

What is Unlicensed Spectrum?

Our wireless future – equitable, ubiquitous connections to 5G experiences and beyond – depends on all the tools in our tech and policy toolbox. This includes shared and unlicensed spectrum in addition to exclusively licensed spectrum.

What are unlicensed, licensed and shared spectrum?



Unlicensed & shared spectrum

Anyone can use an unlicensed spectrum band so long as they follow technical rules established by the FCC. Industry standards often prescribe further rules of the road to coordinate traffic. This framework allows devices using technologies like Wi-Fi, Bluetooth, ZigBee and LoRa to run concurrently without harmful interference.

In emerging systems like those in the Citizens Broadband Radio Service (CBRS) bands, new technology facilitates shared access among three tiers of users: incumbent government operations, priority licensees and opportunistic shared users like schools and libraries that are permitted to operate wherever and whenever the spectrum is not in use.

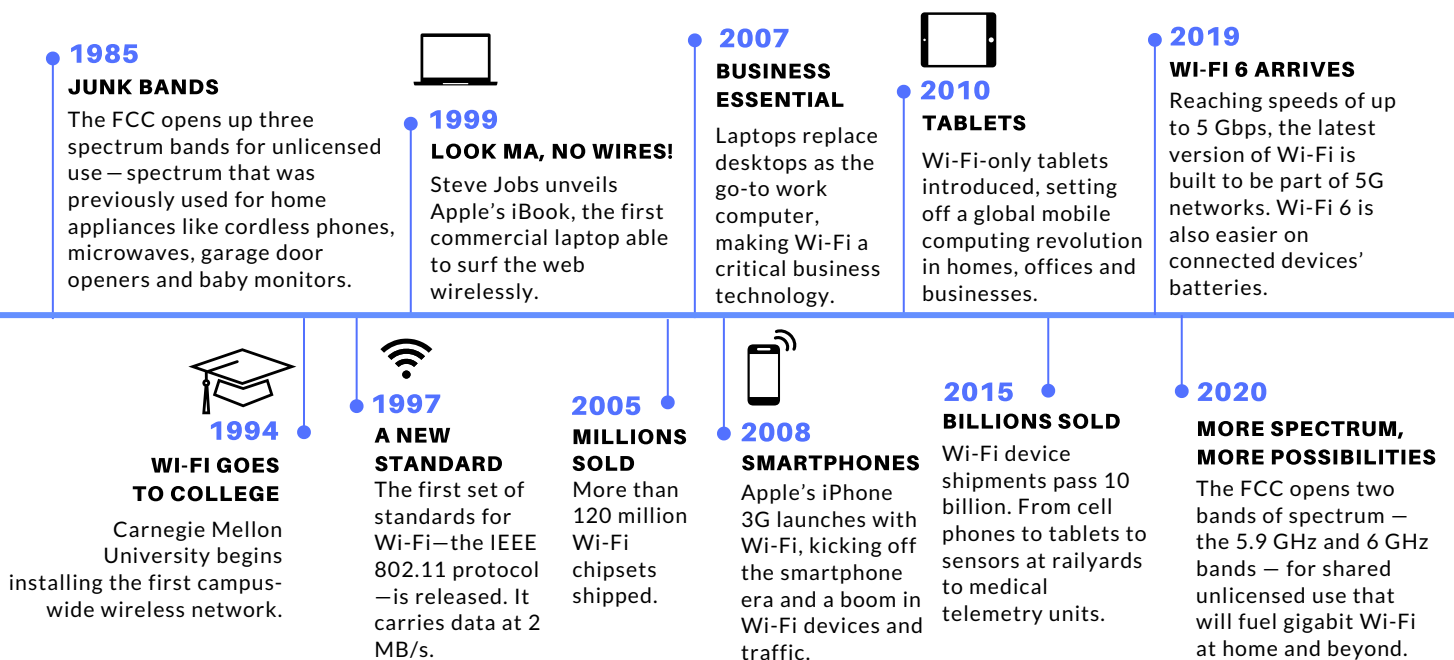


Exclusively licensed spectrum

Most licensed spectrum is bought at auction and coordinated by a single operator for exclusive use by its network and customers.

How it works: “permissionless innovation” over decades

In 1985, Wi-Fi started as an FCC experiment – as long as innovators followed a few rules in this spectrum, they could innovate in the “junk bands.” Light regulation and low barriers to entry led to Wi-Fi, ZigBEE, RFID, WirelessHART, LoRa and Bluetooth, to name a few. These technologies have contributed billions of dollars to the economy as well as transformed the way we run our networks and get online.





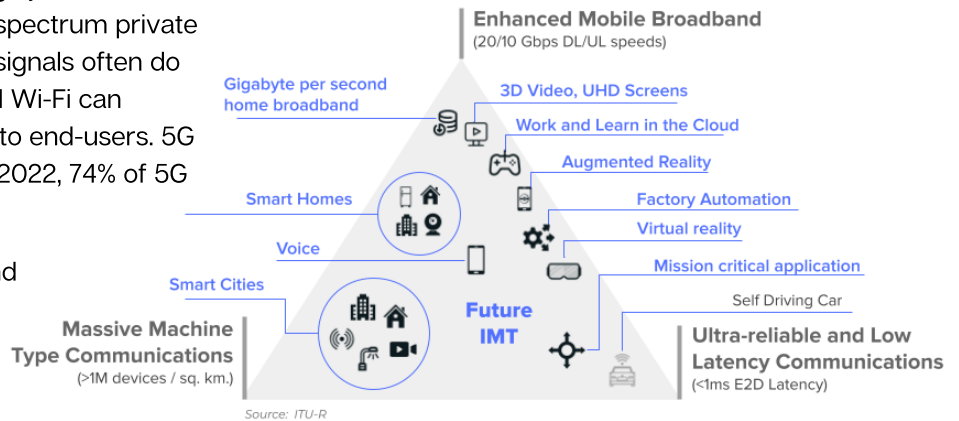
5G needs licensed, unlicensed and coordinated shared spectrum.

5G is actually a variety of wired and wireless technologies that will come together to make connections fast and ubiquitous indoors and out.

Indoors, we will experience 5G largely on unlicensed spectrum and shared-spectrum private networks. This is because mobile signals often do not reach indoors consistently and Wi-Fi can deliver fast speeds at lower costs to end-users. 5G also relies on Wi-Fi for offload: by 2022, 74% of 5G traffic will be offloaded to Wi-Fi.

Wi-Fi will achieve the 5G speed and performance needed for applications like AR and VR modeling, remote surgery, automated factories and more.

Wi-Fi and Other Technologies Enable the 5G Experience



The New Wi-Fi Home

The newest version of Wi-Fi uses wider channels – 160 MHz – to enable:

- Multi-gigabit home wireless speeds: It offers lower latency, lag and buffering.
- Ultra-connected homes: Dozens of devices can connect to one off-the-shelf home router, enabling simultaneous working, learning and playing from home as well as smart home connectivity.
- Energy efficiency: Devices are on air for short periods of time, which is more energy-efficient.
- Fast access to next-gen networks: Cisco predicts that by 2022 Wi-Fi will carry 57% of U.S. Internet traffic, while mobile broadband networks, including new licensed 5G networks, will carry just 7%.



Spectrum Sharing Innovation: the CBRS Band

The Citizens Broadband Radio Service (CBRS) is a first-of-its-kind policy approach to sharing spectrum among federal government users, licensees and opportunistic devices in the 3.5 GHz band. It enables new players to build LTE networks that are 5G-ready.

- The FCC auctioned off licenses for smaller-than-normal areas to a wide variety of users – including companies bringing broadband to rural areas and non-telco companies like Chevron and John Deere.
- This spectrum will also help traditional mobile network operators and other enterprises to add additional capacity to their networks and invest in private networks while sharing with existing federal users.

A balanced approach to spectrum policy is crucial to ensuring the U.S. has the fastest, most resilient networks.