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Global 6 GHz spectrum policy and the outlook for Wi-Fi 8

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INTRODUCTION: THE IMPORTANCE OF THE 6 GHZ BAND IN WI-FI 8

Wi-Fi 6E introduced the 6 GHz band; Wi-Fi 7 maximized it; now Wi-Fi 8 will rearchitect how it's used

The 6 GHz band (5925–7125 MHz) has become the defining spectrum layer for next-generation Wi-Fi, enabling the performance, reliability, and intelligence required for emerging AI-driven and latency-sensitive applications. Its importance began in April 2020, when the U.S. Federal Communications Commission (FCC) opened the entire 6 GHz band for unlicensed Wi-Fi use. That decision enabled Wi-Fi 6E and unlocked a clean, interference-free swath of spectrum capable of supporting faster speeds, lower latency, and dramatically increased capacity.

While Wi-Fi 6E introduced access to the band, Wi-Fi 7 maximized its potential through wider 320 MHz channels — double the 160 MHz available in Wi-Fi 6E — and through Multi-Link Operation (MLO), which allows devices to connect across multiple bands simultaneously. These capabilities enabled multi-gigabit performance and more resilient mesh networks, especially in dense residential and enterprise environments.

Wi-Fi 8, or IEEE 802.11bn, builds on this evolution by rearchitecting how 6 GHz is used. Early adoption trends indicate that 320 MHz channels will become mainstream, with the generation shifting from a peak-speed narrative to one centered around reliability, determinism, and intelligence. As AI-intensive devices proliferate — ranging from home assistants and AR/VR wearables to industrial sensors and autonomous robotics — Wi-Fi 8 is designed to manage growing device density with far greater coordination and efficiency.

Spectrum policy, however, remains a crucial variable. The readiness of Automated Frequency Coordination (AFC) will determine how rapidly standard power Wi-Fi becomes broadly deployable. In August 2025, the Wi-Fi Alliance established Wi-Fi Alliance Services to accelerate certification and adoption of standard-power 6 GHz Wi-Fi in the U.S. and Canada. Meanwhile, global disparities remain — some regions have authorized the full 6 GHz band, others only the lower portion, and certification timelines vary across the EU and APAC.

Ultimately, Wi-Fi 8 is defined not by raw speed but by ultra-high reliability, intelligent spectrum management, advanced error-recovery mechanisms, and significantly improved energy efficiency — capabilities made possible only through the full utilization of the 6 GHz band.

Global 6 GHz harmonization will be a key determinant of Wi-Fi 8's performance, adoption curve, and competitiveness against 5G/NR-U. Markets that align early on policy and certification will capture the earliest and most valuable benefits.

ADVANCED WI-FI 8 FEATURES THAT ARE DEPENDENT ON 6 GHZ

Wi-Fi 8 introduces several new capabilities that are only possible in a wide, clean spectrum

According to Quectel's product manager, Lazaros Kapsias, "The more open the frequencies are, the easier it is for the ideas to be explored." He argued that there are already enough licensed bands globally. "What we are missing is not the data rates anymore, but the advanced network features that will allow the activation of advanced services."

And so, understanding why the 6 GHz band matters requires understanding the features that depend on it. Wi-Fi 8 introduces several new capabilities that are only possible in a wide, clean spectrum. Here are a few:

1. Multi-Access Point Coordination (MAPC)

Wi-Fi 8's most transformative capability brings a cellular technique — Coordinated Multipoint (CoMP) — into the Wi-Fi domain. Instead of a one-to-one relationship between client and access point, multiple APs can simultaneously transmit to and receive from a single device. This feature is expected to support industrial automation, robotics, AR/VR, and other deterministic low-latency workloads.

Multi-Access Point Coordination (MAPC) builds upon the network management improvements of previous generations of Wi-Fi and allows APs to act as a unified system using:

- Coordinated TDMA (c-TDMA) for deterministic airtime
- Coordinated Spatial Reuse (c-SR) for simultaneous transmissions
- Adaptive power control and frequency selection
- Load-balancing across AP clusters

MAPC effectively turns part of the 6 GHz band into a backbone for AP-to-AP communication, according to Khushboo Kalyani, product marketing manager at LitePoint. "Essentially, what I think will happen is that the 6 GHz band would be like… how in mesh you have this back-end kind of channel [that] APs use to transmit and process data," she said. The wider channel delivered by 6 GHz means less interference, more throughput, and a better signal-to-noise ratio with higher modulation. But the coordination layer is equally critical. "APs could use that extra band for making sure they are providing support in the mesh because in Wi-Fi 8, you need the APs to coordinate resources."

That coordination depends on extremely low interference conditions: "You need access to a channel that is almost interference-free and kind of latency-free for [APs] to exchange information

about power, what stations or clients, what frequency they are engaging, and providing the backbone support for," she said.

2. Uplink Enhancements (ELR and DRU)

Wi-Fi 8 dramatically improves uplink performance, aligning the standard with the needs of AI-driven devices that send more data than they receive.

- **Enhanced Long Range (ELR)** increases uplink reach for edge devices such as cameras and outdoor sensors.
- **Distributed Resource Unit (DRU)** gives low-power indoor (LPI) devices more flexible tone and subcarrier allocation within 6 GHz channels.

These enhancements depend on the contiguity and low noise floor of the 6 GHz spectrum to maintain both coverage and deterministic uplink operation — crucial for wearables, smart glasses, notebooks, robotics, and real-time sensors.

Kalyani explained that these uplink innovations were explicitly designed around the expectation of widespread 6 GHz adoption. "So, they came out with features with a view that the world is going to… harmonize and adopt more [of the] 6 GHz band," she said. "One of them was distributed RU, where you allow these indoor devices to improve the uplink range and allow them to transmit at a little more power without exceeding the power spectral density defined by [the] FCC."

She also noted that Enhanced Long Range Physical Layer Protocol Data Units (PPDU) expands uplink reliability across bands. "It applies to 2.4, 5, and 6 GHz, but for client devices operating in 6 GHz, they will benefit [from] it because if you are at the very coverage edge of the access point, you don't really have to rely on [the] previous generation of Wi-Fi for data transmission."

3. Low-latency roaming

Borrowed from cellular mobility models, Wi-Fi 8 introduces seamless roaming that dramatically reduces reassociation time between access points. Instead of re-negotiating every time a device moves, APs maintain a Unified Mobile List (UML) that tracks previously connected devices and enables near-instant transitions.

This mechanism relies on coordinated AP clusters operating in clean 6 GHz channels, where predictability and low contention enable roaming to function as intended, which is crucial for AR/VR, autonomous systems, and uninterrupted mission-critical communication.

While 6 GHz adoption for unlicensed Wi-Fi remains fragmented worldwide, many believe that access to this band is essential to unlock the full capabilities of Wi-Fi 7 and, eventually, Wi-Fi 8. As device density rises and AI-driven applications proliferate, it will no longer be enough to have a single wide channel; networks will require multiple 160 MHz or 320 MHz channels operating concurrently without interference.

Analyst Dean Bubley underscored this point: "There needs to be enough total spectrum for multiple 160/320 MHz channels to be used by neighboring APs, without creating interference … In other words, sufficient spectrum is a fundamental ingredient for these new and evolving applications in both home and enterprise settings, with the full 6 GHz band playing a central role, as it can support 3×320 MHz or 7×160 MHz channels."

Trend:	Implication:	Opportunity:
Wi-Fi 8 introduces architectural upgrades — MAPC, deterministic scheduling, extended uplink range — that rely heavily on clean 6 GHz spectrum.	Regions lacking contiguous 6 GHz channels will not unlock the full benefits of coordinated AP clusters, uplink determinism, or low-latency mobility.	Networks with wide 6 GHz allocations can deploy next-generation capabilities for robotics, AR/VR, and industrial automation, strengthening competitiveness in high-growth digital sectors.

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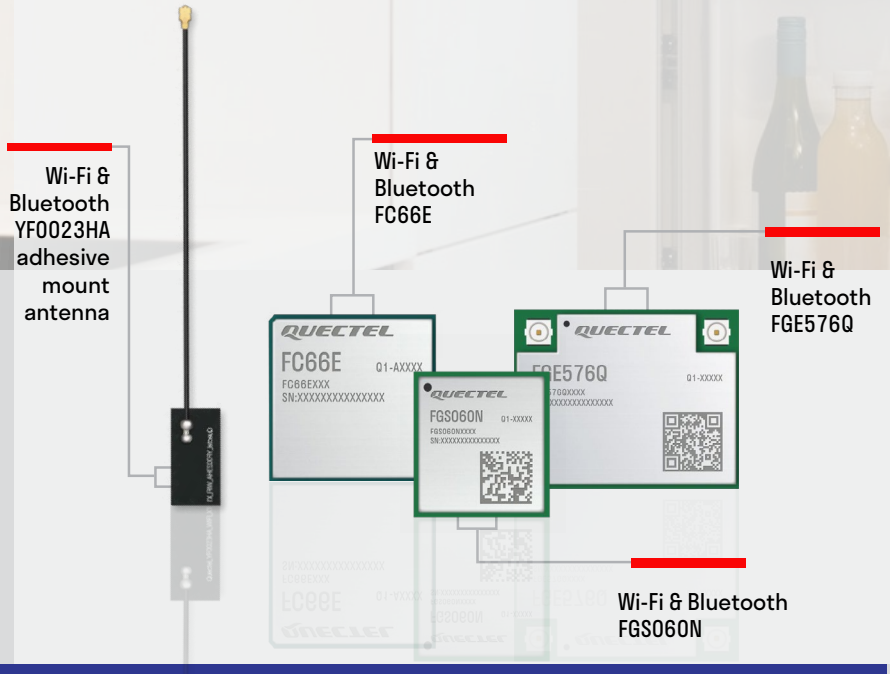

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VENDOR STRATEGIES AND 6 GHZ PRODUCT FRAGMENTATION

As Wi-Fi 8 takes shape, the lack of universal 6 GHz access threatens to limit performance and distort regional rollouts

While it's becoming clear that to get Wi-Fi 8's full capacity and performance, you will need the 6 GHz band, and many of its advanced features depend on it, it's important to note that it's not exactly a requirement for Wi-Fi 8 deployment. "The band is critical to the Wi-Fi industry overall, but I wouldn't link it in particular to a version," said Dell'Oro Group's Research Director Siân Morgan.

From her perspective, the real question for countries without 6 GHz is whether the legacy 2.4 GHz and 5 GHz bands can absorb future traffic loads. "That's where it becomes critical," she added. If congestion grows faster than available spectrum, Wi-Fi 8's headline capabilities will be harder to realize.

That doesn't mean, though, that there won't be real market impacts if 6 GHz adoption remains globally fragmented. "I wouldn't be surprised if we see the same thing we're seeing with Wi-Fi 7, in that some vendors have some models that don't actually support the 6 GHz band," said Morgan. One vendor approach, she continued, is using a software-defined radio, which lets the same radio operate in either 6 GHz or as an extra 5 GHz radio. In a tri-radio access point, for example, you could configure it as 2.4 GHz plus two 5 GHz radios, or as 2.4 GHz, 5 GHz, and 6 GHz — all controlled through software.

Another approach is to offer access points without 6 GHz support at all. That keeps costs down, since each additional radio adds hardware expense. For customers who don't need, understand, or have access to 6 GHz, vendors may lead with these lower-cost SKUs to reduce the bill of materials.

But for enterprises and other end users, this might mean higher costs: "The more SKUs a vendor has to support, the more expensive overall it becomes, and then those costs are passed down to enterprises." Another trend Dell'Oro is seeing with Wi-Fi 7 is that even in markets where 6 GHz is available, some vendors are still promoting dual-radio

"Many of the new generation advancements are propelled by the 6 GHz, and without it, the merits are diminished."

- Lazaros Kapsias,
Product Manager, Quectel

access points that don't support the band. Enterprises may not realize this — they just see "Wi-Fi 7" and assume it's automatically better than Wi-Fi 6. Morgan explained that if they're not familiar with the importance of 6 GHz, a lower-cost access point without that band might seem perfectly fine, and they may not even notice they're missing out on the full capabilities that 6 GHz brings. This problem will persist in the Wi-Fi 8 adoption cycle.

Vendors also feel the impact directly. Kapsias agreed, adding that the more differences in frequencies globally, "the more complex it is to test, certify, and release products." He continued: "At the same time, many of the new generation advancements are propelled by the 6 GHz, and without it, the merits are diminished."

Ultimately, Morgan was blunt: 6 GHz isn't optional if countries want next-generation performance. "There's no doubt about it," she said. Without full 6 GHz access, networks will simply deliver less capacity, more interference, and lower-quality Wi-Fi. And as Wi-Fi 8 ramps up, those national policy gaps will translate directly into end-user experience gaps.

Trend:

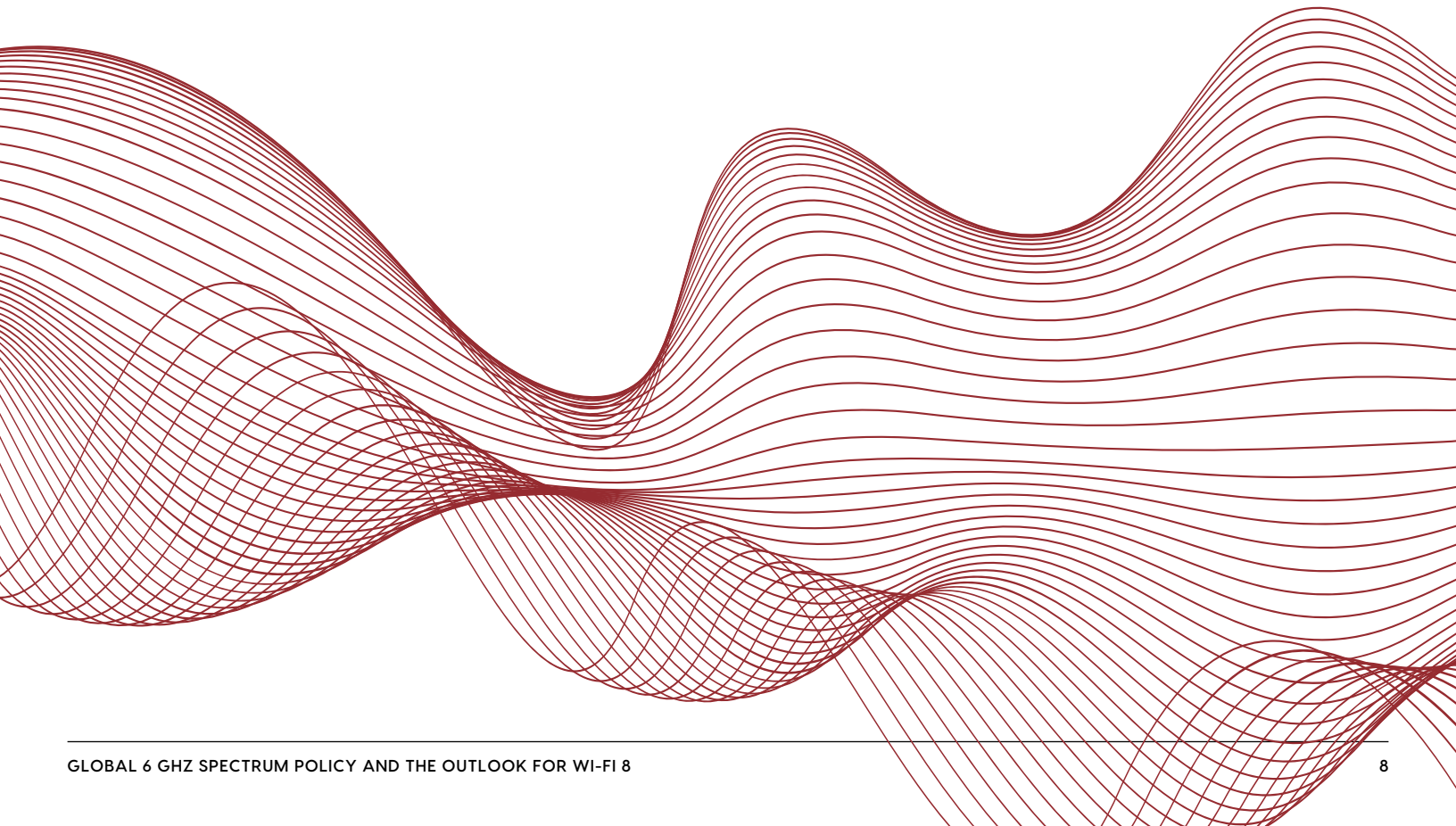
Vendors are responding to regional spectrum differences with multiple SKUs, software-defined radios, and lower-cost Wi-Fi 7/8 models without 6 GHz.

Implication:

Enterprises risk purchasing "Wi-Fi 7/8-in-name-only" equipment that lacks the bandwidth needed for advanced features, while vendors face rising certification and inventory costs.

Opportunity:

Vendors that streamline SKUs and educate customers on 6 GHz benefits can differentiate with simplified portfolios and clearer performance value propositions.



6E OVERHANG AND WI-FI 7 ADOPTION DYNAMICS

Throughout 2024, Wi-Fi 7 adoption was led not by North America, but by EMEA, LATAM, and APAC

Honestly, though? Morgan said it's too early for enterprises to be thinking about Wi-Fi 8 at all. "I mean, in 2Q25, only, like, a quarter of units shipped were Wi-Fi 7; there's still a lot of 6E and a lot of Wi-Fi 6 out there shipping… 2025 is going to be the year where the bulk of the market moves over to Wi-Fi 7. But we're still in that transition now."

Particularly in North America, precisely because of 6 GHz — and by extension, Wi-Fi 6E, which acted as a sort of "semi-launch." As Morgan explained: "Because 6E was really targeted at the regions that supported 6 GHz… those regions in particular, North America and EMEA, had a focus on 6E [and] a lot of them upgraded to 6E. The vendors serving those areas were very focused on 6E. And then they got caught in the supply constraints crunch. And then they got caught with way too much inventory."

That over-investment in 6E gear forced vendors to slow-roll their Wi-Fi 7 introductions. In the meantime, Chinese vendors seized the opening. "And so, the vendors in China, like Huawei and H3C, really took a lead in introducing Wi-Fi 7 to the market. And Huawei made a lot of progress in shipping Wi-Fi 7 outside North America to EMEA and Latin America, and the Asia Pacific outside China."

As a result, throughout 2024, Wi-Fi 7 adoption was led not by North America, but by regions across EMEA, LATAM, and APAC. That dynamic is now shifting quickly. With Cisco and other major U.S. vendors finally shipping their first Wi-Fi 7 access points, North America is poised to catch up fast. As Morgan notes, ramp-up is accelerating: "2025 is really going to be the year that North America adopts Wi-Fi 7."

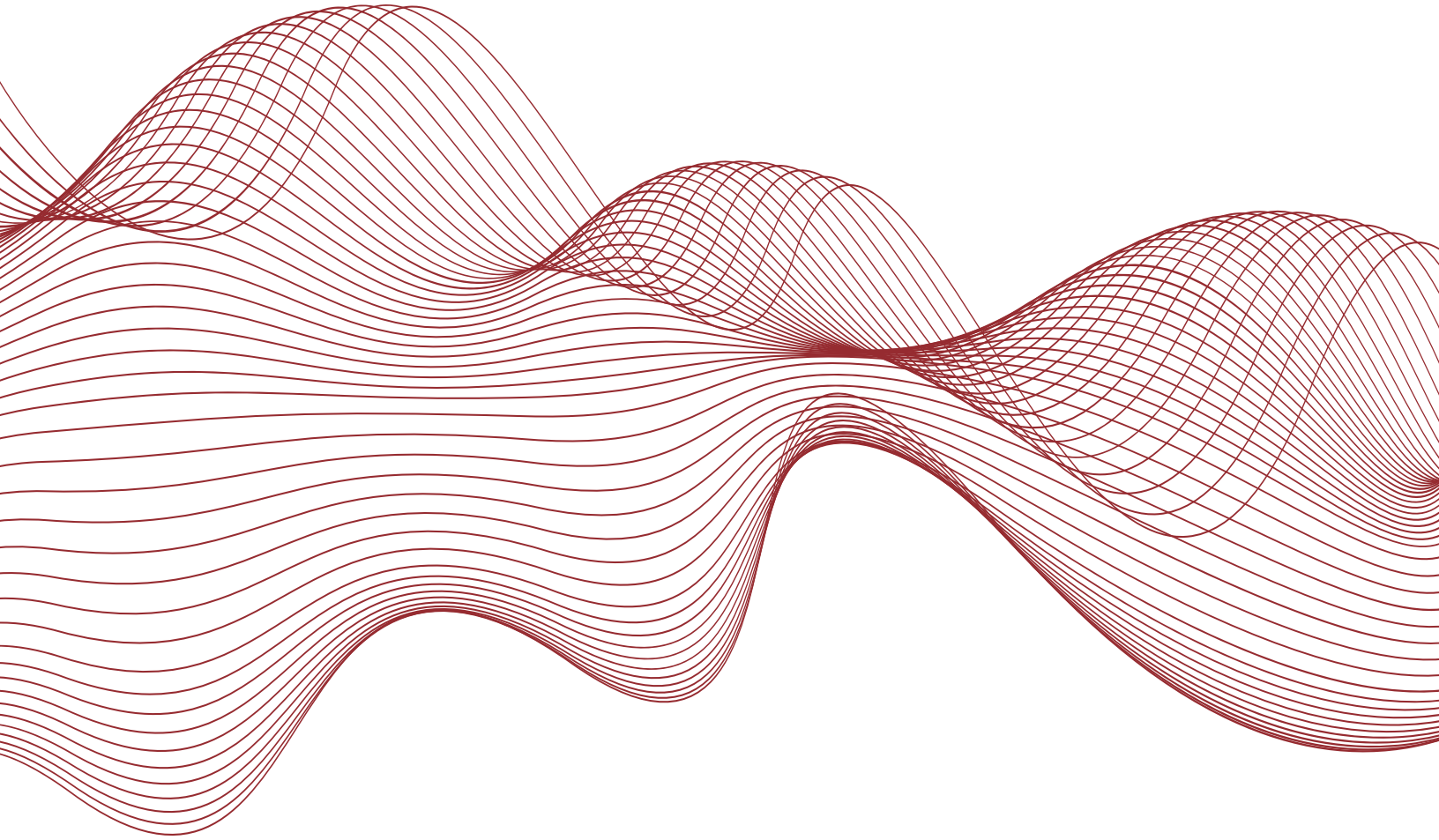
As we consider the move from Wi-Fi 7 to Wi-Fi 8, Kalyani is careful to point out

"Wi-Fi 7 has a bunch of treasure features that will enhance the throughput. And throughput is essential... I wouldn't view Wi-Fi 8 as standalone. I would view Wi-Fi 8 in combination with Wi-Fi 7."

- Khushboo Kalyani,
Product Marketing Manager, LitePoint

that Wi-Fi 8 isn't a reinvention of the technology so much as an evolution of Wi-Fi 7. Rather than replacing Wi-Fi 7, it builds on it, adding a new layer of capabilities. "Wi-Fi 7 has a bunch of treasure features that will enhance the throughput. And throughput is essential," she said. As mentioned previously, what really changes in Wi-Fi 8 is the emphasis: It's no longer just about how fast you can move data, but rather, with how much lower latency you can move it — especially with AI entering the picture. "Because then that also is an element in the equation of how fast the AI processes data," Kalyani provided.

For that reason, it's more accurate to think of Wi-Fi 7 and Wi-Fi 8 as complementary rather than separate generations: "I wouldn't view Wi-Fi 8 as standalone. I would view Wi-Fi 8 in combination with Wi-Fi 7." Together, they form the combined feature set required for the emerging wave of AI, automation, and latency-sensitive workloads.



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RISING DEVICE DENSITY – WHY WI-FI 8'S NEW ARCHITECTURE MATTERS

Wi-Fi 8 is building the wireless foundation for a hyper-connected future

As homes, enterprises, and industrial environments grapple with an unprecedented surge in connected devices — from smart sensors and autonomous machines to AR headsets and AI-driven applications — the limitations of even the most advanced Wi-Fi standards are becoming increasingly clear. In many ways, Wi-Fi 8 is designed from the ground up to handle massive device density, ultra-low latency, and the data-intensive workloads of the decade ahead.

The scale of the challenge ahead is staggering. A forecast from Transforma Insights projects that the number of active IoT devices will more than double over the next decade — from 17.7 billion today to 40.6 billion by 2034. Short-range technologies, including Wi-Fi, BLE, RFID, Zigbee, and Thread, will continue to dominate, accounting for about three-quarters of those connections. Cellular IoT, meanwhile, will surge from 2.1 billion connections in 2024 to 6.7 billion by 2034, driven by 5G, LTE-M, and NB-IoT.

And IoT is only part of the picture. By 2030, analysts at Statista and Ericsson expect more than 40 billion total connected devices globally — and some estimates run significantly higher. This rapid proliferation is transforming connectivity from a convenience into critical infrastructure, pushing Wi-Fi technology beyond its traditional performance envelope.

Consumer: Always-on, always-demanding

Homes that once relied on a handful of devices now host dozens, from smart speakers and security cameras to

connected appliances and wearables. These devices compete for bandwidth alongside laptops, consoles, and streaming devices, while new applications like AR/VR, cloud gaming, and ultra-HD video demand continuous, high-throughput, low-latency connections. As devices grow in number and sophistication, consumer networks must evolve to deliver seamless, low-latency performance across a complex, heterogeneous environment.

Enterprise and industrial: Billions of devices, critical demands

The stakes are even higher in enterprise and industrial settings. Digital transformation is fueling vast deployments of connected devices, and emerging use cases like digital twins and mission-critical operations in defense, energy, and transportation require deterministic latency, ultra-high reliability, and the ability to support thousands of endpoints simultaneously.

New network stress points

This explosion of devices and data-heavy applications exposes critical weaknesses in existing Wi-Fi networks:

- **Congestion in dense environments:** Traditional Wi-Fi protocols falter when hundreds or thousands of devices compete for airtime in locations like stadiums, airports, and industrial facilities.
- **Latency sensitivity:** Applications such as AR/VR, telepresence, and industrial automation demand consistent, low-latency connectivity
- **Energy drain:** Many IoT devices are battery-powered, and persistent connectivity can rapidly deplete their energy reserves, limiting scalability.
- **Security and manageability:** An expanded attack surface and rising operational complexity make network segmentation, policy enforcement, and endpoint security increasingly challenging.

These demands reinforce why wide, clean 6 GHz channels — and the architectural improvements they unlock — will be essential to sustaining modern connectivity.

Trend:	Implication:	Opportunity:
Homes, enterprises, and industrial sites are experiencing exponential device growth — from AR/VR headsets to IoT sensors — all demanding low-latency connectivity.	Legacy Wi-Fi architectures become unreliable under high device density, increasing congestion, jitter, and energy drain on battery-powered devices.	Wi-Fi 8's deterministic scheduling and power-optimized uplink enable reliable scaling to thousands of endpoints, unlocking new digital twin, automation, and consumer XR use cases.

AFC ADOPTION UPDATE – 'CAUTIOUS' AND 'SLOW'

Today, AFC is operational and authorized only in the United States and Canada

Automated Frequency Coordination, or AFC, is the FCC's system for making sure unlicensed Wi-Fi devices can safely share the 6 GHz band with the licensed users already operating there. When the FCC opened 6 GHz for Wi-Fi, it created two categories of devices — low-power indoor APs and higher-power "standard power" APs that can operate indoors or outdoors.

Because standard power APs are more likely to interfere with incumbents like fixed satellite links, they must check in with the AFC system, which works much like the database coordination model used in CBRS. AFC essentially tells each device which frequencies and power levels are safe to use at its location, preventing harmful interference while still allowing Wi-Fi 7 and beyond to take advantage of the wide 6 GHz spectrum.

The FCC has so far approved AFC systems from Qualcomm, Broadcom, Comsearch, Federated Wireless, Sony, Wi-Fi Alliance, and the Wireless Broadband Alliance (WBA) to move forward with managing spectrum access by Wi-Fi devices in the band. However, in its Annual Industry Report, the WBA noted that while there was a moment in which it looked as if AFC presented a key commercial opportunity, the Open AFC Software project, operated by the Telecom Infra Project (TIP), is proving to be the most popular implementation. So far, it has been adopted by the WBA, Wi-Fi Alliance, and Broadcom to provide FCC-approved AFC services in the United States.

Earlier this year, the WBA noted that globally, AFC has "progressed cautiously" and "no disasters" have been reported regarding its implementation. Currently,

AFC is operational and authorized in the United States and Canada, while Saudi Arabia and Colombia have proposed regulatory frameworks for AFC, and several other countries, including Australia, Brazil, and South Korea, are evaluating its feasibility.

Moving forward, the WBA expects non-profit approaches like the Open AFC Software project and for-profit approaches to coexist as some companies like Comsearch and Qualcomm are continuing to push ahead with commercial offerings.

Today, AFC is operational and authorized only in the United States and Canada. While there is interest and regulatory evaluation underway outside of North America — including in places such as Brazil, Saudi Arabia, Australia, South Korea, and some European countries — no other countries have yet adopted AFC commercially for 6 GHz as standard policy.

"It's been quite a slow process," said ABI Research's Principal Analyst Andrew Spivey. "One of the reasons for this is [that] each market has taken… a slightly different approach to the authorization of standard power… Even between the U.S. and Canada, the regulators didn't take the same model… and that is slowing things down. If there was sort of a standard model, which all regulators adopted… then it could speed things up."

AFC in action: Standard power 6 GHz Wi-Fi goes live at Honda Center

Dell'Oro Group's Morgan pointed out that when you look at the broader Wi-Fi market, the portion affected by AFC is actually quite limited. AFC mainly applies to outdoor deployments or indoor environments that rely on external antennas — like stadiums. Outdoor represents roughly 70% of that addressable segment, and when you include the indoor venues with external antennas, you're still talking about roughly only 10% of the total market. "That's the part of the market [where] AFC really is required," she said, adding, however, that the progress operators and vendors are demonstrating in these scenarios has been "really encouraging."

One of the clearest illustrations of that progress comes from Broadcom's Director of Product Marketing Chris Szymanski, who recently evaluated one of the first large-scale indoor standard power 6 GHz Wi-Fi deployments at Honda Center in Anaheim, California. The venue now runs 407 access points supplied by Extreme Networks — 391 of them operating as standard-power Wi-Fi 6E with 6 GHz enabled, and only 16 limited to Wi-Fi 6 on 5 GHz.

Testing the system with an iPhone 15 Pro Max, Szymanski reported instant connectivity, seamless 6 GHz roaming, and consistently stable performance. His speed tests delivered 177 Mbps down / 259 Mbps up, with 7 ms latency and 1 ms jitter — well within the thresholds needed for high-density, latency-sensitive environments.

"Roaming felt invisible; band preference held to 6 GHz," he wrote in a blog post, noting that client adoption is already meaningful. At a recent sellout event, more than 25% of recorded devices were operating in the 6 GHz band, and the overall share would have been even higher if a portion of the venue's floor seating hadn't still been served by 5 GHz-only APs.

His takeaway: "Based on my tests, it's more than ready for game night."

Trend:	Implication:	Opportunity:
Standard power 6 GHz Wi-Fi is accelerating in the U.S. and Canada via AFC systems, with early deployments demonstrating strong real-world performance.	Regions without AFC frameworks will lag in outdoor and large-venue Wi-Fi performance, affecting stadiums, campuses, logistics hubs, and public spaces.	AFC-enabled markets can deploy carrier-grade Wi-Fi for high-capacity, latency-sensitive environments — strengthening Wi-Fi's competitiveness against private 5G.

MARKET SIZE PROJECTIONS FOR WI-FI 7/8

The global Wi-Fi 7 market is projected to reach $22.9 billion by 2030, according to a report from BCC Research, which forecasts a robust compound annual growth rate (CAGR) of 61.5% between 2025 and 2030, as adoption accelerates across various industries and regions. Key drivers of growth include:

- **The rapid expansion of the Internet of Things (IoT).** There are an estimated 18.8 billion connected IoT devices today, a number expected to soar to 40 billion by 2030 — a 13% rise from 2023.
- ***Smart cities that rely on dense networks of connected devices.*** Wi-Fi 7's ability to handle large volumes of simultaneous connections makes it well-suited for smart infrastructure, from lighting to traffic and environmental monitoring.
- **The rise of Wi-Fi-as-a-Service (WaaS).** BCC Research found this market to be growing at a 20.42% CAGR and projected it to reach $31.52 billion by 2032, up from $5.92 billion in 2023.

Wi-Fi 8 growth expected to be 'swift'

According to ABI Research, early prototypes of Wi-Fi 8 equipment are expected to arrive in 2026, and in 2027, more than 0.4 million pre-standard Wi-Fi 8 CPE/APs are forecast to reach the market. "Wi-Fi 8 growth will be swift," said ABI Research's Spivey. He projected that annual shipments for Wi-Fi 8 infrastructure will be 12.5 million in 2028, followed by 37.9 million in 2029, and 81.4 million in 2030.

Shipments of Wi-Fi 8 Infrastructure

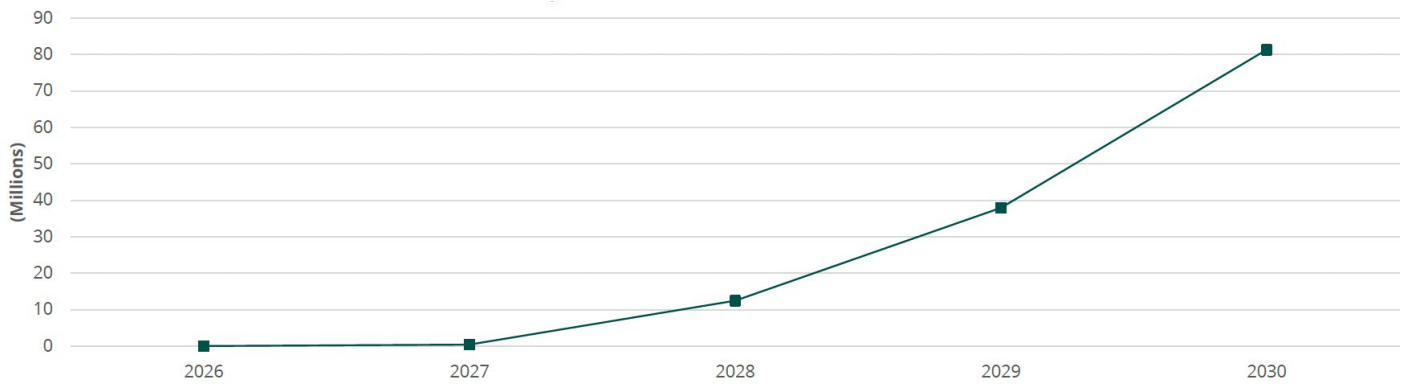


Image courtesy of ABI Research

OUTLOOK FOR 6 GHZ ADOPTION – ALWAYS 'A DEGREE OF FRAGMENTATION'

Broadcom's Szymanski, told *RCR Wireless News* that all realistic outcomes related to 6 GHz adoption involve "a degree of fragmentation." What does differ is how far regulators move toward opening or sharing the band.

Scenario 1: Fragmentation persists (the status quo)

In this scenario, the world largely stays where it is today:

- Some countries authorize the full 1200 MHz,
- Others allow only the lower 500 MHz,
- And some (such as China) make no allocation at all.

"There may be movement between the camps where a country or two decides to go from partial band to full band, or vice versa, but mainly the same state of play," Szymanski said.

Scenario 2: Shared-use expansion in the upper 6 GHz

Here, regulators in regions such as Europe and Brazil allow Wi-Fi operations in the upper 6 GHz band on a best-effort, non-interference basis alongside IMT systems. This approach doesn't create full harmonization, but Szymanski explained that it makes more of the 6 GHz band usable globally, particularly for standard power Wi-Fi under carefully managed coexistence rules.

Scenario 3: China opens the lower 6 GHz band

If China were to authorize lower 6 GHz for unlicensed use — following Hong Kong's lead — the global ecosystem would reach a minimum viable level of harmonization, unlocking far better alignment in device, chipset, and AP design.

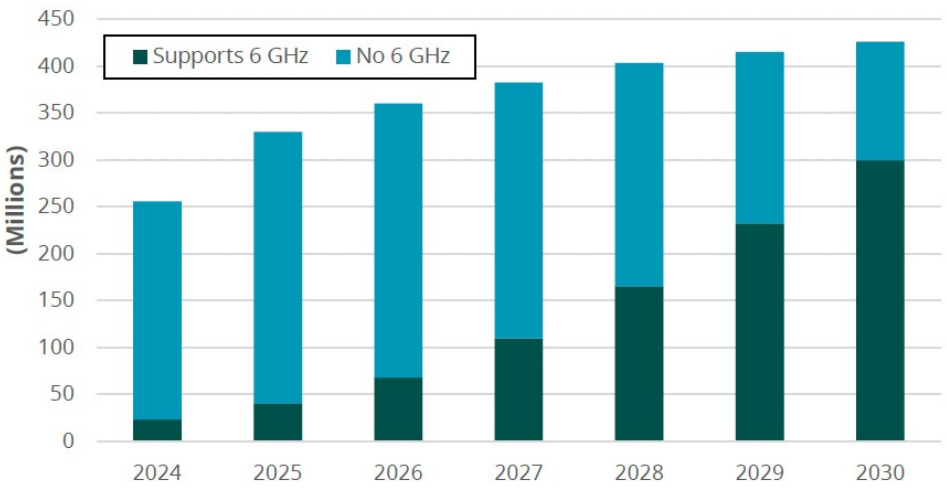
Spivey noted this would also catalyze momentum across Asia-Pacific, where current policies range from the U.S.-aligned (South Korea) to partial-band (Japan) to fully licensed (China).

Trends to watch

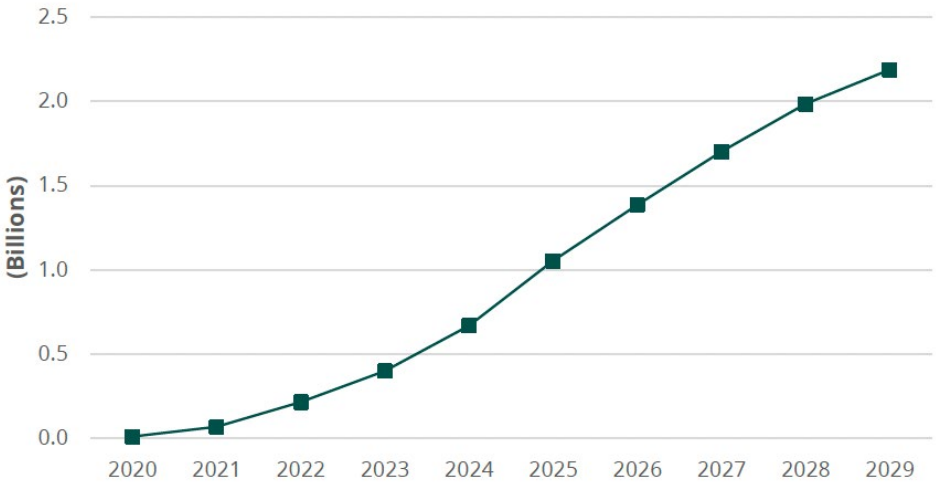
Szymanski highlighted several regulatory decisions that could reshape the next decade of Wi-Fi capabilities:

- **China's lower 6 GHz decision.** China's move would be the single most consequential harmonization event. He noted that Hong Kong's adoption raises expectations that Beijing may eventually follow.

Global Shipments of Wi-Fi Infrastructure Supporting 6 GHz



Global Shipments of Wi-Fi Devices Supporting 6 GHz



Images courtesy of ABI Research

- **Mexico's potential alignment with the U.S. and Canada.** Full-band authorization would solidify the Americas as a unified 1200 MHz region.

- **Europe and Brazil's stance on upper-band sharing.** If coexistence frameworks prove "conducive to sharing," Szymanski said, regulators may allow broader unlicensed use in the upper band — unlocking new capacity for Wi-Fi 7 and Wi-Fi 8.

Regardless of the future spectrum scenario, Spivey believes that the maturing hardware ecosystem — including radios capable of switching between 5 GHz and 6 GHz — will "drive the transition to 6 gigahertz infrastructure" even in the cases of partial access. His outlook is that early 6 GHz penetration will remain low through 2025 before accelerating closer to 2028, when 6 GHz infrastructure becomes "mainstream," following "a greater penetration of 6 GHz devices" and "expanded access to 6 GHz."

Trend:

All realistic outcomes for 6 GHz policy involve some degree of fragmentation, with three meaningful trajectories: status-quo fragmentation, shared upper-band access, or China opening the lower 6 GHz.

Implication:

These scenarios directly influence chipset roadmaps, AP design choices, AFC deployment, Wi-Fi 8 feature viability, and the pace of global harmonization — shaping the economics and capabilities of next-generation Wi-Fi.

Opportunity:

Vendors, operators, and policymakers can gain significant advantage by tracking regulatory outcomes in pivotal markets, enabling smarter product timing, optimized certification strategies, and accelerated deployment in regions with the highest readiness for 6 GHz.

SIDEBAR: GLOBAL 6 GHZ ADOPTION SNAPSHOT

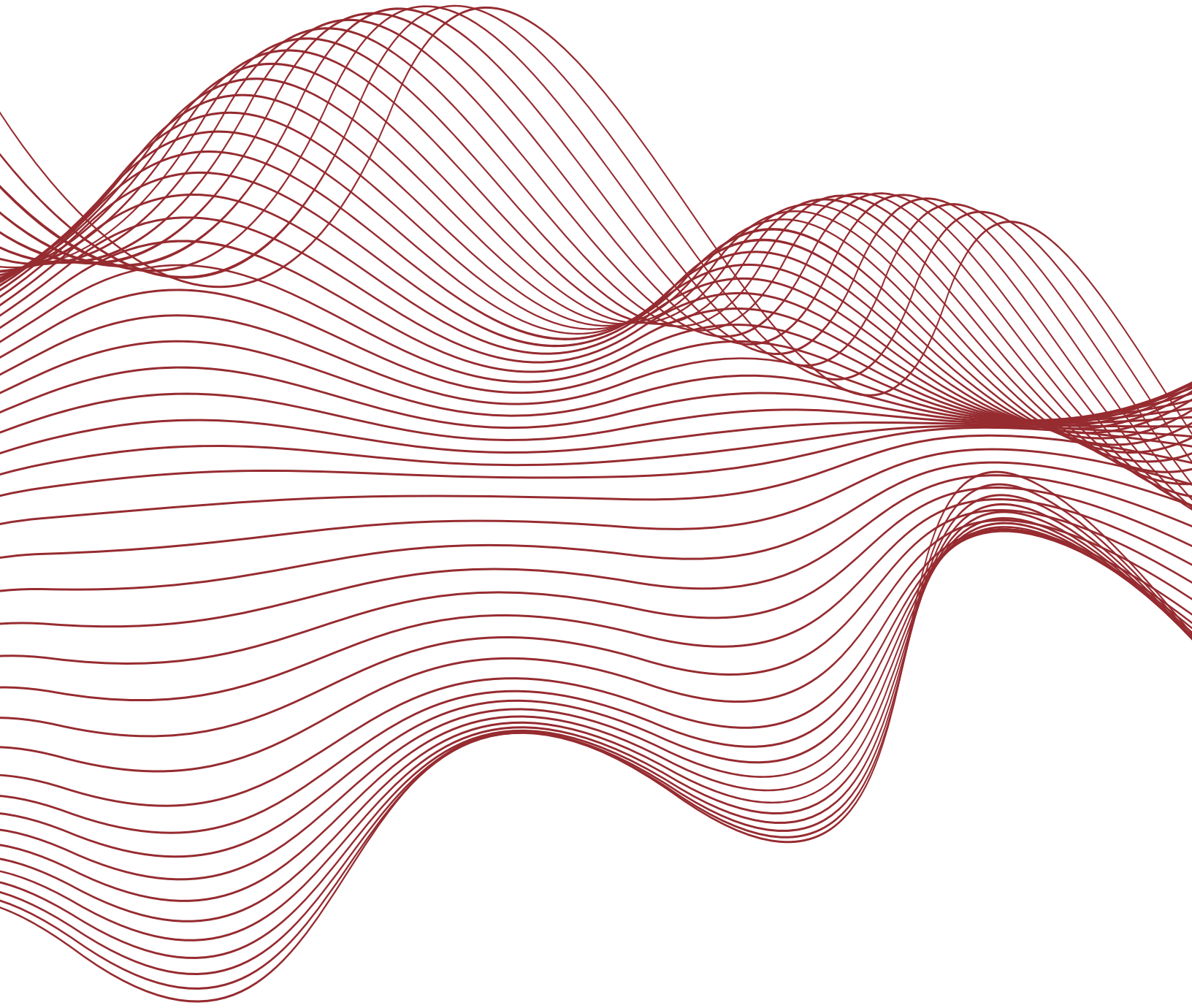
According to the Wi-Fi Alliance, as of December 2025, 97 countries (up from 62 countries since *RCR*'s last Wi-Fi report) have adopted either the full 6 GHz band (5925-7125 MHz) or a portion of the band for unlicensed Wi-Fi. See below for each country's allocation.

Global 6 GHz Wi-Fi Allocations

Country	Range
Albania	5925/5945–6425
Andorra	5925/5945–6425
Argentina	5925–7125
Australia	5925/5945–6425
Austria	5925/5945–6425
Azerbaijan	5925/5945–6425
Bahrain	5925/5945–6425
Bangladesh	5925/5945–6425
Belarus	5925/5945–6425
Belgium	5925/5945–6425
Bosnia & Herz.	5925/5945–6425
Brazil	5925–7125
Bulgaria	5925/5945–6425
Burkina Faso	5925/5945–6425
Canada	5925–7125
Chile	5925/5945–6425
Colombia	5925–7125
Costa Rica	5925–7125
Croatia	5925/5945–6425
Cyprus	5925/5945–6425
Czech Republic	5925/5945–6425
Denmark	5925/5945–6425
Dominican Rep.	5925–7125
Egypt	5925/5945–6425
El Salvador	5925–7125
Estonia	5925/5945–6425
Faroe Islands	5925/5945–6425
Finland	5925/5945–6425
France	5925/5945–6425
Georgia	5925/5945–6425
Germany	5925/5945–6425
Gibraltar	5925/5945–6425
Greece	5925/5945–6425
Guatemala	5925–7125
Hong Kong	5925/5945–6425
Hungary	5925/5945–6425

Country	Range
Iceland	5925/5945–6425
India	5925/5945–6425
Indonesia	5925/5945–6425
Ireland	5925/5945–6425
Isle of Man	5925/5945–6425
Italy	5925/5945–6425
Japan	5925/5945–6425
Jordan	5925/5945–6425
Kenya	5925/5945–6425
Malaysia	5925/5945–6425
Malta	5925/5945–6425
Mauritius	5925/5945–6425
Mexico	5925/5945–6425
Moldova	5925/5945–6425
Monaco	5925/5945–6425
Montenegro	5925/5945–6425
Morocco	5925/5945–6425
Namibia	5925/5945–6425
Netherlands	5925/5945–6425
New Zealand	5925/5945–6425
Nigeria	5925/5945–6425
Norway	5925/5945–6425
Pakistan	5925/5945–6425
Paraguay	5925/5945–6425
Peru	5925–7125
Philippines	5925/5945–6425
Poland	5925/5945–6425
Portugal	5925/5945–6425
Qatar	5925/5945–6425
Romania	5925/5945–6425
Russia	5925/5945–6425
San Marino	5925/5945–6425
Saudi Arabia	5925–7125
Singapore	5925/5945–6425
Slovakia	5925/5945–6425
Slovenia	5925/5945–6425

Country	Range	Country	Range
South Africa	5925/5945–6425	Trinidad & Tobago	5925/5945–6425
South Korea	5925–7125	Tunisia	5925/5945–6425
Spain	5925/5945–6425	Turkey	5925/5945–6425
Sweden	5925/5945–6425	Ukraine	5925/5945–6425
Switzerland	5925/5945–6425	UAE	5925/5945–6425
Syria	5925/5945–6425	United Kingdom	5925/5945–6425
Taiwan	5925/5945–6425	United States	5925–7125
Thailand	5925/5945–6425	Vatican City	5925/5945–6425
Togo	5925/5945–6425	Vietnam	5925/5945–6425



CONCLUSION: PREPARING FOR THE WI-FI 8 ERA

While official ratification of IEEE 802.11bn is not expected until around 2028, the ecosystem is already mobilizing. Chipset vendors plan to begin sampling pre-standard silicon as early as 2026, followed by prototype devices and enterprise-grade access points. Consumer devices — including routers, laptops, smartphones, and IoT sensors — will likely incorporate Wi-Fi 8 closer to the end of the decade as it becomes standard across flagship platforms.

This phased rollout will mirror past transitions but with tighter coordination across hardware, software, and cloud ecosystems — a reflection of the urgency to solve the connectivity challenges of the 2030s, namely sensor-rich environments, immersive digital experiences, and, of course, the rise of AI-powered networks.

As Quectel's Kapsias noted, "Wi-Fi is steadily broadening its role into use cases historically served by cellular technologies or even Ethernet." Achieving that shift requires next-generation reliability. Wi-Fi must become, he said, "more reliable and predictable in real-world conditions, have deterministic behavior, lower packet drop rate, and… coordinated roaming when users move between different APs." This, he continued, is how Wi-Fi 8 will align with "the buzzwords of the times, namely AI-driven applications and autonomous machines… and [it] is being positioned in relation to concepts such as AI inference or edge AI — even if the connection is still evolving."

Yet despite these ambitions, he emphasized that Wi-Fi's foundational value remains unchanged. "It offers a cost-effective and straightforward way to deliver high local data rates," he said. "The more it improves in range and robustness, the broader the set of applications it can support, and that is the direction Wi-Fi 8 appears to be moving toward."

Spectrum policy, however, is emerging as the gating factor for Wi-Fi performance and innovation — and with 6 GHz fragmentation expected to persist — it's something the industry must accept. But, hopefully, only to a certain extent. Many countries continue to evaluate whether to open the full 1200 MHz band, while others are considering making at least part of it available for unlicensed use.

As they do, policymakers should recognize that even stakeholders without much skin in the game — like LitePoint — view 6 GHz as essential to Wi-Fi's global future. "[LitePoint] doesn't have a say… we just test what needs to be tested," Kalyani told *RCR*. But, she also said: "My personal view is that Wi-Fi would benefit from a uniform deployment of 6 GHz. At the end of the day, the majority of the traffic — 70-80% — is still indoors."

And indoors almost always means Wi-Fi. Whether it's AI-driven devices in the home or enterprises deploying VR assistants and automation on the factory floor, what you ultimately need is a strong Wi-Fi connection. In the future — one defined by dense, AI-driven, and latency-sensitive workloads — "strong" will most certainly mean reliable, robust connectivity supported by clean, open spectrum.

ACKNOWLEDGEMENTS

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Global 6 GHz spectrum policy and the outlook for Wi-Fi 8

By Catherine Sbeglia Nin, Managing Editor