

MEDIATEK

everyday genius

MT8788 Q0 Customization SOP Audio

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Document Revision History

Revision	Date	Description
1.0	2019-09-23	Initial Draft

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1. Introduction

In this document, we'll introduce MT8788 audio features and customized configuration.

1.1 Purpose

The document is for customer to configure and use Audio in MT8788 Project.

1.2 Definitions, Acronyms and Abbreviations

\$(proj)

Take MTK's turnkey solution as an example, \$(proj) correspond to tb8788m1_64_bsp.

1.3 References

N/A

1.4 Overview

N/A

2. Specific Contents

2.1 Audio Block

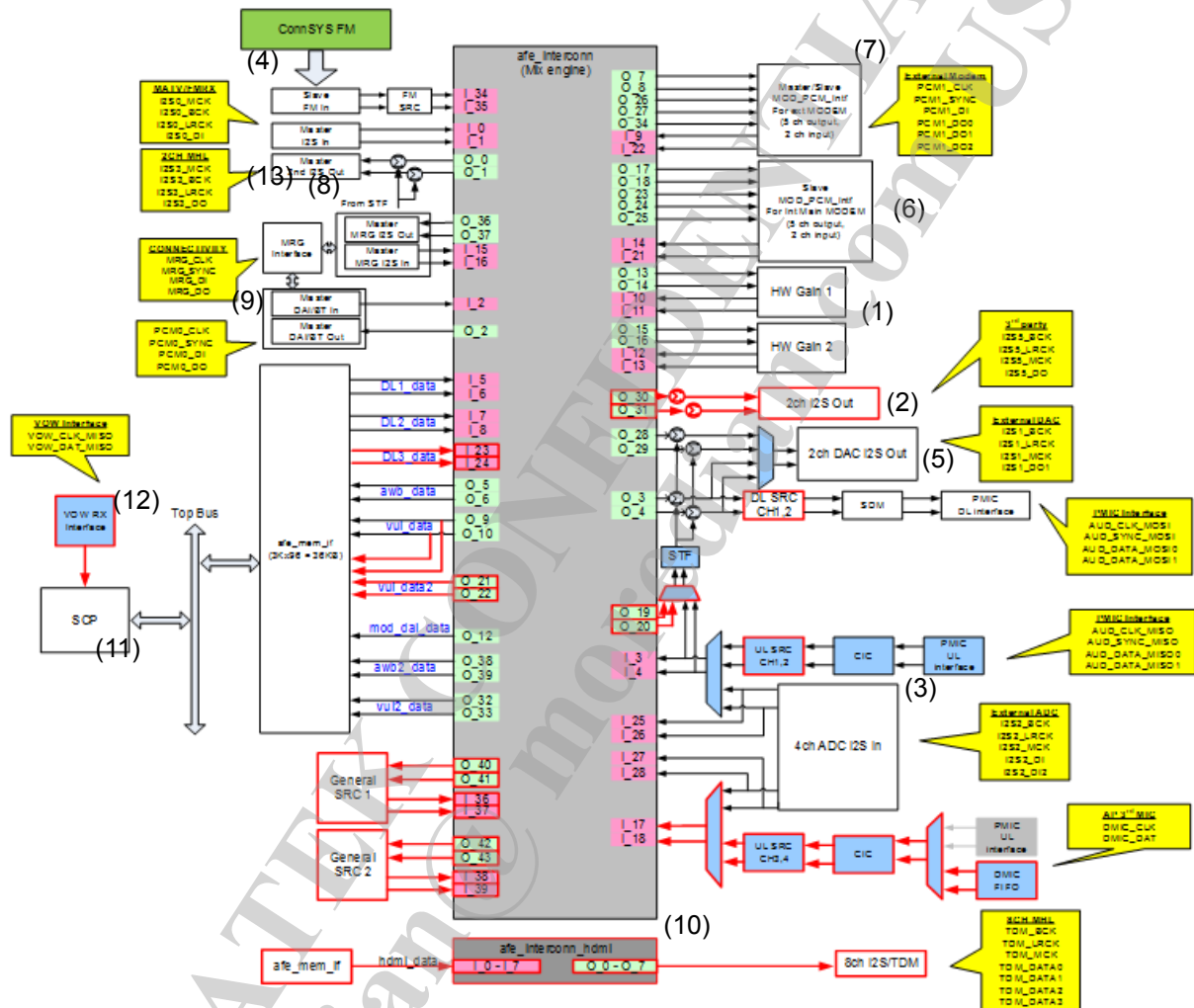


Figure 1. MT8788 Audio Blocks

2.2 Audio Feature

MT8788

- Mediatek Proprietary audio interface connect to PMIC MT6358
- Audio Playback with MTK PMIC – MT6358
 - ◆ Support 8k, 11.025k, 12k, 16k, 22.05k, 24k, 32k, 44.1k, 48kHz, 96kHz, 192kHz sample rate
- Audio Recording with MTK PMIC – MT6358
 - ◆ Support 8k, 16k, 32k, 48kHz sample rate
- Internal high resolution , high flexible HW gain in AFE interconnection.....(1)

- 5 set Inter IC sound interface (I²S)
 - ◆ Master Output *3 (one is 4 ch)(2)(5)(13)
 - ◆ Master Input * 1(3)
 - ◆ Master/Slave input(with SRC)(4)
 - ◆ Master Mode supports 8, 11.025, 12, 16, 22.05, 24, 32, 44.1, 48, 88, 96, 176, and 192KHz sampling rate
 - ◆ Slave Mode supports 8, 11.025, 12, 16, 22.05, 24, 32, 44.1, 48KHz sampling rate
 - ◆ Master Output with 8ch TDM *1(10)
 - ◆ 16/32 bit bus width support
 - ◆ Philip standard and Left just
- 2 set Pulse coded modulation interface(PCM)
 - ◆ Slave PCM for internal Modem*1.....(6)
 - ◆ Master/Slave PCM interface for external modem * 1.....(7)
- 1 set PCM/I2S merged interface (BTPCM + FM RX/TX I2S).....(8)
 - ◆ 4-pin interface for concurrently supporting I2S and PCM
 - ◆ PCM supports 8k/16k Hz sampling rate
 - ◆ I2S supports 32, 44.1, and 48 kHz sampling rate
- BT CVSD-Removal non-RF HW in AP-side.....(9)
- 16/24bit stereo data format support
- Audio codecs
 - ◆ MP3, AAC, AAC+, AMR-NB, AMR-WB, OGG, WAV, APE
- Audio Post-Processing
 - ◆ BesLoudness
 - ◆ ACF
- 3rd support (need contact with 3rd by customer)
 - ◆ Dolby mobile
- Low power audio in MP3 playback, FM playback, FM record.
- Integrated Cortex-M4 DSP, open for development.....(11)
- Voice Wake up, mic activity detector.....(12)

➤ **MT6358**

- Mediatek proprietary audio interface connect to MT6771
- RX processing feature
 - ◆ 4 analog output; earpiece, left and right headphone, lineout
 - ◆ Stereo DAC
 - ◆ Differential earpiece driver up to 50mW in 32ohm, 88mW in 16ohm
 - ◆ Stereo single-ended headphone driver up to 11.25mA in 32ohm
 - ◆ Adjustable earpiece, headphone and SPK Amp gain setting
 - ◆ Sample rate of 8K,16K,44.1K,48K
 - ◆ Best 109dB SNR in headphone output
 - ◆ Best -95dB THD
- TX processing feature

2.3 Receiver

On condition that your platform have no Receiver (earpiece), please check the xml document in below path:

[/alps/device/\\$\(customer\)/\\$\(proj\)/audio_policy_config/audio_policy_configuration.xml](#)

Remove the sections of earpiece port and route from audio policy config:

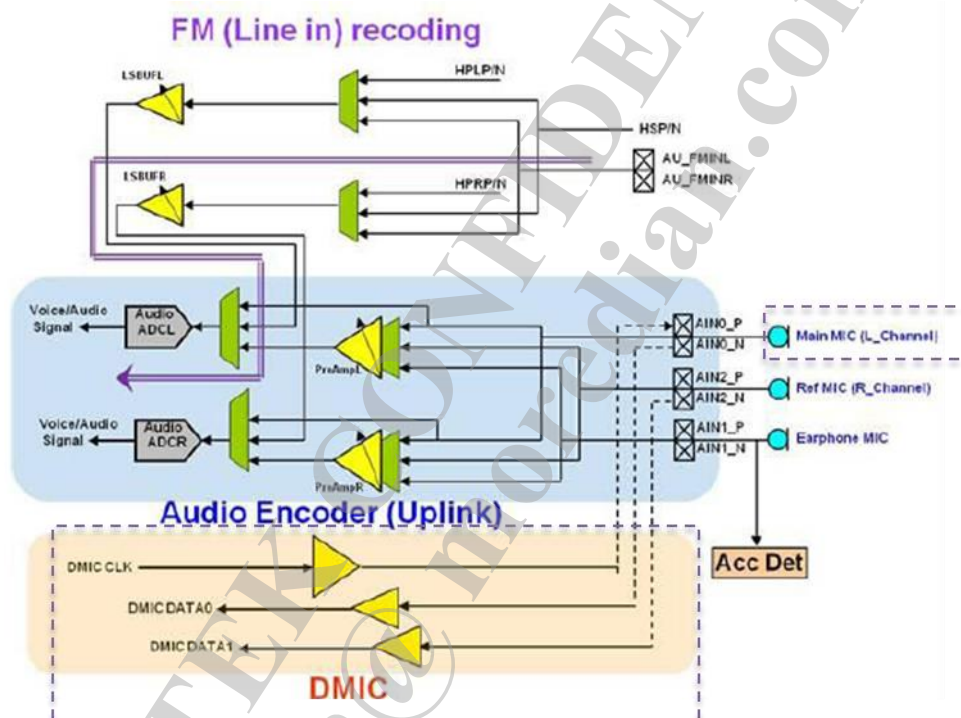
```
<devicePort tagName="Earpiece" type="AUDIO_DEVICE_OUT_EARPIECE" role="sink"> ... </devicePort>
<route type="mix" sink="Earpiece" ... />
```

2.4 Digital Microphone

In case of main_mic (PMIC) connected with DMIC, you need to enable Digital MIC configuration

```
/alps/device/$(customer)/$(proj)/ ProjectConfig.mk
```

```
MTK_DIGITAL_MIC_SUPPORT = yes
```



Please pay attention to that:

Digital Mic. support $F_s \leq 32k$

Analog Mic. support $F_s \leq 48k$

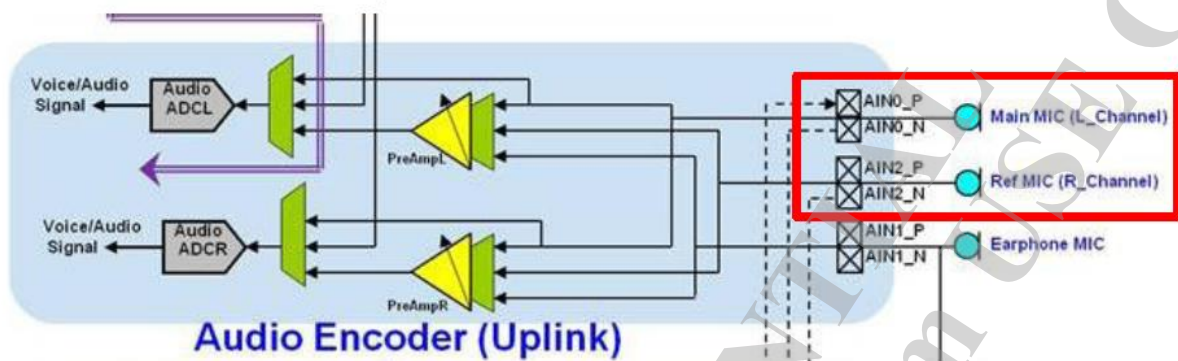
2.5 Dual Microphone

Assuming your platform use two microphones, please enable Dual Mic configuration.

```
/alps/device/$(customer)/$(proj)/ ProjectConfig.mk
```

```
MTK_DUAL_MIC_SUPPORT = yes
```

Main Mic. connect to AIN0, Ref Mic. connect to AIN2.



2.6 External AMP from HP

When SPK use External AMP from HP, please add below define in the header file:

```
#define USING_EXTAMP_HP
```

```
/alps/vendor/mediatek/proprietary/custom/$(proj)/ hal/audioflinger/audio/audio_custom_exp.h
```

If not use External AMP, you must remove the define.

2.7 Stereo Speaker

Suppose your platform use two speaker, please add below define in the header file:

```
#define ENABLE_STEREO_SPEAKER
```

```
/alps/vendor/mediatek/proprietary/custom/$(proj)/ hal/audioflinger/audio audio_custom_exp.h
```

If not use two speakers, you must remove the define.