



KOLKATA METRO RAIL CORPORATION LIMITED
(A Government Of India Undertaking)

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No. KMRC/GM(S&T)/Technical/Telecom/UG

Dated: 21.07.2022

To
Shri Sayed Tausif Abbas
Advisor (Networks, Spectrum and Licensing)
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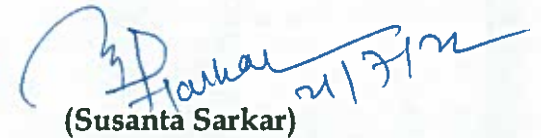
Sub : Allotment of frequency spectrum to NCRTC for implementation of Train Control system for RRTS - regarding.

Ref : i) TRAI's Letter No. C-15/2(2)/2021-NSL-II dated 23.06.2022.
ii) MoHUA's letter No. K-14011/7/2018-MRTS-I dated 30.06.2022.

Reference above, the comments against the issues regarding the subject matter is attached herewith. There is no counter comment in this regard.

This is for your kind information please.

Encl.: As above.


(Susanta Sarkar)

Group General Manager (S&T)
Kolkata Metro Rail Corporation Ltd.

PREAMBLE

Kolkata Metro Rail Corporation Ltd. (KMRCL) is a Government of India enterprise implementing Kolkata (East-West) Corridor Project. KMRCL's project upon completion will connect Salt Lake Sector V in the East and Howrah Maidan in the West. There shall be 6 nos. elevated stations and 6 nos. of underground stations.

Metro Train is fully functional for 8 nos. stations of the above route from Saltlake Sec-V to Seadlah Metro Station. Captive Mobile Radio Trunking System has been deployed for efficient communication for Train Operation, Maintenance and Security coordination. We have obtained Captive Mobile Trunking Service License in Frequency Band of 380 to 400 MHz.

Currently, 5 Pair of frequencies have been assigned to establish secure communication for entire Metro rail route. In addition to this, KMRCL have established Fibre Optic Networks for communication for underground section radio communication using In-Building System.

KMRCL 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?**

KMRCL have implemented Captive Mobile Radio Trunking System (CMRTS) technology which is based on ETSI TETRA standard. Primarily, CMRTS is deployed for establishing Voice Communication between Train Operator and Operational Control Centre. Voice communication is a Mission Critical application and thus CMRTS technology provides reliable & secure communication. Additionally, DCS (Data Communication System) is being used using free band i.e 2.4 GHz and 5.8 GHz for communication of On-Board Train CCTV data and Signalling communication from train to Operation centre.

In NCR area, multiple metro rail networks are operational, additionally different spectrum are being used by Mobile operators, ISP (internet service providers) and by Indian Railways. However as per RRTS and assuming station to station longer distance, it is advised to use the UHF frequency (600 MHz to 800 MHz) for better coverage.

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?**

This is to be based on the services that NCRTC requires like (Signalling, On-Board data of CCTV, internet services etc.) So, without having the actual requirements, it is not possible to specify the spectrum requirement.

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.**

Assigning same spectrum may be allowed in overlapping geographical area subject to, same frequency pair should not be operated in those overlapping areas and frequency reuse should be designed as per Hexa (Bee hive) pattern.

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.**

It is preferred to have separate spectrum for RRTS & Metros as there will be multiple sections overlapping. Also the channel occupancy, interfaces, Interconnectivity of MSO/MSC etc are to be taken care using Multi-Operator.

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?**

If it has been decided by the Government that RRTS Metro/rail networks may share the Radio Access Network (RAN) in the overlapping area using Multi-Operator Core Network (MOCN) then it should be included in terms and conditions before allotment of Spectrum to avoid any conflict between multi vendors/OEMs at later stage.

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 networks operators mandated for MOCN RAN sharing? In case, guidelines need to be prescribed, kindly suggest the points to be included in the guidelines.

Yes, guidelines need to be issued for coordination mechanism under a Central Agency rather than between the RRTS/ Metro rail network operators mandated for MOCN RAN sharing the same Spectrum.

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

Yes. It should be regulated similar to Mobile operators by TRAI or DoT.

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

MoHUA should govern the terms and conditions for RAN sharing between RRTS & other rail network.

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.

Same terms and conditions as adopted for permission/licensing of captive wireless Networks may be made applicable for RRTS and Metro Rails.

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

License is required to ensure authorised use and license fee may be kept minimal as the services are made for public safety & security.

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 it is similar to Indian railways hence the spectrum allocation may be made on same methodology. License fee may be kept minimal as the services are made for public safety & security and not for any commercial use.

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.**

Yes, License is required to ensure authorised use and license fee may be kept minimal as the services are made for public safety & security only.

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

No Suggestions.