



16 September 2024

28 GHz project team
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Subject: Information regarding current and planned use of land-based user terminals in Ka band (27.5 – 30 GHz)

Dear Mr.Braddock ,

Many thanks for the letter dated 20th August 2024 and for publishing Telesat response to the consultation: Increasing use of the 27.5 – 30 GHz band on the Ofcom's website.

Telesat is pleased to provide some additional information regarding the planned use of its Telesat Lightspeed NGSO land-based User Terminals (UTs) in the Ka band for which Ofcom has already granted the Earth Station Network (ESN) license. Please find below the answers to Ofcom's requests, indicating also the parts that should remain confidential.

Q1. For currently operational satellites:

a) Have you deployed land-based user terminals in the Ka band?

b) If yes, how many terminals have you deployed to date?

c) What use case(s) are these terminals used for?

d) What is/are the specific frequency range(s) within the Ka band (17.7-20.2 GHz downlink and 27.5-30GHz uplink) that your land-based user terminals use (uplink and downlink) to connect to your satellites?

Telesat Lightspeed system is not yet operational.

Q2. For future satellite services you are planning to deploy in the next 5-10 years:

a) Are you planning to deploy user terminals in the Ka band?

Yes, a variety of fixed and mobile User Terminals (UTs) across different industry verticals will access Telesat Lightspeed constellation via user links in Ka-band.

Telesat has identified different families of Telesat Lightspeed UTs, each targeting a different industry (enterprise, maritime, commercial and business aviation) and is working with several manufacturers towards UTs development.

Telesat is also working with some vendors to modify existing suitable antennas for compatibility with Telesat Lightspeed. This will provide a low-risk, cost competitive alternative for the industry in choosing Telesat Lightspeed as their preferred choice of satellite connectivity.

b) If yes, what use case(s) will these terminals be used for?

Due to the system's seamless global coverage, Telesat Lightspeed UTs will offer users that rely on fixed and mobile communications extended flexibility and reliability in remote areas and while on the move. The UK is a priority country for Telesat Lightspeed service provision via land, maritime and aeronautical verticals.

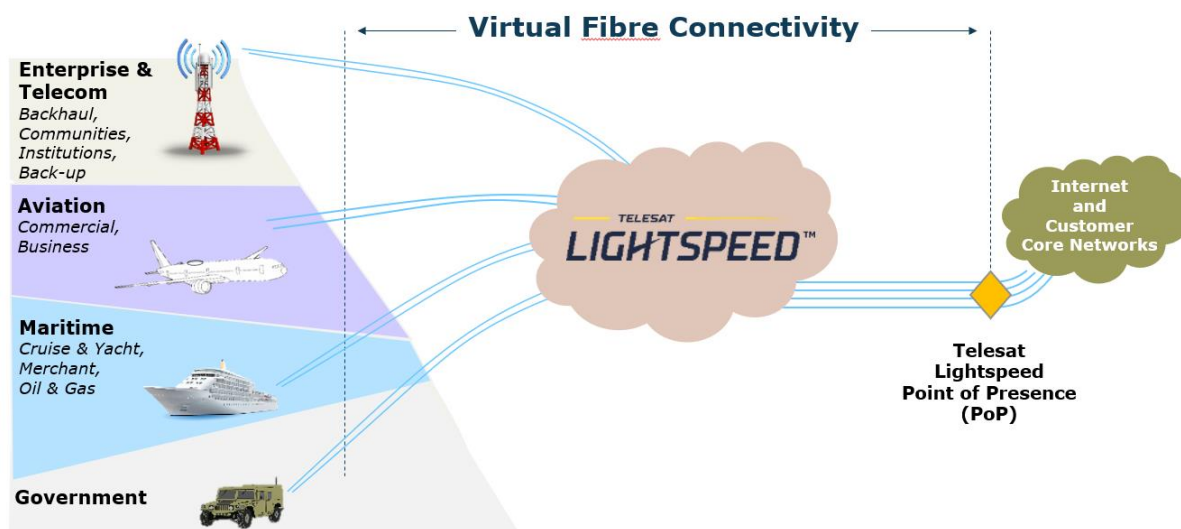


Figure 6: Fibre Quality Broadband for Multiple Markets

Enterprise & Telecom Usage

Telesat plans to collaborate with telecommunications service providers in the UK to extend their existing mobile service coverage through the use of Telesat Lightspeed as a mobile backhaul network. Furthermore, to further expand other means of broadband provision to remote areas, Telesat Lightspeed could also be used as a fixed wireless backhaul.

As a means of connecting geographically dispersed site offices under a corporate entity, Telesat Lightspeed can provide UK enterprise users an alternative form of connection to their existing links. Some of these enterprise users include applications (such as in finance) where

real-time access to updated information is critical and warrants a dedicated redundancy in connectivity for their private network.

Maritime and Offshore Platforms

From the “moving city” nature of cruise ships to unique operational needs of merchant shipping, Telesat Lightspeed will offer multiple Gbps link capacity and Tbps of total capacity to meet passenger demands for seamless Virtual Private Network (“VPN”), download of encrypted web pages, e-commerce and entertainment applications, as well as real-time, high-quality internet streaming to support crews’ morale, training and welfare. Telesat Lightspeed will provide an avenue for users to have the same level of connectivity and experience as those enjoyed by land-based users through the provision of highly focused capacity along popular maritime routes

When it comes to the offshore sites, (such as oil rigs and oil exploration platforms), reliable, cost-effective communications is essential. Offshore oil and gas industry is considered as a major contributor to the UK economy. These industries can leverage low latency communications links on Telesat Lightspeed for real-time operations monitoring, as well as connectivity for employees working in these locations.

Aeronautical Usage

UK is a top priority country also for Telesat Lightspeed aeronautical applications. Telesat Lightspeed is able to offer global coverage across the entire flight path for passengers, including the polar regions. Passengers will be provided with a consistent in-flight fibre-like connectivity experience throughout their journey on any aeronautical route, until the arrival to their destination. Telesat Lightspeed can also dynamically place multiple beams within hotspots, such as airports, to meet the requirements. This can assure end-users with a consistent experience in the air and on the ground, always in compliance with Ofcom’s and airports regulations.

Government

Apart from land, air and sea commercial applications, Telesat is also interested in partnering with Governments around the world to support bandwidth-intensive applications, including the UK Government. Offering outstanding security & quality, global coverage and seamless mobility, Telesat Lightspeed can support governmental efforts in several areas such as defence, humanitarian aid and disaster relief efforts.

Within the defence industry, command and control is of paramount importance for coordination between ground, air and sea units as one integrated entity. The secure, high system availability, global footprint and low-latency of Telesat lightspeed can confidently provide assured connectivity across the government’s defence network for its operations domestically and internationally.

For humanitarian aid and disaster relief, the quick deployment of UTs can aid rescue efforts by easing coordination and harmonisation between disaster relief agencies and government entities in areas where communications are non-existent or unreliable.

c) What is/are specific frequency range(s) that the land-based user terminals will use (uplink and downlink) to connect to your satellites?

Telesat Lightspeed UTs encompassing both Very Small Aperture Satellite (“VSAT”), and Earth Stations in Motion (“ESIM”) can use the following portions of the Ka-band spectrum, with flexible configurable channel bandwidths of up to 500 MHz

Space-to-Earth (Downlink): 17.8-18.6 GHz and 18.8-20.2 GHz (total spectrum 2.2 GHz)

Earth-to-space (Uplink): 27.5-29.1 GHz and 29.5-30 GHz (total spectrum 2.1 GHz)

However, in the UK only the frequency bands of 27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.5 – 30 GHz can currently be used in order to be compliant with the domestic allocation.

d) When are you planning to make these services commercially available in the UK?

Global services are scheduled to commence in H2 2027. Launches and field trials are scheduled to begin in Q2 2026.

Q3. For current and future satellite services: What are your preferred channel sizes for Ka band land-based user terminals? Do you have flexibility to use different channel sizes? If so, please provide details.

Telesat Lightspeed uses a regenerative payload and user links implement flexible configurable channel bandwidth allocated to each terminal dynamically based on demand and regulatory requirements.

[REDACTED]

Q4. Responses to our March consultation "increasing use of 27.5-30GHz" suggest that there is demand for land-based user terminals in the UK to access 2 x 224 MHz (27.8285 – 28.0525 GHz and 28.8365 – 29.0605 GHz) rather than 1 x 112 MHz (28.8365 – 28.9485 GHz). Do you have any information on how the availability of 2 x 224 MHz for land-based user terminals would impact the number of consumers and customers you could connect, product speed, or the quality of service you could provide via these land terminals (compared to just having 1 x 112 MHz available)?

As already mentioned above, Telesat Lightspeed UTs are currently restricted to use 27.5-27.8185 GHz, 28.4545-28.8265 GHz and 29.5-30 GHz in the UK. Telesat understands that Ofcom proposes to allocate an additional 112 MHz (28.8365-28.9485 GHz) out of the 448 MHz total released spectrum for land-based satellite terminal use as referenced in the consultation: "Increasing use of 27.5-30GHz". However, even in this case, the spectrum available for UTs in the UK would still remain fragmented without any contiguous spectrum bandwidth of 500 MHz or more (the biggest portion would be 494MHz corresponding to 28.4545-28.9485 GHz) in the 27.5-29.1 GHz range.

Telesat Lightspeed is a highly flexible system and can comply with domestic allocation by using only parts of the 28 GHz for its UTs. However, Telesat notes that fragmented spectrum

unnecessarily constrains the ability of satellite networks to connect UK users with the highest-speed broadband that is possible with today's technology (e.g. is 140 Mbps/sec with a 65cm Telesat Lightspeed UT). Access to sufficient spectrum is the primary factor in reaching maximum capacity for the benefit of the UK consumers.

Overall, the availability of 2x224 MHz for land-based UTs would result on contiguous spectrum of over 500 MHz which will have a positive impact on speed and performance compared to having access to only 1x112MHz.

Therefore, Telesat would like to reiterate its proposal already indicated in the response to the consultation, i.e. to allocate the full amount of released spectrum 2*224 MHz (27.8285 – 28.0525 GHz and 28.8365 – 29.0605 GHz) to land based UTs including ESIM.

To conclude, Telesat welcomes this opportunity to provide additional comments pertaining to the use of 28 GHz by Lightspeed UTs. We remain available for any possible additional clarification you may need and look forward to continuing the discussion and collaboration.

Kind regards



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