**3GPP TSG RAN Meeting #94e RP-21xxxx**

**Electronic Meeting, Dec. 6 - 17, 2021** (revision of RP-202844)

**Source: Huawei, HiSilicon**

**Title: Revised WID: Introduction of 6GHz NR licensed bands**

**Document for: Approval**

**Agenda Item: 9.4.1.1**

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: Introduction of 6GHz NR licensed bands

## Acronym: NR\_6 GHz

## Unique identifier: 890050

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** | **X** |

 or:

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

Potential target Release: Rel-17.

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 | 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 … *{Tick one box. "***Feature** */* **Building Block** */ Work Task" form a hierarchical structure. E.g. no Building Block can be proposed without a corresponding parent Feature. The full structure of all existing Work Items is shown in the 3GPP Work Plan in* *ftp://ftp.3gpp.org/Information/WORK\_PLAN* *}*

|  |  |
| --- | --- |
|  | 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) |
|  |  |  |  |

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

*{List here other Work Items which relate to the proposed one, such as preceding SI or a preceding WI (e.g. if further enhancing a feature).}*

|  |
| --- |
| 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**: none

## 3 Justification

5G technology and its evolution are increasingly foreseen to be used in various application scenarios, demanding more and more spectrum with the required quality of service that only licensed bands can offer. The so-called mid-band frequency range can provide a good balance between coverage needs and capacity needs, and the 6GHz band is the most promising band in the mid-band frequency range to provide new spectrum for 5G development in middle-long term.

At WRC-19 several regions and countries proposed to establish WRC-23 Agenda Items to study 5.925-7.125 GHz frequency band, or portions thereof, for IMT identification [1-4].

**[1] WRC-19-C-0024(Add.24),** to consider identification for IMT in the 7 025-7 125 MHz frequency range in accordance with Resolution [ACP-C10-IMT] (WRC-19), Asia-Pacific Telecommunity (APT)

**[2] WRC-19-C-0046(Add.24),** Studies on frequency-related matters for International Mobile Telecommunications (IMT), identification including possible additional allocations to the mobile service on a primary basis [in portion(s) of the frequency range between 6 and 24 GHz] for the future development of International Mobile Telecommunications for 2020 and beyond, African Telecommunications Union

**[3] WRC-19-C-0109,** to consider identification for IMT in the 6 425-7 125 MHz frequency band, or portions thereof, in accordance with Resolution [AZE/SVK/SVN-A10-IMT] (WRC-19), Azerbaijan (Republic of), Slovak Republic, Slovenia (Republic of)

**[4] WRC-19-C-0110R2,** to consider IMT identification in the frequency band 5 925-7 125 MHz, or parts thereof, for the future development of IMT, Afghanistan, Cambodia (Kingdom of), China (People's Republic of), Lao People's Democratic Republic, Mongolia, Nepal (Republic of), Papua New Guinea

WRC-19 agreed to establish a new WRC-23 agenda to study possible IMT identification on frequency bands 6.425-7.025 GHz and 7.025-7.125GHz.

– 7 025-7 125 MHz (globally);

– 6 425-7 025 MHz (Region 1);

CCSA established a new project on technical report for the feasibility study of IMT system using 5925-7125MHz frequency band [5]. This CCSA study includes identifying IMT parameters in 5925-7125MHz in order to develop coexistence between IMT system and incumbent services and applications. This work is expected to finish in 2020.

**[5] TC5-WG8-2019-003**, “Project proposal: feasibility study of IMT system using 5925-7125MHz frequency band”, April 2019, available at <http://www.ccsa.org.cn/tc/meeting.php?meeting_id=6243>

According to RCC LS [6], the RCC countries plan to prepare and send to WRC-23 proposals for the identification of the frequency band 6425-7125 MHz for the use by IMT systems. And RCC invites 3GPP to consider the inclusion of the 6425-7125 MHz frequency band in the 3GPP NR specifications in order to ensure the timely availability of 5G-NR equipment to enable the deployment of 5G-NR/IMT-2020 systems in RCC countries and to facilitate the harmonization of the use of this frequency band by 5G-NR/IMT-2020 equipment.

Regarding the regulation of the usage of the radio frequency, in the response LS [7], the RCC Commission on Spectrum and Satellite Orbits at its 20th meeting approved the RCC Recommendation 1/21 “Harmonization of the technical conditions for 5G-NR / IMT-2020 systems in the RCC countries in the frequency band 6 425-7 125 MHz or in its portions” which contains the required regulatory requirements.

 **[6]** [**RP-201438**](http://www.3gpp.org/ftp/TSG_RAN/TSG_RAN/TSGR_89e/Docs/RP-201438.zip)**,** “LS on Standardisation of a new 5G-NR/IMT-2020 band in 6425-7125 MHz”, Regional Commonwealth in the field of Communication (RCC)

**[7] RP-213605,** “LS on inclusion of the 6425-7125 MHz frequency band in the 3GPP specification for 5G-NR/IMT-2000 systems”, Regional Commonwealth in the field of Communication (RCC)

In order to accelerate the availability of this frequency range for IMT licensed usage, it is proposed to define 6GHz NR licensed band(s) under this WI.

## 4 Objective

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

The objectives of the core part work item are:

* Determine the band plan for band(s) for licensed operation in the range of 5925- 7125 MHz, covering
	+ 6425-7125 MHz
	+ 5925-7125 MHz
* Define system parameters such as channel bandwidths and channel arrangements
* Define transmitter and receiver characteristics requirements for the UE
* Define transmitter and receiver characteristics requirements for the BS

Note that this WI does not in any way intend to interfere with regulatory activities and timelines for the 6 GHz range.

### 4.2 Objective of Performance part WI

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

The objective of the performance part work item is to define:

* Conformance requirements for BS testing
* Changes are to be added in release independent manner.

### 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 |
|  |  |  |  |  |  |

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.

The work shall start immediately after regulatory requirements are available for a part of the 5925- 7125 MHz frequency range for the corresponding range and country/region. TSG RAN is to review the availability of regulatory requirements at each TSG meeting, and may revise the WID when the work starts, to more accurately represent the actual regulations.

|  |
| --- |
| **Impacted existing TS/TR** *{One line per specification. Create/delete lines as needed}* |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| 38.101-1 | NR; UE Radio transmission and reception | TSG RAN#97 Sept. 2022 | Core UE part |
| 38.133 | NR; Requirements for support of radio resource management | TSG RAN#97 Sept. 2022 | Core UE part |
| 38.104 | NR; BS Radio transmission and reception | TSG RAN#97 Sept. 2022 | Core BS part |
| 38.141-1 | NR; Base Station (BS) conformance testing Part 1: Conducted conformance testing | TSG RAN#98Dec. 2022 | Perf. BS part |
| 38.141-2 | NR; Base Station (BS) conformance testing Part 2: Radiated conformance testing | TSG RAN#98Dec. 2022 | Perf. BS part |
| 36.104 | E-UTRA; BS Radio transmission and reception | TSG RAN#97 Sept. 2022 | Core BS part |
| 36.141 | E-UTRA; BS conformance testing | TSG RAN#98Dec. 2022 | Perf. BS part |
| 37.104 | E-UTRA, UTRA and GSM/EDGE; Multi-Standard Radio (MSR) Base Station (BS) radio transmission and reception | TSG RAN#97 Sept. 2022 | Core BS part |
| 37.141 | E-UTRA, UTRA and GSM/EDGE; Multi-Standard Radio (MSR) Base Station (BS) conformance testing | TSG RAN#98Dec. 2022 | Perf. BS part |
| 37.105 | Active Antenna System (AAS) Base Station (BS) transmission and reception | TSG RAN#97 Sept. 2022 | Core BS part |
| 37.145-1 | Active Antenna System (AAS) Base Station (BS) conformance testing; Part 1: conducted conformance testing | TSG RAN#98Dec. 2022 | Perf. BS part |
| 37.145-2 | Active Antenna System (AAS) Base Station (BS) conformance testing; Part 2: radiated conformance testing | TSG RAN#98Dec. 2022 | Perf. BS 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)

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## 7 Work item leadership

RAN4

## 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 |
| Huawei |
| HiSilicon |
| CBN |
| CAICT |
| CATT |
| Telia Company |
| China Telecom |
| China Unicom |
| CMCC |
| Spreadtrum Communication |
| Telefonica |
| Ericsson |
| CKH IOD UK LIMITED |
| Deutsche Telekom |
| MediaTek |
| OPPO |
| Lenovo |
| ZTE |
| Xiaomi |
| Nokia |
| Nokia Shanghai Bell |
| vivo |
| Orange |
| Vodafone |