3GPP TSG RAN WG4 meeting #102-e R4-2204485

Electronic Meeting, 21st Feb. – 03rd Mar., 2022 (revision of RP-212874)

**Source: LG Electronics**

**Title: Revised WID on Rel-17 LTE-A inter-band CA for x bands (x= 3, 4, 5) DL with 2 bands UL**

**Document for: Approval**

**Agenda Item: 12.5.1**

3GPP™ Work Item Description

For guidance, see [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39; and [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm).
Information about Work Items can be found at <http://www.3gpp.org/Work-Items>

# Title: Revised WID on Rel-17 LTE-A inter-band CA for x bands (x= 3, 4, 5) DL with 2 bands UL

## Acronym: LTE\_CA\_R17\_xBDL\_2BUL

## Unique identifier: 880191

 NOTE: For new WIs/SIs leave the Unique identifier empty or you can make a proposal for an Acronym.

 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** |

## 1 Impacts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Affects:** | UICC apps | ME | AN | CN | Others (specify) |
| **Yes** |  | X |  |  |  |
| **No** | X |  | 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, we define them as work tasks. If you are in doubt, please contact MCC.

### 2.2 Parent and child Work Items

*{For a* **Feature***: list here the children* **Building Blocks** *(optional) and* Work Tasks *(optional)}*

*{For a* **Building Block***: list here the parent* **Feature** *(mandatory) and children* Work Tasks *(optional)}*

*{For a* Work Task*: list here the parent* **Building Block** *(mandatory)}*

|  |
| --- |
| Parent and child Work Items  |
| Unique ID | Title | Nature of relationship |
|  | New WID on Rel-17 LTE inter-band CA for x bands (x=3,4,5) DL with 2 bands UL  | Parent WID |

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 Unique ID and title and Nature of relationship is "parent WID".

### 2.3 Other related Work Items and dependencies

*{List here other Work Items which relate to the proposed one but are not part of the hierarchical structure, such as preceding SI or a preceding WI (e.g. if you further enhance a topic).}*

|  |
| --- |
| Other related Work Items (if any) |
| Unique ID | Title | Nature of relationship |
|  | Core part: New WID on Rel-17 LTE inter-band CA for x bands (x=3,4,5) DL with 2 bands UL | Child WID |
|  | Perf. part: New WID on Rel-17 LTE inter-band CA for x bands (x=3,4,5) DL with 2 bands UL | Child WID |

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

## 3 Justification

All new LTE inter band CA configurations for x bands (x=3, 4, 5) DL with 2 bands UL will be defined under this WI. When a new band is specified, it will create a new LTE inter band CA configuration for x bands (x=3, 4, 5) DL with 2 bands UL. Moreover, any new LTE band CA configurations can be specified from existing bands.

LTE inter band CA configurations for x bands (x=3, 4, 5) DL with 2 bands UL will be introduced in release independent manner based on TS36.307 and the precondition for proposing x bands (x=3, 4, 5) DL with 2 bands UL in Rel-17 can be as follows:

* LTE inter band CA for x bands (x=3, 4, 5) DL with 1 band UL shall be specified in advance.
* Each of four possible CA configurations of 2 bands DL with 2 bands UL used in a certain x bands (x=3, 4, 5) DL with 2 bands UL shall be specified in advance.
	+ Example. If the following CA configuration is proposed and an operator requests to specify all possible UL CA configurations,

|  |  |
| --- | --- |
| E-UTRA Downlink CA Configuration | E-UTRA Uplink CA Configuration |
| CA\_1A-2A-3A | CA\_1A-2A, CA\_1A-3A, CA\_2A-3A |

Then,

* + - LTE inter-band CA for 3 bands DL with 1 band UL of CA\_1A-2A-3A shall be specified in advance
		- LTE inter-band CA for 2 bands DL with 2 bands UL of CA\_1A-2A, CA\_1A-3A, and CA\_2A-3A shall be specified in advance except for supplementary DL only band.

## 4 Objective

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

Potential self-interference issues for x bands (x=3, 4, 5) DL with 2 bands UL shall be studied and modify the core Rx requirements if necessary.

* For all x bands DL with 2 bands UL configurations,
	+ Specify common RF requirements for inter-band carrier aggregation.
	+ Discuss the impact of supporting all of the paired x bands DL with 2 bands UL configurations (in total, potentially the number of the paired configuration is xC2 at maximum) belonging to for a certain x bands DL with 2 bands UL configuration on UE implementation and network capacity/planning to figure out pros and cons.
		- Note that the discussion itself does not affect the completion of individual x bands DL with 2 bands UL configurations.
* For individual x bands DL with 2 bands UL configurations,
	+ Analyse the impact of harmonics (2nd and 3rd)/IMDs (2nd, 3rd, 4th, and 5th)
	+ Define MSD values and test cases for the case where two band uplinks create self-desensitization.

An overview table of Rel-17 LTE inter-band CA for x bands (x=3, 4, 5) DL with 2 bands UL is provided in the attached Excel file which is updated to add new DC band combinations and revised the status per each CA band combination.

### 4.2 Objective of Performance part WI

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

This Perf. Part WI has to standardize the Perf. Part requirements:

* Required changes to be added to release independence TS 36.307.

of all REL-17 CA combinations that fall into the category defined by the WI title. See an overview table in the excel file with this WID.

### 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 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  | Series | Title | For info at TSG#  | For approval at TSG# | Remarks |
| *Internal TR* | *"TR36.717-03-02"* | *LTE inter-band CA for x bands (x=3,4,5)DL with 2 bands UL* |  | *TSG#96* | *Core part**Rapporteur:* *Jin Woong Park,* *LG Electronics Inc., jinwoong.park@lge.com* |

*{Note 1: Only TSs may contain normative provisions. Study Items shall create or impact only TRs.
"Internal TR" is intended for 3GPP internal use only whereas "External TR" may be transposed by OPs.}*

NOTE: If this is a RAN WID 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 |
| 36.101 | *Add new CA band combinations and related RF core requirements* | *TSG#96* | Core part |
| 36.307 | *Release independent manner will be applied to all new CA band combinations according to each CA band combinations* | *TSG#96* | Perf. part |

NOTE: If this is a RAN WID 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)

*Jin Woong Park,*

**Company:** *LG Electronics Inc.*

**Email: jinwoong.park@lge.com**

## 7 Work item leadership

*R4*

## 8 Aspects that involve other WGs

 *None*

NOTE: For RAN WIDs: 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

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| Supporting IM name |
| NTT DOCOMO, INC. |
| LG Electronics |
| Huawei |
| Qualcomm |
| Nokia |
| Nokia Shanghai Bell |
| Ericsson |
|  |