



# Research on and Design in Wireless “Telluric Electricity”

Jiang Min

Ningbo Polytechnic, Ningbo, China

Email: [chiangm@163.com](mailto:chiangm@163.com)

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## Abstract

Research on and design in wireless “telluric electricity” imitating the actual spider web and trigram cropland structure, using the principle of bionics will combine Telluric Current, electricity, Atmospheric electronic, E-compass, 4G-GSM wave switch, low and high frequency wireless transmitting and receiving devices. WIFI devices Switch. In theory, the electromagnetic spider webs induction method in Maxwell equation is adopted, and simple instruments and equipment are made by combining some software, such as wavelet transform, Mat-Lab simulation and configuration software. After years of testing, with the use of every minute four times, 5 - 10 second detection magnetic anomaly, abnormal situation will be asked after the three behind the road before the earthquake electromagnetic parameters are converted to a digital signal electric parameter. Before the earthquake changes in the electromagnetic field in a few hours to a few days, it is able to know when earthquake to occur, and can determine the location of the epicenter. The devices may be detected over stealth aircraft [1] [2] [3].

## Subject Areas

Civil Engineering

## Keywords

Earthquake Prediction, Magnetic Switch Module, Wireless Transmitting and Receiving Module, GPRS Network, WIFI Switch Nets, Electromagnetic Spider Web, Telluric Electricity

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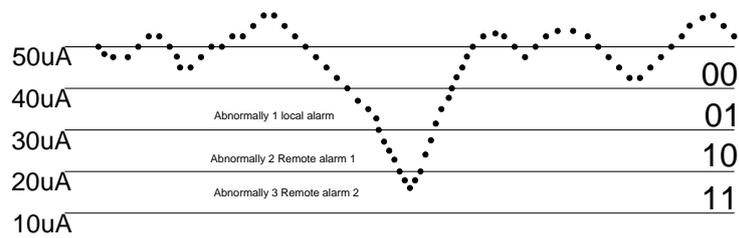
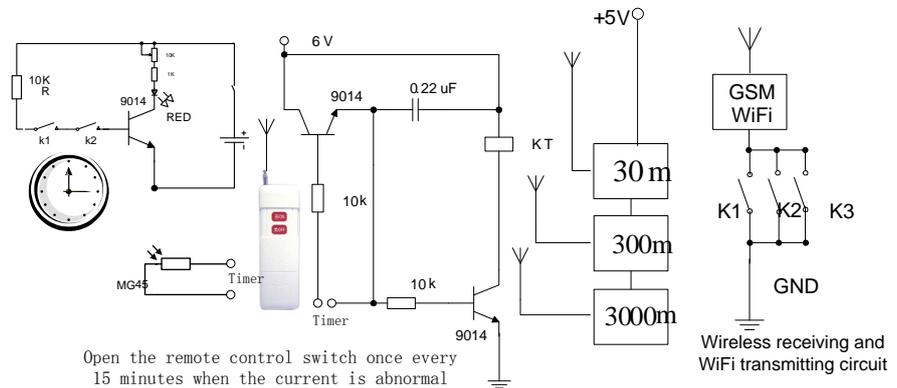
## 1. The Principle of Wireless “Telluric Electricity”

“Wireless telluric electricity”, we design each point placed in the underground 1 - 3 meters, generally two distances (10 meters - 100 meters) even farther apart

from each other lead respectively, using the wireless transmitting device that is respectively connected to both ends of the current table (millimeters) or voltage meter (millivolt meter), automatic recording, to observe the change of the change of the pointer. It can be directly observed on the earth's natural electromagnetic field. The method we use is simply to receive the electromagnetic field remotely. The receiver detects the abnormal signal to start the GSM switch and the Wi-Fi switch by the output of the number 0 and 1. The utility model has the advantages of convenient use, low cost and wide use. The Wi-Fi remote switch has a radius of hundreds of kilometers, suitable for use in the office and bedroom floor. The radius is (tens of meters, a few hundred meters, thousands of meters and tens of kilometers of multi group) distance, usually choose the trunk "land power" or ordinary metal "land", placed multilevel wireless remote control transmitter, the main principle in the whole range of Ningbo City, the electromagnetic induction electromagnetic anomaly range of minor changes including the combination of cobweb the WIFI receiver circuit, warning device using the electromagnetic spider web is usually in the micro power equipment, electromagnetic transmitting and receiving various frequencies per hour of receiving the remote control signal or not turn off the automatic remote signal alarm, multiple network connected groups once electromagnetic detection, usually using the configuration software, can realize remote detection of real-time display. Through the analysis and judgment of the special wavelet transform software, the epicentral position of the earthquake can be accurately determined. This method can be used to determine the range of electromagnetic anomalies and determine the type of earthquake and the location of the epicenter. The self-made equipment has low cost and high reliability, and can be used to detect the change of real time electromagnetic field. This device can be used in the 4 G network area in the world. In the normal electromagnetic time, the remote control alarm circuit does not start the Wi-Fi switch. When the abnormal electromagnetic field is generated, it will alarm automatically. If the alarm is self-locked, the automatic timer can release the remote controller to restore the original state. The internal power supply of the GSM switch or the Wi-Fi switch can alarm more than 200 times continuously after one charge, so it is very convenient to save the power of the power supply. In the ordinary electromagnetic spider network, the ground electricity detection is opened a few times a minute, each time more than 5 seconds to test the electric field and magnetic anomaly. If multiple electromagnetic spider nets are connected to a group, combined with GPRS remote monitoring device or WIFI switch, we can easily determine the location of the epicenter by software, and make accurate analysis of the three elements of the earthquake [4] [5].

## 2. Wireless "Telluric Electricity" Equipment

**Figure 1** is a wireless "telluric electricity" record and a simple circuit device. The ground current and the geomagnetic field are very closely related. Here we



**Figure 1.** Wireless “telluric electricity” recording and simple circuit equipment.

record the time for the opening of the general design of LED every fifteen minutes, found that the current is less than 15 uA to start the 3000 meters 315 MHz transmitter to the WIFI host a warning, automatic record remote recording equipment, can be an area of thousands of point data analysis, three-dimensional electronic compass with a set of device production cost is low, operation reliable. A satisfactory result has been achieved in several years of testing. It effectively prevents the damage of the equipment from lightning and so on.

### 3. Matching Detection of Magnetic Field Equipment

Usually before the earthquake, there will be a household electrical appliance and other anomalies (Figure 2). With simple telluric electricity, electronic devices are placed at the same time. There are 2 single antenna circuits (for providing energy to the device) and electronic compass (for magnetic field detection), as shown in Figure 3 [6].

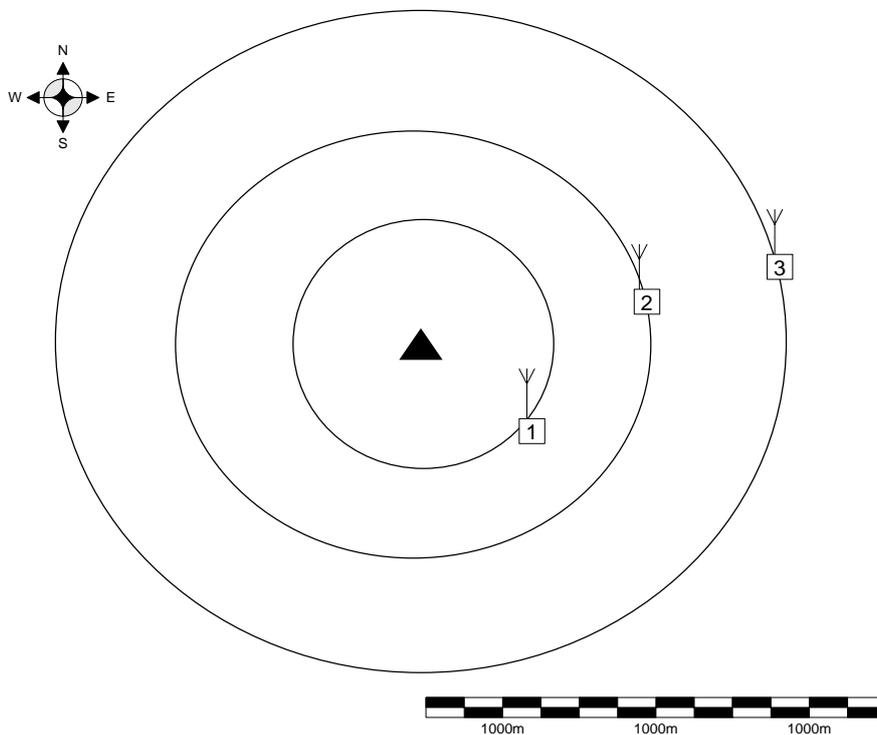


Figure 2. Single antenna circuit with wireless “telluric electricity”.

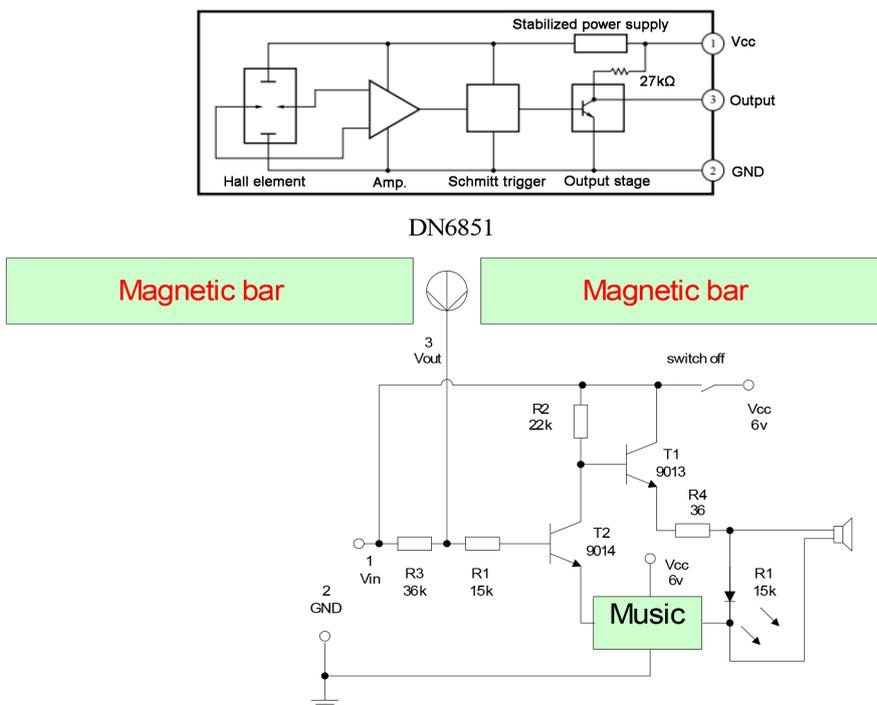
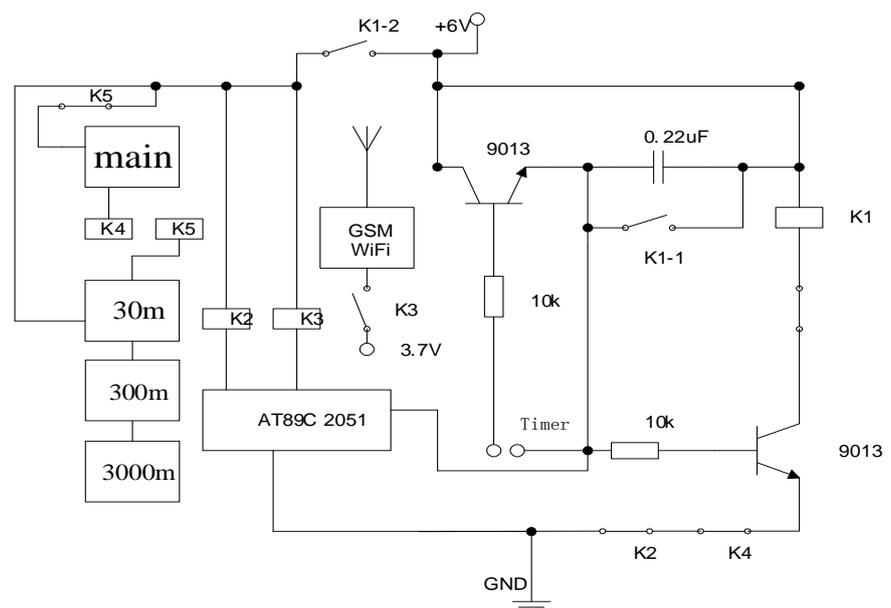


Figure 3. Electronic compass equipment for use.

#### 4. The Main Circuit of Simple Wireless “Telluric Electricity”

Here we use the wireless “telluric electricity” record and simple circuit devices. The electromagnetic spider web is very important for measuring the electric field

abnormal links. Combined with the 3D electronic compass, the three-dimensional detection method is used to measure the three elements of the earthquake, which is more advanced than point test and line test. In particular, it uses the wavelet transform and MATLAB simulation to analyze the remote received signals by using the mathematical statistics comprehensive analysis technology of multi-channel signals. If you want to easily analyze the location of the epicenter, you must know a number of remote WIFI records and put multiple electromagnetic spider webs. **Figure 4** is the principle diagram of the main circuit for the simple control of the electromagnetic spider network. It is mainly used to detect the distribution of electric field and magnetic field. The preliminary experiment has reached the basic design requirements. When the electromagnetic anomaly is found, the alarm is remote. Once the electromagnetic anomaly is found, a special timer is used to start the equipment several times per hour and wait for the remote control signal. The stability and reliability of the network are effectively guaranteed. The wireless transmission module placed in the areas where earthquakes are usually made from tens of meters to hundreds of meters, thousands of meters and tens of kilometers of multi group, the host using the WIFI switch and the corresponding super heterodyne receiving device receives signals, wireless “telluric electricity” and 3D electronic compass were placed several groups, to know the earth electromagnetic anomaly. Based on the remote monitoring of GPRS network and WIFI technology, we can measure the variation of local electromagnetic field and predict the location of earthquake epicenter in a few days before the great earthquake. This device is very energy efficient. In the design control, we try to choose passive (from antenna) or low energy consumption circuit. The two quarter 5# battery can be used for half a year, the only drawback is to replace the new battery every six months.



**Figure 4.** The main circuit diagram of the simple wireless “telluric electricity”.

## 5. Summary

Land is a kind of power that can reflect the earthquake precursors, which reported that convenient means of measuring is feasible; we measured according to the report of the judgment of earthquake. The observation of the geo-electric field is simple and easy to operate, and the cost is low. Placed in the underground from dozens of meters to hundreds of meters away, buried two lead node and wires are respectively connected to the ammeter voltmeter or both ends can be observed from the header to the daily change of the pointer automatically records, this method does not need any artificial power. In the 60 - 70 century of twentieth Century, many factories, mines, schools and rural areas in China carried out geo-electric observation, which is one of the most important means of group survey and prevention. The people gave it the reputation of “land electricity” or “telluric electricity”.

This paper presents how to design and research of wireless “telluric electricity”, record test data, using ordinary tap water or gas pipelines with city electrical equipment do design scheme of zero line, earthquake prediction in the days before the earthquake early warning based on the electromagnetic mode, which can well protect people’s lives and property safety in a certain range [7].

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