**3GPP TSG-WG2 Meeting #131R2-250xxxx**

**Bangalore, India, 25th – 30th August, 2025**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
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|  | **38.300** | **CR** | **draft** | **rev** | **-** | **Current version:** | **18.6.0** |  |
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| *For* ***[HELP](http://www.3gpp.org/3G_Specs/CRs.htm%22%20%5Cl%20%22_blank)*** *on using this form: comprehensive instructions can be found at <http://www.3gpp.org/Change-Requests>.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network | **X** | Core Network |  |

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| ***Title:***  | Running CR for Rel-19 MIMO Phase 5  |
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| ***Source to WG:*** | CMCC |
| ***Source to TSG:*** | R2 |
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| ***Work item code:*** | NR\_MIMO\_Ph5-Core |  | ***Date:*** | 2025-06-30 |
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| ***Category:*** | B |  | ***Release:*** | Rel-19 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
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| ***Reason for change:*** | Introduce the Rel-19 MIMO features based on the agreements in Annex.  |
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| ***Summary of change:*** | 1. Introducing the clause 6.X of Rel-19 MIMO.
2. Refine and add functions according to agreements in RAN2#130.
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| ***Consequences if not approved:*** | Rel-19 MIMO features cannot be supported. |
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| ***Clauses affected:*** | 6.X(new) |
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|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS 38.331 CR XXTS 38.321 CR XX |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
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| ***This CR's revision history:*** |  |

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| *Start of changes* |

## 6.X Asymmetric Downlink Single-TRP and Uplink Multi-TRP

For asymmetric DL single-TRP and UL multi-TRP scenario where UL TRP may reduce or even turn off DL transmission, a flexible number of pathloss offset values between UL-only TRP and DL single-TRP can be associated with UL/Joint TCI states for PUCCH, PUSCH, SRS, and PDCCH ordered CFRA transmission to UL-only TRP, while each pathloss offset value is explicitly indicated for each UL/Joint TCI state. The pathloss offset values are configured via RRC signaling and the pathloss offset values associated with UL/Joint TCI states are updated by the latest pathloss offset value received in RRC or Pathloss Offset Update MAC CE, which defined in 3GPP TS 38.321[6]. The pathloss offset values stored in the UE and the source/anchor gNB is updated based on RRC and not updated based on the Pathloss Offset Update MAC CE.

Editor’s Note: FFS on whether a new subclause is needed for the description of deployment and the application of pathloss offset or merged to the subclause 6.12 where mainly focous on the PDCCH/PDSCH/PUSCH sheduling and transmission via single-DCI and multi-DCI.

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| *End of changes* |

Annex: RAN2 agreements

RAN2#128 agreements:

**Agreements on asymmetric DL sTRP and UL mTRP**

* New MAC CE is introduced for PL offset update for asymmetric DL sTRP/UL mTRP. This new MAC CE is identified by new eLCID.
* Absolute value of PL offset is indicated in the new MAC CE. For the offset value, the value range is [-12, 60] dB and the step size is 4dB.
* In the MAC CE, PL offset value can be updated for any configured TCI states with RRC configured PL offset, i.e., not limited to the activated TCI states.

RAN2#129 agreements:

**Agreements on Asymmetric DL sTRP/UL mTRP**

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| * One PL offset value is indicated for each TCI state included in the new MAC CE.
* The new MAC CE contains one serving cell ID and one BWP ID
* TCI state ID is used to indicate a TCI state in the new MAC CE (i.e., no bitmap for TCI states is needed)
* The new MAC CE can include flexible number of PL offset values.

Working assumption: * UE applies the latest PL offset value received in RRC or MAC CE. Can revisit if new issue is found.

Agreement* RAN2 understands that if a joint/UL TCI state is configured with a PL offset, PHR trigger is based on the PL change of the PL-RS associated to the joint/UL TCI, where the PL change takes into account the PL offset. FFS whether/how to capture this.
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RAN2#129bis agreements:

**Agreements on Asymmetric DL sTRP/UL mTRP**

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| * No need to add a maximum number restriction of the TCI states indicated by the PL offset MAC CE.
* RAN2 understand the PL offset update MAC CE is at least applicable to PUCCH, PUSCH, SRS, and PDCCH-order CFRA.
* We will capture in a note to reflect the previous understanding ‘RAN2 understands that if a joint/UL TCI state is configured with a PL offset, PHR trigger is based on the PL change of the PL-RS associated to the joint/UL TCI, where the PL change takes into account the PL offset.’. FFS on exact wording.
* From RAN2 point of view, UE applies the latest PL offset value received in RRC or MAC CE.
* For 2TA in asymmetric DL sTRP/UL mTRP scenario with pathloss offset configured Rel-18 2TA operation is applied with the following RRC changes:
	+ - remove the restriction that RRC field tag2 is configured only if coresetPoolIndex is configured with more than one value;
		- a single n-TimingAdvanceoffset is configured, i.e., n-TimingAdvanceOffset2 is not configured for 2TA in asymmetric DL sTRP/UL mTRP scenario.
* For PRACH transmission, PL offset is applicable only to PDCCH-order CFRA.
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RAN2#130 agreements:

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| **Agreements on Asymmetric DL sTRP/UL mTRP*** Introduce a new RRC parameter per BWP that explicitly enables the Rel-19 sDCI-mTRP 2TA, and clarify in FD of tag2 to include all cases where tag2 is configured that “it is optionally configured in a serving cell for mDCI mTRP 2TA if coresetPoolIndex for a BWP is configured with more than one value, and for sDCI mTRP 2TA if [the new parameter] is configured.”;
* 2TA operation is supported for Rel-19 single-DCI mTRP without the restriction that coresetPoolIndex needs to be configured with more than one value, and single-DCI mTRP 2TA is applied to both the scenarios that PL offset is configured and PL offset is not configured.
* Regarding Rel-19 sDCI mTRP 2TA operation for the scenario PL offset is not configured (UE is configured with SSB-MTC-additionalPCI), RAN2 assumes both n-TimingAdvanceoffset and n-TimingAdvanceOffset2 are configured unless RAN1 has different agreement.
* Rel-17/18 Unified TCI States A/D MAC CE is reused for asymmetric DL sTRP/UL mTRP deployment.
* No MAC spec impact is expect, can confirm in the post meeting email discussion
* RAN2 understands UE maintains the internal configuration for this element (including Need R) in case the parent element (element in elementsToAddList) is absent as legacy.
* RAN2 to confirm that the PL offset value stored in the UE, i.e. in the internal UE configuration is not updated based on the MAC CE for PL update.
* RAN2 to confirm that the PL offset value stored in the source gNB/anchor gNB, i.e. in the UE RRC AS configuration, is not updated based on the MAC CE for PL update.
* It is up to network implementation whether to 1) apply the stored RRC configured PL offset value to the UE in case the associated tci-State (i.e. the parent parameter in tci-StatesToAddList) is absent, or 2) release the stored RRC configured PL offset value in case PL update is absent and the associated tci-State (i.e. the parent parameter in tci-StatesToAddList) is present, or 3) configure a new RRC value to the UE for the associated tci-State during the RRC resume procedure. No specification change is needed.
* Need R is applied for PL offset.
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