**3GPP TSG-RAN WG4 Meeting #116 Rev of R4-2509678**

**Bengaluru, India, August 25th – 29th, 2025**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **38.133** | **CR** | **draftCR** | **rev** | **1** | **Current version:** | **19.1.0** |  |
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| *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 |  | Core Network |  |

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| ***Title:***  | DraftCR on measurements of intra-frequency NR cells for UE with LP-WUR in IDLE and INACTIVE state |
|  |  |
| ***Source to WG:*** | OPPO |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_LPWUS-Core |  | ***Date:*** |  |
|  |  |  |  |  |
| ***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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
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| ***Reason for change:*** | 1. The relaxed MR intra-frequency neighbour cell measurement requirements for UE with LP-WUR in IDLE and INACTIVE state need to be defined.
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| ***Summary of change:*** | 1. Introduce the relaxed MR intra-frequency neighbour cell measurement requirements for UE with LP-WUR in IDLE and INACTIVE state.
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| ***Consequences if not approved:*** | The relaxed MR intra-frequency neighbour cell measurement requirements for UE with LP-WUR in IDLE and INACTIVE state are missing.  |
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| ***Clauses affected:*** | New 4.X.2.4, 5.X.2.4 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** | **X** |  |  Test specifications | TS 38.533 |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

# <Start of Change 1>

#### 4.X.2.4 Measurements of intra-frequency NR cells for UE with LP-WUR

For a UE with LP-WUR, the requirements in this clause apply when the relaxed measurement criterion defined in [5.2.4.x.2] in [1] is fulfilled. Otherwise, the requirements in clause 4.2.2.3 apply for UE.

The UE shall be able to identify new intra-frequency cells and perform SS-RSRP and SS-RSRQ measurements of the identified intra-frequency cells without an explicit intra-frequency neighbour list containing physical layer cell identities.

The UE shall be able to evaluate whether a newly detectable intra-frequency cell meets the reselection criteria defined in TS 38.304 [1] within KLP x Tdetect,NR\_Intrawhen that Treselection= 0, where KLP = 16. An intra frequency cell is considered to be detectable according to the conditions defined in Annex B.1.2 for a corresponding Band.

The UE shall measure SS-RSRP and SS-RSRQ at least every KLP x Tmeasure,NR\_Intra (see table 4.X.2.4-1) for intra-frequency cells that are identified and measured according to the measurement rules.

The UE shall filter SS-RSRP and SS-RSRQ measurements of each measured intra-frequency cell using at least 2 measurements. Within the set of measurements used for the filtering, at least two measurements shall be spaced by at least KLP x Tmeasure,NR\_Intra/2.

The UE shall not consider an NR neighbour cell for cell reselection, if it is indicated as not allowed in the measurement control system information of the serving cell.

For an intra-frequency cell that has been already detected, but that has not been reselected to, the filtering shall be such that the UE shall be capable of evaluating that the intra-frequency cell has met reselection criterion defined in TS 38.304 [1] within KLP x Tevaluate,NR\_Intra when Treselection = 0as specified in table 4.X.2.4-1, provided that:

when *rangeToBestCell* is not configured:

- the cell is at least 3 dB better ranked in FR1.

when *rangeToBestCell* is configured:

- the cell has the highest number of beams above the threshold *absThreshSS-BlocksConsolidation* among all detected cells whose cell-ranking criterion R value in TS 38.304 [1] is within *rangeToBestCell* of the cell-ranking criterion R value of the highest ranked cell.

- if there are multiple such cells, the cell has the highest rank among them.

- the cell is at least 3 dB better ranked in FR1 if the current serving cell is among them.

When evaluating cells for reselection, the SSB side conditions apply to both serving and non-serving intra-frequency cells.

If the Treselection timer has a non-zero value and an intra-frequency cell satisfies the reselection criteria defined in TS 38.304 [1], the UE shall evaluate this intra-frequency cell for the Treselection time. If this cell remains satisfied with the reselection criteria within this duration, then the UE shall reselect to this cell.

For UE not configured with eDRX\_IDLE cycle, Tdetect,NR\_Intra, Tmeasure,NR\_Intra and Tevaluate,NR\_Intra are specified in table 4.X.2.4-1.

Table 4.X.2.4-1: Tdetect,NR\_Intra, Tmeasure,NR\_Intra and Tevaluate,NR\_Intra

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| DRX cycle length [s] | Scaling Factor (N1) | Tdetect,NR\_Intra [s] (number of DRX cycles) | Tmeasure,NR\_Intra [s] (number of DRX cycles) | Tevaluate,NR\_Intra[s] (number of DRX cycles) |
|  | FR1 | FR2-1 |  |  |  |
| 0.32 | 1 | 8 | 11.52 x N1 x M2 (36 x N1 x M2) | 1.28 x N1 x M2 (4 x N1 x M2) | 5.12 x N1 x M2 (16 x N1 x M2) |
| 0.64 | 5 | 17.92 x N1 (28 x N1) | 1.28 x N1 (2 x N1) | 5.12 x N1 (8 x N1) |
| 1.28 | 4 | 32 x N1 (25 x N1) | 1.28 x N1 (1 x N1) | 6.4 x N1 (5 x N1) |
| 2.56 | 3 | 58.88 x N1 (23 x N1) | 2.56 x N1 (1 x N1) | 7.68 x N1 (3 x N1) |
| NOTE 1: M2 = 1.5 if SMTC periodicity of measured intra-frequency cell > 20 ms; otherwise M2=1. If different SMTC periodicities are configured for different cells, the SMTC periodicity in this note is the one used by the cell being identified. During PSS/SSS detection, the periodicity of the SMTC configured for the intra-frequency carrier is assumed, and if the actual SSB transmission periodicity is greater than the SMTC configured for the intra-frequency carrier, longer Tdetect, NR\_intra is expected. |

# <End of Change 1>

# <Start of Change 2>

#### 5.X.2.4 Measurements of intra-frequency NR cells for UE with LP-WUR

The requirements in clause 4.X.2.4 shall apply.

# < End of Change 2>

# < Start of Change 3>

### 4.XA.2.4 Measurements of intra-frequency NR cells for Redcap with LP-WUR

For a UE with LP-WUR, the requirements in this clause apply when the relaxed measurement criterion defined in [5.2.4.x.2] in [1] is fulfilled. Otherwise, the requirements for FR1 in clause 4.2B.2.3 apply for UE.

The UE shall be able to identify new intra-frequency cells and perform SS-RSRP and SS-RSRQ measurements of the identified intra-frequency cells without an explicit intra-frequency neighbour list containing physical layer cell identities.

The UE shall be able to evaluate whether a newly detectable intra-frequency cell meets the reselection criteria defined in TS 38.304 [1] within KLP x Tdetect,NR\_Intra\_RedCapwhen that Treselection= 0, where KLP = 16. An intra frequency cell is considered to be detectable according to the conditions defined in Annex B.1.4 for a corresponding Band.

The UE shall measure SS-RSRP and SS-RSRQ at least every KLP x Tmeasure,NR\_Intra\_RedCap (see table 4.XA.2.4-1) for intra-frequency cells that are identified and measured according to the measurement rules.

The UE shall filter SS-RSRP and SS-RSRQ measurements of each measured intra-frequency cell using at least 2 measurements. Within the set of measurements used for the filtering, at least two measurements shall be spaced by at least KLP x Tmeasure,NR\_Intra\_RedCap /2.

The UE shall not consider an NR neighbour cell for cell reselection, if it is indicated as not allowed in the measurement control system information of the serving cell.

For an intra-frequency cell that has been already detected, but that has not been reselected to, the filtering shall be such that the UE shall be capable of evaluating that the intra-frequency cell has met reselection criterion defined in TS 38.304 [1] within KLP x Tevaluate,NR\_Intra\_RedCap when Treselection = 0 as specified in table 4.X.2.4-1, provided that:

 when rangeToBestCell is not configured:

 - the cell is at least 3 dB better ranked in FR1 or 4.5 dB better ranked in FR2 for 2 Rx RedCap.

 - the cell is at least 4 dB better ranked in FR1 for 1 Rx RedCap.

 when rangeToBestCell is configured:

- the cell has the highest number of beams above the threshold absThreshSS-BlocksConsolidation among all detected cells whose cell-ranking criterion R value in TS 38.304 [1] is within rangeToBestCell of the cell-ranking criterion R value of the highest ranked cell.

 - if there are multiple such cells, the cell has the highest rank among them.

- the cell is at least 3 dB better ranked in FR1 or 4.5 dB better ranked in FR2 if the current serving cell is among them for 2 Rx RedCap.

- the cell is at least 4 dB better ranked in FR1 if the current serving cell is among them for 1 Rx RedCap.

The 1 Rx RedCap UE applies *absThreshSS-BlocksConsolidation* as the signalled value of *absThreshSS-BlocksConsolidation* [2] + 1 dB.

When evaluating cells for reselection, the SSB side conditions apply to both serving and non-serving intra-frequency cells.

If the Treselection timer has a non-zero value and an intra-frequency cell satisfies the reselection criteria defined in TS 38.304 [1], the UE shall evaluate this intra-frequency cell for the Treselection time. If this cell remains satisfied with the reselection criteria within this duration, then the UE shall reselect to this cell.

For UE not configured with eDRX\_IDLE cycle, Tdetect,NR\_Intra\_RedCap, Tmeasure,NR\_Intra\_RedCap and Tevaluate,NR\_Intra\_RedCap are specified in table 4.XA.2.4-1.

Table 4.XA.2.4-1: Tdetect,NR\_Intra\_RedCap, Tmeasure,NR\_Intra\_RedCap and Tevaluate,NR\_Intra\_RedCap

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| DRX cycle length [s] | Scaling Factor (N1) | Tdetect,NR\_Intra\_RedCap [s] (number of DRX cycles) | Tmeasure,NR\_Intra\_RedCap [s] (number of DRX cycles) | Tevaluate,NR\_Intra\_RedCap[s] (number of DRX cycles) |
|  | FR1 | FR2Note1 |  |  |  |
| 0.32 | 1 | 8 | 11.52 x N1 x M2 (36 x N1 x M2) | 1.28 x N1 x M2 (4 x N1 x M2) | 5.12 x N1 x M2 (16 x N1 x M2) |
| 0.64 |  | 5 | 17.92 x N1 (28 x N1) | 1.28 x N1 (2 x N1) | 5.12 x N1 (8 x N1) |
| 1.28 |  | 4 | 32 x N1 (25 x N1) | 1.28 x N1 (1 x N1) | 6.4 x N1 (5 x N1) |
| 2.56 |  | 3 | 58.88 x N1 (23 x N1) | 2.56 x N1 (1 x N1) | 7.68 x N1 (3 x N1) |
| NOTE 1: Applies for RedCap UE of all FR2 power class.NOTE 2: M2 = 1.5 if SMTC periodicity of measured intra-frequency cell > 20 ms; otherwise M2=1. If different SMTC periodicities are configured for different cells, the SMTC periodicity in this note is the one used by the cell being identified. During PSS/SSS detection, the periodicity of the SMTC configured for the intra-frequency carrier is assumed, and if the actual SSB transmission periodicity is greater than the SMTC configured for the intra-frequency carrier, longer Tdetect, NR\_intra\_RedCap is expected. |

# < End of Change 3>

# < Start of Change 4>

### 5.XA.2.4 Measurements of intra-frequency NR cells for Redcap with LP-WUR

The requirements in clause 4.XA.2.4 shall apply.

# < End of Change 4>