**3GPP TSG RAN Meeting #98-e RP-22xxxx**

**Electronic Meeting, December 12-16, 2022** (revision of RP-223191)

**Source: Ericsson, Qualcomm, Thales**

**Title: New SID: Study on Self-Evaluation towards** **the 3GPP submission of a IMT-2020 Satellite Radio Interface Technology**

**Document for: Approval**

**Agenda Item: 9.1**

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: Study on Self-Evaluation towards the 3GPP submission of a IMT-2020 Satellite Radio Interface Technology

# Acronym: FS\_IMT-2020\_Sat\_eval

Unique identifier:

{A number to be provided by MCC at the plenary}

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** |  |

 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: In case of contradiction with the target dates of clause 5, clause 5 determines the target release.

# 1 Impacts

{For Normative work, identify the anticipated impacts. For a Study, identify the scope of the study}

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

This work item is a …

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

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) |
| N/A |  |  |  |

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 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

*{List here other Work Items which relate to the proposed one, such as a Work Item in an earlier Release if further enhancing the feature from the previous Release)}*

|  |
| --- |
| Other related Work/Study Items (if any) |
| **Acronym** | Unique ID | Title | Nature of relationship |
| FS\_NR\_NTN\_solutions | 800099 | Study on solutions for NR to support non-terrestrial networks (NTN) |  |
| NR\_NTN\_solutions | 860046 | Solutions for NR to support non-terrestrial networks (NTN) |  |

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

# 3 Justification

ITU-R has commenced the process of developing ITU-R Recommendations for the satellite component of the IMT-2020 radio interface(s). In Circular Letter [4/LCCE/134](https://www.itu.int/md/R00-SG04-CIR-0134/en) issued by ITU-R, WP 4B kindly invites the submission of proposals for candidate radio interface technologies (RITs) or a set of RITs (SRITs) for the satellite components of IMT 2020. The submission of proposals was scheduled to begin at the WP 4B meeting #52 (September 2022) and end at WP 4B meeting #53bis (December 2023). Further information is provided in [Document IMT-2020-SAT/2](https://www.itu.int/md/R19-IMT.2020.SAT-C-0002/en) “Submission and Evaluation Process and Consensus Building for Satellite Radio Interface Technology Proposals of IMT-2020”, which describes the process and activities identified for the development of the IMT-2020 satellite components radio interface(s). In this document, eight steps are defined for Submission and Evaluation Process for the satellite component of IMT-2020. Proponents should ensure that all the necessary information for consideration of the submissions is made available according to the established schedule defined in Document IMT-2020-SAT/2.

Especially, in Step 3 “Submission/reception of the RIT and SRIT proposals and acknowledgement of receipt”, it is required that the submission of each candidate RIT or SRIT must include completion of the templates provided in Report ITU-R M.2514 and that “the entity that proposes a candidate RIT or SRIT to the ITU-R (the proponent) shall include with it either an initial self-evaluation or the proponents’ endorsement of an initial evaluation submitted by another entity.” Therefore, any IMT-2020 proponent needs to provide initial evaluation along with the submission to ITU-R to complete Step 3. Additionally, the required conditions for a candidate RIT/SRIT to be considered and approved in the submission process are defined in Step 2, 6, and 7, respectively. Self-evaluation should demonstrate the candidate RIT/SRIT could pass these required conditions.

Furthermore, candidate IMT-2020 RIT/SRIT should be evaluated against the technical performance requirements defined in Report ITU-R M.2514. Self-evaluation needs to be conducted following the evaluation guidelines and shall fulfil the compliance template and description template defined in Report ITU-R M.2514.

It is expected that 3GPP will be actively contributing to the satellite component of IMT-2020 radio interface(s) development and make the submission to ITU-R WP 4B at the appropriate time. Therefore, it is necessary for 3GPP to complete the description and compliance templates and conduct a self-evaluation to complete the submission and evaluation process for IMT-2020. The purpose of this study item is to provide self-evaluation results against the technical performance requirements defined by Report ITU-R M.2514, using the evaluation criteria defined therein, and complete the related compliance template and description templates, to facilitate 3GPP to complete Step 3 of the ITU-R submission and evaluation process defined in Document IMT-2020-SAT/2.

# 4 Objective

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

This study item will provide the description of the self-evaluation results towards IMT-2020 submission to ITU-R WP 4B against the technical performance requirements defined by Report ITU-R M.2514, using the evaluation criteria defined in the report, and complete the related compliance template and description templates. The candidate IMT-2020 RIT/SRIT(s) submission by 3GPP based on Rel-17 NTN (including both NR NTN and IoT NTN), will be evaluated and described as part of the study.

Detailed objectives of this study item include:

1. Complete all required submission templates as defined in Report ITU-R M.2514 [RAN ITU-R Ad-Hoc]
2. Provide self-evaluation results against technical performance requirements for eMBB-s as defined in Report ITU-R M.2514 [RAN ITU-R Ad-Hoc, RAN1, RAN2], including
	* Peak data rate
	* Peak spectral efficiency
	* User experienced data rate
	* 5th percentile user spectral efficiency
	* Average spectral efficiency
	* Area traffic capacity
	* Latency, including user plane latency and control plane latency
	* Energy efficiency, including both network and device
	* Mobility
	* Mobility interruption time

1. Provide self-evaluation results against technical performance requirements for mMTC-s as defined in Report ITU-R M.2514 [RAN ITU-R Ad-Hoc, RAN1, RAN2], including
	* Connection density
2. Provide self-evaluation results against technical performance requirements for HRC-s as defined in Report ITU-R M.2514 [RAN ITU-R Ad-Hoc, RAN1, RAN2], including
	* Reliability
3. Provide self-evaluation results for other requirements (including bandwidth) as defined in Report ITU-R M.2514 [RAN ITU-R Ad-Hoc, RAN1, RAN2, RAN4]

IoT NTN will at least target self-evaluation against bullets c) and e) technical requirements, and NR NTN will target self-evaluation against all technical requirements (in bullets b) to e)).

This study shall start with evaluating features that are supported by Rel-17 NTN (NR NTN + IoT NTN), as relevant for the above aspects.

The study will produce documents used for the 3GPP IMT-2020 submission to ITU-R based on the ITU-R templates, including a description of the self-evaluation results in a new TR, 37.9xx, created by this study.

This study shall have (an) appropriate RIT/SRIT(s) adoption to demonstrate that 3GPP’s candidate IMT-2020 RIT/SRIT fulfils the required condition defined in Step 2, 6, and 7 in Document IMT-2020-SAT/2. The decision to make a submission as RIT(s) or SRIT(s) is outside the scope of this study but is needed for the completion of the study. Such discussion shall be taken by TSG RAN plenary directly.

The study will be done in coordination with the RAN ITU-R Ad-Hoc group. The study can start in the working groups after RAN#98, to discuss initial self-evaluation time-plan, TR template, evaluation assumption, etc. The work in the working groups should be limited in time and using email discussion to a large extent, as possible. The work split between RAN1 and RAN2 will initially follow the split adopted for the previous 5G IMT-2020 submission. The study aims to have a final submission package ready by RAN#102, that is before ITU-R WP4B submission deadline (end of December 2023).

### 4.2 Objective of Performance part WI

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

### 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 |
| External TR | 37.9xx | Study on Submission of satellite radio interface of IMT-2020 | RAN#101 (September 2023) | RAN#102 (December2023) |  |

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 |
|  |  |  |  |

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)

Grövlen, Asbjörn, Ericsson, asbjorn.grovlen@ericsson.com

Rico Alvarino, Alberto, Qualcomm Incorporated, albertor@qti.qualcomm.com

El Jaafari, Mohamed, Thales, mohamed.el-jaafari@thalesaleniaspace.com

NOTE: The first listed Rapporteur has the overall responsibility for this WI (incl all secondary tasks).

# 7 Work item leadership

Primary: 3GPP RAN (ITU-R Ad-Hoc)

Secondary: 3GPP RAN WG1, WG2, WG4

# 8 Aspects that involve other WGs

None

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

# 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.}*

|  |
| --- |
| Supporting IM name |
| Ericsson |
| Qualcomm |
| Thales |
| Hughes Network Systems |
|  |
|  |