



5G Spectrum Positions

5G has the potential to support significantly faster mobile broadband speeds as well as to enable the full potential of the Internet of Things.

However, for 5G to reach its full potential, mobile operators are dependent on getting more widely harmonised spectrum across three frequency ranges sub-1 GHz, 1-6 GHz, and above 6 GHz

More contiguous spectrum
80-100 MHz per MNO
IN MID-BANDS AND
1 GHz per MNO
IN mmW



The speed, reach and quality of 5G services will depend on the support of governments and regulators for timely access to the right amount and type of spectrum, and under the right conditions. This spectrum access will be a critical component in bringing 5G technologies to market.

Which bands are emerging as key to 5G?

3.5 GHz

Mid-band spectrum (1-6 GHz) will play a key role in making 5G mainstream. The 3.5 GHz band has a near-global momentum and has already been licensed in several countries, with more on the way.

Also, technological advancements mean that the 3.5 GHz band can provide the same coverage, and use the same cell sites, as the current 2.6 GHz and 1800 MHz mobile bands.

26 GHz, 28 GHz and 40 GHz

The 26 GHz, 28 GHz and 40 GHz bands have emerged as the most likely candidates to enable the ultra-high-speed vision for 5G. The 26 and 28 GHz bands have the benefit of being adjacent, supporting economies of scale and facilitating early equipment availability for all or parts of both bands.

The availability of spectrum is helping countries get an early start on 5G. By the end of 2019, commercial services are expected to be available in Australia, Bahrain, Czech Republic, Finland, Kuwait, Lesotho, Philippines, Qatar, San Marino, Saudi Arabia, Spain, South Korea, United Arab Emirates, USA and the UK.

WRC-19 Agenda Item 1.13

WRC-19 will address the needs of upcoming evolutions of mobile networks. Spectrum between 24.25 and 86 GHz will be considered for IMT under WRC-19 Agenda Item 1.13. At this point in the process, the 26 GHz and 40 GHz have the highest priority and support from the mobile industry. It also supports mobile industry, along with 66-71 GHz, as well.

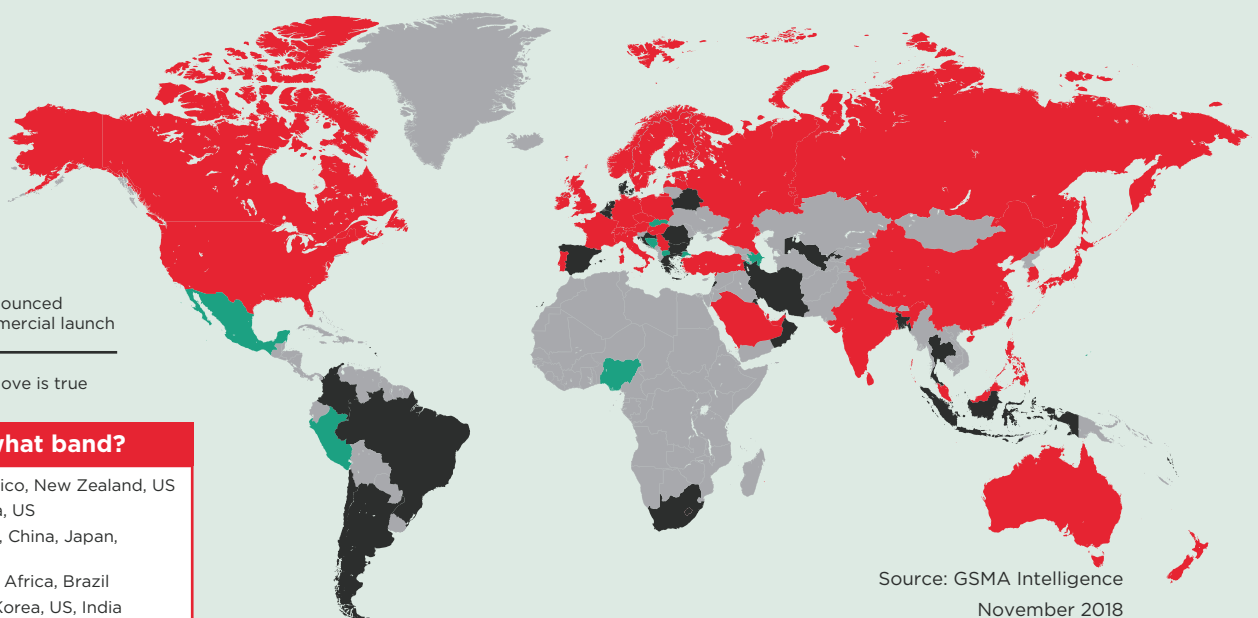
Plans to launch commercial services are accelerating all over the world

KEY

- 5G field trials
- Operators announced plans for commercial launch
- Both of the above is true

Who supports what band?

600 MHz: Canada, Mexico, New Zealand, US
700 MHz: Europe, India, US
3.5 GHz: Europe, Brazil, China, Japan, South Korea, US, India
26 GHz: Europe, China, Africa, Brazil
28 GHz: Japan, South Korea, US, India



Source: GSMA Intelligence
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LONG-TERM PLANNING IS CRUCIAL

Planning for 5G is a long-term effort. Spectrum for the next generation of mobile broadband will be used for decades to come, and it is being defined right now, irrespective of when the first commercial 5G services will be launched.

Decision-making now, at the advent of 5G in the world, can ensure all countries have access to the appropriate frequency bands for 5G when the time comes to launch the service in their countries.

THE GSMA'S KEY 5G SPECTRUM POSITIONS ARE:

**80-100 MHz per MNO
IN MID-BANDS AND
1 GHz per MNO
IN mmW**

5G needs a significant amount of new harmonised mobile spectrum. Regulators should aim to make available 80-100 MHz of contiguous spectrum per operator in prime 5G mid-bands and around 1 GHz per operator in millimetre wave bands.

5G needs spectrum within three key frequency ranges to deliver widespread coverage and support all use cases.

The three ranges are:
**Sub-1 GHz
1-6 GHz
AND ABOVE
6 GHz**



WRC-19 is vital to realising the ultra-high-speed vision for 5G, and government backing for the mobile industry is needed during the whole process. The GSMA recommends supporting the 26 GHz, 40 GHz and 66-71 GHz bands for mobile.

Governments and regulators should avoid inflating 5G spectrum prices (e.g. through excessive reserve prices or annual fees) as they risk limiting network investment and driving up the cost of services.



Exclusively licensed spectrum should remain the core 5G spectrum management approach. Spectrum sharing and unlicensed bands can play a complementary role.

Setting spectrum aside for verticals in priority 5G bands could jeopardise the success of public 5G services and may waste spectrum. Sharing approaches like leasing are better options where verticals require access to spectrum.



Regulators must consult 5G stakeholders to ensure spectrum awards and licensing approaches consider technical and commercial deployment plans.



Governments and regulators need to adopt national spectrum policy measures to encourage long-term heavy investments in 5G networks (e.g. long-term licences, clear renewal process, spectrum roadmap etc).

Read the full position and find out more about 5G spectrum at:
<https://www.gsma.com/spectrum/5g-spectrum-guide/>

Also read "IMT Spectrum Between 24.25 and 86 GHz" and "Considerations for the 3.5 GHz IMT range" at:
<https://www.gsma.com/spectrum/wrc-series/>