

The path to 6G – a regulator's perspective

Richard Moore – Ofcom, Spectrum Policy Principal

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Agenda

- Ofcom's Spectrum Management Strategy
- Demand and opportunities beyond 5G
- Enabling innovation above 100 GHz

Our new spectrum management strategy will increase access to spectrum across all bands through local licensing and new authorisation methods

Main priorities for our spectrum strategy



Supporting wireless innovation

- **Better information** for stakeholders on their spectrum choices
- **Making spectrum available for innovation, more quickly** including when its eventual use is uncertain



Releasing spectrum for local usage and private networks

- **Making spectrum available to facilitate localised uses**, including private networks for users with specific requirements, particularly in bands where equipment is likely to be available



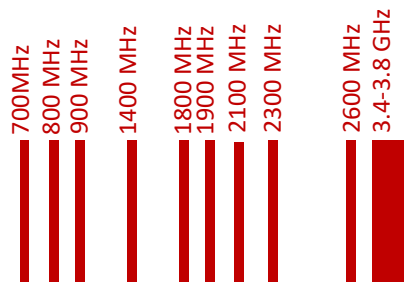
Promoting spectrum sharing

Improving the ability for users to share spectrum by:

- Making wireless systems more resilient to interference from neighbours
- Promoting a fairer balance of interference between users, and
- More realistic analysis of sharing between users

Enabling access to spectrum

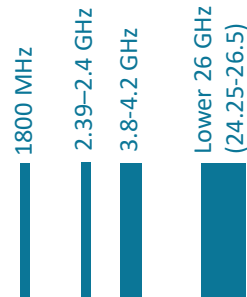
National mobile spectrum



Local access licence:

Localised access in locations not impacting MNOs current and future deployment

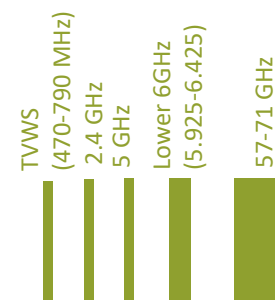
Shared spectrum for local access



Shared access licence :

Localised access shared with incumbent/new users on first come first served basis

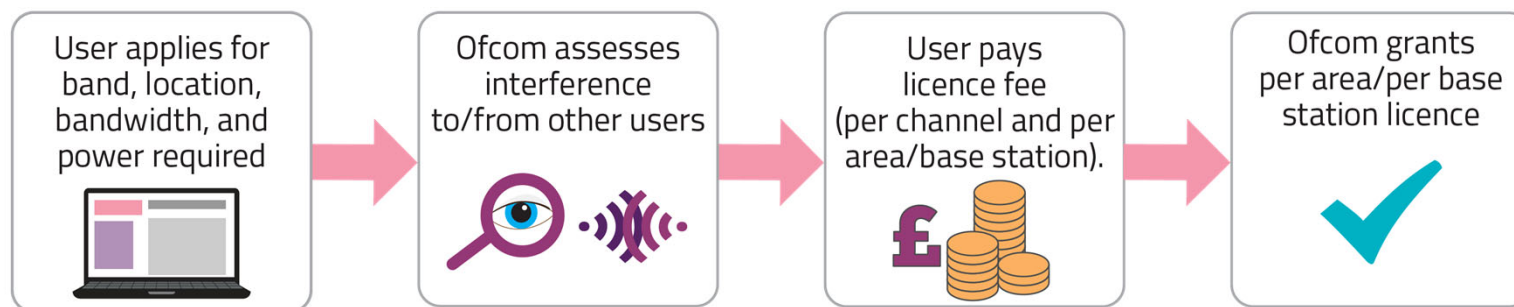
Unlicensed & light licence



6 GHz : Additional 500 MHz unlicensed for indoor WiFi and very low power outdoor use

Shared Access licence

First come first served managed access, deployment within 6 months of obtaining licence

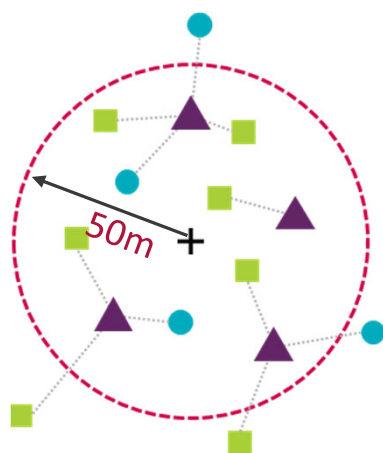


1800 and 2300 MHz	: £80 per licence / year
3.8 – 4.2 GHz	: £80 per 10 MHz / year
26 GHz	: £320 per licence / year

https://www.ofcom.org.uk/_data/assets/pdf_file/0035/157886/shared-access-licence-guidance.pdf

Shared Access licence: Low and Medium power variants

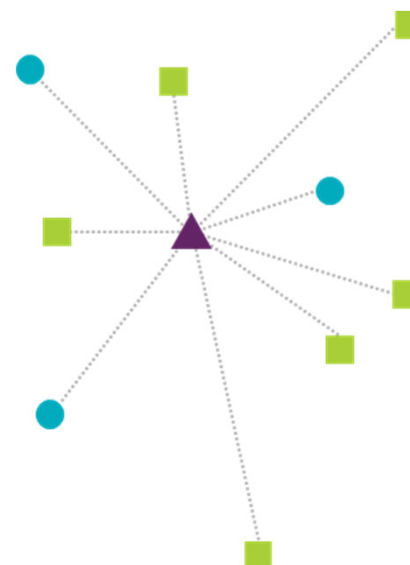
Low power (per area licence)



24 dBm / carrier

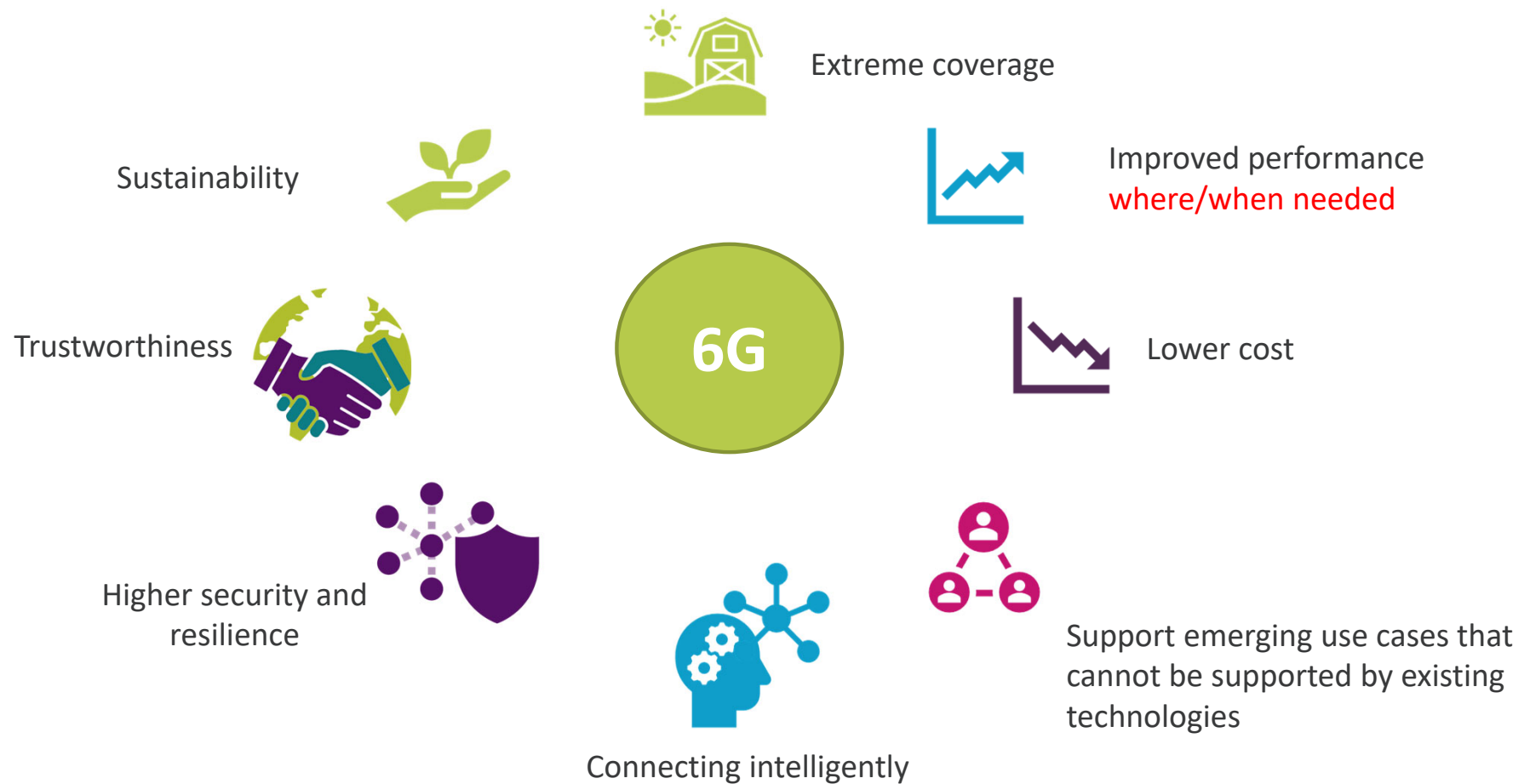
Low power indoor only in 26 GHz band

Medium power (per base station licence)



42 dBm / carrier (rural only)

Network requirement beyond 5G relevant to citizens and businesses



We're actively monitoring emerging technologies and their implications for 5G evolution and 6G



Report available [here](#)

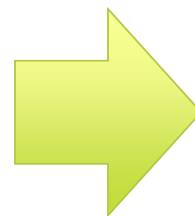
Immersive
communications and
applications

Mobile and wireless
technologies

Fixed and optical
technologies

Broadcasting and
media technologies

Satellite technologies

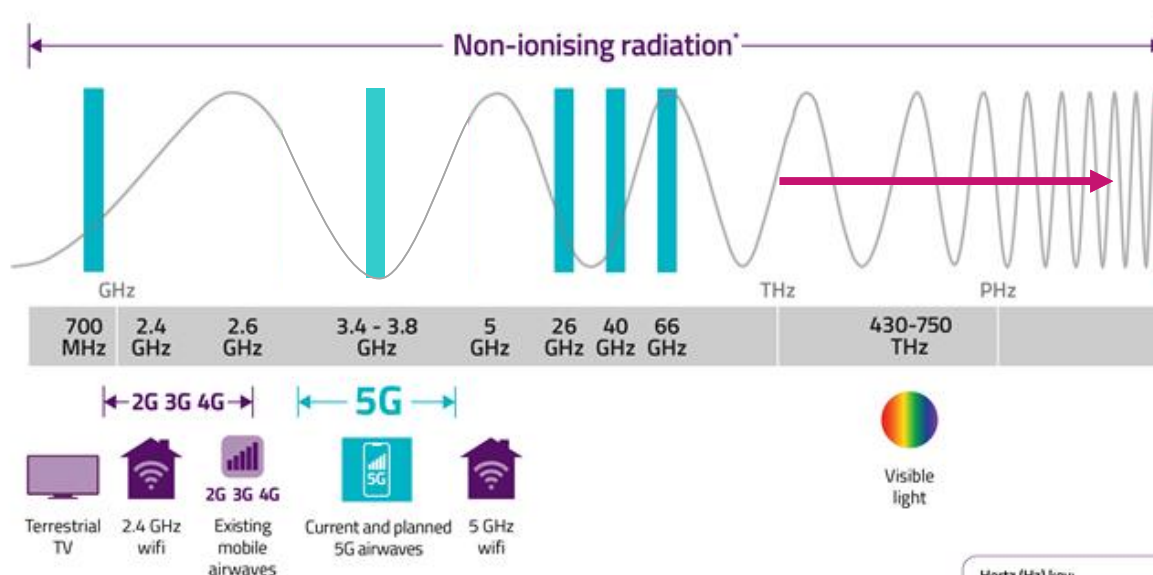


Evolutionary trends which will
remain relevant for 6G

Disruptive technologies which may
only be realised in 6G

Services exceeding capabilities of 5G

Each generation of mobile technology has re-used existing bands and opened up new, higher bands...



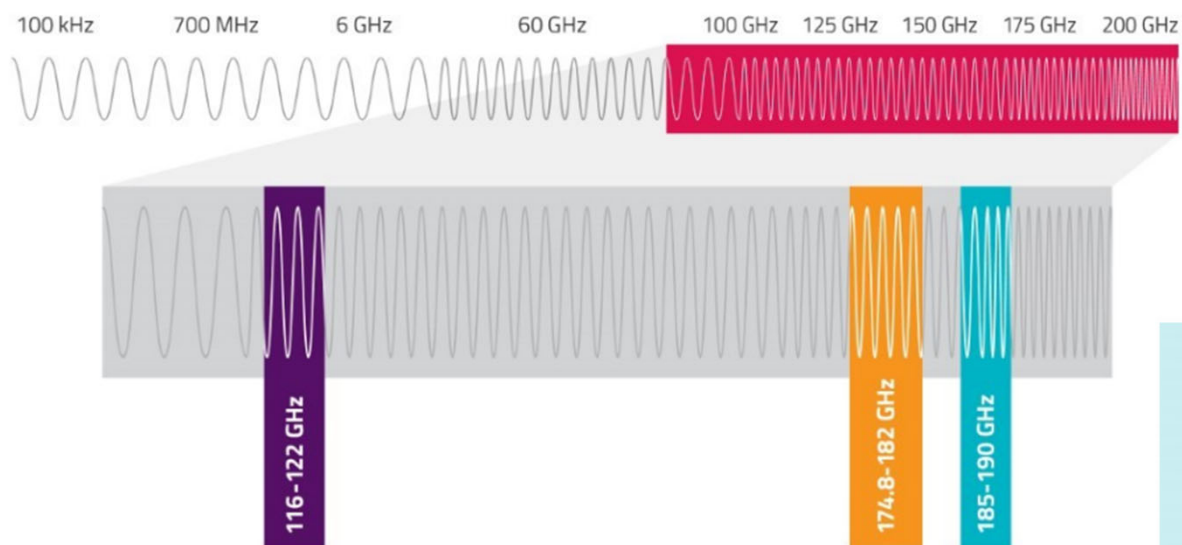
*Radio frequencies needed for common household items to work, from televisions to microwave ovens (usually between 30kHz and 300GHz), produce radiation which is classed as 'non-ionising'. This means that it does not have sufficient energy to break chemical bonds or remove electrons, as opposed to 'ionising radiation', which occurs at much higher frequencies and is generally considered to be hazardous to humans. (Source: International Commission for Non-Ionizing Radiation Protection (ICNIRP))

Hertz (Hz) key:
kHz: kilohertz = 10^3 Hz THz: terahertz = 10^{12} Hz
MHz: megahertz = 10^6 Hz PHz: petahertz = 10^{15} Hz
GHz: gigahertz = 10^9 Hz EHz: exahertz = 10^{18} Hz

- The new frontier of THz spectrum:
- Very high bandwidth
 - High power required to increase range
 - Sharing by default?
 - Realistic coexistence approach

We're already providing access to spectrum above 100GHz via Shared Access licences

Spectrum Access: Extremely High Frequency Licences



High capacity applications	Sensing applications	High precision applications	High density applications
High-resolution 3D imaging Holography applications	Health screening inc. early detection of skin cancer	Robotic assembly Warehouse stocktaking	Closely spaced devices inside factories and offices

https://www.ofcom.org.uk/__data/assets/pdf_file/0024/203829/100-ghz-statement.pdf

Thank you for listening