MDM9x07&MDM9628 Audio API Guide Manual

www.quectel.com

Our aim is to provide customers with timely and comprehensive service. For any assistance, please contact our company headquarters:

Quectel Wireless Solutions Co., Ltd.
7th Floor, Hongye Building, No.1801 Hongmei Road, Xuhui District, Shanghai 200233, China
Tel: +86 21 5108 6236
Email: info@quectel.com

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About the Document

This document applies to MDM9628 and MDM9X07 platforms.

History

Revision	Date	Author	Description
1.0	2017-11-15	Running	Initial

Contents

1. QuecOpen Audio API Introduce

QuecOpen provides a set of audio interfaces for playback and recording, all of which are PCM data streams.

1.1 Play API

（1）Call back function

```
// Description:
//     This callback function handles the result of audio player.
//
// @param hdl:
//     Handle received from Ql_AudPlayer_Open().
// @param result:
//     the executing result for previous operation, such as Open, Play, Pause, Resume, Stop.
//     see the definition of Enum_AudPlayer_State for the specific meaning.
typedef int(*_cb_onPlayer)(int hdl, int result);
```

（2）open and close the device

```
/*****************************************************************
* Function:       Ql_AudPlayer_Open
*
* Description:
*                  Open audio play device, and specify the callback function.
*                  This function can be called twice to play different audio sources.
*
* Parameters:
*                device     : a string that specifies the PCM device.
*                           NULL, means the audio will be played on the default PCM device.
*
*                              If you want to mixedly play audio sources, you can call this
*                              API twice with specifying different PCM device.
*                              The string devices available:
*                                 "hw:0,0"    (the default play device)
*                                 "hw:0,13" (this device can mix audio and TTS)
*                                 "hw:0,14"
*
*                  cb_func : callback function for audio player.
*                              The results of all operations on audio player
*                              are informed in callback function.
*
* Return:
*                  pcm device handle
*                       NULL, fail
****************************************************************/
int   Ql_AudPlayer_Open(char* device, _cb_onPlayer cb_func);
void Ql_AudPlayer_Close(int hdl);
```

（3） **playing**

```
int   Ql_AudPlayer_Play(int hdl, unsigned char* pData, unsigned int length);
int   Ql_AudPlayer_PlayFrmFile(int hdl, int fd, int offset);
```

（3） **control**

```
int   Ql_AudPlayer_Pause(int hdl);
int   Ql_AudPlayer_Resume(int hdl);
void Ql_AudPlayer_Stop(int hdl);
```

1.2 Record API

（1） **open and close device**

```
/****************************************************************
* Function:         Ql_AudRecorder_Open
*
* Description:
*                       Open audio record device, and specify the callback function.
*
* Parameters:
*                       device    : not used. MUST be NULL.
*
*                     cb_func : callback function for audio player.
*                      The results of all operations on audio recorder
*                      are informed in callback function.
*
* Return:
*                       pcm device handle
*                       NULL, fail
****************************************************************/
int   Ql_AudRecorder_Open(char* device, _cb_onRecorder cb_fun);
void Ql_AudRecorder_Close(void);
```

（2） **recording**

```
int   Ql_AudRecorder_StartRecord(void);
```

（3） **control**

```
int   Ql_AudRecorder_Pause(void);
int   Ql_AudRecorder_Resume(void);
void Ql_AudRecorder_Stop(void);
```

1.3 Tone API

```
/*******************************************
 * Description:
 *              open tone device
 * Parameters:
 *              device，  must be NULL
 *              cb，  must be NULL
 *Return:
 *              if success, return 0;
 *              if failed, return -1;
 *******************************************/
int Ql_AudTone_Open(char* device, _cb_onPlayer cb);

struct Ql_TonePara {
    unsigned int lowFreq;     //100-4000HZ
    unsigned int highFreq;   //100-4000HZ
    unsigned int volume;       //0 -1000
    unsigned int duration;   // >0 ms
};
int Ql_AudTone_Start(int hdl, struct Ql_TonePara *para);
void Ql_AudTone_Stop(int hdl);
void Ql_AudTone_Close(int hdl);
```

2. Play

2.1 Program Steps

（1）Open the device. If you want to support remix, you need to open two devices.

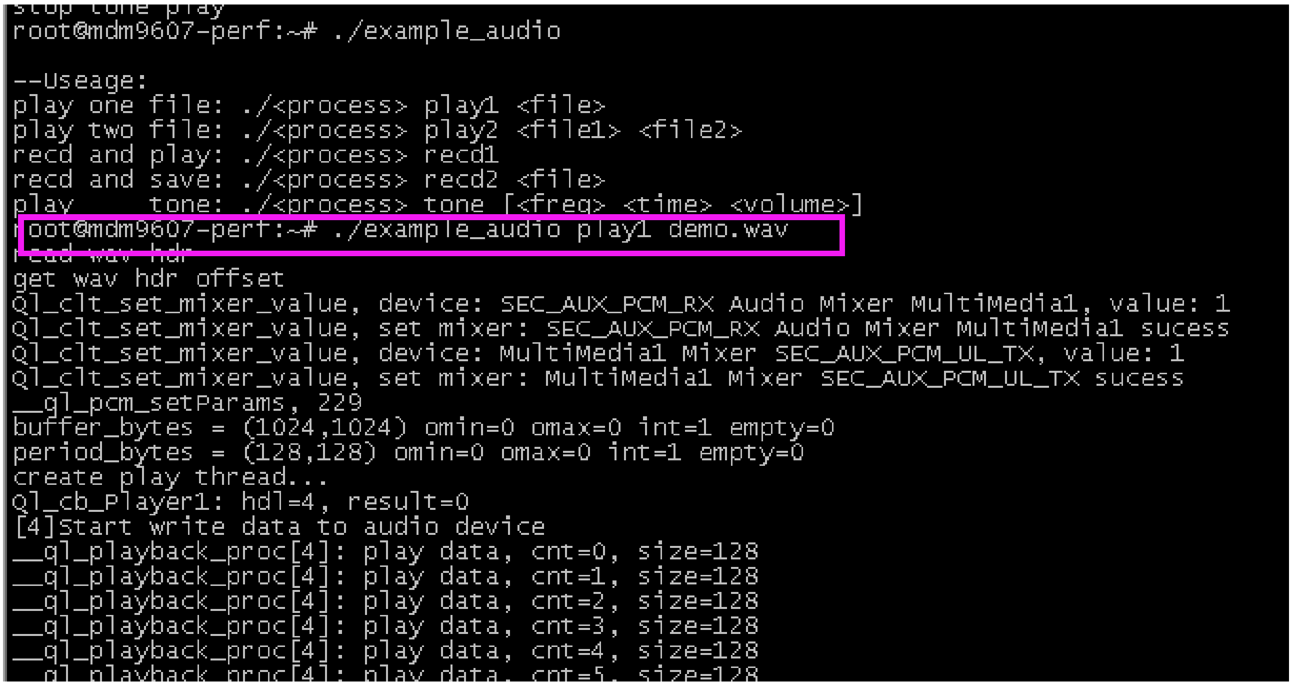
（2）If the PCM data is in the buff, call Ql_AudPlayer_Play() directly；

（3）If the PCM data is in the file, call Ql_AudPlayer_PlayFrmFile() directly

（4）close device

2.2 Demo

Please refer to ql-ol-sdk/ql-ol-extsdk/example/audio/ example_audio.c



```
stop tone play
root@mdm9607-perf:~# ./example_audio

--Useage:
play one file: ./<process> play1 <file>
play two file: ./<process> play2 <file1> <file2>
recd and play: ./<process> recd1
recd and save: ./<process> recd2 <file>
play     tone: ./<process> tone [<freq> <time> <volume>]
root@mdm9607-perf:~# ./example_audio play1 demo.wav
read wav hdr
get wav hdr offset
Ql_clt_set_mixer_value, device: SEC_AUX_PCM_RX Audio Mixer MultiMedia1, value: 1
Ql_clt_set_mixer_value, set mixer: SEC_AUX_PCM_RX Audio Mixer MultiMedia1 sucess
Ql_clt_set_mixer_value, device: MultiMedia1 Mixer SEC_AUX_PCM_UL_TX, value: 1
Ql_clt_set_mixer_value, set mixer: MultiMedia1 Mixer SEC_AUX_PCM_UL_TX sucess
__ql_pcm_setParams, 229
buffer_bytes = (1024,1024) omin=0 omax=0 int=1 empty=0
period_bytes = (128,128) omin=0 omax=0 int=1 empty=0
create play thread...
Ql_cb_Player1: hdl=4, result=0
[4]Start write data to audio device
__ql_playback_proc[4]: play data, cnt=0, size=128
__ql_playback_proc[4]: play data, cnt=1, size=128
__ql_playback_proc[4]: play data, cnt=2, size=128
__ql_playback_proc[4]: play data, cnt=3, size=128
__ql_playback_proc[4]: play data, cnt=4, size=128
__ql_playback_proc[4]: play data, cnt=5, size=128
```

3. Record

3.1 Program Steps

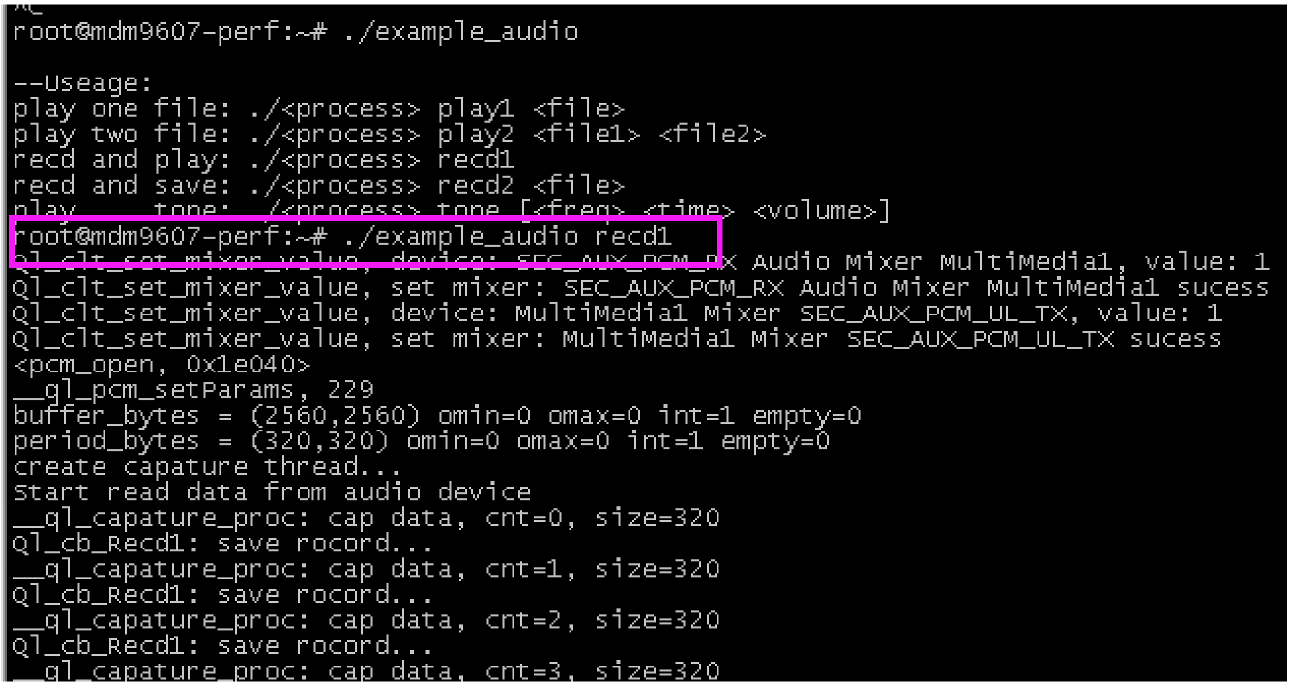
（1）open device, call Ql_AudRecorder_Open（）

（2）recording, call Ql_AudRecorder_StartRecord（）

（3）close device

3.2 demo

Please refer to ql-ol-sdk/ql-ol-extsdk/example/audio/ example_audio.c



```
^C
root@mdm9607-perf:~# ./example_audio

--Useage:
play one file: ./<process> play1 <file>
play two file: ./<process> play2 <file1> <file2>
recd and play: ./<process> recd1
recd and save: ./<process> recd2 <file>
play     tone: ./<process> tone [<freq> <time> <volume>]
root@mdm9607-perf:~# ./example_audio recd1
Ql_clt_set_mixer_value, device: SEC_AUX_PCM_RX Audio Mixer MultiMedia1, value: 1
Ql_clt_set_mixer_value, set mixer: SEC_AUX_PCM_RX Audio Mixer MultiMedia1 sucess
Ql_clt_set_mixer_value, device: MultiMedia1 Mixer SEC_AUX_PCM_UL_TX, value: 1
Ql_clt_set_mixer_value, set mixer: MultiMedia1 Mixer SEC_AUX_PCM_UL_TX sucess
<pcm_open, 0x1e040>
__ql_pcm_setParams, 229
buffer_bytes = (2560,2560) omin=0 omax=0 int=1 empty=0
period_bytes = (320,320) omin=0 omax=0 int=1 empty=0
create capature thread...
Start read data from audio device
__ql_capature_proc: cap data, cnt=0, size=320
Ql_cb_Recd1: save rocord...
__ql_capature_proc: cap data, cnt=1, size=320
Ql_cb_Recd1: save rocord...
__ql_capature_proc: cap data, cnt=2, size=320
Ql_cb_Recd1: save rocord...
__ql_capature_proc: cap data, cnt=3, size=320
```

4. Tone

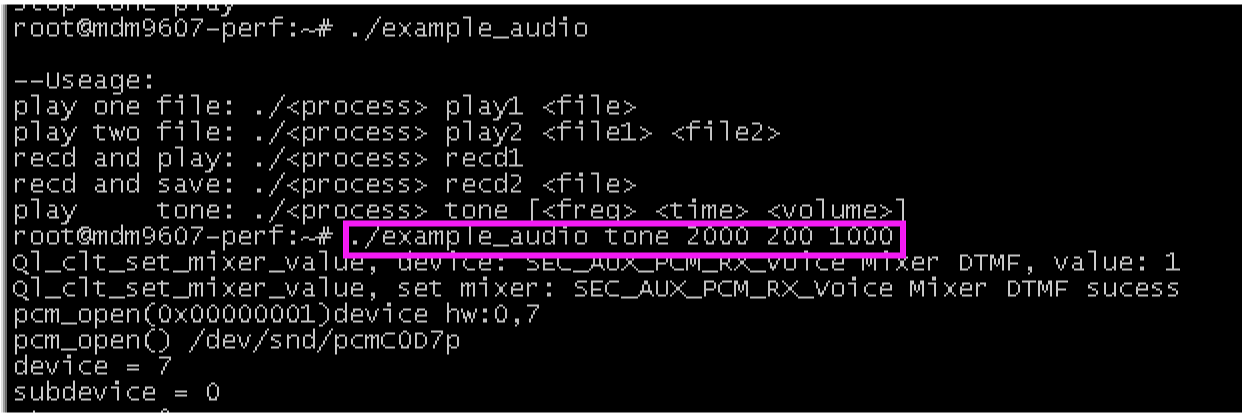
4.1 Program Steps

（1）open device

（2）play tone

（3）close device

4.2 demo



```
stop tone play
root@mdm9607-perf:~# ./example_audio

--Useage:
play one file: ./<process> play1 <file>
play two file: ./<process> play2 <file1> <file2>
recd and play: ./<process> recd1
recd and save: ./<process> recd2 <file>
play     tone: ./<process> tone [<freq> <time> <volume>]
root@mdm9607-perf:~# ./example_audio tone 2000 200 1000
Ql_clt_set_mixer_value, device: SEC_AUX_PCM_RX_Voice Mixer DTMF, value: 1
Ql_clt_set_mixer_value, set mixer: SEC_AUX_PCM_RX_Voice Mixer DTMF sucess
pcm_open(0x00000001)device hw:0,7
pcm_open() /dev/snd/pcmC0D7p
device = 7
subdevice = 0
```