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**SIM7100\_SIM7500\_SIM7600  
Series\_USB AUDIO\_ Application  
Note\_V1.03**



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## Version History

Date	Version	What is new	Author
2016-07-09	1.00	New version	Dongshan.liu
2016-12-23	1.01	Add the description to hear the ring back tone.	Mingjun.li
2016-04-25	1.02	Modify support product scope.	Mingjun.li
2017-07-11	1.03	Add interface for 16k bit	Mingjun.li

## Scope

This document presents the AT command of USB audio operation and application examples. This document can apply to SIM7X00 series modules, including SIM7100, SIM7600CE-A, SIM7500A, SIM7500A-H, SIM7500E, SIM7500E-H, SIM7500SA, SIM7500SA-H, SIM7500JC.

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## 1. Introduction

### 1.1 Overview

This document gives the usage of SIM7X00 USB AUDIO functions. User can get useful information about the SIM7X00 USB AUDIO functions quickly through this document.

The USB AUDIO functions are provided in AT command format, and they are designed for user to design their software PCM applications easily. User can access the USB AUDIO AT commands through UART/ USB interface which communicates with SIM7X00 module.

#### **SIM7X00 USB AUDIO features:**

- MO call of USB AUDIO flow
- MT call of USB AUDIO flow

### 1.2 Terms and Abbreviations

For the purposes of the present document, the following abbreviations apply:

- AT                    the two-character abbreviation is used to start a command line to be sent from TE/DTE to TA/DCE
- USB AUDIO        A method used for external MPU and the module to transferring software PCM data

## 2. USB AUDIO Transferring Method

### 2.1 USB AUDIO Flow of MO Call

The following commands give an example of MO call for USB AUDIO:

- 1) External MPU runs "ATD..." command to dial the destination phone number

*ATD 10086;*

2) Module reports "VOICE CALL: BEGIN" to indicate that the voice call is connected now. External MPU runs "AT+CPCMREG=1" command to begin the PCM data transferring on the USB AUDIO port. If you want hear the ring back tone, you can run "AT+CPCMREG=1" command after ATDXXX;

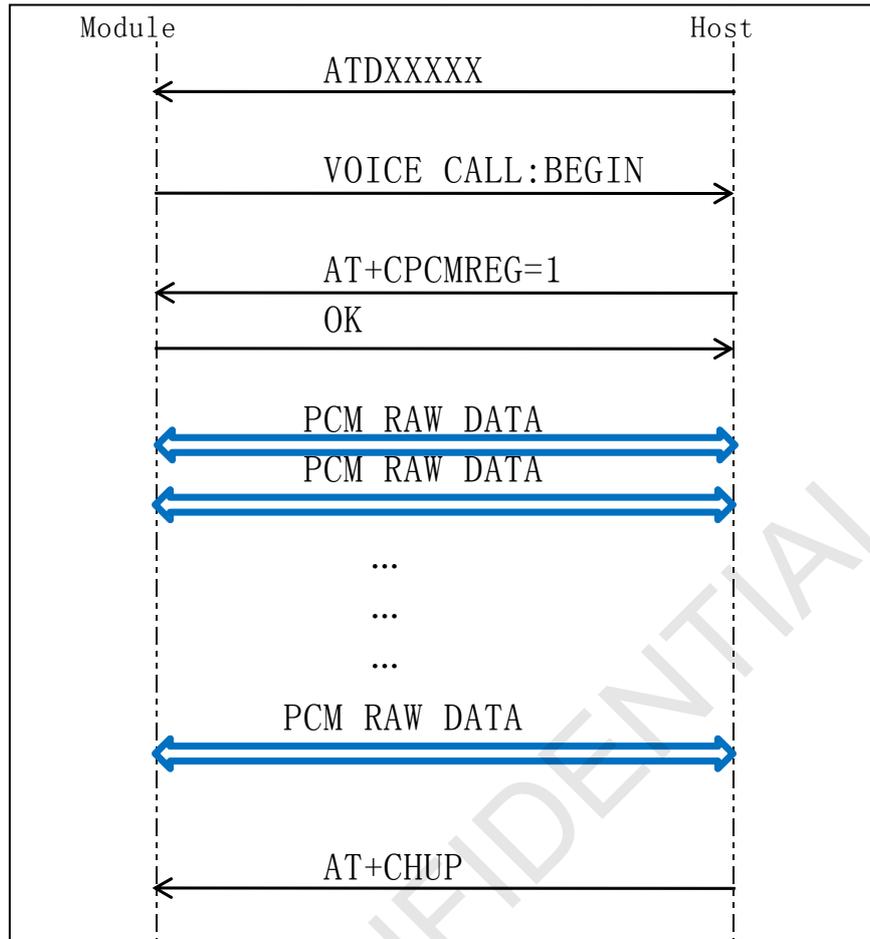
*VOICE CALL: BEGIN*

*AT+CPCMREG=1*

3) Now the external MPU and the module can exchange software PCM data until the call is hung up.

Following is the USB AUDIO flow diagram of MO call.

The black arrow lines indicate using AT port, the blue arrow lines indicate Audio data using Audio port.



**Diagram 1: USB AUDIO flow of MO call**

4) When the voice call is hung up, the USB AT port should report "VOICE CALL: END:" , and then the external MPU may run "AT+CPCMREG=0" command to stop transferring the software PCM data on the USB AUDIO port.

*VOICE CALL: END:*  
*AT+CPCMREG=0*

## 2.2 USB AUDIO Flow of MT Call

The following commands give an example of MT call for USB AUDIO:

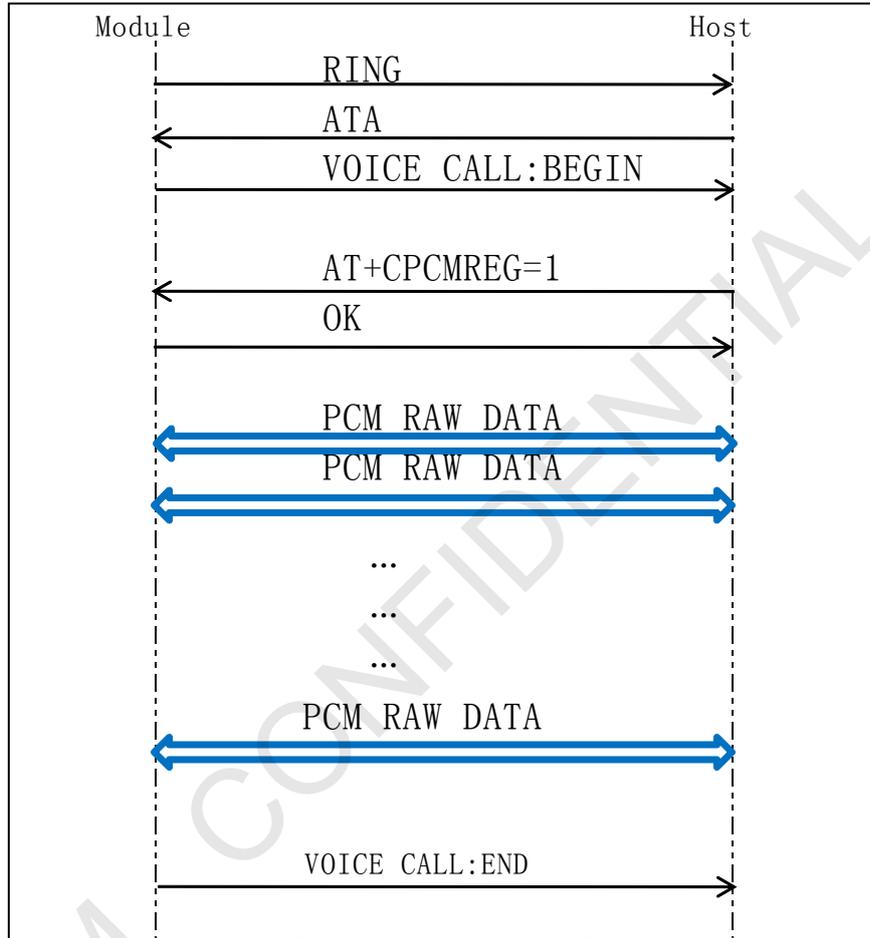
1) Module reports " VOICE CALL: BEGIN " to indicate that the voice call is connected now. External MPU runs "AT+CPCMREG=1" command to begin the PCM data transferring on the USB AUDIO port.

*VOICE CALL: BEGIN*  
*AT+CPCMREG=1*

2) Now the external MPU and the module can exchange software PCM data until the call is hung up.

Following is the USB AUDIO flow diagram of MO call.

The black arrow lines indicate using AT port, the blue arrow lines indicate Audio data using Audio port.



**Diagram 1: USB AUDIO flow of MT call**

4) When the voice call is hung up, the USB AT port should report "VOICE CALL: END:" , and then the external MPU may run "AT+CPCMREG=0" command to stop transferring the software PCM data on the USB AUDIO port.

```

VOICE CALL: END:
AT+CPCMREG=0

```

### 2.3 USB AUDIO PCM Data Format

USB audio PCM data format is 8K sample rate, 16 bit linear. You can set "AT+CPCMFRM=1"

after module reset if you want use 16K sample rate , 16 bit linear (only support 7500/7600 series), this set not saved when module reset.

AT command use “AT Port 9001” (black circle line marked)

Audio data use “Audio 9001” (blue circle line marked)

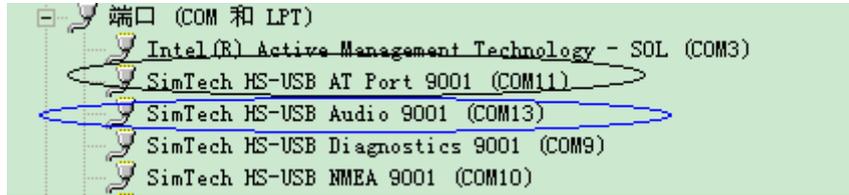


Diagram 3: USB port

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