Annexure-I

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

MTNL Response:

1.1 As 700 MHz band can serve India's rural needs for advanced mobile broadband, MTNL is of the view that no spectrum in the 700 MHz band should be assigned to railways or any other application specific uses.

1.2 It has been widely noted by Government at various forums that 5G shall be the catalyst for the new age Socio Economic reforms in the country and India shall not miss any opportunity to launch 5G technology along with other developed nations. To achieve this ambitious target 700 MHz spectrum shall be a key asset. Spectrum below 1 GHz in general, and the APT700 digital dividend band specifically, has been a key part of the mobile operators' strive to connect everyone, given the wide area coverage advantages of 700 MHz. 700MHz is set to become the biggest LTE ecosystem globally. All three ITU regions have adopted this mobile band. Most advanced markets have already licensed, deployed or planned to license this band for 4G/5G IMT.

1.3 Using the 700 MHz band for purposes other than for mobile broadband LTE/5G will be pose significant socio-economic losses to India, given the benefits of widespread mobile broadband using sub 1GHz – particularly in countries with large rural areas. Therefore premium band like 700 MHz should be allocated to telecom PSU operators BSNL and MTNL so as to ensure rapid proliferation and penetration of mobile broadband into remotest corner of the country.

1.4 It would be important for government to undertake a cost-benefit analysis to determine the long-term economic gains for India and the trade-offs likely to emerge by constraining mobile broadband spectrum in 700 MHz as a result of the set-aside for rails. 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 assigning 700 MHz spectrum for railways.

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

MTNL Response:

2.1 No spectrum should be assigned to railways in the 700 MHz band.

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?

MTNL Response:

3.1 Other bands are available for use by rails and should be considered in first instance in order to avoid undue costs, technical complexities and missed economic opportunities (i.e. 150, 300, 400, 450-470 MHz). Indian Rails would benefit from undertaking a cost-benefit comparative analysis amongst these options, especially if the concern of the proposals by Rails is to put spectrum to use by railways for the purpose of public safety. Public safety applications for rails should avoid planning operational robustness based on the effectiveness of interference mitigation between rails and other spectrum users. As explained in point two above, Indian Rails will require coordinating its networks with commercial mobile broadband to achieve interference mitigation, which is not an effective platform to begin planning a public safety use.

3.2 The band 450-470 MHz should be considered for RSTT. Also, the recent AWG report shows the band 150MHz, 300MHz and 400MHz have been widely used for RSTT in Asia Pacific countries.

3.3 Depending on implementation in India, the bands B26 and B27 in the 800MHz spectrum could also be considered for railways, if PPDR is not implemented in these bands.

3.4 TRAI must consider the large investments required by operators to serve the public with mobile infrastructure and the investment-intensive nature of wide area rural

broadband – constraining the availability of spectrum in 700 MHz is likely to undermine this vision.

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?

MTNL Response:

4.1 Any spectrum allocation meant for larger public good should be done by Government administratively so as to maximize the benefits, therefore if at all 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, then allotment should be done free of cost and administratively. The same approach needs to be applied while allocating spectrum to public sector undertakings.

4.2 Moreover, mixing LTE/5G use with RSTT use in the 700 MHz band is likely to require interference mitigation to coordinate the two systems along the path of railways – this is likely to result in unpredictable costs. Any ongoing risk of interference or need for pre-emptive interference mitigation measures will have an impact also on the price of IMT spectrum in 700 MHz.

4.3 Any costs arising from spectrum management and interference mitigation mechanisms between railways and LTE/5G networks should not be passed on to mobile operators.

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?

MTNL Response:

As per our response above in paragraph 4.1

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

MTNL Response:

6.1 Railway should facilitate the process to collaborate with Telecom PSU Operator BSNL and MTNL to deploy their own infrastructure to provide high-quality internet services. This will reduce the requirement of spectrum for railways, reduce the causes of interference and better specialist services could be offered to public by and large.

6.2 License exempt solutions like Wi-Fi should be considered for providing internet services, or the railway company should facilitate the process to allow mobile operators to deploy their own infrastructure to provide high-quality internet services

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.)

MTNL Response:

7.1 Telecom PSU Operator BSNL and MTNL have played key role in introduction of latest technologies and making them available to common people at most affordable prices, which made significant impact in overall digital transformation of Society by and large. Without having considered business viability, these PSUs have extended

its services to every nook and corner of the country. Therefore, Alternate method suggested in para 4.47 is recommended with one modification that Telecom PSU Operator BSNL and MTNL 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.

7.2 Network slicing will allow Telecom PSUs to dedicate a portion of their spectrum to provide best quality of service for application-specific uses.

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

MTNL Response:

8.1. The digital revolution triggered by MTNL has led to creation and development of a unique multidimensional ecosystem full of new age opportunities making a lasting impact not just over socio-cultural aspects of masses but also over business world making it better, more attractive and full of opportunities than ever before.

8.2 Administrative allocation of 700 MHz spectrum to Telecom PSU Operator i.e. BSNL and MTNL shall lead to a wave of enormous socio-economic reforms with 5G Technology. Estimation of benefits due to this growth shall be far more than the monetary benefits to government by commercially exploiting the spectrum.