Recommendations on Telecom Regulatory Authority of India Consultation Paper on Spectrum Requirements of National Capital Region Transport Corporation (NCRTC) for Train Control System for RRTS Corridors

Reference on TRAI's Consultation paper dated on 09/06/2022

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Chapter 1

Objective of ITU-APT Foundation of India (IAFI)

We, the ITU-APT Foundation of India (IAFI), are a registered non-profit and non-political industry association registered under the Cooperative Societies Act of India. IAFI has been recognized by the International Telecommunication Union (ITU), the UN Organisation for ICT issues, as an international/ regional Telecommunications organisation and has been granted the sector Membership of the ITU Radio Communications Bureau (ITU-R), ITU Development Bureau (ITU-D) and ITU Telecommunication Standardisation Bureau (ITU-T). IAFI is also an affiliate member of the APT. IAFI has been working for the last 20 years to encourage the involvement of professionals, corporate, public/private sector industries, R&D organisations, academic institutions, and other agencies in the activities of the ITU. For more details on IAFI please visit https://www.itu-apt.org/.

Chapter 2:

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

Answer:

Spectrum in 700 MHz band using 3GPP band 28, commonly known as APT band should be assigned to NCRTC for their LTE-R technology-based Train control system for RRTS rail corridors.

RRTS and metro rail need a wireless solution to be able to provide voice and data communication services to manage their operations with a clear vision. 3GPP LTE provides the best solution for meeting the needs of RRTS

Q.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?

Answer:

10 MHz (5+5 MHz) in 700 MHz band using 3GPP band 28, commonly known as APT band should be assigned to NCRTC for their LTE-R technology-based Train control system for RRTS rail corridors

Q.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.

Answer:

Same spectrum in 700 MHz band when assigned to different RRTS/metro rail networks, operating in geographically separated areas/corridors in the country can fully coexist and there is no challenge sharing of the same spectrum.

The LTE systems are designed to reuse the same spectrum in geographically separated areas/corridors.

Q.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.

Answer:

We do not recommend sharing the spectrum between RRTS and Indian Railways network. However sharing between RRTS, suburban and Metro rail network should be encouraged. Such sharing could be managed through MOCN or network slicing.

Interference is the main cause of concern while sharing the spectrum. However, the interference can be mitigated by appropriate transmission and reception techniques and through careful deployment of the RAN (Radio Access Network). RAN sharing through MOCN allows for deployment of two network with zero interference.

Q.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 RAN sharing, kindly provide detailed justifications.

Answer:

If it is decided that RRTS and Metro Rail networks may share the Radio Access Network (RAN) in the overlapping area using Multi-Operator Core Network (MOCN) then

a) A broad guiding principle for such spectrum sharing should be included in the terms and conditions for assignment of spectrum that the assigned spectrum may have to be shared with other RRTS and Metro Rail networks to whom government decides to assign the same spectrum frequencies on sharing basis, furthermore it should be updated in an agenda format when assigning the same, so that there is minimal discrepancy regarding the same.
b) Yes, certain guidelines for coordination mechanism need to be issued for the mutual agreement between the RRTS/Metro rail network operators mandated for MOCN RAN sharing, there will be a need to establish Standard Operating Procedure (SOP).
c) To ensure that the RAN sharing between RRTS and Metro rail networks is done in a smooth manner, there may be a need to put in place guidelines for coordination mechanism, through mutual agreement between the two parties.
d) -

Q.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.

Answer:

A permission/license under Section 4 of the Indian Telegraph Act, 1885, is required for establishing captive wireless network using specifically assigned spectrum. , We believe that permission/licensing regime for Captive Wireless Networks for Train Signalling System may be kept very simple and straightforward and ordinary in nature

We do not recommend any separate CMRTS license as no public service is to be provided and only wireless operating license is needed under section 4 of the Indian Telegraph Act, 1885,

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

Answer:

The broad terms and conditions that may be included in the permission/license could be

1) non-offering of any commercial telecom services to the public in general

2) spectrum to be granted on sharing basis.

3) Description relating to the rail/metro networks issues involved in public safety & security followed with the area of its operation.

4) use of trusted sources only for telecom equioment to be used in the network

Q.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.

Answer:

Spectrum charging should be same for all captive wireless networks that are assigned on administrative basis and these should primarily cover the cost of managing the spectrumonly.

Q.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.

Answer:

- Spectrum charging should be same for all captive wireless networks that are assigned on administrative basis and these should primarily cover the cost of managing the spectrumonly.

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

Answer:

It should also be possible share the same spectrum for other captive networks such as ports, oil refineries, mines etc, which are far separated from the RRTS networks. WPC wing should consider such sharing.