
Source: Lenovo, Motorola Mobility, Continental Automotive GmbH, Eurecom
Title: Draft SID on NR Extension from 71 – 114.25 GHz in Rel-18
Document for: Approval
Agenda Item: 9.0.2

3GPP™ Work Item Description

For guidance, see [3GPP Working Procedures](#), article 39; and [3GPP TR 21.900](#).
Comprehensive instructions can be found at <http://www.3gpp.org/Work-Items>

Title: Study on NR Extension from 71 – 114.25 GHz in Rel-18

Acronym: TBD

Unique identifier: TBD

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	<input type="checkbox"/>
This WID includes a Performance part	<input type="checkbox"/>

or:

This WID includes a Testing part	<input type="checkbox"/>	
and it addresses the following 3GPP work area:	Radio Access	<input type="checkbox"/>
	Core Network	<input type="checkbox"/>
	Services	<input type="checkbox"/>

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. [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	X		
No	X			X	
Don't know					

2 Classification of the Work Item and linked work items

2.0 Primary classification

This work item is a ...

	Feature
	Building Block
	<i>Work Task</i>
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

Parent Work / Study Items			
Acronym	Working Group	Unique ID	Title (as in 3GPP Work Plan)

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

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

Dependency on non-3GPP (draft) specification:

3 Justification

In Rel-17, NR has defined new frequency range namely FR2-2 spanning from 52.6GHz to 71GHz, in addition to existing FR1 spanning from 410MHz to 7.125GHz and FR2-1 spanning from 24.25GHz to 52.6GHz. The practical use case for FR2-2 is the support for unlicensed operation and the other bands are mostly not yet approved for licencing. Due to very limited availability of approved licensed bands in FR2-2, it cannot be commercially deployed to cater the promised use-cases in the licensed bands.

However, beyond 71 GHz, there is availability of ultra-wide licensed bands in the order of 5GHz bands in 71-76GHz and 81-86GHz in ITU region 1, 2 and 3. Furthermore, beyond 90GHz is expected to prove even wider bands in the order of 10GHz. The availability of ultra-wide bands could facilitate several use-cases with commercial needs.

This would allow to meet the requirements being set out for extreme precision positioning that rely on large contiguous bands. Moreover, low power positioning techniques also need ultrawide bandwidth. Furthermore, the availability of ultra-wide bands can better facilitate techniques such as flexible duplexing with non-overlapping sub-bands for DL and UL. With ultrawide bandwidth, the flexible duplexing can still accommodate large uplink and downlink bandwidths. In addition, fixed wireless access and backhaul with high-capacity requirement are one of important use-cases that warrant the need of ultra-wide bands.

Additionally, extending NR operation from 71 – 114.25GHz would pave the path for future extensions towards sub-THz in 6G. We expect that aspects such as waveform, numerology that will be studied under this SI and the evaluation

methodologies including PN models, PA models, antenna models, channel models would be applicable to sub-THz bands as well.

4 Objective

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

This study item includes the following objectives for studying extension of NR operation from 71 – 114.25GHz:

- Identify and develop the evaluation methodology including channel models for above 100GHz (if needed), antenna models, PN models, reference PA models [RAN1, RAN4]
- Identify and evaluate the candidate set of waveforms for both downlink and uplink [RAN1]
 - For performance evaluation, existing waveform with the supported numerologies should be considered as the baseline

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
Internal TR	38.XXX	Study on Extension of NR from 71 – 114.25 GHz			

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)

...
Company: ...
Email: ...

7 Work item leadership

Primary: RAN1

Secondary: RAN4 (secondary)

8 Aspects that involve other WGs

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

9 Supporting Individual Members

Supporting IM name
Lenovo
Motorola Mobility
Continental Automotive GmbH
Eurecom