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FRAMEWORK FOR PLANNING OF THE 6GHZ BAND – WHAT ARE THE RIGHT CHOICES FOR INDIA?

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DYNAMIC SPECTRUM ALLIANCE

07 · 11 · 24

WHO WE ARE

The Dynamic Spectrum Alliance (DSA) is a global, cross-industry, not for profit organization advocating for laws, regulations, and economic best practices that will lead to more efficient utilization of spectrum, fostering innovation and affordable connectivity for all.

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WHAT WE DO

- DSA is technology neutral and supports all shared spectrum technologies that promote co-existence.
- Technology has an increasingly important role to play in spectrum management.
- DSA supports the use of geolocation databases and other interference protection mechanisms to promote greater shared use of spectrum.
- DSA advocates for regulatory frameworks that include licensed, unlicensed, as well as lightly licensed options when allocating spectrum for wireless broadband services.
- An ‘unbalanced approach’ may have the unintended consequence of creating an artificial scarcity of spectrum, which limits access to and increases the cost of broadband services.
- Both licensed and unlicensed spectrum access options play important and complementary roles in the delivery of 4G and advanced 5G services.

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Wi-Fi: Omnipresent and almost always taken for granted

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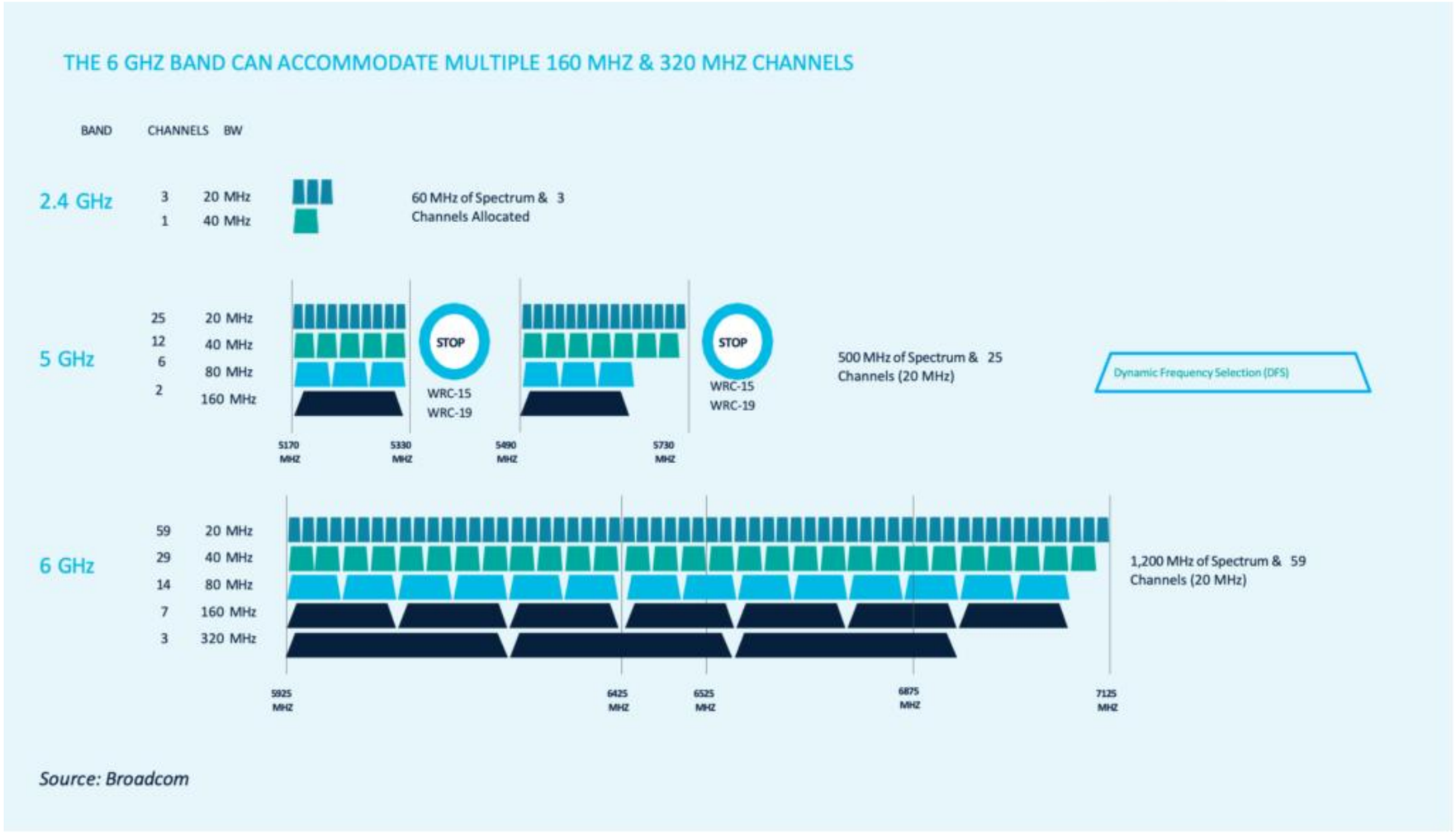
- Wi-Fi is the wireless connectivity technology of choice for billions of people, be it at home, in the office, in public spaces, at school and university or in enterprises.
- Wi-Fi is a global ecosystem. Global economies of scale benefit final customers and companies
- Thanks to its low cost, easy deployment, Wi-Fi supports the widespread adoption of digital solutions, and also of advanced technologies such as IoT and robotics.
- Wi-Fi technology was developed at IEEE, with 802.11ax (Wi-Fi 6E) and 802.11be (Wi-Fi 7) designed for the full 6 GHz band

6 GHz band is needed to ensure future of Wi-Fi



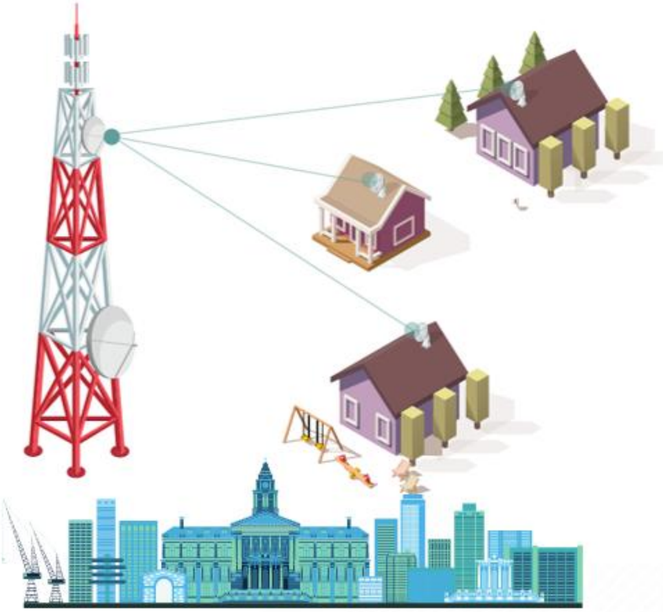
Wi-Fi in the 6 GHz band: different types of use cases

VERY LOW POWER (VLP)

INDOORS AND OUTDOORS

LOW POWER INDOOR (LPI) AND CLIENT TO CLIENT (C2C)

INDOORS



STANDARD POWER (SP)

INDOORS AND OUTDOORS

USED WITH AUTOMATED FREQUENCY COORDINATION (AFC) SYSTEMS

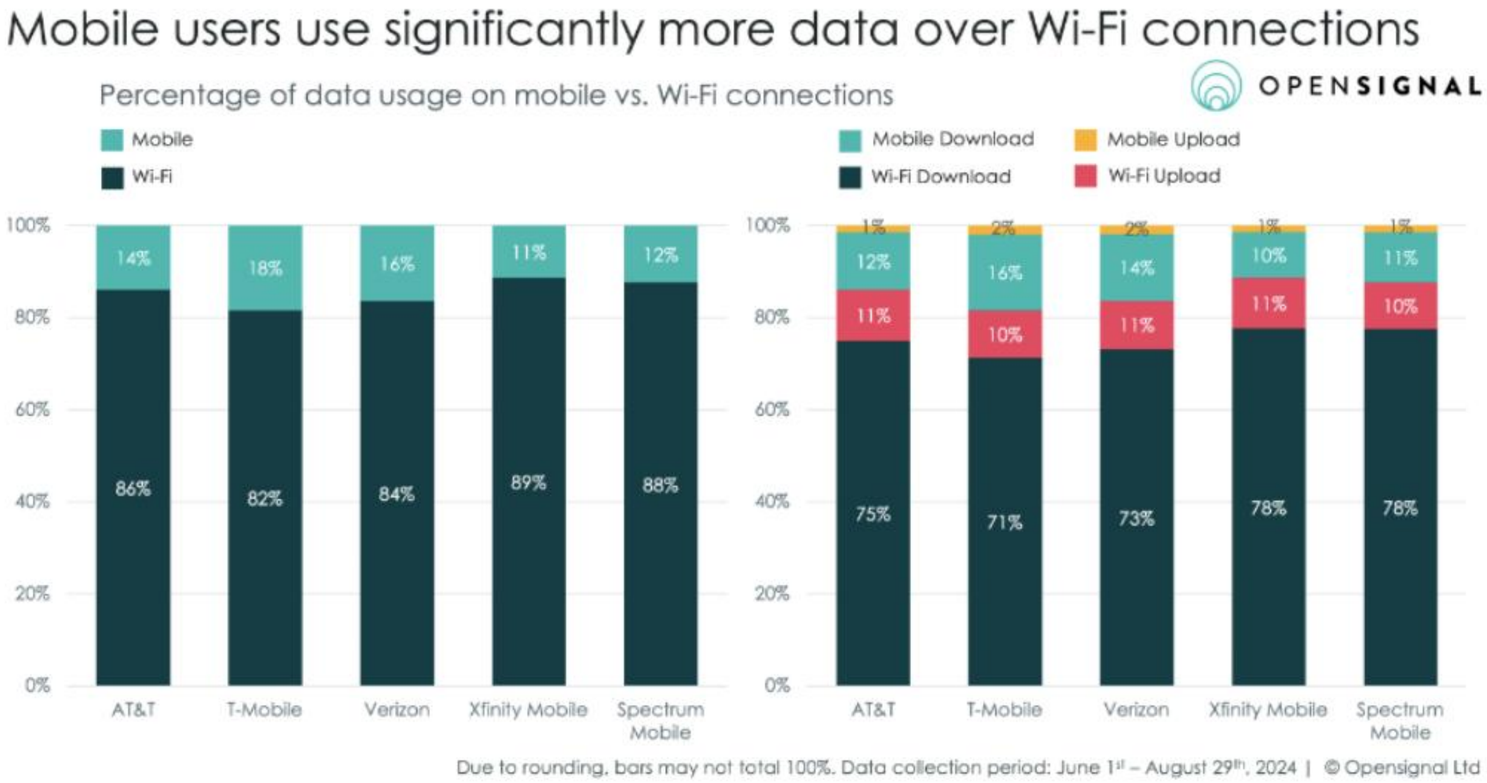
6 GHz Wi-Fi Use Cases

- AR/VR/XR applications, like digital twin rendering, headsets for industrial or educational apps for product/building design or medical procedure simulation
- Fixed Wireless Broadband, both for Enterprise Wi-Fi and Connected Home
- Rural broadband via high-speed broadband satellite Wi-Fi networking
- Robust video conferencing
- Ultra High-Definition Streaming

6 GHz Wi-Fi Use Cases

- Industrial IoT including autonomous systems
- High-speed gigabit connectivity in dense multi-dwelling unit residential buildings
- Sport stadium expedited entry, precision wayfinding and seamless High-Definition video sharing with 600 Mbps per stadium attendee
- Artificial Intelligence (AI)-based virtual assistants
- University and research campus broadband

Wi-Fi drives smartphone data consumption OpenSignal Publication (US) - October 2024



Above graphic courtesy OPENSIGNAL.

https://www.opensignal.com/2024/10/31/wi-fi-drives-smartphone-data-consumption-in-the-us-but-trends-vary-across-operators

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WRC-23 Results


acceleration. Ladies and gentlemen, networks are converging,
combining elements of terrestrial IMT, WiFi, satellite and HIBs links
and provide for broadband for everyone, everywhere at
ITUWRC
DUBAI 2023

WRC-23 Results - Region 3: NOC in band 4 and no FAI

6425 MHZ

7025 MHZ 7125 MHZ

5.457E The frequency bands 6 425-7 125 MHz in Region 1 and 7 025-7 125 MHz in Region 3 are identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Resolution 220 (WRC-23) applies.
The frequency bands are also used for the implementation of wireless access systems (WAS), including radio local area networks (RLANs). (WRC-23)

5.457D In Cambodia, Lao P.D.R. and the Maldives, the frequency band 6 425-7 025 MHz is identified for the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution 220 (WRC-23) applies. (WRC-23)

- The use of the 6 GHz band is perfectly aligned with the results of the Conference and the Radio Regulations. Notes 5.457E and 5.457F, explicitly say that the 6 GHz frequency bands are also used for the implementation of WAS/RLANs (i.e. Wi-Fi).

- The WRC-23's backing of the use of WAS/RLANs in the 6 GHz band across the world is a significant win for the long-term prosperity of Wi-Fi as the industry is moving to Wi-Fi 7 and preparing for Wi-Fi 8.
- >2000+ 6 GHz enabled Wi-Fi devices launched for all major smartphone and laptop operating systems.

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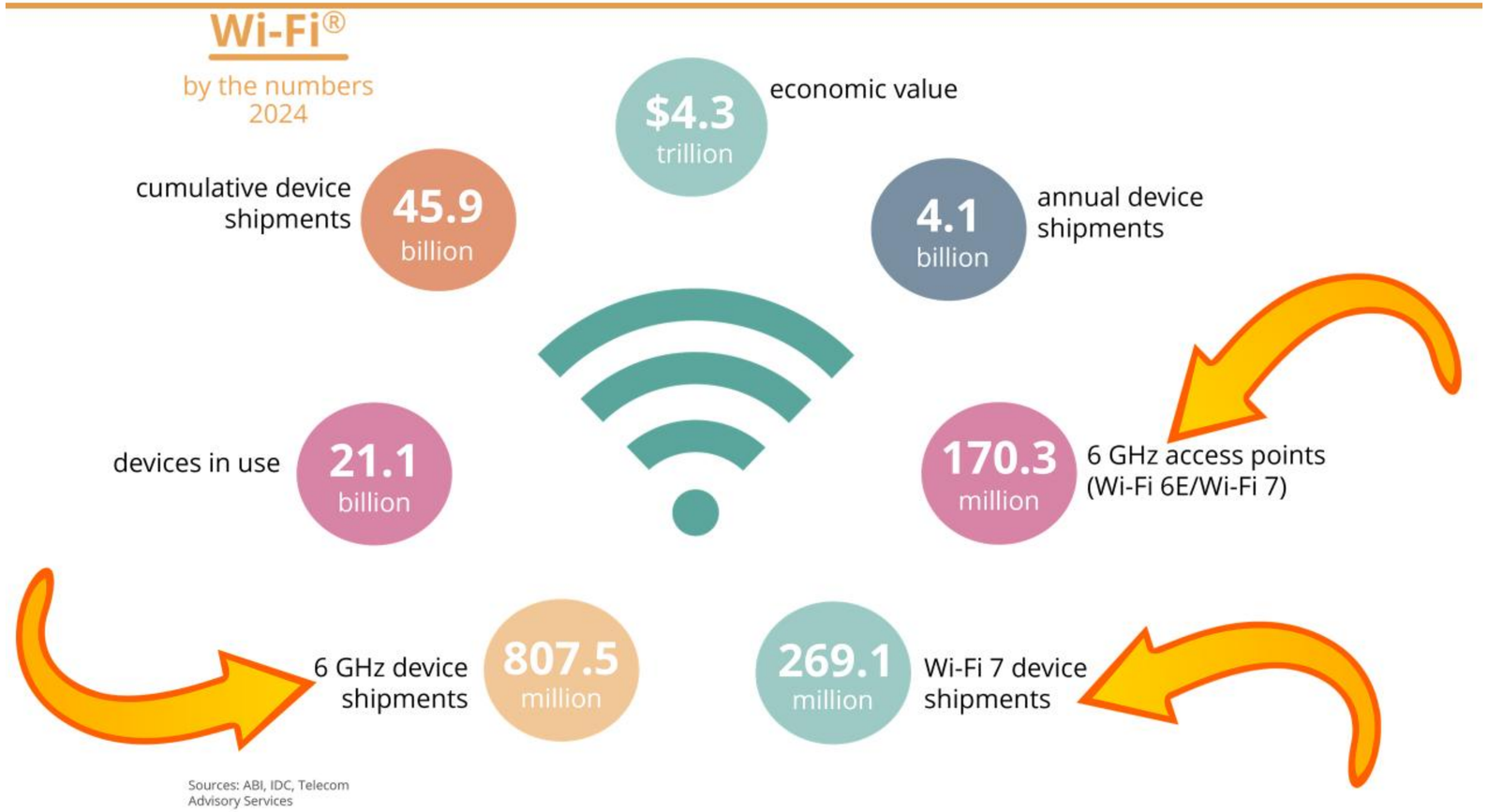
Wi-Fi Ecosystem and adoption

Wi-Fi 6E and Wi-Fi 7 in the 6 GHz band is backed by a big ecosystem



Courtesy of Wi-Fi Alliance

6 GHz Wi-Fi adoption reaches 2.5 billion in 2028

Wi Fi 6E CERTIFIED

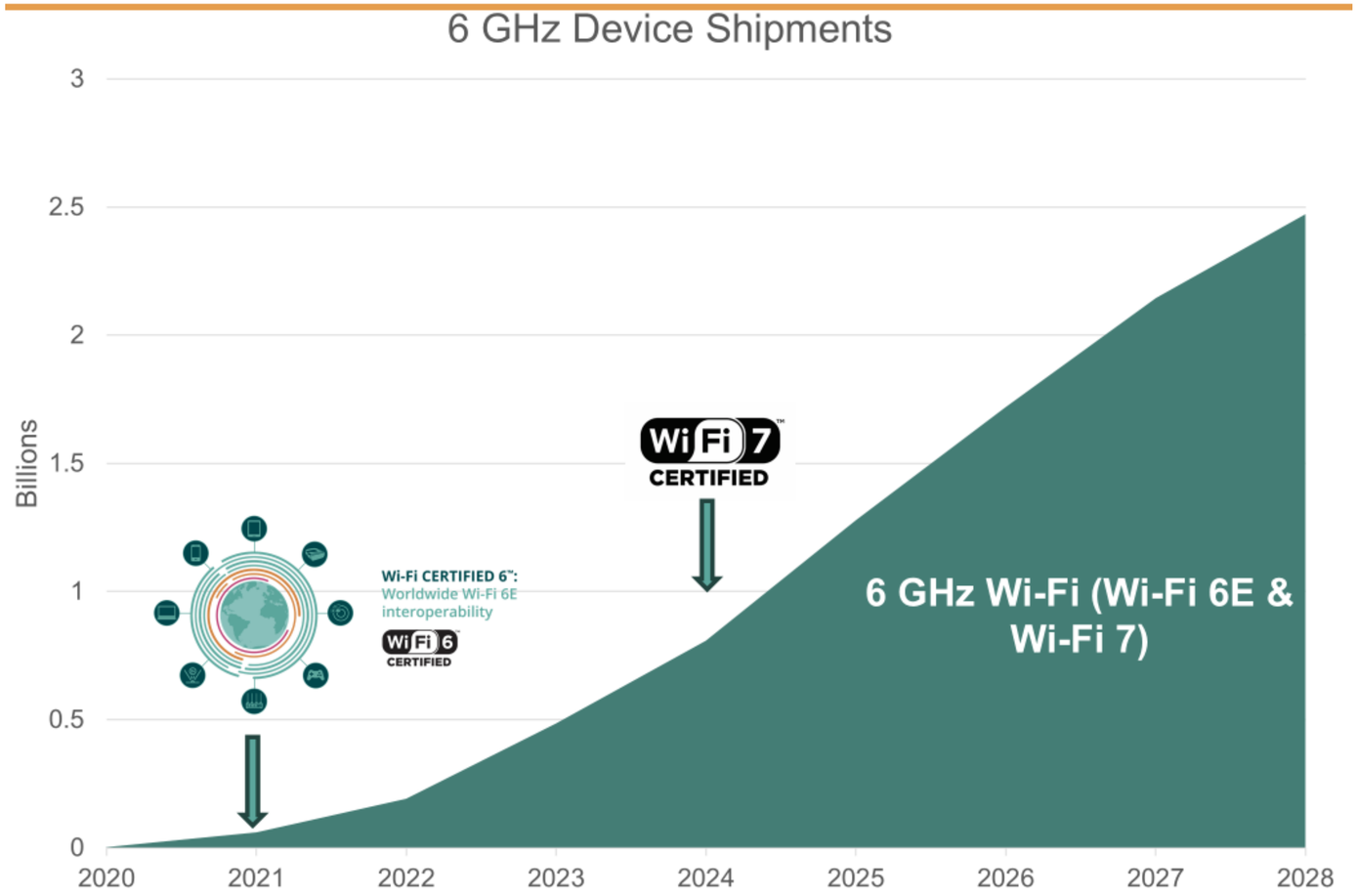
(2020 -)

Wi Fi 7 CERTIFIED

(2024 -)

Wi Fi 7 8 CERTIFIED

(coming in 2028)



Courtesy of Wi-Fi Alliance

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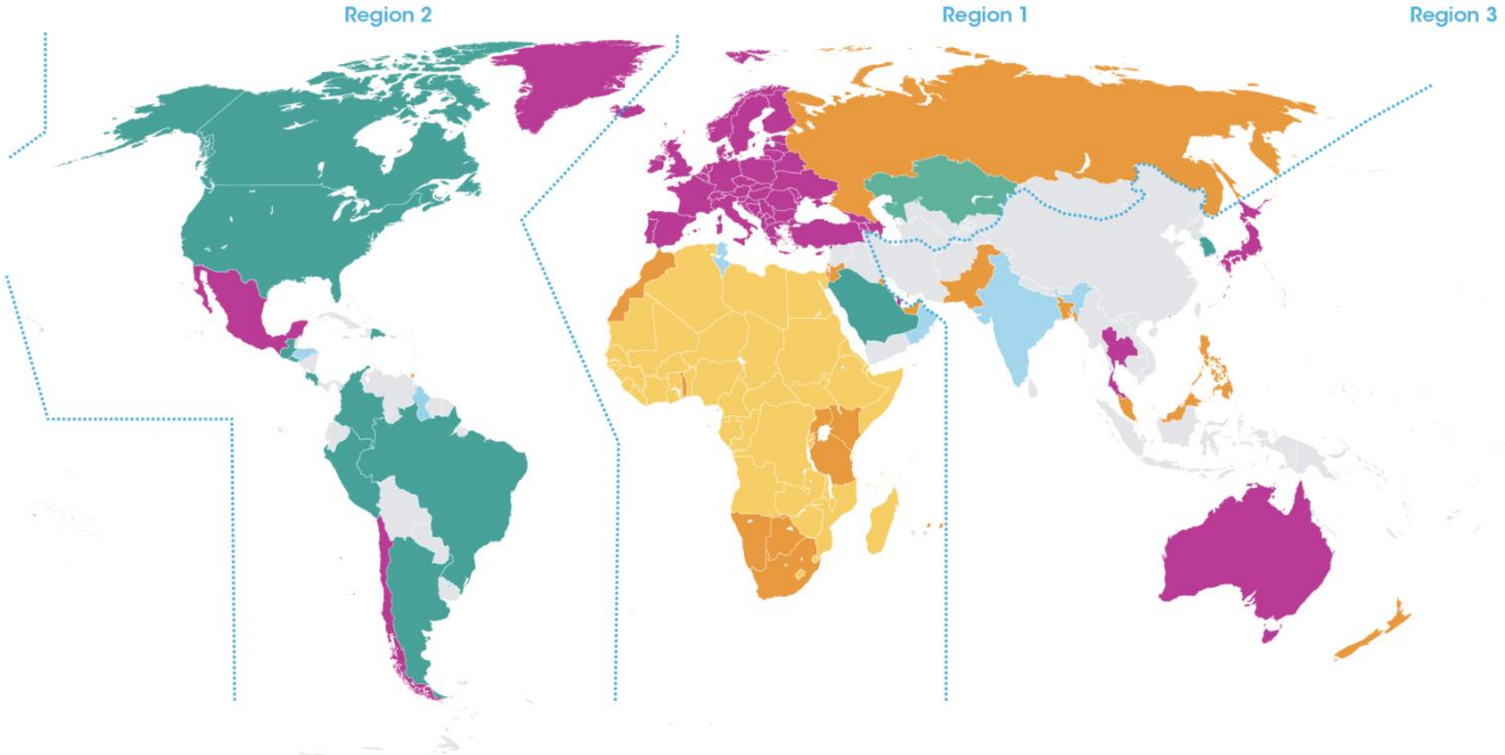
GLOBAL PROGRESS TOWARDS LICENCE-EXEMPT ACCESS TO THE 6 GHZ BAND



Region 2

1200 MHz

Argentina
Brazil
Canada
Colombia
Costa Rica
Dominican Republic
El Salvador
Guatemala
Peru
USA

500 MHz

(& evaluating 1200 MHz)

Chile
Mexico

500 MHz

Trinidad and Tobago

Region 1

1200 MHz

Kazakhstan
Saudi Arabia

500 MHz

(& evaluating 1200 MHz)

CEPT Area
European Union (480 MHz)
Qatar
United Kingdom

500 MHz

Africa / ATU
Bahrain
Botswana
UAE
Israel
Jordan
Kuwait
Kenya
Mauritius (480 MHz)
Morocco
Namibia
Oman
Russia
South Africa
Tanzania
Togo

Region 3

1200 MHz

South Korea

500 MHz

(& evaluating 1200 MHz)

Australia
Japan
Taiwan
Thailand

500 MHz

Bangladesh
Hong Kong
Macau
Malaysia
New Zealand
Pakistan
Phillipines
Singapore

- Adopted 5925-7125 MHz
- Adopted 5925/45-6425 MHz and evaluating 6425-7125 MHz
- Adopted 5925-6425 MHz
- Recommended 5925-6425 MHz
- Under consultation

Data correct as of October 2024

SUMMARY - UNLICENSED ACCESS TO THE 6 GHz BAND

1. Efficient use of the spectrum: Incumbent satellite and fixed services can continue to thrive in the band and coexist with WAS/RLAN license exempt devices (such as Wi-Fi 6E and Wi-Fi 7).
2. 1200 MHz to attend growing demand for wireless capacity.
3. Long term vision, planning for Wi-Fi 7, Wi-Fi 8 and future spectrum requirements.
4. Meeting increased demand for Internet access (affordable and sustainable solution).
5. Enabling wireless innovation and new use cases for people and companies (ex. AR/VR, further automation, manufacturing, etc.).
6. Economic benefits for India: Estimation of $4,030 billion USD between now and 2034.
7. Chipsets and equipment already available.
8. RLANs can work with any backhaul – mobile network, cable, fiber, fixed wireless access, satellite… Having all 1200 MHz available will support competition across platforms and providers.
9. Allowing different stakeholders to deploy gigabit class networks.
10. Immediately realizable benefits (opportunity cost).

THANK YOU

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