

SPECTRUM FOR PRIVATE NETWORKS: RECENT ADVANCEMENTS BY COUNTRIES

Spectrum allocation for private networks is gaining momentum worldwide, but significant work remains for seamless integration and consistent access across borders. This article highlights recent announcements from countries regarding spectrum allocation.

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The availability of spectrum, which encompasses the range of electromagnetic frequencies used for wireless communication, is crucial for deploying private networks. These networks are becoming increasingly essential for enterprises worldwide, driving innovation and efficiency across industries. However, access to spectrum varies significantly between countries, creating challenges for consistent global deployment[1]. Recognising the importance of private networks, many governments are starting to allocate dedicated spectrum. Despite this progress, the lack of global harmonisation remains a significant hurdle, complicating efforts to achieve seamless international integration.

Spectrum Availability by Country

Netherlands

The Netherlands has been allocating private 5G networks since December 2023 on a first come first serve basis on the 3.5 GHz band and the 2x50 Megahertz (of the total 400 MHz) bands. The permits are valid until December 31, 2040.

United States

The U.S. has made significant progress in allocating 5G spectrum, with the FCC allocating key bands including 600 MHz, 2.5 GHz, 3.5 GHz (CBRS), and millimeter-wave frequencies such as 24 GHz, 28 GHz, and 39 GHz. However, the main spectrum band used for private networks is the 3.5 GHz band (3550 MHz to 3700 MHz), mostly known as the Citizens Broadband Radio Service (CBRS). The CBRS is a tiered system that include a higher priority licensed portion and a free general access portion. Although the Federal Communications Commission (FCC) held an auction to award the CBRS licenses in 2020, most of the current private networks utilise the general access spectrum[2]. .

United Kingdom

The UK has allocated 5G spectrum across several bands, offering two licensing options: the Shared Access License and the Local Access License. The Shared Access License covers the 1.8 GHz, 2.39–2.4 GHz, 3.8–4.2 GHz bands, and 26 GHz (for indoor use only) which are reserved for enterprise use cases. Enterprises can apply for licenses directly from the regulator, Ofcom. The Local Access License offers enterprises the option to lease unutilised spectrum from mobile network operators (MNOs) especially in rural and remote locations.

Germany

Germany's Federal Network Agency (BnETZa) allocated private networks spectrum with a 100-megahertz swath of midband spectrum at 3.7 GHz . In the first ten months since the application process began, 74 frequency assignments have been made.

Japan

Japan has allocated spectrum in the 28.3–29.1 GHz and 4.6–4.9 GHz bands, with a slight expansion in 2020, adding the 28.2–28.3 GHz band. The Ministry of Internal Affairs and Communications (MIC) held auctions for these bands in 2019.

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[1] https://stlpartners.com/articles/private-cellular/spectrum-for-private-networks/

[2] For more on CBRS, check our articles: What is CBRS (Citizens Broadband Radio Service)?; Citizens Broadband Radio Service (CBRS): How is it developing?

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Brazil

Brazil has started awarding private networks spectrumin the 100-megahertz swath of midband spectrum at 3.7 GHz

Switzerland

Following Swiss telecoms regulator BAKOM's announcement in September 2023, Switzerland has opened up the 3400-3500 MHz band for private 5G networks on January 1, 2024, allowing enterprises to deploy localised 5G solutions. Enterprises will be able to lease 10 MHz chunks for their own 5G projects. Since the spectrum release, there has been no announcement from major companies claiming they have been awarded licenses.

Australia

In Australia, 26 GHz band became accessible for businesses who want to establish their own private network since December 2021. The Australian Communication and Media Authority (ACMA) has also opened applications for area-wide licenses in the 3.8 GHz band in March 2024 as part of its program to release more 3.4-4.0 GHz mid-band spectrum. The ACMA expects significant interest from tertiary institutions, hospitals, mining operators or public transport hubs looking to deploy private networks to enhance their operational capabilities through better connectivity coverage.

Bahrain

Bahrain's Telecommunications Regulatory Authority (TRA) has allocated the 3.8 to 4.2 GHz band of the C-Band spectrum for private 5G networks in Q4 2022. This move marking a significant step in the GCC region, enabling both private and public sectors to leverage advanced 5G technologies. In March 2024, Nokia and Batelco announced a partnership to offer 5G private wireless networks in Bahrain.

Canada

In May 2023, The Canadian government has announced the licensing of 80 MHz of mid-band spectrum in the 3900-3980 MHz range for local shared and private 5G networks. The Department of Innovation, Science, and Economic Development Canada (ISED) is overseeing the new licensing framework. Additionally, it plans to release portions of the mmWave bands at 26 GHz, 28 GHz, and 38 GHz for enterprise and non-traditional users. Major operators like Roger and Bell are starting to deploy private networks for local enterprise use cases. For instance, Roger has completed the project to deploy private 5G network at Kirland Detour Lake Mine in March 2024, marking the first Canadian mining operation to be completely linked via a 5G wireless private network.

Sweden

In Sweden, the Swedish Post and Telecom Authority (PTS) has taken a proactive approach by reserving spectrum specifically for private networks since December 2022. Sweden has allocated mid-band spectrum at 3.7 GHz and millimeter wave spectrum at 26 GHz for local and regional licenses. Together with Nokia, Telenor launched its private networks services in May 2023, including network slicing products for enterprise customers.

Poland

The Polish regulator UKE, has established regulations for local enterprise networks, allowing various entities to apply for spectrum in the 3.8–4.2 GHz range. Since September 2023, local government authorities can access 100 MHz in the 3.8–3.9 GHz band, while businesses and other users can apply for spectrum in the 3.9–4.2

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GHz range for vertical applications. One of the first private wireless networks deployment was initiated by PGE (Polska Grupa Energetyczna), Poland's largest power grid operator. Nokia has been selected by PGE to deploy this nationwide IP/MPLS-based digital backhaul network that will support critical communications for all power grid companies in Poland.

Ela Eren and Zoey Yin are consultants at STL Partners, specialising in private networks

Get in touch with the author to learn more

ela.eren@stlpartners.com

zoey.yin@stlpartners.com

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