The Design of Wireless Calling Implement Based on SCM

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ABSTRACT

The first answer devices are commonly used electronic products in most competition, the first answer devices are divided into cable devices and wireless devices. The circuit of the cable calling implements is simple, but it’s not convenient to move, and many cable calling implements are fixed in a changeless site such as the television studios, etc. The wireless answer devices are more convenient, for the button of the answers and the receiving parts are separated. They are convenient to move, and can be repeatable used in many kinds of places. At present wireless first answer devices are expensive on the market, generally in thousands of dollars, and a lot of powerful wireless calling implements need to use the computer to achieve its function.

INTRODUCTION

The wireless communication is the main technology of wireless calling implements. At present the wireless communication of wireless calling implements are mostly rely on SCM to modulate and amplify the signal, and then RF output, the receiver port receive the signal and transmit the signal to Single Chip Microcomputer for processing. Another way is to use the two chips: PT2262 and PT2272. PT2262 used to send data, and PT2272 receive, Micro Control Unit(MCU) only need to send data to PT2262 and read data from PT2272, the amplification and transmission about the signal is completed by the two chips. The reason is that using MCU to send and receive the signal can make the MCU
program too complex, and then affect the response speed of the system, and also the circuit can become complicated and signal is easily to be interfered, especially when debugging the communication.

Although using PT2262 and PT2272 can make the circuit simple, the PT2262 has the function of multiple pin input detection. When the level of the input pin chip changes, the chip does not immediately respond but to delay for a period of time, which is used to detect which pin level changed. Although this function can be applies to flexible site, the chips in wireless answer devices become a fatal weakness. Because when two or more players press the button in a relatively short time interval, the chip will be considered they are at the same moment, so that it can make greater error of the system response and even make the system could not judge which is the first.

The design of simple and practical answer devices in this paper is about to overcome the deficiency of existing technology. It only can realize the function of the countdown and the first answer. It is low and small volume, and high reliability. It adopt the household 220V current for power supply. It’s very convenient for the first answer machine button using 4 cells and every cell is 5V. It adopt NRF905 chip for wireless data transmission, sending and receiving, and that can be done in a very short period of time. So the system has high sensitivity, the system will be able to make correctly judgment as long as the time interval of the button press is not less than 0.01 seconds.

Main part and remote control part are connected by remote control instructions receiving module and the remote control instructions sending module. The main body consists of MCU, responding signal receiving module, remote control instruction receiving module, display module, voice module, power supply module for transmitting 220V alternating current to 12V and 5V direct current. MCU is connected with the respond signal receiving module, remote control instruction receiving module, display module, voice module respectively.
This kind of first answer machine is composed of three parts: the main part, the first answer part and remote control part. The main part and the response control part are connected by the respond signal receiving module and respond signal transmission module.
Power supply module to transmitting 220V alternating current to 12V and 5V direct current is connected with MCU and display module respectively. Responding part includes MCU, buttons, four cells power supply module, responding signal transmission module. MCU is connected with buttons, 4 cells power supply module, vies to answer first signal transmission module connection respectively. The remote control part includes PT2262, button A, B, C, D, 12V dry cell, signal amplification and RF output circuit, and the antenna. PT2262 connected with button A, B, C, D, one 12V dry cell, signal amplification and RF output circuit. Signal amplification and RF output circuit connected to the antenna.

![Figure 3. The first answer part of the machine.](image)

**CONCLUSION**

The first answer machine designed in this paper is easy to use and operate. Once the major structure was connected with power and after an initialization for a while, it starts working. The preset lightning time is 10 seconds, which can be changed by a remote control. It is valid only when player push the button after the switch was turned on. If one player pushed the button before the count being over, the major structure will show this player’s number by flashing twice and making sounds. The host can reset system by a remote control to go to the next lightning round.

The wireless responder designed by above project has high sensitivity and respond quickly. Even if there are no less than two buttons been pushed, this system still can identify which one pushed the button first. Although the device in this paper has only responding and counting these two functions, it is easy to operate and the cost is very low. Meanwhile it can be used in most this kind of games.
REFERENCES


