Nelco's Counter Comments wrt

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

We would like to thank TRAI for giving us the opportunity to provide counter comments to the responses received w.r.t. "Auction of Spectrum for IMT/5G". Nelco would like to put its counter comments wrt few points, as mentioned below –

Below are major points w.r.t. which we are presenting our counter comments:

1. The identification and auction of the mmWave band 24.25-28.5 GHz for IMT/5G.
2. Request for the authority to recommend fresh identification of bands not already identified for IMT/5G
3. Auctioning of spectrum used for satellite services.

Point no 1

Identification and auction of mmWave band 24.25-28.5 GHz for IMT/5G

In the recent past, the identification of mmWave spectrum for 5G has gained a lot of traction. Different IMT players have argued that mmWave spectrum is very essential for the success of 5G rollouts. Additional arguments have been made that the device ecosystem exists today and is well positioned to leverage the mmWave bands.

We would like to put following points for TRAI consideration:

1. The WRC 2019 identified 3.25 GHz in the 26GHz band for 5G/IMT (24.25-27.5 GHz). In addition, the WRC 2019 also identified 14 GHz of additional spectrum in the mmWave bands. However, there was no spectrum identified in the 28 GHz band.

2. It is often quoted that some of the countries have identified spectrum in the 28 GHz bands on their own (without any such identification done by the ITU). These countries did such identification before the WRC 2019 got concluded. Many of these countries are either highly fiberised geographies or did so for certain legacy reasons.

3. In South Korea, despite a portion of the 28 GHz band being identified for IMT/5G and also allocated through auction with roll-out obligations to deploy 45,000 base stations (allocated in 2018), till date, only 161 base stations have been deployed in the 28 GHz band.

4. In the US, the FCC for legacy reasons, allocated 850 MHz of spectrum in the 28 GHz band - 27.5-28.35. However, recently the FCC Chairwoman Jessica Rosenworcel went on record to say the following - *"I think that the FCC made a mistake a few years ago when it focused all of its energies in the early 5G days on the spectrum called millimetre wave. Those are airwaves that are really high up there, they have lots of capacity, but their signals don't travel very far. And so, what that means is that you have to have lots of ground-based facilities to make those signals viable. And that's a really costly thing to do. And so, if we just relied on millimeter wave spectrum we'd actually grow the digital divide with 5G."*

5. One of the leading cellular operators of the country (Reliance Jio) has admitted in its submission (in response to Q.53) that *"this spectrum is useful majorly to provide high speed data capacities in dense locations and is unlikely to be used to provide uniform coverage owing*

to limited coverage by mmWave radio which is limited to 50-100 meters and requires lot many radios in a small cluster to provide hotspot coverage". "Thus, even if we consider, hotspot deployment, the cost of laying such a network will be 100s multiple of current spectrum bands deployed in the country".

- It is quite evident that the use of mmWave for providing 5G services beyond such dense locations is going to be rare and limited. This will be most in-efficient way of using the spectrum. Whereas in case of satellite services, the spectrum is not location dependant and will be available across the country.

6. 5G base stations are required every 50-100 meters if they are operated in the 28GHz band. It also goes to say that the deployment of such base stations in the 28 GHz band is going to be a lot more expensive (100s multiple of the deployments in the current bands).

7. It is evident from all these submissions that the 28GHz band if at all would be used only in pockets for enhancing capacity rather than achieving the uniform reach across the country.

8. We would like to clarify that most of the counties have implemented in 26Ghz range rather than 28Ghz for rolling out 5G services.

9. As a start, the auctions mentioned in Mexico, Thailand and Brazil are not for "satellite spectrum", but for domestic filing/GSO orbital slots to which, of course, some spectrum will be associated. However, other satellite operators are still allowed, pending the relevant license/ authorization and satellite network coordination, to use the spectrum, as the spectrum, as such, is not being auctioned.

10. Taking away 1 GHz of the 28 GHz spectrum (27.5-28.5 GHz) from satellite services for which it was originally allocated by the ITU will increase the digital divide rather than reducing it
    a) Satellites today serve the rural and remote areas across multiple geographies. If the crucial 1 GHz of spectrum (27.5-28.5 GHz) is taken away for IMT/5G, each satellite that has a potential of serving the rural and remote areas of India will have a capacity impairment of 50%.
    b) Including 24.25Ghz to 27.5Ghz – additional 17.25Ghz is identified by ITU for IMT Services and thus this 1Ghz (27.5Ghz to 28.5Ghz) should be ear-marked for satellite services.

11. The report referenced by the URL given below, clearly outlines the economic value that can be derived from dedicating the 28 GHz band for satellite: http://www.strategies.nzl.com/industry-comment/dedicating-28ghz-spectrum-band-to-satellite-services/

It is apparent that the usefulness of the mmWave spectrum in widespread rollout has not been proven anywhere across the world. So, we urge the authority to recommend the use of the 26 GHz band initially for the IMT/5G rollout (24.25 - 27.5 GHz). Subsequently, this can be expanded to the freshly identified 14 GHz of spectrum in the mmWave band.

Point no 2

Request for the authority to recommend fresh identification of bands not already identified for IMT/5G

The consultation paper is w.r.t. consultation for spectrum in the 500 MHz, 600 MHz, 700 MHz, 800 MHz, 900 MHz,1800 MHz, 2100 MHz, 2300 MHz, 2500 MHz, 3300-3670 MHz and 24.25 to 28.5 GHz.

One of the respondents (Reliance Jio) in response to Q8 & preface point no 5, has submitted in its response that the entire C-band spectrum & mm wave band should be made available for IMT/5G services on exclusive basis.

We would like to put following points for TRAI consideration:

i) The C-band, other than 3300-3670 MHz and 24.25Ghz – 28.5Ghz is outside the scope of discussion of this consultation paper and should not be discussed. As most of the respondents have responded w.r.t. scope of consultation paper and questions asked thus it will not be fair to consider anything beyond scope of this consultation paper.

ii) As spectrum in C-Band in 3.7Ghz- 4.2 and 4.5Ghz to 4.8 Ghz; 5.925 GHz to 7.125 GHz is already ear-marked for Fixed satellite services and millions of user terminals are already operating in this band, this band can't be made available for IMT/5G services on exclusive basis.

iii) There are hardly any examples of C-band beyond 3.8Ghz, being used for providing IMT/5G services. As such, considering the C band for IMT/5G in India looks unreasonable.

iv) The ask & rationale of allocating all the spectrum for IMT/5G services is against the principle of co-exitance of various services – TV broadcasting, Fixed and mobile satellite services etc. Every service has its purpose to serving the nations & its citizens and cannot be shut down just for the sake of giving all the spectrum for IMT/5G services.

v) In fact, respondent itself (Reliance Jio) in its submission in response to Q24 has submitted that there is no scarcity of spectrum for IMT services. *"The Authority should go beyond the myopic concerns like monopolization of spectrum resources, which are relevant only in the spectrum scarcity scenarios and focus on the optimum deployment and in deriving strategic dividend of spectrum allocation in 5G bands of 3300-3670 MHz and 24.25-28.5 GHz".*

vi) Moreover, the frequency band from 24.25-27.5GHz has been allocated for IMT/5G use by the ITU. The ITU has (as of WRC 2015, 2019 and the agenda for 2023) not considered the 28 GHz band for IMT/5G. The allocation of 24.25-27.5 GHz for IMT/5G gives 3.25 GHz of total spectrum in this band. Considering that there are four operators, 800 MHz assignment is possible to each operator for immediate deployments.

vii) In the World Radio Congress that was held in 2019, 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. This is in addition to 3.25Ghz identified in 24.25Ghz to 27.5Ghz. **With this there is adequate spectrum for the growth of IMT/5G services & its future growth.**

***Considering all above, we would like to submit that respondent organisation's demand for additional spectrum for IMT other than Sub Ghz,* 1800 MHz, 2100 MHz, 2300 MHz, 2500 MHz, 3300-3670 MHz and 24.25 to 28.5 GHz should not be considered.**

Point no 3

Auctioning of spectrum used for satellite services

One of the respondents (Reliance Jio) has recommended that allocation of satellite spectrum should also be done through auctions.

We would like to put following points for TRAI consideration:

i) The Satellite Industry has reiterated the fact that the parallel between "access spectrum" for terrestrial and satellite networks in microwave frequencies does not stand, as the spectrum sharing mechanism is completely different. For terrestrial mobile services spectrum has to be managed by a single operator in a given geographic area and therefore, cannot be shared amongst the operators. However, in the case of satellites, the same spectrum can be used by multiple operators to serve the same geographic area.

ii) Different services utilise the spectrum in different ways – Satellite spectrum used by TV channels, public radio, spectrum used by defence forces etc are serving different needs of the society and everything cannot be equated in commercial value and put to auction. Satellite spectrum auction may prove to be a sure-shot death nail for satellite communication services in the country.

iii) In other words, assignment by auction for satellite spectrum that can be shared between operators, such as the C/Ku/Ka bands, would lead to unnecessary segmentation and a very inefficient use of spectrum. For this reason, **there are no precedents of spectrum assignment by auction to satellite services in these bands in any country.**

iv) Reference of countries given as examples should be studied in detail as it seems that those were actually auctions for orbital slots rather and not auction for satellite spectrum.