THE IMPORTANCE OF 5G WIRELESS SYSTEMS IN HUMAN LIFE

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Abstract: This article talks about 5G wireless systems that have emerged and are evolving due to modern demand. The 5G mobile system provides much higher performance than previous generation mobile systems.

The new 5G technology is not only the next version of mobile, which is evolving from 1G to 2G, 3G, 4G, but also offers a new approach that allows you to connect anywhere.

5G technology is very different. Previous systems have evolved based on what can be done using the latest technology.

5G mobile connection provides anywhere connection for various applications such as automotive communications, optic-style feedback remote control, very large video downloads, as well as applications with very low data transfer speeds such as remote-control devices and this kind of things.

Key words: 5G, multiple inputs, millimeter-wave communication, generation, waveform.

INTRODUCTION

5G is basically the 5th generation of the Mobile Network. The cellular network has a global wireless standard that we use all over the world. And it includes a new generation network that allows you to stay in touch with almost everything around the world, as well as a variety of devices, things, and more. The 5G array plans to use a technology called Mimo [1]. Although it usually causes interference, it does use something called radiation. 5G is undoubtedly one of the biggest investments for years to come. This technology began its success in the next phase of 2018 [2-4]. It not only improves the speed department, but also combines billions of devices around the world with the perfect balance of speed, price and latency. Like all widely used systems, 5G mobile communication is subject to a number of standards. 5G standard 3GPP based on 2G GSM, 3G UMTS and then 4G LTE - sponsored by the Third Generation Partnership Project [5-6].

3GPP has several different working groups, each of which addresses different elements of the required standards. They use industry experts who spend their time and are sponsors of relevant mobile companies. In this way standards are written and developed [7-8].

Having a major industry organization that oversees standards, stakeholders can influence standards to ensure they receive the required functions. Because this standard is international, not only can different companies know how to work and interact on different elements of the system, but the user can also take advantage of opportunities such as roaming, resulting in cheaper phones, calls, and so on. scale saving and so on.

MATERIALS AND DISCUSSION

Now that we know what 5G technology is in the 5G guide, let’s take a look at how it works. First, let’s talk about its spectrum. Like 4G LTE, 5G technology has a wide range of radio spectrum resolutions, but is capable of operating in a wider range than current networks. The most common forms of 5G are Sub-6 and mmWave. U-6 U-6 refers to 5G operating at a frequency less than 6 Gs. All carriers have some form of Sub-6 network, as 4G LTE previously operated on these low frequencies. For example, T-Mobile has a low-band 600 MHz spectrum, and the 2.5 GHz that previously belonged to Sprint is used for both 5G. The Sub-6 spectrum is important in the propagation of 5G because these low-frequency radio waves can

travel long distances and cross walls and barriers. This means that carriers can deploy much larger networks in each city without having to build hundreds of cages. mmWave mmWave (millimeter wave), which refers to ultra high frequency radio waves 30Gts and 300Gts, used to charge 5G connections and provide download speeds of a few gigabits per second. Initially, Verizon relied only on mmWave for its 5G network, but the carrier has now begun distributing Sub-6 networks as well. While MmWave connections provide fast download speeds, high-frequency radio waves cannot travel long distances or pass obstacles - in most cases, even a window or leaf of a tree can block a connection [9-10].

With the development of different generations of mobile telecommunications, each of them has brought its own improvements. The same goes for 5G technology [11-13].

First generation, 1G: These phones were analog and were the first mobile or cell phones used. Despite being revolutionary at the time, they offered very low levels of spectrum efficiency and safety.

Second Generation, 2G: They are based on digital technology and have offered new features such as spectrum efficiency, security, and low text message and data transfer speeds.

Third Generation, 3G: The purpose of this technology was to provide high speed data. The original technology has been improved to ensure that data can be up to 14 Mbit / s and higher.

The fourth generation, 4G: It was an IP-based technology capable of providing speeds of up to 1 Gbit / s.

5G technology: When 5G was first postulated, a number of uses were put forward: data transfer at very high speeds as video downloads expanded; low-delay remote control - examples of autonomous vehicles that communicate with the rejection infrastructure to ensure safe transport, as well as the fact that experienced surgeons can perform delicate operations remotely using a 5G connection, both of which require very low-delay mobile communication; more opportunities for general data communications; very low data rate and the ability to connect from time to time to Internet objects, where the battery life is very long.

Instead of offering more than what was available in previous mobile generations, 5G technology had to create new features and connectivity everywhere.

This requires the use of not only base stations that can be converted to 5G, but also many more small cells [14].

5G also includes many technologies, many of which are new, allowing it to provide the high level of performance required.

5G mobile technologies include:

Waveforms and Modulation: One of the main discussions in 5G production was based on the type of waveform to be used. Finally, the circuit is located around OFDM, the actual modulation formats depend on the link, which includes QPSK, 16QAM, 64QAM, 256QAM, and for uplink when using DFT-OFDM, b / 2-BPSK can be used.

Other forms of waveform may also be developed for the future, but for now, the waveform is centered around OFDM.

Multiple inputs: Again, different input schemes were discussed, but OFDMA was implemented for 5G New Radio. CP-OFDM was used for the lower line and CP-OFDM or DFT-OFDM could be used for the upper line.

Millimeter-wave communication: Millimeter-wave mobile communication was not implemented for the initial deployment of the 5g mobile communication system because cost-effective millimeter-wave communication technology was not sufficiently developed. Many base stations are required to provide the required coverage to use mmWave for 5G mobile communication.

In preparation for the implementation of MmWave, frequencies are allocated and FR2 (Frequency Range 2) is included in the set of allocations.

CONCLUSION

We feel the need to use internet tools and high-speed internet at every step of our lives. In this case, the use of 5G technology is very important, and for a child in a rapidly developing world, it is very important and effective to keep pace with technology. This article talks about the history of the development of 5G and its effectiveness. The more important the Internet is in a person's life, the faster it will work. In short, 5G technology is a radical turning point in human life and a big step towards the future.

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