**3GPP TSG-RAN5 Meeting #108R5-254911**

**Bengaluru, IN, -**

**3GPP TSG RAN Meeting #109 RP-25xxxx**

**Beijing, CN, 15 Sep 2025 - 18 Sep 2025**

**Source: Xiaomi, China Unicom, Samsung**

**Title: New WID on UE Conformance - Enhanced requirements and conductive test methodology for NR NTN and IoT NTN**

**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 - Enhanced requirements and conductive test methodology for NR NTN and IoT NTN

Acronym: NR\_IoT\_NTN\_req\_test\_enh-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-19*

# 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

|  |
| --- |
| 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\_IoT\_NTN\_req\_test\_enh | R4 | 1030086 | Enhanced requirements and conductive test methodology for NR NTN and IoT NTN |
| NR\_IoT\_NTN\_req\_test\_enh-Core  | R4 | 1031086 | Core part: Enhanced requirements and conductive test methodology for NR NTN and IoT NTN |
| NR\_IoT\_NTN\_req\_test\_enh-Perf | R4 | 1032086 | Perf. Part: Enhanced requirements and conductive test methodology for NR NTN and IoT NTN |

### 2.3 Other related Work Items and dependencies

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

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

# 3 Justification

From RAN#103, a new Rel-19 RAN4 work item Enhanced requirements and conductive test methodology for NR NTN and IoT NTN was carried out, this WI targets at the UE Conformance on enhanced requirements and test methodology for NR-NTN (Non-Terrestrial Networks) and IoT-NTN (NB-IoT and eMTC based NTN) in NR-NTN frequency range 1 (FR1-NTN) and frequency range for LTE bands. The following working areas are included.

* **High power UE (HPUE) for NTN:**

To address NTN uplink limitations by elevating UE Tx power beyond Rel-18's, aligning with TN high-power standards to enhance coverage/throughput for critical scenarios (e.g., disaster response, automotive) under feasible regulatory.

Specify high power UE (HPUE) for NR-NTN (Non-Terrestrial Networks) and IoT-NTN (NB-IoT and eMTC based NTN) in FR1-NTN bands and the corresponding LTE NTN bands for the single uplink (UL) carrier scenario.

* **NTN testing for Non-Geostationary Orbit (NGSO):**

In Rel-18 the UE test coverage issue was identified in RAN5 for non-geostationary orbit (NGSO) when approaching the end of Rel-18, and correspondingly the solution was provided in RP-232682, where the UE supporting NGSO will be verified for frequency and timing compensation performance under the channel model with fixed Doppler shift or fixed delay shift which are randomly selected before the test. A new channel model with time-varying Doppler/delay shifts is needed to validate UE compensation under real-world mobility, ensuring robust NGSO service performance.

* **Less than 5MHz for NR-NTN:**

To enable more efficient deployment of the FR1 NTN bands where parts of the spectrum for satellite use is limited. This feature built on the work done in the Rel-18, i.e., WI of NR support for dedicated spectrum less than 5 MHz for FR1, as much as possible by extending support for NTN.

For this work item in RAN4, the overall completion level for core part has reached 88% after RP#108 (June 2025) and expected complete at the RP#109 meeting. And performance part has reached to 40% after RP#108 and expected complete at the RP#111 meeting. Therefore, it is justified to introduce the conformance testing for Enhanced requirements and conductive test methodology for NR NTN and IoT NTN into RAN5 specifications.

# 4 Objective

The objective of this work item is to enable UE conformance testing for the Rel-19 NTN enhancements WI which includes analysing the requirements, creation of corresponding test cases by defining the test environment, special conformance testing function, test procedure, message contents, MU/TT analysis, associated PICS, applicability and updating the relevant conformance specifications.

The conformance testing aspects for this WI would consist of below areas:

* UE RF test cases for：
	+ HPUE requirements for NR NTN,
	+ HPUE requirements for NB-IoT NTN,
	+ NTN (NR and NB-IoT) testing NGSO channel model
	+ NR NTN less than 5MHz
* UE DEMOD test cases for:
	+ NTN (NR and NB-IoT) testing NGSO channel model
	+ NR NTN less than 5MHz
* RRM test cases for:
	+ NTN (NR and NB-IoT) testing NGSO channel model
	+ NR NTN less than 5MHz

Note: Applicability of Rel-19 satellite propagator model for Rel-19 SIG test case is pending RAN4 conclusions of the test requirements scope.

# 5 Expected Output and Time scale

*{If this WID covers both stage 2 and stage 3, clearly indicate the different completion dates.}*

|  |
| --- |
| **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 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

|  |
| --- |
| **Impacted existing TS/TR** *{One line per specification. Create/delete lines as needed}* |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| 38.508-1 | Definition of common environment for Rel-19 Enhanced requirements and conductive test methodology for NR NTN and IoT NTN test cases | TSG RAN#114(Dec-26) |  |
| 38.508-2 | Introduction of physical implementation capabilities for Rel-19 Enhanced requirements and conductive test methodology for NR NTN and IoT NTN test cases | TSG RAN#114(Dec-26) |  |
| 38.521-5 | Introduction of RF test cases for Rel-19 Enhanced requirements and conductive test methodology for NR NTN and IoT NTN test cases | TSG RAN#114(Dec-26) |  |
| 38.522 | Introduction of applicability statements of Rel-19 Enhanced requirements and conductive test methodology for NR NTN and IoT NTN test cases | TSG RAN#114(Dec-26) |  |
| 38.533 | Radio Resource Management (RRM) test cases for Rel-19 Enhanced requirements and conductive test methodology for NR NTN and IoT NTN test cases | TSG RAN#114(Dec-26) |  |
| 38.903 | Derivation of test tolerances and measurement uncertainty for Rel-19 Enhanced requirements and conductive test methodology for NR NTN and IoT NTN test cases | TSG RAN#114(Dec-26) |  |
| 38.905 | Derivation of test points for radio transmission and reception User Equipment (UE) conformance test cases for Rel-19 Enhanced requirements and conductive test methodology for NR NTN and IoT NTN test cases  | TSG RAN#114(Dec-26) |  |
| 36.521-4 | Satellite access Radio Frequency (RF) and performance Conformance Testing for Rel-19 Enhanced requirements and conductive test methodology for LTE IoT NTN test cases | TSG RAN#114(Dec-26) |  |
| 36.521-3 | Radio Resource Management (RRM) conformance testing for LTE IoT NTN test cases | TSG RAN#114(Dec-26) |  |
| 36.521-2 | Introduction of test applicability and ICS for RRM test cases for LTE IoT NTN test cases | TSG RAN#114(Dec-26) |  |
| [36.903](https://www.3gpp.org/DynaReport/36903.htm) | Derivation of test tolerances for Radio Resource Management (RRM) conformance tests for LTE IoT NTN test cases | TSG RAN#114(Dec-26) |  |
| [36.904](https://www.3gpp.org/DynaReport/36904.htm) | Derivation of test tolerances for User Equipment (UE) radio reception for LTE IoT NTN conformance test cases | TSG RAN#114(Dec-26) |  |
| [36.905](https://www.3gpp.org/DynaReport/36905.htm) | Derivation of test points for radio transmission and reception for LTE IoT NTN conformance test cases | TSG RAN#114(Dec-26) |  |

# 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

*{At least 4 supporting Individual Members are needed. There is an expectation that these companies will provide resources to progress the work. Note that having 4 supporting companies is a necessary but not sufficient condition: the usual TSG approval process by consensus is needed for the WID approval.}*

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| Supporting IM name |
| Xiaomi |
| Samsung |
| China Unicom |
| MediaTek |
| Huawei |
| HiSilicon |
| CATT |
| KTL |
| CAICT |
| Qualcomm |
| Ericsson |
| Thales |
| Verizon |
| Rohde & Schwarz |