Analysis of Common Interference Factors and Control Measures in Electronic Communication

Yan He
Zhonghuan Information College, Tianjin University of Technology, 300380, China

Abstract: With the rapid development of information technology, electronic communication has become a necessity in our daily life. With the increasing demand for communication, the technical level of electronic communication is getting higher, and the application technology of electronic communications is gradually being optimized. However, in the process of rapid development and wide application of electronic communications, the existence of some interference factors hinders the rapid development of electronic communications technology, and also affects the overall application quality of electronic communications. Therefore, it is of crucial significance to scientifically analyze the interference factors in electronic communications and adopt scientific and effective control measures to ensure the comprehensive scientific development of electronic communications.

1. Introduction
With the rapid development of social economy, the electronic communication industry has become a necessity in our daily life. Scientific electronic communication technologies can effectively communicate with people and provide superior technical support and information support for production activities. In the process of rapid development of electronic communications, its technical standards have become higher, its radiation capabilities have become stronger, and its bandwidth capabilities have also been developed and improved in an orderly manner. For example, the wireless network that we often use in our work and life is the typical electronic communication technology. Its existence makes the communication network's radiation and application space expand constantly. However, in the process of rapid development of electronic communications, the existence of some interference factors has seriously affected the overall level of development of electronic communications, and also hindered the overall progress of China's electronic communications technology. Based on this, scientific analysis of common interference factors in electronic communications and adoption of scientific and effective control measures can effectively improve the level of development of electronic communications.

2. Analysis of common interference factors in electronic communications
In the practical application of electronic communications, the existence of some factors restricts the development level of electronic communications to a great extent, and also affects the stability of electronic communications. Therefore, in the practical application of electronic communications, scientific analysis of common interference factors should be conducted to fully determine the technical loopholes in electronic communications so that the direction of control can be clearly defined and control measures can be formulated.

2.1 Hardware Interference
In the course of the use of electronic communications, once it is found that it has a fault or a network
outage, it should be the first to check the hardware of the electronic communications. In the actual application of electronic communications, hardware devices are the foundation, and hardware devices are the key. Scientific hardware devices can provide certain material carriers for electronic communications, and can also guarantee the stability of communications networks to a large extent. Hardware faults have a relatively large impact on wireless LANs. Hardware faults include network connection media failures and hardware device failures. As shown in Figure 1, there are few wireless clients and access points in the system. During the application process of the electronic communication system, people can easily discover system failures, so that more rapid and accurate technical measures can be taken to effectively improve the system stability. However, if the network environment is relatively complex, it is not conducive to the area where the staff judges the equipment failure. For example, in some large shopping malls and indoor venues, in order to ensure that people have a good wireless network experience, they purchase equipment that meets the requirements for larger capacity wireless networks. However, during actual use, it is easy for people to discover that the faults of large-scale wireless networks are relatively obvious, and some of them can normally connect to wireless networks, but there are also some people who have difficulty connecting to wireless networks. The root cause of this problem lies in the fact that there is a certain failure of the access equipment of the wireless network. In summary, equipment failure is a major contributing factor of the application of electronic communications. When judging the interference factors of electronic communications, it is necessary to first determine its equipment conditions, comprehensively strengthen the supervision and inspection of electronic communication systems, detect equipment failures of a timely manner, and promptly update or repair faulty devices.

Figure 1: Simpler wireless access

2.2 Configure Interference
In the practical application of electronic communications, the basic equipment will have a significant impact on electronic communications, the configuration of interference is also a major interference factor. Therefore, in the actual application of electronic communications, it is necessary to effectively survey and inspect configuration interference, take scientific and effective measures to solve and optimize the configuration of interference, and improve the overall level of electronic communications configuration. In the actual use of electronic communications, some devices in our lives will also have a relatively strong interference. For example, a microwave oven used in the kitchen, such as a mobile phone that we have on hand. Taking a wireless network as an example, during the use of the electronic communication, a system failure may easily occur due to the wireless network configuration problem, but it may also be difficult to effectively resist the interference factor because of the low configuration. In the use of electronic communications, if the wireless LAN fails, it indicates that the access point is not a hardware failure. In this case, the device must be debugged simply and efficiently. If the failure cannot be eliminated effectively, the relevant signal strength of the access point will be detected one by one. Under normal circumstances, the wireless network card will be set within the signal strength detection system. After testing, if the results show that the signal strength is very low, and the location of the communication device it didn’t move, we can detect the signal through the conversion to the wireless access point channel. Scientific detection methods can
detect configuration disturbances in a timely manner and can also improve the development level of electronic communication with the source. Therefore, in the detection process, scientific detection methods should be selected. In the detection process, it is possible to first modify the wireless terminal channel of a certain station. After the detection is completed, it confirms the scientific nature of the modification method so that a wide range of detection and modification can be carried out. As shown in Figure 2, WEP structure analysis and judgment should be taken first in the detection process to effectively detect the factors of WEP interference. WEP detection is performed from functions such as initialization vectors and integrity algorithms. If the WEP does not match the device, it will cause many serious consequences. Therefore, resistance to WEP interference is one of the important tasks of electronic communication control.

![Figure 2: Wep structure](image)

2.3 Local electronic communication interference
In the practical application of electronic communications, interference factors are more diversified. Common interference factors also include local electronic communication interference and other interference. Especially in the application of electronic communications, it is highly likely that there will be some on-demand broadcasts. Once such problems arise, it will seriously affect the stable operation of electronic communications. These bands do not exist in isolation. When they appear, they are likely to interact with each other. This will easily increase the instability of electronic communication, seriously affect the stable and efficient operation of electronic communication, and even affect the normal operation of electronic communications. Because interruptions in electronic communications and even paralysis. For example, more severe full-band interference will affect the overall level of electronic communications operations to a certain extent. This interference factor is often not affected by conditions and environment, and can cause serious interference in electronic communication, resulting in quality problems with electronic communication. Therefore, in the practical application of electronic communication, it is necessary to strengthen the monitoring and management of this part of the interference factors, effectively improve the operational level of electronic communications, and fully optimize the operating efficiency of electronic communications.

3. Analysis of Control Measures of Common Interference Factors in Electronic Communication
With the rapid development of social economy, the application range of electronic communications has been continuously expanding, and the technical standards for electronic communications have also become higher and higher. Scientific, efficient and stable electronic communication networks can play a role in application and ensure the safety and efficiency of electronic communication networks. Therefore, in the process of using electronic communications, scientific and effective control measures should be taken in conjunction with its common interference factors in order to fully enhance the overall operational level of electronic communications.
3.1 Strengthen the detection of communication systems and timely detect faulty interference locations
In the practical application of electronic communications, such interference is a relatively intuitive interference problem. The emergence of such interference problems of electronic communication systems will seriously affect the stability and efficiency of electronic communications. Therefore, to effectively prevent and control this type of interference problem, the detection and management of the communication system should be strengthened, the source of the hardware interference problem should be discovered in time, and the interference factors should be cleared in time. If necessary, new equipment can be directly replaced. On the one hand, the diagnosis and positioning of hardware interference should be done. Electronic communication systems are more complex systems. In the course of electronic communication systems functioning, any hardware problem may cause interference. Of course, different nature of the hardware problem, the interference problem is not the same. In order to scientifically detect hardware interference in electronic communication systems, its positioning and diagnosis should be effectively performed. The staff can combine work experience and their own judgments to master the shape of the interference problem, and then to match the interference problem of which hardware, in order to accurately locate the interference area. It should be not that the staff should scientifically clarify the location of the access point and should also determine the fault location based on the overall operation of the electronic communications system. If most of the users in the electronic communication system cannot connect to the wireless network, the problem of the failure of the electronic communication system is more serious. In the actual inspection and management, the work content of the staff will become complicated and diversified. When this happens, staff should conduct a full test. However, when only a small number of users in the electronic communication system are unable to access, the staff can check whether there is a problem with the hardware facilities and configuration related to the access point. On the other hand, problems with wireless access points, wired networks, or strong radio interference around the system can cause users in electronic communication systems to be difficult to connect to the network. Workers need to take the lead in determining whether they are effective against the actual detection process. The connection, especially the computer part, with the wireless network which is scientific and effective. In the actual detection process, the staff can use the computer to pass its relevant command mode. If the computer reacts accordingly, the connection is valid and successful. If the computer does not respond, the connection is unsuccessful. When dealing with hardware interference, only through detection can problems be found. After finding problems, staff should also make timely response measures. Staff can make judgments based on the size of the fault, whether to reconnect, reconfigure, or directly replace the relevant equipment.

3.2 Scientifically debug and manage and reasonably avoid configuration interference
In the actual application of electronic communications, configuring interference is a relatively obvious interference factor. The configuration interference problem in the electronic communication system will directly affect the operation level of the wireless network and even cause the interruption of the wireless network. Therefore, for the problem of configuration interference, the staff should strengthen scientific debugging and management, and effectively improve the operational level of electronic communications. On the one hand, staff should do a good job of debugging wireless access. During the debugging process, once the wireless connection is found to be unsuccessful, or most of the users cannot connect to the wireless network, the staff should strengthen the detection of the wireless access point and promptly discover the failure or problem of the wireless access point. On the other hand, to effectively solve the problem of configuration interference, the staff can also perform signal debugging. The signal of the wireless network card is decided at the factory. In the actual application process of the wireless network card, through signal debugging, the staff can find out whether the problem of the wireless connection is caused by the weak signal of the network card. If it is indeed a problem that the signal is weak, the staff can change the channel of the wireless access point and use the wireless terminal to perform further detection and debugging of the signal. When testing, it is necessary to first select a wireless terminal and modify the signal after connecting the channel. Only after returning to
normal can it be implemented in a large area so as to avoid invalidation and waste of time.

3.3 Adjust transmission frequency and adopt scientific spread spectrum technology

During the operation of the electronic communication system, the interference of the local electronic communication is an internal interference factor and a hidden interference factor. In the practical application of electronic communication systems, to effectively solve this interference factor, the staff can adopt the method of adjusting the frequency, and can also adopt the spread spectrum technology. However, no matter which method, it should be accurately selected in combination with the actual detection results. Avoid rising detection costs in order to optimize the overall operational quality of electronic communication systems. On the one hand, the staff can choose to use the FM mode to adjust the transmit frequency to the range of 2.4 to 5 GHz to avoid the problem of co-channel interference. On the other hand, in the operational practice of electronic communication systems, in order to effectively ensure the stability and high efficiency of electronic communications, the staff should also adopt scientific spread spectrum technology. Practice has proved that this kind of technology can effectively solve the problem of mutual influence of internal waves in electronic communications, and can also improve the smooth and efficient operation of electronic communications systems to a large extent. At the same time, in dealing with the interference problem of the electronic communication system, the staff should also comprehensively inspect and monitor the interference source and clean up the interference source in time, so as to optimize the operating efficiency of the electronic communication from the source and reduce or even avoid the existence of the same frequency interference. In addition, in the application process of electronic communication, in order to effectively solve the problem of the same frequency interference, the staff can also choose to use a more intuitive processing method, that is to reconfigure the signal, re-processing it with a new signal to protect the electronic communication stability and efficiency of the system.

4. Conclusion

With the rapid development of social economy, electronic communication technology has become a key technology in our daily life. The smooth and efficient operation of the electronic communication system is directly related to the exertion of its functions and the realization of its effectiveness. However, in the application process of electronic communication technology, there are more diversified interference factors. The existence of these factors directly affects the transmission efficiency and transmission quality of electronic communication, and also affects the accuracy of transmission signals. How to effectively protect the operational quality of electronic communication systems requires the integration of many interference factors such as hardware interference, configuration interference, and local electronic communication interference. Electronic communication interference, and scientific and effective countermeasures shall be adopted to fully enhance the operational level of electronic communication systems and effectively optimize the use of electronics communication stability.

References:
[1] Wang Xiang. Research on common interference factors and control measures in electronic communication[J]. Electronic Technology and Software Engineering, 2015(02):44.
[2] Hu Xiaoxi. Research on Common Interference Factors and Control Measures in Electronic Communication[J]. Electronic Production, 2015(07):140.
[3] Liao Xiaobo. Analysis of common interference factors and control measures in modern electronic communications [J], Science and Informatization, 2017(30).
[4] Li Yinfeng, Common interference factors and control technology analysis in electronic communication [J], Glamour China, 2016 (46).
[5] Lai Huuhua. Analysis of Common Interference Factors and Control Measures in Electronic Communication[J]. China Science and Technology Expo, 2015(30):137-137.