

## **Versus scoreboard operation description**

The Versus scoreboard circuit consists of one MCU, one 2.4GHz module, one sound chip, one LED driver, one LCD driver, one EEPROM, one USB Player IC, one 4M Nor flash, one function IC, One Line out amp, and one Digital amp.

The function of each component is described as follows:

1. MCU (MT-8802A): running in 8MHz main clock and 32768Hz watch clock overall control for the system. Receive the remote control signal from the 2.4GHz module. Control the sound chip to play appropriate sound effect. Control the EEPROM to store the current score and play status of the system. Control the Function IC for the desired audio output and the volume. The digital amp act as a audio amplifier
2. 2.4GHz module: Receive the remote control signal from the remote control unit and send the appropriate data to MCU. MCU then response to this command to perform appropriate action.
3. Sound chip: Store the special sound effect and play this sound effect on requested from the MCU.
4. LED driver (SC16426): Drives the LED panel to display the score, time, period, etc.
5. LCD driver (HT1621): Drives the LCD display for the MP3 track no., ID3 tag, and related information.
6. EEPROM (24C02): Store the current score, time and the unit status when power is low or detached.
7. USB Player IC (TMC53C): Plays MP3 files from the thumb-drive.
8. 4M Nor flash (39VF040): Store the program of TMC53C.
9. Function IC (PT2313): switch the appropriate sound source and control the volume.
10. Line out amplifier (LM4558): Act as a driver to audio line out.
11. Digital amp (TDA7491P): Act as audio amplifier.

## **Operation Principle:**

The Versus scoreboard is powered by AC-DC adaptor or 8x D-cell battery, the power consumption is less then 14mA in standby mode to maintain the 2.4G module and the MCU, press POWER button either on the remote handset or keyboard to turn on/off the supply for SC16426, HT1621, PT2313, LM4558 and TDA7491P, the MCU sent command to initiate the SC16426 and HT1621 and PT2313 and recall time/score data from 24C02 after supply turn on, in power on mode user press MODE button to switch on TMC53C and sent command by MCU to playback MP3 song from thumb-drive, press VOLUME+/- or BASS button to change sound level and acoustics by PT2313, press TIME START/PAUSE button to start or stop the watch counter in MCU, MCU can detect power level if less then 6V will auto shut off and write time/score data into 24C02.