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Satellite Industry Response to RSM's Consultation Paper: Allocation of 24-30 GHz

GSOA thanks Radio Spectrum Management (RSM), part of the Ministry of Business, Innovation and Employment (MBIE, the Ministry), for providing an opportunity to submit the satellite industry's views on the proposals posed in its consultation document. Satellite-powered broadband infrastructure is increasingly delivering real-world impact across sectors such as aviation, maritime, government, and underserved areas. Satellite infrastructure enables "always-on" broadband in mobility across land, sea and air. This is not just about using technology efficiently; it's about using it meaningfully, making connectivity relevant, seamless, and accessible in ways that enhance the lives of New Zealanders and provide New Zealand enterprises with new opportunities to deliver value.

To unlock the full potential of "always-on" broadband for mobility across land, sea and air, and to reach every corner of New Zealand, MBIE plays a key role as an enabler of reliable, scalable infrastructure for New Zealanders. Earth Station in Motion (ESIM) operations are especially critical for realising New Zealand's potential as a world-class destination and as a well-connected Trans-Tasman hub for tens of thousands of people and businesses that rely on satellite broadband while on the move.

The benefits that MBIE seeks from the digital economy are only realisable through a spectrum planning and allocation approach grounded in the maximisation of economic and social value. However, realising these benefits requires the fundamental recognition that New Zealand, a remote low-density population nation with a vast territory and a massive oceanic footprint, will accomplish its digital economy vision when MBIE rebalances its terrestrial and satellite infrastructure priorities. This shift in priorities needs to occur as part of MBIE's national spectrum allocation updates to enable satellite access for New Zealanders.

GSOA respectfully submits the following feedback on the issues posed in the Consultation Document.

1. Mitigating any further delay in allocating the 28 GHz: an FSS primary allocation in this band is urgently needed to "power on" the New Zealand ESIM ecosystem

New Zealand has an opportunity to maximize ESIM uptake of satellite broadband using geostationary (GSO) or non-geostationary (NGSO) systems joining its closest neighbour, Australia, in switching on all portions of 27.5-30 GHz (28 GHz band) for Fixed Satellite Service (FSS) uses, including ESIM. We note that this band provides Ultra-High Throughput FSS capabilities for the Trans-Tasman aviation route and the maritime sector. More than 120 countries already use this band for FSS/ ESIM. We urge MBIE to begin incorporating economic-value analysis into its spectrum planning and allocation processes, as the loss of economic benefit from unrealized allocation of the 28 GHz FSS band is not insignificant.

We also note that both Air New Zealand and Qantas have already invested, and continue to invest, in 28 GHz ESIM capabilities. There would be tremendous benefit to allowing these operators to switch on their service in New Zealand as well. New Zealand is heavily dependent on aviation infrastructure to be connected to the world. New Zealanders should be able to benefit from the same broadband benefits they experience abroad. Moreover, Air New Zealand has recently announced a massive

increase in its passenger offerings.¹ – ESIM will be a significant value-creation platform to incentivise passenger take-up.

2. Implementation of the August 2023 Cabinet Decision on the shared use of the band 27.5-28.35 GHz between FSS and the terrestrial Mobile Service

While GSOA is ambivalent to the exclusive and unconstrained allocation of the band 24.25-27.5 GHz to the terrestrial Mobile Service (MS), GSOA has reservations about the options MBIE is presenting for expanding MS into the 27.5-28.35 GHz band.

GSOA respects the August 2023 Cabinet Decision for the shared use of the band 27.5-28.35 GHz between FSS and MS, but does not support MBIE's options to implement such a decision. GSOA is concerned that not all available options to implement the Cabinet Decision were fully considered. It is unclear, for example, whether MBIE considered the economic benefits, technical and operational upsides of allocating this band to FSS on a primary basis and MS on a secondary basis nationwide. GSOA is of the view that MS and FSS cannot co-exist within the same band. And it is acknowledged that IMT cannot share with FSS uplink when the FSS uplink transmission is in the boresight (or even high power sidelobe) into the IMT receiver.

The term 'sharing' is dependent on the definition of protection criterion for the affected receivers, with IMT being the receiver on the ground, and satellite as the receiver in space. In exploring the feasibility of sharing, an appropriate premise pre-supposes that FSS could operate in 27.5-28.35 GHz by the existence of FSS gateways and ESIMs at airports/seaports, as a pre-condition to accommodate sharing with IMT. In order to protect satellite receivers in space, it will be necessary to:

- Ensure as much as possible, there are no terrestrial transmissions in the band overlapping with FSS;
- Impose operational conditions for IMT base stations to down tilt and/or apply an EIRP mask with reduced power density level above the horizon relative to the main beam.

For protection of IMT receivers, geographical separation could be considered, noting that the larger the geographical distance needed to be imposed for protecting IMT, the less feasible it becomes for IMT deployment in areas that FSS could already operate. Conversely, if IMT is allowed to operate, FSS would be denied operating in the areas. Considering the protection requirements mentioned above, it is recommended, MBIE ensure FSS is retained as the primary exclusive service in the band 27.5-29.5 GHz, noting that 29.5-30 GHz is already FSS primary exclusive. And, as the band 24.25-27.5 GHz would be auctioned/assigned to terrestrial use exclusively, most use cases could already be accommodated there.

There would be no harm to the MS ecosystem, since MS will have the entire 24.25 – 27.5 GHz available for indoor or coverage-limited FWA/Hotspot applications, and all 3 MNOs can be accommodated within this band, with 1 GHz each or more, which is more than the maximum of 800 MHz per MNO assigned in other countries. And as noted by MBIE, further capacity requirements can also be accommodated in higher mmWave bands allocated to IMT in the future.

¹ Air New Zealand: <https://asianaviation.com/air-new-zealand-boosting-2026-domestic-capacity/>

In the event of a justified need to accommodate additional terrestrial use cases within 27.5-28.35 GHz, GSOA is of the view that they should be limited to very niche examples in urban/suburban cases. In this regard, it is proposed that IMT could deploy only in urban/suburban areas provided that base stations are configured to downtilt and subject to EIRP mask, while not claiming protection from existing FSS gateways and deployment of ESIMs around airports/seaports.

GSOA does not support the options presented by MBIE for the band 27.5 -28.35 GHz. GSOA strongly recommends that MBIE implement the Cabinet Decision for this band considering an economic-value analysis and a regulatory analysis aimed at mitigating a regulatory asymmetry to the detriment of the New Zealand FSS/ESIM ecosystem.

Recommendation: The option that would achieve this outcome, and the one that we recommend, is not provided in the consultation document: the allocation of this band to FSS on a primary basis and to MS on a secondary basis.

3. Lack of coherence in the application of coexistence mechanisms: 29.5-30 GHz

GSOA respectfully notes that MBIE is suggesting applying the exact coexistence mechanisms sought for the band 27.5-28.35 GHz to the band 29.5-30 GHz, to “be consistent” (page 47), although there is no MS use of the 29.30 GHz band. GSOA does not support the expectation that FSS gateways in this band are not to operate at elevation angles below 20 degrees. As MBIE states that it “is not proposing any changes to the usage of this band”, yet requests changes to the usage by placing a hard limit on a minimum elevation angle, justified from the same set of rules from another band segment with differing allocations and usage (the lower 28 GHz band).

Recommendation: GSOA is of the view that MBIE needs to decouple this band segment (29.5-30 GHz) from the 27.5-28.35 GHz segment, as the operational characteristics would be different. There should be no elevation angle restrictions in this band. Furthermore, if MBIE considers the views of the satellite industry to make FSS primary in the band 27.5-28.35 GHz, elevation angle restrictions for FSS gateways would not apply across the 27.5-30 GHz band.

4. Detrimental impacts to the New Zealand ESIM ecosystem: interpretation of ITU-R Res.169 and ITU-R Res.123

ESIMs are part of the FSS allocation in the band 27.5-30 GHz, entitled to primary status with respect to secondary services and to co-primary status with respect to other co-primary services. The provisions of Res 169 (WRC-19) and Res 123 (WRC-23), which cover GSO and NGSO FSS ESIM in the Ka-band, respectively, explain that Resolution 169 and Resolution 123 do not limit ESIM operations in the 27.5-29.5 GHz band, or parts thereof, within an Administration’s borders. These resolutions instead guide administrations on cross-border management where neighbouring countries have overlapping allocations between terrestrial FS or MS and ESIM.

One salient provision of Res.169 states that *(further resolves) an administration may authorise ESIMs within its own territory without reference to the power flux density levels contained in Res. 169, where doing so does not affect other administrations.* Similarly, Res.123 states that *(considering further) an administration intending to authorize the operation of non-GSO ESIMs on the territory under its jurisdiction, including territorial waters and national airspace, may consider adopting interference management procedures and/or mitigation measures different from those contained in this Resolution, so long as the provisions of this Resolution apply with respect to any other administration.*

Misinterpretation of ITU Res. 169 or ITU Res. 123 would result in significant economic losses and unnecessary constraints to the New Zealand ESIM ecosystem, including Air New Zealand, Qantas, all other international airliners using ESIM and the maritime sector.

Recommendation: GSOA is of the view that in the bands 28.35-30 GHz, ITU-R Resolution 169 and ITU-R Resolution 123 are not applicable. Should MBIE consider the views of the satellite industry to make FSS primary in the band 27.5-28.35 GHz, then Resolution 169 and Resolution 123 would not apply across 27.5-30 GHz. Application of Resolution 169 and Resolution 123, specifically using it for *national* management where there is no *cross-border* management requirement unnecessarily impairs implementation of A-ESIM (gate-to-gate) and M-ESIM (pier-to-pier). Land ESIMs should be permitted nationwide.

5. Maintaining a GURL-based licensing regime for FSS/ ESIM user terminals in 27.5-30 GHz

RSM proposes departing from the current GURL regime for satellite user terminals in the Ka band. Instead, it wishes to implement an *application licence* in the band for user terminals, for example, for ESIM use. However, ESIM and other FSS services can appropriately follow a compliance regime implemented through a defined set of power and frequency parameters within a GURL's national regime, reducing administrative burdens: for example, by allocating FSS as a primary service and establishing an FSS/ ESIM user terminal GURL across the 27.5-30 GHz range. Establishing application-specific licences would require periodic reviews and increases administrative burdens.

Recommendation: GSOA is of the view that a GURL for FSS/ ESIM user terminals should be implemented across 27.5-30 GHz.

Conclusion

GSOA welcomes the much-needed allocation of the 28 GHz band for FSS/ESIM use. However, GSOA recommends that MBIE do so by implementing the Cabinet Decision for the shared use of the band 27.5-28.35 GHz in a way that doesn't foreclose economic opportunities arising from FSS/ESIM primary use. The bands 28.35-29.5 GHz and 29.5-30 GHz should be allocated exclusively for FSS/ESIM use. ITU-R Resolution 169 and ITU-R Resolution 123 should be interpreted as intended (cross-border management), and a GURL for user terminals across 27.5-30 GHz should be applied.

GSOA is the global CEO-driven association representing the entire satellite ecosystem - from operators in all orbits, including communications and Earth Observation, to manufacturers, launch providers, and ground segment companies. We lead industry collaboration, drive visibility at the highest policy levels, and provide a strong, united voice for the satellite sector. GSOA promotes and advances the collective agenda of the satellite industry, helping shape the policies and frameworks that expand connectivity, fuel innovation and growth, and ensure long-term sustainability. Recognised globally as the leading advocate for satellite operators, GSOA influences key issues such as spectrum management, 5G/6G integration, non-terrestrial networks, space sustainability, and closing the digital divide.