

RESEARCH OF POSSIBILITIES FOR IMPROVING THE EFFICIENCY OF PERFORMANCE OF WIRELESS ACCESS NETWORKS BY MULTIPATH CHANNELS

***Annotation.** The object of research carried out in this work is to examine the opportunities for further improvement and development of wireless technology to increase the performance of the wireless network. A comparative analysis of the existing methods of improving the work of wireless access networks. The subject of research is the process of reception and transmission of information in multipath channels.*

***Introduction.** Nowadays mobile wireless networks of different type and purpose are used practically everywhere: cellular, trunking, local, etc. Due to limited allocated frequency band, the most important problems that must be solved at the stage of design, is the problem of electromagnetic compatibility segments of the same network or different networks with each other for solution of which it is necessary to minimize intrasystem and mutual interference. The value of the interference depends on the frequency and territorial network plan.*

The aim of this work is to analyze factors influencing the performance of the wireless network, and development of methods of adapting its main parameters (power, frequency plan, the amount of frequency channels, etc.) to the real conditions of operation, to ensure more high quality transmission of information [1].

Multipath propagation is typical for urban environment and the radio channels inside buildings. In view of interference waves arriving at the receiving point with different amplitudes and phases, the distortion spatial and temporal structure of the useful signal, in particular the dispersion and fading. This affects the quality, speed and reliability of information transmission. Multipath propagation must be considered in stationary systems, and mobile radio communication.

Wireless networks, which are currently becoming more usually calculated and designed based on homogeneous identical propagation conditions in different parts of the system, which leads to a perfect network topology. However, in its implementation of this ideal picture is not feasible because, firstly, the choice of placement of base stations is substantially limited administrative, geographic, and a number of other prohibitions. And secondly, the conditions of propagation of signals and, consequently, the efficiency of information transmission depends on the topography and nature of the terrain, building density buildings in the city, the height of the scaffolding, the availability of water surfaces, etc. As a result, the actual structure of the network and the service area of each of its cells differ significantly from the ideal used in the calculations. This leads to changes in the basic parameters that characterize the quality of information transfer in the network, and often worse [2].

To investigate the possibility to improve efficiency, we analyzed the principles of wireless networks considered the basic elements of wireless access networks, their architecture and hierarchy. After that, we have given the characteristics of the existing standards, development trends, gave an overview of signaling technology and assessed their effectiveness.

The methods of improving the quality of data transmission in the network, among which stands out for its efficiency ones, that allow to adapt the parameters of the equipment and networks to the actual conditions of signal propagation, and thus align to make a more uniform picture of the coverage and evenly distribute the load on the individual station, which is a prerequisite for effective and sustainable network.

To solve the problem of minimizing interference in the network and improve its performance, you should strive for even load distribution between the base stations. Since the

$$\Delta M_x = \frac{d(tg\varphi_N)}{dI_x} \Delta I_x ; \text{ conditions of propagation of the signal may vary in different parts of}$$

the network, and the placement of base stations are fixed - is a means of load balancing, power control of base stations determined by the radius of cells, and is attributable to their load.

Parameters that can be adapted to the actual conditions of the system are:

- Transmitting power of base stations,
- Frequency plan
- The location of the base stations,
- The characteristics of the antennas.

There are two approaches of existing developments to improve the efficiency of a wireless network: adaptation of the radiated power and the frequency plan for the purpose of load balancing between the base stations on the network. The purpose of the adaptation process for the base station is the regulation of radiated power, which leads to equalization of the load between them. The aim of the adaptation process of the frequency plan of base stations is to regulate the frequency, so as to minimize self-interference between cells using the same frequency [3].

To equalize the load on the base station power adjustment method is effective to reduce the standard deviation allowing the load on the subscriber station from the average for the network is about 2 times.

With an increase in traffic must be correct assignment of frequency channels; proposed in the method for selecting the frequency channels allows to achieve acceptable results in the signal/noise ratio.

Literature

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АНАЛИЗ ХАРАКТЕРИСТИК ВОССТАНОВЛЕННЫХ 3D ТВ ОБЪЕКТОВ

Аннотация. Рассматривается алгоритм восстановления координат объекта с допустимой минимальной погрешностью при различных видах преобразований. Анализировались Wavelet – преобразования разных порядков с нормированными значениями шага дискретизации для повышения качества визуализации трехмерных объектов. Исследованы одни из основных характеристик 3D ТВ объекта – отношения сигнал/шум и погрешность измерения координат после его восстановления.

Актуальной задачей телевидения на сегодняшний день является получение качественных трехмерных моделей реальных объектов в разных областях человеческой деятельности. В