Bharti Airtel Ltd.
India & South Asia
Airtel Center, Plot No. 16,
Udyog Vihar, Phase - IV,
Gurugram - 122 015
Haryana, India

www.airtel.in
Call +91 124 4222222
Fax +91 124 4243252

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Shri Akhilesh Kumar Trivedi
Advisor (Networks, Spectrum and Licensing)
Telecom Regulatory Authority of India,
Mahanagar Door Sanchar Bhawan,
JawaharLal Nehru Marg,
New Delhi – 110 002

Subject : **Bharti Airtel's Counter Comments on the Consultation Paper on *Auction of Frequency Spectrum in 37-37.5 GHz, 37.5-40 GHz, and 42.5-43.5 GHz bands Identified for IMT***

Reference : **TRAI's Consultation Paper dated 04th April 2024, and Bharti Airtel's response dated 24th May 2024**

Dear Sir,

This is in reference to TRAI's Consultation Paper on '*Auction of Frequency Spectrum in 37-37.5 GHz, 37.5-40 GHz, and 42.5-43.5 GHz bands Identified for IMT*' dated 04.04.2024. We had submitted our detailed response to the consultation on 24.05.2024.

In this regard, we now submit our counter comments towards some of the points raised by other respondents.

This is for your kind consideration.

Thanking You,

Yours' Sincerely,
For **Bharti Airtel Limited**

Rahul Vatts
Chief Regulatory Officer

Encl: a.a

Counter Comments to TRAI CP on *Auction of Frequency Spectrum in 37-37.5 GHz, 37.5-40 GHz, and 42.5-43.5 GHz bands Identified for IMT*

Executive Summary

Airtel thanks the Authority for the opportunity to provide its counter comments to responses received on the consultation paper ("CP") "*Auction of Frequency Spectrum in 37-37.5 GHz, 37.5-40 GHz and 42.5-43.5 GHz bands Identified for IMT*". These counter comments are an extension of the arguments previously presented in the main response to the CP. For the sake of continuity, here is a quick summary of the key submissions made earlier:

- ✓ *The entire available spectrum in these frequency ranges should be put **to auction** for IMT at the earliest.*
- ✓ ***TDD-based configuration should be adopted**. The choice of band plan should be left to the licensee.*
- ✓ ***The block size** should be **100 MHz**. The minimum bidding quantity should be 400 MHz for new entrants who do not hold any spectrum in any mmWave band and 100 MHz for existing operators who already hold spectrum in some/one of the mmWave spectrum bands.*
- ✓ *The **validity period of spectrum assigned should continue to be for 20 years**.*
- ✓ *Adequate information about present/planned locations of SRS/satellite hub stations should be provided and **co-existence studies between IMT and satellite operations** should be conducted – prior to auctions. An appropriate **protection/keep-off distance** between IMT stations and Satellite Earth Station Gateways should be prescribed. Post-auctions, establishment of new hub stations should only be allowed in isolated areas with no existing IMT base station.*
- ✓ *The Authority's **spectrum pricing exercise** must emerge from the industry's incremental/aggregate RoCE and incremental/marginal revenue generation ability in the band(s) being valued. **Or alternatively,** since these spectrum bands are being auctioned for the first time in India, the valuation of the spectrum in these bands can be estimated by considering the combined weightage of the market value of 26 GHz used in the most recent auction and its contribution to revenue generation. The value so arrived should be reduced to adjust for the comparative efficiency and propagation loss of these bands vis a vis the 26 GHz band.*
- ✓ *The **reserve price should be taken as 50% of the valuation of the spectrum.***
- ✓ *The DoT should formulate a policy on spectrum swapping. The Telecom Service Providers (TSPs) should be allowed to swap the existing spectrum in one band with any other band that they need and that is available with the Government, while being revenue neutral to positive to the exchequer.*

In the section that follows Airtel submits its counter comments on key points raised by some of the stakeholders.

Counter Comments to TRAI CP on *Auction of Frequency Spectrum in 37-37.5 GHz, 37.5-40 GHz, and 42.5-43.5 GHz bands Identified for IMT*

(a) Shorter validity period of Spectrum:

Some stakeholders have suggested spectrum validity should be kept for shorter duration like 10 or 15 years, with provision to further renewal of 5 years.

Response:

Airtel does not agree with a validity period of less than 20 years for these ranges. India already has a well-settled and set spectrum duration. Any change to that will have a detrimental impact on the long-term sustainability of investments and network rollouts.

There is also no appreciable logic to keeping the validity period as either 10 years or 15 years with a provision of 5-year extension. It is important to highlight here that there is no further renewal concept in case of an auction scenario. Once the term (of 20 years) of auctioned spectrum expires, the spectrum goes back to the auction pool again. Hence, keeping the duration shorter and then extending it further makes no sense.

Airtel would like to reiterate that the spectrum in the frequency ranges under consideration viz. (a) 37-37.5 GHz, (b) 37.5-40 GHz, and (c) 42.5-43.5 GHz, should be assigned for a validity period of 20 years only, as prevalent in the existing frequency bands, and not for a shorter validity period. There are important reasons for retaining the longer validity period (at least 20 years):

1. It is well acknowledged that creating telecommunications networks is capital-intensive and has a long gestation period. As a result, the monetisation of the network and the uptake of services takes a significant amount of time especially when the band or services are new. For instance, in the 2300 MHz band, it took close to 5-6 years to develop the ecosystem and network deployment on a massive scale post-auction. In 5G, while TSPs have rolled-out the pan-India 5G network since the 2022 auctions, the monetisation continues to pose challenges. **Thus, any shorter validity period for the spectrum would risk destabilising the long-term investments of the sector**.

2. Since the time of entry of private players in the telecom sector, access spectrum has always been assigned with a validity period of 20 years (irrespective of the method of assignment — whether administratively bundled with license or using auctions). **The regime has been working well for the sector for the past 30 years. There is therefore no reason to change such a well-settled and successful approach.** In fact, for the 26 GHz band, which is also an mmWave spectrum band like the frequency ranges under consideration in the instant CP, the validity period has been kept as 20 years in both the NIA 2022 and NIA 2024. Therefore, DoT should continue to maintain a consistent approach in this regard.

3. It is Airtel's understanding that this question has seemingly been raised by the Authority as the ecosystem in these bands is not fully developed and use cases are not readily available. However, that is all the more reason to have a longer validity period. It will help the ecosystem to develop in a sustainable manner as operators will have surety of its long-term deployment and use.

4. Longer validity periods, combined with the Government's principled decision to allow use of auctioned spectrum bands in a technology-neutral manner, have ensured the continuous evolution of technology deployment across different bands. For example, the 2100 MHz band that started with the provision of 3G services in 2010 is now (also) used for 4G and can even be used for 5G. Similarly, the 900/1800 MHz bands that were earlier used to provide only GSM-based services are now also used to deploy LTE/5G. This evolution would not have been possible with shorter validity periods. Indeed, shorter validity periods would likely have deterred innovation in tech deployment and use case development.

5. **A shorter validity may also attract unreliable operators,** which scenario may not be in the interests of either the consumers or the exchequer. It is important to have serious players operate in the industry.

6. Lastly, policy guidelines for the surrender and trading of spectrum are already in place and these would apply to the frequency ranges under consultation as well. Those too would provide flexibility to a spectrum holder in these ranges for trading or even surrendering after 2 years and 10 years, respectively. Hence, Airtel sees no reason whatsoever to still consider a shorter validity period.

In view of the foregoing, the spectrum in the frequency ranges (a) 37-37.5 GHz, (b) 37.5-40 GHz and (c) 42.5-43.5 GHz should be assigned for a validity period of 20 years, consistent with the present approach (including in the 26 GHz band).

(b) Spectrum assignment at a smaller service area than the present LSA based licensing regime:

Some stakeholders have suggested spectrum to assigned on smaller areas than LSAs e.g. on Secondary Switching Areas/ SDCA or District levels.

Response:

Airtel disagrees with this approach of assigning auctioned spectrum at SSA level / district-wise / SDCA-wise because it is an unworkable approach. There are several compelling reasons for this:

- Historically, the auctioning of IMT spectrum has centred around licensed service areas (LSA) levels, aligning with the dynamics of TSPs who operate freely across diverse zones such as urban, rural, etc., depending on the traffic demands of their existing networks.

- The SDCA model, once applicable to landline systems, is now obsolete. In any case, the concept was never relevant for wireless.

- **Assignment in service areas smaller than LSAs would give rise to select pockets of coverage in urban areas** or to a scenario where no TSP would want to acquire spectrum in rural or even semi-

urban areas without adequate population density. **This would completely derail the Digital Inclusion and Digital India mission of the Government**.

- Since the opening of the telecom sector, access spectrum has consistently been assigned on an LSA-level basis – irrespective of assignment method (i.e., administrative or using auctions). This approach is consistent with the Indian licensing regime – the access service licenses, under which this spectrum is used, are also granted LSA-wise (whether the CMTS or the UAS licenses earlier or the Access Service Authorisation under the UL now). There is no reason to change this approach for these particular spectrum bands.

- Consequently, and as a logical corollary from the previous point above, the entire network and service architecture of the TSPs is designed and set up on the basis of LSAs. The tariff plans are designed and offered to consumers LSA-wise. In view of this, any attempts to **assign certain specific bands for smaller service areas would not only disrupt the entire network and business planning of TSPs**, but also unnecessarily create operational and regulatory complexities.

- Spectrum assignment for smaller service areas will lead to the fragmentation of spectrum, with the mushrooming of an enormous number of smaller operators in localised geographies. This, in turn, will result in inefficient utilisation. It will further lead to complexities of **disjointed spectrum holdings for larger TSPs, disincentivising a nation-wide or even an LSA-wide network deployment**.

  Unnecessary spectrum fragmentation will also prevent larger TSPs from leveraging economies of scale, increasing the time and resources required to be spent on acquiring the same amount of spectrum.

On top of it all, the entire **interference management and harmonization effort across such smaller service areas will grow into an unnecessarily humongous task for the WPC. There are 2645 SDCAs and 806 districts across India, wherein managing the interference and harmonization will be a logistical and administrative nightmare and would be next to impossible.**

The Authority has seemingly raised a question regarding the deployment of mmWave bands, given that ubiquity in the frequency ranges under consideration in the instant Consultation Paper may not be achieved. We wish to highlight, based on factors such as traffic growth, development of user equipment, and market penetration, that TSPs are eager to deploy mmWave bands to ensure widespread coverage. It's worth noting that the Authority itself has acknowledged this trend across all mmWave spectrum bands, including the 26 GHz band, which has already been assigned to TSPs on an LSA-level basis through the 2022 Auctions. Even in the NIA 2024, the assignment for the 26 GHz band remains LSA-wise. Therefore, there appears to be no need or rationale for deviating from this approach for these specific bands. Airtel suggests, therefore, that a consistent approach be maintained by DoT in this regard.

Airtel recommends that the spectrum in the frequency ranges (a) 37-37.5 GHz, (b) 37.5-40 GHz and (c) 42.5-43.5 GHz should be assigned LSA-wise, consistent with the approach followed in the cases of the existing frequency bands (including the 26 GHz band).

Furthermore, as regards industry 4.0 or Special Economic Zones (SEZ) requirements pointed out by some stakeholders, it must be noted that the **DoT has already issued guidelines for the leasing of spectrum to CNPN licensees by Access Service Providers**.[1] Further, the TRAI recommendations on telecommunication Infrastructure Sharing, Spectrum Sharing and Spectrum Leasing released on 24th April, also allows TSPs to lease spectrum to users partially or in smaller areas of operations basis the agreement between lessor and lessee. Thus, the specific business cases can easily be met through the enabling CNPN framework. There is no need to create another carve-out in the form of spectrum assignment at the level of smaller areas.

In view of the above, Airtel does not see any justification for assigning spectrum in smaller areas.

(c) Inclusion for auction - of spectrum bands meant for backhaul and/or bands not discussed in the CP:

One of the stakeholders has suggested to put to auction many other IMT bands along-with 28GHz, V and E-band.

Response:

Airtel would like to submit that the statement about the inclusion of certain bands not the subject of the present consultation process is creating unnecessary confusion. TRAI has also not sought any views on such bands. Airtel requests that the Authority disregard bands not under consideration in the consultation paper.

Further, Airtel submits that since the Telecommunications Act 2023 has already decided that backhaul spectrum and satellite spectrum should be given administratively, putting it up for auction holds no merit.

(d) Spectrum Cap:

One stakeholder has suggested that the Authority should go beyond concerns like monopolization of spectrum, which are relevant only in spectrum scarcity scenario. It also suggests no spectrum cap should be imposed or 50% cap in the bands may be considered.

Some stakeholders have recommended a combined spectrum cap of 26 GHz with the proposed bands.

[1] https://dot.gov.in/sites/default/files/Spectrum%20leasing%20guidelines%20dated%2027062022.pdf

Further, a stakeholder has suggested that having separate caps for 26 GHz and the new bands would necessitate a revision in the application of spectrum caps in sub-GHz and mid-band spectrum bands.

Response:

Airtel does not agree with argument to have no spectrum cap at all. Airtel also disagrees with a combined cap for these three frequency ranges along with including the 26 GHz bands in the same.
Airtel also wishes to state that it disagrees with the suggestion that spectrum caps for sub-GHz and mid band spectrum bands also need to be revised. The sub-GHz and mid-bands are not the subject matter of the present CP and, in any case, the system of caps in those bands has evolved over the last 10 years of process.

We now move on to detailed submissions:

(i) No cap or a very liberal cap (say 50%) in new bands under discussion is not appropriate at this stage:

Airtel submits that spectrum cap is an evolving concept. The Authority would appreciate that even for other bands the position of cap has evolved over a decade, from a scenario from in-band & overall cap earlier, to today when there is an overall cap for the entire sub-GHz range, another overall cap for 1800/2100/2300/2500 MHz bands, and a separate cap for 3300 MHz band.

The frequency ranges under consideration are new, being opened-up for auction for the first time, and there is no immediate visibility in the ecosystem development either. At this stage, it cannot be foreseen as to what needs of TSPs will emerge; hence, keeping no spectrum cap or a very liberal cap of say 50%, will not be a prudent approach. It may be appropriate to continue with the same levels of spectrum cap as are in place for the existing bands. In any case, it is always within the rights of the Government to revise the same, if the need for the same is felt at a later stage.

We also wish to state that the risk of monopolization is there in the instant bands as well. While the total quantum of spectrum in these mmWave bands is very huge as compared to sub-GHz or mid-band spectrum, the adequate quantum required by each individual operator is also correspondingly high. Thus, spectrum scarcity and risk of hoarding are as relevant in the case of mmWave as in the case of other bands.

Therefore, Airtel believes that these ranges require their independent cap, excluding 26GHz, and at present the cap should consider needs of a competitive market. If required, the cap can be reviewed and revisited in a few years from now once the ecosystem and deployment would have matured further.

(ii) No combined Spectrum Cap for the 26 GHz band and the three new frequency ranges:

Regarding the three new frequency bands under consideration, the rationale for keeping these bands and 26 GHz separate was laid out in the main response and has been resubmitted for the Authority's consideration.

Currently, there is no case for a combined spectrum cap for the 26 GHz band (24.25-27.5 GHz) and the frequency ranges under consideration.

It has been noted by the Authority itself in the Consultation Paper that the ecosystem is not fully developed for the frequency ranges under consideration and they are yet to find adequate use cases. On the other hand, the 26 GHz band, which has already been auctioned in 2022, is rapidly developing and has already been deployed in multiple parts of the country. In this background, **a combined spectrum cap for the 26 GHz band and the three new frequency ranges may lead to one TSP monopolising the more developed 26 GHz band, with the others being left with the newer bands which are still in the early stages of ecosystem development**.

Thus, Airtel suggests that the 26 GHz band should not be aggregated with the three new frequency ranges for the purposes of calculating the spectrum cap.

In summary, Airtel recommends that there should not be a combined spectrum cap for the 26 GHz band and the new frequency ranges under consideration.

(iii) Combined Spectrum Cap for the three new frequency ranges (excluding the 26 GHz band):

The frequency bands designated for IMT in India within these ranges are also in use for satellite operations. Specifically, the 37-38 GHz range is utilised for Space Research Services (SRS), the range 37.5-40 GHz facilitates hub operations (satellite to earth) and the range from 42.5-43.5 GHz is used for hub operations (earth to satellite) as well as Radio Astronomy Services (RAS).

While both SRS and satellite hub operations would require appropriate exclusion zones to be prescribed for the purposes of co-existence, it is understood that the exclusion zones with respect to SRS are much larger than those of satellite hub stations.

Further, adequate data for present/planned locations of SRS and satellite hub stations is neither available in the public domain, nor has it been made available to the TSPs. In the absence of such information, it would be premature to take a decision regarding the spectrum cap and whether it should be combined with each of the three frequency ranges or calculated separately for each of the three frequency ranges.

There are pros and cons to both approaches. On the one hand, combining all these bands together may result in one TSP monopolising a relatively cleaner spectrum band while the others are left with effectively unusable bands with huge exclusion zones (possibly with a radius of 100 km). On the other hand, calculating spectrum caps for each individual band may impact the contiguity of the spectrum, resulting

in less efficient use. Hence, any decision in this regard must be taken only after all the relevant factors have been carefully considered and evaluated.

Accordingly, Airtel requests that the following details be first made available to TSPs, in order that they can determine the necessary protection distances for the Indian context through CPM-19 studies, and evaluate the potential impact on IMT deployment:

- **SRS:** Location details of current/planned assignments and their elevation angles
- **Hub (Satellite to Earth):** Location details of present hub stations and plans for the future (if any)

Further, in order to determine which portions, regions and frequencies will be impacted and rendered inaccessible as a result of coexistence issues between IMT and satellite operations, Airtel requests that a study be conducted for IMT coexistence with incumbent services that takes into account India-specific requirements. This will enable informed decision-making regarding the assignment of these ranges.

At worst, a combined spectrum cap of 40% may be prescribed for these three frequency ranges but excluding the 26 GHz band, to ensure a level playing field. However, it would be prudent for TSPs to make an informed decision on investment only post the availability of information about satellite operations.

Therefore, Airtel would like to reiterate that frequency ranges under consideration, viz. (i) 37-37.5 GHz, (ii) 37.5-40 GHz and (iii) 42.5-43.5 GHz should not be combined with the 26 GHz band and these bands, on a consolidated basis, should be treated separately for the purposes of calculating the spectrum cap per service provider in an LSA for IMT.

In summary, Airtel recommends that adequate data regarding present/planned locations of SRS and satellite hub stations should be made available to TSPs, and a co-existence study between IMT and satellite operations should be conducted prior to the auctions, so as to enable informed decision making with regard to spectrum caps. In the worst-case scenario, to maintain a level playing field, a combined spectrum cap of 40% can be prescribed for these three frequency ranges (excluding 26 GHz).

(e) Reserving the spectrum for enterprise / captive use cases, and allocating some part of the spectrum for backhaul purposes on administrative basis:

One of the stakeholders has argued that ISPs are deprived of spectrum for last mile connectivity, and this has resulted in a non-level playing field developing between ISPs and Access Service Providers in the enterprise segment. Therefore, it has suggested to reserve part of spectrum in these bands for microwave backhaul applications, and to assign the same administratively on P2P basis to all licensed operators (including those with other than Access Service Authorization).

Response:

At the outset, Airtel strongly discourages arguments related to the spectrum requirements of ISPs. It is understood that ISPs are deploying their network using unlicensed bands in 2.4/5GHz and are using fibers for their small areas of deployment. For ensuring ubiquitous coverage across complete city or state they need to be equally eligible to acquire Access Licensees and acquire sufficient licensed bands spectrum for demanding any administrative assignment of MWA/MWB links. In this context, the argument of a non-level playing field seems misleading.

In any case, the issue of a non-level playing field can arise only between parties that are otherwise equal. If both ISPs and Access Service Providers were allowed to use the same spectrum bands for providing the same services and Access Service Providers were made to pay auction-determined prices while ISPs were given administrative assignments, that is when the issue of a non-level playing field would actually arise. In fact, in 2010, when DoT permitted both UASL and ISP operators to acquire the BWA spectrum, both had to undergo the same auction process and acquire the spectrum after paying the same auction-determined prices – in order to maintain the level playing field.

If a service provider wishes to provide services using licensed spectrum, the existing regime allows it to obtain an Access Service Authorisation and acquire the requisite spectrum through auctions on payment of auction-determined prices. Why then should licensed spectrum be available to ISPs on an administrative basis? There is no rationale to support that.

Now, coming to the present bands under discussion, it may be noted that these bands are already identified for IMT services. In these bands, it is understood that, globally, Original Equipment Manufacturers (OEMs) are developing radios and user equipment for access services (mobile and radio) and not backhaul services. Hence, carving some part of the band for a use case for which even devices are not being developed, will be inefficient.

Therefore, Airtel recommends that the Authority reject any proposal for carving out any spectrum out of these bands for backhaul or assigning it on an administrative basis.

(f) Putting PFD limits for IMT base stations to manage coordination with satellite earth stations:

One of the stakeholders, while providing examples from Australia (ACMA) and USA (FCC), has suggested putting power flux density (pfd) thresholds to develop coordination contours around satellite earth stations to protect such stations from ground-path interference. It suggests a TRP of 25 dBm/200 MHz and the IMT base station antenna beams to be pointed below the horizon plane.

Response:

Airtel submits that suggested approach and limits are not applicable to the band under consideration in this CP.

Airtel understands that the ACMA reference is related to 26/28 GHz band where the IMT-FSS coexistence situation in FSS (Earth-to-space) w.r.t emission limit was discussed on IMT Base Station for calculating the aggregate interference into the space receivers.

Further, the coexistence situation in this 40 GHz band is different from the 26 GHz band.

- The 37.5 – 40 GHz is IMT-FSS (space-to-Earth) would require either a separation distance or pfd threshold. The limitation of pfd threshold is that it implies continuous monitoring and inspection for the compliance of such a pfd threshold. This will not only increase unnecessary compliance burden on TSPs, but also impact the public mobile networks.

- It may also be noted that presently, ACMA has not yet released 40 GHz band for IMT usage[2].

Therefore, such comments are not relevant to the bands under discussion in current TRAI CP. We strongly recommend that ITU-R suggested models for coexistence need to be adopted.

Airtel again reiterates that it is crucial that an appropriate India specific study is concluded before putting these bands to auction. The locations of existing Gateway stations should be duly notified prior to auction, and for future Gateways suggested guidelines should be followed. Further since SRS services have large area impact and if there is any existing deployment or any planned deployment of SRS station, the India specific study w.r.t same should be conducted on priority before auctions.

[2] https://www.acma.gov.au/sites/default/files/2024-04/Draft%20FYSO%202024-29.pdf