# The State of Private 5G in APAC

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Private 5G network adoption in the Asia Pacific (APAC) region has started gaining traction in several industries, including manufacturing, mining, and logistics. Moreover, governments in the region are actively developing private 5G networks to facilitate smart city and industrial park developments, indicating a growing recognition of the benefits of this technology. As the potential advantages of private 5G become increasingly apparent, adoption rates are expected to surge throughout the APAC region, signaling a transformative digital landscape that promises to revolutionize industries and society as a whole.

In this report, we take a closer look at the key trends shaping the private 5G market in APAC. The key takeaways include:

- South Korea, China, and Japan have designated specific spectrum for private 5G deployment.
- India and Japan have well-developed regulatory frameworks for private 5G deployment, with India simplifying the process by exempting enterprises from paying an annual license fee to set up their own private 5G networks.
- The business case for private 5G deployments has been firmly established in manufacturing and mining, where the need for high-speed and reliable connectivity in remote locations, real-time monitoring and automation, improved safety, and cost reduction has driven adoption.
- China leads the way in 5G private network deployments, with over 5,235 private 5G deployments in 40 industry sectors.
- Japan is the next biggest market with 71 Private 5G deployments.
- While private 5G adoption has been slower in other markets, there is already significant interest and enthusiasm surrounding this technology. As a result, we anticipate rapid adoption in these markets within the next 3 to 5 years.

### The State of Private 5G Regulation

#### Availability of spectrum

There are two categories of spectrums available for private 5G networks: licensed and unlicensed.

1) Licensed spectrums

• Licensed spectrums consist of industrial, shared, and public categories. Availability and allocation of licensed spectrums for non-telcos vary across countries, due to differing regulatory frameworks.

Exhibit 1			
Availability of spectrum for Private 5G across countries in APAC			
Country	Mid-frequency Band	High frequency Band	
South Korea	4.7 GHz	28 GHz	
Japan	4.6 -4.8 GHz	24.75 - 25.15 GHz	
China	5.92 -6.12 GHz	28.2 – 29.1 GHz	
lndia	No specific spectrum for private 5G, but non- telcos can own it in all available frequency bands		
India	telcos can own it in all available frequency bands		

Source: twimbit analysis

#### 2) Unlicensed spectrums

Unlicensed spectrum can play a significant role in the deployment of private 5G networks by providing additional bandwidth that can be used to support highspeed, low-latency connectivity. Private 5G networks can use unlicensed spectrum alongside licensed spectrum to create a more robust, scalable, and flexible network infrastructure.

The United States has paved the way in making unlicensed spectrums available for the establishment of all private networks, not just for private 5G. Countries in APAC, namely Singapore, China, South Korea, Australia, Japan, and India, have followed suit; making unlicensed spectrums available for private networks in the mid-band and high-band frequencies (57GHz – 66GHz).

#### **Cost of Spectrum**

The cost of obtaining spectrum for private 5G networks varies across countries primarily driven by two factors, viz.,

- Amount of spectrum required, and

- Intended use case.

The typical fees for obtaining a license to use spectrum for private 5G networks includes:

- a one-time entry fee
- an annual license fee
- a spectrum usage charge

However, enterprises in **India** can obtain spectrum from DoT without any license fee, for which they must pay a one-time entry fee of Rs. 50,000 (USD 632) plus spectrum usage charges.

### Ease of procurement

The ease of obtaining spectrum for private 5G networks across the Asia Pacific region also largely depends on the country's regulatory framework.

- In Japan and South Korea, the governments have simplified the licensing process and designated specific frequency bands for private 5G use.
  - In Japan, private companies can apply for a license to operate a private
    5G network under this system by submitting a simple application
    form, and they can receive a license in a few days.
  - The Korea Communications Commission (KCC) has designated a new category of spectrum for private 5G networks, and private companies can apply for a license to use this spectrum by completing a simplified application form.
- In **China**, obtaining spectrum requires navigating complex regulations and obtaining approval from multiple government agencies.
- In India, the DoT has a specific framework for setting up private 5G networks, called the CNPN (Captive Non-Public Network), with eligibility requirements that include:
  - The enterprise must be an Indian company registered under the Companies Act, 2013, and own or lease the property on which the Private 5G network will be deployed.
  - The enterprise must have a net worth of at least INR 100 crores (USD 12.12 million) to seek direct assignment of the spectrum from the government.

### Market readiness by region

The regulatory framework for private 5G deployment is highly matured in Japan and India, making these regions favorable for implementation. Similarly, the demand for private 5G is well-established in China, Japan, and South Korea.

Exhibit 2 Market readiness in APAC



Source: twimbit analysis

### Demand drivers for private 5G

Governments and organisations across APAC are quickly embracing private 5G technology in recognition of the impact it potentially holds for multiple industries.

**Industrial Automation**: Private 5G networks can enable advanced industrial automation, such as robotics and IoT devices, by providing high-speed, low-latency connectivity.

**Data Security and Privacy**: Private 5G networks can offer increased data security and privacy compared to public networks, which is especially important for sensitive industries like healthcare and finance. Private 5G networks can help increase data security by giving users more control over network access, employing enhanced encryption, isolating the network from public networks, and implementing network slicing.

**Network Control and Customization**: Private 5G networks offer organizations greater control and customization over their infrastructure, with the ability to prioritize critical traffic and allocate resources accordingly. This results in optimized performance and increases operational efficiency.

**Cost Savings**: In some cases, private 5G networks can save money by reducing infrastructure costs because they can be deployed on existing network infrastructure and have less traffic than public networks, reducing network maintenance. Private 5G networks help businesses save money by increasing efficiency and enabling automation when compared to traditional wired networks.

**Improved Productivity and Efficiency**: Private 5G networks can improve productivity and efficiency by providing reliable, high-speed connectivity for critical business applications.

### Key end-user segments for private 5G

Private 5G networks have the potential to benefit a range of end-user segments, with several key segments expected to drive adoption in the Asia Pacific region. Manufacturing and mining are two industries that greatly benefit from the implementation of private 5G networks in the Asia-Pacific (APAC) region.



#### Exhibit 3 Opportunities across different verticals in APAC

Source: twimbit analysis

### Customer adoption trends by geography

Private 5G networks are typically deployed in partnership with telecommunications companies in most countries in the region, though some countries have made spectrum available for non-telcos to set up their networks.

Exhibit 4



Source: twimbit analysis

#### Trends in adoption across APAC

While most APAC countries are in the early stages of market evolution, China and Japan have made significant headway in private 5G network deployment:

- **China** is the largest adopter with over 5,235 private 5G deployments across 40 industry sectors.
- In Japan, there are around 71 deployed 5G sites and 121 applicants and licensees for private deployment, making it the second largest market. The manufacturing industry leads with 14 deployed sites, followed by transportation, agriculture, and public safety.
- All other countries have handful of deployments and are in early stages of market adoption.

With increasing demand, the number of private 5G sites is expected to grow significantly across APAC countries. Our Exhibit 5 projects the deployment of private 5G networks in these regions by 2025.

private 5G network deployments in A		
Country	Private 5G sites	
Australia	~90-120	
China	~20000-21000	
India	~300-320	
Indonesia	~15-20	
Japan	~700-750	
Singapore	~8-10	
South Korea	~800-850	
Philippines	~8-10	

Exhibit 5 Projected private 5G network deployments in APAC, 2025

Source: twimbit analysis