

## **BIF Response to TRAI Consultation Paper on Assignment of Additional Spectrum to Indian Railways for its Safety and Security Applications**

At the outset, BIF wishes to take this opportunity to laud the Authority for issuing a Consultation Paper, which addresses the important aspects of Passenger Safety and Security of Indian Railways, which bears a daily load of over 10 million passengers.

Radio-communication for railway operations is considered as "mission critical" for train operations and management of train emergency situations.

After having gone through the CP and bearing in mind the needs of the consumers and the importance of this precious sub-GHz spectrum in the 700MHz band, BIF question-wise submission is as below.

**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.**

### **BIF Response:**

Yes. We generally support the proposal to assign the additional 5 MHz to Indian Railways (IR) to cater to the safety and security applications due to the following reasons:

- a. Since this happens to be the last chunk of 5 MHz left in the 700 MHz band, this may not be useful for commercial IMT/5G operations and thus, may not be needed by the operators.
- b. Post the issue of this CP, the Union Cabinet has announced its decision to reserve an additional 5 MHz of 700 MHz band spectrum for IR.
- c. IR needs the said spectrum for its important Safety & Security Requirements.
- d. IR's indigenous development of Radio based Train Collision Avoidance System (TCAS): Kavach has been tested and found to be successful. Radio based TCAS shall be the IR's Automatic Train Protection (ATP) system instead of ETCS level 2. This additional 5 MHz spectrum would be required for design optimization of the network, when IR implements LTE network in 700 MHz band for safety & security applications.

This will enable IR to consolidate all its spectrum requirements in the 700 MHz band. With this additional allocation, adequate bandwidth would be available in 700 MHz band, instead of the diversified spread of spectrum in a number of HF / VHF and sub GHz bands.

However, the use of the additional 700MHz spectrum must also be restricted to captive use, as in the case of the original assignment of 5 MHz of spectrum in the 700 MHz band to IR in 2021. IR should not be allowed to offer any commercial services like Internet/Wi-Fi onboard.

### **Vacation of 900 MHz band by IR:**

In addition, it is submitted that since additional 5 MHz is being allocated to IR, there should be clear and time-bound plan for vacation of the 900 MHz band by IR and putting up the same for auction.

1.6 MHz of spectrum in the 900 MHz band has been assigned to IR since 2003 for its GSM-R-based network. Since IR wished to migrate to LTE-based network, 5 MHz of spectrum in the 700 MHz band was allotted to it in 2021. In line with TRAI Recommendations on the matter, one of the conditions for such assignment was: *"The 1.6 MHz (paired) spectrum already assigned to Indian Railways in 900 MHz band will be taken back from Indian Railways upon migration to LTE based network"*.

However, more than two years have passed since then, and the 1.6 MHz of 900 MHz band spectrum has been surrendered by IR only in seven LSAs, namely Andhra Pradesh, Himachal Pradesh, Karnataka, Kerala, Northeast, Orissa and Tamil Nadu – as noted by TRAI itself in the instant Consultation Paper.

Even CAG, in its Report No. 2 of 2022 dated 01.04.2022 ("CAG Report"), has observed that the use of the commercially important 900 MHz band spectrum by IR is inefficient and sub-optimal, and it should have been surrendered/re-farmed as per TRAI's recommendations.

The longer the surrender process drags on, the longer the public will have to wait for improved services that can be offered by TSPs using this spectrum – not to mention the huge revenues that the Government exchequer is losing out on by not putting up this spectrum for auction.

Therefore, the 900 MHz band spectrum needs to be vacated by IR and put up for auction in a time-bound manner.

**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.**

**BIF Response:**

- a. While we agree to the requirement of giving additional 5 MHz to the IR, we feel that the field trial recommended by the Authority for sharing the 10 MHz (paired) spectrum between the 3 claimants viz. IR, NCRTC & RRTS/Metro Networks should still be conducted. If successful, shared spectrum between IR, NCRTC and RRTS would lead to optimal use of the scarce spectrum.
- b. Since, we agree with the demand for IR to be given this extra chunk of 5 MHz (paired), hence response to other part of this question is not relevant.

**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.**

**BIF Response:**

In case it is decided to assign an additional 5 MHz (paired) spectrum in 700 MHz band to IR, it would be preferable to assign such spectrum in a frequency block which is contiguous to the existing assignment to IR. As is evident from the spectrum table, the existing vacant frequency block is not adjacent to the frequency blocks already assigned to IR and reserved for NCRTC and other RRTS/ Metro rail networks. There would, therefore, be a need to harmonize the spectrum assignment in the 700 MHz band to make the spectrum assigned to IR, and NCRTC and the other RRTS/ Metro Rail contiguous.

**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.**

**BIF Response:**

Yes, a uniform spectrum methodology should be adopted for Indian Railways as well as for NCRTC and other RRTS/ Metro rail networks, since all these entities use the same spectrum band for similar purposes.

For deciding on such uniform methodology, due regard must be paid to the observations in the CAG Report. The CAG has observed that the current spectrum charging methodology on which spectrum has been assigned to different Government ministries/departments/agencies, does not incentivize these users to use the spectrum efficiently. It has suggested that the methodology should be revised, keeping in view the opportunity cost of spectrum – so that it promotes efficient utilization by such users and spectrum management discipline.

Since the 700 MHz band is a commercially important IMT band, it will have huge opportunity costs – for the Government exchequer (TSPs are likely to be ready to pay huge prices if adequate quantity of this spectrum is put to auction), as well as for the public at large (which could have been catered by TSPs through the use of this spectrum). Also, unlike IR/NCRTC which use the spectrum only in specific pockets, TSPs use the spectrum much more efficiently throughout the LSA to serve a much larger user base.

Thus, the spectrum charging methodology for IR, NCRTC and other RRTS/Metro rail networks has to take into account the opportunity costs of auctioning this spectrum – both

the financial ones (the potential revenue through auction) and the larger public good that may be served if TSPs are allowed to use it instead.

**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.**

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**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 instalments to recover deferred payments iv. Rate of interest in respect of deferred payment and prepayment Please support your answer with detailed justification.**

**BIF Response:**

Please refer to our response to Q4.

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

**BIF Response:**

In addition to the 900 MHz band assigned to IR, there are many other important IMT bands, like 1800/2100/2300/3300 MHz bands, which have been assigned to various Government ministries/departments/agencies, including MoD. The CAG Report, as in the case of IR's usage of 900 MHz, has taken note of the sub-optimal/under-utilization of these different bands by Government users.

In order to help the Government exchequer as well as the larger public requirement, these bands need to be vacated and put for auctions. Accordingly, we recommend that the operations of these Government users must be shifted from important IMT bands like 1800/2100/2300/3300 MHz to non-IMT bands, in a time-bound manner.

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