

# The complete guide to LTE 450

# Introduction

## What is LTE 450 – and why does it matter?

LTE 450 is a type of wireless communication network based on a 450 MHz frequency. More importantly, it's a network band that offers wide reach, deep signal penetration, high speeds and secure, dependable connection. On top of that, it's cost-effective to implement and use, and it can futureproof systems with its great flexibility.

In the heyday of 2G GSM and 3G cellular networks, the 450 MHz frequency was set aside as a low-frequency route for emergency communications. Now we have advanced to 4G and 5G and the 2G networks are being retired, 450 MHz is open to bids for other purposes. These tend to involve critical communications over long ranges, with connections to remote and dispersed points.

**anteno**va

## Wireless for the next generation

Antenova is a leading innovator in wireless technology solutions. With a passion for connectivity, we specialize in designing and manufacturing high-performance antennas and radio frequency (RF) modules for a wide range of applications. Our mission is to empower the Internet of Things (IoT), providing seamless and reliable connectivity for smart devices, wearables, and more. At Antenova, we combine cutting-edge engineering expertise with a commitment to customer success, delivering compact, efficient, and reliable wireless solutions that enable the next generation of connected devices. **Join us on the journey to make the world more connected, efficient, and smarter.**

[Find out more](#)

## What makes LTE 450 different?

The most obvious difference in LTE 450 is its low frequency at 450 MHz. Typical public networks have frequencies of 900, 1800, 2100 or 2600 MHz. The frequency of LTE 450, or band 31 as it is sometimes known, requires a dedicated LTE 450 module. This immediately gives LTE 450 an advantage in terms of less signal congestion.

## Why do you need to know about LTE 450?

LTE 450 supports communication functions including voice, data, remote monitoring and more. Its low frequency (450 MHz) gives wider area coverage than higher frequencies, which makes it more economical as it requires fewer base stations. It can cover thinly distributed points of connectivity in rural areas and other remote settings which are difficult or impossible to connect via mainstream mobile networks. Its signals penetrate deeply through walls and underground. LTE 450 can be deployed and operated cost-effectively and flexibly, and its communications are fast, reliable and secure.

Increasing numbers of businesses are turning to LTE 450 and this growth is set to continue. There is a competitive edge to be gained by early adopters, while growing availability and ease of adoption are increasing the advantage for all.

### What is the 'LTE' in LTE 450?

LTE stands for Long Term Evolution. It's a particular 4G wireless broadband standard which gives much faster speeds than 3G, although not as fast as 'true 4G'. The agreed target speed standard for true 4G is hard to achieve in reality.

LTE is not the only choice of network technology within the 450 MHz band. Previously, CDMA (Code Division Multiple Access) was preferred by many. Now LTE is becoming increasingly popular, thanks largely to its higher speeds, greater capacity and lower latency.

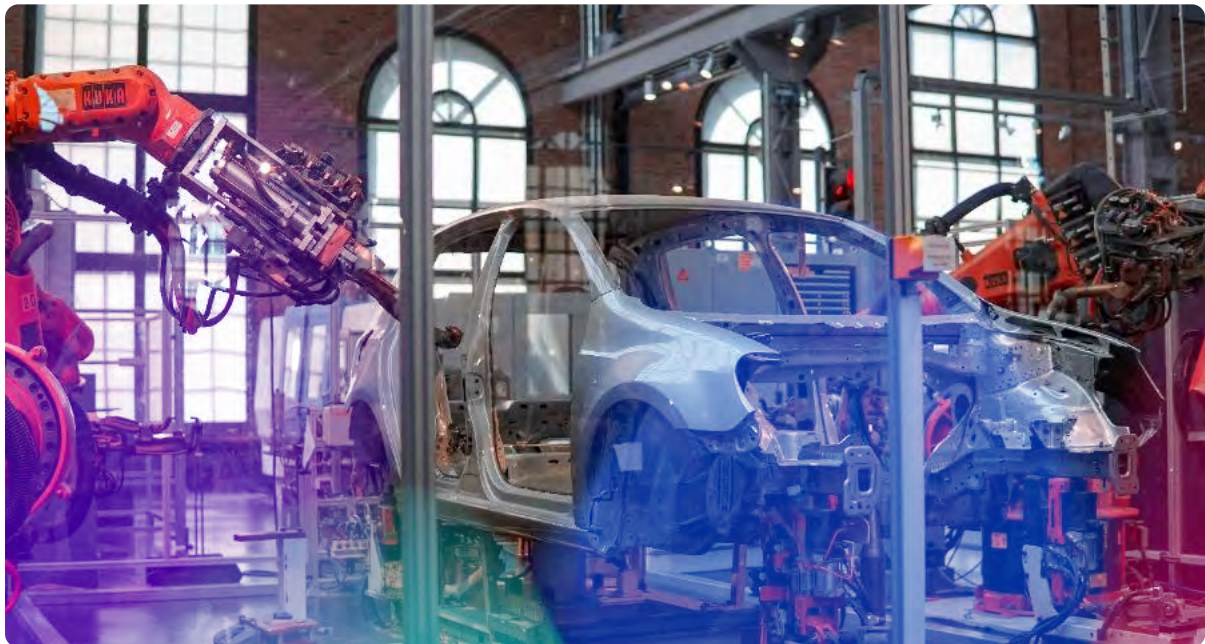
## Who needs to know about LTE 450?

LTE 450 provides a sound basis for critical communications, whether in a commercial context or for public services, including safety. It's ideal for connecting consumers and business premises – such as offices and plants – in widely separated locations. Utility companies, especially, will use LTE 450 to shift data traffic away from public networks and avoid congestion. The same applies to manufacturing and engineering businesses with their IoT and M2M data.

There is great interest in applying LTE 450 to smart energy grids, other remotely controlled infrastructures and to meter reading in particular. It enables real-time data on each consumer's energy use and other metrics to be collected and sent for management and analysis. Huge numbers of meters and other devices can be connected – some of which were previously difficult to reach due to their depth within buildings. In smart cities, LTE 450 may have roles in controlling services like lighting, heating and waste management.

Businesses working to digitise their processes and become smarter should take note. LTE 450 can help them gain full benefit from advances like industrial IoT, Industry 4.0 and the move toward smart factories, while providing flexibility for future communication needs.

Power generation, gas, oil and mineral extraction, farming, logging, marine industries and freight distribution are just some of the sectors which will benefit.



## What do the experts know about LTE 450?

Network operators and equipment vendors with specialist knowledge in this area can tell you everything you need to know about LTE 450. Much experience has already been gained. To date, more than 70 countries have allocated the LTE 450 spectrum to new purposes. In 20 of those countries there are now active LTE 450 networks.

European countries have been the earliest adopters, with the energy sector amongst the first to win LTE 450 access. In Finland, telecom company Ukkoverkot has been that country's first provider to deploy LTE 450 as a broadband network. Despite Finland's large area and scattered population, it has achieved 99.9% coverage.

A key challenge for the specialists is to help network operators and customers who have invested heavily in CDMA technology to migrate to LTE. Their solutions include hybrid arrangements, enabling gradual migration, and reuse of existing eqpt wherever possible.

Devices specified to support the LTE 450 network frequency will be needed. As LTE 450 deployment grows, designers and suppliers of equipment and services which enhance its advantages are making further advances. Developments include new mobile phones, laptops, routers, modems, antennas and other devices optimised for LTE 450, along with modules and systems for easy implementation.

## What industry sectors have most to gain from LTE 450?

Utility companies are especially interested in connecting their data centres to widely dispersed smart meters. In the electricity sector, specifically, LTE 450 can provide a basis for monitoring and managing smart power grids. Similarly, industrial companies need reliable links to sensors, IoT devices and other equipment, wherever they may be.

LTE 450 continues to serve critical communication needs in relation to safety and emergency systems and services. It also connects, for example, isolated schools and healthcare facilities.

The strength, reach and reliability of LTE 450 connectivity can be invaluable for industries with distantly spread activities, like logistics, transport, seaports and remote, highsecurity government installations. Distant communication can extend to forestry and agricultural areas, as well as rurally located power facilities, and out to sea with oil, gas and shipping businesses.

# Benefits of LTE 450

LTE 450 is a type of wireless communication network which efficiently meets the critical needs of many important operations. Electricity supply, other utilities, public safety services and manufacturing are just some of the sectors it can serve.

The wide reach and deep penetration of its signals enable effective connectivity over large areas – and to difficult-to-access locations – which are poorly covered by mainstream networks. LTE 450 is economical to deploy and use, provides highly secure and reliable connection, and can be easily scaled and modified in line with current and future requirements.

## **Other benefits include:**

### **Wide coverage**

At low frequencies, like that of LTE 450, radio waves are longer and travel further, resulting in better signal propagation characteristics compared to higher-frequency networks. Blanket communication coverage can be spread across large expanses of countryside or sea. This makes LTE 450 ideal for connecting with dispersed populations, and with remote, rural or marine workplaces, plants and facilities.

### **Deeper signal penetration**

The low-frequency radio waves of LTE 450 also penetrate deeply into buildings and below ground, passing easily through obstacles such as walls. This is particularly useful for connection with, for example, electricity or water meters located in basements.

### **Security and reliability**

Private LTE 450 connectivity is stronger, more stable and more dependable than that of high-frequency public networks. It is inherently more secure against cyber threats and interference, and can be specified with extra inbuilt security features.

The lower cost of LTE 450 infrastructure means businesses can afford to back up the network with additional emergency power sources and other redundancy equipment. This further enhances its reliability. Meanwhile, its lower complexity, with fewer stations, means there is less risk of failures and outages.

## Cost saving

A wider signal reach means there are fewer base stations, radio sites or towers to install, manage and maintain – saving on both initial investment and ongoing costs.

Thanks to deeper signal penetration, IoT devices and other equipment in hard-to-reach locations can easily communicate with the LTE 450 network. Without it, they would consume extra energy through repeated attempts to connect.



LTE 450 has been around for many years, so an ecosystem and various organisations supporting its use are already in place and are continuing to develop. This saves time and money when planning to adopt LTE 450. Existing equipment designed and optimised specifically for this network's frequency includes a range of IoT devices, mobile phones and laptops.

Economies like these combine to make LTE 450 infrastructure less expensive to build compared to all other cellular networks. In fact, in some cases the LTE 450 legacy infrastructure which was used previously for a different purpose can be taken over for a new application.

For complex, widespread organisations and operations, LTE 450 can reduce expense by replacing multiple physical and wireless networks with a single, consolidated, simplified network.

## Control, flexibility and futureproofing

Private LTE 450 gives businesses more control over their network. They are free to make their own decisions on how it is developed and managed, regardless of what a public network provider wants or is able to do. They can tailor everything to their specific connectivity and communication needs.

With LTE 450, it's easy to upgrade, grow and modify the network and its equipment as needs change. Importantly, LTE 450 complies with a global standard, aligned with 5G, which also helps to make it futureproof.

# LTE 450 frequently asked questions

## What is causing the surge of interest in LTE 450?

Despite the advantages already mentioned, and although LTE 450 networks have already been available for many years, uptake has been relatively slow until now. What has stimulated renewed interest is their potential within the internet of things (IoT) and machine to machine (M2M) applications. In particular, LTE 450 supports CAT-M and narrowband-IoT (NB-IoT) technologies, which are dedicated to IoT connectivity.

## What is 'private' LTE 450?

The term 'private LTE 450' is often used in articles on LTE 450. This distinguishes private networks from public ones. If you choose private LTE 450, it will be isolated and independent from public networks. The advantages of this include less congestion, as well as high data security and freedom to manage communications and systems without interference.

## What is the purpose of LTE 450?

There are many applications and industries which can make good use of the LTE 450 qualities and characteristics summarised above. For instance, LTE 450 is well suited to providing businesses and other organisations with broadband coverage, cost-effectively and reliably, over large areas.



SHARE KNOWLEDGE WITH RF EXPERTS AROUND THE WORLD

ask.antenova is a global forum for designers and engineers working with wireless technology.

Visit [ask.antenova](https://ask.antenova.com)

antenova

Wireless connectivity  
without compromise.