



DIGITAL
LIFE

RJIL/TRAI/2019-20/184
22nd July 2019

To,
Sh. Syed Tausif Abbas
Advisor (NSL-II),
Telecom Regulatory Authority of India,
Mahanagar Doorsanchar Bhawan,
Jawahar Lal Nehru Marg, New Delhi 110002

Subject: Comments on 'Consultation Paper on Allotment of Spectrum to Indian Railways for Public Safety and Security services' (Consultation Paper No. 8/2019 dated 24.06.2019).

Dear Sir,

Please find enclosed comments of Reliance Jio Infocomm Ltd. on the issues raised in the 'Consultation Paper on Allotment of Spectrum to Indian Railways for Public Safety and Security services' (Consultation Paper No. 8/2019 dated 24.06.2019).

Thanking You,
For **Reliance Jio Infocomm Limited,**


Kapoor Singh Guliani
Authorised Signatory



Enclosure: As above.

**RELIANCE JIO INFOCOMM LTD'S COMMENTS ON TRAI'S
"CONSULTATION PAPER ON ALLOTMENT OF SPECTRUM TO INDIAN RAILWAYS FOR PUBLIC
SAFETY AND SECURITY SERVICE"**

General Comments:

1. At the outset, Reliance Jio Infocomm Limited (RJIL) thanks the Authority for issuing this consultation paper to deliberate on the Allotment of spectrum to Indian Railways for Railway Radiocommunication Systems between Train and Trackside (RSTT). We agree with the Authority that there is an urgent need to upgrade RSTT technology from GSM-R, and that as per the current technological developments and views taken by other countries, LTE based communication corridor along the network of Railways seems most suitable for RSTT services.
2. However, we do not agree with the Indian Railways demand for reserving 15 MHz spectrum in 700 MHz spectrum band for this LTE based communication corridor. Department of Telecommunications (DoT) has rightly noted that considering the limited spectrum available in 700 MHz band and the fact that this digital dividend spectrum has immense potential for coverage in wide and rural areas, the spectrum for Indian Railways may be explored beyond this band and that the spectrum in 450-470 MHz seems most suitable for this purpose.
3. We submit that spectrum in 700 MHz band has been recognized internationally to have wide commercial and social value. This digital dividend spectrum, with a rapidly increasing device eco-system, is being considered for deployment to enable better coverage of rural areas. This spectrum is being auctioned in U.S. and many other countries for a while now, Asia Pacific Telecommunity (APT) and many Latin American and African countries have also adopted the FDD 700 MHz band plan for this spectrum. Europe is also well on its way to free this spectrum by May 2020 for wireless broadband services and there is positive traction in China to make available this spectrum for mobile broadband, clearly indicating that this band is extensively considered for commercial delivery of wireless broadband.
4. Further, besides the well documented used cases in 4G applications, this band is also seen as the base band to provide the wide-area coverage layer for 5G new radio (NR). For instance, the target of '5G everywhere' by 2025 in Europe, will need to leverage spectrum in 700 band extensively to materialize.
5. Additionally, many studies note that lower frequencies like 700, 800, 900, 1800 and 2100 MHz may need to be exploited in combination with spectrum in 3300-3800 MHz (utilising the LTE/NR uplink co-existence feature of 3GPP standards) allowing



operators to benefit from faster and cost-efficient deployment of C-band, the primary band for 5G, thus delivering enhanced capacity without incurring network densification costs.¹

6. Thus, clearly the undeniable fact remains that there is vast commercial potential in this spectrum. It's better and deeper coverage makes efficient and effective deployment of wireless broadband in remote and rural areas in the country possible. Thus, DoT's view of immense commercial potential in this spectrum is undeniable and consequently the legal question of violating the Hon'ble Supreme Court's verdict by allocating this scarce natural resource to a commercial organization like Indian Railways without auction is very much relevant and cannot be brushed aside.
7. We submit that any allocation of spectrum IMT bands, should be done through auction only and in case any administrative allocation is to be done to Indian Railways then it should be done from spectrum not earmarked for commercial use like the spectrum in 450-470 MHz band. This spectrum is not identified for commercial use and is also being considered for harmonisation by regional group on Global basis as mentioned in Table 2.1 of the Consultation Paper.
8. Further, we agree with DoT and TRAI's opinion that allocating 700 MHz band for Railways requirement would be very inefficient way to use this spectrum of immense commercial value. Railway's limited requirement of spectrum along the tracks will render the spectrum useless in entire LSAs, as Railways pass through populated areas as well and allocating the same spectrum to any TSP in non-Railways areas will lead to interference issues impacting the provision of RSTT, thus the spectrum allocated to Railways cannot be used for any other purpose anywhere.
9. We further submit that while we agree that Railways requirements to provide a) Mission Critical Passenger Safety Services & Applications through ETCS Level 2 or similar Railway Signalling system. b) Video Surveillance (Live Feed) through CCTV cameras in trains along with Video Analytics for Passenger Security. c) Train and way side Telemetry through Mobile communications are valid and legitimate requirements, we strongly disagree with their proposal to use the RSTT spectrum for providing Wi-Fi to passengers and using this spectrum for faster data network Communication for voice, video and other related application and IoT based services, as the same are commercial services and can be provisioned only under Unified License Authorization by DoT.

¹ http://www-file.huawei.com/-/media/CORPORATE/PDF/public-policy/public_policy_position_5g_spectrum.pdf



10. The Railways is a commercial organisation and it can very well take the requisite licenses and auction-acquired spectrum to offer commercial services like Wi-Fi and other commercial services to its customers under the applicable license and service terms and conditions.
11. We have gone through the alternatives suggested in the Consultation paper and submit that alternative of an TSP building and operating the network for RSTT with Indian Railways availing the network to provide independent RSTT services, seems to be a very doable option and can be explored further. With regards the alternative of Railways having common spectrum and network with Public Protection and Disaster Relief (PPDR) can also be considered as an option but should be explored in consultation with the PPDR agencies and all possible associated issues like congestion, command and control and operational processes should be explored before taking it any further.
12. To summarise, we submit as under:

1. **The spectrum in 700 MHz band should not be allocated to Indian Railways for Radiocommunication Systems between Train and Trackside (RSTT), due to its commercial use and being a backbone band for 4G-5G services.**
2. **The appropriate allocation for RSTT purpose should be in the 450-470 MHz spectrum band.**
3. **The Railways should not be permitted to offer commercial services like Wi-Fi and voice, video communication etc. without obtaining appropriate authorization under Unified License.**
4. **Further, Railways should obtain commercial spectrum for commercial use like all other interested parties i.e. Auction.**
5. **The Authority should better explore the possibility of a TSP building the RSTT network for Railways and common network for RSTT and PPDR.**

Issue wise response:

Q.1 Whether spectrum in 700 MHz band should be assigned to Indian Railways for RSTT in India? Please provide justification for your response.

RJIL Response:

1. At the outset, we submit that spectrum in 700 MHz may not be assigned to Indian railways for RSTT services as this spectrum is of immense commercial value and will be the backbone of the digital inclusion envisaged under various national schemes like 'Digital India'. As highlighted by DoT and agreed by the Authority, the spectrum



resources in 700 MHz band are limited and to utilize this spectrum in an optimum manner, it should be auctioned.

2. We further submit that Railway is a commercial organisation and safety and control system are part of operation of the system. As the Railways is planning to upgrade these systems and wishes to use most advance telecommunication technology leveraging commercial spectrum, it should be prepared to win the right to use this spectrum in an open auction. As administrative allocation of this valuable national resource, at zero cost, will be a travesty of Hon'ble Supreme Court's landmark judgement in 2G case.
3. Further, as highlighted by the Authority in the Consultation Paper, the Railways do not intend to limit the use of this spectrum and new system to offer conventional RSTT services. Instead they propose to use the following applications/facilities by deploying LTE technology in 700 MHz:
 - a. Faster data network Communication for voice, video and other related application.
 - b. More network-enabled devices (IoT based Asset reliability Monitoring).
 - c. Providing Wi-Fi facility in trains.
4. Clearly, the proposal by Railways is encroaching upon the licensed telecommunication activities under various authorization of Unified License. The Authority is requested to strictly forbid using these facilities and application by a Government organisation without appropriate licensing.
5. We further submit that, if at all, Railways feels that providing such services are desirable to enhance its customer experience, then it should follow the legitimate route of obtaining an appropriate license and acquiring spectrum through auction to offer the same.
6. Further, we agree that with the DoT view that it would be prudent to take decision on proposal of spectrum assignment to the Indian Railways based on the outcomes of WRC-19 to be held in November-2019. As many other issues like identifying globally harmonized frequency bands for the implementation of RSTT along with existing mobile service allocations are under consideration. It is also not out of place to mention that so far ITU has not proposed this band for RSTT. Further, as per table 2.1 of the consultation paper, this band is not even in consideration in ITU for a possible global spectrum harmonization for RSTT proposed from within regional groups.
7. As highlighted in our General Comments, if at all this spectrum is allocated then DoT would be compelled to not use the spectrum in non- Railway track areas due to



interference issues and would be a very inefficient deployment, which will go completely against the Government's objective of efficient utilization of spectrum.

8. We would also take this opportunity to highlight another vital related point. As the Authority is aware, Railways are most inflexible in acting upon the request for Right of Way permissions and permission to install mobile towers in their areas. We submit that in case the permission to install towers is accorded by Railways as per provision of "Right of way Rules" notified by the Government, the quality of communication coverage inside the moving train will anyways improve tremendously besides increasing the Government's revenue in terms of license fee and SUC by increased usage in trains. Further, Railways would be left to manage only core RSTT services. We submit that enhanced co-operation with TSPs will boost coverage in nearby areas and can be used for telemetry.

Q.2 In case your answer to Q1 is in affirmative, how much spectrum should be assigned to Indian Railways?

RJIL Response: Not Applicable

Q.3 In case your answer to Q1 is negative,

i) what are the other bands (including 450-470 MHz) in which spectrum can be assigned for RSTT, ii) how much spectrum should be assigned to Indian Railways?

RJIL Response:

1. We agree with the DoT view that spectrum in 450-470 MHz may be considered for assignment for RSTT. This spectrum is not identified for commercial use and these spectrum frequency ranges are also being considered for harmonisation by regional group on Global basis as mentioned in Table 2.1 of the Consultation Paper. The use of globally harmonised band is always better from operational feasibility.
2. This LTE band seems to be the optimum option for RSTT. The device eco-system for this band is also evolving and there are international used cases are also available for use of this band by Railways, for instance in Australia.
3. We submit that instead of allocating the entire spectrum in 450-470 MHz band, the spectrum should be allocated in tranches of 10 MHz. The initial 10 MHz should be allocated to start with and the remaining 10 MHz should be allocated, post determining that more spectrum is required to meet RSTT needs. Further, as mentioned earlier, this spectrum should be strictly allocated for Railway's operational and signaling requirement.



Q.4 In case it is decided that spectrum in IMT bands which have already been earmarked for mobile services, be assigned to Indian Railways for RSTT in India, what should be the methodology (including price) of allotment of spectrum?

RJIL Response:

1. We submit that in view of the Hon'ble Supreme Court's landmark judgement in 2G case, commercially deployable mobile spectrum cannot be allocated to any entity below the market price. The Authority is aware that, hitherto, all spectrum allocation has been carried out on the same principle and there is no reason to alter this approach just because the beneficiary would be a commercial organisation belonging to Government.
2. We reiterate that Railways is a commercial organisation and safety and control system are part of operation and would be part of the cost of operation. The cost of spectrum would be an inalienable part of the cost of providing safety and security of Railways and Railways should bear this cost. It is pertinent to mention here that that when 3G and BWA spectrum was allocated to BSNL/MTNL, administratively in 2010, they were also required to pay the market price of the said spectrum.
3. Thus, in case it is decided that spectrum in IMT bands which have already been earmarked for mobile services, be assigned to Indian Railways for RSTT, it should be allocated at market price. In case market price is not available, it should be based on the reserve price recommended by TRAI. Indian Railways should be asked to pay difference of reserve price and market price to be discovered in next auction from date of assignment.

Q.5 In case it is decided to assign spectrum in other spectrum bands (including 450-470 MHz band), what should be the methodology (including price) of allotment of spectrum?

RJIL Response:

1. We submit that the allocation of the spectrum in non-commercial bands like 450-470 MHz band will depend on the proposed usage by Railways. In case the Railways undertake to use this spectrum only for RSTT services with no infringement of the scope of services under the Unified License, then the spectrum can be assigned administratively, at the administrative price determined by the Government.
2. However, in case the Railways is desirous of offering commercial services being offered under Unified License then it should not only be required to obtain



appropriate license, it should be charged at market price available for next higher band or as per the market price of commercial spectrum band with similarly characteristics.

Q.6 Do you foresee any challenges, if IR makes internet services available onboard i.e. within the train using spectrum allocated for signaling purpose?

RJIL Response:

1. We do see licensing and jurisprudential challenges, in case Indian Railways provided internet services onboard. We submit that provision of Internet service by any entity is permissible only on obtaining a license under section 4 of Indian Telegraph Act. Thus, we reiterate our submissions in the previous responses that to provide commercial service like Internet, Railways should obtain the appropriate authorization under Unified License and necessarily obtain their spectrum resources through auctions and comply with the applicable Regulation and Quality of service norms.
2. We submit that using spectrum allocated for signaling purposes for internet services will not only be a violation of allocation terms but will also disturb the level playing field.

Q.7 Whether the requirement of IR for RSTT can be fulfilled using the following alternate methods:

i) Alternate method suggested in para 4.47, wherein a TSP could build, deploy and maintain LTE-R network for IR; while the control, use and operation of the LTE-R network may be with IR. OR

ii) Alternate method suggested in para 4.48, wherein there could be a common integrated network (with common spectrum) for Public Safety i.e. Public Protection and Disaster Relief (PPDR) and Railways, using PS-LTE and LTE-R technology respectively. OR

iii) Any other method as may be suggested by the stakeholders. (Please provide detailed response with justifications and required enabling provisions.)

RJIL Response:

1. We submit that the alternate method suggested in para 4.47, wherein a TSP could build, deploy and maintain LTE-R network for IR; while the control, use and operation of the LTE-R network may be with Indian Railways is a feasible option. Under this option, while the RSTT related services can be controlled by Railways, the commercial and monetization part can be left to the partner TSP. The TSP can be permitted to offer the onboard Wi-Fi and other services. Additionally, the TSP can use the towers built for this network, to provide service to nearby areas, as well, thus becoming a



win-win situation. Therefore, we submit that this option can be the appropriate option and all its modalities should be explored further. This option will ensure effective and efficient utilisation of spectrum and at the same time will provide state of art LTE network for Indian Railways.

2. The Alternate suggested in para 4.48 wherein there could be a common integrated network (with common spectrum) for Public Safety i.e. Public Protection and Disaster Relief (PPDR) and Railways can also be explored. However, such a utility will require a detailed discussion and agreement with the PPDR agencies as well, as there is a possibility of operational issues due to multiple Authorities using the same network or same frequency spots in overlapping geography. The possibility of congestion related issues in the areas where Railways is passing through congested areas cannot be ruled out as well.
3. We further submit, going by Authority's existing recommendation of PPDR, this proposal will lead to a very complex situation involving multiple Government agencies using common network resources, which is provided majorly by BSNL/MTNL and partially by a private TSP. One simpler way would be to let private TSP provide the network for PPDR and Railways both, while using the spectrum resources for commercial use in remaining areas.

Q.8 If there are any other issues/suggestions relevant to the subject, stakeholders may submit the same with proper explanation and justification.

RJIL Response: None

