



VIL/AH/RCA/2024/005

March 06, 2024

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. Akhilesh Kumar Trivedi

Subject: Comments on the TRAI's Consultation Paper on "Assignment of Additional Spectrum to Indian Railways for its Safety and Security Applications" dated February 07, 2024

Dear Sir,

This is in reference to the TRAI's Consultation Paper on "Assignment of Additional Spectrum to Indian Railways for its Safety and Security Applications" dated February 07, 2024.

In this regard, kindly find enclosed herewith comments from Vodafone Idea Limited on the above-said consultation paper.

We hope our comments will merit your kind consideration please.

Thanking you,
Yours sincerely,

For Vodafone Idea Limited

Anjali Hans
EVP – Regulatory, CSR & External Communications Head

Enclosed: As stated above



VIL Comments to the TRAI Consultation Paper on “Assignment of Additional Spectrum to Indian Railways for its Safety and Security Applications” issued on 07.02.2024

At the outset, we are thankful to the Authority for giving us this opportunity to provide our comments to the TRAI Consultation Paper on “Assignment of Additional Spectrum to Indian Railways for its Safety and Security Applications” issued on February 07, 2024. In this regard, we would like to submit as follows, for the Authority’s kind consideration.

Preface:

Principally, we are of the view that specific and robust long-term spectrum planning is need of the hour. In this regard, we submit as follows:

1. **Identification, Usage and Protection of Bands as per International Standards:** Any spectrum band which is identified as an IMT band, is first discussed and debated, contemplated at international forums through various global conferences, studies and agreements. The same is then standardized with 3GPP, which is the signal for the vendors and the ecosystems to produce equipment for the identified bands. Such bands are identified for global commercial use. In our view, for cases like the instant one related to Indian Railways and previous one for NCRTC, only non-IMT bands should be considered. **Any assignment of spectrum from such bands for non-commercial services should be kept to the minimum extent possible and assignment should happen from the non-IMT band to ensure that maximum spectrum is available for commercial use and also to minimize the impact of loss to the exchequer.**
2. **Spectrum Roadmap:** We believe that prior to assigning any spectrum to any entity on an administrative basis, considering the current and future needs of the IMT, there is a critical need to define the long-term spectrum roadmap, for at least a period for 10 years. Sub GHz band with good device ecosystem is in limited availability and is critical for providing good coverage for IMT connectivity, especially for the rural subscribers.
 - a. Even TRAI in its Recommendations on ‘Auction of spectrum in frequency bands identified for IMT/5G dated April 11, 2022 has highlighted the need for a spectrum roadmap and 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.”



- b. 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.
- c. This roadmap will also 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.
- 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.

In addition to above, kindly also find below our question-wise comments, to the questions listed in the consultation paper. We hope it will merit Authority's kind consideration and support.

Question-wise Comments

Q1. Whether an additional 5 MHz (paired) spectrum in the 700 MHz band should be assigned to Indian Railways (IR) in order to meet its requirement for safety and security applications? Kindly provide a detailed response with justification.

VIL Comments to Q1.

1. Indian Railways is one of the most cost-efficient and effective means of transport which serves substantial population of the country and as such need to be backed up with proper safety and security framework in place. We understand that this requires improved railway traffic control, security for train operations, passenger safety, etc. which can be met through continuous communication through the medium of videos, over a communication network. For this, it is important to have adequate spectrum to meet the requirement.
2. While safety and security aspects are of paramount importance, there is need to look into other important aspects related to spectrum in 700 MHz. These aspects are listed as following:
 - a. **700 MHz – Propagation characteristics and Device ecosystem:** Due to low frequency and the ability to efficiently penetrate through buildings, this band has always been considered as one of the prime band and carries significant commercial value. Further, this band also supports wide retail device ecosystem. TRAI also, in its consultation paper, has stated as below:

2.48 From the reports published by Global mobile Suppliers Association (GSA), it is seen that the LTE device ecosystem in 700 MHz band has been increasing at a fast pace. ...



Therefore, the first preference of this band should be to utilize it for commercial/end consumer services.

- b. **Availability for TSPs:** As highlighted in the paper itself, only 5 MHz is left in the 700 MHz band and any further assignment to any Government user will leave no further spectrum for TSPs in future. In such case, it will disentitle some private TSPs from this band entirely.
 - c. **Alternate arrangements to meet Indian Railways demand:**
 - i. Spectrum being a finite resource, its optimum utilization is of paramount interest for the nation. We understand that the IR and RRTS corridors would be non-overlapping and as such, spectrum sharing should be opted for, through existing 700 MHz assignments, to meet the additional requirements of IR. Detailed inputs have been provided in our comments to Q2 below.
 - ii. As the spectrum is required by IR for safety and security applications and there is no dependency on end consumer device ecosystem, alternate spectrum bands like 500 MHz and 600 MHz bands should be looked into. The use cases being sort of a B2B type, the OEMs can be asked to provide equipment supporting alternate bands. For this, the existing holding in 700 MHz can also be looked at for aligning with above-said alternate band.
3. **In view of the above, we urge that NO spectrum from 700 MHz band should be given to any non-UL Licensee entity, as this band has been identified for IMT in India and also has a good retail device ecosystem and spectrum identified for IMT shall be allocated to UL licensees only. We request the Authority to kindly consider the above while formulating its recommendations on the matter.**
4. **Scope of Spectrum use:**
- a. Any spectrum allotted to Government users (like Indian Railways and NCRTC) should carry a mandatory provision in scope of spectrum use that it should be used only under a closed network with no connectivity to public networks for data, SMS or voice. Also, it should be mandated that the spectrum cannot be used to extend services to their consumers or employees.
5. **Authorized Shared access (ASA):**
- a. Spectrum is a finite resource and extending the right to use it to single entity in a limited geography in a licensed service area, denies everyone else the right to use the same in the remaining part of the geographies, under present norms.
 - b. There is a need to bring in more and more spectrum for providing quality and affordable services to the consumer. Presently, spectrum being allocated to many Government



agencies, is utilized in limited geographies across an LSA and thus, it gets blocked in other than said limited geographies leading to waste of a national resource.

- c. Foremost priority should be to free up IMT spectrum from Government/other users by allocating them non-IMT spectrum. In other cases, spectrum being used by Government/other users in limited geographies (like Indian Railways/NCRTC), should be brought for use by the TSPs as secondary users. This would serve a better purpose and would be of good benefit to the telecom sector as a whole.
 - d. For the 700 MHz allocations, ASA should be mandatorily implemented, to better utilize the spectrum. It will go a long way in serving the spectrum requirements of the TSPs, for meeting the coverage and capacity demands in the current 4G/5G networks and promotion of efficient utilization of the available spectrum resources. Since, the TSP would not be able to utilize the spectrum in various premium locations, it will limit the revenue opportunities and impact to customer experience, thus, the spectrum allocated through ASA should be made available at discounted prices of at least 50% of the prices for the geographies where it can be used.
6. **Existing assignments in 900 MHz band:** We understand that there are existing assignments to Indian Railways in 900 MHz spectrum band, which are not being utilized. 900 MHz spectrum band being a prime spectrum band which enormous retail device ecosystem and equipment support, it is a national waste to keep the spectrum unutilized and not to put it in auction for availability to TSPs. In our view, the said unutilized spectrum in 900 MHz band should be asked to be returned to the DoT and it should be made available for IMT purposes.

Q2. In case your response to Q1 is negative, -

- (a) In what manner, the requirement of the IR for safety and security applications may be fulfilled?
 - (i) Specifically, whether it would be appropriate to devise a framework under which the 10 MHz (paired) spectrum [5 MHz (paired) assigned to IR, and 5 MHz (paired) reserved for NCRTC and other RRTS/ Metro rail network] in the 700 MHz band may be used by all types of rail networks on shared basis, subject to the outcome of the field trial recommended by the Authority in its recommendations on 'Spectrum Requirements of National Capital Region Transport Corporation (NCRTC) for Train Control System for RRTS Corridors' dated 28.12.2022? If yes, please suggest the key features which should be included in such a framework?
 - (ii) Any other suggestion may be provided with detailed justification.
- (b) In case your response to Q(2)(a)(i) is affirmative, whether a frequency spectrum of 10 MHz (paired) in the 700 MHz band would be sufficient to meet the requirement of different rail networks in India particularly in the overlapping zones? Kindly provide a detailed response with justification.



VII Comments to Q2.

1. We support TRAI's earlier recommendations dated December 28, 2022 on 'Spectrum Requirements of National Capital Region Transport Corporation (NCRTC) for Train Control System for RRTS Corridors', where it had recommended conducting a field trial of RAN sharing by the Ministry of Railways involving IR and NCRTC, under the supervision of DoT. This will help in optimally utilizing the spectrum which is a finite national resource.
2. In our view, a common shared network based on MOCN (Multi-Operator Core Networks) is helpful to get around the interference of using the shared frequencies by Railways and NCRTC (or Metro Rail etc.). MOCN is already a tried and tested way of implementing shared frequency network in which deployed Radio network (eNodeB) will be shared, i.e. between Indian Railways and NCRTC in this case.
3. Furthermore, RAN Slicing can also be used to enable Railways and NCRTC to guarantee a defined radio network resource share. RAN Slice will provide a minimum network capacity at high load to Indian Railways and NCRTC and they can use all the available capacity at low load. This even allows the individual slices of network to be configured to meet the characteristics requirements of the individual needs of Indian Railways and NCRTC.
4. Therefore, we reiterate no additional spectrum should be provided from 700 MHz and instead existing assignment should be utilized through spectrum sharing. On a principle level, we recommend that the spectrum which has been recognized for IMT, should not be used for any other purposes (including Railways and NCRTCs) and all present assignments and uses should be moved to alternate non IMT bands.

Q3. In case it is decided to assign an additional 5 MHz (paired) spectrum in the 700 MHz band to IR, whether there is a need for harmonization of spectrum in the 700 MHz band to make the spectrum assigned to IR, and NCRTC and other RRTS/ Metro Rail Networks contiguous? Kindly provide a detailed response with justification.

VII Comments to Q3.

Not applicable. Please see response to Q2. above.

Q4. Should a uniform spectrum charging methodology be adopted for Indian Railways as well as for NCRTC and other RRTS/ Metro rail networks? If yes, which of the following spectrum charging methodology be adopted in this regard:

- (i) Spectrum charging methodology based on Auction Determined price (ADP) as recommended in the TRAI's recommendations on 'Spectrum requirements of National Capital Region Transport Corporation (NCRTC) for train control system for RRTS corridors' dated 28.12.2022.
- (ii) Spectrum charges as levied for Indian Railways as per DoT's Order No. P-11014/34/2009-PP (II) and P- 11014/34/2009-PP(IV) dated 22nd March 2012 (revised vide DoT's order dated 11.12.2023).



(iii) Apart from the methodologies highlighted in (i) and (ii) above, any other uniform spectrum charging methodology that may be adopted in this regard?

Details with justification may kindly be provided.

And

Q5. If answer to Q4 above is no, whether the existing charging methodology as per DoT's Order No. P-11014/34/2009-PP (II) and P- 11014/34/2009-PP(IV) dated 22nd March 2012 (revised vide DoT's Order dated 11.12.2023) be continued for Indian Railways or some other spectrum charging methodology may be adopted specifically for Indian Railways? Please provide detailed response with justification.

VIL Comments to Q4 and Q5.

No comments.

Q6. If a spectrum charging methodology similar to NCRTC and other RRTS/Metro rail networks, is adopted for Indian Railways, what should be the payment terms and associated conditions relating to:

- i. Upfront payment
- ii. Moratorium period
- iii. Total number of installments to recover deferred payments
- iv. Rate of interest in respect of deferred payment and prepayment

Please support your answer with detailed justification.

VIL Comments to Q6.

No comments.

Q7. Any other suggestions relevant to the subject may kindly be made with detailed justification.

VIL Comments to Q7.

As highlighted in preface above, a predictable Spectrum Roadmap for 10 years should be formulated 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.

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