



GSMA APAC
Suite 1207-10 12/F
Great Eagle Centre
23 Harbour Road
Wan Chai
Hong Kong
Tel: +852 3960 5000
gsma.com

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Shri Rajiv Sinha

Principal Advisor (NSL)

Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhawan
Jawahar Lai Nehru Marg New Delhi 110002,
E-mail: pradvnsl@traf.gov.in

Subject – GSMA’s Response to TRAI’s Consultation Paper on *Spectrum Requirements of National Capital Region Transport Corporation (NCRTC) for Train Control System for RRTS Corridors*

Dear Sir,

At the outset, the GSMA thanks the Authority (TRAI) for issuing this consultation paper to seek views of the stakeholders on various vital aspects related to Spectrum Requirements of National Capital Region Transport Corporation (NCRTC) for Train Control System for RRTS Corridors.

Mobile connectivity has been a catalyst for economic and social development in the daily lives of Indian citizens, from enabling digital payments and e-commerce to providing access to education, health and essential public services through mobile applications during the pandemic. Today, India is one of the highest data consuming markets globally, with more than 1.1 Bn mobile subscribers by the end of Apr’2022.

Mobile broadband usage is expected to grow further with launch of 5G services in next few years. The GSMA estimates monthly mobile data usage to grow from 18.4 GB per subscriber at present to 50 GB per subscriber by 2027¹. Additionally, there are a wide of enterprises and industries that are set to benefit from 5G rollout for digital transformation of business processes and introduction of new industrial applications.

To keep pace with the increasing demand of mobile broadband, it is essential that sufficient amount of spectrum in globally harmonised bands across low, mid and high bands, is made

¹ [The Mobile Economy 2022 \(gsma.com\)](http://gsma.com)



available to mobile network operators facilitate cost-efficient rollout and widespread availability of high quality 5G connectivity to all users in India.

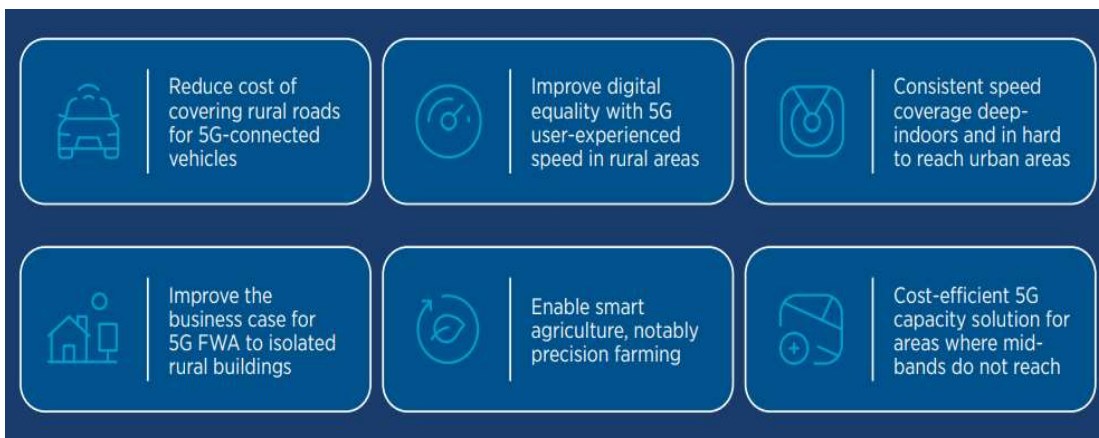
Requirement of Spectrum Roadmap: There is clearly a need to define a long-term spectrum roadmap, which will provide a regulatory certainty for promoting investment in the sector and also help operators to take informed decisions about acquiring spectrum and invest in networks. Based on international best practices, the GSMA recommends such roadmap to consider a timeframe of at least 10 years in order to better accommodate emerging spectrum needs, technological evolution and international developments.

Role of Low Band Spectrum (sub-1 GHz) for 5G

Low-band spectrum below 1 GHz, is the cornerstone of digital equality and a driver of broad and affordable connectivity². It is a crucial national asset that can build bridges towards digital inclusion and ensure the impact of mobile's economic and social benefits are available to all communities.

Low-band capacity will be at the core of ensuring that 5G is available to everyone. More spectrum in this range is vital to giving rural communities equitable access to 5G services available in urban areas and pushing towards digital inclusion goals and helping to unlock new use cases for all. At the same time, low-bands can help improve the quality of enhanced mobile broadband coverage for hard-to-reach places, such as deep indoors or narrow alleys.

Benefits of low-band spectrum:



² Coleago Consulting. "The need for sub-1 GHz spectrum to deliver the vision of 5G"
<https://www.gsma.com/spectrum/wp-content/uploads/2022/06/5G-Low-Band-Spectrum.pdf>



As per the recent study by Coleago Consulting³, wider sub-1 GHz channels – ideally 2x20 MHz or more, are beneficial in several ways, namely:

- **Improving cost efficiency** – deployment in a wide channel reduces the cost per MHz deployed and cost per connection.
- **Enhanced spectral efficiency** – wider channels enable higher resource utilisation and performance gains relative to 5 MHz or 10 MHz channels.
- **Implementation of MIMO technology** – larger channels are better suited for MIMO technology and can significantly increase cell-edge capacity and performance.

The 700 MHz is one of the prime bands for 5G and it is a key band to enable the benefits of 5G for all users in India. Any such band where end-user/mobile device ecosystem has been developed, principally should not be utilized for any purposes where such device ecosystem is not required. Many countries in the Asia Pacific region have released the full 2x45 MHz for IMT and operators are starting to deploy it for 5G. Among the other sub-1 GHz frequencies, the 850 MHz and 900 MHz bands are still needed to support legacy 2G and 3G networks services while the 600 MHz band is still at a very nascent stage and the ecosystem will take time to emerge.

Further reservations of sub 1-GHz spectrum for Railways/NCRTC/any other Rail agency will lead to sub-optimal outcomes and risk India’s digital ambitions

Out of available 700 MHz mobile spectrum in India (2x45 MHz), 10 MHz is already assigned/reserved for government use and 5 MHz spectrum has been assigned to Indian Railways for LTE-based RSTT network. If another 5 MHz is assigned/ reserved for Railways/NCRTC or any other RRTS/metro rail networks or similar government/ PSU agencies who are also commercial enterprises, **the remaining spectrum (25 MHz) in the 700 MHz band may not be enough to meet the future IMT requirements and would lead to sub-optimal assignments for mobile operators.**

The reduced bandwidth is unlikely to provide a balanced distribution of spectrum assets in a key coverage band, resulting in reduced 5G coverage and slower networks especially in rural areas. The scarcity of sub-1 GHz will artificially inflate the prices paid for spectrum and risks leading to lower network investment and, further delayed rollouts, and limited coverage. This would result in missed opportunities for increased economic activity arising from optimum mobile broadband capacity available to operators and consumers.

Additional set-asides in this band risks inefficient spectrum use, particularly as deployments are only likely to be in certain, fixed locations.

³ [The need for sub-1 GHz spectrum \(gsma.com\)](https://www.gsma.com)



The GSMA's view is that the economic benefits of countrywide mobile broadband in 700 MHz outweigh those of set-asides for application-specific uses, and therefore we do not recommend reserving any further 700 MHz spectrum for railways or any other similar applications.

Alternative options are available for RSTT based applications for Railways

It is not necessary to set aside spectrum specifically for RSTT based applications as their needs can be met through other means. Firstly, **other bands are available for use by Indian Railways, NCRTC and any other rail agency** (i.e. 150, 300, 400, 450-470 MHz) and should be considered in first instance in order to avoid undue costs, technical complexities and missed economic opportunities. We submit that the authority shall consider allocation of spectrum to NCRTC from those frequency bands where end-user/mobile device ecosystem does not play a key role.

Alternatively, **mobile operators are also well-positioned to provide industrial applications, including for railway operators**, making use of their spectrum holdings. For example, in Australia, Telstra has been supplying railway communications to the Australia Rail Track Corporation using its 850 MHz spectrum and has plans to upgrade to 4G using its 700 MHz network. Such approach can be considered for NCRTC and would help mitigate the complexities of interference planning between public mobile networks and RSTT applications.

Further the introduction of 5G in India would further expand mobile operators' capabilities to offer such industrial grade applications and to meet the safety and security requirements, without a need for spectrum reservations for specific applications.

Since demands for spectrum is now coming from various PSUs, government agencies like Indian Railways (IR), latest being NCRTC, and in future such demands may come from other users as well – it thus becomes critical for TRAI and DoT to plan out a clear roadmap for such users as to what bands can be made available for their usage. This is an important factor for India MNOs for predictability and consistency of network planning and investments.

Also, TRAI in its recommendations dated 25-Oct-2019 had recommended that *“As Indian Railways would be using the assigned spectrum along its railway track network and stations only, DoT may explore the possibility of assigning the same spectrum in other areas for area-specific limited use to other entities for captive use. However, it should be ensured that there is no interference to the Railways' network from such use.”* In view of the same, we request TRAI to take cognizance of its earlier recommendations also while making any further recommendations to DoT in this regard.



We trust that our submission will merit your kind consideration before taking any final decision in the matter. We would appreciate the opportunity to discuss and work together to ensure the benefits of mobile infrastructure continue to advance the interests of the citizens of India.

We also remain available for any questions and further information/ clarification that may be required in this regard.

Sincerely,

A handwritten signature in cursive script that reads "Jeanette Whyte". The signature is written in black ink and is positioned below the word "Sincerely,".

Jeanette Whyte
Head of Public Policy, APAC
GSMA

Copy to:

1. Dr. P.D. Vaghela, IAS, Chairperson, TRAI
2. Shri V. Raghunandan, Secretary, TRAI
3. Advisor (NSL), TRAI