**3GPP TSG-RAN WG4 Meeting #95-e R4-20xxxxx**

**Electronic Meeting, 25 May – 5 June, 2020**

**Agenda item:** 6.18.2

**Source:** Moderator (CATT)

**Title:** Email discussion summary for [95e][324] NR\_perf\_enh\_Demod\_BS

**Document for:** Information

# Introduction

Great progress was achieved on NR BS performance requirement enhancement in RAN4#94-e-bis meeting. This email discussion summary will primarily focus on the applicability rule, the CRs and the simulation results on NR BS performance requirement enhancement.

The candidate targets of this email discussion for 1st round and 2nd round:

* 1st round
  + Discuss the applicability rule for 30% throughput test cases for alignment.
  + Update if necessary and capture the simulation results for 30% throughput test cases in the corresponding CRs.
  + Check the associated CRs and provide comments for revision if necessary.
* 2nd round (if needed)
  + Further verify the revised CRs if any for alignment.

# Topic #1: BS 30% TP test point

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2006057 | Nokia, Nokia Shanghai Bell | Applicability rules  Proposal 1: RAN4 to include the wording “unless otherwise stated, for PUSCH requirements with a required throughput target of 30% of maximum throughput, the tests shall be done only for the lowest supported subcarrier spacing” in the PUSCH applicability rules.  Agreeing on SNR values  Proposal 2: Unless new simulation results are received, capture the SNR values summarized in R4-2005574 in the PUSCH 30%TPUT CRs. |
| R4-2006251 | CATT | CR for TS 38.104: Introduce PUSCH performance requirements at 30% throughput test point |
| R4-2006252 | CATT | CR for TS 38.141-1: Introduce PUSCH performance requirements at 30% throughput test point |
| R4-2006253 | CATT | CR for TS 38.141-2: Introduce PUSCH performance requirements at 30% throughput test point |

## Open issues summary

### Sub-topic 1-1: Applicability rules of 30% throughput test point

* Agreement in RAN4#94-e-bis (R4-2005551)
  + Whether to update applicability rules and how to specify if needed
    - Option 1: To avoid misunderstanding, adding a statement in applicability rule and a note in each requirement table to clarity that 30% throughput requirement is only applied for the minimum PRBs for each subcarrier spacing declared to be supported.
    - Option 2:
      * Update the applicability of requirements for different subcarrier spacings in 8.1.2.1.1 of 38.141-1/2 to capture the previous agreement:
        + Applicability rules

SCS: Only test the lowest supported SCS for each frequency range

* + - * No need to update the applicability of requirements for different channel bandwidths if adding new tables for 30% TP test cases is agreed.

Agreement: Option 2.

**Issue 1-1-1: Applicability rules**

* Proposals
  + Option 1: RAN4 to include the wording “unless otherwise stated, for PUSCH requirements with a required throughput target of 30% of maximum throughput, the tests shall be done only for the lowest supported subcarrier spacing” in the PUSCH applicability rules.

|  |
| --- |
| Unless otherwise stated, PUSCH requirement tests shall apply only for each subcarrier spacing declared to be supported (see D.7 in table 4.6-1).  Unless otherwise stated, for PUSCH requirements with a required throughput target of 30% of maximum throughput, the tests shall be done only for the lowest supported subcarrier spacing. |

* + Option 2: Keep the previous agreements.

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| Unless otherwise stated, tests for PUSCH with 70% of maximum throughput requirement shall apply only for each subcarrier spacing declared to be supported (see D.14 in table 4.6-1).  Unless otherwise stated, tests for PUSCH with 30% of maximum throughput requirement shall apply only for the lowest subcarrier spacing declared to be supported (see D.14 in table 4.6-1) for each frequency range. |

* Recommended WF
  + Need more discussion.

### Sub-topic 1-2: Agreeing on SNR values

* Proposals
  + Option 1: Capture the SNR values summarized in R4-2006250 in the CRs for PUSCH 30% throughput test cases without square brackets in this meeting if no new simulation results received.
  + Option 2: Capture the SNR values summarized in R4-2006250 in the CRs for PUSCH 30% throughput test cases with square brackets in this meeting.
* Recommended WF
  + Option 1.

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
|  |  |
|  |  |
|  |  |

### CRs/TPs comments collection

*Major close-to-finalize WIs and Rel-15 maintenance, comments collections can be arranged for TPs and CRs. For Rel-16 on-going WIs, suggest to focus on open issues discussion on 1st round.*

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2006251 |  |
|  |
|  |
| R4-2006252 |  |
|  |
|  |
| R4-2006253 |  |
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## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary** |
| **Sub-topic#1** | *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd round:* |
|  |  |
|  |  |

*Recommendations on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title** | **Assigned Company,**  **WF or LS lead** |
|  |  |  |

### CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provides recommendation on CRs/TPs Status update*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |
| R4-2006251 |  |
| R4-2006252 |  |
| R4-2006253 |  |

## Discussion on 2nd round (if applicable)

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation** |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |
|  |  |
|  |  |

# Topic #2: FR2 PUSCH 2T2R 16QAM

Regarding BS additional FR2 requirements, there is no open issue left but two CRs submitted by Nokia (R4-2003898 and R4-2003899) that need to be discussed in this meeting.

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2006058 | Nokia, Nokia Shanghai Bell | CR for 38.104: Performance requirements for FR2 PUSCH 2T2R 16QAM |
| R4-2006059 | Nokia, Nokia Shanghai Bell | CR for 38.141-2: Radiated test requirements for FR2 PUSCH 2T2R 16QAM |

## Open issues summary

*Before e-Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 2-1

*Sub-topic description:*

*Open issues and candidate options before e-meeting:*

**Issue 2-1: TBA**

* Proposals
  + Option 1: TBA
  + Option 2: TBA
* Recommended WF
  + TBA

### Sub-topic 2-2

*Sub-topic description*

*Open issues and candidate options before e-meeting:*

**Issue 2-2: TBA**

* Proposals
  + Option 1: TBA
  + Option 2: TBA
* Recommended WF
  + TBA

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX | Sub topic 2-1:  Sub topic 2-2:  ….  Others: |

### CRs/TPs comments collection

*Major close to finalize WIs and Rel-15 maintenance, comments collections can be arranged for TPs and CRs. For Rel-16 on-going WIs, suggest to focus on open issues discussion on 1st round.*

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2006058 |  |
|  |
|  |
| R4-2006059 |  |
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## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary** |
| **Sub-topic#1** | *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd round:* |
|  |  |

*Suggestion on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title** | **Assigned Company,**  **WF or LS lead** |
| #1 |  |  |

### CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provided recommendation on CRs/TPs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |
| R4-2006058 |  |
| R4-2006059 |  |

## Discussion on 2nd round (if applicable)

No discussion is needed in the 2nd round.

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation** |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |