**3GPP TSG-RAN WG4 Meeting # 109 R4-2321577**

**Chicago, US, November 13 – 17, 2023**

**Agenda item:** 9.6.7

**Source:** Moderator (MediaTek inc.)

**Title:** WF on R18 IoT NTN RRM requirements

**Document for:** Approval

# Introduction

This document is to capture all agreements in email thread [109][235] IoT\_NTN\_enh.

# Topic #1: RRM core requirements

Sub-Topic 1-1: IDLE mode measurements

Issue 1-1-1: Skipping serving cell measurement before *t-service*

No agreement

Sub-Topic 1-2: CONN mode neighbour cell measurements

Issue 1-2-1: For NB-IoT NGSO, intra-frequency inter-satellite neighbour cell measurement

Agreement:

* Define requirements for NGSO intra-frequency inter-satellite neighbour cell measurement as “inter-frequency” case
* Add condition that requirements apply provided that cell is available as indicated by t-ServiceStartNeigh if indicated.

Issue 1-2-2: For NB/eMTC, time-based triggering, the exact time for UE to start the measurement

no consensus to capture the exact time for UE to start measurement in RAN4 spec

Issue 1-2-3: For eMTC, time-based triggering and MG perspectives

Agreement:

For eMTC neighbour cell measurement, MG shall be configured as legacy TN case.

RAN4 agree that the MG is suspended till the time t-serviceStartNeigh

* Detailed wording to be updated in CR

Issue 1-2-4: For eMTC, location-based triggering and MG perspectives

no consensus to introduce new conditions on when the neighbour cell measurements can be performed without gaps.

Issue 1-2-5: For eMTC, suspend MG upon *t-ServiceStarNeigh*

To resolve in CR

Issue 1-2-6: For NB/eMTC NGSO, Ksatellite in Re-establishment delay requirement

no consensus to revise Ksatellite in Re-establishment delay requirement

Sub-Topic 1-3: eMTC, CHO

Issue 1-3-1: For eMTC, CHO requirements

Agreement:

* Update Tinterrupt to include Tsearch, based on handover interruption requirementwith KSAT =1, and Nfreq=1

Sub-Topic 1-4: GNSS re-acquisition gap in connected mode

Issue 1-4-1: GNSS-MG spec impact

Agreement:

* Add generic description that the measurements are suspended when UE is performing GNSS measurement during GNSS measurement gap. Wording to be discussed directly in the CR.
* For NB-IoT, UE shall restart the cell measurement when the interval between two samples are larger than 5000 ms.
* For eMTC, the modification for the case that GNSS-MG is larger than the eDRX cycle can be further study in the maintenance phase.

Issue 1-4-2: For eMTC, GNSS-MG overlapping with MG

Agreement:

* When GNSS gap overlaps with MG, MG applies if GNSS-MG is terminated earlier than MG and after RA procedure.

Issue 1-4-3: RRC re-establishment when *carrierFreqList* is provided

* FFS: If the *carrierFreqList* in SIB32 indicates that current and target cells belong to the same carrier, then Ksatellite,I can be set to 1. Otherwise, Ksatellite,I shall correspond to the number of NGSO satellites the UE shall monitor.

Sub-Topic 1-5: Others

Issue 1-5-1: Requirement terminologies

To resolve in CR

Issue 1-5-2: Location-based triggering cell measurements – margin for distanceThresh

Postpone the margin discussion in performance part.

Issue 1-5-3: Clarification on more than two NGSO satellites on a frequency layer

No agreement

Topic #2: RRM performance requirements

Issue 2-2-1: For NB/eMTC, test cases suspended due to lack of neighbour cell assistant information

FFS

* Define test cases which are suspended due to lack of neighbour cell assistant information.
	+ Introduce inter-frequency test cases
	+ Introduce NGSO configuration for the existing intra-frequency test cases

Issue 2-2-2: For NB-IoT, neighbour cell measurement in CONNNECTED mode

FFS

* For NB-IoT, introduce test cases for neighbour cell measurement in CONNNECTED mode.

Issue 2-2-3: For NB/eMTC, test cases for time/location based triggering of cell reselection in IDLE mode

FFS

* RAN4 to define test cases for time/location based triggering of cell reselection in IDLE mode based on the following table:

|  |  |
| --- | --- |
| **Requirements**  | **NB/eMTC** |
| IDLE: Time-based measurement triggering | NB/eMTC |
| IDLE: Location-based measurement triggering | NB/eMTC |

* RAN4 to further discuss whether and how to reduce the number of test cases

Issue 2-2-4: For NB/eMTC, test cases for time/location based triggering of neighbour cell measurements in CONNECTED mode

FFS RAN4 to discuss feasibility of defining tests for time- and location based triggering of neighbour cell measurements.

* Option 1: not to define the corresponding test cases.
* Option 2: RAN4 to define test cases for time- and location based triggering of neighbour cell measurements, based on the following table:

|  |  |
| --- | --- |
| **Requirements**  | **NB/eMTC** |
| CONN: Location-based measurement triggering [NB/eMTC] | NB/eMTC |
| CONN: Time-based measurement triggering | eMTC |

Issue 2-2-5: For eMTC, test cases for CHO

FFS

* RAN4 to define test cases for eMTC CHO based on the following table:

|  |  |
| --- | --- |
| **Requirements**  | **NB/eMTC** |
| CHO configured with condEventD1 | eMTC |
| CHO configured with condEventT1 | eMTC |

* RAN4 to further discuss whether and how to reduce the number of test cases