3GPP TSG-RAN WG4 Meeting # 109 R4-2321367

Chicago, US, 13 – 17 November 2023

|  |
| --- |
| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **38.133**  | **CR** | **3803** | **rev** | **1** | **Current version:** | **18.3.0** |  |
|  |
| *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)*.* |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

|  |
| --- |
|  |
| ***Title:***  | Big CR to TS 38.133 on Enhanced support of reduced capability NR devices |
|  |  |
| ***Source to WG:*** | Ericsson |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_redcap\_enh-Core |  | ***Date:*** | 2023-10-16 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***Release:*** | Rel-18 |
|  | *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)* |
|  |  |
| ***Reason for change:*** | Enhanced eDRX requirements in RRC\_INACTIVE state for Rel-18 WI on enhanced support of reducated capability NR devices are missing.  |
|  |  |
| ***Summary of change:*** | This big CR contains endorsed CRs from RAN4#108bis meeting for enhanced eDRX requirements in RRC\_IDLE are introduced for Rel-18 RedCap UEs as follows:* Change #1: R4-2317288, "Draft CR for measurement and evaluation of serving cell measurements for RedCap enhancements", MediaTek inc.
* Change #2: R4-2317289, “Draft CR for introducing intra-frequency neighbour cell measurement requirements for release 18 RedCap UE”, Ericsson
* Change #3: R4-2317290, "Draft CR on measurements of inter-frequency NR cells for eRedCap", Apple
* Change #4: R4-2317422, "CR on measurements of inter-RAT E-UTRAN cells for eRedCap UE", Huawei, HiSilicon

Additional endorsed CR (R4-2321589) from RAN4#109.* Change #5: requirements on higher priority carrier search
 |
|  |  |
| ***Consequences if not approved:*** | eDRX requirements in RRC\_INACTIVE state when eDRX cycle ≥ 20.48 sec will be missing in TS38.133. |
|  |  |
| ***Clauses affected:*** | 5.1B.2.2, 5.1B.2.3, 5.1B.2.4, 5.1B.2.5, 5.1B.2.7  |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** | **X** |  |  Test specifications | TS38.533 |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | This CR is revision of R4-2320119. |

Start of Change 1

#### 5.1B.2.2 Measurement and evaluation of serving cell

The requirements in clause 4.2B.2.2 shall apply when UE is not configured with eDRX\_IDLE.

When UE is configured with eDRX\_IDLE and UE is not configured with eDRX by [*ran-ExtendedPagingCycle-r18*] or *eDRX-AllowedInactive-r18* is not signalled in SIB1, the UE shall measure the SS-RSRP and SS-RSRQ level of the serving cell and evaluate the cell selection criterion S defined in TS 38.304 [1] for the serving cell at least once every M1\* T for FR1 and N1\*T for FR2; where:

- T is dertermined according to clause 7.1 in [1],

- M1=2 if SMTC periodicity (TSMTC) > 20 ms and T ≤ 0.64 second, otherwise M1=1.

When UE is configured with eDRX\_IDLE and eDRX by [*ran-ExtendedPagingCycle-r18*] and *eDRX-AllowedInactive-r18* is signalled in SIB1, within a single eDRX INACTIVE PTW, the UE shall measure the SS-RSRP and SS-RSRQ level of the serving cell and evaluate the cell selection criterion S defined in TS 38.304 [1] for the serving cell at least once every M1\* T for FR1 and N1\*T for FR2; where:

- T is dertermined according to clause 7.1 in [1],

- M1=2 if SMTC periodicity (TSMTC) > 20 ms and T ≤ 0.64 second, otherwise M1=1.

The UE shall filter the SS-RSRP and SS-RSRQ measurements of the serving 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 T/2.

If UE is not configured with eDRX by [*ran-ExtendedPagingCycle-r18*] or *eDRX-AllowedInactive-r18* is not signalled in SIB1 and the UE has evaluated according to Table 5.1B.2.2-1or and Table 5.1B.2.2-2 in Nserv\_RedCap consecutive T that the serving cell does not fulfil the cell selection criterion S, the UE shall initiate the measurements of all neighbour cells indicated by the serving cell, regardless of the measurement rules currently limiting UE measurement activities.

If UE is configured with eDRX by [*ran-ExtendedPagingCycle-r18*] and *eDRX-AllowedInactive-r18* is signalled in SIB1 and the UE has evaluated according to Table 5.1B.2.2-3 and Table 5.1B.2.2-4 in Nserv\_RedCap consecutive T within a single eDRX INACTIVE PTW that the serving cell does not fulfil the cell selection criterion S, the UE shall initiate the measurements of all neighbour cells indicated by the serving cell, regardless of the measurement rules currently limiting UE measurement activities.

Table 5.1B.2.2-1: Nserv\_RedCapfor inactive Redcap UE configured with eDRX\_IDLE cycle, (Frequency range FR1)

|  |  |  |  |
| --- | --- | --- | --- |
| eDRX\_IDLE cycle length [s] | DRX or eDRX INACTIVE cycle length[s] | T [s] | Nserv \_RedCap [number of T ] |
| 2.56 ≤eDRX\_IDLE cycle length ≤10485.76 | 0.32 ≤DRX\_Inactive cycle length ≤2.56; or2.56 ≤eDRX\_Inactive cycle length ≤10.24 if inactive eDRX is configured  | 0.32 | 4\*M1 |
| 0.64 | 4\*M1 |
| 1.28 | 2 |
| 2.56 | 2 |
| 5.12 | 2 |
| 10.24  | 2 |
| Note1: T is dertermined according to clause 7.1 in [1].Note2: M1=2 if SMTC periodicity (TSMTC) > 20 ms and T≤ 0.64 second, otherwise M1=1. |

Table 5.1B.2.2-2: Nserv\_RedCapfor inactive Redcap UE configured with eDRX\_IDLE cycle, (Frequency range FR2)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle length [s] | DRX or eDRX INACTIVE cycle length[s] | T [s] | Scaling Factor (N1) | Nserv\_RedCap [number of T] |
| 2.56 ≤eDRX\_IDLE cycle length ≤10485.76 | 0.32 ≤DRX\_Inactive cycle length ≤2.56; or2.56 ≤eDRX\_Inactive cycle length ≤10.24 if inactive eDRX is configured | 0.32 | 8 | 4\* N1 |
| 0.64 | 5 | 4\* N1 |
| 1.28 | 4 | 2\* N1 |
| 2.56 | 3 | 2\* N1 |
| 5.12 | 3 | 2\* N1 |
| 10.24  | 3 | 2\* N1 |
| Note1: T is dertermined according to clause 7.1 in [1]. |

Table 5.1B.2.2-3: Nserv\_RedCapfor inactive Redcap UE, (Frequency range FR1)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle and eDRX INACTIVE cycle length [s] | eDRX INACTIVE cycle length [s] | T [s] | eDRX INACTIVE PTW length [s] (number of 1.28s periods) | Nserv\_RedCap [number of T Note 3] |
| 20.48 ≤ eDRX\_IDLE cycle length ≤10485.76 | 20.48 ≤ eDRX\_ INACTIVE cycle length ≤10485.76 | 0.32 | ≥ 1.28 (1) | M1\*2 |
| 0.64 | ≥ 1.28 (1) (M1=1) or ≥ 2.56 (2) (M1=2) | M1\*2 |
| 1.28 | ≥2.56 (2) | 2 |
| 2.56 | ≥5.12 (4) | 2 |
| NOTE 1: RAN DRX cycle in this table is UE specific DRX value configured by RRC specified in [1].NOTE 2: The number of RAN DRX cycles in this table is given for the DRX cycles within RAN configured PTWs.NOTE 3: eDRX INACTIVE PTW in this table is RAN configured PTW.NOTE 4: Nserv\_RedCap requirements are only defined within eDRX INACTIVE PTW duration.NOTE 5: T is determined according to clause 7.1 in [1].NOTE 6: The eDRX\_INACTIVE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].NOTE 7: The lower bound of PTW length is derived based on . |

Table 5.1B.2.2-4: Nserv\_RedCapfor inactive Redcap UE, (Frequency range FR2)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle and eDRX INACTIVE cycle length [s] | T [s] | eDRX INACTIVE PTW length [s] (number of 1.28s periods) | Scaling Factor (N1) | Nserv\_RedCap [number of T Note 3] |
| 20.48 ≤ eDRX\_IDLE cycle length ≤10485.76 | 0.32 | ≥5.12 (4) | 8 | N1\*2 |
| 0.64 | ≥6.4 (5) | 5 | N1\*2 |
| 1.28 | ≥10.24 (8) | 4 | N1\*2 |
| 2.56 | ≥15.36 (12) | 3 | N1\*2 |
| NOTE 1: Applies for RedCap UE of all FR2 power class.NOTE 2: RAN DRX cycle in this table is UE specific DRX value configured by RRC specified in [1].NOTE 3: The number of RAN DRX cycles in this table is given for the DRX cycles within RAN configured PTWs.NOTE 4: eDRX INACTIVE PTW in this table is RAN configured PTW.NOTE 5: Nserv\_RedCap requirements are only defined within eDRX INACTIVE PTW duration.NOTE 6: T is determined according to clause 7.1 in [1].NOTE 7: The eDRX\_INACTIVE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].NOTE 8: The lower bound of PTW length is derived based on .NOTE 9: When eDRX=20.48s and DRX=0.32s, UE is allowed to perform cell evaluation within PTW in every 2 eDRX cycles. |

If UE is not configured with eDRX\_INACTIVE ≥ 20.48s, when UE transitions from measurements within eDRX\_IDLE PTW and to measurements outside eDRX\_IDLE PTW or vice versa during one measurement period, the UE measurement requirements apply based on the longer measurement period requirements before or after the transition.

When the UE transitions between any two states when changing eDRX\_IDLE cycle length, eDRX\_INACTIVE cycle length, INACTIVE RAN DRX length or changing PTW configuration, the UE shall meet the transition requirement, which is the less stringent requirement of the two requirements corresponding to the first state and the second state, during the transition time interval which is the time corresponding to the transition requirement. After the transition time interval, the UE shall meet the requirement corresponding to the second state.

If the UE in RRC\_INACTIVE has not found any new suitable cell based on searches and measurements using the intra-frequency, inter-frequency and inter-RAT information indicated in the system information during the time T’, the UE shall initiate cell selection procedures for the selected PLMN as defined in TS 38.304 [1], where

- T’= 10 s, if the UE is not configured with eDRX\_inactive cycle, or

- T’= MAX (10 s, one eDRX\_inactive cycle) if the UE is configured with eDRX\_inactive cycle for FR1, or

- T’= MAX (10 s, N1\* eDRX\_inactive cycle) if the UE is configured with eDRX\_inactive cycle for FR2.

End of Change 1

Start of Change 2

5.1B.2.3 Measurements of intra-frequency NR cells

The requirements in clause 4.2.2.3 shall apply when UE is not configured with eDRX\_IDLE. When UE is configured with eDRX\_IDLE and UE is not configured with eDRX by [*ran-ExtendedPagingCycle-r18*] or *eDRX-AllowedInactive-r18* is not signalled in SIB1,, the requirements defined in section 4.2.2.3 shall apply with Tdetect,NR\_Intra\_RedCap, Tmeasure,NR\_Intra\_RedCap and Tevaluate,NR\_Intra\_RedCap defined in Table 5.1B.2.3-1 and Table 5.1B.2.3-2.

When UE is configured with eDRX by [*ran-ExtendedPagingCycle-r18*] and *eDRX-AllowedInactive-r18* is signalled in SIB1, the requirements defined in section 4.2B.2.5 shall apply with Tdetect, EUTRAN\_RedCap, Tmeasure, EUTRAN \_RedCap and Tevaluate, EUTRAN \_RedCap defined in Table 5.1B.2.3-3 and Table 5.1B.2.3-4.

**Table 5.1B.2.3-1: Tdetect,NR\_Intra\_RedCap, Tmeasure,NR\_Intra\_RedCap and Tevaluate,NR\_Intra\_RedCap for Redcap UE configured with eDRX\_IDLE cycle, (Frequency range FR1)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **eDRX\_IDLE cycle length [s]** | **DRX or eDRX INACTIVE cycle length [s]** | **Tdetect,NR\_Intra\_RedCap [s] (number of DRX or eDRX INACTIVE cycles)** | **Tmeasure,NR\_Intra\_RedCap [s] (number of DRX or eDRX INACTIVE cycles)** | **Tevaluate,NR\_Intra\_RedCap [s] (number of DRX or INACTIVE eDRX cycles)** |
|
| 2.56 ≤eDRX\_IDLE cycle length ≤ 10485.76 | 0.32 | 11.52 x M2 (36 x M2) | 1.28 x M2 (4 x M2) | 5.12 x M2 (16 x M2) |
| 0.64 | 17.92 (28) | 1.28 (2) | 5.12 (8) |
| 1.28 | 32 (25) | 1.28 (1) | 6.4 (5) |
| 2.56 | 58.88 (23) | 2.56 (1) | 7.68 (3) |
| 5.12 | 117.76 (23) | 5.12 (1) | 15.36 (3) |
| 10.24 | 235.52 (23) | 10.24 (1) | 30.72 (3) |
| Note1: M2 = 1.5 if SMTC periodicity of measured intra-frequency cell > 20 ms; otherwise M2=1. |

**Table 5.1B.2.3-2: Tdetect,NR\_Intra\_RedCap, Tmeasure,NR\_Intra\_RedCap and Tevaluate,NR\_Intra\_RedCap for Redcap UE configured with eDRX\_IDLE cycle, (Frequency range FR2)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **eDRX\_IDLE cycle length [s]** | **DRX or eDRX INACTIVE cycle length [s]** | **Scaling Factor (N1)** | **Tdetect,NR\_Intra\_RedCap [s] (number of DRX or eDRX INACTIVE cycles)** | **Tmeasure,NR\_Intra\_RedCap [s] (number of DRX or eDRX INACTIVE cycles)** | **Tevaluate,NR\_Intra\_RedCap [s] (number of DRX or eDRX INACTIVE cycles)** |
|
| 2.56 ≤eDRX\_IDLE cycle length ≤ 10485.76 | 0.32 | 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 | 17.92x 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) |
| 5.12 | 3 | 117.76 x N1 (23 x N1) | 5.12 x N1 (1 x N1) | 15.36 x N1 (3 x N1) |
| 10.24 | 3 | 235.52 x N1 (23 x N1) | 10.24 x N1 (1 x N1) | 30.72 x N1 (3 x N1) |
| Note1: M2 = 1.5 if SMTC periodicity of measured intra-frequency cell > 20 ms; otherwise M2=1. |

**Table 5.1B.2.3-3: Tdetect,NR\_Intra\_RedCap, Tmeasure,NR\_Intra\_RedCap and Tevaluate,NR\_Intra\_RedCap for Redcap UE configured with eDRX\_IDLE cycle and eDRX\_INACTIVE cycle, (Frequency range FR1)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **eDRX\_IDLE cycle and eDRX INACTIVE cycle length [s]** | **RANDRX cycle length [s]** | **eDRX INACTIVEPTW length [s] (number of 1.28s periods)** | **Tdetect,NR\_Intra\_RedCap [s] (number of RAN DRX cycles)** | **Tmeasure,NR\_Intra\_RedCap [s] (number of RAN DRX cycles Note 3)** | **Tevaluate,NR\_Intra\_RedCap [s] (number of RAN DRX cycles Note 3)** |
| 20.48 ≤ eDRX\_IDLE cycle length ≤10485.76 | 0.32 | ≥[1.28] ([1]) | (23) | 0.32 x M2 (1 x M2) | 0.64 x M2 (2 x M2) |
| 0.64 | ≥[1.28] ([1]) | 0.64 (1) | 1.28 (2) |
| 1.28 | ≥[2.56] ([2]) | 1.28 (1) | 2.56 (2) |
| 2.56 | ≥[5.12] ([4]) | 2.56 (1) | 5.12 (2) |
| Note 1: RAN DRX cycle in this table is UE specific DRX value configured by RRC specified in [1].Note 2: The number of RAN DRX cycles in this table is given for the DRX cycles within RAN configured PTWs.Note 3: eDRX INACTIVE PTW in this table is RAN configured PTW.Note 4: The eDRX\_IDLE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].Note 5: The lower bound of PTW length is derived based on .Note 6: M2 = 2 if SMTC periodicity of measured intra-frequency cell > 20 ms; otherwise M2=1. |

**Table 5.1B.2.3-4: Tdetect,NR\_Intra\_RedCap, Tmeasure,NR\_Intra\_RedCap and Tevaluate,NR\_Intra\_RedCap for Redcap UE configured with eDRX\_IDLE cycle and eDRX\_INACTIVE cycle, (Frequency range FR2)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **eDRX\_IDLE cycle and eDRX INACTIVE cycle length [s]** | **RAN DRX length [s]** | **eDRX INACTIVEPTW length [s] (number of 1.28s periods)** | **Scaling Factor (N1)** | **Tdetect,NR\_Intra\_RedCap [s] (number of RAN DRX cycles)** | **Tmeasure,NR\_Intra\_RedCap [s] (number of RAN DRX cycles Note 5)** | **Tevaluate,NR\_Intra\_RedCap [s] (number of RAN DRX cycles Note 5)** |
| 2.56 ≤eDRX\_IDLE cycle length ≤ 10485.76 | 0.32 | ≥5.12 (4) | 8 | (23 x N1) | 0.32 x N1 (1 x N1) | 0.64 x N1 (2 x N1) |
| 0.64 | ≥6.4 (5) | 5 | 0.64 x N1 (1 x N1) | 1.28 x N1 (2 x N1) |
| 1.28 | ≥10.24 (8) | 4 | 1.28 x N1 (1 x N1) | 2.56 x N1 (2 x N1) |
| 2.56 | ≥15.36 (12) | 3 | 2.56 x N1 (1 x N1) | 5.12 x N1 (2 x N1) |
| Note 1: RAN DRX cycle in this table is UE specific DRX value configured by RRC specified in [1].Note 2: Applies for RedCap UE of all power class.Note 3: The number of RAN DRX cycles in this table is given for the DRX cycles within RAN configured PTWs.Note 4: eDRX INACTIVE PTW in this table is RAN configured PTW.Note 5: The eDRX\_IDLE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].Note 6: The lower bound of PTW length is derived based on .Note 7: When eDRX=20.48s and DRX=0.32s, UE is allowed to perform cell evaluation within PTW in every 2 eDRX cycles. |

When the UE transitions between any two states when changing eDRX\_IDLE cycle length, eDRX\_INACTIVE cycle length, INACTIVE RAN DRX length or changing PTW configuration, the UE shall meet the transition requirement, which is the less stringent requirement of the two requirements corresponding to the first state and the second state, during the transition time interval which is the time corresponding to the transition requirement. After the transition time interval, the UE shall meet the requirement corresponding to the second state.

End of Change 2

Start of Change 3

#### 5.1B.2.4 Measurements of inter-frequency NR cells

The requirements in clause 4.2.2.4 shall apply when UE is not configured with eDRX\_IDLE. When UE is configured with eDRX\_IDLE and UE is not configured with eDRX by [*ran-ExtendedPagingCycle-r18*] or *eDRX-AllowedInactive-r18* is not signalled in SIB1, the requirements defined in section 4.2.2.4 shall apply with Tdetect,NR\_Inter\_RedCap, Tmeasure,NR\_Inter\_RedCap and Tevaluate,NR\_Inter\_RedCap defined in Table 5.1B.2.4-1 and Table 5.1B.2.4-2.

When UE is configured with eDRX by [*ran-ExtendedPagingCycle-r18*] and *eDRX-AllowedInactive-r18* is signalled in SIB1, the requirements defined in section 4.2.2.4 shall apply with Tdetect,NR\_Inter\_RedCap, Tmeasure,NR\_Inter\_RedCap and Tevaluate,NR\_Inter\_RedCap defined in Table 5.1B.2.4-3 and Table 5.1B.2.4-4.

Table 5.1B.2.4-1: Tdetect,NR\_Inter\_RedCap, Tmeasure,NR\_Inter\_RedCap and Tevaluate,NR\_Inter\_RedCap for Redcap UE configured with eDRX\_IDLE cycle, (Frequency range FR1)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle length [s] | DRX or eDRX INACTIVE cycle length [s] | Tdetect,NR\_Inter\_RedCap [s] (number of DRX or eDRX INACTIVE cycles) | Tmeasure,NR\_Inter\_RedCap [s] (number of DRX or eDRX INACTIVE cycles) | Tevaluate,NR\_Inter\_RedCap [s] (number of DRX or eDRX INACTIVE cycles) |
|
| 2.56 ≤eDRX\_IDLE cycle length ≤ 10485.76 | 0.32 | 11.52 x 1.5 (36 x 1.5) | 1.28 x 1.5 (4 x 1.5) | 5.12 x 1.5 (16 x 1.5) |
| 0.64 | 17.92 (28) | 1.28 (2) | 5.12 (8) |
| 1.28 | 32 (25) | 1.28 (1) | 6.4 (5) |
| 2.56 | 58.88 (23) | 2.56 (1) | 7.68 (3) |
| 5.12 | 117.76 (23) | 5.12 (1) | 15.36 (3) |
| 10.24 | 235.52(23) | 10.24 (1) | 30.72 (3) |

Table 5.1B.2.4-2: Tdetect,NR\_Inter\_RedCap, Tmeasure,NR\_Inter\_RedCap and Tevaluate,NR\_Inter\_RedCap for Redcap UE configured with eDRX\_IDLE cycle, (Frequency range FR2)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle length [s] | DRX or eDRX INACTIVE cycle length [s] | Scaling Factor (N1) | Tdetect,NR\_Inter\_RedCap [s] (number of DRX or eDRX INACTIVE cycles) | Tmeasure,NR\_Inter\_RedCap [s] (number of DRX or eDRX INACTIVE cycles) | Tevaluate,NR\_Inter\_RedCap [s] (number of DRX or eDRX INACTIVE cycles) |
|
| 2.56 ≤eDRX\_IDLE cycle length ≤ 10485.76 | 0.32 | 8 | 11.52 x N1 x 1.5 (36 x N1 x 1.5) | 1.28 x N1 x 1.5 (4 x N1 x 1.5) | 5.12 x N1 x 1.5 (16 x N1 x 1.5) |
| 0.64 | 5 | 17.92x 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) |
| 5.12 | 3 | 117.76 x N1 (23 x N1) | 5.12 x N1 (1 x N1) | 15.36 x N1 (3 x N1) |
| 10.24 | 3 | 235.52 x N1 (23 x N1) | 10.24 x N1 (1 x N1) | 30.72 x N1 (3 x N1) |

Table 5.1B.2.4-3: Tdetect,NR\_Inter\_RedCap, Tmeasure,NR\_Inter\_RedCap and Tevaluate,NR\_Inter\_RedCap for Redcap UE configured with eDRX\_IDLE cycle and eDRX\_INACTIVE cycle (Frequency range FR1)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle andeDRX\_INACTIVE cycle length [s] | RAN DRX cycle length [s] | eDRX INACTIVE PTW length [s] (number of 1.28s periods) | Tdetect,NR\_Inter\_RedCap [s] (number of DRX or eDRX INACTIVE cycles) | Tmeasure,NR\_Inter\_RedCap [s] (number of DRX or eDRX INACTIVE cycles) | Tevaluate,NR\_Inter\_RedCap [s] (number of DRX or eDRX INACTIVE cycles) |
| 20.48≤eDRX\_IDLE cycle length ≤ 10485.7620.48 ≤eDRX\_INACTIVE cycle length ≤ 10485.76 | 0.32 | ≥1.28 (1) | (23) | 0.32 x 1.5 (1 x 1.5) | 0.64 x 1.5 (2 x 1.5) |
| 0.64 | ≥1.28 (1) | 0.64 (1) | 1.28 (2) |
| 1.28 | ≥2.56 (2) | 1.28 (1) | 2.56 (2) |
| 2.56 | ≥5.12 (4) | 2.56 (1) | 5.12 (2) |
| Note 1: RAN DRX cycle in this table is UE specific DRX value configured by RRC specified in [1].Note 2: The number of RAN DRX cycles in this table is given for the DRX cycles within RAN configured PTWs.Note 3: eDRX INACTIVE PTW in this table is RAN configured PTW [1].Note 4: The number of DRX cycles in this table is given for the DRX cycles within RAN PTWs.Note 5: The eDRX\_INACTIVE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].Note 6: The lower bound of PTW length is derived based on . |

Table 5.1B.2.4-4: Tdetect,NR\_Inter\_RedCap, Tmeasure,NR\_Inter\_RedCap and Tevaluate,NR\_Inter\_RedCap for Redcap UE configured with eDRX\_IDLE cycle and eDRX\_INACTIVE cycle (Frequency range FR2)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle andeDRX\_INACTIVE cycle length [s] | RAN DRX cycle length [s] | eDRX INACTIVE PTW length [s] (number of 1.28s periods) | Scaling Factor (N1) Note1 | Tdetect,NR\_Inter\_RedCap [s] (number of DRX or eDRX INACTIVE cycles) | Tmeasure,NR\_Inter\_RedCap [s] (number of DRX or eDRX INACTIVE cycles) | Tevaluate,NR\_Inter\_RedCap [s] (number of DRX or eDRX INACTIVE cycles) |
| 20.48≤eDRX\_IDLE cycle length ≤ 10485.7620.48 ≤eDRX\_INACTIVE cycle length ≤ 10485.76 | 0.32 | ≥5.12 (4) | 8 | (23 x N1) | 0.32 x N1 (1 x N1) | 0.64 x N1 (2 x N1) |
| 0.64 | ≥6.4 (5) | 5 | 0.64 x N1 (1 x N1) | 1.28 x N1 (2 x N1) |
| 1.28 | ≥10.24 (8) | 4 | 1.28 x N1 (1 x N1) | 2.56 x N1 (2 x N1) |
| 2.56 | ≥15.36 (12) | 3 | 2.56 x N1 (1 x N1) | 5.12 x N1 (2 x N1) |
| Note 1: Applies for RedCap UE of all power class.Note 2: The number of DRX cycles in this table is given for the DRX cycles within RAN PTWs.Note 3: The eDRX\_INACTIVE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].Note 4: The lower bound of PTW length is derived based on .Note 5: When eDRX\_INACTIVE=20.48s and DRX=0.32s, UE is allowed to perform cell evaluation within PTW in every 2 eDRX \_INACTIVE cycles.Note 6: RAN DRX cycle in this table is UE specific DRX value configured by RRC specified in [1].Note 7: The number of RAN DRX cycles in this table is given for the DRX cycles within RAN configured PTWs.Note 8: eDRX INACTIVE PTW in this table is RAN configured PTW [1]. |

When the UE transitions between any two states when being configured with eDRX\_INACTIVE, being configured with eDRX\_INACTIVE cycle, changing eDRX\_INACTIVE cycle length, or changing PTW configuration, the UE shall meet the transition requirement, which is the less stringent requirement of the two requirements corresponding to the first state and the second state, during the transition time interval which is the time corresponding to the transition requirement. After the transition time interval, the UE shall meet the requirement corresponding to the second state.

End of Change 3

Start of Change 4

#### 5.1B.2.5 Measurements of inter-RAT E-UTRAN cells

The requirements in clause 4.2B.2.5 shall apply when UE is not configured with eDRX\_IDLE. When UE is configured with eDRX\_IDLE and UE is not configured with eDRX by [*ran-ExtendedPagingCycle-r18*] or *eDRX-AllowedInactive-r18* is not signalled in SIB1, the requirements defined in section 4.2B.2.5 shall apply with Tdetect, EUTRAN\_RedCap, Tmeasure, EUTRAN \_RedCap and Tevaluate, EUTRAN \_RedCap defined in Table 5.1B.2.5-1.

Table 5.1B.2.5-1: Tdetect, EUTRAN\_RedCap, Tmeasure, EUTRAN \_RedCap and Tevaluate, EUTRAN \_RedCap for inactive Redcap UE configured with eDRX\_IDLE cycle, (Frequency range FR1)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle length [s] | DRX or eDRX INACTIVE cycle length [s] | Tdetect, EUTRAN\_RedCap [s] (number of DRX or eDRX INACTIVE cycles) | Tmeasure, EUTRAN \_RedCap [s] (number of DRX or eDRX INACTIVE cycles) | Tevaluate, EUTRAN \_RedCap [s] (number of DRX or eDRX INACTIVE cycles) |
|
| 2.56 ≤eDRX\_IDLE cycle length ≤ 10485.76 | 0.32 | 11.52 x 1.5 (36 x 1.5) | 1.28 x 1.5 (4 x 1.5) | 5.12 x 1.5 (16 x 1.5) |
| 0.64 | 17.92 (28) | 1.28 (2) | 5.12 (8) |
| 1.28 | 32 (25) | 1.28 (1) | 6.4 (5) |
| 2.56 | 58.88 (23) | 2.56 (1) | 7.68 (3) |
| 5.12 | 117.76 (23) | 5.12 (1) | 15.36 (3) |
| 10.24 | 235.52(23) | 10.24 (1) | 30.72 (3) |

When UE is configured with eDRX by [*ran-ExtendedPagingCycle-r18*] and *eDRX-AllowedInactive-r18* is signalled in SIB1, the requirements defined in section 4.2B.2.5 shall apply with Tdetect, EUTRAN\_RedCap, Tmeasure, EUTRAN \_RedCap and Tevaluate, EUTRAN \_RedCap defined in Table 5.1B.2.5-2.

Table 5.1B.2.5-2: Tdetect,EUTRAN\_RedCap, Tmeasure,EUTRAN\_RedCap, and Tevaluate,EUTRAN\_RedCap for UE configured with eDRX\_IDLE cycle and eDRX\_INACTIVE ≥ 20.48s, (Frequency range FR1)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle andeDRX\_Inactive cycle length [s] | RAN DRX cycle length [s] | eDRX Inactive PTW length [s] (number of 1.28s periods) | Tdetect,EUTRAN\_RedCap [s] (number of RAN DRX cycles Note 3) | Tmeasure,EUTRAN\_RedCap [s] (number of RAN DRX cycles Note 3) | Tevaluate,E-UTRAN\_RedCap[s] (number of RAN DRX cycles Note 3) |
| 20.48 ≤ eDRX\_IDLE cycle length ≤10485.7620.48 ≤ eDRX\_INACTIVE cycle length ≤10485.76 | 0.32 | ≥1.28 (1) |  (23) | 0.32 (1) | 0.64 (2) |
| 0.64 | ≥1.28 (1) | 0.64 (1) | 1.28 (2) |
| 1.28 | ≥2.56 (2) | 1.28 (1) | 2.56 (2) |
| 2.56 | ≥5.12 (4) | 2.56 (1) | 5.12 (2) |
| NOTE 1: RAN DRX cycle in this table is UE specific DRX value configured by RRC specified in [1].NOTE 2: The number of RAN DRX cycles in this table is given for the RAN DRX cycles within RAN configured PTWs.NOTE 3: eDRX Inactive PTW in this table is RAN configured PTW [1].NOTE 4: The eDRX\_IDLE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].NOTE 5: The eDRX\_INACITVE cycle lengths are ran-ExtendedPagingCycle-r18 as specified in [2]NOTE 6: The lower bound of PTW length is derived based on .NOTE 7: When eDRX=20.48s and DRX=0.32s, UE is allowed to perform cell evaluation within PTW in every 2 eDRX cycles. |

When the UE transitions between any two states when changing eDRX\_IDLE cycle length, eDRX\_INACTIVE cycle length, INACTIVE RAN DRX length or changing PTW configuration, the UE shall meet the transition requirement, which is the less stringent requirement of the two requirements corresponding to the first state and the second state, during the transition time interval which is the time corresponding to the transition requirement. After the transition time interval, the UE shall meet the requirement corresponding to the second state.

End of Change 4

Start of Change 5

#### 5.1B.2.7 General requirements

The requirements in sub-clause 4.2B.2.7 shall apply when the UE is not configured with eDRX\_INACTIVE.

When configured with eDRX\_INACTIVE, the UE shall search every layer of higher priority at least every Thigher\_priority\_search = max(60, [1]\*eDRX\_INACTIVE cycle length) \* Nlayers seconds; where Nlayers is the total number of higher priority NR and E-UTRA carrier frequencies broadcasted in system information.

End of Change 5