

Telecom Regulatory Authority of India (TRAI)

Consultation Paper

*Spectrum Requirements of National Capital Region
Transport Corporation (NCRTC) for Train Control
System for RRTS Corridors*

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Response Submitted by:

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PREAMBLE

Maharashtra Metro Rail Corporation Limited (MAHA-METRO), is a 50:50 jointly owned company of Government of India and Government of Maharashtra. Nagpur Metro Rail Corporation Limited (NMRCL) which is a joint Special Purpose Vehicle (SPV) of Government of India (GoI) and Government of Maharashtra (GoM), has been reconstituted into Maharashtra Metro Rail Corporation Limited (MAHA-METRO) for implementation of all metro projects in the State of Maharashtra outside Mumbai Metropolitan Region.

Maha-Metro is using Radio Communication to fulfill the need for wireless communication between moving trains and controllers. For wireless radio communications, we are using 5 pairs of frequencies in the band 380 MHz-400 MHz which is approved by DoT. Maha-Metro is using group call, simplex call, and duplex call features in Tetra radio communication for optimizing the use of allocated channels. Maha Metro has signed a license agreement with DoT for the License of Captive Mobile Radio Trunking Services referred to as 311-237/2016-CS-I dated 31.10.2017.



MAHA-METRO's COMMENTS ON ISSUES MENTIONED IN THE CONSULTATION PAPER

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

Spectrum for RRTS & Metro Rails should be allotted in 700 MHz band for the following reasons

- i. 700 MHz band offers better coverage, reduces capex cost.
- ii. If the allotted spectrum is in the same band for Indian Railways, RRTS & Metro Rails, it will lead to economies of scale and sharing of spares may also be possible.
- iii. Vendor ecosystem is available in 700 MHz band for Radio Access Network and User Equipment (Train Radio, Handheld and Fixed Radio Terminals).

2. 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?

RRTS and Metro Rails should be allotted 5 MHz spectrum in 700 MHz band, since the Mission Critical Voice, Mission critical Data and Video requirements are same as that of Indian Railways.

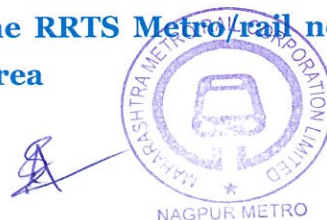
Globally other Railways and Metros have been allotted 10 MHz or higher for setting up similar mission critical LTE networks. For example, South Korea and Dhaka Metro.

3. 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.

a) Assignment of same spectrum for RRTS/Metro rail networks which are geographically separated area

No challenges are expected in geographically separated regions.

b) Assigning same spectrum to more than one RRTS Metro/rail networks operating in the overlapping geographical area



For sharing of spectrum between RRTS and Metro Rails in geographically overlapping areas, suitable experts' recommendations may be taken. Prima facie technological solutions like MOCN and other recommended by experts from IIT Chennai seem workable.

- 4. 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.**

MOCN is proven technology for RAN Sharing in Public Network also being used in South Korea and many commercial networks in the world.

- 5. 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.**

- a) This is a policy matter to be decided by Govt. of India.
- b) Coordination mechanism may be decided through Mutual Agreement.
- c) Commercial arrangement may be decided through Mutual Agreement .



d) In case of disagreement, MoHUA (Nodal Ministry for RRTS & Metro Rail) may govern the terms and conditions of RAN sharing between RRTS & Metro Rail

6. 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.

For RRTS and Metro Rails the same policy as adopted for Indian Railways for permission/licensing regime for operation of wireless networks may be made applicable.

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

Same terms and conditions as adopted for Indian Railways for permission/licensing of captive wireless networks may be made applicable for RRTS and Metro Rails. Moreover, it is a policy matter to be decided by Govt. of India.

8. 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.

As the use case of RRTS and Indian Railways is identical, hence the spectrum allocation may be made on the same analogy as that of Indian Railways.

9. 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.

It is a policy matter, however for all similar captive networks like RRTS and Metro Rail the same terms and conditions and spectrum charges shall be applicable.

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

No suggestion

