# GUJARAT METRO RAIL CORPORATION (GMRC) LIMITED

(A SPV of Govt. of India & Govt. of Gujarat)

(Formerly known as Metro-Link Express for Gandhinagar and Ahmedabad (MEGA) Company Limited)

No: MEGA/S&T/DoT/LICENSE/2016/30/VOL-3/322                    Date: 02/07/2022

To
**The Under Secretary**
**Govt Of India**
**322-C, Nirman Bhawan,**
**New Delhi**

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| **Kind Attn.** | : | **Sh. Sunil Kumar, Under Secy to Govt. of India** |
| **Subject** | : | **Allotment of frequency spectrum to NCRTC for implementation of Train Control System for Regional Rapid Transit System-Reg** |
| **Reference** | : | **1. MoHUA (MRTS-I) Letter No K-14011/7/2018-MRTS-I dated 30/06/2022** |
| | | **2. TRAI Letter No C-15/2/(2)/2021-NSL-II dated 23/06/2022** |

Vide reference (2) above, TRAI has released a consultation paper on 09/06/2022 wherein issues related to assignment of spectrum to NCRTC and other RRTS Metro/Rail Networks have been raised.

Vide reference (1) above, Ministry of Housing and Urban Affairs has asked for furnishing comments over issues related to assignment of spectrum (in 700 MHz Band) to NCRTC and other RRTS Metro/Rail Networks from various Metro Rail Organisations of India.

The responses against the raised questions regarding the subject matter are being attached along with this letter.

**For GMRC Limited**

02/07/2022

**Mehul Joshi**
**GM/Telecom**

**Enclosure:**
   1. Responses against the queries raised by TRAI

**Copy To:**
   1. Sh. V. Raghunandan, The Secretary, TRAI, **Email: secretary@trai.gov.in**
   2. Sh. Tausif Abbas, Advisor (Networks, Spectrum and Licensing), TRAI, **Email: advmn@trai.gov.in**

# Telecom Regulatory Authority of India (TRAI)

# Consultation Paper

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

## June 2022

Response Submitted by:

## Gujarat Metro Rail Corporation Ltd. (GMRC)

# PREAMBLE

Ahmedabad- Gandhi Nagar Metro Rail project is being promoted with the objective of providing safe, fast and eco-friendly transportation services to the public at affordable rates while simultaneously reducing the congestion on the roads. The proposed metro is having majorly elevated structure, ballast less tracks, air-conditioned coaches, GPS based rail tracking system, train destination indicators & stations with support infrastructure like Automated Fare collection, Parking facilities etc.

On 4th February 2010, A special purpose vehicle (SPV) namely, Gujarat Metro Rail Corporation (GMRCL) Limited was incorporated by Govt of Gujarat to implement Metro Rail Project under the Companies Act, 1956. The company was restructured and with effect from 20th March 2015, the company has been converted as a 50:50 SPV of Government of India and Govt of Gujarat.

Presently GMRCL is executing Metro Rail Projects in the city of Ahmedabad, Gandhinagar, and Surat of Gujarat State. The details of the projects are:

1. **Ahmedabad Metro Rail Project Phase-1:** This project is having two corridors of 19.44 Kms and 18.49 Kms. including 6.33 Kms section of Underground Metro. The number of stations is 28 Elevated and 4 Underground Stations. This Project covers Ahmedabad City.

2. **Ahmedabad Metro Rail Project Phase-2:** This project is having two corridors of 22.84 Kms and 5.42 Kms. The number of stations is 22 Elevated Stations. This Project covers Gandhinagar and Ahmedabad cities.

3. **Surat Metro Rail Project Phase-1:** This project is having two corridors of 21.61 Kms and 18.74 Kms. including 6.47 Kms section of Underground Metro. The number of stations is 32 Elevated and 6 Underground Stations. This Project covers Surat city.

# GMRC'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 and 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.
iii. Vendor ecosystem is already 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 minimum 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.

Many new Metros are being designed from Driverless System Operations, which will require even more Live CCTV Video bandwidth to remotely monitor the passenger activity. They would require around 10 Mhz spectrum as is being used in other Countries for Mission Critical LTE.

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, as interference is unlikely.

   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 seem workable. This can be further optimised by using highly directive antennas and by better placement of Base Stations.

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 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 by the concerned parties.
      c) Commercial arrangement may be decided through Mutual Agreement by the concerned parties.

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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 needs to 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 methodology as that of Indian Railways. Presently all Metros are using Radio Technology in the free ISM Band for Mission Critical Train Control Systems (Communication Based Train Control) and hence for them to move to LTE Band which is the most likely future technology, it would be desirable to have free or minimal license free mechanism.

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. Presently all Metros are using Radio Technology in the free ISM Band for Mission Critical Train Control Systems (Communication Based Train Control) and hence for them to move to LTE Band which is the most likely future technology, it would be desirable to have free or minimal license free mechanism.

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

As per the RRTS details provided in the document, it is felt that spacing of LTE Base Stations by NCRTC can be further increased, especially in the areas wherein there is geographical separation from the Indian Railways network.

P. K Verma
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