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

Bengaluru, India, Aug 25th – 29th, 2025

Agenda Item: 8.0.1

Source: Xiaomi

Title: Comment for [POST131][005][UE caps] UE capability CRs (Xiaomi)

Document for: Discussion and Decision

# Introduction

* [POST131][005][UE caps] UE capability CRs (Xiaomi)

Intended outcome: Agree to Mega CRs, 38.331 and 38.306

Deadline: CR capturing RAN1/4 feature list – Thursday, Sept. 4

CR merging all RAN2 endorsed CRs as well - Tuesday, Sept. 9

Companies providing input to this email discussion are requested to leave contact information below.

|  |  |  |
| --- | --- | --- |
| **Company** | **Name** | **Email Address** |
| **OPPO** | **Qianxi Lu** | **qianxi.lu@oppo.com** |
| **Nokia** | **Andrew Lappalainen** | **andrew.lappalainen@nokia.com** |
| **Huawei, HiSilicon** | **Seau Sian Lim** | **seau.sian.lim@huawei.com** |
| **Ericsson** | **Martin van der Zee** | **Martin.van.der@ericsson.com** |
|  |  |  |
|  |  |  |

# Comment

Companies are invited to provide comments **if there’s a change that is not agreeable**. Other comments are welcomed.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Comment Index** | **Capability IE/FG** | **Specification**  **(306/331)** | **Comment** | **Proposed Change** | **Rapp resolution** |
| OPPO001 | 46-1/2/3 | 331,306 | They are now implemented as MRDC Parameter,  MRDC-Parameters-v1900  While based on our R4 colleagues, MPR reduction were discussed for CA case, rather than MRDC. | Avoid implementation those features as MRDC parameters (in both 331 and 306) | Resolved |
| OPPO002 | 46-4/5 | 331,306 | Based on our R4, there is no case where UE report both features, since the support of 46-5 already includes the support of 46-4 | Suggest implement 46-4/5 as a same capability, with two ENUMERATED values pointing to 46-4 and 46-5. | Postpone  UECap#3: whether FG46-4 and FG46-5 can be supported simultaneously based on RAN4 feedback  Rapporteur suggests to postpone this to next meeting, companies can further clarify this in RAN4 discussion. |
| OPPO003 | 49-1 | 331,306 | Currently this feature is reported via UE-MRDC-Capability only, but looking at the values in this feature    Clearly, the first/third/fourth case is related to NR-SA and NR-DC that should be implemented via UE-NR-Capability. | Implement the values of this feature separately via UE-MRDC-Capability and UE-NR-Capability. | Resolved |
| N0001 | R1 59-1-5 | 306 | Prerequisite 59-1-1 is incorrectly written as uei-BR-Event2ModeA-r19. This should be uei-ModeA-Event2-r19 | Change prerequisite to ‘uei-ModeA-Event2-r19’ | Resolved. |
| N0002 | R1 59-2-1-1d, 59-2-1-2a, 59-2-1-3a, 59-2-1-4a, 59-2-1-5a | 331 | In all these capabilities for 48 Tx port codebooks, the parameter *maxNumberResource-r19* is encoded as INT(2..3), but a bit could be saved by encoding them as ENUMERATED {n2,n3}.  Note that in the corresponding 64 Tx port codebook capabilities maxNumberResource-r19 is already encoded as ENUMERATED {n2,n4}. | Change encoding for *maxNumberResource-r19* from INT (2..3) to ENUMERATED {n2,n3}. | Resolved and updated for all |
| N0003 | R1 59-2-1-6 | 306/331 | This feature was not captured in the CR. All prerequisites (“One or more of {59-2-1-1,1c, 2, 3, 4, 5}”) are already implemented and there are no details left FFS. | Add capability for R1 59-2-1-6 “CSI-RS resource time domain restriction for Type-I and Type II codebook enhancement for up to 128 ports” | UECap #2: missing value of K in the candidate value  Based on RAN1 description, rapporteur thinks there’s missing candidate value for the number of CSI-RS resources for this capability. Therefore, rapporteur will keep this as an open issue and check with RAN1 feature lead to solve this in next RAN1 meeting.  Support of the K CSI-RS resources configured within two slots for extended Type-I and Type II codebook for up to 128 ports |
| N0004 | R1 59-2-3-4 | 306/331 | Component 4 (Supported maximum slot duration for NTRP P/SP CSI-RS occasions being confined in) is missing | Add component 4 under the per-band and per-BC capabilities *cjtc-PO-ReportSubbandPerBC-r19 / cjtc-PO-ReportSubband-r19*  maxSlotDuration-r19 INTEGER (1..2)  *maxSlotDuration-r19* indicates the supported maximum slot duration for NTRP P/SP CSI-RS occasions being confined in. | Resolved |
| N0005 | R1 59-2-3-5a | 306 | According to the feature list, *for this FG*, OCPU= **2**\*X\*NTRP; however, this is captured as OCPU= X\*NTRP in the parameter description for *valueX-r19*. | Under description for *cjtc-DdFO-ReportProcessing-r19*, *cjtc-DdFO-ReportProcessingPerBC-r19* parameter *valueX-r19* change OCPU= X\*NTRP to OCPU= **2**\*X\*NTRP. | Resolved |
| N0006 | R1 59-2-3-6c | 331 | This capability (i.e. *cjt-QCL-PDSCH-SchemeE-r19*) is mislabeled as 59-2-3-6b in 38.331. | Change label in 331 to 59-2-3-6c. | Resolved |
| N0007 | R1 59-2-3-7 | 306 | Prerequisite of per-band capability *linked-CJTC-Dd-eType2CJT-Joint-r19* is listed as *eType2CJTperBC-r18*. Should it be *eType2CJT-r18*? | Double check whether prerequisite should be changed to per-band capability *eType2CJT-r18* | Resolved |
| N0008 | R1 59-2-3-7a | 306 | Prerequisite of per-band capability *linked-CJTC-Dd-eType2CJT-Separate-r19* is listed as *eType2CJTperBC-r18*. Should it be *eType2CJT-r18*? | Double check whether prerequisite should be changed to per-band capability *eType2CJT-r18* | Resolved see above |
| N0009 | R1 59-2-3-10 | 331 | scs960kHz is mislabeled as scs120kHz in the per band and per BC capabilities | Change second instance of *scs120kHz-r19* to *scs960kHz-r19* under *timelineRelax-CJTC-Dd-eType2CJT-r19* and *timelineRelax-CJTC-Dd-eType2CJT-PerBC-r19* | Resolved |
| N0010 | R1 59-3-2 | 306 | In the description for this capability in 306, the parameters have an -r18 suffix instead of -r19 suffix, i.e. *maxNumberPUSCH-MIMO-Layer-r18* and *maxNumberSRS-Resource-r18* | Change suffix of the parameters to “-r19”. | Resolved |
| N0011 | R1 59-3-4a | 331 | This capability (i.e. *mTRP-PUSCH-RepetitionTypeA-3Port-r19*) is mislabeled as 59-3-4 in 38.331. | Change label in 331 to 59-3-4. | Resolved |
| N0012 | R1 59-3-4d | 306, 331 | This feature was not captured in the CR. The prerequisite 59-4-4b is already implemented and there are no details left FFS. | Add capability for R1 59-3-4d “PDCCH ordered sent by one TRP triggers RACH procedure towards a different TRP based on CRFA for inter-cell without CORESETPoolIndex” | Resolved and see H009 (assume the comment refers to FG59-4-4d) |
| N0013 | R1 61-4a | 306 | The capability for *od-SSB-AlwaysOn-MAC-CE-Diff-r19* is defined based on the support for explicit or joint explicit/implicit deactivation mechanism, but the description in 306 refers to the time relations TimeC1/TimeC2, which are not relevant to this capability. | Update description in 306 to refer to OD-SSB deactivation mechanisms based on explicit / implicit indication and delete part about time relations based on TimeC1, TimeC2. | Resolved |
| N0014 | R1 63-2 | 306 | The NOTE on indicating at least one non-zero value is confusing; besides, it seems like this should be a normative requirement instead of a note. | Delete NOTE and add following clarification to capability description:  “UE supporting this feature must support a non-zero value for at least one of *supportedMaxAperiodic-LTM-CSI-ReportConfig-r19* and *supportedMaxSemiPersistent-LTM-CSI-ReportConfig-r19*.” | Resolved but kept as a NOTE |
| N0015 | R4 46-4 | 306 | In the description and NOTE for *mpr-SingleCC-SingleValue-r19*, the abbreviation “NRB” should be written as “NRB” (same as it is for *mpr-SingleCC-MultipleValue-r19*) | Change “NRB” to “NRB” in the description and NOTE of *mpr-SingleCC-SingleValue-r19* | Resolved |
| N0016 | R4 49-1 | 306 | This capability (i.e. *threeCarrierMeasWithoutGap-r19*) has not been defined in 38.306 even though it is in 331. | Add definition for *threeCarrierMeasWithoutGap-r19* to 38.306 CR. | Resolved  See Oppo003 |
| N0017 | R4 50-2 | 306 | The formula for the processing time Tmin is incomplete in the capability description of *od-SSB-AdditionalProcessingTime*.  Or maybe the intention is not to write it fully and the description will just refer to the RAN4 specs? | Double check whether formula for Tmin needs to be updated to align with the feature list (i.e. ) or whether the description will just refer to the RAN4 specs. | Resolved  After further checking, this is defined in RAN1 spec. Added the reference in 306.    following agreement copied from RAN4: |
| H001 | uei-ModeA-Event2-r19 | 306 | In the NOTE 1, should it be an ‘and the’, rather than a ‘,’? The current sentence does not make sense to me.  NOTE 1: For the configured RS(s) for new beam in the RS resource set, QCL RS in the indicated TCI state and its corresponding QCL SSB for Scheme-1 and Scheme-2, the SSB can be associated with the serving cell PCI or a PCI other than the serving cell PCI. | Change to  NOTE 1: For the configured RS(s) for new beam in the RS resource set and the QCL RS in the indicated TCI state and its corresponding QCL SSB for Scheme-1 and Scheme-2, the SSB can be associated with the serving cell PCI or a PCI other than the serving cell PCI. | Resolved  change it into ‘and its corresponding QCL RS’ |
| H002 | uei-ModeA-Event1-r19 | 306 | Not sure the note is needed as it seems to be the same as the feature  NOTE 1: Event 1 is defined as an event where the quality of the current beam is worse than a certain threshold. | Remove the NOTE 1? | Resolved |
| H003 | uei-ModeA-Event7-r19 | 306 | Typo on the pre-requisite:  A UE supporting this feature shall also indicate the support of *uei-BR-Event2ModeA-r19*. | Change to  A UE supporting this feature shall also indicate the support of *uei-ModeA-Event2-r19* | Resolved |
| H004 | R1 59-2-1-6 |  | This seems to be missing for both per band and per BC. There is no visible sign that this feature is still FFS. |  | UECap #2: missing value of K in the candidate value  Based on RAN1 description, rapporteur thinks there’s missing candidate value for the number of CSI-RS resources for this capability. Therefore, rapporteur will keep this as an open issue and check with RAN1 feature lead to solve this in next RAN1 meeting.  Support of the K CSI-RS resources configured within two slots for extended Type-I and Type II codebook for up to 128 ports |
| H005 | cjtc-DdReportProcessing-r19  cjtc-FO-ReportProcessing-r19  cjtc-PO-ReportWidebandProcessing-r19  cjtc-DdFO-ReportProcessing-r19 | 331 | The values for these 2 components are from my reading is that it continues between 12 and 64 with the same intervals. For example, 12 …64 for Component 2 is 12, 16, 20…all the way to 64?  Component 2 candidate values: {2, 4, 6, 8, 12, … 64}  Component 4 candidate values: {2, 4, 6, 8, 12, 16, 20, 24, 28, 32, …, 64} | Check with RAN1? | UECap #1: intermediate candidate values represented by ‘…’  Actually rapporteur has aware that there’s a lot of candidate values with ‘…’. This issue has been noticed to RAN1 feature lead, and they will continue discussion in next meeting. For this meeting, I suggest we don’t inserted any intermediate values and this will be updated once there’s concrete RAN1 agreement. |
| H006 | cjtc-PO-ReportSubbandPerBC-r19  cjtc-PO-ReportSubband-r19 | 331 | Missing Component 4:  4. Supported maximum slot duration for NTRP P/SP CSI-RS occasions being confined in  Component 4 candidate values: {1, 2} | Add the missing component to 331 and 306 | Resolved see N0004 |
| H007 | ***nonCodebook-CSI-RS-SRS-3TxPUSCH-r18*** | 306 | Should we add ‘-r16’ in *codebookVariantsList* to align with other ASN.1 field in 306. Maybe there are already some that are not aligned previously with this. | Editorial | Resolved  There’s no other Rel-19 capability uses codebookVariantsList, for other legacy capabilities, since there’s only r16 field, there’s no necessary change to update this for legacy caps. |
| H008 | mTRP-PUSCH-RepetitionTypeA-3Port-r19 | 331 | The annotation should be 59-3-4a. Cut and paste error. | Update the annotation. | Resolved |
| H009 | 59-4-4d | 331 | It is missing without any FFS |  | Resolved |
| H010 | ***intraFreqL1-MeasConfigSP-CSI-RS-r19*** | 306 | This note looks strange:  NOTE: For *supportedMaxAperiodic-LTM-CSI-ReportConfig-r19* and *supportedMaxSemiPersistent-LTM-CSI-ReportConfig-r19*, the UE must support a non-zero value for at least one of aperiodic and semi-persistent. | Proposed to change to:  NOTE: The UE must support a non-zero value for at least one of *supportedMaxAperiodic-LTM-CSI-ReportConfig-r19* and/or *supportedMaxSemiPersistent-LTM-CSI-ReportConfig-r19.*. | Resolved |
| H011 | enableTx-RxDuringMeasGap-r19 | 331 | The following does not allow for support more than 1 by the UE  additionalDCI-r19 ENUMERATED {dci0-2and1-2, dci0-3, dci1-3},  RAN1 suggested using a bitmap.  Candidate values of component 2b: 3-bit bitmap {DCI 0\_2 and 1\_2, DCI 0\_3, DCI 1\_3} | Follow RAN1 suggestion | Resolved |
| H012 | ***od-SSB-AdditionalProcessingTime-r19*** | 306 | Ediotrial to simplified the text below:  If UE does not support this feature, additional processing time of 5ms is considered for reception of on-demand SSB bursts from the time when UE receives OD-SSB activation or parameter update MAC CE command. | Suggest to align with previous way of writing:  If the field is absent, the UE shall support a default value of additional processing time of 5ms. | Resolved |
| H013 | ***lpwus-LP-SS-SupportedBandList-r19*** | 306/(331) | 1. The description for lpwus-LP-SS-SupportedBandList-r19 is copy and paste incorrectly;  2. The relation between 62-1a and 62-1b is unclear (from RAN1 feature list). Technically, UE indicates whether support 62-1b on top of 62-1a, e.g., the UE reports 62-1a with band list {band A, band B, band C}, UE further reports whether supports 62-1b for band A, band B, and/or band C. The UE cannot report 62-1b with band list {band D, band E}. To fix it:  Option 1: add description for 62-1b, all the band(s) indicated by this field are included in *lpwus-OFDM-SupportedBandList-r19*.  Option 2: add 62-1b as the sub-field under *lpwus-OFDM-SupportedBandList-r19*, e.g.,  LPWUS-OFDM-SupportedBandInfo-r19 ::= SEQUENCE {  supportedBandIndicator-r19 FreqBandIndicatorNR,  minimumTimeGap-r19 SEQUENCE {…}  lpwus-LP-SS ENUMERATED {supported} OPTIONAL  } | Change 1:  ***lpwus-LP-SS-SupportedBandList-r19***  Indicates whether the UE supports LP-SS based RRM measurement in IDLE/INACTIVE mode when LP-SS overlaid sequence is configured and all M values {1,2,4} for LP-SS for a list of frequency bands. ~~LP-WUS operation in IDLE/INACTIVE mode based on OOK signal for a list of frequency bands. The UE shall support UEID based subgrouping for a frequency band if it indicates supporting of LP-WUS operation for the frequency band. The capability signalling comprises of the following components:~~  ~~- Support of LP-SS based RRM measurement in IDLE/INACTIVE mode when LP-SS overlaid sequence is configured;~~  ~~- Support of all M values {1,2,4} for LP-SS.~~  Change 2:  Option 1:  A UE supporting this feature shall also indicate support of *lpwus-OFDM-SupportedBandList-r19*. All the band(s) indicated by this field are also included in *lpwus-OFDM-SupportedBandList-r19*.  Option 2: please see the Option 2 in comments | Resolved:   1. the dependency between FG62-1a and FG 62-1b has been added in 306 based on the updated capability implementation as below: |
| H014 | **SIB1 request for idle/inactive UEs** | 306 | This capability was decided to be optional with signalling in RAN2. | Capability signalling should be added based on discussion: [POST131][112][NES] UE capability CRs (ZTE) | Resolved    the followings are merged from RAN2 endorsed CR: |
| H015 | ***support32-DL-HARQ-ProcessTN-r19***  *and*  ***support32-UL-HARQ-ProcessTN-r19*** | 306 | The following NOTE is for NW configuration restriction (captured in CR R2-2506471) instead of capability reporting. It is confusing to capture in the capability field description, i.e., it is unclear what UE does with this NOTE.  NOTE: For FR1, the maximum number of layers configured for PDSCH is up to 4. | Remove the NOTEs from both capabilities’ description. | Resolved |
| N0018 | R1 64-1 | 306/331 | The parameter *additionalDCI-r19* should be defined as a bitmap, as the intention is that the UE could signal support for any combination of *dci02and1-2*, *dci0-3*, *dci1-3* (including signalling them as all unsupported), in addition to already supporting DCI formats 0\_1 and 1\_1.  There is a typo in the description of *additionalDCI-r19* in 306: Value ‘*dci0-1and1-2*’ indicates DCI format 0\_2 and DCI format 1\_2 | Change *additionalDCI-r19* to a 3-bit bitmap where the bits represent {*dci02and1-2*, *dci0-3*, *dci1-3*}.  Fix typo in description of *additionalDCI-r19* in 38.306:  Value ‘*dci0-1and1-2*’ indicates 🡪 Value ‘*dci0-2and1-2*’ indicates | Resolved |
| E001 | R1 62-1b  *UE-RadioPagingInfo-r19* | 38.331 | There should be a conditional statement added to this capability, i.e. it is only present when *lpwus-OFDM-SupportedBandList-r19* is present. |  | Not pursued  For capability, such dependency is captured in 306 specification, instead of using a conditon presence. please see the udpates in 306 as below. |
| E002 | R1 62-1 and R1 62-1a | 38.331 | The bandlist for LP-SS support should be removed, i.e. the UE is expected to support LP-SS in all the bands where it supports OFDM (*lpwus-OFDM-SupportedBandList-r19*). | A close-up of a computer screen  AI-generated content may be incorrect. | Resolved. See H013, it has been added in 306. |
| E003 | R1 62-1 and R1 62-1a | 38.331 | For LP-WUS there is only a need for a single *SupportedBandList.* When the UE supports both OFDM and OOK, then it supports OFDM and OOK on the same bands. It is good to limit the capability size. |  | Resolved. The signaling is further optimized to only include one list of supported band and other capabilities as optional within the field, indicating based on OOK or OFDM overlaid sequence. |