**3GPP TSG RAN WG2 Meeting #131bis R2-250xxxx
Prague, Czech Republic, 13th – 17th October 2025**

**Agenda item: 8.4.4**

**Source: Huawei, HiSilicon (Rapporteur)**

**Title: Updating the Rel-19 LPWUS capabilities CR and identifying open issues**

**WID/SID: NR\_LPWUS-Core – Release 19**

**Document for: Discussion and Decision**

# 1 Introduction

This is to trigger the following email discussion.

* **[Post131bis][211][LPWUS] CR for TS 38.306 (Huawei)**

Intended outcome: Update the CR and identify any additional other open issues.

Deadline: Long

Companies are invited to provide input by **Wednesday October 29 18:00 UTC**.

## Contact information:

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| Company | Delegate Name | Email |
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# 2 Discussion

## 2.1 Aligning “*minimumTimeGap-r19”* capability with RAN1 FGs

This is to align “*minimumTimeGap-r19*” with RAN1 feature group list as pointed out by Lenovo during the main session.

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| --- |
| [R2-2507586](file:///C%3A%5CUsers%5Cpanidx%5COneDrive%20-%20InterDigital%20Communications%2C%20Inc%5CDocuments%5C3GPP%20RAN%5CTSGR2_131bis%5CDocs%5CR2-2507586.zip) Corrections on Rel-19 RAN1/4 UE capability Xiaomi CR Rel-19 38.306 19.0.0 1370 - F NR\_LPWUS, NR\_MIMO\_Ph5**Use a baseline for next revision**[R2-2507587](file:///C%3A%5CUsers%5Cpanidx%5COneDrive%20-%20InterDigital%20Communications%2C%20Inc%5CDocuments%5C3GPP%20RAN%5CTSGR2_131bis%5CDocs%5CR2-2507587.zip) Corrections on Rel-19 RAN1/4 UE capability Xiaomi CR Rel-19 38.331 19.0.0 5547 - F NR\_LPWUS, NR\_AIML\_air, NR\_ENDC\_RF\_Ph4* - Lenovo is concerned that this is not aligned with the feature list. Vivo confirms that it reflects RAN1 intention.
* Use a baseline for next revision
 |

Following is the excerpt from “R1-2506627 Updated RAN1 UE features list for Rel-19 NR after RAN1 #122”:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Features** | **Index** | **Feature group** | **Components** | **Prerequisite feature groups** | **Need for the gNB to know if the feature is supported** | **Applicable to the capability signalling exchange between UEs (Sidelink WI only)”.** | **Consequence if the feature is not supported by the UE** | **Type****(the ‘type’ definition from UE features should be based on the granularity of 1) Per UE or 2) Per Band or 3) Per BC or 4) Per FS or 5) Per FSPC)** | **Need of FDD/TDD differentiation** | **Need of FR1/FR2 differentiation** | **Capability interpretation for mixture of FDD/TDD and/or FR1/FR2** | **Note** | **Mandatory/Optional** |
| 62. NR\_LPWUS | 62-1 | LP-WUS operation in IDLE/INACTIVE mode based on OOK signal | 1. LP-WUS operation in IDLE/INACTIVE mode to trigger paging monitoring based on OOK2. The support of LP-SS based RRM measurement5. Minimum time gap between LP-WUS reception and UE to start PDCCH monitoring6. Support of all M values {1, 2, 4} for FR1 for LP-WUS7. Support of M value 1 for 120 kHz SCS FR2 for LP-WUS8. Support of all M values {1, 2, 4} for LP-SS |  | YES | n/a | LP-WUS operation in IDLE/INACTIVE mode based on OOK signal is not supported | Per Band | n/a | n/a | n/a | Component 5 candidate values: {capability 1, capability 2, capability 3}Note: According to RAN2 agreement, UE supporting LP-WUS reception shall also support RRM measurement relaxation and RRM measurement fully offloading. How to capture this is up to RAN2 | Optional with capability signalling |
| 62. NR\_LPWUS | 62-1a | LP-WUS operation in IDLE/INACTIVE mode based on OFDM overlaid sequence | 1. LP-WUS operation in IDLE/INACTIVE mode to trigger paging monitoring based on OFDM overlaid sequence2a. The support of SSB-based RRM measurement5. Minimum time gap between LP-WUS reception and UE to start PDCCH monitoring6. “Support of all M values {1, 2, 4} for FR1 for LP-WUS7. “Support of M value 1 for 120 kHz SCS FR2 for LP-WUS |  | YES | n/a | LP-WUS operation in IDLE/INACTIVE mode based on OFDM overlaid sequence is not supported | Per band | n/a | n/a | n/a | Component 5 candidate values: {capability 1, capability 2, capability 3}Note: According to RAN2 agreement, UE supporting LP-WUS reception shall also support RRM measurement relaxation and RRM measurement fully offloading. How to capture this is up to RAN2 | Optional with capability signalling |

As shown in the above table, minimum time gap between LP-WUS reception and UE to start PDCCH monitoring has to be reported separately for UE supporting LP-WUS with OOK and OFDM. The endorsed UE capabilities CR (R2-2507586) has the following change:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| - *minimumTimeGap-r19* indicates the minimum time gap between LP-WUS reception and UE to start PDCCH monitoring. The values of ‘*cap1*’, ‘*cap2*’ and ‘*cap3*’ for each SSB periodicity are shown in below table:

|  |  |  |  |
| --- | --- | --- | --- |
| **SSB periodicity (ms)** | ***cap1* (ms)** | ***cap2* (ms)** | ***cap3* (ms)** |
| 5/10/20 | 70 | 500 | 900 |
| 40 | 130 | 600 | 1000 |
| 80 | 250 | 800 | 1200 |
| 160 | 490 | 1200 | 1600 |

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To align with RAN1 feature list, “*minimumTimeGap-r19*” has to be reported separate as shown below:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| - *minimumTimeGap-OOK-r19* indicates the minimum time gap between LP-WUS reception and UE to start PDCCH monitoring when UE indicates support of *lpwus-OOK-r19*. The values of ‘*cap1*’, ‘*cap2*’ and ‘*cap3*’ for each SSB periodicity are shown in the Table of “values of ‘*cap1*’, ‘*cap2*’ and ‘*cap3*’ for each SSB periodicity” below.- *minimumTimeGap-OFDM-r19* indicates the minimum time gap between LP-WUS reception and UE to start PDCCH monitoring when UE indicates support of *lpwus-OFDM-r19*. The values of ‘*cap1*’, ‘*cap2*’ and ‘*cap3*’ for each SSB periodicity are shown in the Table of “values of ‘*cap1*’, ‘*cap2*’ and ‘*cap3*’ for each SSB periodicity” below.* Table of values of ‘*cap1*’, ‘*cap2*’ and ‘*cap3*’ for each SSB periodicity:

|  |  |  |  |
| --- | --- | --- | --- |
| **SSB periodicity (ms)** | ***cap1* (ms)** | ***cap2* (ms)** | ***cap3* (ms)** |
| 5/10/20 | 70 | 500 | 900 |
| 40 | 130 | 600 | 1000 |
| 80 | 250 | 800 | 1200 |
| 160 | 490 | 1200 | 1600 |
|  |  |  |  |

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### Q1: do companies agree with the above understanding/change?

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| --- | --- | --- |
| **Company** | **Yes or No** | **Comments** |
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## 2.2 Terminology alignment for “RRM relaxation and offloading”

In R2-2507626, it was pointed out that different specs are using different terminology for “RRM relaxation and offloading” and proposed to align. Spec rapporteurs agreed to align the terminology during offline. Below shows the change in 38.306:

|  |  |
| --- | --- |
| Relaxation of serving cell and further relaxation of neighboring cell RRM measurements and offloading of serving cell RRM measurements | It is mandatory to support relaxation of serving cell and neighboring cell RRM measurements as specified in clause 5.2.4.12.1 in TS 38.304 [21] and offloading of serving cell RRM measurements as specified in clause 5.2.4.12.3 in TS 38.304 [21] if a UE supports reception of LP-WUS in RRC\_IDLE/RRC\_INACTIVE ~~as specified in TS 38.304 [21]~~. A UE supporting this feature shall also indicate the support at least one of *lpwus-OOK-r19* and *lpwus-OFDM-r19*. |

### Q2: do companies agree with the above change?

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| --- | --- | --- |
| **Company** | **Yes or No** | **Comments** |
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Draft CRs for 38.306 and 38.331 with the changes are provided in Appendix.

### Q3: If there are there any other open issues in LP-WUS UE capabilities, please list them below:

|  |  |
| --- | --- |
| Company | Open Issue |
|  |  |

# 3 Conclusion

TBD.

# 4 Appendix 1: Draft CR to TS 38.306

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

**Prague, Czech Republic, Oct. 13th – 17th, 2025**

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| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **38.306** | **CR** | **draftCR** | **rev** | **-** | **Current version:** | **19.0.0** |  |
|  |
| *For* [***HELP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](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:***  | Correction to R19 LP-WUS UE Capabilities |
|  |  |
| ***Source to WG:*** | Huawei, HiSilicon |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | NR\_LPWUS-Core |  | ***Date:*** | 2025-10-13 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | **RAN2-131b:**When describing the measurement relaxation related capabilities in TS 38.306, usually the description refers to other core specification that describes the corresponding measurement relaxation mechanism. Some examples:**Relaxed measurement**It is optional for UE to support relaxed RRM measurements of neighbour cells in RRC\_IDLE/RRC\_INACTIVE as specified in TS 38.304 [21].**Rel-17 relaxed measurement for RRC\_IDLE/RRC\_INACTIVE**It is optional for (e)RedCap UE to support Rel-17 relaxed RRM measurements of neighbour cells in RRC\_IDLE/RRC\_INACTIVE as specified in TS 38.304 [21].***rrm-RelaxationRRC-ConnectedRedCap-r17***Indicates whether (e)RedCap UE supports Rel-17 relaxed RRM measurements in RRC\_CONNECTED as specified in TS 38.331 [9].**RAN2-131b Post Meeting:**1. To align “” with RAN1 feature group list, define separate capabilities for “”
2. Align terminology on “RRM relaxation and offloading” among different specs
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|  |  |
| ***Summary of change:*** | Added reference for “Relaxation of serving cell and neighboring cell RRM measurements and offloading of serving cell RRM measurements” capability. |
|  |  |
| ***Consequences if not approved:*** | It is unclear what the “relaxation of serving cell and neighboring cell RRM measurements and offloading of serving cell RRM measurements if a UE supports reception of LP-WUS in RRC\_IDLE/RRC\_INACTIVE” is. |
|  |  |
| ***Clauses affected:*** | 4.2.2, 6 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS38.331 draft CR |
| ***affected:*** |  | **X** |  Test specifications |  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications |  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

*START OF CHANGE*

4.2.2 General parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Definitions for parameters** | **Per** | **M** | **FDD-TDD DIFF** | **FR1-FR2****DIFF** |
| ***accessStratumRelease***Indicates the access stratum release the UE supports as specified in TS 38.331 [9]. | UE | Yes | No | No |
| ***airToGroundNetwork-r18***Indicates whether the UE supports air to ground network access. If the UE indicates this capability the UE shall support the following ATG essential features, e.g., acquiring ATG cell specific SIB22 and ATG cell specific P-Max. | UE | No | No | FR1 only |
| ***crossCarrierSchedulingConfigurationRelease-r17***Indicates whether the UE supports using *crossCarrierSchedulingConfigRelease* to release the configurations configured by *crossCarrierSchedulingConfig*. | UE | No | No | No |
| ***delayBudgetReporting***Indicates whether the UE supports delay budget reporting as specified in TS 38.331 [9]. | UE | No | No | No |
| ***dl-DedicatedMessageSegmentation-r16***Indicates whether the UE supports reception of segmented DL RRC messages. | UE | No | No | No |
| ***drx-Preference-r16***Indicates whether the UE supports providing its preference of a cell group on DRX parameters for power saving in RRC\_CONNECTED, as specified in TS 38.331 [9]. | UE | No | No | No |
| ***drx-PreferenceCellDTX-DRX-r19***Indicates whether the UE supports providing its preference of a cell group on DRX parameters for power saving and its preference on cell DTX/DRX related parameters for PCell in RRC\_CONNECTED, as specified in TS 38.331 [9]. | UE | No | No | No |
| ***gNB-SideRTT-BasedPDC-r17***Indicates whether the UE supports gNB-side RTT-based PDC, as specified in TS 38.300 [28]. A UE supporting this feature shall also support *rtt-BasedPDC-CSI-RS-ForTracking-r17* and/or *rtt-BasedPDC-PRS-r17*. | UE | No | No | No |
| ***hardSatelliteSwitchResyncNTN-r18***Indicates whether UE supports hard satellite switch with re-sync, as specified in TS 38.331 [9].A UE supporting this feature shall also indicate the support of *nonTerrestrialNetwork-r17*.When UE supports this feature and does not support *softSatelliteSwitchResyncNTN-r18*, this UE is able to perform hard satellite switch with re-sync in a network supporting soft satellite switch with re-sync, as specified in TS 38.331 [9]. | UE | No | No | No |
| ***inactiveState***Indicates whether the UE supports RRC\_INACTIVE as specified in TS 38.331 [9]. This capability is not applicable to NCR-MT. | UE | Yes | No | No |
| ***inactiveStateNTN-r17***Indicates whether the UE supports RRC\_INACTIVE in NTN as specified in TS 38.331 [9]. It is mandated if the UE indicates the support of *nonTerrestrialNetwork-r17*. | UE | CY | No | No |
| ***inactiveStatePO-Determination-r17***Indicates whether the UE supports to use the same i\_s to determine PO in RRC\_INACTIVE state as in RRC\_IDLE state. | UE | No | No | No |
| ***inDeviceCoexInd-r16***Indicates whether the UE supports reporting of affected NR carrier frequencies in IDC assistance information as specified in TS 38.331 [9]. | UE | No | No | No |
| ***inDeviceCoexIndAutonomousDenial-r18***Indicates whether the UE supports IDC autonomous denial as specified in TS 38.331 [9]. A UE supporting this feature shall also support *inDeviceCoexInd-r16*. | UE | No | No | No |
| ***inDeviceCoexIndFDM-r18***Indicates whether the UE supports reporting of affected NR carrier frequency ranges in IDC assistance information as specified in TS 38.331 [9]. A UE supporting this feature shall also support *inDeviceCoexInd-r16*. | UE | No | No | No |
| ***inDeviceCoexIndTDM-r18***Indicates whether the UE supports reporting of IDC TDM assistance information as specified in TS 38.331 [9]. A UE supporting this feature shall also support *inDeviceCoexInd-r16*. | UE | No | No | No |
| ***lpwus-SupportedBandList-r19***Indicates whether the UE supports LP-WUS operation in IDLE/INACTIVE mode 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 UE supporting this feature shall also indicate the support of at least *lpwus-OOK-r19* or *lpwus-OFDM-r19*.For each supported band, the capability signalling comprises of the following parameters:- *supportedBandIndicator-r19* indicates the frequency bands where UE supports LP-WUS operation in IDLE/INACTIVE mode;- *lpwus-OOK-r19* indicates whether the UE supports LP-WUS operation in IDLE/INACTIVE mode based on OOK signal. The UE indicating this feature supports LP-WUS operation in IDLE/INACTIVE mode to trigger paging monitoring based on OOK signal, LP-SS based RRM measurement, all M values {1, 2, 4} for FR1 for LP-WUS, M value 1 for 120 kHz SCS FR2 for LP-WUS and all M values {1, 2, 4} for LP-SS;- *lpwus-OFDM-r19* indicates whether the UE supports LP-WUS operation in IDLE/INACTIVE mode based on OFDM overlaid sequence. The UE indicating this feature supports LP-WUS operation in IDLE/INACTIVE mode to trigger paging monitoring based on OFDM overlaid sequence, SSB-based RRM measurement, all M values {1, 2, 4} for FR1 for LP-WUS, M value 1 for 120 kHz SCS FR2 for LP-WUS;- *lpwus-LP-SS-r19* indicates whether the UE supports LP-SS based RRM measurement in IDLE/INACTIVE mode when LP-SS overlaid sequence is configured. The UE indicating this feature also supports all M values {1,2,4} for LP-SS. A UE supporting *lpwus-LP-SS-r19* shall also indicate support of *lpwus-OFDM-r19*;NOTE: If LP-SS overlaid sequence is configured, and if both SSB based and LP-SS based thresholds are configured for RRM measurement, it is up to UE implementation which threshold to use.- *minimumTimeGap-OOK-r19* indicates the minimum time gap between LP-WUS reception and UE to start PDCCH monitoring when UE indicates support of *lpwus-OOK-r19*. The values of ‘*cap1*’, ‘*cap2*’ and ‘*cap3*’ for each SSB periodicity are shown in the Table of “values of ‘*cap1*’, ‘*cap2*’ and ‘*cap3*’ for each SSB periodicity” below.- *minimumTimeGap-OFDM-r19* indicates the minimum time gap between LP-WUS reception and UE to start PDCCH monitoring when UE indicates support of *lpwus-OFDM-r19*. The values of ‘*cap1*’, ‘*cap2*’ and ‘*cap3*’ for each SSB periodicity are shown in the Table of “values of ‘*cap1*’, ‘*cap2*’ and ‘*cap3*’ for each SSB periodicity” below.* Table of values of ‘*cap1*’, ‘*cap2*’ and ‘*cap3*’ for each SSB periodicity:

|  |  |  |  |
| --- | --- | --- | --- |
| **SSB periodicity (ms)** | ***cap1* (ms)** | ***cap2* (ms)** | ***cap3* (ms)** |
| 5/10/20 | 70 | 500 | 900 |
| 40 | 130 | 600 | 1000 |
| 80 | 250 | 800 | 1200 |
| 160 | 490 | 1200 | 1600 |
|  |  |  |  |

 | UE | No | No | No |
| ***maxBW-Preference-r16, maxBW-Preference-r17***Indicates whether the UE supports providing its preference of a cell group on the maximum aggregated bandwidth for power saving in RRC\_CONNECTED, as specified in TS 38.331 [9]. | UE | No | No | Yes(Incl FR2-2 DIFF) |
| ***maxCC-Preference-r16***Indicates whether the UE supports providing its preference of a cell group on the maximum number of secondary component carriers for power saving in RRC\_CONNECTED, as specified in TS 38.331 [9]. | UE | No | No | No |

6 Conditionally mandatory features without UE radio access capability parameters

| **Features** | **Condition** |
| --- | --- |
| Acquisition of positioning SI messages with 80 milliseconds offset position compared to SI messages in *schedulingInfoList* | It is mandatory to support acquisition of positioning SI messages with 80 milliseconds offset position compared to SI messages in *schedulingInfoList* for UEs which support the acquisition of the posSIB types in *posSchedulingInfoList* as specified in TS 38.331 [9]. |
| Acquisition of SI messages with explicit SI window positions | It is mandatory to support acquisition of SI messages with explicit SI window positions for UEs which support the SIB types in *schedulingInfoList2* as specified in TS 38.331 [9]. |
| AS layer memory size for QoE paused measurement reports | It is mandatory to support the minimum AS layer memory size of 64KB for QoE paused measurement reports for UEs which support *qoe-Streaming-MeasReport-r17*, *qoe-MTSI-MeasReport-r17* or *qoe-VR-MeasReport-r17*. |
| AS layer memory size for QoE measurement reports in RRC\_IDLE and RRC\_INACTIVE | It is mandatory to support the minimum AS layer memory size of 64KB for QoE measurement reports stored in RRC\_IDLE/RRC\_INACTIVE for UEs which support *qoe-IdleInactiveMeasReport-r18* and any of *qoe-Streaming-MeasReport-r17* or *qoe-MTSI-MeasReport-r17* or *qoe-VR-MeasReport-r17*. This memory size is additional to "AS layer memory size for QoE paused measurement reports" |
| ATG specific P-max | It is mandatory to support the ATG specific P-max configured by network for UEs supporting *airToGroundNetwork-r18*. |
| Downlink SDAP header | Either NAS reflective QoS or *as-ReflectiveQoS* is supported. |
| Extended values for *drx-HARQ-RTT-TimerDL/UL* | It is mandatory for UEs which support FR2-2 bands with SCS 480kHz and/or 960kHz. |
| IMS emergency call | It is mandatory to support IMS emergency call over PLMN for UEs which are IMS voice capable in NR.It is mandatory to support IMS emergency call over SNPN for UEs that are SNPN capable and IMS voice capable over SNPNs. |
| Logged measurements suspension due to IDC interference | It is mandatory to support Logged measurements suspension due to IDC interference for UEs which are supporting logged measurements in RRC\_IDLE and RRC\_INACTIVE upon request from the network and in-device coexistence indication as specified in TS 38.331 [9]. |
| MAC subheaders with LX field | It is mandatory to support MAC subheaders with LX field for UEs supporting MAC SDU(s) using the LCID value(s) as specified in Table 6.2.1-2c in TS 38.321 [8]. |
| MAC subheaders with one-octet eLCID field | It is mandatory to support MAC subheaders with one-octet eLCID field for UEs/IAB-MTs/NCR-MTs supporting MAC CEs using extended LCID values as specified in TS 38.321 [8]. |
| Paging cause in RAN paging message | It is mandatory for a UE to support paging cause in RAN paging if UE supports paging cause in CN paging. |
| Receiving PSCCH/PSSCH from 2nd starting symbol in a slot | It is mandatory for a UE supporting NR sidelink in shared spectrum and when shared spectrum channel access must be used to support receiving PSCCH/PSSCH transmitted from 2nd starting symbol in a slot in addition to the first starting symbol and monitor a total up to the number reported in *pscch-RxSidelink-r16* of PSCCHs in a slot in the 1st and 2nd starting symbols.A UE supporting this feature shall indicate support of *sl-Reception-r16*. |
| Receiving UE to UE COT sharing information | It is mandatory for a UE supporting NR SL in shared spectrum where shared spectrum channel access must be used to support monitoring SCI to read COT sharing information and transmitting NR SL based on COT sharing information subject to COT sharing conditions.A UE supporting this feature shall indicate support of *sl-DynamicChannelAccess-r18*. |
| SON report in PNI-NPN | It is mandatory for a UE to support a SON report in PNI-NPN if UE supports PNI-NPN and supports the SON report in PLMN. |
| Skipping UL configured grant if no data to transmit, as specified in release-15 version of TS 38.321 [8]. | Either configuredUL-GrantType1 or *configuredUL-GrantType1-v1650* or configuredUL-GrantType2 or *configuredUL-GrantType2-v1650* is supported. |
| TA reporting during initial access | It is mandatory to support TA reporting during initial access for UEs supporting *uplink-TA-Reporting-r17* or *uplinkTA-ReportingATG-r18* as specified in TS 38.321 [8]. |
| Inter-frequency configuration for less than 5MHz in SIB4 | It is mandatory to support configuration of *dl-CarrierFreq-r18* and *frequencyBandList-r18* as specified in TS 38.331 [9] for UEs supporting *support5MHz-ChannelBW-20PRB-CORESET0-r18*, *support3MHz-ChannelBW-Symmetric-r18* or *support3MHz-ChannelBW-Asymmetric-r18*. |
| Relaxation of serving cell and further relaxation of neighboring cell RRM measurements and offloading of serving cell RRM measurements | It is mandatory to support relaxation of serving cell and neighboring cell RRM measurements as specified in clause 5.2.4.12.1 in TS 38.304 [21] and offloading of serving cell RRM measurements as specified in clause 5.2.4.12.3 in TS 38.304 [21] if a UE supports reception of LP-WUS in RRC\_IDLE/RRC\_INACTIVE ~~as specified in TS 38.304 [21]~~. A UE supporting this feature shall also indicate the support at least one of *lpwus-OOK-r19* and *lpwus-OFDM-r19*. |

*END OF CHANGE*

# 5 Appendix 2: Draft CR to TS 38.331

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

 **Prague, CZ, 13th – 17th Oct, 2025**

|  |
| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **38.331** | **CR** | **draftCR** | **rev** | **-** | **Current version:** | **19.0.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](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:***  | Corrections on Rel-19 RAN1 UE capability |
|  |  |
| ***Source to WG:*** | Huawei, HiSilicon |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | NR\_LPWUS |  | ***Date:*** | 2025-10-03 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | Indicate separate capabilities for *minimumTimeGap-r19* to align with RAN1 feature group list. |
|  |  |
| ***Summary of change:*** | Define *minimumTimeGap-OOK-r19* and *minimumTimeGap-OOK-r19* in *LPWUS-SupportedBandInfo-r19* |
|  |  |
| ***Consequences if not approved:*** | UE capabilities for *minimumTimeGap* are not aligned with RAN1 feature group list. |
|  |  |
| ***Clauses affected:*** | 6.3.3 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS38.306 draft CR |
| ***affected:*** |  | **x** |  Test specifications | TS/TR ... CR ... |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

6 Protocol data units, formats and parameters (ASN.1)

*START OF CHANGE*

– *UE-RadioPagingInfo*

The IE *UE-RadioPagingInfo* contains UE capability information needed for paging.

***UE-RadioPagingInfo* information element**

-- ASN1START

-- TAG-UE-RADIOPAGINGINFO-START

UE-RadioPagingInfo-r17 ::= SEQUENCE {

 -- R1 29-1: Paging enhancement

 pei-SubgroupingSupportBandList-r17 SEQUENCE (SIZE (1..maxBands)) OF FreqBandIndicatorNR OPTIONAL,

 ...

}

UE-RadioPagingInfo-r19 ::= SEQUENCE {

 lpwus-SupportedBandList-r19 SEQUENCE (SIZE (1..maxBands)) OF LPWUS-SupportedBandInfo-r19 OPTIONAL,

 pagingAdaptation-r19 ENUMERATED {supported} OPTIONAL,

 pagingAdaptionPEI-SupportBandList-r19 SEQUENCE (SIZE (1..maxBands)) OF FreqBandIndicatorNR OPTIONAL,

 ...

}

LPWUS-SupportedBandInfo-r19 ::= SEQUENCE {

 supportedBandIndicator-r19 FreqBandIndicatorNR,

 -- R1 62-1: LP-WUS operation in IDLE/INACTIVE mode based on OOK signal

 lpwus-OOK-r19 ENUMERATED {supported} OPTIONAL,

 -- R1 62-1a: LP-WUS operation in IDLE/INACTIVE mode based on OFDM overlaid sequence

 lpwus-OFDM-r19 ENUMERATED {supported} OPTIONAL,

 -- R1 62-1b: LP-SS based RRM measurement in IDLE/INACTIVE mode when LP-SS overlaid sequence is configured

 lpwus-LP-SS-r19 ENUMERATED {supported} OPTIONAL,

 minimumTimeGap-OOK-r19 ENUMERATED {cap1, cap2, cap3} OPTIONAL,

 minimumTimeGap-OFDM-r19 ENUMERATED {cap1, cap2, cap3} OPTIONAL

}

-- TAG-UE-RADIOPAGINGINFO-STOP

-- ASN1STOP

*END OF CHANGE*