

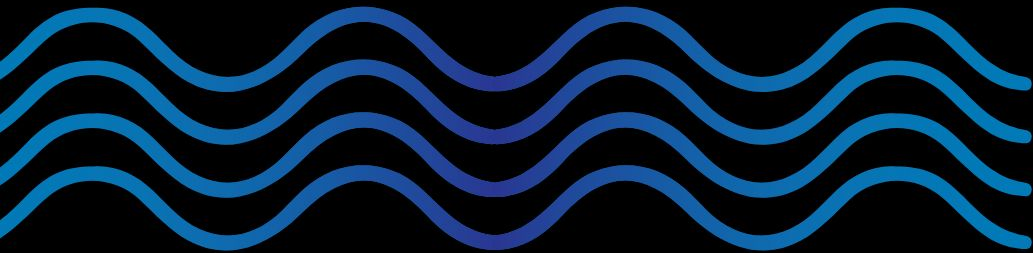


Wi-Fi



Market Update

April 2021



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The pandemic has shown us:
Wi-Fi is a necessity.

It is the most ubiquitous and widely available way to access broadband — in our homes, schools, libraries, hospitals and communities. But beyond keeping us connected, Wi-Fi also has done the job of keeping our economy running during COVID-19.

Overview

Because of unlicensed spectrum policy charted by the Federal Communications Commission (FCC) nearly two decades ago, Wi-Fi has become a critical wireless technology for consumers and businesses. A balanced approach to spectrum policy is crucial to ensuring the U.S. has the fastest, most resilient networks.

- The U.S. has become a world leader, drawing other countries to move quickly to enable spectrum sharing, particularly in the **6 GHz band**. This will make the U.S. the center of Wi-Fi-supported 5G.
- The approval of unlicensed use in 6 GHz has the industry rapidly moving forward with **Wi-Fi 6** and **Wi-Fi 6E** technologies.
- The FCC's decision allowing WISPs to operate in the **5.9 GHz** band connected Americans during the pandemic and will improve our network resilience for the next "shock." And the FCC's win-win compromise in this spectrum can make this permanent.
- Spectrum sharing helps bring broadband to rural areas and non-telco companies.

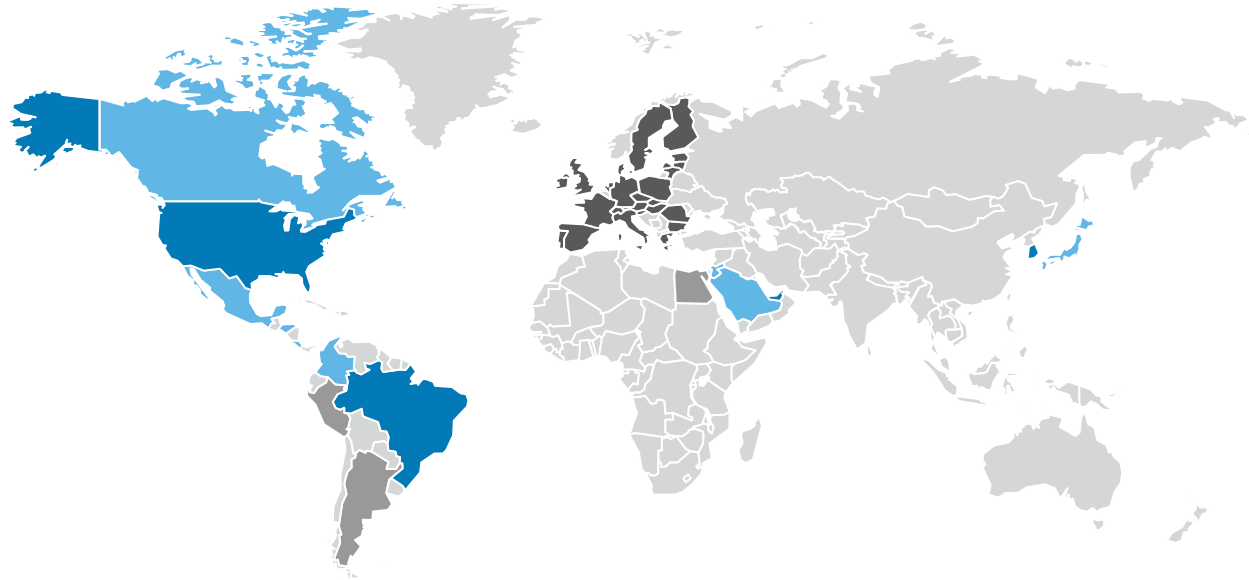
The World Is Ready for Wi-Fi 6E

The FCC's decision to allow unlicensed operations in the 6 GHz band caught the attention of regulatory bodies around the world:

- The EU and five other countries have since adopted similar rules.
- 12 other countries are considering unlicensed in the band.

The FCC can continue to lead the way by crafting the right rules to ensure whole-home coverage remains readily available to consumers.

Countries Enabling Wi-Fi 6E



- | | |
|---|---|
|  Adopted 5.925-7.125 |  Adopted 5.925-6.425 |
|  Considering 5.925-7.125 |  Considering 5.925-6.425 |

Source: [Wi-Fi Alliance](#), 2021

Wi-Fi 6E Proliferates

Samsung Galaxy S21 Ultra sports
Wi-Fi 6E thanks to Broadcom



Wi-Fi 6E arrives at CES 2021



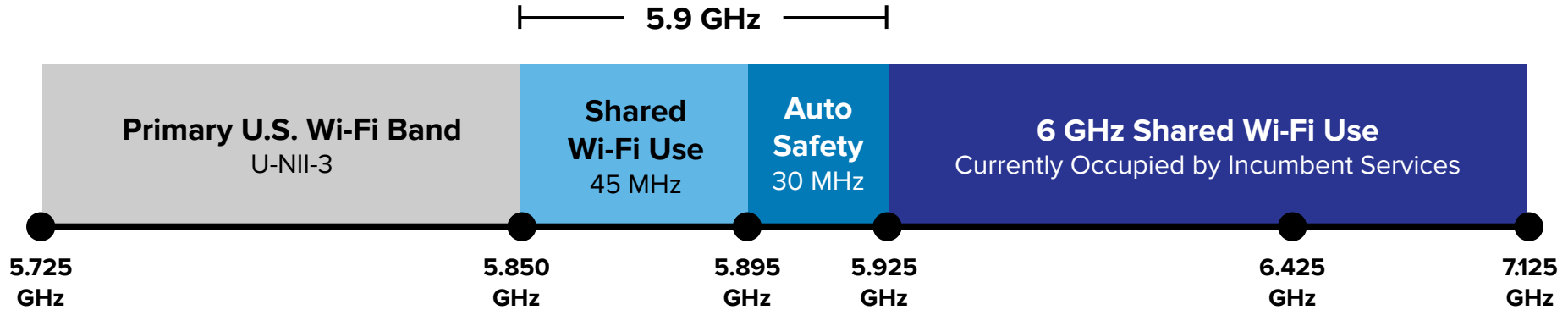
What Wi-Fi 6E means for the future
of the iPhone, iPad, and Mac

Macworld

The Wi-Fi industry is already taking advantage of the FCC's 2020 decision to allow unlicensed services in the 6 GHz band.

- **Wi-Fi 6E** — the name for devices capable of operating in this band — proliferates. **16 routers and devices are already on the market and more released each week.**
 - Netgear, TP-Link, Linksys and ASUS have introduced access points (routers).
 - Samsung GS-21 Ultra is first Wi-Fi 6E smartphone, and MediaTek and Intel introduced Wi-Fi 6E platforms for PCs.
- The Wi-Fi Alliance projects **over 316 million Wi-Fi 6E devices** will enter the market in 2021 alone.

5.9 GHz — Where Are We Now?



THE BIPARTISAN PLAN:

After a seven-year proceeding during which the FCC reviewed comments from all relevant stakeholders, the FCC decided unanimously on a compromise for this long underused band that will benefit both automotive safety innovation and American broadband consumers. In November 2020, the FCC authorized indoor unlicensed use of the lower 45 megahertz of the band while enabling the continued development of future automotive safety innovations in the upper 30 MHz.

5.9 GHz: Broadband in a Pandemic

When the pandemic first hit in 2020 and stay-at-home orders proliferated, our networks became more important than ever.

People needed broadband and needed it ASAP.

In response, the FCC unanimously passed an order allowing **more than 100 WISPs** to use the 5.9 GHz band for added broadband capacity during the pandemic.

Amplex of Luckey, Ohio reported that the additional spectrum was a "great help" to meet a 30% jump in bandwidth demand there.



The experiment was a resounding success:

- The increased bandwidth has enabled people to easily access telehealth, telework, remote learning and more services during the pandemic.
- Opening the 5.9 GHz band is also enhancing rural broadband access, which is particularly important for farmers relying on Wi-Fi for precision agriculture.

Shared Spectrum Success Stories

Shared spectrum — which includes flexible licensing and access rules like those in the 3.5 GHz Citizens Broadband Radio Service (CBRS) band — increases how many and how entities can provide broadband services.

What does this mean in practice?



Education — Arlington Public Schools 1-2-3 Connect Me

This initiative, which uses CBRS, allowed for the set up of private network solely for student use to connect to the APS network from home without requiring the County to build additional fiber. With the 1-2-3 Connect Me Program, 99.2% of all APS students participated successfully and 95.4% of all student devices are active on the network, daily.



Healthcare — Memorial Health System Clinic Wireless Network

Memorial Health System Clinic in Springfield, Illinois is using CBRS to connect outdoor hotspots to indoor networks, which enables nurses to test and triage patients outside the hospital, which is especially important as the pandemic continues. Additionally, hospitals use CBRS for asset tracking, critical communications and patient monitoring.

Shared Spectrum Success Stories



Agriculture — Trilogy's Rural Cloud Initiative (RCI)

Trilogy's first RCI commercial deployment connected 18 greenhouses on a 600-acre farm. RCI brought together 10 partners to connect the greenhouses using publicly available CBRS spectrum, and thanks to that connectivity, the first phase of the project will result in a 10% increase in efficiency and profit driven by increased yields and cost savings.

Manufacturing — Foxconn Industrial Internet-powered Smart Factory

Foxconn and Airspan are coming together to operate smart factories where equipment can be connected to private networks on shared spectrum. A Wisconsin factory is using Fii to connect 18 pieces of equipment to the private network in a 100,000 square-foot facility. Using CBRS ensures mobility so that mobile equipment can still maintain connection to the private network in factory.



Military — US Ignite at Fort Carson

US Ignite is planning a dedicated 4G/5G network, using CBRS, for IoT research at Fort Carson in Colorado. It will support the upload of vehicle data and video traffic from route-monitoring cameras. Longer term, the network will support broader IoT research as part of a collaborative initiative among Fort Carson, the city of Colorado Springs and the University of Colorado Boulder.