**3GPP TSG RAN meeting #104 RP-240925**

**Shanghai, China, June 17-21th , 2024**

## Status Report to TSG

**Title: Status report for New WID: Inter RAT mobility support from E-UTRAN TN to NR-NTN; rapporteur: Thales, CATT**

**Agenda item:** 10.9.2

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| --- | --- |
| **WI / SI Name** | Rel-19 Inter RAT mobility support from E-UTRAN TN to NR-NTN |
| included in this status report | Study Item: No | Core part: Yes | Performance part:Yes | Testing part:No |
| **Acronym** | LTE\_TN\_NR\_NTN\_mob |
| **Unique ID** | 1031076 |
| **TSG Tdoc of latest approved WI/SI description (if any)** | RP-240846 |
| **Target Completion Date****(indicate if changed)** | Study Item: N/A | Core part: 09/2025 | Performance part: - | Testing part:  |
| **Overall Completion level** | Study Item: N/A  | Core part: Overall: 70%RAN2: 70% | Performance Part: - | Testing part:  |

Note: Overall completion level percentage numbers should use one of the colors below:

* xx%: Normal progress, no RAN plenary action needed
* xx%: Progress behind schedule, may need RAN plenary intervention. If so, SR should clearly define requested action
* xx%: Progress critically behind, RAN plenary shall intervene. SR should define requested action

**Source:**

|  |  |
| --- | --- |
| **Leading WG** | RAN2 |
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## 1 Work plan related evaluation

|  |  |
| --- | --- |
| **Do you want to modify the time budget for this WI/SI compared to what was endorsed at the last RAN meeting?** | No |

*If you answered No: Then please remove the Excel file from the zip file of this status report.*

*If you answered Yes: Then please fill out the attached Excel template to request a modification of the time budgets for your WI /SI. The Excel table has to be filled out for all affected RAN WGs and up to the target date of the WI/SI. The basis are the endorsed time budgets of the last RAN meeting. Please highlight all changes of the values.
 One time unit (TU) corresponds to ~ 2 hours in the meeting.
 If this status report covers a WI with Core and Performance part, then please have one line for each in the attached Excel table.
 Note: If no Excel table is attached, then this means no time budget change.*

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## 2. Detailed progress in RAN WGs since last TSG meeting (for all involved WGs)

 NOTE: Agreements and Open issues impacted cross-TSG aspects shall be explicitly highlighted

## 2.1 RAN2

#### 2.2.1 Agreements

#### 2.1.1.1 Decisions during RAN2#125bis

##### 2.1.1.1.1 LTE to NR NTN mobility

Agreement:

1. For idle mode mobility from LTE to NR NTN, at least normal LTE UE are in scope. Can come back in the next meeting to check if also eMTC UE and NB-IoT UEs could also be considered in scope

Working Assumption:

2. We don’t introduce multiple SMTCs in LTE

#### 2.1.1.2 Decisions during RAN2#126

##### 2.1.1.2.1 LTE to NR NTN mobility

Agreements:

1. For idle mode mobility from EUTRA TN to NR NTN, NB-IoT UEs are considered not in the scope.

2. For idle mode mobility from EUTRA TN to NR NTN, we don’t consider specific optimizations for BL UEs and UEs in CE.

3. SIB24 is reused to provide the NR NTN cell reselection related information (e.g. frequency information, SMTC config, etc.), introducing a satellite ID list in per frequency. The EUTRA cell provides the satellite assistance information for NR neighbor cell per satellite, as identified by the satellite ID.

4. To support the idle mode mobility from EUTRA TN to NR NTN, the satellite assistance information for NR NTN neighbor cells is needed and should include the following parameters:

 - Satellite ephemeris information

 - TA common information

 - k-Mac

 - epoch time

 - validity duration

 - ntn-PolarizationDL (FFS if mandatory or optional)

5. The Ephemeris information/epoch time/k-mac/validity duration IEs defined in SIB33 specified in TS36.331 should be reused for NR satellite assistance information.

6. The signalling format for ntn-PolarizationDL and TA common related configurations within NTN-Config specified in TS38.331 should be introduced in TS36.331 for NR satellite assistance information.

7. RAN2 will decide in the next meeting which of the following options to adopt for the provision of the NR satellite assistance information (based on TPs provided by the WI RRC Rapporteur):

 Option 1: Introduce a new SIB to include the NR satellite assistance information.

 Option 2: Define new IE for NR satellite assistance information and define separate neighbour satellite information list to provide the NR satellite information in SIB33.

 Option 3: Extend the NeighSatelliteInfo defined for IoT NTN to include the parameters needed for NR satellite, and reuse the neighSatelliteInfoList defined in SIB33 to provide either NR or IoT NTN information.

8. Introduce the clarification in the field description of measTimingConfig (configured via SIB24 in TS 36.331) that it is configured based on the assumption that the gNB-UE propagation delay equals to 0 ms, and UE can adjust the offset based on the actual propagation delay, when the corresponding frequency is associated with a satellite ID.

Working Assumption:

1. NR NTN cell reselection evaluation is based on RRM measurements as legacy; no spec impact foreseen for EUTRA TN to NR NTN cell (can come back in the next meeting to see if the WA can be confirmed)

#### 2.2.2 Remaining Open issues

Definition of necessary access layer features enabling support of idle mode mobility based on cell reselection from E-UTRA TN to NR NTN, where E-UTRA TN provides satellite information for NR NTN neighbor cells in a System Information Block.

## 3. Detailed progress in SA/CT WGs since last TSG meeting (for all involved WGs)

NOTE: This section only needs to be filled in for WI/SIs where there is a corresponding relevant WI/SI in SA/CT.

## 3.1 SA2

#### 3.1.1 Agreements with cross-TSG impacts

#### 3.1.2 Remaining Open issues with cross-TSG impacts

NOTE: This section should also flag any critical dependencies that need TSG attention.

## 4. References

## 4.1 RAN2

**RAN2#125bis meeting, Changsha, China, April 15 - 19, 2024:**

* R2-2402154 discussion Support of LTE TN to NR NTN mobility China Telecom
* R2-2402195 discussion Discussion on LTE to NR NTN idle mode mobility OPPO
* R2-2402221 discussion Discussion on LTE TN to NR NTN Mobility vivo
* R2-2402545 discussion Discussion on idle mode mobility enhancements for E-UTRAN TN to NR-NTN CMCC
* R2-2402809 discussion Idle mode mobility from LTE to NR NTN Qualcomm Incorporated
* R2-2402827 discussion Discussion on LTE TN to NR NTN mobility Huawei, HiSilicon, Turkcell
* R2-2402834 discussion Discussion on the cell reselection from LTE to NR NTN Xiaomi
* R2-2402885 discussion Mobility from LTE TN to NR NTN Apple
* R2-2403035 discussion Support of Idle Mode Mobility from EUTRA TN to NR NTN CATT
* R2-2403066 discussion Support for LTE to NR-NTN idle mode mobility Telit Communications S.p.A. ; Thales
* R2-2403073 discussion Consideration on idle mode mobility between LTE TN and NR NTN ZTE Corporation, Sanechips
* R2-2403123 discussion Discussion on support of LTE to NR NTN cell reselection LG Electronics France
* R2-2403205 discussion Discussion on LTE to NR NTN mobility Interdigital, Inc.
* R2-2403226 discussion Discussion on cell reselection from E-UTRA TN to NR NTN MediaTek Inc.
* R2-2403307 discussion On E-UTRA TN to NR NTN Mobility in IDLE mode Nokia
* R2-2403339 discussion E-UTRAN TN to NR NTN mobility Samsung
* R2-2403640 discussion E-UTRAN TN to NR-NTN mobility Ericsson

**RAN2#126 meeting, Fukuoka city, Japan, May 20 - 24, 2024:**

* R2-2405630 discussion Discussion for LTE to NR NTN mobility Sharp
* R2-2405314 discussion Consideration of LTE TN to NR NTN mobility China Telecom
* R2-2405210 discussion Discussion on support of LTE to NR NTN cell reselection LG Electronics France
* R2-2404759 discussion Discussion on cell reselection from E-UTRA TN to NR NTN MediaTek Inc.
* R2-2405155 discussion E-UTRAN TN to NR NTN mobility basic scenario and signalling Samsung
* R2-2405127 discussion Discussion on LTE to NR NTN mobility Huawei, HiSilicon, Turkcell
* R2-2405146 discussion On How to Address E-UTRA TN to NR NTN Mobility in IDLE mode Nokia
* R2-2404986 discussion Further discussion on idle mode cell reselection form LTE to NR NTN Transsion Holdings
* R2-2405084 discussion Consideration on idle mode mobility between LTE TN and NR NTN ZTE Corporation, Sanechips
* R2-2405101 discussion Discussion on the cell reselection from LTE to NR NTN Xiaomi
* R2-2405108 discussion Discussion on LTE to NR NTN mobility Interdigital, Inc.
* R2-2405022 discussion Considerations on cell reselection enhancements from E-UTRAN TN to NR-NTN CMCC
* R2-2404800 discussion On LTE to NR-NTN IDLE mobility Lenovo
* R2-2404840 discussion E-UTRAN TN to NR-NTN mobility Ericsson
* R2-2404681 discussion Idle mode mobility from LTE to NR NTN Qualcomm Incorporated
* R2-2404656 discussion Mobility from LTE TN to NR NTN Apple
* R2-2404591 discussion Discussion on LTE to NR NTN idle mode mobility OPPO
* R2-2404162 discussion Discussion on LTE TN to NR NTN Mobility vivo
* R2-2404211 discussion Support of Idle Mode Mobility from EUTRA TN to NR NTN CATT
* R2-2404198 discussion Support for LTE to NR-NTN idle mode mobility Telit Communications S.p.A. ; Thales

***END***