

COMMENTS OF TELESAT

In response to the consultation paper on
Auction of Spectrum in frequency bands identified for IMT/5G
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Telesat is grateful to the Telecom Regulatory Authority of India ("TRAI") for the opportunity to respond to the "Consultation Paper on Auction of Spectrum in frequency bands identified for IMT/5G", Consultation Paper No. 8/2021.

While there are generally no comments on the details relating to the licensing fees, conditions and obligations of Mobile Operators mentioned in this Consultation Paper, Telesat shares the same concerns with several satellite operators on the possibility of auctioning the 27.5 to 28.5 GHz exclusively for IMT/5G in all the Licensed Service Area.

The importance of the 28 GHz band for the satellite industry cannot be further emphasized. Use of this band would need to be considered holistically, in terms of its societal value, taking also into account the indications from the Draft Spacecom Policy 2020 to provide an environment for increased private (non-governmental) participation in offering satcom services and an avenue for the use of non-Indian orbital resources to establish space-based systems for communications over India.

Given the relevance of the 28 GHz frequency band to the satellite industry and the synergistic function of space and terrestrial services to provide complementary connectivity services to end users in India, Telesat urges TRAI to reconsider allocation of the 27.5-28.5 GHz band to terrestrial mobile services. This is also in consideration of the poor terrestrial 5G coverage in this band, also acknowledged in the consultation, which will realistically limit 5G deployment to urban areas, in comparison to global satellite coverage in the same band.

Telesat suggests that, if any 5G use is to be made of the band of the 27.5-28.5 GHz band, for it to be limited to private captive networks on a non-interference basis to satellite systems.

In any case, whatever the final outcome, it is essential that access for FSS earth stations in the 27.5-28.5 GHz band is preserved, also as many existing and planned systems use this band for the gateway feeder links. If access to this band were to be denied, it would severely compromise gateway functioning and therefore capacity provision, leading also to a paradox with the regulatory requirement to deploy in-country gateways.

In the context of this consultation Telesat will be responding to a limited set of questions relevant also to the market access and imminent deployment of Telesat Lightspeed¹ in India.

Finally, Telesat is concerned by the reference to a possible auction mechanism for satellite spectrum. This would be unprecedented in mm-wave frequency bands. The parallel between "access spectrum" for satellite and terrestrial networks does not

¹ <https://www.telesat.com/leo-satellites/>

stand, as the spectrum sharing mechanism is completely different and, in the case of satellites, assignment by auction would be most inefficient.

Q8 Whether entire available spectrum referred by DoT in each band should be put to auction in the forthcoming auction? Kindly justify your response.

For the frequency band 27.5–28.5 GHz, Telesat would propose the TRAI to recommend:

- 1. not auctioning the band at this stage. Such auction can always be re-considered at a later stage**
- 2. limiting possible 5G use only to private captive networks on a non interference basis to satellite systems**
- 3. maintaining in any case access to the band for FSS and especially for gateway feeder links**
- 4. although outside the scope of the current consultation, avoiding consideration of an auction mechanism for spectrum used for satellite services in the mm-wave frequencies**

The recommendations above are based on the following:

- 27.5-28.5 GHz is of paramount importance to modern satellite systems. Newer systems leverage on high bandwidth to revolutionise and enhance the quality of connectivity and the economics of novel applications, including backhauling of 5G networks in more remote areas. Multi-billion-dollar extensive investments have been and are being made to meet growing demand for satellite connectivity to connect the unconnected. Excluding access to 27.5 –28.5 GHz would significantly impact the existing and ongoing investments made on satellite systems and ground equipment, especially considering that the operational frequency ranges of Ka-band satellite systems cannot be changed. Subsequently, this will also reduce the benefits reaped by the end-users of satellite connectivity
- As also mentioned in the consultation, WRC-19 has ruled against IMT identification of the 28GHz band, which was not even considered as a potential candidate band in the last study cycle. As such, 5G allocations in the 28GHz band are only taking place in a very limited number of countries. On the contrary, several agenda items from WRC-19 to WRC-23 signal an overwhelming interest for satellite services in the 28 GHz band

- There is sufficient spectrum for mobile capacity in the 26 GHz band. With 3.25 GHz of spectrum from the 24.25 – 27.5 GHz, the existing mobile operators in India would have more than sufficient amount of spectrum to provide the ample high data rates required for both industrial and commercial uses. Allocation of 27.5-28.5GHz could always be considered at a second stage, based on an assessment of usage in the 26GHz band
- 5G coverage for public use in this frequency band, is, as also mentioned in the consultation document, very poor and exclusive assignment of 27.5-28.5GHz to 5G, resulting in limited deployment in urban areas, would lead to an inefficient spectrum use, also considering the potential for satellite global coverage in the same band
- 5G services will need backhauling which can be effectively provided by novel satellites. Limiting satellite capacity, by limiting access to part of the Ka-band, will damage the synergy envisaged between these two essential and complementary services
- In any case, FSS fixed earth stations can always be coordinated and ESIM can operate with appropriate sharing conditions with terrestrial systems
- As mentioned above, "access spectrum" for satellite and terrestrial networks cannot be considered as similar. While terrestrial mobile operators need the spectrum to be auctioned because it cannot be shared, the opposite is true for satellite operators in mm-wave frequency bands, where multiple satellite systems can share the same spectrum in the same location thanks to the directivity of the antennas and satellite network coordination.

Overall, it is Telesat's view that the 27.5 – 28.5 GHz frequency band exclusive use for IMT/5G will lead to an inefficient use of spectrum and unnecessarily reduce the satellite capabilities in India, including for 5G backhauling. As such, the 27.5-28.5 GHz should be excluded in the forthcoming auction for a "win-win" synergetic approach to telecommunications in India.

Q.21 What should be associated roll-out conditions for the allocation of spectrum in 24.25 to 28.5 GHz frequency range? Kindly justify your response

The text in the consultation states in Sec. 2.67 that "24.25 – 28.5 GHz (mmWave) spectrum is likely to be used for provision of 5G use cases/applications requiring very high data rates and ultra-low latency. Therefore, the TSPs would be deploying it selectively in the areas where the demand for such use cases/applications exists.

Further, the technical characteristics of high band are such that it cannot be used for meeting coverage requirement.”

As such it is clear that, given the contention in the band and its high value for satellite services, nationwide allocation to 5G of the 27.5-28.5GHz band is not a sensible way forward, as it would unnecessarily sterilize valuable spectrum in areas where 5G will never be deployed using these frequencies.

In the most unfortunate case that 27.5-28.5GHz were auctioned for 5G on an exclusive basis, the spectrum denial to other services would indeed be nationwide. Such spectrum allocation should therefore be associated to strict nationwide roll-out conditions. Spectrum unused within a certain timeframe, according to the rollout conditions, should be promptly recovered and its use reconsidered.

Q.71 Whether some spectrum should be earmarked for localized private captive networks in India? Kindly justify your response

As mentioned in the reply to Q.8, the 27.5-28.5GHz (rather than the 28.5-29.5GHz band indicated in 4.40 of the consultation document) could be earmarked for localized captive networks in India on a non-interference, non-protection basis in relation to satellite systems. Even the US², which were at the forefront of promoting 5G use in the 28GHz band, are now reconsidering this option because of the extremely poor coverage.

Q.72 In case it is decided to earmark some spectrum for localized private captive networks, whether some quantum of spectrum be earmarked (dedicatedly) from the spectrum frequencies earmarked for IMT services and/or spectrum frequencies earmarked for non-IMT services on location-specific basis (which can coexist with cellular-based private captive networks on shared basis)? Kindly justify your response with reasons.

A per reply to Q.71, the 27.5-28.5GHz spectrum could be earmarked specifically for localized private captive networks, on a non-interference, non-protection basis in relation to satellite services.

² <https://www.axios.com/fcc-5g-midband-milimeter-spectrum-digital-divide-ee591e73-53be-4cf9-8818-f43bdb8d1976.html> (“Acting FCC Chair says 5G midband spectrum key to closing digital divide”, 16 July 2021)

Conclusion

Telesat, like other satellite operators, is extremely concerned about the possibility of the 27.5-28.5GHz band to be auctioned for 5G on an exclusive basis.

In its reply, Telesat has provided solid reasons and considerations in support of alternative solutions.

Telesat wishes to thank TRAI for the consideration of the replies provided and looks forward to further collaboration. Should there be any additional queries or discussion, Telesat remains fully available and looks forward to a continued engagement and cooperation.

Background of Telesat

Backed by a legacy of engineering excellence, reliability and industry-leading customer service, Telesat is one of the largest and most successful global satellite operators. Telesat works collaboratively with its customers to deliver critical connectivity solutions that tackle the world's most complex communications challenges, providing powerful advantages that improve their operations and drive profitable growth.

Continuously innovating to meet the connectivity demands of the future, Telesat Lightspeed, the company's Low Earth Orbit satellite network, will be the first and only LEO network optimized to meet the rigorous requirements of telecom, government, maritime and aeronautical customers. Telesat Lightspeed will redefine global satellite connectivity with ubiquitous, affordable, high-capacity links with fiber-like speeds.

Headquartered in Ottawa, Canada with offices and facilities around the world, Telesat has recently become a public company, trading on the Nasdaq Global Select Market ("NASDAQ") and the Toronto Stock Exchange ("TSX"). For more information, visit www.telesat.com.