**3GPP TSG-RAN WG4 Meeting #100-e *R4-2115442***

**Electronic meeting, August 16– 27, 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **36.133** | **CR** | **7131** | **rev** | **-** | **Current version:** | **14.19.0** |  |
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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:*** | Big CR to TS 36.133: LTE RRM maintenance (Rel-14) | | | | | | | | | |
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| ***Source to WG:*** | MCC, Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LTE\_extDRX-Core, LTE\_feMTC-Core | | | | |  | ***Date:*** | | | 2020-08-30 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-14 |
|  | *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 can be 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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
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| ***Reason for change:*** | | This big CR merge the endorsed draft CRs. The reason for change in each endorsed draft CR is copied below.  - R4-2115274, CR to eDRX RRM requirements R14   * The eDRX requirements in idle mode are defined based on PTW, where UE performs measurement during PTW based on DRX cycle. However, based on section 7.3 of 36.304, when eDRX cycle is 5.12s, there is no PTW, but UE should monitor paging based on 5.12s DRX cycle. It means the current requirements are not applicable for 5.12s eDRX cycle.   - R4-2115272, CR to eMTC RRM requirements R14   * The requirements are not scaled with number of carriers, which is different from requirements for normal UEs. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The summary of change in each each endorsed draft CR is copied below.  - R4-2115274, CR to eDRX RRM requirements R14   * Update the tables for eDRX requirements by adding a row for 5.12s eDRX cycle, and apply the 5.12s DRX cycle to define the measurement requirements, which is aligned with paging monitoring.   - R4-2115272, CR to eMTC RRM requirements R14   * Add scaling factor Kcarrier. * Correct some typo   - Correct some typos   * Correct the Table number from Table 4.2.2.11.2-2 to Table 4.7.2.2.2-2, in order to align with the section number. * Correct the added Note index used in Tables 4.2.2.5.1-2, 4.2.2.5.2-2, 4.2.2.5.4-2, 4.2.2.5.5-2, 4.7.2.2.2-2 and 4.7.2.2.3-3. | | | | | | | | |
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| ***Consequences if not approved:*** | | The consequences if not approved for each endorsed draft CR are coppied below.  - R4-2115274, CR to eDRX RRM requirements R14   * Requirements are not applicable for 5.12s eDRX cycle   - R4-2115272, CR to eMTC RRM requirements R14   * eMTC inter-frequency measurement requirements in idle mode are incorrect | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | - R4-2115274, CR to eDRX RRM requirements R14   * 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5, 4.7.2.1.2, 4.7.2.1.3, 4.7.2.2.1, 4.7.2.2.2, 4.7.2.2.3   - R4-2115272, CR to eMTC RRM requirements R14   * 4.7.2.1.3, 4.7.2.2.3, 4.7.2.2.4, 4.7.2.2.5 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **X** |  | Test specifications | | | | TS 36.521-3 | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

<Start of Change 1>

#### 4.2.2.1 Measurement and evaluation of serving cell

The UE shall measure the RSRP and RSRQ level of the serving cell and evaluate the cell selection criterion S defined in [1] for the serving cell at least every DRX cycle.

The UE shall filter the RSRP and 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 DRX cycle/2.

If the UE is not configured with eDRX\_IDLE cycle and has evaluated according to Table 4.2.2.1-1 in Nserv consecutive DRX cycles 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 the UE is configured with eDRX\_IDLE cycle and has evaluated according to Table 4.2.2.1-2 in Nserv consecutive DRX cycles within a single 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.

If the UE in RRC\_IDLE 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 [1], where T=10 s if the UE is not configured with eDRX\_IDLE cycle, and T=MAX(10 s, one eDRX\_IDLE cycle) if the UE is configured with eDRX\_IDLE cycle.

Table 4.2.2.1-1: Nserv

|  |  |
| --- | --- |
| DRX cycle length [s] | Nserv [number of DRX cycles] |
| 0.32 | 4 |
| 0.64 | 4 |
| 1.28 | 2 |
| 2.56 | 2 |

Table 4.2.2.1-2: Nservfor UE configured with eDRX\_IDLE cycle

|  |  |  |  |
| --- | --- | --- | --- |
| eDRX\_IDLE cycle length [s] | DRX cycle length [s] | PTW length [s] (number of 1.28s periods) | Nserv [number of DRX or eDRX cyclesNote 3] |
| 5.12 | N/A | N/A | 2 |
| 10.24 ≤ eDRX\_IDLE cycle length ≤ 2621.44 | 0.32 | ≥1.28 (1) | 2 |
| 0.64 | ≥1.28 (1) | 2 |
| 1.28 | ≥2.56 (2) | 2 |
| 2.56 | ≥5.12 (4) | 2 |
| NOTE 1: The number of DRX cycles in this table is given for the DRX cycles within PTWs.  NOTE 2: The eDRX\_IDLE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].  NOTE 3: Number of eDRX cycles when eDRX\_IDLE cycle length equals 5.12s, number of DRX cycles otherwise. | | | |

For any requirement in this section, when the UE transitions between any two states when being configured with eDRX\_IDLE, being configured with eDRX\_IDLE cycle, changing eDRX\_IDLE 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 has to meet the requirement corresponding to the second state.

#### 4.2.2.2 Void

#### 4.2.2.3 Measurements of intra-frequency E-UTRAN cells

The UE shall be able to identify new intra-frequency cells and perform RSRP and RSRQ measurements of 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 TS36.304 within Tdetect,EUTRAN\_Intrawhen that Treselection= 0. An intra frequency cell is considered to be detectable according to RSRP, RSRP Ês/Iot, SCH\_RP and SCH Ês/Iot defined in Annex B.1.1

for a corresponding Band.

The UE shall measure RSRP and RSRQ at least every Tmeasure,EUTRAN\_Intra for intra-frequency cells that are identified and measured according to the measurement rules.

The UE shall filter RSRP and 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 Tmeasure,EUTRAN\_Intra/2

The UE shall not consider a E-UTRA neighbour cell in 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 [1] within Tevaluate,E-UTRAN\_intra when Treselection = 0, provided that the cell is at least 3 dB better ranked. When evaluating cells for reselection, the side conditions for RSRP and SCH apply to both serving and non-serving intra-frequency cells.

If Treselection timer has a non zero value and the intra-frequency cell is better ranked than the serving cell, the UE shall evaluate this intra-frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

For UE not configured with eDRX\_IDLE cycle, Tdetect,EUTRAN\_Intra, Tmeasure,EUTRAN\_Intra and Tevaluate, E-UTRAN\_intra are specified in Table 4.2.2.3-1. For UE configured with eDRX\_IDLE cycle, Tdetect,EUTRAN\_Intra, Tmeasure,EUTRAN\_Intra and Tevaluate, E-UTRAN\_intra are specified in Table 4.2.2.3-2, where the requirements apply provided that the serving cell is configured with eDRX\_IDLE and is the same in all PTWs during any of Tdetect,EUTRAN\_Intra, Tmeasure,EUTRAN\_Intra and Tevaluate, E-UTRAN\_intra when multiple PTWs are used.

Table 4.2.2.3-1 : Tdetect,EUTRAN\_Intra, Tmeasure,EUTRAN\_Intra and Tevaluate, E-UTRAN\_intra

|  |  |  |  |
| --- | --- | --- | --- |
| DRX cycle length [s] | Tdetect,EUTRAN\_Intra [s] (number of DRX cycles) | Tmeasure,EUTRAN\_Intra [s] (number of DRX cycles) | Tevaluate,E-UTRAN\_intra  [s] (number of DRX cycles) |
| 0.32 | 11.52 (36) | 1.28 (4) | 5.12 (16) |
| 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) |

Table 4.2.2.3-2: Tdetect,EUTRAN\_Intra, Tmeasure,EUTRAN\_Intra and Tevaluate,E-UTRAN\_intra for UE configured with eDRX\_IDLE cycle

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle length [s] | DRX cycle length [s] | PTW length [s] (number of 1.28s periods) | Tdetect,EUTRAN\_Intra [s] (number of DRX or eDRX cycles Note 3) | Tmeasure,EUTRAN\_Intra [s] (number of DRX or eDRX cycles Note 3) | Tevaluate,E-UTRAN\_intra  [s] (number of DRX or eDRX cycles Note 3) |
| 5.12 | N/A | N/A | 117.76 (23) | 5.12 (1) | 10.24 (2) |
| 10.24 ≤ eDRX\_IDLE cycle length ≤ 2621.44 | 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: The number of DRX cycles in this table is given for the DRX cycles within PTWs.  NOTE 2: The eDRX\_IDLE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].  NOTE 3: Number of eDRX cycles when eDRX\_IDLE cycle length equals 5.12s, number of DRX cycles otherwise. | | | | | |

For any requirement in this section, when the UE transitions between any two states when being configured with eDRX\_IDLE, being configured with eDRX\_IDLE cycle, changing eDRX\_IDLE 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 has to meet the requirement corresponding to the second state.

#### 4.2.2.4 Measurements of inter-frequency E-UTRAN cells

The UE shall be able to identify new inter-frequency cells and perform RSRP or RSRQ measurements of identified inter-frequency cells if carrier frequency information is provided by the serving cell, even if no explicit neighbour list with physical layer cell identities is provided.

If Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ then the UE shall search for inter-frequency layers of higher priority at least every Thigher\_priority\_search where Thigher\_priority\_search is described in clause 4.2.2.

If Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ then the UE shall search for and measure inter-frequency layers of higher, equal or lower priority in preparation for possible reselection. In this scenario, the minimum rate at which the UE is required to search for and measure higher priority layers shall be the same as that defined below.

If the UE is not configured with eDRX\_IDLE cycle or configured with an eDRX\_IDLE cycle not longer than 20.48 s, the UE shall be able to evaluate whether a newly detectable inter-frequency cell in normal performance group meets the reselection criteria defined in TS36.304 within Kcarrier,normal \* Tdetect,EUTRAN\_Inter, and able to evaluate whether a newly detectable inter-frequency cell in reduced performance group meets the reselection criteria defined in TS36.304 within 6 \* Kcarrier,reduced \* Tdetect,EUTRAN\_Inter if at least carrier frequency information is provided for inter-frequency neighbour cells by the serving cells when Treselection = 0 provided that the reselection criteria is met by a margin of at least 5dB for reselections based on ranking or 6dB for RSRP reselections based on absolute priorities or 4dB for RSRQ reselections based on absolute priorities. If the UE is configured with eDRX\_IDLE cycle longer than 20.48 s, the UE shall be able to evaluate whether a newly detectable inter-frequency cell in normal performance group meets the reselection criteria defined in TS36.304 within Kcarrier,normal \* Tdetect,EUTRAN\_Inter, and when Srxlev < 3 dB or Squal < 3 dB able to evaluate whether a newly detectable inter-frequency cell in reduced performance group meets the reselection criteria defined in TS36.304 within 6 \* Kcarrier,reduced \* Tdetect,EUTRAN\_Inter if at least carrier frequency information is provided for inter-frequency neighbour cells by the serving cells when Treselection = 0 provided that the reselection criteria is met by a margin of at least 5dB for reselections based on ranking or 6dB for RSRP reselections based on absolute priorities or 4dB for RSRQ reselections based on absolute priorities. An inter-frequency cell is considered to be detectable according to RSRP, RSRP Ês/Iot, SCH\_RP and SCH Ês/Iot defined in Annex B.1.2 for a corresponding Band.

When higher priority cells are found by the higher priority search, they shall be measured at least every Tmeasure,E-UTRAN\_Inter . If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection. However, the minimum measurement filtering requirements specified later in this clause shall still be met by the UE before it makes any determination that it may stop measuring the cell. If the UE detects on a E-UTRA carrier a cell whose physical identity is indicated as not allowed for that carrier in the measurement control system information of the serving cell, the UE is not required to perform measurements on that cell.

If the UE is configured with eDRX\_IDLE cycle not longer than 20.48 s, the UE shall measure RSRP or RSRQ at least every Kcarrier,normal \* Tmeasure,EUTRAN\_Inter for identified lower or equal priority inter-frequency cells in normal performance group, and at least every 6 \* Kcarrier,reduced \* Tmeasure,EUTRAN\_Inter for identified lower or equal priority inter-frequency cells in reduced performance group. If the UE is configured with eDRX\_IDLE cycle longer than 20.48 s, the UE shall measure RSRP or RSRQ at least every Kcarrier,normal \* Tmeasure,EUTRAN\_Inter for identified lower or equal priority inter-frequency cells in normal performance group, and when Srxlev < 3 dB or Squal < 3 dB at least every 6 \* Kcarrier,reduced \* Tmeasure,EUTRAN\_Inter for identified lower or equal priority inter-frequency cells in reduced performance group. If the UE detects on a E-UTRA carrier a cell whose physical identity is indicated as not allowed for that carrier in the measurement control system information of the serving cell, the UE is not required to perform measurements on that cell.

The UE shall filter RSRP or RSRQ measurements of each measured higher, lower and equal priority inter-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 Tmeasure,EUTRAN\_Inter/2.

The UE shall not consider a E-UTRA neighbour cell in cell reselection, if it is indicated as not allowed in the measurement control system information of the serving cell.

If the UE is configured with eDRX\_IDLE cycle not longer than 20.48 s, for an inter-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 inter-frequency cell in normal performance group has met reselection criterion defined TS 36.304 within Kcarrier,normal \* Tevaluate,E-UTRAN\_Inter, and capable of evaluating that the inter-frequency cell in reduced performance group has met reselection criterion defined TS 36.304 within 6 \* Kcarrier,reduced \* Tevaluate,E-UTRAN\_Inter, when Treselection = 0 provided that the reselection criteria is met by a margin of at least 5dB for reselections based on ranking or 6dB for RSRP reselections based on absolute priorities or 4dB for RSRQ reselections based on absolute priorities. If the UE is configured with eDRX\_IDLE cycle longer than 20.48 s, for an inter-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 inter-frequency cell in normal performance group has met reselection criterion defined TS 36.304 within Kcarrier,normal \* Tevaluate,E-UTRAN\_Inter, and when Srxlev < 3 dB or Squal < 3 dB capable of evaluating that the inter-frequency cell in reduced performance group has met reselection criterion defined TS 36.304 within 6 \* Kcarrier,reduced \* Tevaluate,E-UTRAN\_Inter, when Treselection = 0 provided that the reselection criteria is met by a margin of at least 5dB for reselections based on ranking or 6dB for RSRP reselections based on absolute priorities or 4dB for RSRQ reselections based on absolute priorities. When evaluating cells for reselection, the side conditions for RSRP and SCH apply to both serving and inter-frequency cells.

If Treselection timer has a non zero value and the inter-frequency cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

For UE not configured with eDRX\_IDLE cycle, Tdetect,EUTRAN\_Inter, Tmeasure,EUTRAN\_Inter and Tevaluate, E-UTRAN\_inter are specified in Table 4.2.2.4-1. For UE configured with eDRX\_IDLE cycle, Tdetect,EUTRAN\_Inter, Tmeasure,EUTRAN\_Inter and Tevaluate, E-UTRAN\_inter are specified in Table 4.2.2.4-2, where the requirements apply provided that the serving cell is configured with eDRX\_IDLE and is the same in all PTWs during any of Tdetect,EUTRAN\_Inter, Tmeasure,EUTRAN\_Inter and Tevaluate, E-UTRAN\_inter when multiple PTWs are used.

Table 4.2.2.4-1 : Tdetect,EUTRAN\_Inter, Tmeasure,EUTRAN\_Inter and Tevaluate,E-UTRAN\_Inter

|  |  |  |  |
| --- | --- | --- | --- |
| DRX cycle length [s] | Tdetect,EUTRAN\_Inter [s] (number of DRX cycles) | Tmeasure,EUTRAN\_Inter [s] (number of DRX cycles) | Tevaluate,E-UTRAN\_Inter  [s] (number of DRX cycles) |
| 0.32 | 11.52 (36) | 1.28 (4) | 5.12 (16) |
| 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) |

Table 4.2.2.4-2: Tdetect,EUTRAN\_Inter, Tmeasure,EUTRAN\_Inter and Tevaluate, E-UTRAN\_inter for UE configured with eDRX\_IDLE cycle

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle length [s] | | DRX cycle length [s] | | PTW length [s] (number of 1.28s periods) | | Tdetect,EUTRAN\_Inter [s] (number of DRX or eDRX cycles Note 3) | | Tmeasure,EUTRAN\_Inter [s] (number of DRX or eDRX cycles Note 3) | | Tevaluate,E-UTRAN\_inter  [s] (number of DRX or eDRX cycles Note 3) | |
| 5.12 | | N/A | | N/A | | 117.76 (23) | | 5.12 (1) | | 10.24 (2) | |
| 10.24 ≤ eDRX\_IDLE cycle length ≤ 2621.44 | | 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: The number of DRX cycles in this table is given for the DRX cycles within PTWs.  NOTE 2: The eDRX\_IDLE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].  NOTE 3: Number of eDRX cycles when eDRX\_IDLE cycle length equals 5.12s, number of DRX cycles otherwise. | | | | | | | | | | | |

For higher priority cells, a UE may optionally use a shorter value for **TmeasureE-UTRA\_Inter** ,which shall not be less than Max(0.64 s, one DRX cycle).

For any requirement in this section, when the UE transitions between any two states when being configured with eDRX\_IDLE, being configured with eDRX\_IDLE cycle, changing eDRX\_IDLE 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 has to meet the requirement corresponding to the second state.

#### 4.2.2.5 Measurements of inter-RAT cells

If Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ then the UE shall search for inter-RAT layers of higher priority at least every Thigher\_priority\_search where Thigher\_priority\_search is described in clause 4.2.2

If Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ then the UE shall search for and measure inter-RAT layers of higher, lower priority in preparation for possible reselection. In this scenario, the minimum rate at which the UE is required to search for and measure higher priority inter-RAT layers shall be the same as that defined below for lower priority RATs.

For any requirement in this section, when the UE transitions between any two states when being configured with eDRX\_IDLE, being configured with eDRX\_IDLE cycle, changing eDRX\_IDLE 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 has to meet the requirement corresponding to the second state.

##### 4.2.2.5.1 Measurements of UTRAN FDD cells

When the measurement rules indicate that UTRA FDD cells are to be measured, the UE shall measure CPICH Ec/Io and CPICH RSCP of detected UTRA FDD cells in the neighbour frequency list at the minimum measurement rate specified in this section. The UE shall filter CPICH Ec/Io and CPICH RSCP measurements of each measured UTRA FDD 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 half the minimum specified measurement period.

If the UE is not configured with eDRX\_IDLE cycle or configured with eDRX\_IDLE cycle not longer than 20.48 s, the UE shall evaluate whether newly detectable UTRA FDD cells in normal performance group have met the reselection criteria in TS 36.304 within time NUTRA\_carrier,normal \* TdetectUTRA\_FDD ,and evaluate whether newly detectable UTRA FDD cells in reduced performance group have met the reselection criteria in TS 36.304 within time 6 \* NUTRA\_carrier,reduced \* TdetectUTRA\_FDD when Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ when TreselectionRAT = 0 provided that the reselection criteria is met by a margin of at least 6dB for reselections based on RSCP, or a margin of at least 3dB for reselections based on Ec/Io. If the UE is configured with eDRX\_IDLE cycle longer than 20.48 s, the UE shall evaluate whether newly detectable UTRA FDD cells in normal performance group have met the reselection criteria in TS 36.304 within time (NUTRA\_carrier,normal) \* TdetectUTRA\_FDD ,and when Srxlev < 3 dB or Squal < 3 dB evaluate whether newly detectable UTRA FDD cells in reduced performance group have met the reselection criteria in TS 36.304 within time 6 \* NUTRA\_carrier,reduced \* TdetectUTRA\_FDD when Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ when TreselectionRAT = 0 provided that the reselection criteria is met by a margin of at least 6dB for reselections based on RSCP, or a margin of at least 3dB for reselections based on Ec/Io.

If the UE is not configured with eDRX\_IDLE cycle or configured with eDRX\_IDLE cycle not longer than 20.48 s, cells which have been detected shall be measured at least every NUTRA\_carrier,normal \* TmeasureUTRA\_FDD for the cells in normal performance group, and at least every 6 \* NUTRA\_carrier,reduced \* TmeasureUTRA\_FDD for the cells in reduced performance group when Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ. If the UE is configured with eDRX\_IDLE cycle longer than 20.48 s, cells which have been detected shall be measured at least every (NUTRA\_carrier,normal) \* TmeasureUTRA\_FDD for the cells in normal performance group, and when Srxlev < 3 dB or Squal < 3 dB at least every 6 \* NUTRA\_carrier,reduced \* TmeasureUTRA\_FDD for the cells in reduced performance group when Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ.

When higher priority UTRA FDD cells are found by the higher priority search, they shall be measured at least every Tmeasure,UTRA\_FDD. If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection. However, the minimum measurement filtering requirements specified later in this clause shall still be met by the UE before it makes any determination that it may stop measuring the cell.

If the UE is not configured with eDRX\_IDLE cycle or configured with eDRX\_IDLE cycle not longer than 20.48 s, for a 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 an already identified UTRA FDD cell has met reselection criterion defined in TS 36.304 [1] within NUTRA\_carrier,normal \* TevaluateUTRA\_FDD if the cell is in normal performance group and within 6 \* NUTRA\_carrier,reduced \* TevaluateUTRA\_FDD if the cell is in reduced performance group when Treselection = 0provided that the reselection criteria is met by a margin of at least 6dB for reselections based on RSCP, or a margin of at least 3dB for reselections based on Ec/Io. If the UE is configured with eDRX\_IDLE cycle longer than 20.48 s, for a 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 an already identified UTRA FDD cell has met reselection criterion defined in TS 36.304 [1] within (NUTRA\_carrier,normal) \* TevaluateUTRA\_FDD if the cell is in normal performance group and when Srxlev < 3 dB or Squal < 3 dB within 6 \* NUTRA\_carrier,reduced \* TevaluateUTRA\_FDD if the cell is in reduced performance group when Treselection = 0provided that the reselection criteria is met by a margin of at least 6dB for reselections based on RSCP, or a margin of at least 3dB for reselections based on Ec/Io.

If Treselection timer has a non zero value and the UTRA FDD cell is satisfied with the reselection criteria which are defined in [1], the UE shall evaluate this UTRA FDD cell for the Treselection time. If this cell remains satisfied with the reselection criteria within this duration, then the UE shall reselect that cell.

For UE not configured with eDRX\_IDLE cycle, TdetectUTRA\_FDD, TmeasureUTRA\_FDD and TevaluateUTRA\_FDD are specified in Table 4.2.2.5.1-1. For UE configured with eDRX\_IDLE cycle, TdetectUTRA\_FDD, TmeasureUTRA\_FDD and TevaluateUTRA\_FDD are specified in Table 4.2.2.5.1-2, where the requirements apply provided that the serving cell is configured with eDRX\_IDLE and is the same in all PTWs during any of TdetectUTRA\_FDD, TmeasureUTRA\_FDD and TevaluateUTRA\_FDD when multiple PTWs are used.

Table 4.2.2.5.1-1: TdetectUTRA\_FDD, TmeasureUTRA\_FDD, and TevaluateUTRA\_FDD

|  |  |  |  |
| --- | --- | --- | --- |
| DRX cycle length [s] | TdetectUTRA\_FDD [s] | TmeasureUTRA\_FDD [s] (number of DRX cycles) | TevaluateUTRA\_FDD  [s] (number of DRX cycles) |
| 0.32 | 30 | 5.12 (16) | 15.36 (48) |
| 0.64 | 5.12 (8) | 15.36 (24) |
| 1.28 | 6.4(5) | 19.2 (15) |
| 2.56 | 60 | 7.68 (3) | 23.04 (9) |

Table 4.2.2.5.1-2: TdetectUTRA\_FDD, TmeasureUTRA\_FDD and TevaluateUTRA\_FDD for UE configured with eDRX\_IDLE cycle

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle length [s] | DRX cycle length [s] | PTW length [s] (number of 1.28s periods) | TdetectUTRA\_FDD [s] (number of DRX or eDRX cycles Note 4) | TmeasureUTRA\_FDD [s] (number of DRX or eDRX cycles Note 4) | TevaluateUTRA\_FDD  [s] (number of DRX or eDRX cycles Note 4) |
| 5.12 | N/A | N/A | 117.76 (23) | 15.36 (3) | 46.08 (9) |
| 10.24 ≤ eDRX\_IDLE cycle length ≤ 2621.44 | 0.32 | ≥1.28 (1) | Note 3 (23) | 0.96 (3) | Note 3 (9) |
| 0.64 | ≥2.56 (2) | 1.92 (3) | Note 3 (9) |
| 1.28 | ≥3.84 (3) | 3.84 (3) | Note 3 (9) |
| 2.56 | ≥7.68 (6) | 7.68 (3) | Note 3 (9) |
| NOTE 1: The number of DRX cycles in this table is given for the DRX cycles within PTWs.  NOTE 2: The eDRX\_IDLE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].  NOTE 3: The time is calculated depending on the number N of DRX cycles as follows:  NOTE 4: Number of eDRX cycles when eDRX\_IDLE cycle length equals 5.12s, number of DRX cycles otherwise. | | | | | |

For higher priority cells, a UE may optionally use a shorter value for **TmeasureUTRA\_FDD**, which shall not be less than Max(0.64 s, one DRX cycle).

##### 4.2.2.5.2 Measurements of UTRAN TDD cells

When the measurement rules indicate that UTRA TDD cells are to be measured, the UE shall measure P-CCPCH RSCP of detected UTRA TDD cells in the neighbour frequency list at the minimum measurement rate specified in this section. The UE shall filter P-CCPCH RSCP measurements of each measured UTRA TDD 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 half the minimum specified measurement period. If the UE is not configured with eDRX\_IDLE cycle, P-CCPCH RSCP of UTRAN TDD cells shall not be filtered over a longer period than that specified in table 4.2.2.5.2-1. If the UE is configured with eDRX\_IDLE cycle, P-CCPCH RSCP of UTRAN TDD cells shall not be filtered over a longer period than that specified in table 4.2.2.5.2-2.

If the UE is not configured with eDRX\_IDLE cycle or configured with eDRX\_IDLE cycle not longer than 20.48 s, the UE shall evaluate whether newly detectable UTRA TDD cells in normal performance group have met the reselection criteria in TS 36.304 within time NUTRA\_carrier\_TDD,normal \* TdetectUTRA\_TDD, and evaluate whether newly detectable UTRA TDD cells in reduced performance group have met the reselection criteria in TS 36.304 within time 6 \* NUTRA\_carrier\_TDD,reduced \* TdetectUTRA\_TDD when Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ when Treselection = 0 provided that the reselection criteria is met by a margin of at least 6dB. If the UE is configured with eDRX\_IDLE cycle longer than 20.48 s, the UE shall evaluate whether newly detectable UTRA TDD cells in normal performance group have met the reselection criteria in TS 36.304 within time (NUTRA\_carrier\_TDD,normal) \* TdetectUTRA\_TDD, and when Srxlev < 3 dB or Squal < 3 dB evaluate whether newly detectable UTRA TDD cells in reduced performance group have met the reselection criteria in TS 36.304 within time 6 \* NUTRA\_carrier\_TDD,reduced \* TdetectUTRA\_TDD when Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ when Treselection = 0 provided that the reselection criteria is met by a margin of at least 6dB.

If the UE is not configured with eDRX\_IDLE cycle or configured with eDRX\_IDLE cycle not longer than 20.48 s, cells which have been detected shall be measured at least every NUTRA\_carrier\_TDD,normal \* TmeasureUTRA\_TDD for the cells in normal performance group, and at least every 6 \* NUTRA\_carrier\_TDD,reduced \* TmeasureUTRA\_TDD for the cells in reduced performance group, when Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ. If the UE is configured with eDRX\_IDLE cycle longer than 20.48 s, cells which have been detected shall be measured at least every (NUTRA\_carrier\_TDD,normal) \* TmeasureUTRA\_TDD for the cells in normal performance group, and when Srxlev < 3 dB or Squal < 3 dB at least every 6 \* NUTRA\_carrier\_TDD,reduced \* TmeasureUTRA\_TDD for the cells in reduced performance group, when Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ.

When higher priority UTRA TDD cells are found by the higher priority search, they shall be measured at least every Tmeasure,UTRA\_TDD. If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection. However, the minimum measurement filtering requirements specified later in this clause shall still be met by the UE before it makes any determination that it may stop measuring the cell.

If the UE is not configured with eDRX\_IDLE cycle or configured with eDRX\_IDLE cycle not longer than 20.48 s, for a 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 an already identified UTRA TDD cell has met reselection criterion defined in [1] within NUTRA\_carrier\_TDD,normal \*TevaluateUTRA\_TDD if the cell is in normal performance group and within 6 \* NUTRA\_carrier\_TDD,reduced \* TevaluateUTRA\_TDD if the cell is in reduced performance group when Treselection = 0provided that the reselection criteria is met by a margin of at least 6dB. If the UE is configured with eDRX\_IDLE cycle longer than 20.48 s, for a 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 an already identified UTRA TDD cell has met reselection criterion defined in [1] within NUTRA\_carrier\_TDD,normal \*TevaluateUTRA\_TDD if the cell is in normal performance group and when Srxlev < 3 dB or Squal < 3 dB within 6 \* NUTRA\_carrier\_TDD,reduced \* TevaluateUTRA\_TDD if the cell is in reduced performance group when Treselection = 0provided that the reselection criteria is met by a margin of at least 6dB.

If Treselection timer has a non zero value and the UTRA TDD cell is satisfied with the reselection criteria which are defined in [1], the UE shall evaluate this UTRA TDD cell for the Treselection time. If this cell remains satisfied with the reselection criteria within this duration, then the UE shall reselect that cell.

For UE not configured with eDRX\_IDLE cycle, TdetectUTRA\_TDD, TmeasureUTRA\_TDD and TevaluateUTRA\_TDD are specified in Table 4.2.2.5.2-1. For UE configured with eDRX\_IDLE cycle, TdetectUTRA\_TDD, TmeasureUTRA\_TDD and TevaluateUTRA\_TDD are specified in Table 4.2.2.5.2-2, where the requirements apply provided that the serving cell is configured with eDRX\_IDLE and is the same in all PTWs during any of TdetectUTRA\_TDD, TmeasureUTRA\_TDD and TevaluateUTRA\_TDD when multiple PTWs are used.

Table 4.2.2.5.2-1: TdetectUTRA\_TDD, TmeasureUTRA\_TDD and TevaluateUTRA\_TDD

|  |  |  |  |
| --- | --- | --- | --- |
| DRX cycle length [s] | TdetectUTRA\_TDD [s] | TmeasureUTRA\_TDD [s] (number of DRX cycles) | TevaluateUTRA\_TDD  [s] (number of DRX cycles) |
| 0.32 | 30 | 5.12 (16) | 15.36 (48) |
| 0.64 | 5.12 (8) | 15.36 (24) |
| 1.28 | 6.4(5) | 19.2 (15) |
| 2.56 | 60 | 7.68 (3) | 23.04 (9) |

Table 4.2.2.5.2-2: TdetectUTRA\_TDD, TmeasureUTRA\_TDD and TevaluateUTRA\_TDD for UE configured with eDRX\_IDLE cycle

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle length [s] | DRX cycle length [s] | PTW length [s] (number of 1.28s periods) | TdetectUTRA\_TDD [s] (number of DRX or eDRX cycles Note 4) | TmeasureUTRA\_TDD [s] (number of DRX or eDRX cycles Note 4) | TevaluateUTRA\_TDD  [s] (number of DRX or eDRX cycles Note 4) |
| 5.12 | N/A | N/A | 117.76 (23) | 15.36 (3) | 46.08 (9) |
| 10.24 ≤ eDRX\_IDLE cycle length ≤ 2621.44 | 0.32 | ≥1.28 (1) | Note 3 (23) | 0.96 (3) | Note 3 (9) |
| 0.64 | ≥2.56 (2) | 1.92 (3) | Note 3 (9) |
| 1.28 | ≥3.84 (3) | 3.84 (3) | Note 3 (9) |
| 2.56 | ≥7.68 (6) | 7.68 (3) | Note 3 (9) |
| NOTE 1: The number of DRX cycles in this table is given for the DRX cycles within PTWs.  NOTE 2: The eDRX\_IDLE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].  NOTE 3: The time is calculated depending on the number N of DRX cycles as follows:  NOTE 4: Number of eDRX cycles when eDRX\_IDLE cycle length equals 5.12s, number of DRX cycles otherwise. | | | | | |

For higher priority cells, a UE may optionally use a shorter value for **TmeasureUTRA\_TDD**, which shall not be less than Max(0.64 s, one DRX cycle).

##### 4.2.2.5.3 Measurements of GSM cells

When the measurement rules defined in [1] indicate that E-UTRAN inter-frequencies or inter-RAT frequency cells are to be measured, the UE shall measure the signal level of the GSM BCCH carriers if the GSM BCCH carriers are indicated in the measurement control system information of the serving cell. GSM BCCH carriers of lower priority than the serving cell shall be measured at least every Tmeasure,GSM.

When higher priority GSM BCCH carriers are found by the higher priority search, they shall be measured at least every Tmeasure,GSM, and the UE shall decode the BSIC of the GSM BCCH carrier. If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection, or to continuously verify the BSIC of the GSM BCCH carrier every 30s. However, the minimum measurement filtering requirements specified later in this clause shall still be met by the UE before it makes any determination that it may stop measuring the cell.

The UE shall maintain a running average of 4 measurements for each GSM BCCH carrier. The measurement samples for each cell shall be as far as possible uniformly distributed over the averaging period.

If continuous GSM measurements are required by the measurement rules in [1], the UE shall attempt to verify the BSIC at least every 30 seconds for each of the 4 strongest GSM BCCH carriers. If a change of BSIC is detected for one GSM cell then that GSM BCCH carrier shall be treated as a new GSM neighbour cell. If the UE detects on a BCCH carrier a BSIC which is indicated as not allowed for that carrier in the measurement control system information of the serving cell, the UE is not required to perform BSIC re-confirmation for that cell.

The UE shall not consider the GSM BCCH carrier in cell reselection, if the UE cannot demodulate the BSIC of that GSM BCCH carrier. Additionally, the UE shall not consider a GSM neighbour cell in cell reselection, if it is indicated as not allowed in the measurement control system information of the serving cell.

If Treselection timer has a non zero value and the GSM cell is satisfied with the reselection criteria which are defined in [1], the UE shall evaluate this GSM cell for the Treselection time. If this cell remains satisfied with the reselection criteria within this duration, then the UE shall reselect that cell.

For UE not configured with eDRX\_IDLE cycle, Tmeasure,GSM is specified in Table 4.2.2.5.3-1. For UE configured with eDRX\_IDLE cycle, Tmeasure,GSM is specified in Table 4.2.2.5.3-2, where the requirements apply provided that the serving cell is configured with eDRX\_IDLE and is the same in all PTWs during Tmeasure,GSM when multiple PTWs are used.

Table 4.2.2.5.3-1: Tmeasure,GSM,

|  |  |
| --- | --- |
| DRX cycle length [s] | Tmeasure,GSM [s] (number of DRX cycles) |
| 0.32 | 5.12 (16) |
| 0.64 | 5.12 (8) |
| 1.28 | 6.4(5) |
| 2.56 | 7.68 (3) |

Table 4.2.2.5.3-2: Tmeasure,GSM for UE configured with eDRX\_IDLE cycle

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle length [s] | | DRX cycle length [s] | | PTW length [s] (number of 1.28s periods) | | Tmeasure,GSM [s] (number of DRX or eDRX cycles Note 3) | |
| 5.12 | | N/A | | N/A | | 15.36 (3) | |
| 10.24 ≤ eDRX\_IDLE cycle length ≤ 2621.44 | | 0.32 | | ≥1.28 (1) | | 0.96 (3) | |
| 0.64 | | ≥2.56 (2) | | 1.92 (3) | |
| 1.28 | | ≥3.84 (3) | | 3.84 (3) | |
| 2.56 | | ≥7.68 (6) | | 7.68 (3) | |
| NOTE 1: The number of DRX cycles in this table is given for the DRX cycles within PTWs.  NOTE 2: The eDRX\_IDLE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].  NOTE 3: Number of eDRX cycles when eDRX\_IDLE cycle length equals 5.12s, number of DRX cycles otherwise. | | | | | | | |

##### 4.2.2.5.4 Measurements of HRPD cells

In order to perform measurement and cell reselection to HRPD cell, the UE shall acquire the timing of HRPD cells.

When the measurement rules indicate that HRPD cells are to be measured, the UE shall measure CDMA2000 HRPD Pilot Strength of HRPD cells in the neighbour cell list at the minimum measurement rate specified in this section.

The parameter ‘Number of HRPD Neighbor Frequency’, which is transmitted on E-UTRAN BCCH, is the number of carriers used for all HRPD cells in the neighbour cell list.

When the E-UTRA serving cell fulfils Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ, the UE shall search for CDMA2000 HRPD layers of higher priority at least every Thigher\_priority\_search where Thigher\_priority\_search is defined in clause 4.2.2.

For CDMA2000 HRPD cells which have been detected, the UE shall measure CDMA2000 HRPD Pilot Strength at least every (Number of HRPD Neighbor Frequency)\*TmeasureHRPD, when the E-UTRA serving cell Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ.

The UE shall be capable of evaluating that the CDMA2000 HRPD cell has met cell reselection criterion defined in [1] within TevaluateHRPD.

For UE not configured with eDRX\_IDLE cycle, Table 4.2.2.5.4-1 gives values of TmeasureHRPD and TevaluateHRPD. For UE configured with eDRX\_IDLE cycle, TmeasureHRPD and TevaluateHRPD are specified in Table 4.2.2.5.4-2, where the requirements apply provided that the serving cell is configured with eDRX\_IDLE and is the same in all PTWs during any of TmeasureHRPD and TevaluateHRPD when multiple PTWs are used.

Table 4.2.2.5.4-1: TmeasureHRPD and TevaluateHRPD

|  |  |  |
| --- | --- | --- |
| DRX cycle length [s] | TmeasureHRPD [s] (number of DRX cycles) | TevaluateHRPD [s] (number of DRX cycles) |
| 0.32 | 5.12 (16) | 15.36 (48) |
| 0.64 | 5.12 (8) | 15.36 (24) |
| 1.28 | 6.4 (5) | 19.2 (15) |
| 2.56 | 7.68 (3) | 23.04 (9) |

Table 4.2.2.5.4-2: TmeasureHRPD and TevaluateHRPD for UE configured with eDRX\_IDLE cycle

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle length [s] | DRX cycle length [s] | PTW length [s] (number of 1.28s periods) | TmeasureHRPD [s] (number of DRX or eDRX cycles Note 4) | TevaluateHRPD  [s] (number of DRX or eDRX cycles Note 4) |
| 5.12 | N/A | N/A | 15.36 (3) | 46.08 (9) |
| 10.24 ≤ eDRX\_IDLE cycle length ≤ 2621.44 | 0.32 | ≥1.28 (1) | 0.96 (3) | Note 3 (9) |
| 0.64 | ≥2.56 (2) | 1.92 (3) | Note 3 (9) |
| 1.28 | ≥3.84 (3) | 3.84 (3) | Note 3 (9) |
| 2.56 | ≥7.68 (6) | 7.68 (3) | Note 3 (9) |
| NOTE 1: The number of DRX cycles in this table is given for the DRX cycles within PTWs.  NOTE 2: The eDRX\_IDLE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].  NOTE 3: The time is calculated depending on the number N of DRX cycles as follows:  NOTE 4: Number of eDRX cycles when eDRX\_IDLE cycle length equals 5.12s, number of DRX cycles otherwise. | | | | |

If Treselection timer has a non zero value and the CDMA2000 HRPD cell is satisfied with the reselection criteria which are defined in [1], the UE shall evaluate this CDMA2000 HRPD cell for the Treselection time. If this cell remains satisfied with the reselection criteria within this duration, then the UE shall reselect that cell.

##### 4.2.2.5.5 Measurements of cdma2000 1X

In order to perform measurement and cell reselection to cdma2000 1X cell, the UE shall acquire the timing of cdma2000 1X cells.

When the measurement rules indicate that cdma2000 1X cells are to be measured, the UE shall measure cdma2000 1x RTT Pilot Strength of cdma2000 1X cells in the neighbour cell list at the minimum measurement rate specified in this section.

The parameter ‘Number of CDMA2000 1X Neighbor Frequency’, which is transmitted on E-UTRAN BCCH, is the number of carriers used for all cdma2000 1X cells in the neighbour cell list.

When the E-UTRA serving cell fulfils Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ, the UE shall search for cdma2000 1X layers of higher priority at least every Thigher\_priority\_search where Thigher\_priority\_search is defined in clause 4.2.2.

For CDMA2000 1X cells which have been detected, the UE shall measure CDMA2000 1xRTT Pilot Strength at least every (Number of CDMA2000 1X Neighbor Frequency)\*TmeasureCDMA2000\_1X, when the E-UTRA serving cell Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ. The UE shall be capable of evaluating that the cdma2000 1X cell has met cell reselection criterion defined in [1] within TevaluateCDMA2000\_1X.

For UE not configured with eDRX\_IDLE cycle, Table 4.2.2.5.5-1 gives values of TmeasureCDMA2000\_1X and TevaluateCDMA2000\_1X. For UE configured with eDRX\_IDLE cycle, TmeasureCDMA2000\_1X and TevaluateCDMA2000\_1X are specified in Table 4.2.2.5.5-2 where the requirements apply provided that the serving cell is configured with eDRX\_IDLE and is the same in all PTWs during any of TmeasureCDMA2000\_1X and TevaluateCDMA2000\_1X when multiple PTWs are used.

Table 4.2.2.5.5-1: TmeasureCDMA2000 1X and TevaluateCDMA2000 1X

|  |  |  |
| --- | --- | --- |
| DRX cycle length [s] | TmeasureCDMA2000\_1X [s] (number of DRX cycles) | TevaluateCDMA2000\_1X [s] (number of DRX cycles) |
| 0.32 | 5.12 (16) | 15.36 (48) |
| 0.64 | 5.12 (8) | 15.36 (24) |
| 1.28 | 6.4 (5) | 19.2 (15) |
| 2.56 | 7.68 (3) | 23.04 (9) |

Table 4.2.2.5.5-2: TmeasureCDMA2000\_1X and TevaluateCDMA2000\_1X for UE configured with eDRX\_IDLE cycle

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle length [s] | | DRX cycle length [s] | | PTW length [s] (number of 1.28s periods) | | TmeasureCDMA2000\_1X [s] (number of DRX or eDRX cycles Note 4) | | TevaluateCDMA2000\_1X  [s] (number of DRX or eDRX cycles Note 4) | |
| 5.12 | | N/A | | N/A | | 15.36 (3) | | 46.08 (9) | |
| 10.24 ≤ eDRX\_IDLE cycle length ≤ 2621.44 | | 0.32 | | ≥1.28 (1) | | 0.96 (3) | | Note 3 (9) | |
| 0.64 | | ≥2.56 (2) | | 1.92 (3) | | Note 3 (9) | |
| 1.28 | | ≥3.84 (3) | | 3.84 (3) | | Note 3 (9) | |
| 2.56 | | ≥7.68 (6) | | 7.68 (3) | | Note 3 (9) | |
| NOTE 1: The number of DRX cycles in this table is given for the DRX cycles within PTWs.  NOTE 2: The eDRX\_IDLE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].  NOTE 3: The time is calculated depending on the number N of DRX cycles as follows:  NOTE 4: Number of eDRX cycles when eDRX\_IDLE cycle length equals 5.12s, number of DRX cycles otherwise. | | | | | | | | | |

If Treselection timer has a non zero value and the CDMA2000 1X cell is satisfied with the reselection criteria which are defined in [1], the UE shall evaluate this CDMA2000 1X cell for the Treselection time. If this cell remains satisfied with the reselection criteria within this duration, then the UE shall reselect that cell.

<End of Change 1>

<Start of Change 2>

##### 4.7.2.1.2 Measurements of intra-frequency cells for UE category M1 in normal coverage

The requirements in this subclause apply if UE is in the normal coverage area of the serving cell. The UE is considered to be in normal coverage area of serving cell according to RSRP, RSRP Ês/Iot, SCH\_RP and SCH Ês/Iot of the serving cell defined in Annex B.1.3 for a corresponding Band.

The UE shall be able to identify new intra-frequency cells and perform RSRP measurements of 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 TS36.304 within Tdetect,EUTRAN\_Intra\_NCwhen that Treselection= 0. An intra frequency cell is considered to be detectable according to RSRP, RSRP Ês/Iot, SCH\_RP and SCH Ês/Iot defined in Annex B.1.3 for a corresponding Band.

The UE shall measure RSRP at least every Tmeasure,EUTRAN\_Intra\_NC for intra-frequency cells that are identified and measured according to the measurement rules.

The UE shall filter RSRP 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 Tmeasure,EUTRAN\_Intra\_NC/2.

The UE shall not consider a E-UTRA neighbour cell in 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 [1] within Tevaluate,E-UTRAN\_Intra\_NC when Treselection = 0, provided that the cell is at least 4dB better ranked for Cat-M1 UE.

If Treselection timer has a non zero value and the intra-frequency cell is better ranked than the serving cell, the UE shall evaluate this intra-frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

For UE not configured with eDRX\_IDLE cycle, Tdetect,EUTRAN\_Intra\_NC, Tmeasure,EUTRAN\_Intra\_NC and Tevaluate, E-UTRAN\_Intra\_NC are specified in Table 4.7.2.1.2-1. For UE configured with eDRX\_IDLE cycle, Tdetect,EUTRAN\_Intra\_NC, Tmeasure,EUTRAN\_Intra\_NC and Tevaluate, E-UTRAN\_Intra\_NC are specified in Table 4.7.2.1.2-2, where the requirements apply provided that the serving cell is configured with eDRX\_IDLE and is the same in all PTWs during any of Tdetect,EUTRAN\_Intra\_NC, Tmeasure,EUTRAN\_Intra\_NC and Tevaluate, E-UTRAN\_Intra\_NC when multiple PTWs are used.

Table 4.7.2.1.2-1 : Tdetect,EUTRAN\_Intra\_NC, Tmeasure,EUTRAN\_Intra\_NC and Tevaluate, E-UTRAN\_Intra\_NC

|  |  |  |  |
| --- | --- | --- | --- |
| DRX cycle length [s] | Tdetect,EUTRAN\_Intra\_NC [s] (number of DRX cycles) | Tmeasure,EUTRAN\_Intra\_NC [s] (number of DRX cycles) | Tevaluate,E-UTRAN\_intra\_NC  [s] (number of DRX cycles) |
| 0.32 | 11.52 (36) | 1.28 (4) | 5.12 (16) |
| 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) |

Table 4.7.2.1.2-2: Tdetect,EUTRAN\_Intra\_NC, Tmeasure,EUTRAN\_Intra\_NC and Tevaluate,E-UTRAN\_Intra\_NC for UE configured with eDRX\_IDLE cycle

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle length [s] | DRX cycle length [s] | PTW length [s] (number of 1.28s periods) | Tdetect,EUTRAN\_Intra\_NC [s] (number of DRX or eDRX cycles Note 3) | Tmeasure,EUTRAN\_Intra\_NC [s] (number of DRX or eDRX cycles Note 3) | Tevaluate,E-UTRAN\_intra\_NC  [s] (number of DRX or eDRX cycles Note 3) |
| 5.12 | N/A | N/A | 117.76 (23) | 5.12 (1) | 10.24 (2) |
| 10.24 ≤ eDRX\_IDLE cycle length ≤ 2621.44 | 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: The number of DRX cycles in this table is given for the DRX cycles within PTWs.  NOTE 2: The eDRX\_IDLE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].  NOTE 3: Number of eDRX cycles when eDRX\_IDLE cycle length equals 5.12s, number of DRX cycles otherwise. | | | | | |

For any requirement in this section, when the UE transitions between any two states when being configured with eDRX\_IDLE, being configured with eDRX\_IDLE cycle, changing eDRX\_IDLE 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 has to meet the requirement corresponding to the second state.

##### 4.7.2.1.3 Measurements of inter-frequency cells for UE category M1 in normal coverage

The requirements in this subclause apply if UE is in the normal coverage area of the serving cell. The UE is considered to be in normal coverage area of serving cell according to RSRP, RSRP Ês/Iot, SCH\_RP and SCH Ês/Iot of the serving cell defined in Annex B.1.3 for a corresponding Band.

The UE shall be able to identify new inter-frequency cells and perform RSRP or RSRQ measurements of identified inter-frequency cells if carrier frequency information is provided by the serving cell, even if no explicit neighbour list with physical layer cell identities is provided. The UE shall not cause any interruption to the paging reception and acquisition of SI while performing measurement on serving or any neighbor cells.

If Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ then the UE shall search for inter-frequency layers of higher priority at least every Thigher\_priority\_search where Thigher\_priority\_search is described in clause 4.2.2.

If Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ then the UE shall search for and measure inter-frequency layers of higher, equal or lower priority in preparation for possible reselection. In this scenario, the minimum rate at which the UE is required to search for and measure higher priority layers shall be the same as that defined below.

The UE shall be able to evaluate whether a newly detectable inter-frequency cell meets the reselection criteria defined in TS36.304 within Kcarrier\*Tdetect,EUTRAN\_Inter\_NC, if at least carrier frequency information is provided for inter-frequency neighbour cells by the serving cells when Treselection = 0 provided that the reselection criteria is met by a margin of at least 8 dB for reselections based on ranking or 8 dB for RSRP reselections based on absolute priorities or 5.5 dB for RSRQ reselections based on absolute priorities. Kcarrier is the number of inter-frequency carriers in the neighbour cell list. An inter frequency cell is considered to be detectable according to RSRP, RSRP Ês/Iot, SCH\_RP and SCH Ês/Iot defined in Annex B.1.8 for a corresponding Band.

When higher priority cells are found by the higher priority search, they shall be measured at least every Tmeasure,E-UTRAN\_Inter\_NC . If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection. However, the minimum measurement filtering requirements specified later in this clause shall still be met by the UE before it makes any determination that it may stop measuring the cell. If the UE detects on a E-UTRA carrier a cell whose physical identity is indicated as not allowed for that carrier in the measurement control system information of the serving cell, the UE is not required to perform measurements on that cell.

The UE shall measure RSRP or RSRQ at least every Kcarrier\*Tmeasure,EUTRAN\_Inter\_NC for identified lower or equal priority inter-frequency cells. If the UE detects on a E-UTRA carrier a cell whose physical identity is indicated as not allowed for that carrier in the measurement control system information of the serving cell, the UE is not required to perform measurements on that cell.

The UE shall filter RSRP or RSRQ measurements of each measured higher, lower and equal priority inter-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 Tmeasure,EUTRAN\_Inter\_NC/2.

The UE shall not consider a E-UTRA neighbour cell in cell reselection, if it is indicated as not allowed in the measurement control system information of the serving cell.

For an inter-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 inter-frequency cell has met reselection criterion defined TS 36.304 within Kcarrier\*Tevaluate,E-UTRAN\_Inter\_NC, when Treselection = 0 provided that the reselection criteria is met by a margin of at least [7]dB for reselections based on ranking or [7]dB for RSRP reselections based on absolute priorities or [5]dB for RSRQ reselections based on absolute priorities.

If Treselection timer has a non zero value and the inter-frequency cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

For UE not configured with eDRX\_IDLE cycle, Tdetect,EUTRAN\_Inter\_NC, Tmeasure,EUTRAN\_Inter\_NC and Tevaluate, E-UTRAN\_Inter\_NC are specified in Table 4.7.2.1.3-1. For UE configured with eDRX\_IDLE cycle, Tdetect,EUTRAN\_Inter\_NC, Tmeasure,EUTRAN\_Inter\_NC and Tevaluate, E-UTRAN\_Inter\_NC are specified in Table 4.7.2.1.3-2. Additionally, the requirements in Table 4.7.2.1.3-2 apply provided that the serving cell is configured with eDRX\_IDLE and is the same in all PTWs during any of Tdetect,EUTRAN\_Inter\_NC, Tmeasure,EUTRAN\_Inter\_NC and Tevaluate, E-UTRAN\_Inter\_NC when multiple PTWs are used.

Table 4.7.2.1.3-1 : Tdetect,EUTRAN\_Inter\_NC, Tmeasure,EUTRAN\_Inter\_NC and Tevaluate,E-UTRAN\_Inter\_NC

|  |  |  |  |
| --- | --- | --- | --- |
| DRX cycle length [s] | Tdetect,EUTRAN\_Inter\_NC [s] (number of DRX cycles) | Tmeasure,EUTRAN\_Inter\_NC [s] (number of DRX cycles) | Tevaluate,E-UTRAN\_Inter\_NC  [s] (number of DRX cycles) |
| 0.32 | 11.52 (36) | 1.28 (4) | 5.12 (16) |
| 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) |

Table 4.7.2.1.3-2: Tdetect,EUTRAN\_Inter\_NC, Tmeasure,EUTRAN\_Inter\_NC and Tevaluate, E-UTRAN\_inter\_NC for UE configured with eDRX\_IDLE cycle

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle length [s] | DRX cycle length [s] | PTW length [s] (number of 1.28s periods) | Tdetect,EUTRAN\_Inter\_NC [s] (number of DRX or eDRX cycles Note 3) | Tmeasure,EUTRAN\_Inter\_NC [s] (number of DRX or eDRX cycles Note 3) | Tevaluate,E-UTRAN\_inter\_NC  [s] (number of DRX or eDRX cycles Note 3) |
| 5.12 | N/A | N/A | 117.76 (23) | 5.12 (1) | 10.24 (2) |
| 10.24 ≤ eDRX\_IDLE cycle length ≤ 2621.44 | 0.32 | ≥1.28 (1) | (23) | 0.32 (1) | (2) |
| 0.64 | ≥1.28 (1) | 0.64 (1) | (2) |
| 1.28 | ≥1.28 (1) | 1.28 (1) | (2) |
| 2.56 | ≥2.56 (2) | 2.56 (1) | (2) |
| NOTE 1: The number of DRX cycles in this table is given for the DRX cycles within PTWs.  NOTE 2: The eDRX\_IDLE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].  NOTE 3: Number of eDRX cycles when eDRX\_IDLE cycle length equals 5.12s, number of DRX cycles otherwise. | | | | | |

For higher priority cells, a UE may optionally use a shorter value forTmeasure,EUTRAN\_Inter\_NC,which shall not be less than Max(0.64 s, one DRX cycle).

For any requirement in this section, when the UE transitions between any two states when being configured with eDRX\_IDLE, being configured with eDRX\_IDLE cycle, changing eDRX\_IDLE 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 has to meet the requirement corresponding to the second state.

<End of Change 2>

<Start of Change 3>

##### 4.7.2.2.1 Measurement and evaluation of serving cell for UE category M1 in enhanced coverage

The requirements in this subclause apply if UE is in the enhanced coverage area of the serving cell. The UE is considered to be in enhanced coverage area of serving cell according to RSRP, RSRP Ês/Iot, SCH\_RP and SCH Ês/Iot of the serving cell defined in Annex B.1.3 for a corresponding Band.

The UE shall measure the RSRP level of the serving cell and evaluate the cell selection criterion S defined in [1] for the serving cell at least every DRX cycle.

The UE shall filter the RSRP measurements of the serving cell using at least 4 measurements. Within the set of measurements used for the filtering, at least two measurements shall be spaced by, at least DRX cycle/2.

If the UE is not configured with eDRX\_IDLE cycle and has evaluated according to Table 4.7.2.2.1-1 in Nserv\_EC consecutive DRX cycles 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 the UE is configured with eDRX\_IDLE cycle and has evaluated according to Table 4.7.2.2.1-2 in Nserv\_EC consecutive DRX cycles within a single 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.

If the UE in RRC\_IDLE 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 [1], where T=20 s if the UE is not configured with eDRX\_IDLE cycle, and T=MAX(20 s, one eDRX\_IDLE cycle) if the UE is configured with eDRX\_IDLE cycle.

Table 4.7.2.2.1-1: Nserv\_EC

|  |  |
| --- | --- |
| DRX cycle length [s] | Nserv\_EC [number of DRX cycles] |
| 0.32 | 8 |
| 0.64 | 8 |
| 1.28 | 4 |
| 2.56 | 4 |

Table 4.7.2.2.1-2: Nserv\_ECfor UE configured with eDRX\_IDLE cycle

|  |  |  |  |
| --- | --- | --- | --- |
| eDRX\_IDLE cycle length [s] | DRX cycle length [s] | PTW length [s] (number of 1.28s periods) | Nserv [number of DRX or eDRX cycles Note 3] |
| 5.12 | N/A | N/A | 4 |
| 10.24 ≤ eDRX\_IDLE cycle length ≤ 2621.44 | 0.32 | ≥1.28 (1) | 4 |
| 0.64 | ≥2.56 (2) | 4 |
| 1.28 | ≥5.12 (4) | 4 |
| 2.56 | ≥10.24(8) | 4 |
| NOTE 1: The number of DRX cycles in this table is given for the DRX cycles within PTWs.  NOTE 2: The eDRX\_IDLE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].  NOTE 3: Number of eDRX cycles when eDRX\_IDLE cycle length equals 5.12s, number of DRX cycles otherwise. | | | |

For any requirement in this section, when the UE transitions between any two states when being configured with eDRX\_IDLE, being configured with eDRX\_IDLE cycle, changing eDRX\_IDLE 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 has to meet the requirement corresponding to the second state.

##### 4.7.2.2.2 Measurements of intra-frequency cells for UE category M1 in enhanced coverage

The requirements in this subclause apply if UE is in the enhanced coverage area of the serving cell. The UE is considered to be in enhanced coverage area of serving cell according to RSRP, RSRP Ês/Iot, SCH\_RP and SCH Ês/Iot of the serving cell defined in Annex B.1.3 for a corresponding Band.

The UE shall be able to identify new intra-frequency cells and perform RSRP measurements of identified intra-frequency cells without an explicit intra-frequency neighbour list containing physical layer cell identities. The UE shall not cause any interruption to the paging reception and acquisition of SI while performing measurement on serving or any neighbor cells.

The UE shall be able to evaluate whether a newly detectable intra-frequency cell meets the reselection criteria defined in TS36.304 within Tdetect,EUTRAN\_Intra\_ECwhen that Treselection= 0. An intra-frequency cell is considered to be detectable according to RSRP, RSRP Ês/Iot, SCH\_RP and SCH Ês/Iot defined in Annex B.1.3 for a corresponding Band.

The UE shall measure RSRP at least every Tmeasure,EUTRAN\_Intra\_EC for intra-frequency cells that are identified and measured according to the measurement rules.

The UE shall filter RSRP measurements of each measured intra-frequency cell using at least 4 measurements. Within the set of measurements used for the filtering, at least two measurements shall be spaced by at least Tmeasure,EUTRAN\_Intra\_EC/2.

The UE shall not consider an E-UTRA neighbour cell in 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 [1] within Tevaluate,E-UTRAN\_intra\_EC when Treselection = 0, provided that the cell is at least 5dB better ranked.

If Treselection timer has a non zero value and the intra-frequency cell is better ranked than the serving cell, the UE shall evaluate this intra-frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

For UE not configured with eDRX\_IDLE cycle, Tdetect,EUTRAN\_Intra\_EC, Tmeasure,EUTRAN\_Intra\_EC and Tevaluate, E-UTRAN\_intra\_EC are specified in Table 4.7.2.2.2-1. For UE configured with eDRX\_IDLE cycle, Tdetect,EUTRAN\_Intra\_EC, Tmeasure,EUTRAN\_Intra\_EC and Tevaluate, E-UTRAN\_intra\_EC are specified in Table 4.7.2.2.2-2. Additionally, the requirements in Table 4.7.2.2.2-2 apply provided that the serving cell is configured with eDRX\_IDLE and is the same in all PTWs during any of Tdetect,EUTRAN\_Intra\_EC, Tmeasure,EUTRAN\_Intra\_EC and Tevaluate, E-UTRAN\_intra\_EC when multiple PTWs are used.

Table 4.7.2.2.2-1 : Tdetect,EUTRAN\_Intra\_EC, Tmeasure,EUTRAN\_Intra\_EC and Tevaluate, E-UTRAN\_intra\_EC

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SCH Ês/Iot of neighboring cell: Q2 [dB] | DRX cycle length [s] | Tdetect,EUTRAN\_Intra\_EC [s] (number of DRX cycles) | Tmeasure,EUTRAN\_Intra\_EC [s] (number of DRX cycles) | Tevaluate,E-UTRAN\_intra\_EC  [s] (number of DRX cycles) |
| -15≤ Q2 < -6 | 0.32 | 330.24 (1032) | 1.28 (4) | 10.24 (32) |
| 0.64 | 330.24 (516) | 1.28 (2) | 10.24 (16) |
| 1.28 | 524.8 (410) | 1.28 (1) | 12.8 (10) |
| 2.56 | 1039.36 (406) | 2.56 (1) | 15.36 (6) |
| Q2≥-6 | 0.32 | 16.64 (52) | 1.28 (4) | 10.24 (32) |
| 0.64 | 23.04 (36) | 1.28 (2) | 10.24 (16) |
| 1.28 | 38.4 (30) | 1.28 (1) | 12.8 (10) |
| 2.56 | 66.56 (26) | 2.56 (1) | 15.36 (6) |

Table 4.7.2.2.2-2: Tdetect,EUTRAN\_Intra\_EC, Tmeasure,EUTRAN\_Intra\_EC and Tevaluate, E-UTRAN\_intra\_EC for UE configured with eDRX\_IDLE cycle

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle length [s] | DRX cycle length [s] | PTW length [s] (number of 1.28s periods) | Tdetect,EUTRAN\_Intra\_EC [s] (number *N* of DRX or eDRX cycles Note 4) for neighboring cell with SCH Es/IoT:  -15≤ Q2 < -6 [dB] | Tdetect,EUTRAN\_Intra\_EC [s] (number *N* of DRX or eDRX cycles Note 4) for neighboring cell with SCH Es/IoT:  Q2≥-6 [dB] | Tmeasure,EUTRAN\_Intra\_EC [s] (number *N* of DRX or eDRX cycles Note 4) | Tevaluate,E-UTRAN\_intra\_EC  [s] (number *N* of or eDRX DRX cycles Note 4) |
| 5.12 | N/A | N/A | 2078.72 (406) | 133.12 (26) | 5.12 (1) | 30.72 (6) |
| 10.24 ≤ eDRX\_IDLE cycle length ≤ 2621.44 | 0.32 | ≥1.28 (1) | Note 3 (406) | Note 3 (26) | 0.32 (1) | Note 3 (6) |
| 0.64 | ≥1.28 (1) | 0.64 (1) | Note 3 (6) |
| 1.28 | ≥2.28 (1) | 1.28 (1) | Note 3 (6) |
| 2.56 | ≥2.56 (2) | 2.56 (1) | Note 3 (6) |
| NOTE 1: The number of DRX cycles in this table is given for the DRX cycles within PTWs.  NOTE 2: The eDRX\_IDLE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].  NOTE 3: The detection period and the evaluation period depend on the number *N* of DRX cycles and are calculated according to the formula below:  .  NOTE 4: Number of eDRX cycles when eDRX\_IDLE cycle length equals 5.12s, number of DRX cycles otherwise. | | | | | | |

For any requirement in this section, when the UE transitions between any two states when being configured with eDRX\_IDLE, being configured with eDRX\_IDLE cycle, changing eDRX\_IDLE 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 has to meet the requirement corresponding to the second state.

##### 4.7.2.2.3 Measurements of inter-frequency cells for UE category M1 in enhanced coverage

The requirements in this subclause apply if UE is in the enhanced coverage area of the serving cell. The UE is considered to be in enhanced coverage area of serving cell according to RSRP, RSRP Ês/Iot, SCH\_RP and SCH Ês/Iot of the serving cell defined in Annex B.1.3 for a corresponding Band.

The UE shall be able to identify new inter-frequency cells and perform RSRP or RSRQ measurements of identified inter-frequency cells if carrier frequency information is provided by the serving cell, even if no explicit neighbour list with physical layer cell identities is provided. The UE shall not cause any interruption to the paging reception and acquisition of SI while performing measurement on serving or any neighbor cells.

If Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ then the UE shall search for inter-frequency layers of higher priority at least every Thigher\_priority\_search where Thigher\_priority\_search is described in clause 4.2.2.

If Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ then the UE shall search for and measure inter-frequency layers of higher, equal or lower priority in preparation for possible reselection. In this scenario, the minimum rate at which the UE is required to search for and measure higher priority layers shall be the same as that defined below.

The UE shall be able to evaluate whether a newly detectable inter-frequency cell meets the reselection criteria defined in TS36.304 within Kcarrier\*Tdetect,EUTRAN\_Inter\_EC, if at least carrier frequency information is provided for inter-frequency neighbour cells by the serving cells when Treselection = 0 provided that the reselection criteria is met by a margin of at least 8 dB for reselections based on ranking. Kcarrier is the number of inter-frequency carriers in the neighbour cell list. An inter frequency cell is considered to be detectable according to RSRP, RSRP Ês/Iot, SCH\_RP and SCH Ês/Iot defined in Annex B.1.8 for a corresponding Band.

When higher priority cells are found by the higher priority search, they shall be measured at least every Tmeasure,E-UTRAN\_Inter\_EC . If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection. However, the minimum measurement filtering requirements specified later in this clause shall still be met by the UE before it makes any determination that it may stop measuring the cell. If the UE detects on a E-UTRA carrier a cell whose physical identity is indicated as not allowed for that carrier in the measurement control system information of the serving cell, the UE is not required to perform measurements on that cell.

The UE shall measure RSRP or RSRQ at least every Kcarrier\*Tmeasure,EUTRAN\_Inter\_EC for identified lower or equal priority inter-frequency cells. If the UE detects on a E-UTRA carrier a cell whose physical identity is indicated as not allowed for that carrier in the measurement control system information of the serving cell, the UE is not required to perform measurements on that cell.

The UE shall filter RSRP or RSRQ measurements of each measured higher, lower and equal priority inter-frequency cell using at least 4 measurements. Within the set of measurements used for the filtering, at least two measurements shall be spaced by at least Tmeasure,EUTRAN\_Inter\_EC/2.

The UE shall not consider a E-UTRA neighbour cell in cell reselection, if it is indicated as not allowed in the measurement control system information of the serving cell.

For an inter-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 inter-frequency cell has met reselection criterion defined TS 36.304 within Kcarrier\*Tevaluate,E-UTRAN\_Inter\_EC, when Treselection = 0 provided that the reselection criteria is met by a margin of at least 6 dB for reselections based on ranking.

If Treselection timer has a non zero value and the inter-frequency cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

For UE not configured with eDRX\_IDLE cycle, Tdetect,EUTRAN\_Inter\_EC, Tmeasure,EUTRAN\_Inter\_EC and Tevaluate, E-UTRAN\_inter\_EC are specified in Table 4.7.2.2.3-1. For UE configured with eDRX\_IDLE cycle, Tdetect,EUTRAN\_Inter\_EC, Tmeasure,EUTRAN\_Inter\_EC and Tevaluate, E-UTRAN\_inter\_EC are specified in Table 4.7.2.2.3-3. Additionally, the requirements in Table 4.7.2.2.3-3 apply provided that the serving cell is configured with eDRX\_IDLE and is the same in all PTWs during any of Tdetect,EUTRAN\_Inter\_EC, Tmeasure,EUTRAN\_Inter\_EC and Tevaluate, E-UTRAN\_inter\_EC when multiple PTWs are used.

Table 4.7.2.2.3-1: Tdetect,EUTRAN\_Inter\_EC, Tmeasure,EUTRAN\_Inter\_EC and Tevaluate,E-UTRAN\_Inter\_EC

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SCH Ês/Iot of neighboring cell: Q2 [dB] | DRX cycle length [s] | Tdetect,EUTRAN\_Inter\_EC [s] (number of DRX cycles) | Tmeasure,EUTRAN\_Inter\_EC [s] (number of DRX cycles) | Tevaluate,E-UTRAN\_inter\_EC  [s] (number of DRX cycles) |
| **-15≤ Q2 < -6** | 0.32 | 330.24 (1032) | 1.28 (4) | 10.24 (32) |
| 0.64 | 330.24 (516) | 1.28 (2) | 10.24 (16) |
| 1.28 | 524.8 (410) | 1.28 (1) | 12.8 (10) |
| 2.56 | 1039.36 (406) | 2.56 (1) | 15.36 (6) |
| **Q2≥-6** | 0.32 | 16.64 (52) | 1.28 (4) | 10.24 (32) |
| 0.64 | 23.04 (36) | 1.28 (2) | 10.24 (16) |
| 1.28 | 38.4 (30) | 1.28 (1) | 12.8 (10) |
| 2.56 | 66.56 (26) | 2.56 (1) | 15.36 (6) |

Table 4.7.2.2.3-2: Void

Table 4.7.2.2.3-3: Tdetect,EUTRAN\_Inter\_EC, Tmeasure,EUTRAN\_Inter\_EC and Tevaluate, E-UTRAN\_inter\_EC for UE configured with eDRX\_IDLE cycle

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| eDRX\_IDLE cycle length [s] | DRX cycle length [s] | PTW length [s] (number of 1.28s periods) | Tdetect,EUTRAN\_Inter\_EC [s] (number of DRX or eDRX cycles Note 4) for neighboring cell with SCH Es/IoT:  -15≤ Q2 < -6 [dB] | Tdetect,EUTRAN\_Inter\_EC [s] (number of DRX or eDRX cycles Note 4) for neighboring cell with SCH Es/IoT:  Q2≥-6 [dB] | Tmeasure,EUTRAN\_Inter\_EC [s] (number of DRX or eDRX cycles Note 4) | Tevaluate,E-UTRAN\_inter\_EC  [s] (number of DRX or eDRX cycles Note 4) |
| 5.12 | N/A | N/A | 2078.72 (406) | 133.12 (26) | 5.12 (1) | 30.72 (6) |
| 10.24 ≤ eDRX\_IDLE cycle length ≤ 2621.44 | 0.32 | ≥1.28 (1) | Note 3 (406) | Note 3 (26) | 0.32 (1) | Note 3 (6) |
| 0.64 | ≥1.28 (1) | 0.64 (1) | Note 3 (6) |
| 1.28 | ≥1.28 (1) | 1.28 (1) | Note 3 (6) |
| 2.56 | ≥2.56 (2) | 2.56 (1) | Note 3 (6) |
| NOTE 1: The number of DRX cycles in this table is given for the DRX cycles within PTWs.  NOTE 2: The eDRX\_IDLE cycle lengths are as specified in Section 10.5.5.32 of TS 24.008 [34].  NOTE 3: The detection period and the evaluation period depend on the number *N* of DRX cycles and are calculated according to the formula below:  .  NOTE 4: Number of eDRX cycles when eDRX\_IDLE cycle length equals 5.12s, number of DRX cycles otherwise. | | | | | | |

For higher priority cells, a UE may optionally use a shorter value forTmeasure,EUTRAN\_Inter\_EC,which shall not be less than Max(0.64 s, one DRX cycle).

For any requirement in this section, when the UE transitions between any two states when being configured with eDRX\_IDLE, being configured with eDRX\_IDLE cycle, changing eDRX\_IDLE 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 has to meet the requirement corresponding to the second state.

##### 4.7.2.2.4 Maximum allowed layers for multiple monitoring for UE category M1 in enhanced coverage

The UE category M1 in enhanced coverage shall be capable of monitoring at least:

- Depending on UE capability, 2 FDD E-UTRA inter-frequency carriers, and

- Depending on UE capability, 2 TDD E-UTRA inter-frequency carriers.

In addition to the requirements defined above, the UE shall be capable of monitoring a total of at least 5 carrier frequency layers, which include one serving carrier frequency and any of the above defined combination of E-UTRA FDD inter-frequency and E-UTRA TDD inter-frequency layers.

##### 4.7.2.2.5 Maximum interruption in paging reception for Category M1 UEs in enhanced coverage

UE shall perform the cell re-selection with minimum interruption in monitoring downlink channels for paging reception. When the UE is configured with eDRX\_IDLE cycle, the UE shall not miss any paging in a PTW provided the paging is sent in at least [2] DRX cycles before the end of that PTW.

At intra-frequency cell re-selection, the UE shall monitor the downlink of serving cell for paging reception until the UE is capable to start monitoring downlink channels of the target intra-frequency cell for paging reception. The interruption time shall not exceed TSI-EUTRA-M1-EC + 50 ms.

TSI-EUTRA-M1-EC is the time required for receiving all the relevant system information data, which include MIB and relavant SIB, according to the reception procedure and the RRC procedure delay of system information blocks defined in TS 36.331 [2] for an E-UTRAN cell.

These requirements assume extended coverage radio conditions and do not take into account cell re-selection failure.

For any requirement in this section, when the UE transitions between any two states when being configured with eDRX\_IDLE, being configured with eDRX\_IDLE cycle, changing eDRX\_IDLE 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 has to meet the requirement corresponding to the second state.

<End of Change 3>