VIL/PB/RCA/2022/012

July 14, 2022

Advisor (Networks, Spectrum and Licensing)
Telecom Regulatory Authority of India,
Mahanagar Doorsanchar Bhawan,
Jawaharlal Nehru Marg (Old Minto Road),
New Delhi – 110002

Kind Attn: Shri Syed Tausif Abbas

Subject: Comments on the TRAI's Consultation Paper on "Spectrum Requirements of National Capital Region Transport Corporation (NCRTC) for Train Control System for RRTS Corridors" dated June 09, 2022

Dear Sir,

Kindly find enclosed herewith comments from Vodafone Idea Limited to the TRAI's Consultation Paper on "Spectrum Requirements of National Capital Region Transport Corporation (NCRTC) for Train Control System for RRTS Corridors" dated June 09, 2022.

We hope our comments will merit your kind consideration please.

Thanking you,

Yours sincerely,

For **Vodafone Idea Limited**

P. Balaji
Chief Regulatory & Corporate Affairs Officer

Enclosed: As stated above

VIL Comments to the TRAI Consultation Paper on
"Spectrum Requirements of National Capital Region Transport Corporation (NCRTC) for Train Control System for RRTS Corridors"

At the outset, we are thankful to the Authority for giving us this opportunity to provide our comments to the TRAI Consultation Paper on "Spectrum Requirements of National Capital Region Transport Corporation (NCRTC) for Train Control System for RRTS Corridors" dated 09.06.2022.

In this regard, we would like to submit as follows:

1. **Spectrum Roadmap:** We believe that prior to assigning any spectrum to any entity, there is a critical need to define the long term spectrum roadmap, for at least a period for 10 years. This roadmap will help the industry in gaining a better understanding of the availability of the spectrum and target its business plans, customer acquisition and future spectrum management activities in the most optimum way, including identification of potential new spectrum sharing opportunities as well.

2. **Identification and Protection of IMT Bands:** Any such spectrum band which is identified as the IMT band, is contemplated at international forums through various global conferences, studies and agreements. The same then also is standardized with 3GPP. In our view, for cases like the instant one related to NCRTC, only non-IMT bands should be considered. **Thus, we submit that no further allocation should be made from the 700 MHz band and it should be utilized only for IMT services.**

3. **Alternative bands/frequencies:** As 700 MHz band is a prime band for 5G services with wide retail device ecosystem supporting it, principally, it should not be utilized for any such purpose where retail device ecosystem is not required. While we do not support allocation of spectrum from IMT bands for any other purposes, however, even if it is to be done, same should be allocated from the bands which have lower retail device ecosystem (like 500 MHz).

We strongly recommend again that NO spectrum from 700 MHz band should be given to NCRTC or any other Government entity for similar purposes, as this band has been identified for IMT in India and also has a good retail device ecosystem.

In addition to above, we would like to submit our question-wise comments also as follows, for Authority's kind consideration:

Question-wise Comments

Q.1: In which band, spectrum should be assigned to NCRTC for their LTE-R technology based Train control system for RRTS rail corridors?

And

Q2. How much spectrum in the spectrum band(s) suggested in response to Q1, should be assigned to NCRTC to meet its requirement for its RRTS LTE-R based network?

VIL Comments to Q. No. 1 and 2

1. **Spectrum Roadmap:**

   a. We believe that prior to assigning any spectrum to any entity, there is a critical need to define the long term spectrum roadmap, for at least a period for 10 years.

   b. Even TRAI in its Recommendations on 'Auction of spectrum in frequency bands identified for IMT/5G dated April 11, 2022 has mentioned the need for spectrum roadmap stated as below:

   "Considering that there are certain additional bands which are already identified by ITU for IMT services and few additional bands are under consideration in WRC-23 for IMT identification, the Authority recommends that DoT should explore the possibility to make these bands available for IMT services at the earliest ***and come out with a spectrum roadmap for opening up of new bands for IMT to meet the future demand. At least a 5-year roadmap on spectrum likely to be made available for IMT in each year and likely date/month of auction should be made public. Such a spectrum roadmap will provide certainty, enable the bidders to take informed decisions and may also encourage new entrants."***

   c. This roadmap will help clarify quantum and timeline of spectrum availability, facilitating the TSPs to plan their investments in near to long term. The roadmap may also include details regarding the harmonization of future spectrum which will be beneficial in reduction of equipment costs and limiting the possibility of interference.

   d. Hence, we request that before recommending allocation of the IMT spectrum bands for any non-IMT usage, there is an urgent and critical need to define the long-term spectrum roadmap, in consultation with the industry and other stakeholders.

2. **700 MHz prime band for IMT with good device ecosystem:**

   a. 700 MHz band is a prime band for 5G services and has a wide device ecosystem for support.

   b. As mentioned earlier, in India, 700 MHz band has already been identified for IMT. Given the importance of this band, it has also been identified as one of the key bands for deployment of 5G in India by the 5G High Level Forum constituted by DoT.

   c. Also, as stated by TRAI in this paper, as per the 3GPP band plan B28 adopted by India for 700 MHz band, 45 MHz (paired) spectrum can be utilized in this band. With 5 MHz (paired) spectrum being kept for NCRTC and other RRTS/metro rail networks pan India, only 25 MHz (paired) spectrum will be left for commercial use which will be insufficient in long term.

   d. Besides, reduction in quantity of spectrum available in an auction or to be made available in future auctions is a key factor related to pricing and participation in the auction in same band as well as other bands.

   e. Further, it is well established from international as well as domestic scenarios, TSP(s) have bought spectrum for 4G services, in same and different bands during multiple auctions (almost over a period of 10 years), for technology evolution and capacity augmentation. Hence, the certainty of availability of spectrum in prime bands should be assured to the TSPs over a longer time period.

   f. Therefore, no spectrum should be assigned from 700 MHz to NCRTC.

3. **Alternate Spectrum Bands:**

   a. **Non-IMT Band:** As mentioned in TRAI's previous Consultation paper on "Allotment of spectrum to Indian Railways for Public Safety and Security services" dated June 24, 2019, TRAI had mentioned that spectrum in 450-470 MHz band can be assigned to IR, which is not intended to be assigned to the TSPs. It was also mentioned that DoT had also viewed that spectrum in 450-470 MHz is available and has not been earmarked for IMT services. Also, some countries are using this band for Railway Radio communication. 20 MHz spectrum is available in this band, which could be made available for IR and being a lower frequency band, this can also meet the coverage requirement of IR. Hence, the same can be executed in the case of NCRTC as their services will not be utilized for retail device ecosystem.

b. While we do not support allocation of spectrum from IMT bands for any other purposes, however, even if it is to be done, same should be allocated from the bands which have lower retail device ecosystem (like 500 MHz).

4. We would like to submit that the maximum spectrum allocated for the purpose shall not exceed 5 MHz and shall be shared across all RRTS. Assignment of 5 MHz of <1 GHz spectrum at the current reserve price will cost the exchequer in excess of INR 4000 Cr as per current reserved price for 5 MHz block. So, the assignment of spectrum shall be kept to minimum extent possible and assignment shall happen from the non-IMT band to further minimize the impact.

5. **Considering all above, we recommend that no spectrum shall be assigned from 700 MHz to NCRTC. Alternatively, non-IMT bands should be looked into. If that is also not possible, then such band/frequencies where retail device ecosystem is not available (like 500 MHz) should be utilized for such purposes.**

Q3. Do you see any challenge, if the same spectrum is assigned to different RRTS/metro rail networks, operating in geographically separated areas/corridors in the country? If yes, kindly provide details and possible solutions.

VIL Comments to Q. No. 3

1. As mentioned in this Consultation Paper, NCRTC had engaged a group of eminent experts to conduct a "Study of feasibility or co-existence of two separate LTE networks of NCRTC and IR in the same spectrum without impacting ETCS and mission critical services". NCRTC itself had mentioned that the expert group has given technical clearance for the sharing and co-existence of both the systems in the same frequency band without any interference.

2. Also, we do not foresee any challenge if the same spectrum is assigned to different RRTS/metro rail networks, operating in geographically separated areas/corridors in the country.

3. Hence, NCRTC shall be assigned the same spectrum band for RRTS rail corridors.

Q4. In case more than one RRTS Metro/rail networks are to operate in overlapping geographical areas, will it be appropriate for RRTS Metro/rail networks to share the Radio Access Network (RAN) in the overlapping areas using Multi-Operator Core Network (MOCN)? Any other feasible mechanism for using same spectrum in overlapping areas may also be suggested with detailed explanation. Kindly justify your response.

VIL Comments to Q. No. 4

1. Multiple RAN Sharing technologies does exist and already in use globally where network is setup by one operator and is same is shared securely by other operator in the area of overlap. This will help mitigate the interference issues if both the parties deploy their independent network on the same spectrum assets.

2. MOCN functionality that allows a network operator to provide access to a single radio access network by other operators. Each operator operates its own core network, including one or more independent nodes. Such technologies are tried and validated globally. Some of the examples of such mechanisms are Multi-Operator Core Network (MOCN), Multi-Operator RAN Sharing (MORAN), ICR, etc.

3. We recommend using MOCN, MORAN or other mechanisms highlighted above in the areas of overlap.

Q5. In case it is decided that RRTS Metro/rail networks may share the Radio Access Network (RAN) in the overlapping area using Multi-Operator Core Network (MOCN),

a) Whether it should be included in the terms and conditions for assignment of spectrum that the assigned spectrum may have to be shared with other RRTS/Metro rail networks to whom government decides to assign the same spectrum frequencies on sharing basis?

b) Whether certain guidelines for coordination mechanism need to be issued or it should be left to the mutual agreement between the RRTS/Metro rail network operators mandated for MOCN RAN sharing? In case, guidelines need to be prescribed, kindly suggest the points to be included in the guidelines.

c) Whether commercial arrangements between two RRTS/Metro rail networks for RAN sharing needs to be regulated or left to the mutual arrangement?

d) **Whether any other conditions need to be prescribed for such RAN sharing? Kindly provide detailed justifications.**

VIL Comments to Q. No. 5

1. In case it is decided that RRTS Metro/rail networks may share the Radio Access Network (RAN) in the overlapping area using Multi-Operator Core Network (MOCN), interventions/regulations as is applicable in the case of other Licensees shall be adhered to. Also, existing flexibility shall be maintained as in the case of other Licensees to follow a common approach, based on terms and conditions of license agreement.

2. Sharing of spectrum/Radio Network should be made mandatory for these licensees in case of overlap region, in the terms and conditions of the assignments, in order to prevent any issues in future.

Q6. What should be the permission/licensing regime for operation of wireless networks for NCRTC and other RRTS/metro rail networks? Kindly justify your response with justification.

And

Q7. What should be the broad terms and conditions, which may be included in the Permission/License. Kindly provide detailed response with justification.

And

Q8. Would it be appropriate if the spectrum be allocated on the same analogy as Indian Railways, for the same reasons as argued by DoT? If not, what should be the spectrum charging mechanism for spectrum that will be assigned to NCRTC? Kindly provide detailed response with justification.

VIL Comments to Q. No. 6, 7 and 8

1. Any spectrum allotted to such entities should adhere to the guidelines of UL (Access Authorization) and spectrum allocation scope shall be restricted.

2. In case the spectrum is allotted to NCRTC, they should be mandated to use it as a closed network with no connectivity to public networks for data, SMS or voice. Also, they should

be mandated to ensure that no such services are extended to their consumers or employees as well.

Q9. Whether the terms & conditions and spectrum charges that will be applicable for NCRTC, should be made applicable to the other RRTS/Metro rail networks that may come up in future? If no, what terms & conditions and spectrum charges should be made applicable for the other RRTS/Metro rail networks? Kindly justify your response.

VIL Comments to Q. No. 9

1. The terms & conditions that will be applicable for NCRTC, should definitely be made applicable to the other RRTS/Metro rail networks that may come up in future so that a common approach is followed between all the stakeholders. Further, the industry should be consulted before finalization of such terms & conditions.

2. Also, such terms and conditions shall be part of the spectrum roadmap to avoid any kind of ambiguities in the future.

Q10. Any other issues/suggestions relevant to the subject, may be submitted with proper explanation and justification.

VIL Comments to Q. No. 10:

As explained in comments to Question no. 1 above, a predictable Spectrum Roadmap is urgently required and should be created for future assignments of spectrum especially in IMT bands. This should be done in consultation with industry players to ensure fair and reasonable policies, providing long term certainty on available spectrum.

x---------- End of Document ----------x