THE WORK FLOW OF EM190F：

The EM190F Car MP3 Player is mainly connect of three parts : 1: the center controller and the MP3 encoder/decoder circuit . 2: the frequency modulator part . 3: the power supply circuit .

Part 1 :

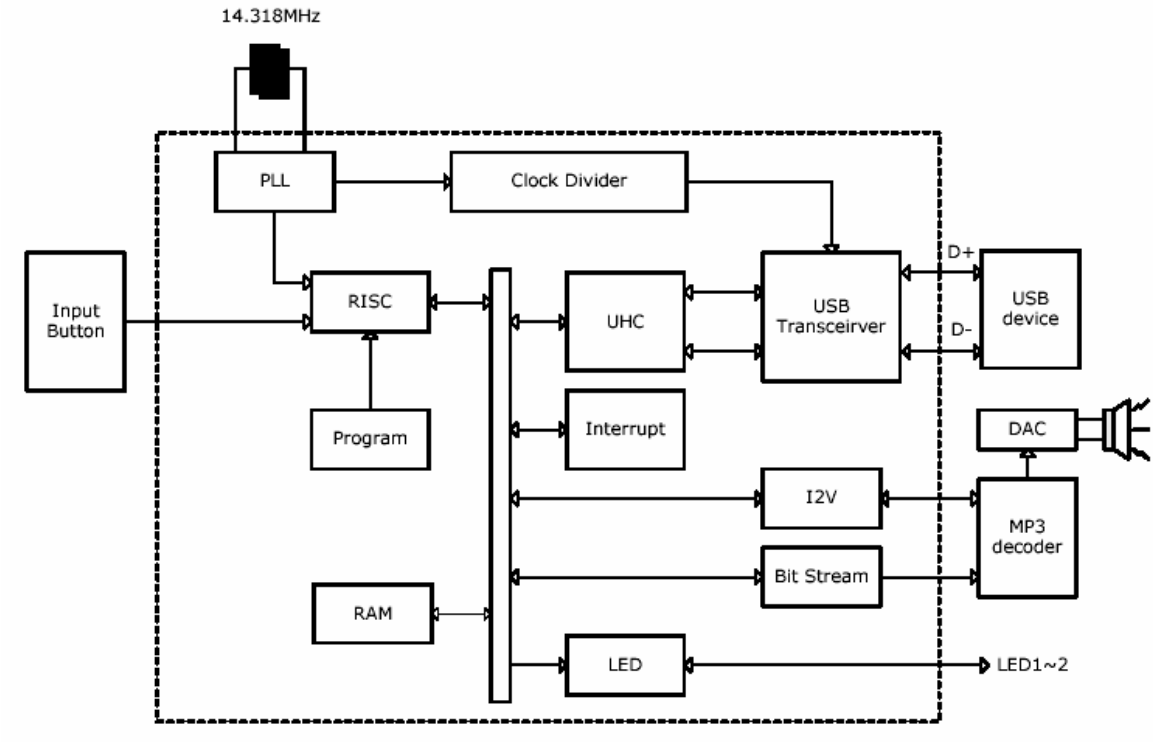
The center controller and the MP3 encoder/decoder circuit is the most important part of this player. Refer the schematic and the block diagram, we can know that: the OTI-6888 is the center controller of the other parts; the OTI-1316 is the MP3 encoder/decoder circuit; and the key & LED circuit is the assistant circuit.

The OTI-6888 is a USB host with MP3 interface controller. User can stores the mp3 file in the USB device (USB flash disk, USB card reader). When the USB device pluged in USB port and push the **PLAY/PAUSE** key on the keyboard. The OTI-6888 will read the mp3 file from USB device, and send the data to MP3 decoder and DAC OTI-1316. When user push the **PREV/V-(NEXT/V+)** key on the keyboard, The OTI-6888 will then stop reading currently MP3 file and read the preview (next) mp3 file from USB device, and send the data to MP3 decoder OTI-1316.

When user push the **CH** key on the keyboard, The Oti-6888 will send data to HY1417 to change the sending out modulated frequency, and the data be send to the LED circuit (74HC138) to change the state of the seven green LEDs at the same time.

The USB interfaces are for full speed operation (12Mb/s). It conforms to USB Specification, Version 1.1. The USB transceiver is embedded in this controller. With stable slew-rate control, the controller reduces EMI.

BLOCK DIAGARAM of OTI-6888

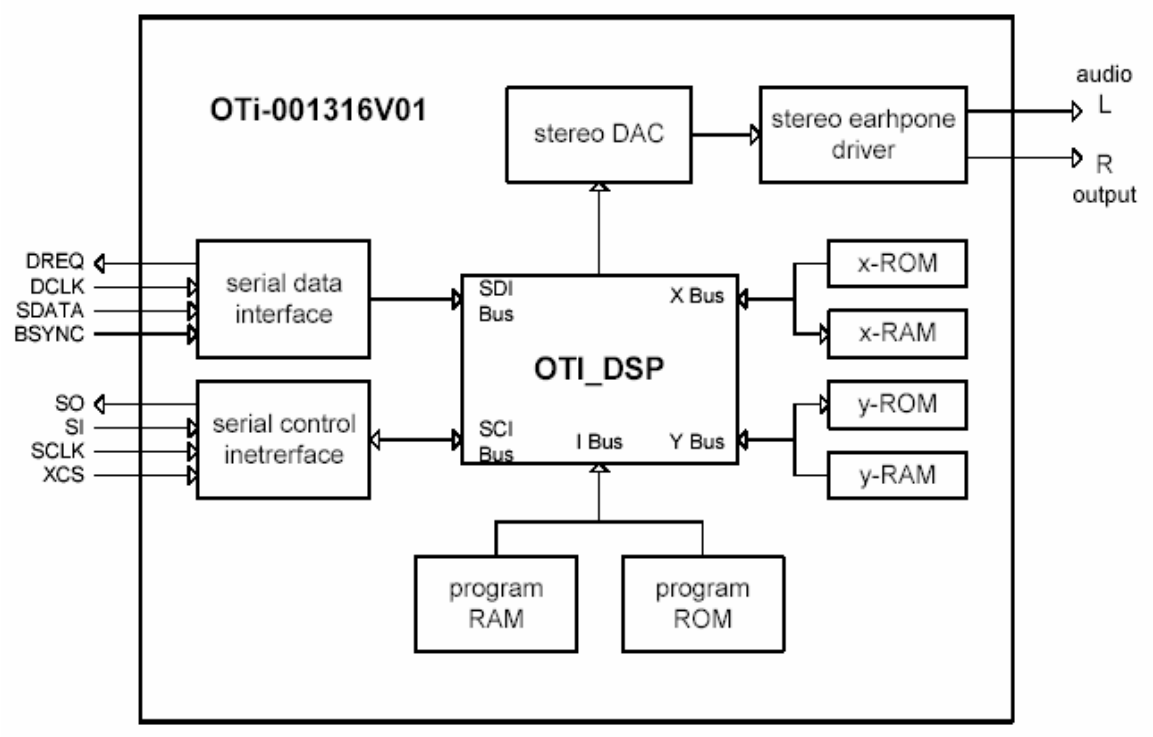


OTi-001316V01 is a single-chip solution for an MPEG layer 1, 2 and 3 audio decoder. The chip contains a high-performance low-power DSP processor core (OTI_DSP), working memory, 4

Kbytes program RAM and 0.5Kbytes data RAM for user applications, serial control and input data interfaces, and a high-quality oversampling variablesample-rate stereo DAC, followed by an earphone amplifier and a ground buffer.

OTi-001316V01 receives its input bitstream through a serial input bus from the OTI-6888, which it listens to as a system slave. The input stream is decoded control to an 18-bit oversampling, multi-bit, sigma-delta DAC. The decoding is controlled via a serial control bus. In addition to the basic decoding, it is possible to add application specific features, like DSP effects, to the user RAM memory. After decoded, stereo audio signal be amplified and send to the FM (frequency modulate) circuit.

BLOCK DIAGRAM of OTI-1316V01



Part 2 :

The HY1417LP is a low-power stereo FM (frequency modulation) transmitter. It use CMOS technology, with supply voltage from 2.8V to 5.5V, and very low standard current of 2.5mA. So these devices are well suited for low voltage and battery powered applications.

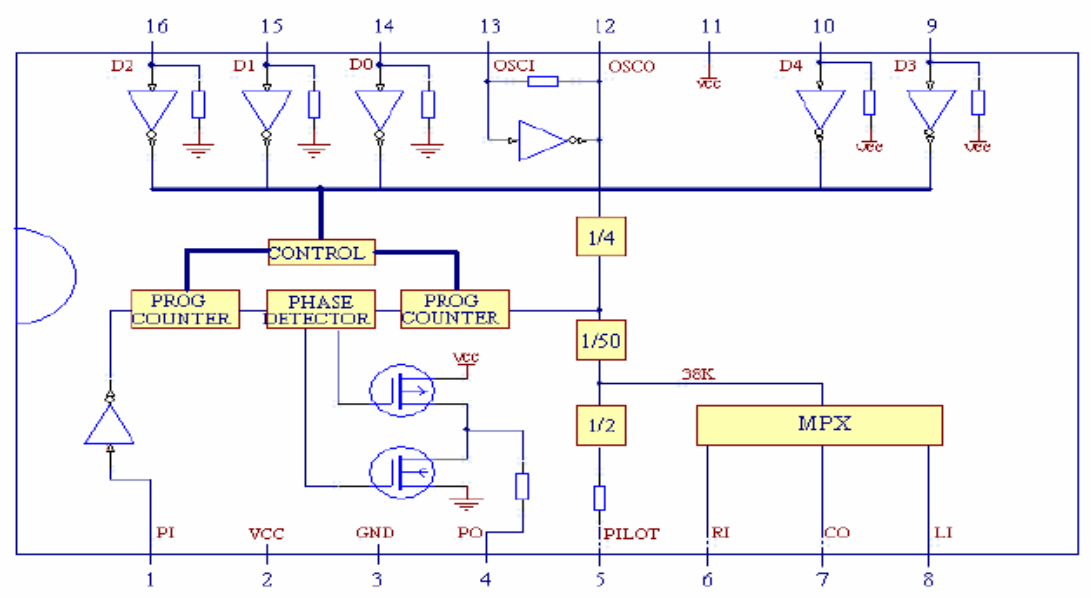
The HY1417LP consists of a stereo modulator for generating stereo composite signals and PLL (phase lock loop) circuit , and a FM transmitter for broadcasting a FM signal on the air. The HY1417LP IC is also have a built-in 38KHZ oscillator circuit and the programmable control circuit .

Stereo audio signal from OTI-1316 (pin 6.8) and the 38KHz signal will be mixed and processed, then this stereo modulated signal will be add to the outside oscillator (L2,DF1,DF2,CX,Q1 and the assemble circuit). The voltage/frequency control pulse signal from pin5 will be add to there too. After amplified by Q2, the modulated 88MHz radio signal be send to space by one antenna (The antenna is internal wire connect to transmitter PCB) at last. Stereo audio signal can also be input from the audio jack which connect to the outside audio player.

Change the voltage of the programmable control port (pin14,15,16.connected to the controller OTI-6888) , the output frequency from antenna could be change into five point :

88.1MHz, 88.3MHz, 88.5MHz, 88.7MHz, 88.9MHz.

BLOCK DIAGRAM of HY1417LP



Part 3 :

The power supply circuit is mainly consist of two DC/DC converter UTC7805 and XC62FP3302PR. 12V DC voltage from the battery of the car can be convert to +5V DC by the UTC7805, and then this voltage could be convert to 3.3V DC by the XC62FP3302PR. So, this part can supply +5V and +3.3V voltage to all other IC and circuit to work.