



RLAN Use in the 5 and 6 GHz Bands Comments of EchoStar Global Australia Pty Ltd

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EchoStar® Global Australia Pty Ltd (“EchoStar Global”) is planning for and beginning to launch an Australia Non-Geostationary Orbit (“NGSO”) Mobile Satellite Service (“MSS”) satellite that operates in the S-band with feeder links at the 7025–7075 MHz band. As discussed below, we support the Australian Communications and Media Authority’s (ACMA) proposal to enable RLAN use of the 5925–7125 GHz band on a shared basis with MSS. Such use will allow the most efficient use of the 7025–7075 MHz band by enabling sharing with MSS feeder links, including EchoStar Global’s current and planned use of this band to support its planned NGSO MSS system.

1. What is the demand for spectrum for RLAN use in the 6 GHz band (5925–7125 MHz)?

No comment.

2. Should the ACMA proceed, as proposed, to consult on a formal variation to the LIPD class licence that adds the frequency range 5925–6425 MHz for RLAN use, bounded by the parameters described in the ACMA’s preliminary view section of this paper?

No comment.

3. If class licensing arrangements are to be made in the lower 6 GHz band (by variation to the LIPD class licence), should alternative/additional power limits and/or other conditions be considered?

No Comment.

4. Is it appropriate to consider inclusion of the upper 6 GHz band (6425–7125 MHz) in the LIPD class licence or should this be deferred to monitor future developments (for example, in the wide-area International Mobile Telecommunications (IMT) space) as outlined in the ACMA’s preliminary view? We invite comments from submitters on the utility of the band for IMT use.

We do not support use of the 6 GHz band for IMT because it reduces the ability to make the most efficient use of the spectrum.

High-reliability satellite services in the C-band frequencies support both government and commercial operations that help ensure access to connectivity worldwide; therefore, use of the 5925–7025 MHz frequency band should remain allocated to the Fixed-Satellite Service (FSS) on a primary basis. Satellite systems operating in this frequency range are used for a wide range of FSS applications with high-availability requirements, including broadcast (national and international programming, news, live sports, etc.), government and defence networks, and broadband connectivity.

FSS operations in the 6725–7025 MHz band are particularly important considering the special status of this band in the Radio Regulations. As the uplink band (Earth-to-space) for the International Telecommunication Union (ITU) Appendix 30B Allotment Plan, this spectrum allocation is intended to ensure that all countries have access to spectrum and orbital resources for satellites.

Numerous studies have detailed the lack of compatibility of ubiquitous FSS deployment with IMT. FSS services provided in 6 GHz require the ability to deploy earth stations on a ubiquitous basis. Terrestrial services operating outdoors or at high power, particularly at the scale of deployment envisioned for IMT or 5G systems, will interfere with the satellite’s reception of signals that are transmitted from earth stations. Moreover, the ubiquitous transmitting FSS earth stations will interfere

with IMT/5G receivers. The deployment of these two services is not compatible and, therefore, IMT/5G should not be deployed in the bands that are allocated to FSS (Earth-to-space).

Additionally, per RR 5.458B, the band 6700–7075 MHz has an additional allocation to the FSS in the space-to-Earth direction, limited to feeder links for NGSO MSS systems. Notified MSS systems have made use of all or a portion of this allocation continuously since 1998. Current MSS feeder link stations, depending on location, may require access to the sky in all azimuths at elevation angles down to approximately 6 degrees, given the tracking characteristics of such stations. These feeder link stations are designed to receive very low-level signals transmitted from the MSS system spacecraft. A single IMT transmitter can emit Effective Isotropic Radiated Power (EIRP) levels several orders of magnitude higher than the received satellite transmitted signals at the feeder link receive antenna.

For existing earth stations, procedures to establish coordination distances for IMT-to-earth stations are contained in Annex 7 of Appendix 7 of the ITU Radio Regulations. The case of new feeder link stations for MSS systems becomes problematic if user terminals of the new IMT systems, deployed on a ubiquitous or mobile basis, are located in an area that was used by an earth station. In this case, large areas could not be used by additional feeder link earth stations because it would be impossible for receiving feeder link stations to share frequencies in the same area with IMT systems. Given the consequential effect of the proliferation of IMT stations in the band, the ability of the MSS systems to establish new feeder link earth stations in the 7 GHz bands must be preserved.

In conclusion, IMT identifications in the segments 6700–7075 MHz should not be considered because IMT deployments are not compatible with FSS allocations used for NGSO MSS feeder links. For the 6425–6700 MHz and 7075–7125 MHz bands, sharing and compatibility studies could be performed for a potential IMT identification, including establishing appropriate guard bands for any IMT identification in these bands in order to prevent overloading the receive low-noise amplifiers at the NGSO MSS feeder downlink stations.

- 5. Should standard power (that is, higher power devices, including for outdoor use) operating under a dynamic spectrum access system such as the automatic frequency coordination (AFC) system adopted in the USA, be adopted in Australia for some or all of the 6 GHz band? Is there an appetite and capability for industry to provide the necessary systems to enable such use? We welcome views and evidence on the commercial and technical feasibility of introducing AFC systems in the band.**

In view of the potential for harmful interference to FSS posed by outdoor, high-power, or ubiquitous use of this frequency range by terrestrial services, the use of this spectrum should remain limited to primary FSS service with carefully prescribed operational constraints on any terrestrial operations, including license-exempt use by RLANs.

EchoStar does not consider RLANs that operate outdoors or at high-power feasible in Australia because such operations would disrupt existing and planned satellite operations in the 5925–7025 MHz band. The long-term impact of high-power outdoor device deployment will depend on factors that are difficult to predict and, therefore, difficult to mitigate. These same factors in other jurisdictions within the region will also have an impact because satellites receive signals from any country or region within their uplink beam.

Beyond domestic considerations, the special status of the 6725–7025 MHz band in the ITU Radio Regulations as the uplink band for the Appendix 30B Allotment Plan band is relevant to the feasibility of license-exempt operations of low-power indoor RLAN devices in Australia because the deployment of outdoor devices could become widespread and more likely to affect the performance of the satellite receiver. This will be the case even if Australia is excluded from the service area of a foreign Plan Assignment notified under the Plan, as the regulatory status of the service will not impede the impact of signals emanating from Australian territory into satellite receivers operating under the Plan Assignment of another regional administration.

An unlicensed approach for the implementation of low-power indoor RLAN is suitable in the 5925–7125 MHz segment. A fundamental principal of spectrum management relevant to the consideration of RLANs in the 5925–7125 MHz range is that unlicensed devices with no status in the Allocation Plan must protect licensed services with status in the Allocation Plan and not claim protection from the allocated service. This principle must be the foundation for technical, operational, and coexistence considerations for assigning RLANs, including low-power devices and Wi-Fi systems in Australia.

Deployment of local area radio networks in the 5925–7125 MHz band, including low-power devices and Wi-Fi systems, can be feasible if their use is limited to indoor deployment and where operational constraints that minimize the potential for interference at the satellite are observed. EchoStar would urge the ACMA to limit license-exempt devices in this band to indoor-only applications and to power levels equivalent to those adopted in the EU/European Conference of Post and Telecommunications Administrations (CEPT) in this band. A proliferation of devices in the 5925–7125 GHz range will create risks of harmful interference to satellite receiving operations, which cannot be adequately mitigated by other types of deployment of the band.

Under the appropriate technical and operational characteristics for coexistence with the FSS, deploying RLANs would be possible across the full band (5925–7125 MHz) allocated to the FSS on a primary basis.

- 6. Should the higher power regulatory arrangements and associated interference mitigation measures added to the International Telecommunication Union (ITU) Radio Regulations at WRC-19 (see Resolution 229 (Rev WRC-19)) in the 5 GHz band be included in any amendment to the LIPD class licence?**

No comment.

Respectfully submitted,

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Jennifer A. Manner
Head, Regulatory Affairs