

# ON 5G WIRELESS COMMUNICATION TECHNOLOGY OF BROADCAST NETWORK

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**Abstract:** Currently, most of the 5G wireless communication models in broadcast network are single structured, and the information processing speed is relatively slow, increasing the upload speed loss ratio of the platform. Therefore, this paper proposes to explore the 5G wireless communication technology based on SA networking mode. According to actual communication requirements and standards, the paper sorts out basic communication data, sets 5G wireless communication spectrum, and then integrates and deploys SA networking + MIMO - OFDM units, sets a multi-level SA-networking-based 5G wireless communication mod, improves information processing speed, and adopt SA networking self - organization correction to achieve 5G communication . The test results show that after the same number of passes, the upload rate loss ratio obtained by SA networking based on 5G wireless communication test group is well controlled below 45%. The communication effect is good, with fast speed and high practical application value, which is worth promoting .

**Key words:** 5G \_ wireless communication; SA networking; communication technology; network integration and deployment.

## 1. INTRODUCTION

5G \_ That is the fifth generation of mobile communication. Radio and TV 5G tv network is sink integrating the internet , mobile communication network, radio and television network and the Internet of things. The fifth generation mobile application network. June 6, 2019 CITIC Issued to China Mobile, China Telecom, China Unicom and China Radio and Television. The " fifth generation digital cellular mobile communication service" basic telecommunication business operation license [1], and since then various departments have successively launched 5G various businesses in Mainland China has formed a new era of 5G commercial use. And with the internet the integration of technologies such as Internet and big data, and the 5G set by some enterprises. Although the communication platform can provide convenience for daily work, it is relatively easy vulnerable to external environmental factors, resulting in uncontrollable communication problems Problems and defects, reduce the overall efficiency [2-3] . Set traditional 5G mobile dynamic wireless power communication technology , traditional 5G network physical layer communication technology This type of communication technology has the above-mentioned problems and is difficult to control. Depend on This paper proposes a solution for broadcasting and television 5G in SA networking mode . Research on Wireless Communication Technology Study. The so-called SA networking (Standalone) is mainly an independent group Network is a type of networking in 5G communication technology . Network with other The difference is that S A The coverage of the network and the relative direction of communication More flexible , changeable , and highly targeted . Not only that , the integration of SA networking and 5G communication technology can also strengthen the core Network -to - endpoint network control to better utilize 5G the advantages of the technology , Reduce communication delay , distortion and other situations . In addition , SA networking It can also increase the compatibility and conversion of the communication platform, breaking the traditional the communication platform, reasonably expand the actual communication range, and gradually form Form a more stable and diversified communication structure, which will provide future support for related industries and Provide a reference for technological innovation.

## 2.RADIO AND TELEVISION SA DESIGN OF NETWORKED 5G WIRELESS COMMUNICATION TECHNOLOGY

### 2 . 1 Basic Communication Data Collation

The 5G wireless communication platform will form a large number of data and information, these data serve as communication indicators to a certain extent Order of support . Therefore , in order to improve the overall communication efficiency and quality It is necessary to mine and process the basic communication data first [4] .

First , build a directional communication collection space, according to its own needs and standards, and set specific communication within the preset range Mining points, and at the same time access the corresponding number of data collection points Nodes , associate the regionally set nodes to form a cyclical communication data acquisition structure [5]. Secondly, basic communication data collection see Table 1 for the setting of index parameters for collection and arrangement.

**Table 1** Information Data Collection And Sorting Indicator Parameter Setting

Determination index	Measured finishing standard	Boundary finishing standard
Data finishing speed ( Gb8 / s )		5 . 5 ~ 10.5
Communication Conversion Ratio	1.33	1.25 ~ 1.68
Communication frequency ( MHz )	1 200	8 00 ~ 1 600

According to Table 1, complete the index parameters of information data collection and sorting settings. Based on this, the realization of basic data collation environment set. Next, set intelligent data organization in the communication space Program , associate it with the preset data collection node to form a dynamic State -of-the-art communication data collation system . But this part needs attention Yes , the designed 5G communication finishing procedure is not fixed, but Make corresponding corrections according to changes in communication range and information conversion It has strong flexibility and convertibility, and the speed of data sorting And the scope is more changeable , for the future 5G communication in SA network mode Technological exploration creates a basic environment .

**2 . 2 5G Setting of Wireless Communication Spectrum**

Based on the basic communication data obtained above , 5G wireless The setting and practical application of communication spectrum . The communication spectrum is actually A directional carrier for information data transmission, the execution of general communication services communication and transmission are inseparable from the wireless spectrum [6] . Before setting the frequency spectrum, it is necessary to Spectrum resources must be obtained first . in 5G \_ Assigned in FR 1 and FR 2 Spectrum resources in two regions , frequency bands below 6 GHz It is Sub 6 G , and the frequency range of the spectrum is controlled between 350 ~ 5 500 MHz , and the frequency standard average value is calculated, as shown in formula (1):

$$y = 0.2m + n \times \sum \chi e - m(nv - 1)2 \quad (1)$$

e = 1

formula ( 1 ) : y represents the frequency standard mean , m Indicates the communication control range range , n represents the directional coverage distance ,  $\chi$  represents the frequency band conversion deviation , e Indicates the number of frequency bands , and v indicates the frequency directional fluctuation ratio . According to the above test Determined analysis , to achieve the calculation of the frequency standard mean, set it as the basis The basic frequency standard , comprehensive 5G Spectrum construction requirements are divided into FR 1 See Table 2 for setting of communication protocol value with FR 2 .

**Table 2** R1 And FR2 Communication Protocol Value Setting

spectrum name	Frequency range /MHz	/Communication protocol times/times
FR 1	3 50 ~ 5 500	16
FR 2	2 2 250 ~ 50 250	2 7

According to Table 2, complete the value of FR 1 and FR 2 communication protocol setting and analysis . Next , take advantage of 5G technology , the frequency bands commonly used Carry out multi-directional marking, and set spectrum refarming and carrier aggregation in the communication program Combined, dynamic spectrum sharing and other functions to increase the practical application ability of spectrum and data conversion capabilities to realize the setting of 5G wireless communication spectrum .

**2 . 3 SA Networking + MIMO - OFDM Integration and Deployment of Communication Units**

Utilize the constructed 5G communication spectrum , integrate SA networking and MI - The MO-OFD M communication unit is used for the integration and deployment of communication protocols. The so-called integrated deployment is actually the internal adjustment of 5G communication signals. With [7]under normal circumstances, the communication unit will be positioned first, and the The total ratio of single input to single output of fixed data is calculated to calculate the actual transmission transmission capacity , and then set it to the base 5G communication transmission standard Capacity , in SA networking + MIMO - fusion of OFDM communication units Under the influence, set a specific communication structure.

Realize SA networking + MIMO-OFDM communication The design of the deployment structure of letter units . Add SIS O to the communication program control protocol to increase the speed of information transmission capacity, with the transmitter and receiver After the terminals are associated , the communication space diversity is formed , and the SA networking + MIMO - deployment of OFDM communication units , thus enhancing communication Practical application performance of transmission link [8] .

## 2.4 multi-level SA Networking 5G \_ Construction of Wireless Communication Model

Currently , setting up 5G communication units and performing modulation generally takes and The SA network forms an association , and then connects to 5G wireless communication program The expected communication goal [9]. But SA in some areas Network control the coverage of the system is limited, and the pertinence is not strong, so that the communication efficiency is affected. to affect, therefore, the need for SA Networking 5G \_ wireless communication model construction. First determine the communication range, use SA networking technology technology, which divides the communication area into different sections, and each section is Need to set the corresponding communication identification node .

Use it to collect data information in batches, and form a pair adaptive integration of responses , and subsequently, based on the data obtained from the identified nodes, Determine the transmission assignment of the communication model , and then set it to 5G The transmission standard value of the communication model , and the SA networking is set on the basis In the model , it is fused with the initial control program to form a more flexible live , changeable communication transmission program , the specific communication structure is shown in Figure 2 Shown :

Achieving SA Networking 5G wireless communication model flow program design . On this basis , according to its own 5G Transfer of communication tasks Change and adjustment , and design the built-in system of the model . but note Yes , with the assistance of SA networking , the processing scope of the communication model is not Fixed, but more flexible and changeable, and the daily needs of radio and television communications Comply with the standard and complete the SA Networking 5G \_ wireless communication model design.

## 2.5 Self-organizing Correction SA Networking to Realize 5G Communication

Self- organizing correction SA networking is the process of performing communication tasks In the process , a dynamic processing of correcting the abnormal communication instructions formed Rational form . Adjust the communication data collection nodes set in the model, integrate the SA network, locate the abnormal position, and build a self-organizing correction space During this period , a cyclic self-organizing communication correction program is formed . At this time according to Signal spectral efficiency and communication unit values, set three correction stages, and then See Table 3 for the setting of the value of the orthographic communication correction index :

**Table 3** Orthogonal Communication Correction Index Value Table

revision stage	Orthogonal Ratio	Signalconversion standard
basic recognition stage	3.05	4.11
Transition Communication Phase	10.35	14.27
revision stage	16.12	19.45

From Table 3, the setting of the value of the orthogonal communication correction index is completed . Set this value in the communication model to build a more stable, The self- organized correction system, in the process of executing 5G traffic tasks , Once an exception occurs, it is difficult for the basic communication structure to locate the abnormal location Carry out positioning and processing, if it is not corrected in time, often lead to the occurrence of communication cut-off or communication error, etc., resulting in more Large- scale communication problems, therefore, timely positioning and correction will prevent communication failures The probability of error is minimized, plus SA Auxiliary networking, further Enhance communication efficiency .

## 3. EXPERIMENT

This experiment is mainly for SA Radio and television 5G in networking mode wireless Research on the practical application effect of communication technology. Considering that the final test The authenticity and reliability of the results , the communication program and platform of G enterprise are selected as the For the actual test target, the analysis is carried out by means of comparison, refer to Literature, Setting up legacy 5G mobile wireless power communication test groups, legacy 5G \_ The network physical layer communication test group and the experimental design SA Network 5G wireless communication test group, based on actual communication measurement Requirements and standards, comparative research on the obtained test results, and then, conduct Set up and layout of test environment .

### 3.1 Experiment preparation

Incorporate the underlying data built into the selected 5G enterprise communications platform. And the information is extracted to form a directional data packet to realize the compression processing after processing, then set up the basic traffic environment and make relevant The indicators have been revised and adjusted, see Table 4 for details .

**Table 4** Basic communication index correction adjustment value

Correction index	basic standard	limit standard
Communication interference intensity ( dBm )	-68.33	-72.37
association degree	1.3	1.6
Interference (wavenumber)	Spectrum1 111	1 101
Peak rate ( Mbps )	6 50	9 00

From Table 4, complete the correction and adjustment of the basic communication indicators, and then Finally , on this basis, adjust the actual communication execution loop of 5G communication environment , connect to SA network, and form a cyclical practice with radio and television communication programs practice structure . At the same time, it is also necessary to set up Determine the specific control core points to improve the overall communication efficiency and quality To create a more efficient and secure communication environment .

**3 . 2 Experimental process and result analysis**

Combined with SA networking technology, according to the test environment built above , right G enterprise communication situation for specific analysis and verification. will need The data packets to be communicated are divided into 3, thus set in the built-in In the platform , use SA networking to combine the processing of each stage The result is transmitted to the corresponding position to realize intelligent sensing and analysis . exist On this basis , using the deployed information collection nodes, the secondary acquired Data and information are converted and processed in a oriented manner, so setting the platform Taiwan 's internal basic processing. At this time, the received communication processing result on the Combined with the SA network , the upload speed loss ratio is calculated, see formula (2) Shown :

$$B = G2 \_ \times \sum \psi J + X - GJ \tag{2}$$

J = 1

In formula (2) : B represents the upload speed loss ratio, G represents the preset communication range ,  $\psi$  represents the calibration distance, J Indicates the number of uploads, X means no line coverage. Based on the above measurements, the analysis of the test results is completed with research to complete the analysis and research on the test results: The same number of pass transmissions , the final SA Networking 5G wireless communication test The upload rate loss ratio obtained by the group is well controlled at 45 % The following shows that the communication effect of this method is better, the speed is faster, and it has

The actual application promotion value .

**4. CONCLUSION**

Compared with the traditional 5G communication technology , this paper proposes SA Group network, the designed communication structure is more flexible and stable, In the information environment , clear positioning and communication association can be carried out to maximize Reduce the occurrence of network delay, network chaos, etc., and ensure communication High transmission efficiency, safety, and stability, and can be reduced under reasonable standards Low energy consumption , forming an intelligent communication connection , providing 5G for radio and television wireless communication To lay a solid foundation for the promotion and application of information technology.

**COMPETING INTERESTS**

The authors have no relevant financial or non-financial interests to disclose.

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