COMMENTS OF TELESAT

Telesat appreciates the opportunity to respond to the Allocation of 24–30 GHz Spectrum Technical Discussion Document. Telesat notes that some of RSM's preliminary proposals and decisions are aligned with Telesat's consultation response submitted in 2021, particularly in facilitating the use of NGSO FSS satellite systems in the 28 GHz band.

Before addressing the specific consultation questions, Telesat would like to provide an update on the Telesat Lightspeed program since our last written submission in 2021.

For this consultation, Telesat's responses will focus on selected questions directly relevant to market access and the imminent deployment of Telesat Lightspeed in New Zealand.

UPDATES ON TELESAT LIGHTSPEED

As introduced in 2021, Telesat is developing Telesat Lightspeed, a state-of-the-art Low Earth Orbit (LEO) satellite constellation designed to revolutionize global connectivity.

Global Connectivity & Partnerships

Telesat Lightspeed will deliver affordable, high-speed, low-latency connectivity to complement terrestrial networks worldwide, including New Zealand. Service will be provided through partnerships with Internet Service Providers (ISPs), Mobile Network Operators (MNOs), indigenous communities, and municipalities – all helping to reduce the digital divide. In addition, passengers and crew on board aircraft and vessels will benefit from gate-to-gate and pier-to-pier connectivity, enabling seamless service from boarding through transit, where regulations permit.

Constellation Design

The initial deployment will consist of 156 satellites in 13 orbital planes (12 satellites per plane, inclusive of spares) at an altitude of 1,335 km. This robust configuration ensures at least two satellites are always visible from any location on Earth. The constellation design also allows for future expansion through additional orbits at varying altitudes and inclinations.

Spectrum & Technical Capabilities

Operating in the Ka-band, the network integrates both User (Service) and Feeder links, with flexible, configurable channel bandwidths to adapt to local demand and regulatory requirements. The specific frequency bands utilised are 17.8–18.6 GHz and 18.8–20.2 GHz (space-to-Earth) as well as 27.5–29.1 GHz and 29.5–30 GHz (Earth-to-space). Additionally, Telesat gateways or landing stations can also operate in 29.1 -29.5 GHz where regulations permit.

Program Milestones

- **July 2023** – Following the decommissioning of Telesat's LEO Phase 1 satellite, Telesat LEO 3 demonstration satellite was successfully launched.
- **August 2023** – Telesat announced MDA as the prime contractor for the Lightspeed constellation.
- **April 2024** – Telesat and the Government of Canada finalized terms for a C$2.14 billion loan to support Lightspeed.

- **December 2024** – Completion of the Preliminary Design Review (PDR), with the program advancing toward the Critical Design Review (CDR) milestone.

Looking ahead, launches are scheduled to commence in late 2026, with customer trials and global service rollouts anticipated by the end of 2027.

Telesat's responses to RSM questions

19	Do you agree with RSM's proposed new spectrum uses within 27.5-28.35 GHz, noting the growing demand for FSS (Earth-to-space) GSO and NGSO gateways and user terminals?

Telesat remains supportive of an exclusive allocation of this frequency band for satellite use, ensuring that all ESIMs, including L-ESIMs, can operate without being subjected to additional technical conditions.

Nonetheless, Telesat can align with the spectrum use framework proposed by RSM for the 27.5–28.35 GHz band, which provides for the following:

1. Gateway Earth Stations Continued operation of existing and new FSS (Earth to space) gateway Earth stations/sites at specific fixed locations;
2. Deployment of FSS (Earth to space) Earth station user terminals at fixed locations, not in motion;
3. Operation of FSS (Earth to space) ESIMs for A-ESIM and M-ESIM, subject to the technical conditions outlined in Resolution 123 (WRC 23) and Resolution 169 (WRC 19);
4. Mobile Systems in specific areas of the country, in accordance with agreed sharing options and associated technical conditions.

22	Do you agree with RSM's understanding of the spectrum requirements for enabling different services and applications, e.g. FSS (Earth-to-space) and Mobile Service in 27.5-28.35 GHz?

Telesat agrees with RSM's understanding of the spectrum requirements for Fixed Satellite Service (FSS). In line with RSM's document, Telesat wishes to further add that:

Gateway Earth Stations Telesat: Lightspeed gateway earth stations are capable of supporting bandwidths of up to 500 MHz and can operate using both circular polarisations.

Coordination Procedures: While RSM notes that the 27.5–28.35 GHz band is subject to coordination procedures, Telesat emphasizes that coordination between operators is often a lengthy and complex process.

Continued Use During Negotiations: It is therefore important to ensure that satellite operators are permitted to continue using this frequency band as long as there is clear evidence of ongoing negotiations. This approach safeguards continuity of service without disruption to operations while allowing coordination processes to progress.

23	What are your spectrum estimates for FSS (Earth-to-space) and Mobile Services (including their applications which you wish to implement or use in the 27.5-28.35 GHz range?

Telesat would like to highlight that, in addition to gateways capable of supporting channel bandwidths of up to 500 MHz, the current planned Telesat Lightspeed user terminals (including enterprise, maritime, and aeronautical applications) are also expected to support channel bandwidths of up to 500 MHz.

The demand for applications requiring high throughput and low latency continues to grow. Real-time services such as live video streaming, 5G backhauling, and other data-intensive applications depend on robust satellite connectivity.

To meet these requirements, it is essential that both gateways and ESIM terminals have access to the entire 27.5–28.35 GHz band (850 MHz). Limiting access or imposition of unnecessary technical limitations would constrain the ability of satellite systems to deliver the performance necessary for modern and emerging applications.

37	Do you agree with our approach of ESIM use in 27.5-28.35 GHz?
38	Do you wish to offer, implement or use pier-to-pier M-ESIM and A-ESIM applications in 27.5-28.35 GHz?
39	Is there any other change which you wish to see in our approach for using A-ESIM and M-ESIM? If so, provide the relevant details.

RSM has proposed to implement Resolution 123 for the protection of mobile services across all of New Zealand. On this matter, Telesat respectfully requests RSM to reconsider the need for imposing such technical limitations on ESIMs throughout the country in the 27.5–28.35 GHz band.

A substantial portion of the proposed areas – specifically those classified as medium and low urban accessibility, as well as remote and very remote regions will not have mobile service as suggested by RSM. Imposing technical restrictions in these areas would therefore unnecessarily constrain satellite operations. Therefore, Telesat proposes to only limit these restrictions to only inside major, large, medium, small urban areas, and high accessibility areas.

Telesat is interested and committed to enabling gate-to-gate and pier-to-pier operations in this frequency band. Such operations will transform the passenger and crew experience on board vessels and aircraft by providing seamless connectivity from the moment passengers board, through taxiing and take-off, and continuing throughout the journey. To support this innovation, Telesat urges RSM to reconsider the requirement for a separate licence for fixed locations (even in the

case where ESIMs are stationary), allowing ESIM operations to proceed under existing authorisations.

On that note, Telesat wishes to highlight that Resolution 123 (WRC-23) Annex 1 Annex 1 already establishes safeguards, including:

1. A maximum EIRP spectral density towards the territory of any coastal state limited to 24.44 dBW in a reference bandwidth of 14 MHz for NGSO M-ESIM;
2. A pfd limit for NGSO A-ESIM below 3 km altitude.

These measures provide adequate protection for mobile services while still enabling ESIM gate-to-gate and pier-to-pier operations.

40	Do you agree with RSM's proposed new spectrum uses outlined in Section 3.1? If not, provide details on the modifications you wish to seek with appropriate reasoning.

RSM proposes the new spectrum use in 28.35-29.5 GHz as follows:

1. FSS Earth Station (Earth-to-space) gateways at specific fixed locations across New Zealand;
2. FSS Earth Station user terminals/VSATs at fixed locations across New Zealand;
3. FSS ESIM for A-ESIM and M-ESIM under technical conditions in Res 123 (WRC-23) and Res 169 (WRC-19);
4. FSS ESIM for L-ESIM will be allowed area areas of, or at any location in New Zealand under certain technical conditions.
5. No other use, including Mobile services.

In general, Telesat is supportive of the proposed spectrum use framework. However, Telesat recommends a review of the need for imposing ESIM technical conditions, given that there is currently no other terrestrial use in the 27.5–28.35 GHz band. Removing unnecessary restrictions would ensure that satellite operators can fully leverage the band to deliver advanced connectivity services without compromising coexistence.

44	Do you agree with RSM's proposed licensing arrangement to licence FSS (Earth-to-space) GSO or NGSO gateways operating in 28.35-29.5 GHz?

Telesat preliminarily agrees with RSM's proposed continued licensing arrangement to authorise FSS NGSO gateways operating in the 28.35–29.5 GHz band. This approach will enable individually licensed FSS NGSO gateway Earth stations, operating from discrete locations within New Zealand, to communicate with satellites in NGSO orbits.

Telesat emphasizes that any new licensing procedures and conditions should be applied consistently to both new and existing FSS gateways, ensuring regulatory fairness and operational certainty across the sector.

Telesat will provide further comments once a draft version of the comparable licensing procedures and policy ruleset is made available for review.

45	Which licensing option would you prefer for licensing FSS GSO and NGSO fixed user terminals and moving user terminals (ESIMs), respectively?

Telesat prefers that FSS NGSO fixed user terminals and ESIMs be included under the General User Radio Licences (GURLs) for operation in the 27.5–29.5 GHz band, as an expansion of the current licensing framework already applied to the 29.5–30 GHz band. Incorporating any proposed technical or licensing requirements for specific frequency ranges (such as compliance with Resolution 123 where necessary), directly into the GURL would ensure regulatory alignment while providing continuity and consistency in licensing mechanisms across the band.
At the same time, this eliminates the administrative burden of individual licensing processes.

In contrast, RSM's proposal for a "one licence per Territorial Local Authority" mechanism for the authorisation of satellite user terminals (VSATs and ESIMs) could result in significant inefficiencies, as ubiquitous user terminals such as ESIMs may require over 50 separate licences to enable islandwide use as there are more than 50 Territorial Local Authorities in New Zealand.

Although the discussion document does not specify the associated fees or application process, Telesat wishes to raise this concern for RSM's consideration to ensure that licensing arrangements remain practical and proportionate to the nature of satellite services.

46	Do you agree with RSM's proposed approach to 29.5-30 GHz?

Telesat is still supportive of the existing GURL licensing mechanism for user terminals in 29.5-30 GHz.

Telesat has raised a point for consideration in relation to the licensing process for the TLA in the response to Q 45.

47	Do you agree with RSM's proposed approach to 17.7-20.2 GHz?

As RSM has correctly pointed out, the frequency band 17.7-20.2 GHz works in tandem with the 27.5-30 GHz for satellite operations. In view of existing terrestrial Fixed Service links, Telesat agrees with RSM that operation of FSS "will either need to work in areas where fixed links do not cause them interference issues or should accept any interference, including harmful interference from fixed links".

In any case, Telesat understands that individually licenced NGSO FSS User terminals (space-to-Earth) could still be obtained for protection against interference, if preferred.