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

**Athens, 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:***  |  |
|  |  |
| ***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:*** | Miscellaneous 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 CR4990  |
| ***affected:*** |  |  |  Test specifications | TS36.300 CRXXXX  |
| ***(show related CRs)*** |  |  |  O&M Specifications | TS36.306 CRXXXX |
|  |  |
| ***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, *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, *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.

- 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 the UE 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 the distance between UE and serving cell location is shorter than *distanceThresh*, the UE may choose not to perform inter-frequency measurements. Else, the UE shall perform inter-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 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