**3GPP TSG-RAN5 Meeting #103R5-242124r1**

**Fukuoka, Japan, 20th – 24th May, 2024**

**3GPP TSG RAN Meeting #104 RP-24xxxx**

**Shanghai, China, June 17-20, 2024**

**Source: MediaTek Inc., Apple, China Telecom**

**Title: New WID on UE Conformance - Further NR mobility enhancements**

**Document for: Endorsement**

**Agenda Item: 4.1**

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: UE Conformance – Further NR mobility enhancements

## Acronym:NR\_Mob\_enh2-UEConTest

## Unique identifier:

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

Potential target Release: Rel-18

## 1 Impacts

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

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

### 2.1 Primary classification

This description is a

|  |
| --- |
| Normative Work Item:*tick applicable boxes below* |
|  | Stage 1 |
|  | Stage 2 |
|  | Stage 3 |
| X | Other (e.g. testing) |

### 2.2 Parent Work Item

For a brand-new topic, use “N/A” in the table below. Otherwise indicate the parent Work Item.

|  |
| --- |
| Parent Work / Study Items  |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| NR\_Mob\_enh2 | RAN2 | 940098 | Further NR mobility enhancements |
| NR\_Mob\_enh2-Core | RAN2 | 940198 | Core part: Further NR mobility enhancements |
| NR\_Mob\_enh2-Perf | RAN2 | 940298 | Perf. part: Further NR mobility enhancements |

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| Other related Work/Study Items (if any) |
| **Acronym** | Unique ID | Title | Nature of relationship |
|  |  |  | *{optional free text}*  |

## 3 Justification

When the UE moves from the coverage area of one cell to another cell, at some point a serving cell change needs to be performed. Currently serving cell change is triggered by L3 measurements and is done by RRC signalling triggered Reconfiguration with Synchronisation for change of PCell and PSCell, as well as release/add for SCells when applicable. All cases involve complete L2 (and L1) resets, leading to longer latency, larger overhead and longer interruption time than beam switch mobility. The goal of L1/L2 mobility enhancements is to enable a serving cell change via L1/L2 signalling, in order to reduce the latency, overhead and interruption time.

In Rel-17 Conditional PSCell change (CPC)/Conditional PSCell addition (CPA), a CPC/CPA-configured UE has to release the CPC/CPA configurations when completing random access towards the target PSCell. Hence the UE doesn’t have a chance to perform subsequent CPC/CPA without prior CPC/CPA reconfiguration and re-initialization from the network. This will increase the delay for the cell change and increase the signaling overhead, especially in the case of frequent SCG changes when operating FR2. Therefore, MR-DC with selective activation of cell groups aims at enabling subsequent CPC/CPA after SCG change, without reconfiguration and re-initialization on the CPC/CPA preparation from the network. This results in a reduction of the signalling overhead and interrupting time for SCG change.

Currently, CHO and MR-DC cannot be configured simultaneously. This limits the usefulness of these two features when MR-DC is configured. In Rel-18 specific mechanisms for CHO and MR-DC to be configured simultaneously including following enhancements:

1) L1/L2 based inter-cell mobility;

2) NR-DC: Selective CG activation (at least for SCG) (RRC) without reconfiguration and re-initiation of CPC/CPA;

3) CHO with target MCG, target SCG;

4) CHO with target MCG, candidate SCGs for CPC/CPA.

RAN#94-e approved a Rel-18 Work Item NR\_Mob\_enh2 (latest WID in RP-233970) to address the above demand for Further NR mobility enhancements. The completion level of the 3GPP Rel-18 WI NR\_mob\_enh2 has achieved 90% at RP #103 (Mar-2024), and the Core part has been 100% in RP#103 (Mar. 2024) while the Performance part will be completed in Jun. 2024. To fulfil the industrial demand of further NR mobility enhancements, there is a need to introduce an associated RAN5 WI to enable UE conformance testing of Further NR mobility enhancements.

## 4 Objective

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

The objective of this work item is to enable UE conformance testing for Rel-18 Further NR mobility enhancements WI listed under clause 2.2, including the following areas:

* Protocol test case to support Further NR mobility enhancements;
* RRM test cases to support Further NR mobility enhancements.

### 4.2 Objective of Performance part WI

N/A

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

N/A

## 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 |
| TS 38.508-1 | Definition of common test environment for Rel-18 Further NR mobility enhancements test cases | TSG RAN#110(Dec-25) |  |
| TS 38.508-2 | Definition of ICS for Rel-18 Further NR mobility enhancements test cases | TSG RAN#110(Dec-25) |  |
| TS 38.522 | Introduction of applicability for Rel-18 Further NR mobility enhancements RRM test cases | TSG RAN#110(Dec-25) |  |
| TS 38.523-1 | Introduction of SIG test cases for Rel-18 Further NR mobility enhancements | TSG RAN#110(Dec-25) |  |
| TS 38.523-2 | Introduction of applicability for Rel-18 Further NR mobility enhancements SIG test cases | TSG RAN#110(Dec-25) |  |
| TS 38.523-3 | Introduction of test model for Rel-18 Further NR mobility enhancements | TSG RAN#110(Dec-25) | Progress of TTCN development of the new protocol test cases is tracked in MCC TF160 reports to RAN5/RAN. |
| TS 38.533 | Introduction of RRM test cases for Rel-18 Further NR mobility enhancements | TSG RAN#110(Dec-25) |  |
| TR 38.903 | Derivation of test tolerances and measurement uncertainty for Rel-18 Further NR mobility enhancements RRM test cases | TSG RAN#110(Dec-25) |  |

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)

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# 7 Work item leadership

RAN5

# 8 Aspects that involve other WGs

None

# 9 Supporting Individual Members

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| --- |
| Supporting IM name |
| MediaTek |
| ZTE |
| SRTC |
| Tejet |
| Sporton |
| Apple |
| China Telecom |
| Verizon |
| Lenovo |
| Motorola Mobility |
| Ericsson |
| Huawei |
| Hisilicon |
| Vodafone |
| NOKIA |
| AT&T |
| NTT DOCOMO |
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