDIO.DTSM6.decode.so**) provided by HiSilicon to the **device\hisilicon\bigfish\sdk\prebuilts** directory.

Step 5 Add the contents in the red rectangle shown in Figure 2-1 to **Android.mk** in the **device\hisilicon\bigfish\sdk\prebuilts** directory.

Figure 2-1 Adding contents to Android.mk

```
62  ifeq (y,$(CFG_HI_HACODEC_WMADECODE_SUPPORT))
63  LOCAL_SRC_PRELIBS += libHA.AUDIO.WMA.decode
64  endif
65  ifeq (y,$(CFG_HI_HACODEC_DTSM6DECODE_SUPPORT))
66  LOCAL_SRC_PRELIBS += libHA.AUDIO.DTSM6.decode
67  endif
68  ifeq (y,$(CFG_HI_CAPTION_TTX_SUPPORT))
69  LOCAL_SRC_PRELIBS += libhi_ttx
70  endif
71  ifeq (y,$(CFG_HI_CAPTION_CC_SUPPORT))
72  LOCAL_SRC_PRELIBS += libhi_cc
73  endif
```

Step 6 Copy the license file **omx-dts.dat** to the **device/hisilicon/bigfish/etc** directory.

Step 7 Add the contents in the red rectangle shown in Figure 2-2 to the **# audio** part of **device.mk** in the **device\hisilicon\Hi37XXXVXXX** directory.

Figure 2-2 Adding contents to device.mk

```
38  # audio
39  PRODUCT_COPY_FILES += \
40      device/hisilicon/bigfish/etc/audio_policy.conf:system/etc/audio_policy.conf\
41      device/hisilicon/bigfish/etc/asound.conf:system/etc/asound.conf\
42      device/hisilicon/bigfish/etc/alsa.conf:system/usr/share/alsa/alsa.conf\
43      device/hisilicon/bigfish/etc/omx-dts.dat:system/etc/omx-dts.dat
44
45  # pppoe
46  PRODUCT_COPY_FILES += \
47      device/hisilicon/bigfish/etc/pppoe/ppp.conf:system/etc/ppp/ppp.conf \
48      device/hisilicon/bigfish/etc/pppoe/ppp.connect:system/etc/ppp/ppp.connect \
49      device/hisilicon/bigfish/etc/pppoe/ppp.disconnect:system/etc/ppp/ppp.disconnect
```

Step 8 Compile the entire version.

----End

CAUTION

The current DTS-M6 decoding library is developed based on the **M6_Decoder_multi_library_3.80.06_release** software package of DTS, Inc. Therefore, **M6_Decoder_multi_library_3.80.06_release** is recommended. However, the version of the DTS software package obtained by the customer may be different. In this case, it is recommended that the DTS software package be sent to HiSilicon for integration tests. The DTS-M6 decoding library will be upgraded based on the new DTS software package version and customer requirements. If the decoding library is upgraded, the customers will be notified.

3 FAQs

3.1 What Is the Priority If There Are Multiple DTS Libraries in the System?

Problem Description

If there are multiple DTS libraries in the system, what is the priority, and what should be noted?

Solution

If there are multiple DTS libraries in the system, the priority is as follows:

DTS-HD genuine library > DTS-M6 decoding library > DTS passthrough library

If the customer does not have the DTS-HD genuine library and does not purchase the DTS-M6 software package from DTS, Inc., do not send the DTS-M6 library to the customer. Otherwise, the DTS passthrough library as well as the DTS-M6 library cannot be used.

In later versions, the related files may be checked automatically, and the available decoding library can be loaded intelligently for DTS audio decoding. Customers will be notified of any upgrade.

3.2 What Do I Do If Error Information Is Displayed During the Playback of Streams?

Problem Description

The following information is displayed during the playback of streams:

```
ERR: Register libdtshd_decoder_wrap.so Failed because dlopen fail Cannot
load library: load_library(linker.cpp:745): library
"libdtshd_decoder_wrap.so" not found
```

Cause Analysis

This issue occurs because the dynamic library **libdtshd_decoder_wrap.so** does not exist in **/system/lib** of the board.

Solution

To solve this problem, follow the procedures in chapter 2 "Uses." To generate the dynamic library **libdtshd_decoder_wrap.so** for debugging (not mass production), perform steps 1 to 3, go to **device\hisilicon\bigfish\frameworks\hiaudio\2customer**, and run the **mm** command.

3.3 What Do I Do If No Audio Is Output After Decoding?

Problem Description

There is no audio output after decoding during the playback of streams.

Cause Analysis

Check whether the Android log information is similar to that shown in Figure 3-1.

Figure 3-1 Android log information

```
ERROR-HI_ADEC]:ADECInitDecoder[1679]:ha_err: DecInit (codec:DTSM6), err=0x80001001
ERROR-HI_ADEC]:ADECInitDecoder[1680]:enCodecID=0x20041030
ERROR-HI_ADEC]:ADECInitDecoder[1681]:enDecMode=0x2
ERROR-HI_ADEC]:ADECInitDecoder[1682]:pCodecPrivateData=0x607bb6a8
ERROR-HI_ADEC]:ADECInitDecoder[1683]:u32CodecPrivateDataSize=0x24
ERROR-HI_ADEC]:ADECInitDecoder[1684]:u32DesiredOutChannels=0x2
ERROR-HI_ADEC]:ADECInitDecoder[1685]:bInterleaved=0x1
ERROR-HI_ADEC]:ADECInitDecoder[1686]:u32BitPerSample=0x10
ERROR-HI_ADEC]:ADECInitDecoder[1687]:u32DesiredSampleRate=0xbb80
ERROR-HI_ADEC]:ADECInitChannel[2008]:Adec_Decoder_Init err=0xffffffff
ERROR-HI_ADEC]:ADECheckInputAttr[2468]:ADECInitChannel err=0xffffffff
ERROR-HI_ADEC]:ADEC_SetAttr[2856]: ErrCode =0xffffffff
ERROR-HI_AVPLAY]:AVPLAY_StartAudChn[3483]:call HI_MPI_ADEC_Start failed.
ERROR-HI_AVPLAY]:HI_MPI_AVPLAY_Start[5817]:start aud chn failed.
```

If yes, check whether the decoding library **libHA.AUDIO.DTSM6.decode.so** exists in **/system/lib** of the board, or whether **omx-dts.dat** exists in **/system/etc**.

Solution

Ensure that the license file **omx-dts.dat** has been obtained from DTS, Inc and is pushed to **/system/etc**.