3GPP TSG-RAN WG4 Meeting # 95-e R4-2007686

Electronic Meeting, 25 May – 5 June, 2020

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **36.133** | **CR** | **6867** | **rev** | **-** | **Current version:** | **16.5.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network |  |

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| ***Title:*** | CR on non-anchor RRM measurement requirements in enhanced coverage for Rel-16 NB IoT | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NB\_IOTenh3-Core | | | | |  | ***Date:*** | | | 2020-05-08 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Resubmission of endorsed Draft CR R4-2005290  Additional changes are highlighted with tracking ID “Additional Changes RAN4#95-e”  Implement non-anchor RRM measurement requirements in enhanced coverage. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add the conditons for non-anchor paging carrier RRM measurement in measurment requirements for NB-IoT.  Add the condition that UE is allowed to make RRM measurement on non-anchor carrier in enhanced coverage when nB is not equal to 4T  Add the clarification about filtering among samples from anchor carrier and non-anchor carrier.  Remove square brackets. | | | | | | | | |
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| ***Consequences if not approved:*** | | The corresponding requirements is incomplete. | | | | | | | | |
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| ***Clauses affected:*** | | 4.6.2.3, | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | |  | | |
| ***affected:*** | |  | **x** | Test specifications | | | |  | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**<<Start of Change 1>>**

4.6.2.3 Measurement and evaluation of serving NB-IoT cell for UE category NB1 in enhanced coverage

The UE shall measure the NRSRP and NRSRQ level of the serving NB-IoT cell on the anchor carrier and evaluate the cell selection criterion S defined in clause 5.2.3.2a in [1] for the serving NB-IoT cell on anchor carrier at least every DRX cycle.

If the UE is configured for receiving paging on the non-anchor carrier then the UE shall evaluate the cell selection criterion S defined in clause 5.2.3.2a in [1] for the serving NB-IoT cell on non-anchor carrier at least every DRX cycle.

The UE is allowed to measure NRSRP level of the serving NB-IoT cell on non-anchor carrier provided that

* The relaxed monitoring criteria defined in TS 36.304 clause 5.2.4.12 are met,
* Transmit power difference of the signals/channels between anchor- and non-anchor carriers is signalled to the UE, via the existing parameter *nrs-PowerOffsetNonAnchor*, and
* UE is not configured with any positioning measurements.*nB* configured by higher layer is not equal to *fourT,*

The nrs-NonAnchor-config is enabled indicated by higher layer defined in clause 10.2.6 TS 36.211 [16]

The UE shall filter the NRSRP and NRSRQ measurements of the serving NB-IoT 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. NRSRP measurement on non-anchor carrier can be filtered with NRSRP measurement on non-anchor carrier or NRSRP measurement on anchor carrier, where the non-anchor carrier measurement is translated with parameter nrs-PowerOffsetNonAnchor.

If the UE is not configured with eDRX\_IDLE cycle and has evaluated according to Table 4.6.2.3-1 in Nserv\_NB\_EC consecutive DRX cycles that the serving NB-IoT cell does not fulfil the cell selection criterion S, the UE shall initiate the measurements of all neighbour cells indicated by the serving NB-IoT 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 4.6.2.3-2 in Nserv\_NB-IoT-EC consecutive DRX cycles within a single PTW that the serving NB-IoT cell does not fulfil the cell selection criterion S, the UE shall initiate the measurements of all neighbour cells indicated by the serving NB-IoT 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 and inter-frequency 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= 80 s if the UE is not configured with eDRX\_IDLE cycle, and T=MAX(80 s, one eDRX\_IDLE cycle) if the UE is configured with eDRX\_IDLE cycle.

**Table 4.6.2.3-1: Nserv\_NB\_EC**

|  |  |
| --- | --- |
| **DRX cycle length [s]** | **Nserv\_NB-IoT-EC [number of DRX cycles]** |
| 1.28 | 4 |
| 2.56 | 4 |
| 5.12 | 4 |
| 10.24 | 4 |

**Table 4.6.2.3-2: Nserv\_NB\_ECfor UE configured with eDRX\_IDLE cycle**

|  |  |  |  |
| --- | --- | --- | --- |
| **eDRX\_IDLE cycle length [s]** | **DRX cycle length [s]** | **PTW length [s] (number of 2.56s periods)** | **Nserv\_NB\_EC [number of DRX cycles]** |
| 20.48 ≤ eDRX\_IDLE cycle length ≤ 10485.76 | 1.28 | ≥ 7.68 (3) | 4 |
| 2.56 | ≥ 12.8 (5) | 4 |
| 5.12 | ≥ 23.04 (9) | 4 |
| 10.24 | ≥ 43.52 (17) | 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 X of TS 24.008 [34]. | | | |

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 1>>**