Radiocommunication Study Groups

INTERNATIONAL TELECOMMUNICATION UNION

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TECHNOLOGY ASPECTS

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India (Republic of)

WORKING DOCUMENT TOWARDS TECHNOLOGY ASPECTS ON LOW MOBILITY RURAL SCENARIO FOR ITU-R M.[IMT-2020.EVAL]

1 Introduction

Working Party 5D is in the process of defining in detail the performance requirements, evaluation criteria and methodology for the assessment of "IMT-2020". At the 24th meeting of WP 5D in June 2016, it discussed and agreed upon a few test environments and reflected them in the working document Report ITU-R M.[IMT-2020.EVAL]. Further discussions on Test environments were planned to be taken up in the 25th meeting of WP 5D during October 2016.

2 Discussion

Broadband connectivity has been identified to be a critical infrastructural requirement for the development of rural villages – be it economic, social or educational. This is more so because majority of Indian population live in rural areas. Looking into the aforesaid priorities, this contribution attempts to present Low Mobility Rural scenario to be taken into consideration for IMT2020 Technical Performance Requirements and evaluations.

The rural connectivity is characterised by low mobility. We feel that this low mobility rural scenario needs special attention and should be considered as additional test environment for eMBB and urLLC usage scenarios. We think that similar scenarios may exist in other developing and less developed countries and thus will have very wide applicability for IMT-2020 systems.

2.1 Channel Model

We believe that a rural channel model for low mobility rural scenario needs to be arrived at. We recommend that a suitable channel model be studied for low mobility rural scenario for IMT-2020.

3 Proposal

3.1 Test Environment

Considering the above, India proposes that WP 5D consider a **Low Mobility Rural Scenario** also for evaluation. Accordingly, the work plan be amended and details of the changes be considered for discussion during the meeting #25 of WP 5D. Proposed addition is to be made to the working document toward ***Section 8.2 Test environments*** of ITU-R M.[IMT-2020.EVAL].

3.2 Technical Performance Requirements

India proposes an indicative value for average spectral efficiency for the above Test Environment in Table 5 of WP 5D/TEMP/151 (draft Report ITU-R M.[IMT-2020.TECH PER REQ]) to be considered for further studies in WP 5D, as modified below.

TABLE 5

Proposals for "4.5 Average Spectral efficiency"

Related proposal	Proposed value(s)	Remarks
M.2083	3x IMT-Advanced (for eMBB)	The achievable increase in efficiency from IMT-Advanced will vary between scenarios and could be higher in some scenarios (for example five times subject to further research).
5D/48 Qualcomm et.al.	Based on deployment scenario [3 x IMT-Advanced]	Full buffer traffic model should be assumed
5D/51 Korea	**Three times** higher than compared to IMT-Advanced	[Editor's note: This item should be discussed further after defining deployment scenarios.]
5D/131 CEPT	3x IMT-A	This corresponds to an average cell spectral efficiency Full buffer traffic model should be assumed Based on the deployment scenario
5D/180 Korea	IMT-2020 systems shall be able to support three times higher spectrum efficiency than IMT-Advanced for eMBB.	
5D/199	[TBD]	Target values for TRP spectral efficiency for various test environments
5D/216 Ericsson et.al.	Based on deployment scenario	[3 x IMT-Advanced] for select comparable usage scenario
India	3x IMT-A for high speed rural scenario (as exists in IMT-A) and "TBD" for Low mobility rural scenario (proposed now)	Low-mobility-large-coverage rural scenario is proposed to be included for further studies

Rural 2–eMBB and urLLC: *a rural environment with wide area coverage, focusing on low mobility with randomly distributed population clusters of villages.*

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