**3GPP T****SG-RAN WG4 Meeting #111 R4-2408712**

**Fukuoka, Japan, 20th** – **24th April, 2024** (revision of RP-233180)

**Source: Nokia**

**Title: Revised WID:** **High-power UE operation for fixed-wireless/vehicle-mounted use cases in LTE bands and NR bands in Rel-18**

**Document for: Approval**

**Agenda Item: 6.14**

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: High-power UE operation for fixed-wireless/vehicle-mounted use cases in LTE bands and NR bands in Rel-18

## Acronym: LTE\_NR\_HPUE\_FWVM\_R18

## Unique identifier: 961012

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

 or:

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

Potential target Release: Rel-18.

Note that this field above indicates the proposed Release at the time of submission of the WID to TSG approval. It can later be changed without a need to revise the WID. The updated target Release is indicated in the Work Plan. NOTE: In case of contradiction with the target dates of clause 5, clause 5 determines the target release.

## 1 Impacts

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

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

### 2.1 Primary classification

This work item is a …

|  |  |
| --- | --- |
|  | Feature |
| X | 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, they are defined as work tasks. If you are in doubt, please contact MCC.

### 2.2 Parent Work Item

|  |
| --- |
| Parent Work / Study Items  |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| LTE\_NR\_HPUE\_FWVM | RAN WG4 | 920073 | High-power UE operation for fixed-wireless/vehicle-mounted use cases in LTE bands and NR bands |

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 data (In case the feature covers Core and Perf. part, please list under Working Group the leading WG of the Core part).

### 2.3 Other related Work Items and dependencies

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

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

**Dependency on non-3GPP (draft) specification**:

## 3 Justification

Support for fixed wireless and vehicle mounted user equipment usage scenarios, with broader rural coverage and higher data rates is envisioned as part of deployment configurations in LTE band 12, band 5 and band 13, and in NR band n5, n26, n13, n71 and n85. Improvements in coverage, availability, and throughput performance to meet the market demands associated with fixed wireless and vehicle mounted usage would be enabled with user equipment specified with a power class 1 (31dBm) up-link transmission capability.

The fixed wireless access scenario provides a variety of benefits consisting of rapid deployment, and a reduction of costs associated with the transport to a customer premise, relative to wireline types of transport. The enablement of fixed wireless user equipment provides backhauling services to an appropriate base station in a serving network, for any other equipment at the customer premise. Similarly, vehicle mounted access scenario provides both direct access to other devices and indirect access to other devices, via the network.

The REL17 WI on High-power UE operation for fixed-wireless/vehicle-mounted use cases in LTE bands and NR bands is completed with the approval of TR 37.828. REL17 completed all necessary core requirements, most of necessary co-existence studies and concluded release independence aspects.

Therefore, a REL18 WI can be started to further discuss and agree on the corresponding band specific HPUE requirements in the RAN4 specifications.

## 4 Objective

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

This is a basket WI including following E-UTRA and NR bands.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Band | contact company (email address) | other supporters (min. 3) | Status | Release independent from |
| 5 | sebastian.thalanany@uscellular.com | Nokia, Ericsson and Samsung | Moved to Rel19 | Rel-10 |
| 12 | sebastian.thalanany@uscellular.com | Nokia, Ericsson and Samsung | Completed | Rel-10 |
| 13 | zheng.zhao@VERIZONWIRELESS.COM | Nokia, Ericsson, Qualcomm and Samsung | Moved to Rel19 | Rel-10 |
| 40 | wilfredotrocel@nbnco.com.au | Nokia, Ericsson, Qualcomm | Completed | Rel-10 |
| 42 | wilfredotrocel@nbnco.com.au | Nokia, Ericsson, Qualcomm | Completed | Rel-10 |
| 106 | eolbrich@anterix.com | Nokia, UIC and Ericsson | Completed | Rel-10 |
| n5 | sebastian.thalanany@uscellular.com | Nokia, Ericsson and Samsung | Moved to Rel19 | Rel-15 |
| n13 | zheng.zhao@VERIZONWIRELESS.COM | Nokia,,Ericsson, Qualcomm and Samsung | Moved to Rel19 | Rel-15 |
| n26 | bill.shvodian@t-mobile.com | Nokia, Ericsson, Deutsche Telekom | Moved to Rel19 | Rel-15 |
| n71 | bill.shvodian@t-mobile.com | Nokia, Ericsson, Deutsche Telekom | Completed | Rel-15 |
| n85 | bill.shvodian@t-mobile.com | Nokia, Ericsson, Deutsche Telekom | Completed | Rel-15 |
| n41 | bill.shvodian@t-mobile.com | Nokia, Ericsson, Deutsche Telekom | Completed | Rel-15 |
| n77 | bill.shvodian@t-mobile.com | Nokia, Ericsson, Deutsche Telekom | Completed | Rel-15 |
| n100 | d.martens@strict.nl | UIC, Nokia, Ericsson, Kontron, Huawei | Completed | Rel-15 |
| n101 | d.martens@strict.nl | UIC, Nokia, Ericsson, Kontron, Huawei | Completed | Rel-15 |
| n28 | Laura White, Telstra | LGE, Nokia, Ericsson | Moved to Rel19 | Rel-15 |
| n78 | Laura White, Telstra | LGE, Nokia, Ericsson | Completed | Rel-15 |
| n7 | Javad Jafarian, Bell Mobility | TELUS, Nokia, Ericsson, Samsung | Completed | Rel-15 |
| n25 | Javad Jafarian, Bell Mobility | TELUS, Nokia, Ericsson, Samsung | Completed | Rel-15 |
| n66 | Javad Jafarian, Bell Mobility | TELUS, Nokia, Ericsson, Samsung | Completed | Rel-15 |
| n40 | wilfredotrocel@nbnco.com.au | Nokia, Ericsson, Qualcomm | Completed | Rel-15 |

Note: The Release independence is covered already in TS 36.307 (Table 3A.1-1) and TS 38.307 (Table 5.1-2) via general requirements that were introduced via REL-17 WI LTE\_NR\_HPUE\_FWVM.

**Band Specific objectives:**

* Define power class 1 requirements
* UE A-MPR, and impact of other related parameters.
	+ - see, R4-2210569 WF on A-MPR for bands n71 and n85
* For other bands which have NS value do A-MPR for protection of other bands study
* Investigate the feasibility of filter with small duplex for B13 and n13.

The corresponding HPUE requirements for fixed wireless/vehicular-mounted use cases for each can be included in the RAN4 specifications independently when the work on this band is complete, i.e. no need to wait for the completion of other bands.

### 4.2 Objective of Performance part WI

NOTE: Leave empty if the WI proposal does not contain a RAN performance part.

None.

### 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 |
| Technical report | 37.829 | High-power UE operation for fixed-wireless/vehicle-mounted use cases in LTE bands and NR bands | RAN#104 | RAN#104 | Core-part Raporteur: Petri Vasenkaripetri.j.vasenkari@nokia.com. |

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 |
| 36.101  | Introduce core requirements for high-power UE operation for fixed-wireless/vehicle-mounted use cases  | RAN#104 | Core part |
| 38.101-1  | Introduce core requirements for high-power UE operation for fixed-wireless/vehicle-mounted use cases  | RAN#104 | Core 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)

Vasenkari, Petri, Nokia, petri.j.vasenkari@nokia.com

## 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 |
| Nokia |
| Nokia Shanghai Bell |
| U.S. Cellular |
| T-Mobile USA |
| Verizon |
| UIC |
| Airbus |
| Firstnet |