MOD Spectrum Policy
Access to 26 GHz

An assessment of the MOD's requirements for access to the 26 GHz frequency band
December 2022

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Introduction

MOD currently has nationwide management rights to 1 GHz of spectrum in the 26 GHz band (24.25 – 27.5 GHz). Although the MOD has yet to allocate any of it to its capabilities, the potential benefits of high data rates, low probability of detection, and directive data links have been recognised. With the international harmonisation of 26 GHz for 5G at the 2019 World Radiocommunications Conference, Ofcom is considering how to make the most efficient use of this spectrum and is consulting on its potential use. This paper is an executive summary of a detailed assessment of the 26 GHz frequency band that MOD has undertaken and shared with Ofcom and the Department for Culture Media and Sports (DCMS) as the lead government department for spectrum policy.

The 26 GHz band is part of the mmWave frequency bands. This paper only covers the potential use of the 26 GHz band and not mmWave frequences more generally.

Future Need

To help Ofcom determine the optimal use of the 26 GHz spectrum, MOD has assessed its future needs through a use case analysis. A working group was created bringing together members of the MOD, Ofcom and DCMS. Following an analysis of the strategic drivers and a stakeholder consultation, an initial list of twenty-one use cases based on potential future uses of 5G technology was created. The use cases were downselected to those that would benefit most from using 26 GHz and grouped into seven scenarios:

- **Explosive Ordnance Disposal and Counter Terrorism**. This scenario involves bomb disposal or combating terrorism where access to spectrum is required anytime and anywhere to keep people safe. The technologies used for disposing of explosives and for countering terrorism requires the operators to be distant from the capabilities involved and invariably require wireless communications.

- **Smart Bases**. Advanced digital technologies can transform the way military bases plan and execute their missions. The availability of high-speed and low-latency wireless connectivity has the potential to enable localised autonomous processes, real-time monitoring, and augmented reality maintenance.

- **Deployed Headquarters**. In-service communications equipment used to connect headquarters and enable internal communications currently use 4G technology. As the 5G ecosystem grows, MOD will be able to use commercial-off-the-shelf technologies to provide tactical communications, including non-terrestrial networks using drones to provide greater communication ranges.

- **Drones**. Drones are becoming one of the most important capabilities on the battlefield providing situational awareness, information delivery, targeting, and possibly munitions delivery. Using 26 GHz can enhance those capabilities and provide the connectivity for controlling a swarm of drones.

- **Autonomous Vehicles**. Autonomous military vehicles are increasingly being seen as an essential component of

future warfighting. These vehicles are ideal for moving through dangerous terrain, attacking targets, and removing the need for people to be in high-risk situations. Such capabilities could potentially be used anywhere in the United Kingdom, as well as on training areas, to control autonomous armoured fighting vehicles.

- **Smart training and operational/mission planning**. Virtual and augmented reality is fast becoming the main mode of training for Defence. Royal Air Force pilots can spend approximately 100 hours training in a simulator before their first flight. On the ground, this type of training is being used to simulate realism to battlegroup training (giving the gunner in a tank a virtual target to engage, for example). Achieving realism requires high data transfer rates coupled with low latency communications.

Analysis

The use case scenario analysis was undertaken with support from Ofcom specialists. Each of the scenarios was examined to understand whether access to 26 GHz would be beneficial and, if so, the amount of spectrum required and the geographical location of where it would be used.

When considered together, the use case scenario analysis showed that a nationwide safeguard of 200 MHz would be sufficient to meet the MOD's future needs. If Defence exploits 26 GHz to a greater extent in the future, additional spectrum will need to be secured using existing processes.

In addition, the analysis showed MOD could use 24.25 – 24.45 GHz (the bottom 200 MHz of the 26 GHz band) and vacate its current 1 GHz holding of 26.5 – 27.5 GHz to reduce band fragmentation.

Conclusions

MOD has assessed its future spectrum needs and concluded it would require guaranteed, nationwide access to a 200 MHz block of spectrum for at least ten years while military use of 26GHz in the context of the broader range of mmWave technologies is evaluated and further developed. The MOD would also change its access to use the bottom 200 MHz of the band, thereby freeing up 800 MHz of the 26 GHz band for civil allocation.