**3GPP TSG- Meeting # *draft-*01597**

**, Greece, –4**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
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|  |  | **CR** |  | **rev** | **1** | **Current version:** |  |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network | **X** | Core Network |  |

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| ***Title:***  |  |
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| ***Source to WG:*** | Nokia, Nokia Shanghai Bell |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** |  |  | ***Date:*** | 7 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** |  |
|  | *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)* |
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| ***Reason for change:*** | Miscellanious corrections to IoT-NTN |
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| ***Summary of change:*** | The distance based intra frequency measurement triggering related description is included for Srxlev/Squal check criteria.UE capability for location-based measurement for different types of cells is considered in the evaluation steps |
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| ***Consequences if not approved:*** | Location based measurement triggering is not triggered for some conditions of serving cell  |
|  |  |
| ***Clauses affected:*** | 5.2.4.2, 5.2.4.2a |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS36.331  |
| ***affected:*** |  |  |  Test specifications | TS36.300  |
| ***(show related CRs)*** |  |  |  O&M Specifications | TS36.306 |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR’s revision history:*** |  |

Start of changes

#### 5.2.4.2 Measurement rules for cell re-selection

For NB-IoT measurement rules for cell re-selection is defined in clause 5.2.4.2.a.

When evaluating Srxlev and Squal of non-serving cells for reselection purposes, the UE shall use parameters provided by the serving cell.

Following rules are used by the UE to limit needed measurements:

- If the measurements are performed using RSS as specified in [10] and the serving cell fulfils Srxlev> SIntraSearchP:

- If *distanceThresh* and *referenceLocation* are broadcast in *SystemInformationBlockType31*, and if the UE has obtained its location information:

- If *referenceLocation* is set to *fixedReferenceLocation* and if the UE supports location-based measurement initiation for fixed cell

- The *referenceLocation* is used as serving cell reference location. If the distance between the UE and the serving cell reference location is shorter than *distanceThresh*, the UE may choose not to perform intra-frequency measurements. Else, the UE shall perform intra-frequency measurements.

- If *referenceLocation* is set to *movingReferenceLocation* and if the UE supports location-based measurement initiation for moving cell,

- The UE derives the serving cell reference location based on ephemeris, epochTime and *referenceLocation.* If the distance between the UE and the serving cell reference location is shorter than *distanceThresh*, the UE may choose not to perform intra-frequency measurements. Else, the UE shall perform intra-frequency measurements.

- Else, the UE may choose not to perform intra-frequency measurements.

- Else, the UE may choose not to perform intra-frequency measurements.

- Else if the serving cell fulfils Srxlev> SIntraSearchP and Squal > SIntraSearchQ,

- If *distanceThresh* and *referenceLocation* are broadcast in *SystemInformationBlockType31*, and if the UE has obtained its location information:

- If *referenceLocation* is set to *fixedReferenceLocation* and if the UE supports location-based measurement initiation for fixed cell, the *referenceLocation* is used as serving cell reference location. If the distance between the UE and the serving cell reference location, the UE may choose not to perform intra-frequency measurements. Else, the UE shall perform intra-frequency measurements.

- If *referenceLocation* is set to *movingReferenceLocation* and if the UE supports location-based measurement initiation for moving cell, the UE derives the serving cell reference location based on ephemeris, epohcTime and referenceLocation. If the distance between the UE and the serving cell reference location is shorter than distanceThresh, the UE may choose not to perform intra-frequency measurements. Else, the UE shall perform intra-frequency measurements.

- Else, the UE may choose not to perform intra-frequency measurements.

- Else, the UE may choose not to perform intra-frequency measurements.

- Otherwise, the UE shall perform intra-frequency measurements.

- The UE shall apply the following rules for E-UTRAN inter-frequencies and inter-RAT frequencies which are indicated in system information and for which the UE has priority provided as defined in 5.2.4.1:

- For an E-UTRAN inter-frequency or inter-RAT frequency with a reselection priority higher than the reselection priority of the current E-UTRA frequency the UE shall perform measurements of higher priority E-UTRAN inter-frequency or inter-RAT frequencies according to TS 36.133 [10].

- For an E-UTRAN inter-frequency with an equal or lower reselection priority than the reselection priority of the current E-UTRA frequency and for inter-RAT frequency with lower reselection priority than the reselection priority of the current E-UTRAN frequency:

- If the measurements are performed using RSS as specified in [10] and the serving cell fulfils Srxlev > SnonIntraSearchP:

- If *distanceThresh* and *referenceLocation* are broadcast in *SystemInformationBlockType31*, and if the UE has obtained its location:

- If *referenceLocation* is set to *fixedReferenceLocation* and if supports location-based measurement initiation for fixed cell, the *referenceLocation* is used as serving cell reference location. the *referenceLocation* is used as serving cell reference location. If the distance between the UE and serving cell reference location is shorter than *distanceThresh* the UE may choose not to perform measurements of E-UTRAN inter-frequencies or inter-RAT frequency cells of equal or lower priority unless the UE is triggered to measure an E-UTRAN inter-frequency which is configured with *redistributionInterFreqInfo.* Else, the UE shall perform measurements of E-UTRAN inter-frequencies or inter-RAT frequency cells of equal or lower priority according to TS 36.133 [10].

- If *referenceLocation* is set to *movingReferenceLocation* and UE supports location-based measurement initiation for moving cell, The UE derives the serving cell reference location based on ephemeris, epochTime and *referenceLocation*. If the distance between the UE and serving cell reference location is shorter than *distanceThresh* the UE may choose not to perform measurements of E-UTRAN inter-frequencies or inter-RAT frequency cells of equal or lower priority unless the UE is triggered to measure an E-UTRAN inter-frequency which is configured with *redistributionInterFreqInfo.* Else, the UE shall perform measurements of E-UTRAN inter-frequencies or inter-RAT frequency cells of equal or lower priority according to TS 36.133 [10].

- Else, the UE may choose not to perform measurements of E-UTRAN inter-frequencies or inter-RAT frequency cells of equal or lower priority unless the UE is triggered to measure an E-UTRAN inter-frequency which is configured with *redistributionInterFreqInfo.*

- Else, the UE may choose not to perform measurements of E-UTRAN inter-frequencies or inter-RAT frequency cells of equal or lower priority unless the UE is triggered to measure an E-UTRAN inter-frequency which is configured with *redistributionInterFreqInfo.*

- Else if the serving cell fulfils Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ:

- If *distanceThresh* and *referenceLocation* are broadcast in *SystemInformationBlockType31*, and if the UE supports location-based measurement initiation and has obtained its location:

- If *referenceLocation* is set to *fixedReferenceLocation* and UE supports location-based measurement initiation for fixed cell, the *referenceLocation* is used as serving cell reference location. If the distance between the UE and serving cell reference location is shorter than *distanceThresh*, the UE may choose not to perform measurements of E-UTRAN inter-frequencies or inter-RAT frequency cells of equal or lower priority unless the UE is triggered to measure an E-UTRAN inter-frequency which is configured with *redistributionInterFreqInfo*. Else, the UE shall perform measurements of E-UTRAN inter-frequencies or inter-RAT frequency cells of equal or lower priority according to TS 36.133 [10].

- If *referenceLocation* is set to *movingReferenceLocation* and UE supports location-based measurement initiation for moving cell, the UE derives the serving cell reference location based on ephemeris, epochTime and *referenceLocation*. If the distance between the UE and serving cell reference location is shorter than *distanceThresh*, the UE may choose not to perform measurements of E-UTRAN inter-frequencies or inter-RAT frequency cells of equal or lower priority unless the UE is triggered to measure an E-UTRAN inter-frequency which is configured with *redistributionInterFreqInfo*. Else, the UE shall perform measurements of E-UTRAN inter-frequencies or inter-RAT frequency cells of equal or lower priority according to TS 36.133 [10].

- Else, the UE may choose not to perform measurements of E-UTRAN inter-frequencies or inter-RAT frequency cells of equal or lower priority unless the UE is triggered to measure an E-UTRAN inter-frequency which is configured with *redistributionInterFreqInfo.*

- Else, the UE may choose not to perform measurements of E-UTRAN inter-frequencies or inter-RAT frequency cells of equal or lower priority unless the UE is triggered to measure an E-UTRAN inter-frequency which is configured with *redistributionInterFreqInfo.*

- Otherwise,the UE shall perform measurements of E-UTRAN inter-frequencies or inter-RAT frequency cells of equal or lower priority according to TS 36.133 [10].

- If the UE supports relaxed monitoring and *s-SearchDeltaP* is present in *SystemInformationBlockType3*, the UE may further limit the needed measurements, as specified in clause 5.2.4.12.

If *t-Service* is present in *SystemInformationBlockType3* of the serving cell, UE shall perform intra-frequency, inter-frequency or inter-RAT measurements, before the time *t-Service* regardless whether the serving cell fulfils Srxlev> SIntraSearchP and Squal > SIntraSearchQ, or Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ. The exact time to start measurements before *t-Service* is up to UE implementation and *t-ServiceStartNeigh* if present in *SystemInformationBlockType33* may be used to decide on when to start measurements. UE shall perform measurements of higher priority inter-frequencies or inter-RAT frequencies regardless of the remaining service time of the serving cell.

#### 5.2.4.2a Measurement rules for cell re-selection for NB-IoT

When evaluating Srxlev and Squal of non-serving cells for reselection purposes, the UE shall use parameters provided by the serving cell.

Following rules are used by the UE to limit needed measurements:

- If the serving cell fulfils Srxlev> SIntraSearchP:

- If *distanceThresh* and *referenceLocation* are broadcast in *SystemInformationBlock31-NB*, and if the UE has obtained its location:

* If *referenceLocation* is set to *fixedReferenceLocation* and the UE supports location-based measurement initiation for fixed cell, the *referenceLocation* is used as serving cell reference location. If the distance between UE and serving cell reference location is shorter than *distanceThresh*, the UE may choose not to perform intra-frequency measurements. Else, the UE shall perform intra-frequency measurements.
* If *referenceLocation* is set to *movingReferenceLocation* and the UE supports location-based measurement initiation for moving cell the UE derives the serving cell reference location based on ephemeris, epochTime and *referenceLocation*. If the distance between UE and serving cell reference location is shorter than *distanceThresh*, the UE may choose not to perform intra-frequency measurements. Else, the UE shall perform intra-frequency measurements.
* Else, the UE may choose not to perform intra-frequency measurements.

- Else, the UE may choose not to perform intra-frequency measurements.

- Otherwise, the UE shall perform intra-frequency measurements.

- The UE shall apply the following rules for NB-IoT inter-frequencies which are indicated in system information:

- If the serving cell fulfils Srxlev > SnonIntraSearchP:

- If *distanceThresh* and *referenceLocation* are broadcast in *SystemInformationBlock31-NB*, and if the UE supports location-based measurement initiation and has obtained its location:

- If *referenceLocation* is set to *fixedReferenceLocation* and the UE supports location-based measurement initiation for fixed cell, the *referenceLocation* is used as serving cell reference location. If *referenceLocation* is set to *movingCell*, the UE derives the serving cell reference location based on ephemeris, epochTime, referenceLocation and the UE location.

- If *referenceLocation* is set to *movingReferenceLocation* and the UE supports location-based measurement initiation for moving cell the UE derives the serving cell reference location based on ephemeris, epochTime and *referenceLocation*. If the distance between the UE and serving cell reference location is shorter than *distanceThresh*, the UE may choose not to perform inter-frequency measurements. Else, the UE shall perform inter-frequency measurements.

- Else, the UE may choose not to perform inter-frequency measurements.

- Otherwise,the UE shall perform inter-frequency measurements.

- If the UE supports relaxed monitoring and *s-SearchDeltaP* is present in *SystemInformationBlockType3-NB*, the UE may further limit the needed measurements, as specified in clause 5.2.4.12.

If *t-Service* is present in *SystemInformationBlockType3-NB* of the serving cell, UE shall perform intra-frequency or inter-frequency measurements before the time *t-Service* regardless whether the serving cell fulfils Srxlev> SIntraSearchP or Srxlev > SnonIntraSearchP. The exact time to start measurements before *t-Service* is up to UE implementation and *t-ServiceStartNeigh* if present in *SystemInformationBlockType33-NB* may be used to decide on when to start measurements.

End Of Changes