UC20 Voice over USB Application Note

UMTS/HSPA Module Series

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About the Document

History

Revision	Date	Author	Description
1.0	2012-11-07	Scott HU	Initial

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1 Introduction

This document mainly introduces the general realization path and operation procedure of Voice over USB functionality of UC20.

2 Overview

UC20 provides Voice over USB functionality, as shown in Figure 1.

In voice call status, the module obtains voice data through air interface, and DSP decodes the data to voice PCM (Pulse Code Modulation) stream, then the stream will be transferred to device by USB BUS. Finally, PCM Application on the device will send PCM stream to Audio Process Unit to play (or save) locally. Similarly, after the voice being recorded by MIC on the device, it will be transferred in an opposite direction.

PCM Application on the device should control the sending speed of PCM data strictly to ensure the continuity of voice data. In the course of use, the device will receive 640 bytes of PCM data from the module in every 40ms; PCM Application should receive these data and process them as soon as possible. Meanwhile, PCM Application obtains MIC recording data from Audio Process Unit. It is required that PCM Application should send 1600 bytes of voice data to the module at an interval of 100ms.

Please note that this functionality of UC20 only supports Mono, and the PCM data must be at sample rate of 8KHz and in 16bit linear format.
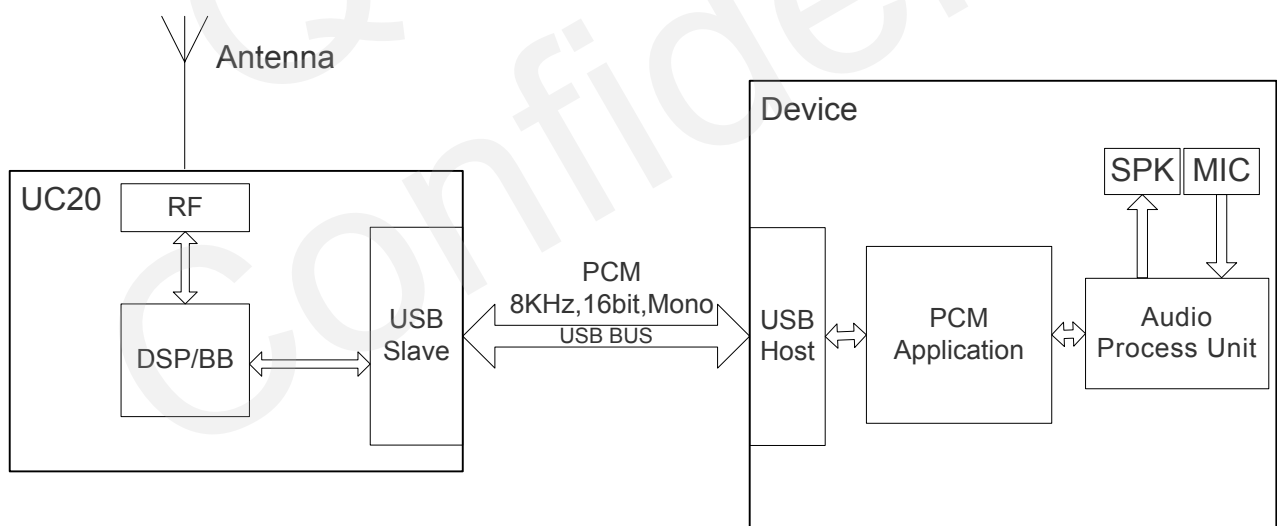
Figure 1: Voice Path of Voice over USB Functionality

3 Description of AT Command

UC20 module provides AT+QPCMV command to enable/disable the Voice over USB functionality. After the functionality is enabled, when you are dialing a call, the voice data came from the other side of the call will be decoded to PCM data by module, then it will be outputted to device through the USB port which has been set. In the meantime, the device writes the PCM data to the port, and the data will be transmitted to the other side of the call via network. When the call is finished, there is not any data to be outputted, and the inputted data is invalid either. The outputted and inputted PCM data must be at the sample rate of 8KHz and in 16bit linear format.

AT+ QPCMV	Enable/Disable Voice over USB Functionality
Test Command **AT+QPCMV=?**	Response **+QPCMV: (0,1),(0,1)** **OK**
Read Command **AT+QPCMV?**	Response **+QPCMV: <enable>[,<port>]** **OK**
Write Command **AT+QPCMV=<enable>[,<port>]**	Response **OK** **ERROR**
Reference	

Parameter

<enable>	Enable/disable Voice over USB functionality.	
	0	Enable
	1	Disable
<port>	Configure the port for PCM data transmission .	
	0	USB NMEA port
	1	DEBUG UART, baud rate is 230400.

NOTES

1. Ensure the current port is not used for other functions when configuring <port>. In addition, when using USB NMEA port, you should configure the port via AT+QGPSCFG="outport","none" to prevent it from being used by GNSS. Similarly, when using DEBUG UART, you cannot use it as DM port at

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the same time.

2. The settings will take effect immediately. Parameters will not be saved and they will be recovered by default value after rebooting the module.

4 Operation Procedure

This chapter describes the detailed operation procedure of UC20 Voice over USB functionality.

Step 1: Power on the UC20 EVB and the module accesses to network properly.

Step 2: Execute AT+QPCMV=1,0 on the USB AT port to enable Voice over USB functionality, and choose USB NMEA port as the input and output port of PCM data.

Step 3: Execute ATD command to dial a call or ATA command to accept the incoming call on the USB AT port.

Step 4: PCM Application on the device will receive 640 bytes of PCM data through USB NMEA port in every 40ms and should process the received data immediately (play or save).

Step 5: PCM Application on the device will obtain MIC recording data through Audio Process Unite. It is required that the PCM Application should send 1600 bytes of voice data to USB NMEA port at an interval of every 100ms.

Step 6: Execute ATH command to hang up the phone on the USB AT port or the other side hangs up the call, and USB NMEA port will stop outputting PCM data.

Step 7: Execute AT+QPCMV=0 to disable Voice over USB functionality on the USB AT port.
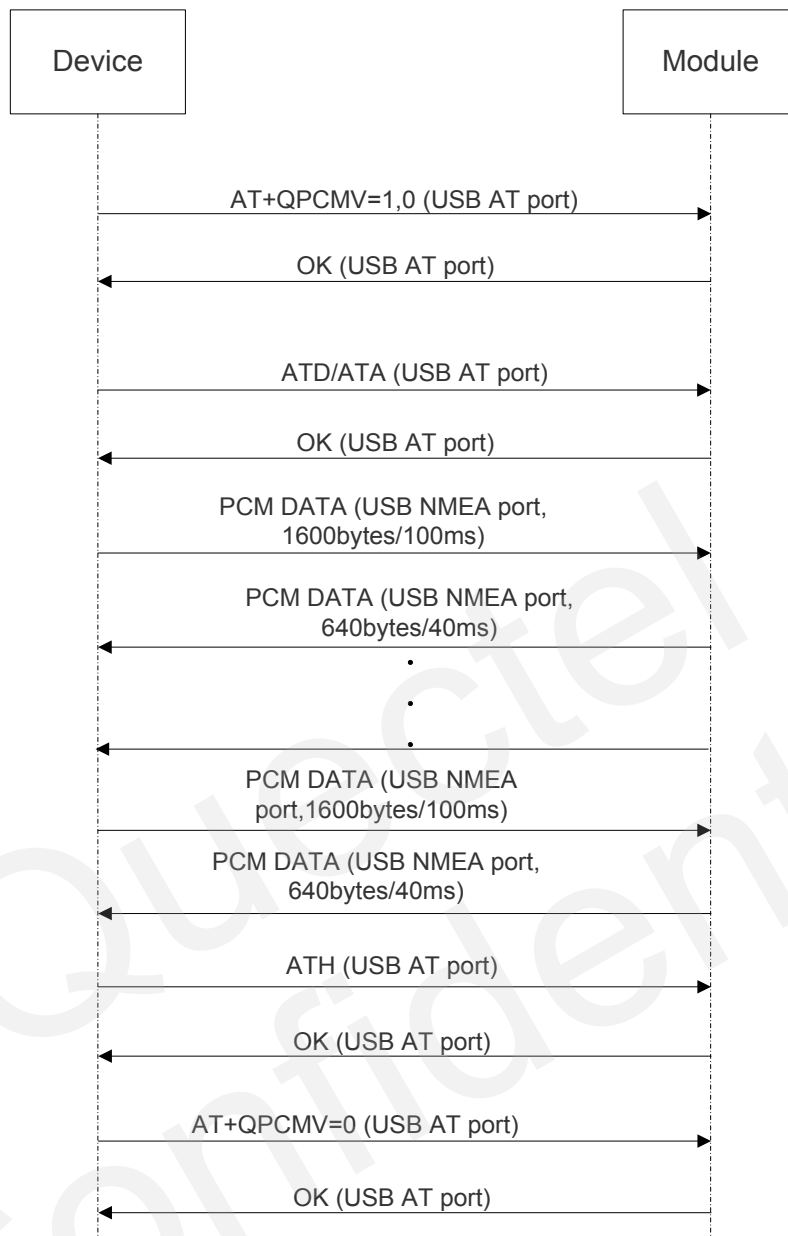
Figure 2 shows the detailed operation procedure.

Figure 2: Operation Procedure of Voice over USB