**3GPP TSG-WG2 Meeting #130R2-250xxxx**

**St Julia’s, Malta, 19th – 23th May, 2025**

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| *CR-Form-v12.3* |
| **DRAFT CHANGE REQUEST** |
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|  | **38.300** | **CR** | **-** | **rev** | **-** | **Current version:** | **18.5.0** |  |
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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:*** | 2025-04-23 |
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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#129bis.
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| ***Consequences if not approved:*** | Rel-19 MIMO features cannot be supported. |
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| ***Clauses affected:*** | 6.X(new), 10.6, 11 |
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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 PUCCH, PUSCH, SRS, and PDCCH ordered CFRA transmission of UL-only TRP, pathloss offset values between UL-only TRP and DL single-TRP can be associated with a flexible number of UL/Joint TCI states, which are configured via RRC signaling and updated by the latest pathloss offset value received in RRC or MAC CE, in which each pathloss offset value is explicitly indicated for each UL/Joint TCI state, as defined in 3GPP TS 38.321[6].

Editor’s Note: exact of the deployment description of Asymmetric Downlink Single-TRP and Uplink Multi-TRP can be added later on or completed by RAN1.

Editor’s Note: FFS on whether a new subclause is needed for the description of deployment and the application of PL 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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Agreements on other aspects

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| MAC impact:* In Mode A of UE-initiated CSI reporting, the active time of a DRX operation includes the time after a new UCI for UE-initiated beam reporting is sent on first PUCCH.
* Confirm the following RAN2 understandings:
	+ - The CG type-1 PUSCH carrying the beam report of Mode-B does not carry MAC PDU (i.e. UL-SCH).
		- The DG PUSCH carrying the beam report of Mode-A carries MAC PDU (i.e. UL-SCH) as legacy.
* FFS if any other MAC impact for UL skipping
* The UE continues to perform CSI measurements for the UEIBM procedure when the active BWP is the dormant BWP.
* If the BWP in an SCell is a dormant BWP, the UE should not report mode-A beam measurement results. The UE cannot perform mode-B beam reporting on this BWP.
* RAN2 understand the event evaluation and report triggering for UE-initiated beam report is captured by RAN1 spec.

RRC impac:* enabledCurrentBeamReport-r19 is added as an optional need-R field.
* Reuse resourcesForChannelMeasurement in CSI-ReportConfig. Clarify in the field description that for UEI BM, the new beam to be measured is either CSI-RS (nzp-CSI-RS-ResourceSetList) or SSB (csi-SSB-ResourceSetList).
* ng-n1-n2-r19, cri-typeI-SinglePanel-ri-restriction-r19/cri-typeII-ri-restriction-r19 and cri-typeI-SinglePanel-CBSR-r19/cri-typeII-CBSR-r19 in the same way as corresponding legacy fields i.e.:
	+ - ng-n1-n2-r19 is defined in the same way as ng-n1-n2 in R15 typeI-multiPanel
		- cri-typeI-SinglePanel-ri-restriction-r19/cri-typeII-ri-restriction-r19 are defined in the same way as legacy RI restrictions
		- cri-typeI-SinglePanel-CBSR-r19/cri-typeII-CBSR-r19 are defined in the same way as n1-n2-codebookSubsetRestriction-r18.
* mrSelectedResources is defined as a SEQUENCE structure containing two fields with integer values from one to eight.
* delayOffsetCompensation can be located under CSI-AperiodicTriggerState and outside of CSI-AssociatedReportConfigInfo and that the parameter triggeringScheme is not needed.
* Define numberofSubbandsPO as a list (with size up to the number of subbands) where each element is an integer value within the maximum size of a BWP.
* The following is used the signaling of typeI-CBSR and typeII-CBSR and typeI-softScalingRank:
	+ - (N1, N2) can be signaled as a separate parameter, and CBSR can be signaled as a CHOICE of (X1, X2) and a CHOICE of N1N2;
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