Response to Consultation Paper on Auction of Spectrum in frequency bands identified for IMT/ 5G

Nelco would like to thank TRAI for giving them the opportunity to respond to the consultation paper on "Auction of Spectrum". Nelco is a Satellite Communication Service Provider (SCSP) in India and have been participating into various consultative process of formulation of NFAP and other policy matters. While we welcome DOT & TRAI move to make more spectrum available for IMT in 3.4Ghz (3.3Ghz – 3.67Ghz) and in 26Ghz (24.25Ghz to 27.5Ghz), we are concerned about possibility of spectrum auction in the frequency range of 27.5Ghz to 28.5Ghz exclusively for IMT/5G use in all licensed service areas.

In the overall communication services, there are various services being provided using different frequency bands – IMT, Satellite, Microwave, Wi-fi services etc. Each of these services serve its intended use and has its own market/target customers and spectrum availability is critical for each of these services.

As mentioned in the consultation paper, as per WRC-19 of ITU, 24.25Ghz – 27.5Ghz has been identified for IMT use whereas it has ruled against IMT identification of the 28GHz band and most of the countries are planning their spectrum allocation as per ITU guidelines.

LEO satellites are going to transform the overall communication space and India should not be deprived of making full use of LEO service by not making the required spectrum, which includes spectrum from 27.5Ghz to 28.5Ghz, available for LEO Satellite services.

We sincere urge TRAI & DOT to reconsider allocation of 27.5Ghz to 28.5Ghz for IMT services and keep it outside of the upcoming Auction of the IMT spectrum. The policy wrt allocation of 27.5Ghz – 28.5Ghz may be reviewed after few years post analysing the utilisation of the 5G network in 24.25Ghz – 27.5Ghz spectrum across urban/semi-urban/rural areas of the country.

As the spectrum usage mechanisms w.r.t Satellite services and IMT are completely different, the method of spectrum allocation (auction/administrative) etc need to be accordingly considered.

Considering above, please find below response to few of the questions asked in this consultation paper:

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

Response:

We would like to recommend that the Frequency band in the range of 27.5Ghz to 28.5Ghz:

1) should be excluded from IMT auction at this stage
2) should be allocated for satellite services

3) if despite the representation provided, TRAI & DOT decides to allocate this frequency band for IMT, in line with the principles laid down by ITU to protect incumbent services (28 GHz band being presently allocated to Satellite), then

   a. It should be done on non-exclusive basis wherein this spectrum can be utilised for satellite services as well, specifically for gateway feeder links.

   b. Satellite gateway exclusive protection zone of appropriate distance – IMT services should not be allowed within that defined radius from satellite earth station gateway.

   c. Maintain access to In-flight and Maritime satellite terminals in the band 27.5-28.5 GHz.

Following is the justification of the above recommendations:

- The frequency band of 27.5Ghz to 28.5Ghz is of prime importance for satellite systems. The new satellite systems like LEO can offer high speed broadband to every remote part of the country. The digital divide that exists today between urban and rural areas can be addressed through newer satellite systems and will ensure benefit of digital economy to reach to tier4 cities & beyond. It can enable quality education, access to various govt aided programs, digital systems etc. Also, it may help industry as BPO/KPO, large content providers, data centers to setup their infrastructure at remote location – truly removing the distance & location barrier and providing equal opportunity for citizens from rural areas to access education, get much larger employment opportunities in these locations. It has potential to transform the economy of the country. Curtailing the satellite spectrum will limit the bandwidth available and make it much less attractive use-case for such enterprise segments to setup their presence/infrastructure in remote areas.

- 5G coverage for public use in this frequency band as also mentioned in the consultation document, very poor. Exclusive assignment of 27.5-28.5GHz to 5G, may result in limited deployment in urban areas only and very less utilisation in semi-urban & rural areas. It will lead to an inefficient spectrum use, whereas satellites use the 27.5-28.5 GHz ensures service coverage all across the country.

- 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 enough spectrum to provide the ample high data rates required for both industrial and commercial uses. The WRC-19, additional allocations (37-43.5 GHz, 45.5-47 GHz, 47.2-48.2 GHz, 66-76 GHz, 81-86 GHz) amounting to a total of 14 GHz were identified for IMT/5G deployments. With this, there seems to be adequate spectrum for the growth of IMT/5G services.

- While Government of India has focus w.r.t enabling Indian industries to make for India and world, excluding access to 27.5 –28.5 GHz would significantly impact the existing and ongoing investments made on satellite systems and ground equipment. It will make global Satellite operators lesser motivated to invest in India. It will reduce the India satellite market space significantly, making it less lucrative for Indian Space segment manufacturing companies.

- Global LEO satellite operators have already designed and launched / in process of launching their satellites wherein 27.5Ghz to 28.5Ghz is very much part of spectrum to be utilised by these satellites. The frequency band in these satellite systems now cannot be changed. Subsequently, though satellites & ground stations might be capable of delivering full throughput, however due to restriction of not being able to utilise 27.5Ghz to 28.5Ghz, the overall capacity to be made available for India will be significantly reduced and limit 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 28 GHz band, and the 28 GHz was not even considered as a potential candidate band in the last study cycle. As such, 5G allocations in the 28GHz band have taken place in a very limited number of countries.

- 5G services will need backhauling which can be effectively provided by satellites. Limiting by restricted access to part of the Ka-band for satellite services, will damage the synergy envisaged between these two essential and complementary services

- In any case, fixed earth stations gateway can 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.

- As in the TRAI consultation paper, global frequency bands in mmWave are either n257 or n258. India should go with global accepted frequency band of n258, rather than coming out with its own version which will be combination of n257 & n258. Anyway, number of device models in the mmWave are limited and considering that most of the countries use 24.25Ghz to 27.5Ghz for IMT, it is expected that device eco-system will develop more in n258 rather than any India specific band.

Overall, depriving usage of 27.5Ghz – 28.5 GHz frequency band for satellite services will significantly reduce the communication & broadband potential of India and its exclusive use for IMT/5G will lead to an inefficient use of spectrum. Considering all the above, it is recommended that 27.5Ghz to 28.5Ghz should be excluded in the forthcoming spectrum auction.

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

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 requirements."

As such, 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 appropriate way forward, as it would unnecessarily waste valuable spectrum in areas where 5G will never be deployed using these frequencies.

In the most unfortunate case that 27.5Ghz-28.5GHz were auctioned nationwide for 5G on an exclusive basis, the spectrum denial to other services would also be nationwide, even for semi-urban & rural areas where 5G rollout may not even happen. Such 5G spectrum allocation should therefore be associated with strict nationwide roll-out conditions. Spectrum unused within a certain timeframe, according to the rollout conditions, should be promptly recovered and should be made available for use for other services.

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

Some spectrum may be ear-marked for localised private captive networks as it will not only help enterprises and industry automation but also ensure co-existence of other services as well. Though to ensure that the regulatory compliance w.r.t spectrum is maintained, it is recommended that the allocation is done to authorised telecom service providers.

Conclusion:

Satellite services are playing vey important role in ensuring that benefits of digital services reach the underserved, which is an important requirement in India. We are at stage of transformation w.r.t satellite communication which is expected to diminish any location/ geography disadvantage and truly transform the way people learn, grow and contribute to country's GDP.

Nelco has provided response to few of the question with associated rationale and will continue to collaborate and provide any additional information required.