**3GPP TSG RAN Meeting #87e *draft* RP-200472**

**Electronic Meeting, March 16-19, 2020** (revision of RP-192532)

**Source: China Telecom**

**Title: Revised WID on NR performance requirement enhancement**

**Document for: Approval**

**Agenda Item: 9.3.23**

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

# Title: NR performance requirement enhancement

## Acronym: NR\_perf\_enh-Perf

## Unique identifier: 840094

NOTE: For new WIs/SIs leave the Unique identifier empty and make a proposal for an Acronym.

 For a revised WI/SI: Take Unique identifier and acronym as shown in 3GPP workplan.

 If this is a RAN WID including Core and Perf. part, then Title, Acronym and Unique identifier refer to the feature WI.

 Please tick (X) the applicable box(es) in the table below:

 Either:

|  |  |
| --- | --- |
| **This WID includes a Core part** |  |
| **This WID includes a Performance part** | **X** |

 or:

|  |  |
| --- | --- |
| **This WID includes a Testing part** |  |
| **and it addresses the following 3GPP work area:** | **Radio Access** |  |
| **Core Network** |  |
| **Services** |  |

## 1 Impacts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Affects:** | UICC apps | ME | AN | CN | Others (specify) |
| **Yes** |  | X | X |  |  |
| **No** | X |  |  | X | X |
| **Don't know** |  |  |  |  |  |

## 2 Classification of the Work Item and linked work items

### 2.1 Primary classification

|  |  |
| --- | --- |
| X | Feature |
|  | Building Block |
|  | *Work Task* |
|  | Study Item |

NOTE: Normally, Core/Perf./Testing parts in RAN WIDs are Building Blocks. Only if they are under an SA or CT umbrella, we define them as work tasks. If you are in doubt, please contact MCC.

### 2.2 Parent Work Item

|  |
| --- |
| Parent Work Items  |
| Unique ID | Title |
|  |  |

NOTE: RAN agreed some time ago, that it describes the feature WI + Core/Perf. part WI or Testing part WI in one WID. Therefore the table above should just include the feature WI Unique ID and title.

### 2.3 Other related Work Items and dependencies

*{List here other Work Items which relate to the proposed one, such as preceding SI or a preceding WI (e.g. if further enhancing a feature).}*

|  |
| --- |
| Other related Work Items (if any) |
| Unique ID | Title | Nature of relationship |
| 750267 | Perf. part: New Radio Access Technology |  |

NOTE: Also related or dependent WIs/SIs in other TSGs should be indicated.

## 3 Justification

RAN4 discussion on NR Rel-15 performance requirements was started from April 2018, and the major work was completed by June 2019. With this very tight time schedule, several important NR features specified in Rel-15 core part are not covered when developing the Rel-15 performance requirements.

On one hand, these features are very important Rel-15 features, and some operators have plans to deploy them in the early deployments. On the other hand, it is indeed difficult to finish the corresponding performance requirements within Rel-15 timeline. Thus it is proposed to open a new Rel-16 WI to define performance requirements for the selected NR features that are specified in Rel-15 core part but not covered in Rel-15 performance part, and further discuss if some of the requirements can be release independent from Rel-15.

## 4 Objective

### 4.1 Objective of SI or Core part WI or Testing part WI

### 4.2 Objective of Performance part WI

UE demodulation and CSI reporting requirements:

* NR CA PDSCH normal demodulation and CA CQI reporting requirements for NR CA, EN-DC, NE-DC, NR-DC
	+ - All NR CA normal demodulation and CA CQI reporting requirements are applicable to EN-DC, NE-DC, NR-DC with CA. For EN-DC and NE-DC, EUTRA performance will not be verified. For NR-DC, no specific requirements will be specified.
		- CA CQI reporting requirements will be defined under AWGN condition.
		- Note: the work for CA CQI reporting requirements can be started from March 2020.
* NR FR1 CA PDSCH demodulation performance requirement with power imbalance
	+ - Intra-band contiguous 2CC CA with 6dB power imbalance is assumed
* FR1 intra-band EN-DC PDSCH demodulation performance requirement with power imbalance
	+ - Intra-band contiguous EN-DC with 6dB power imbalance is assumed.
		- Further study whether to introduce intra-band non-contiguous EN-DC requirements and applicable power imbalance level
		- Only the NR cell is configured as the weaker power cell and to be tested.
* Requirements for the number of TX ports larger than 8 and up to 32
	+ - Type of requirements: RAN4 should further decide if only PMI and/or CRI reporting needs to defined or both PMI and/or CRI reporting and PDSCH demodulation requirements are needed
* LTE-NR co-existence demodulation test cases for TDD mode
* Decide the applicable release for new UE requirements

BS demodulation requirements:

* To study the tests coverage of PUSCH requirements for 30% TP test point. Limited test cases will be introduced if the existing test coverage is insufficient.
* Additional BS demodulation requirements
	+ - For FR2 PUSCH 2T2R 16QAM, specify requirements for MCS lower than 16, considering the OTA testability limit, to replace the existing requirements for MCS 16.

### 4.3 RAN time budget request (not applicable to RAN5 WIs/SIs)

NOTE: For all new RAN related WIs/SIs which are not led by RAN WG5 the WI/SI rapporteur has to fill out the attached Excel table to request time budgets for corresponding RAN WG meetings.
The Excel table has to be filled out for all affected RAN WGs and up to the target date of the WI/SI.
One time unit (TU) corresponds to ~ 2 hours in the meeting.
If no TU is needed, then leave the field empty otherwise enter a number >0 in the field.

 For revisions of already approved WI/SI descriptions: Please remove the Excel table from the WID/SID's zip file. The time budgets are already recorded. If you want to modify them, then this has to be done via the status report and not via a revised WID/SID.

 If this WID is covering Core and Performance part, then please fill out one line for each part in the attached Excel table.

**additional comments to the time budget request in the attached Excel table:**

## 5 Expected Output and Time scale

|  |
| --- |
| **New specifications** *{One line per specification. Create/delete lines as needed}* |
| Type  | TS/TR number | Title | For info at TSG#  | For approval at TSG# | Remarks |
|  |  |  |  |  |  |

NOTE: If this is a RAN WI including Core and Perf. part, then all new Core part specs have to be listed first and then all new Perf. part specs. Indicate "Core part" or "Perf. part" under Remarks for each spec.
By default a new specs can only be new for one of both parts.

|  |
| --- |
| **Impacted existing TS/TR** *{One line per specification. Create/delete lines as needed}* |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| 38.101-4 | NR; User Equipment (UE) radio transmission and reception; Part 4: Performance requirements | TSG-RAN #89 | Performance part |
| 38.104 | NR; Base Station (BS) radio transmission and reception | TSG-RAN #89 | Performance part |
| 38.141-1 | NR; Base Station (BS) conformance testing; Part 1: conducted conformance testing | TSG-RAN #89 | Performance part |
| 38.141-2 | NR; Base Station (BS) conformance testing Part 2: Radiated conformance testing | TSG-RAN #89 | Performance part |
| 38.307 | NR; Requirements on User Equipments (UEs) supporting a release-independent frequency band | TSG-RAN #89 | Performance part |

NOTE: If this is a RAN WI including Core and Perf. part, then all new Core part specs have to be listed first and then all new Perf. part specs. Indicate "Core part" or "Perf. part" under Remarks for each spec.
If an existing spec is affected by both (Core part and Perf. part), then it has to be listed twice with appropriate approval dates.

## 6 Work item Rapporteur(s)

Shan YANG

Company: China Telecom

Email: yangshan@chinatelecom.cn

## 7 Work item leadership

RAN WG4

## 8 Aspects that involve other WGs

NOTE: For RAN WIs: Section 8 applies only toWGs outside of TSG RAN because RAN WG aspects have to be covered in section 4.

## 9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| China Telecom |
| ZTE |
| CATT |
| CHTTL |
| AT&T |
| Orange |
| Spirent |
| NTT DOCOMO |
| CMCC |
| Intel |
| Samsung |
| Qualcomm |
| MediaTek |
| Huawei |
| HiSilicon |
| Nokia |
| Ericsson |
| OPPO |
| vivo |
| Apple |
|  |