Eye record

First, the chip hardware description

1 , The chip's power supply

Optimal operating voltage of the chip 4.2V . So if the user is using 5V A power supply, a diode connected in series recommendations

2 Chip LED [Power Status]

工作状态	下载模式	播放语音	暂停	睡眠
状态	快闪	慢闪	常亮	灭

备注：正常工作状态指示灯

3 Chip LED [operating state]

工作状态	一对一可打断	抬起停止	一对一不可打断	标准MP3功能
状态	常亮2S	快闪2S[100ms取反]	中慢闪2S[200ms取反]	慢闪2S[500ms取反]

备注：此时指示灯，只在上电初始化的时候，指示2秒

4 , An audio output Description

1 , SPK1 with SPK2 Swiss received two speakers, regardless of possible positive and negative, attention: only allow access 2W The following speaker

2 , Then the amplifier or headphones directly connected DAC - R with DAC - L Ends Note: common ground (ground power supply)

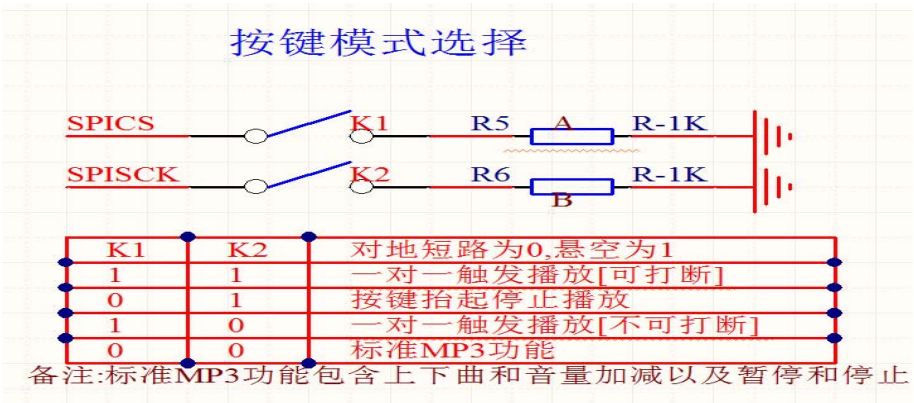
5 Chip debugging instructions

(1) , Our chip is the default plug USB Line, to enter download mode. When the user finishes updating voice, a trigger any IO

Mouth to exit download mode and resume normal working condition

(2) , Starting with chip debugging easy to difficult, from simple to complex first, and then transfer the keys to ensure the normal serial after serial debugging debugging normal hand,

and then transferred microcontroller, TF card no sound, the first computer via USB plug, see if I can read TF card letter



Serial debugging assistant test	Command sent [with parity]	Command sent [without parity]	Remark

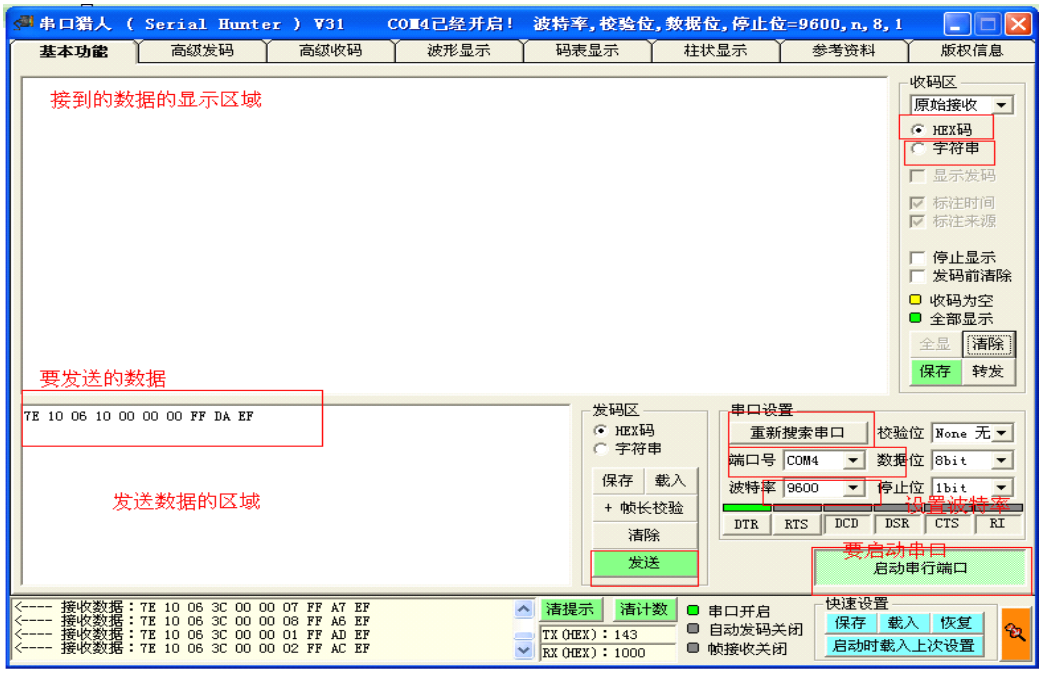
[next song]	7E FF 06 01 00 00 00 FE FA EF	7E FF 06 01 00 00 00 EF	
[On one]	7E FF 06 02 00 00 00 FE F9 EF	7E FF 06 02 00 00 00 EF	
[Specify the track]	7E FF 06 03 00 00 01 FE F7 EF	7E FF 06 03 00 00 01 EF	Specifies the first song to play
	7E FF 06 03 00 00 02 FE F6 EF	7E FF 06 03 00 00 02 EF	Specifies the second song
	7E FF 06 03 00 00 0A FE EE EF	7E FF 06 03 00 00 0A EF	Specify the first 10 first
Volume Up	7E FF 06 04 00 00 00 FE F7 EF	7E FF 06 04 00 00 00 EF	
Volume down	7E FF 06 05 00 00 00 FE F6 EF	7E FF 06 05 00 00 00 EF	
[Specifies the volume]	7E FF 06 06 00 00 1E FE D7 EF	7E FF 06 06 00 00 1E EF	As specified volume 30 level
[Designation EQ]	7E FF 06 07 00 00 01 FE F3 EF	7E FF 06 07 00 00 01 EF	Retention
[Loop Tracks]	7E FF 06 08 00 00 01 FE F2 EF	7E FF 06 08 00 00 01 EF	Playing the first cycle
	7E FF 06 08 00 00 02 FE F1 EF	7E FF 06 08 00 00 02 EF	The first play of the second cycle
	7E FF 06 08 00 00 0A FE E9 EF	7E FF 06 08 00 00 0A EF	The first loop tenth
	7E FF 06 08 00 01 01 FE F1 EF	7E FF 06 08 00 01 01 EF	Loop FLASH of FOLDER1 First song
	7E FF 06 08 00 02 01 FE F0 EF	7E FF 06 08 00 02 01 EF	Loop FLASH of FOLDER2 First song
[Specifies the playback device]	7E FF 06 09 00 00 01 FE F1 EF	7E FF 06 09 00 00 01 EF	Designated player UDISK
	7E FF 06 09 00 00 02 FE F0 EF	7E FF 06 09 00 00 02 EF	Designated player TF
	7E FF 06 09 00 00 04 FE EE EF	7E FF 06 09 00 00 04 EF	Designated player FLASH
[Into sleep mode]	7E FF 06 0A 00 00 00 FE F1 EF	7E FF 06 0A 00 00 00 EF	
[Wake-sleep]	7E FF 06 0B 00 00 00 FE F0 EF	7E FF 06 0B 00 00 00 EF	
[Chip Reset]	7E FF 06 0C 00 00 00 FE EF EF	7E FF 06 0C 00 00 00 EF	
[Play]	7E FF 06 0D 00 00 00 FE EE EF	7E FF 06 0D 00 00 00 EF	
[time out]	7E FF 06 0E 00 00 00 FE ED EF	7E FF 06 0E 00 00 00 EF	
[Specified folder filename]	7E FF 06 0F 00 01 01 FE EA EF	7E FF 06 0F 00 01 01 EF	Appointed as" 01 " Folder, track for" 001 '
	7E FF 06 0F 00 01 02 FE E9 EF	7E FF 06 0F 00 01 02 EF	Appointed as" 01 " Folder, track for" 002 '

stand by 1000 first	7E FF 06 14 00 10 FF FD D8 EF	7E FF 06 14 00 10 FF EF	Appointed as" 01 " Folder, track for" 0255 '
	7E FF 06 14 00 17 CF FE 01 EF	7E FF 06 14 00 17 CF EF	Appointed as" 01 " Folder, track for" 1999 '
	7E FF 06 14 00 C0 01 FE 26 EF	7E FF 06 14 00 C0 01 EF	Appointed as" 12 " Folder, track for" 0001 '
	7E FF 06 14 00 C0 FF FD 28 EF	7E FF 06 14 00 C0 FF EF	Appointed as" 12 " Folder, track for" 0255 '
	7E FF 06 14 00 C7 CF FD 51 EF	7E FF 06 14 00 C7 CF EF	Appointed as" 12 " Folder, track for" 1999 '
Stop play	7E FF 06 16 00 00 00 FE E5 EF	7E FF 06 16 00 00 00 EF	Stop decoding software
Specified folder loop	7E FF 06 17 00 02 00 FE E2 EF	7E FF 06 17 00 02 00 EF	Designation 02 Folders loop
	7E FF 06 17 00 01 00 FE E3 EF	7E FF 06 17 00 01 00 EF	Designation 01 Folders loop
Shuffle Playback	7E FF 06 18 00 00 00 FE E3 EF	7E FF 06 18 00 00 00 EF	Shuffle Playback
Single Loop	7E FF 06 19 00 00 00 FE E2 EF	7E FF 06 19 00 00 00 EF	Single loop open
	7E FF 06 19 00 00 01 FE E1 EF	7E FF 06 19 00 00 01 EF	Single closed loop
DAC setting	7E FF 06 1A 00 00 00 FE E1 EF	7E FF 06 1A 00 00 00 EF	open DAC
	7E FF 06 1A 00 00 01 FE E0 EF	7E FF 06 1A 00 00 01 EF	turn off DAC
Combination Play	7E FF 09 21 00 05 01 02 03 04 FE C8 EF	7E FF 09 21 00 05 01 02 03 04 EF	Combination Play 5 , 1 , 2 , 3 , 4
Combination Play	7E FF 0C 21 00 05 01 02 03 04 06 0708 FE B0 EF	7E FF 0C 21 00 05 01 02 03 04 06 07 08 EF	Combination Play 5 , 1 , 2 , 3 , 4 , 6 , 7 , 8
Play with volume	7E FF 06 22 00 1E 01 FE BA EF	7E FF 06 22 00 1E 01 EF	30 Level playing the first volume 1 song
	7E FF 06 22 00 0F 01 FE C9 EF	7E FF 06 22 00 0F 01 EF	15 Level playing the first volume 1 song
	7E FF 06 22 00 0F 02 FE C8 EF	7E FF 06 22 00 0F 02 EF	15 Level playing the first volume 2 song

Query the current status	7E FF 06 42 00 00 00 FE B9 EF	7E FF 06 42 00 00 00 EF	
[Query Volume]	7E FF 06 43 00 00 00 FE B8 EF	7E FF 06 43 00 00 00 EF	
[The current inquiry EQ]	7E FF 06 44 00 00 00 FE B7 EF	7E FF 06 44 00 00 00 EF	
U The total number of disk file	7E FF 06 47 00 00 00 FE B4 EF	7E FF 06 47 00 00 00 EF	The current total number of files equipment
TF The total number of files	7E FF 06 48 00 00 00 FE B3 EF	7E FF 06 48 00 00 00 EF	
FLASH The total number of files	7E FF 06 49 00 00 00 FE B2 EF	7E FF 06 49 00 00 00 EF	
U Disc current track	7E FF 06 4B 00 00 00 FE B0 EF	7E FF 06 4B 00 00 00 EF	Currently playing track
TF Current track	7E FF 06 4C 00 00 00 FE AF EF	7E FF 06 4C 00 00 00 EF	
FLASH Current Folder Tracks pointer	7E FF 06 4D 00 00 00 FE AE EF	7E FF 06 4D 00 00 00 EF	
Queries folder total number of tracks	7E FF 06 4E 00 00 01 FE AC EF	7E FF 06 4E 00 00 01 EF	Inquire 01 Folder or FOLDER1 The total number of tracks
Inquire TF or U Total disk file Number of folders	7E FF 06 4F 00 00 00 FE AC EF	7E FF 06 4F 00 00 00 EF	Only supports TF Card and U plate
The current folder pointer [FLASH]	7E FF 06 61 00 00 00 FE 9A EF	7E FF 06 61 00 00 00 EF	Query currently playing folder [branch hold FLASH]

Third, test methods

1 , Serial port software operation



(1) , First of all Installation information in the " Serial Hunter " Software, open the software, you must first search for the serial port, refer to find After a given port, specify "baud", our default baud rate for the module 9600 Most After that "Start Serial Port", so the software is configured. There are two concepts need The first is to define what " HEX Code ", this is our default, this is used to display the number of Data. Here is the second set must be "string", this word is used to display the print Breaks, we can not use here.

(3) Software Configuration OK Thereafter, the required instructions to copy the transmission region can. Specific instructions Please refer to the module data sheets

(4) , If the data module is not manual test command, then, calculate their own particular needs Note Meaning how two checksum bytes do not, then the module does not accept the instruction .

Calculated check code:

```
/*****************************************************************************************************
  - 功能描述:  求和校验
  - 隶属模块:
  - 参数说明:
  - 返回说明:
  - 注:
                和校验的思路如下
                发送的指令，去掉起始和结束。将中间的6个字节进行累加，最后取反码
                接收端就将接收到的一帧数据，去掉起始和结束。将中间的数据累加，再加上接收到的校验
                字节。刚好为0.这样就代表接收到的数据完全正确。
*****************************************************************************************************/
void DoSum( INT8U *Str, INT8U len)
{
    INT16U xorsum = 0;
    INT8U i;

    for(i=0; i<len; i++)
    {
        xorsum = xorsum + Str[i];
    }
    xorsum      = 0 -xorsum;
    *(Str+i)    = (INT8U)(xorsum >>8);
    *(Str+i+1)  = (INT8U)(xorsum & 0x00ff);
}
```

0 = 24 + x analogy 0000 0000 (0) = 00,100,100 (twenty four) + 11,011,011 (DB + 1)

Appendix I: SPI-FLASH Capacity and length of audio table

Schedule 1-1 YX5300-24SS FLASH Capacity and the length of time of the audio conversion table :(Unit: S)

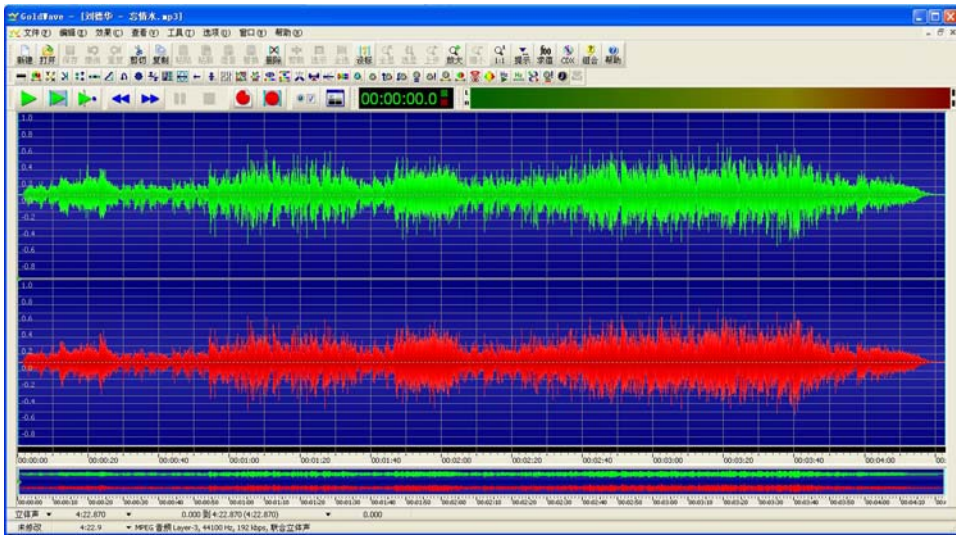
Capacity / rate	4MBits	8MBits	16MBit	32MBit	64MBit	
16Kbps	252	505	1011	2022	4045	
24Kbps	163	327	654	1309	2618	
32Kbps	113	226	453	906	1812	
64Kbps	59	119	239	477	955	
96Kbps	41	81	162	325	651	
128Kbps	31	61	123	246	493	
160Kbps	twenty four	49	97	194	389	
192Kbps	20	40	81	161	323	
256Kbps	15	30	60	120	241	
320Kbps	11	twenty three	47	95	191	

Note: MP3 File size depends on the bit rate, regardless of the sample rate. Voice Broadcast recommended 16Kbps ~ 64Kbps , Music players recommended 32Kbps ~ 96Kbps .

Third, the rate of conversion method

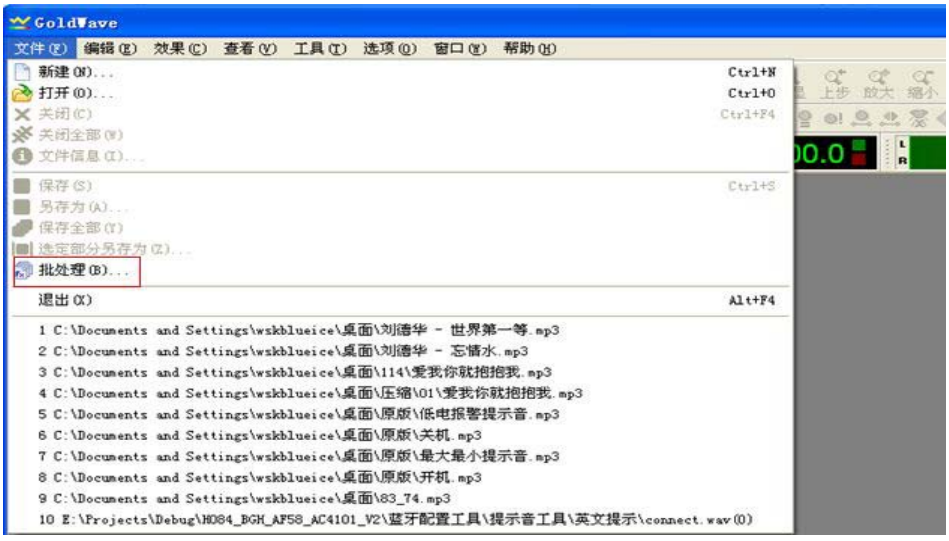
1 To fight for SPIFLASH Small-capacity, stable characteristics, we have developed YX5300-24SS . Directly through mobile phones Microusb Update the voice line, but for the common MP3 Documents, mostly 4M Bytes or so, use SPIFLASH ,

Space becomes very hard for. But we generally as a voice broadcast and tips occasions, do not need high sampling rate



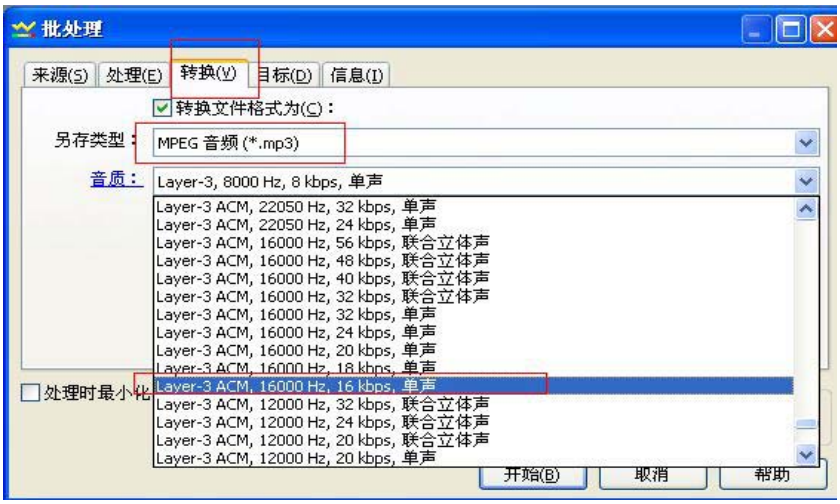
From the lower left corner of the chart, we can see "the world's first and so on. MP3 "Sampling rate of up to 44100HZ . Bit rate 256KBS . This parameter, indicating the current song sound quality is quite good, so take up 4.5M Space.

2 But actually we do not need such a high quality, then you can be compressed. As follows: Use " GoldWave "This software.

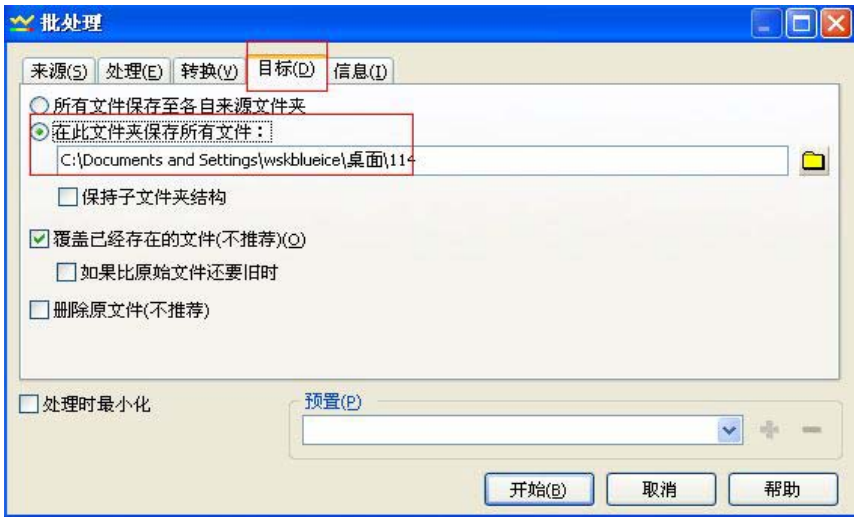


Click Batch,

add files



Select "conversion" Set the sampling rate 16000KHZ Bit rate 16KBS .



Path to store files after conversion can then specify what

After compression, 4.5M Files become 507K A. Is one such step

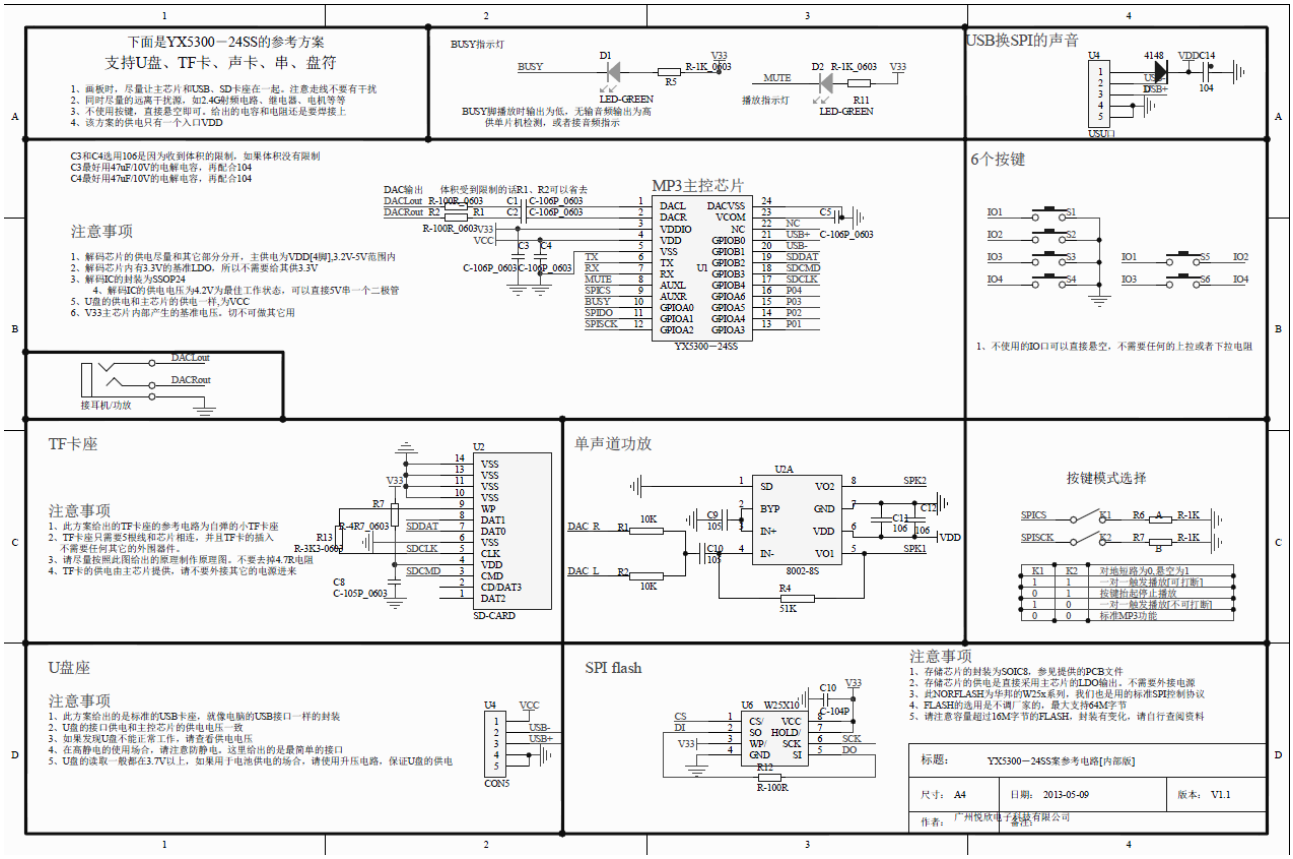
Remarks:

1 ,if wav File, you can also use this software to convert MP3 2 , After the effect of the conversion, users can listen to it in the computer above effect, playing computer above effect, and the effect of our players is the same chip

3 If that is not good sound quality, it can be appropriate to increase the sampling rate and bit rate of these two parameters. You can try it yourself

4 If you need to modify the source volume, and trim audio, you can use this software

Fourth, the chip's schematics



four, Program Example

Program Example: Serial designated player

```
/ *************************************************** ****************************
 - Function: electrical chip are designated music playing the first and second curved, basic program for the user to test
 - date : 2013-05-06
 - Operating environment: STC   Crystal: 11.0592M    Baud rate: 9600
 - Remark : In Pu in science and technology 51 Development board debugging OK --- STC89C516RD + 1 The test procedure is a module or chip
program must have equipment line, such as U plate, TF card, FLASH
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * /
#include "REG52.h"

#define COMM_BAUD_RATE 9600                 // Baud rate
#define OSC_FREQ              11,059,200     // Crystal Run: 11.05926MHZ
static INT8U Send_buf [10] = {0};

void Delay_Ms (INT32U z) {

    INT32U x = 0, y = 0; for (x =

  110; x> 0; x--) for (y = z; y> 0;

  y--);}

/ *************************************************** ****************************
 - Description: Serial 1 initialization
 - Note:          Set as 9600 Baud Rate
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * /
void Serial_init (void) {TMOD

= 0x20;                                 // Set up T1 Baud Rate Generator.
    SCON = 0x50;                        // 0101,0000 8 Data bits, no parity
    PCON = 0x00;                        // PCON = 0;
    TH1 = 256- (OSC_FREQ / COMM_BAUD_RATE / 32/12); // Set as 9600 Baud Rate
    TL1 = 256- (OSC_FREQ / COMM_BAUD_RATE / 32/12); TR1
             = 1;                       // Timer 1 turn on
    REN        = 1;                     // Serial ports 1 Receive enable
    ES        = 1;                      // Serial ports 1 Interrupt Enable
} Void Uart_PutByte (INT8U ch) {


    SBUF = ch; while

  (TI!) {;} TI = 0;}


/ *************************************************** ****************************
 - Functional Description: Serial transmission command out [including control and query]
 - Parameter Description: CMD: Represents control instructions, please refer to the instruction list, also includes instructions related queries
               feedback: Need to answer [ 0: No reply, 1: Need to answer]
               data: Parameter transfer
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * /
```

```
void SendCmd (INT8U len) {

        INT8U i = 0;
        Uart_PutByte (0x7E); // Starting
        for (i = 0; i <len; i ++) // data
        { Uart_PutByte (Send_buf [i]);} Uart_PutByte


        (0xEF); // End
}

/ ************************************************** ****************************
  -  Description: checksum
  -  And verify the following idea:
        Instruction sent to remove start and end. The middle 6 Bytes are accumulated, the last inversion code. The receiving end will be received frame of data,
start and end removed. Intermediate accumulation data, plus parity bytes received. Just as 0. This represents the received data is correct.

* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * /
void DoSum (INT8U * Str, INT8U len) {

        INT16U xorsum = 0; INT8U
        i;
        for (i = 0; i <len; i ++) {

                xorsum = xorsum + Str [i];}

        xorsum          = 0 -xorsum;
        * (Str + i)      = (INT8U) (xorsum >> 8);
        * (Str + i + 1) = (INT8U) (xorsum & 0x00ff);}


void Uart_SendCMD (INT8U CMD, INT8U feedback, INT16U dat) {

        Send_buf [0] = 0xff;            // Reserved bytes
        Send_buf [1] = 0x06;            // length
        Send_buf [2] = CMD;             // Control instruction
        Send_buf [3] = feedback; // The need for feedback
        Send_buf [4] = (INT8U) (dat >> 8); // datah Send_buf
        [5] = (INT8U) (dat);                // datal
        DoSum (& Send_buf [0], 6);          // check
        SendCmd (8);            // This data frame transmission
}

void main ()
{Serial_init (); // Serial register initial setting

        Uart_SendCMD (0x03, 0, 0x01); // Playing the first
        Delay_Ms (1000); // Probably delay 6S Uart_SendCMD (0x03, 0, 0x02); // The
        first play of the second
        Delay_Ms (1000); // Probably delay 6S Uart_SendCMD (0x03, 0, 0x04); // The
        first play of the fourth
        while (1);}
```