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Retraction

Retracted: Realization of a Noncontact IC Chip with Embedded Ferroelectric Memory in an Auxiliary Timing Device for Sports Games

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] J. Chen, "Realization of a Noncontact IC Chip with Embedded Ferroelectric Memory in an Auxiliary Timing Device for Sports Games," *Journal of Nanomaterials*, vol. 2022, Article ID 9933084, 12 pages, 2022.

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Research Article

Realization of a Noncontact IC Chip with Embedded Ferroelectric Memory in an Auxiliary Timing Device for Sports Games

Jian Chen

Department of Physical Education, College of Engineering and Technology, Chengdu University of Technology, Leshan, 614000 Sichuan, China

Correspondence should be addressed to Jian Chen; 18402422@masu.edu.cn

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The research direction of the new generation of embedded memory can be summarized into two types of embedded nonvolatile memory and embedded volatile memory; the research on online testing of embedded memory started in the past ten years, and there are few research results. This article analyzes the feasibility of the noncontact IC chip in the embedded ferroelectric memory of the sports game auxiliary timing device and is aimed at obtaining an optimized embedded ferroelectric memory by analyzing the relevant data to achieve the update and update of the sports game timing device system. Early sports event timing methods generally use manual timing (stopwatch) or camera shooting timing; this method is inefficient, poor real-time, huge workload, and prone to errors. This research mainly focuses on the analysis and discussion of the material structure and performance of the embedded ferroelectric memory and the process of noncontact IC chip. This article uses custom welding circuit technology to prepare the best ferroelectric filter in the test part and verifies the influence of temperature on the material; in order to understand the properties of ferroelectric materials at the electronic and atomic level, a first-order statistical method is obtained. The numerical calculation results of the experiment verify that the evaluation value of the serial port synchronization module as a whole exceeds the pulse synchronization; the network synchronization as a whole exceeds the code synchronization, and the result of the network time service module is the opposite, but as a whole, each module of the noncontact IC chip has strong performance adaptability; in the application of auxiliary timing, the maintainability of noncontact IC chip is quite outstanding, and the maximum value is 7.97; a large number of complex simulation system tasks can be completed by simple and direct tasks.

1. Introduction

Competitive sports highlights a new development culture, and promoting sports development has become one of the important strategies for the development of sports in many countries [1]. The continuous improvement of athletes' competitive sports level will make the education system gradually become another important foundation for the cultivation of competitive sports reserve talents after the competitive sports system [2]. The development of competitive sports is not only an expectation to cultivate high-level athletes with all-round development of morality, intelligence, and physical fitness but also a useful supplement to the competitive sports system and a useful reference to foreign competitive sports [3]. This is the fundamental reason why competitive sports has attracted the attention of the Chinese people, continues to develop, and has a bright future. The development of competitive sports urgently needs to strengthen the research of competitive sports events, but most of the existing researches are partial and unilateral status quo investigations or macrotheoretical analysis on the organization, management, construction, and training guarantee of competitive sports teams [4].

With the rapid development of VLSI technology and the rapid promotion of the concept of Internet of Things, the importance of information storage has become more and more obvious [5]. Embedded memory originally refers to the memory integrated on the embedded microprocessor chip, used for code or other long-term data storage. Now in a broad sense, the storage circuit uses the same process as other working circuits and is integrated into a chip to work. The main purpose of this is to greatly reduce the delay of the data interface and to greatly accelerate the speed of the memory and reduce the application [6]. The research direction of the new generation of embedded memory can be summarized into two types of embedded nonvolatile memory and embedded volatile memory. Embedded nonvolatile memory is divided into high-speed and low-power applications. These types of memories are aimed at different applications, and all have strong application prospects [7].

New embedded nonvolatile memory (eNVM) for large-scale technology nodes such as ferroelectric field effect transistors (FeFET) has been studied in depth and is very promising. Sasaki et al. describe a magnetic resonance wireless power transmission system with auxiliary coils. The system was proposed to supply power from the bed to an "implantable cardioverter defibrillator" (ICD) device. ICDs are the most effective treatment for preventing sudden cardiac death (SCD), with supportive pacing and antitachycardia pacing, low-energy cardioversion, and high-energy defibrillation [8]. In this study, a 1/2 scale model was used to study the power efficiency of a magnetic resonance wireless power transmission system with auxiliary coils. When the transmission distance is 100 mm and the main resistance is 20 Ω, the maximum transmission efficiency of using the auxiliary coil is about 70% higher than that when the auxiliary coil is not used [9]. For the first time, Popov et al. observed direct bonding on Si or C-sapphire substrates and hydrogen transfer from the silicon layer in the silicon on sapphire (SOS) structure through HREM for the first time. The conclusion is that the OII phase is mainly stabilized by high compressive stress [10]. Kobayashi et al. designed and manufactured a nonvolatile SRAM by integrating with ferroelectric HfO_2 capacitors and proved its storage/recall operation before/after power failure through experiments. The sub-10 nm thick ferroelectric HfO_2 capacitor has obtained excellent ferroelectricity and memory characteristics. NVSRAM with ferroelectric HfO_2 capacitors can be a candidate for cost-effective, normally off, and ultralow power embedded memory solutions for IoT power management [11]. Inference and on-chip learning can be facilitated by further eNVM technology options, such as multibit operations and linear switching. Lederer et al. introduced the advantages of FeFETs based on hafnium oxide for such applications because they have a basic three-terminal structure that can selectively activate or deactivate selected devices and adjust linearity and dynamic range for certain applications. In addition, the effects of the material properties of the ferroelectric layer, the thickness of the interface layer, and the scaling on the device performance are discussed [12]. Chien et al. recommend embedding 256 kb resistive random access (ReRAM) in the microcontroller unit as a data buffer for communication with independent flash memory. It is manufactured using a combination of TSMC0.18 μm process and Industrial Technology Research Institute ReRAM back-end process. Simulations show that compared with other nonvolatile memory (such as ferroelectric RAM), ReRAM buffers run at least 51% faster [13]. Khan et al. studied the potential of ferroelectric field effect transistor technology in current embedded nonvolatile memory applications and future memory, bionic, and alternative computing models. The material and device-level challenges involved in high-volume manufacturing of advanced technology nodes (≤10 nm) are emphasized, which is reminiscent of the challenges encountered in the early development of high-K metal gate transistors [14]. Ferroelectric field effect transistors (FeFETs) based on ferroelectric hafnium oxide (HfO_2) films show great potential for future embedded nonvolatile memory applications. Yurchuk et al. verified the possibility of charge trapping in HfO_2-based FeFET memory during standard operation. The single-pulse ID-VG technique (MOS tube Id-Vg curve data) was used to analyze in detail the kinetics of charge trapping and its interaction with ferroelectric polarization switching. In addition, the impact of charge trapping on important storage characteristics (such as retention and durability) has also been studied [15]. These studies have carried out detailed research through experiments. They have carried out data acquisition on related objects such as embedded memories of ferroelectric materials. However, it can be found that their research angles are relatively single and belong to the study of physical properties. The demonstration of the practical application of the experimental results is still lacking.

Ferroelectric film is the basis of ferroelectric memory. According to the requirements of embedded ferroelectric memory for ferroelectric materials, the microstructure and electrical properties of different parts of thin ferroelectric film are discussed, and a good integrated capacitor is provided through customized integration technology. The analysis of the etch degradation process of ferroelectric films during aggregation shows that the magnitude of the reheat treatment does not completely correct the cause of etch degradation. In the high-speed memory, we used a conventional bandgap reference voltage-controlled oscillator charge pump scheme [16]. As for the design of low power consumption, we implement the reference current reference and reference voltage reference with circuits, respectively. The program makes full use of the high-speed and precise calculations in data processing to design some of the best automated business automation and continuous and efficient operation of the business. On the basis of in-depth research on data mining technology, we eliminate general data miningalgorithms and develop intermediate class libraries as technical tools and process analysis for sports events. For the specific development process of a noncontact IC card chip, methods such as gated clocks and optimized layout structures are used to reduce chip area and reduce chip power consumption.

2. Embodiment of the Auxiliary Function of Ferroelectric Memory

2.1. The Combination of Sports Events and Computer Technology. People have gradually realized the original concentrated advantage. After all, the high-intensity stand-alone training program is a highly developed model based on high investment, high elimination rate, and low throughput. It is a systematic cultural study at the expense of young people's cost of improving the level of competition [17]. With the rapid development of computer technology and network technology, people have ushered in a new era of network characterized by information and knowledge. The information that people are exposed to, especially digital information, is increasing exponentially. As the most powerful tool for modern human development, computer technology will inevitably play an inescapable responsibility in the development of sports competition. Through information management, the problems of large number of participants in previous competitions and sports competitions, complex project settings, tight timeliness, and difficulty in scheduling have been solved [18]. Computer technology uses relevant information to automatically generate graphics, tables, etc. to provide users with high-level information services to meet the requirements of statistical analysis and decision support proposed by users. The information can also provide relevant information to coaches and athletes participating in the competition in a timely and accurate manner. With the rapid development of science and technology, the use of high-tech technology to assist referees in judgment has become a reality, the accuracy of judgments has also been improved, and the pressure on referees has also been reduced. The use of high technology plays an important role in the accuracy and speed of task execution. And it has been widely used in the judicial procedures of many sports events. In order to improve the level of sports competition, more and more countries continue to apply new technologies to sports competitions [19]. The clear 3D animation display, the rapid response within a few seconds, and the pressure line or out-of-bounds gap accurate to the millimeter are all showing the world the convenience and precision that high-tech brings us.

Data mining is the process of searching for information hidden in a large amount of data through algorithms. Data mining brings data technology to the next level. It not only needs and transfers past data but also discovers multiple connections between data, thereby promoting the generation of useful information [20]. The system can not only express the business logic flow in reality but also store and process the business in reality and persist the corresponding data according to the data model. When there is an error in the data that needs to be modified, in the face of a less rigorous system, you only need to provide a corresponding means to repair the error, not the information that cannot be modified [21]. The communication and low coupling between the modules are fully considered, and more user loads can be quickly met, and it can be expanded downward when the system utilization is not high, saving costs.

2.2. Embedded Ferroelectric Memory and Noncontact IC Chip. Driven by fast-paced memory products, a number of successful memory technologies have emerged in the memory field in the past ten years, eliminating traditional technologies in the industry and expanding the application space of memory technologies [22]. As the concept of the Internet of Things and consumer applications have grown substantially, embedded storage applications have begun to flourish. Embedded memory has also encountered bottlenecks in its further development. At present, the process and manufacturing of memory cells are also at a relatively advanced level in the world, but at the same time, it also encounters general problems in new memory research, such as process volatility and instability. It poses challenges to process research and circuit design. More and more new memory technologies pursuing different product segments are introduced one by one [23]. For the new generation of nonvolatile embedded memory, low power consumption, low cost, high speed, and other characteristics are required. The market for modern processors and embedded applications is extremely competitive, and only those competitors with high production characteristics and performance can win. Due to the importance of standard transmission interfaces and standard procedures for interoperability, middleware has become an integral part of many measurement tasks. For application software development, middleware is more important than system and network services [24].

With the substantial increase in chip integration, circuit design and application pose new challenges to discrete memories. Limited by the frequency of incoming and outgoing signals, the high-speed clock cannot be transmitted to the chip, providing a clock signal for the overall operation of the chip [25]. If the peak value is too high, the power supply voltage will drop too much, which may cause the chip to reset or fail to work normally, showing that the working distance of the card becomes shorter. The charge pump used in a good memory needs to meet the driving voltage and driving current and has the smallest possible area and power consumption. The specific design depends on different types of memory [26]. New devices combining ferroelectric materials and semiconductor devices have gradually been applied. Ferroelectric memory is a nonvolatile memory produced by a combination of thin ferroelectric film and CMOS technology. Bonded film is a key component of embedded ferroelectric memory; it is the specific application of spontaneous polarization of integrated ferroelectric film and its inversion retention characteristics under the action of electric field [27]. The field of embedded ferroelectric storage devices is a major breakthrough in microelectronics technology and information storage and manufacturing technology. It has opened up many new ways for the fame and development of microelectronics technology, information storage, and manufacturing technology and greatly stimulated the research and development of various universities. In order to understand the properties of ferroelectric materials at the electronic and atomic level, humans have developed a first-order calculation method, in which electrons are the main calculation object for the interaction of intermediate ions [28, 29]. The relationship between the strength of the ferroelectric capacitor and the electric field is

$$\begin{gathered}\bar{R}_a = \bar{R}_i - \left(\bar{R}_o + \bar{R}_{\sin}\right)\left\{\frac{1}{\pi} \sin\left[a\chi_a\left(\bar{R}_i + \bar{R}\right)\right] + \frac{1}{2}\right\}, \\ O = i\bullet\frac{l\bar{R}}{L} = i * \frac{l}{L\bar{R}}\left(\delta_i\frac{\bar{L}}{m} + p\right).\end{gathered} \tag{1}$$

Among them, $\bar{L}$ is the voltage, m is the thickness, and i is the area. Calculating the polarization intensity of the capacitor. It is different during the voltage rise $\bar{R}$ and fall phases. The corresponding expression is automatically selected according to the change of the input voltage during the simulation, that is

$$\begin{aligned} \chi &= f_i - \frac{(\|f_i + f_{i-1}\|) \otimes 1}{\left(1 + \alpha^{(f+f_i)}\right) + m}, \\ i : f_i &= L\alpha^{-\chi(a+a_i)^2} + l(l-1), \\ \alpha : \delta &= O\left[\cos l\sqrt{\phi(i + i_{m-1})}\right] \otimes l(f_i). \end{aligned} \tag{2}$$

In the design and simulation of large-scale integrated circuits, it will take more time and reduce the simulation efficiency f_i. δ is the residual polarization in the positive and negative directions, and the maximum value that can be reached in the other direction is calculated by the formula:

$$\begin{aligned} i &= \int_{\forall i \in \delta} (m-1)\left(\bar{R}(i-1)\right) l\bar{R}\left(\bar{R} + \chi_{i-1}\right), \\ f' &= \sqrt{\delta_{i-1}}\left(\cos^2(\alpha_{i=1} l) - \delta_{i-1} \bullet \frac{\alpha}{\alpha_{-1}}\right. \end{aligned} \tag{3}$$

The phase f' of the detection signal represents the sign of the charge, and the amplitude δ_{i-1} of the electrostatic force signal reflects the density of the polarized charge or the magnitude of the electric potential.

3. Ferroelectric Memory and Noncontact IC Chip Auxiliary Timing Experiment

3.1. Properties of the Embedded Ferroelectric Memory. In the mid-1990s, ferroelectric memory products were already on the market. Ferroelectric memory has become one of the most promising new members in the memory family. Since the ferroelectric device does not require an external or current power supply to maintain the two states, it can be used to make a storage device to store digital data, and the storage device can maintain its internal storage information without a power supply. The composite film storage unit has an excellent editing function, which can temporarily maintain its intelligent state. Ferroelectric random access memory is a nuclear mode of operation. After this kind of destructive reading, the data needs to be rewritten, so a large number of erasing and rewriting tasks will be accompanied in the information reading process. The concept of memory is very wide and has multiple levels and types, but in the process of information storage, data must be converted into binary data. With a large number of reads and writes, reliability problems such as fatigue failure will occur. In the case that the continuous reduction of the size of the memory cell will cause various problems, many researchers have realized that breaking the limitations of binary storage will greatly increase the storage density of the memory. When the memory cell is read, the state of the memory cell will change due to the read operation. After each read, the original position is damaged, and a voltage must be applied to restore the original polarization. The schematic diagram of the structure of the ferroelectric memory storage unit is shown in Figure 1.

The development of material science research, material preparation technology, and microelectronic integration technology has made great progress in the application of ferroelectric thin films in nonvolatile memory. Initially, researchers focused on the use of ferroelectric thin film polarization. Ferroelectric memory inserts can be written at bus speed; there is no write delay during data transmission, there are no restrictions on the amount of data transmission and write delay, and the system can complete the writing of the entire chip. Compared with other memories, the writing speed of ferroelectric memories is more than 10,000 times faster. The reading speed is also very fast, and there is no obvious speed difference from the writing process. The performance comparison of embedded ferroelectric memory, EEPROM, and FLASH is shown in Table 1.

Studying the morphology and microstructure of ferroelectric thin films is very important for analyzing the performance of ferroelectric thin films and mechanical devices. The electrical properties and customization content of thin ferroelectric thin films are the same as those of general ferroelectric materials, but there are special considerations in the application of thin film materials, and the research methods and technologies are different. Ferroelectric thin film is a key component of ferroelectric memory. High-quality thin ferroelectric thin film is the foundation and stability of ferroelectric memory, and the quality of ferroelectric thin film is reflected by specific performance parameters. The memory-related parameters of different storage unit power consumption are shown in Table 2.

Embedded ferroelectric memory is essentially a combination of the functions of a semiconducting CMOS circuit and an integrated ferroelectric capacitor. Therefore, from a process point of view, the two can form different device structures during the process of mutual integration. Although many experiments have been done to improve the retention of ferroelectric storage and improve it, the visual problem between ferroelectrics and semiconductors has not been well resolved. The analysis of the crystalline and electrical properties of ferroelectric films with different structures shows that the electrical properties of ferroelectric films are closely related to the crystalline properties of the films. The experimental setup is shown in Figure 2.

The grain boundaries between the surface grains and the internal grain boundaries will not affect the overall electrical environment of the film. Ferroelectric memory uses the different orientations of polarized electric domains and the reversal movement of electric domains to store and read information. The preparation and processing of the ferroelectric film will affect the performance of the coupling circuit. At the same time, the processing of the thin ferroelectric film and the back-end coupling circuit will also cause certain damage to the thin ferroelectric film, resulting in the degradation of the ferroelectric capacitor.

The development of microelectronics, optoelectronics, sensors, and other related technologies has also put forward further demands for the miniaturization, thin-film, and high-density applications of ferroelectrics. From the perspective of the device structure, the integrated ferroelectric capacitor is mainly used to replace the ordinary dielectric

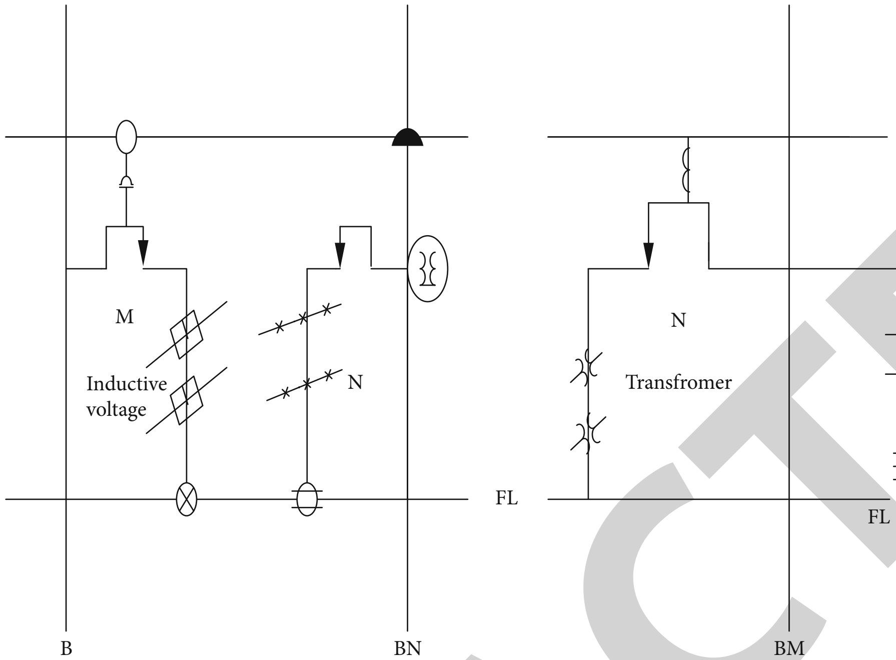

Figure 1: Storage unit structure.

Table 1: Three kinds of memory performance parameters.

Parameter	FLASH	EEPROM	Ferroelectric memory
Unit structure	1A	2A	2A2R
Write time	12	2	150
Read time (ns)	125	205	115
Write voltage (V)	21	12	4/2.7
Number of reads and writes	2A10	2A10	4A20
Quiescent current (μA)	17	3	25
Maximum write operation current (mA)	37	10	6
Maximum read operation current (mA)	16	9	8

Table 2: Storage unit power consumption.

Memory	Maximum power consumption	Minimum power consumption	Average power consumption
RF8* 502	573.27	2.11	2.07
RF6* 287	888.01	0.874	19.4
POS5G* 6	2.69	1.75	47.3
PISK*7 (6021)	572.41	3.96	8.76
PISK*7	28.96	3.96	6.08

capacitor in the semiconductor memory. There are many types of ferroelectric memory storage cells. After the amplifier outputs the signal, the ferroelectric capacitor should be rewritten to restore the destroyed polarization state. After the amplifier generates a signal, the ferroelectric capacitor should be rebuilt to restore the damaged polarization state. In terms of electrodes, the existing ferroelectric materials do not have the negative crystalline properties of traditional Pt electrodes, which affect the performance of the materials. Although pulsed laser technology can effectively control the composition of the film, the problem of small particles on the surface of the film and the preparation of large-area film coatings is a problem that needs to be solved. The content of molecules at different temperatures is shown in Figure 3.

It can be seen that the ferroelectric properties of the samples with different holding time are different. This is mainly due to the influence of the holding time on the grain size and film structure, resulting in different ferroelectric properties. The lower electrode material controls the structure and electrical properties of the ferroelectric thin film, and the interaction between the electrode material and the substrate directly determines the function and life of the ferroelectric memory. The development of the information age requires large-capacity and small-sized memory, which means that

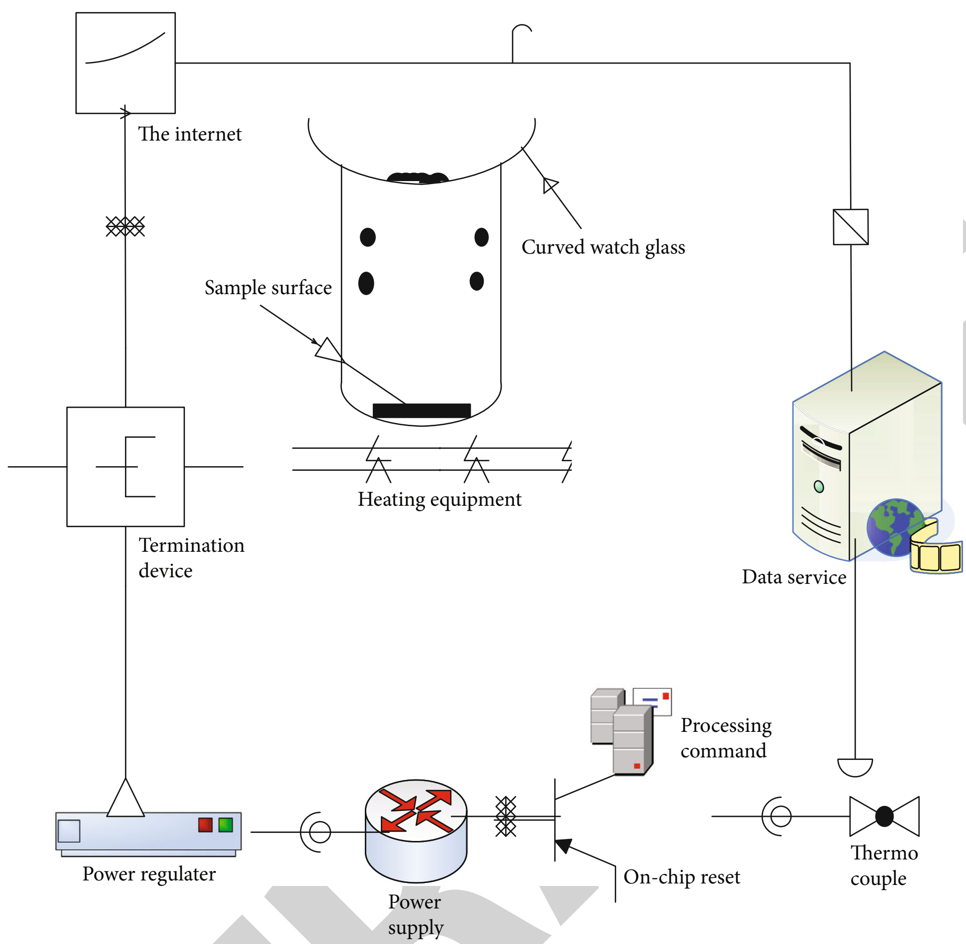

Figure 2: Experimental setup test.

the density of the storage unit needs to be increased, and the volume of the storage unit needs to be reduced. The size of the ferroelectric film as a storage medium is also reduced. The residual polarization capacity of the material should be as large as possible, so that the small ferroelectric capacitor area can accept a large polarization current change, which is beneficial to reduce the cell area of the ferroelectric memory. The dielectric frequency should be small because high-frequency dielectric materials will produce a large linear conversion rate, which obscures the availability of the polarization conversion curve. Under the action of an external electric field, the ferroelectric observes the turning polarization through the destruction and development process of the data and the movement of the surrounding particles. The corresponding relationship between the drive capability of the ferroelectric memory and the area, capacitance, and power consumption is shown in Table 3.

3.2. Application of Noncontact IC Chip in Time Monitoring. Even for two-state storage based on epitaxial ultrathin film, the writing of the storage state is very unstable. By applying a current-limited writing method, the storage device can realize multilogic state storage. Ferroelectric reversible diodes cannot maintain a high switching ratio storage state after power failure. In order to promote the application of such electronic storage devices, the problem of maintaining high switching ratio storage after power failure must be solved. Because the interface barrier is affected by the internal defects of the electrode and the ferroelectric material, although the ferroelectric memory based on the ferroelectric capacitor is a relatively new operating system, its characteristics and mechanical properties are still unclear and require in-depth study. With the development and progress of society, smart cards have been widely used in many fields, especially noncontact IC cards, work permits, and identity certificates. The characteristic coefficient of noncontact IC chip is shown in Figure 4.

In fact, although the same preparation parameters are used when different substrates are used, the quality of the prepared films is not the same. Therefore, the design of low-power circuits has developed innovative and scientific methods. With the gradual improvement of integrated circuit design technology, there will be fewer and fewer ways to reduce chip power consumption, and the share of power consumption will also become smaller and smaller. Reducing the area of the chip can avoid large parasitic resistance and capacitance and can reduce the power consumption of the chip. Use it to establish a connection with the internal

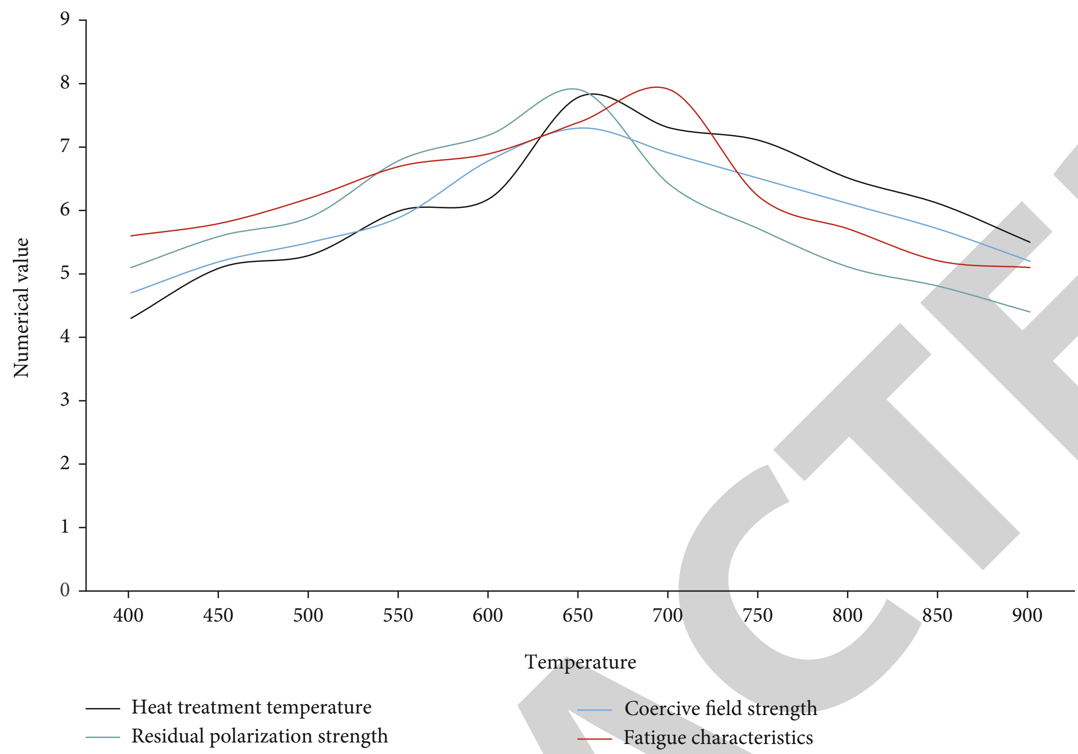

Figure 3: Temperature affects volatilization parameters.

Table 3: Related correspondence index.

Drive capability	Area	Capacitance	Power consumption
CL	4.98*1.89	0.0078	0.0021
C1	4.98*2.19	0.0127	0.0013
C2	4.98*3.71	0.0328	0.0117
C3	4.98*5.01	0.0691	0.0248
C4	4.98*7.82	0.219	0.0569

circuit. It can not only make test points but also can be used for imaging and repairing. Analyzing the application of IC chip is shown in Figure 5.

The biggest feature of the noncontact IC card system is the use of RFID technology for noncontact identification. The antenna of the IC card contact is not integrated on the chip. On the one hand, this increases the cost of card manufacturing, and on the other hand, it also limits the flexibility of applications, thereby limiting the application range of noncontact IC cards. The chip card IC is mounted on the label using flip chip technology. This type of label is usually attached to the horizontal surface of the paper and covered with adhesive on the back. In this way, the antenna has a winding on the back of the ferrite core, and a film mark is made as a sticker mark, and a round shape is provided. Digital correction uses a group of different living body signal worlds to reflect the distributed digital information and only needs to locate and judge the change of the living body signal during the demodulation process. In order to maximize the antinoise capability of the system, channel coding technology is needed to manage possible or existing errors. Channel coding is to change the original digital signal with no equivalent or equivalent to a digital signal with normal or equivalent enhancement. Data intrusion is achieved by controlling the access status of storage areas and redundant storage. Controlling the access status of the storage area can prevent the destruction of the stored data when an error occurs. Simulating different synchronized data for evaluation in different modules is shown in Figure 6.

Obviously, the evaluation value of the serial port synchronization module as a whole exceeds the pulse synchronization; the network synchronization as a whole exceeds the code synchronization, and the result is the opposite in the network time service module, but the overall performance of each module of the noncontact IC chip is adaptable. If the external time reference source is a wired source, the program is also used for correction to obtain a more accurate second pulse. The time synchronization device sends out a pulse signal at regular intervals. After receiving this pulse, the timing equipment uses the rising or falling edge of the pulse to calibrate the local clock. Comparison of function consumption before and after optimization is shown in Figure 7.

When performing functional simulation of the chip, record the real-time flip information of each device of the chip, combine the parasitic parameter information of the power supply network and the signal network, and analyze the power consumption, IRDrop, and electromigration problems caused by all the flips in the chip at the same time. The first clock of the first standby synchronization system receives the wireless time service, and the time service is sent by the other party. We can set the view to receive the time

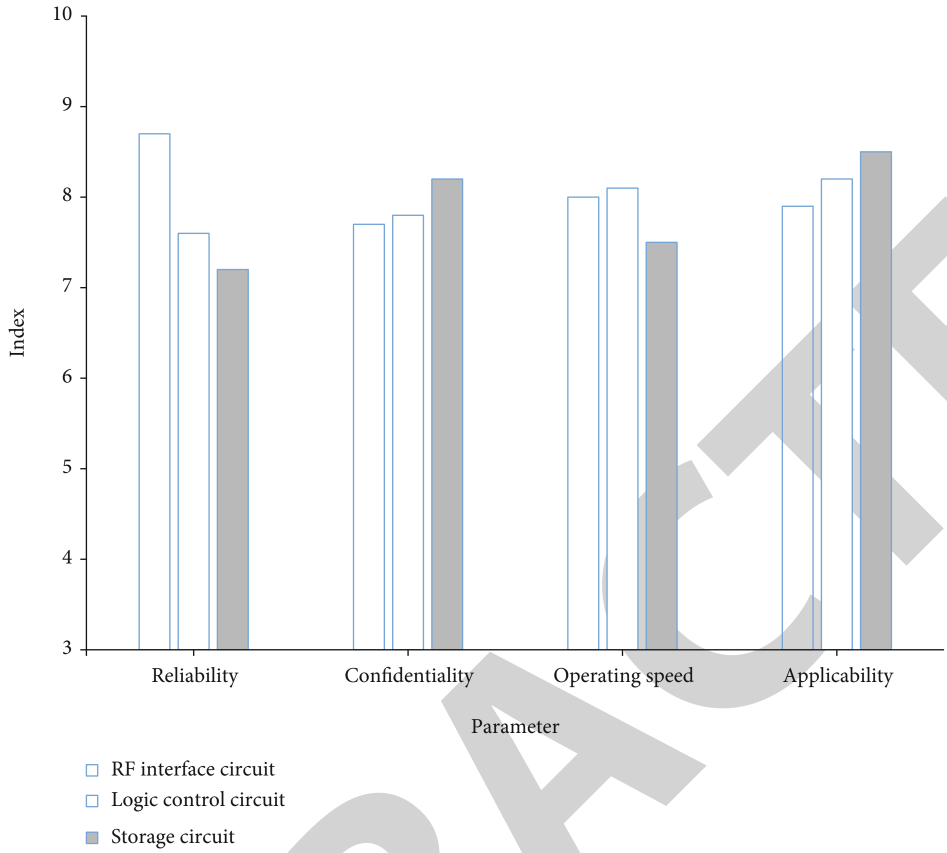

Figure 4: Noncontact IC chip.

service sent by the top-level synchronization. Analyze the feasibility of simulating auxiliary timing for this operating design, and the result is shown in Figure 8.

Judging from the 9 test results of noncontact IC chips, the feature of maintainability is quite prominent in the application of auxiliary timing, with a maximum value of 7.97. According to the requirements of traditional gymnasium design and sports competition rules, it provides a fair competition environment for athletes, the gymnasium prohibits the use of natural lighting during the game, and artificial lighting is used without skylights. The consequence of this design is that the use of the stadium requires the help of artificial equipment. The introduction of skylight lighting has greatly reduced the energy consumption of gymnasiums, and the enthusiasm of university gymnasiums to open to the outside world is also increasing day by day. The noncontact IC of embedded ferroelectric material can realize a large number of complex simulation system tasks through simple and easy operations in time, which greatly reduces the labor of competitors, improves performance, and ensures the accuracy and reliability of data, the probability of technology and economy, and the feasibility of management.

4. Discussion

As the parts in the form of circular circuits become smaller and smaller, the coupling degree is higher and higher, and the speed is getting faster and faster; people in the manufacturing chain have found many problems that cause it and gradually focus their work on the design and research of energy efficiency optimization. The process size of the coupling circuit is getting smaller and smaller, the number of transistors that can be accommodated in a single area increases, and the area of the cut leads to an increasing power density, which is prone to overheating. Adjust the loading process and design constraints according to the characteristics of the chip module, and plan the additional loading plan of the chip according to the average flip position of the display during normal operation; complete all stored back-end programs, save time, usage, and other parameters according to the previous storage characteristics to ensure the continuity of the design. Then, complete various verifications of the chip to ensure the correctness of the chip design. The weak ferroelectricity of ultrathin films needs to be detected by special instruments. Piezoelectric atomic force microscope is a commonly used tool for detecting ferroelectric properties. Although it has been very advanced, it still needs development in the detection of weak ferroelectricity. With the continuous progress of integrated circuit design and manufacturing technology, the proportion of embedded memory in the chip is getting higher and higher. Due to the increase of transistor density in embedded memory, it is easy to find internal defects, and people have conducted in-depth research on the test of embedded

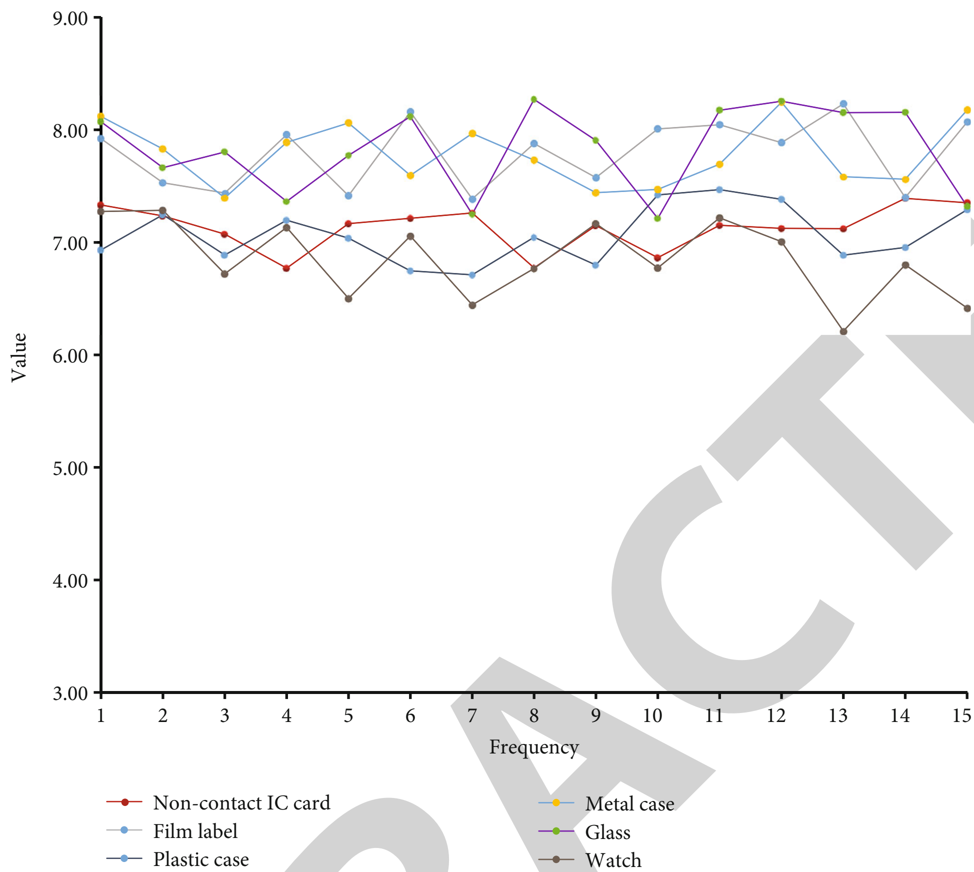

FIGURE 5: Application of noncontact IC chip.

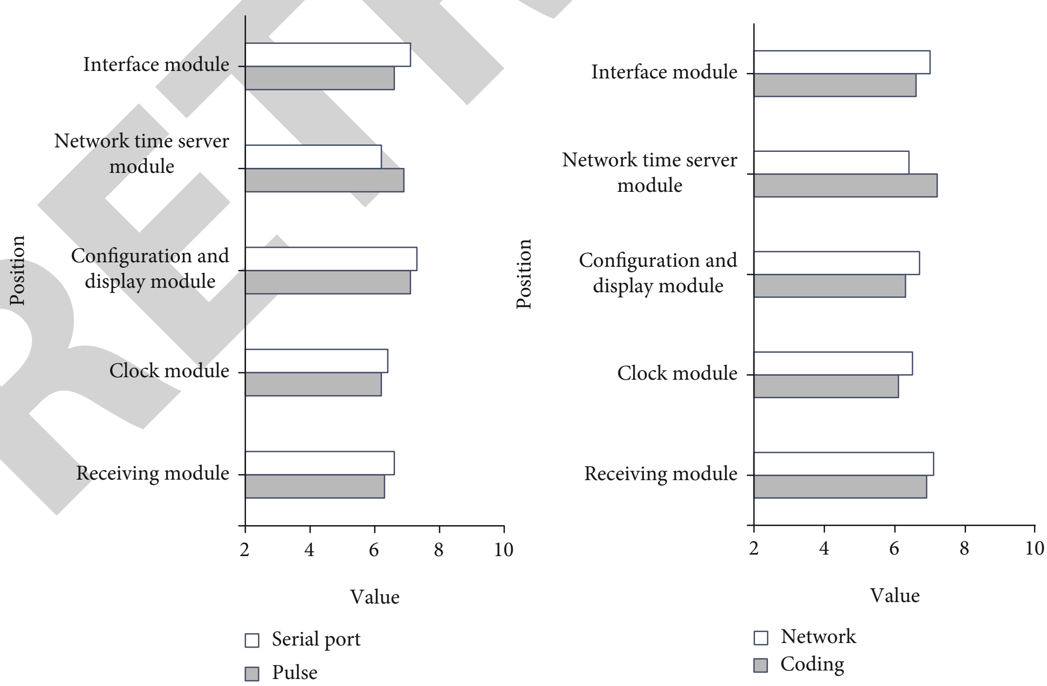

FIGURE 6: Synchronized formal parameters under different module positions.

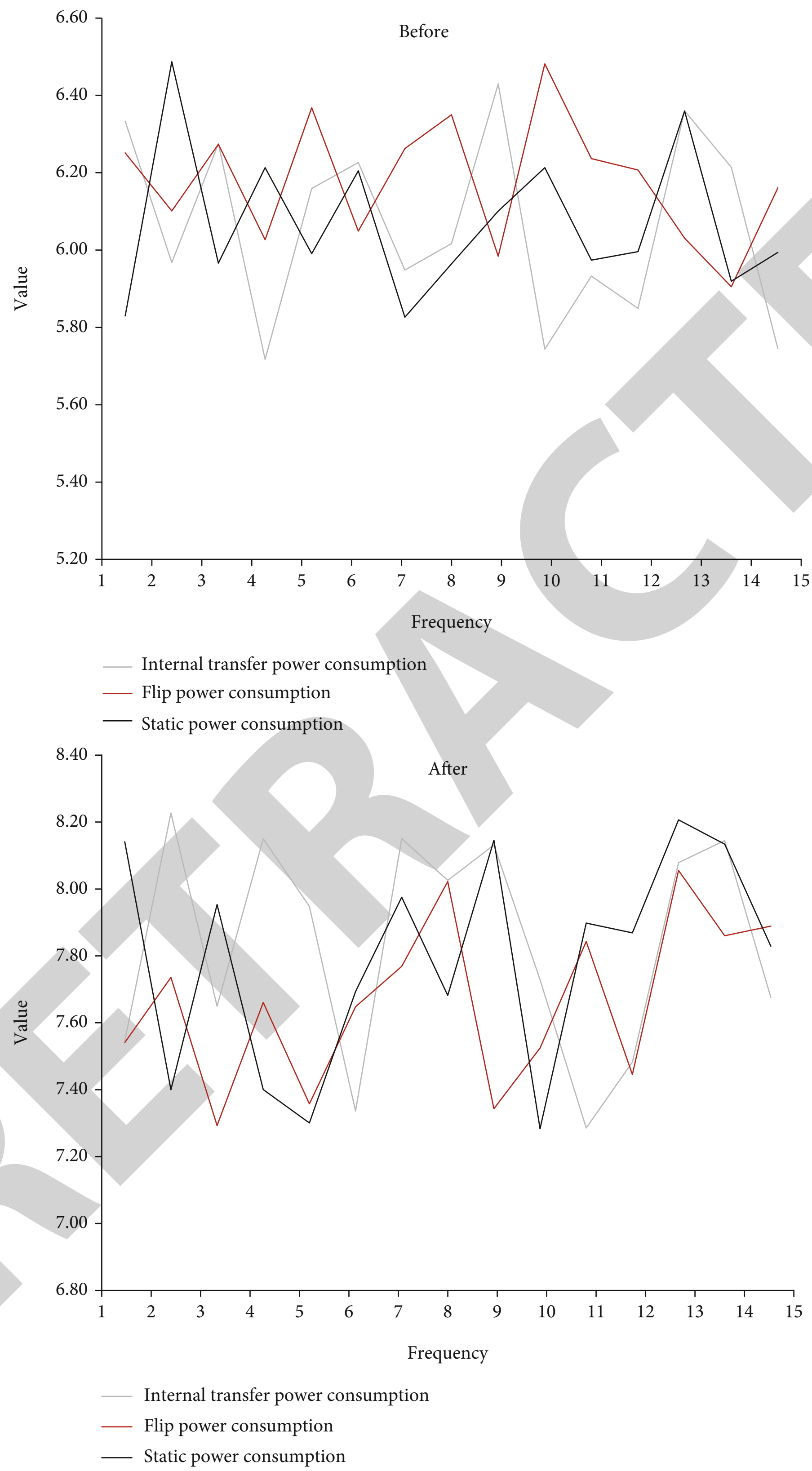

Figure 7: Comparison before and after function consumption optimization.

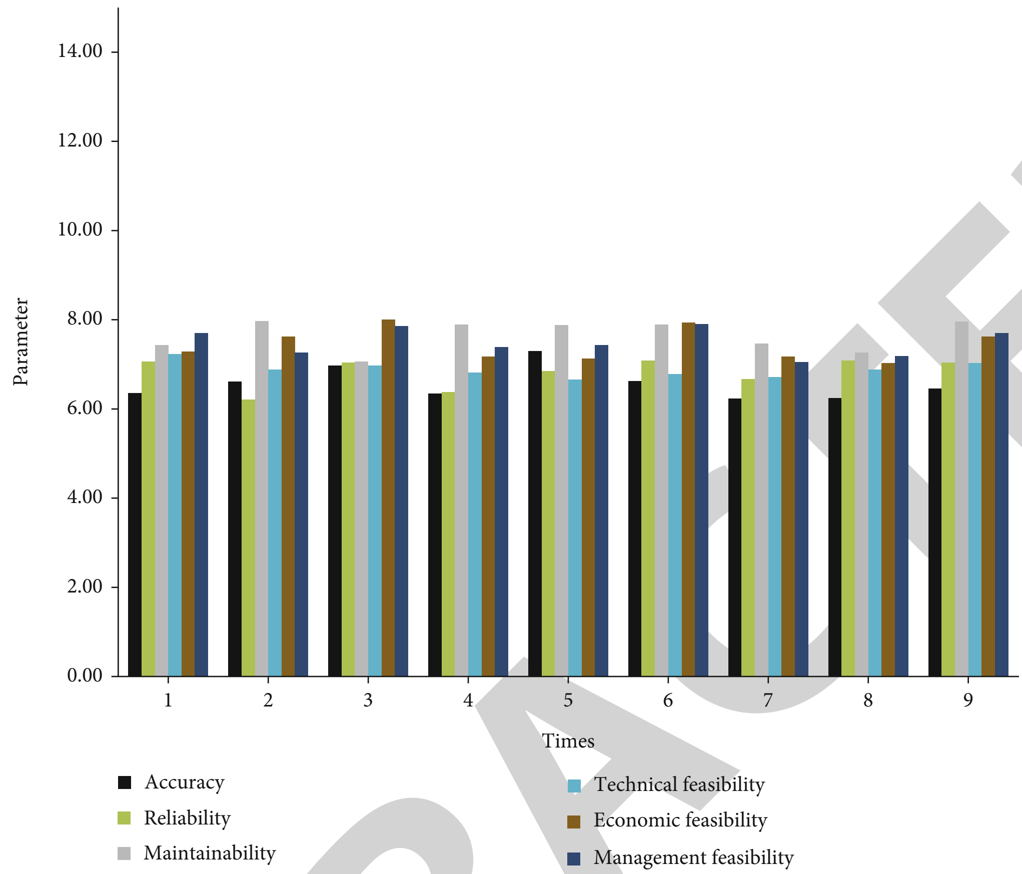

Figure 8: Auxiliary timing test results.

memory. With the further improvement of film preparation technology, the preparation technology of epitaxial film has been mastered by many scientific workers.

5. Conclusion

At present, the system only recognizes the functions of game score statistics, and there are many shortcomings in providing humanized services and drills throughout the game. In terms of practice, it analyzes and sorts out general college gymnasiums, college gymnasiums that take into account urban competitions, and urban gymnasium space design data models and provides suggestions for optimization of the space design of the competition hall and activates the space design thinking of the competition hall, gets rid of some misunderstandings in the current design, and broaden the vision of the current space design. Out of the consideration of both urban events and the use of competitive sports, the choice of technology should be based on the needs of both aspects, respect the principle of rationality of technology, and must not blindly use it to cause unnecessary waste. The key to solving this problem lies in two aspects. On the one hand, it is necessary to further study the process of resistive random access memory to reduce the current of the write operation as much as possible. On the other hand, it is to optimize the high-voltage module plan and try to use a smaller capacitor to achieve the appropriate operating current, which is also the next step in the work of resistive random access memory. Since many future research and development environments are currently undergoing research and development, ferroelectric memory has unique advantages compared to other types of memory; ferroelectric memory is very likely to become a new product that replaces existing traditional memory and flash memory. In recent years, noncontact IC cards have integrated data protection and cryptography, electronic computing technology, manufacturing technology, and many other professional application technologies, forming an independent technical field. The combination of the two overcomes the main technical obstacles to the integration of ferroelectrics and semiconductor devices, making it possible to integrate ferroelectric devices compatible with semiconductor technology, and has greatly promoted the development of ferroelectric thin film preparation and material research.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare no conflicts of interest.

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