**3GPP TSG-SA5 Meeting #155 *S5-243292***

**Jeju, South Korea, 27 - 31 May 2024**

**Source: CATT, China Unicom**

**Title: pCR TR 28.874 Add use case on NTN Tracking area management**

**Document for: Approval**

**Agenda Item: 6.19.15**

# 1 Decision/action requested

***Approval***

# 2 References

[1] 3GPP TR 28.874-010: " Study on management aspects of NTN – Phase 2"

[2] SP-231733: "New SID: Study on Management Aspects of NTN Phase 2"

# 3 Rationale

It is proposed to add a new use case on NTN Tracking area management.

# 4 Detailed proposal

This contribution proposes to make the following changes in [1].

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| **1st change** |

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 38.423: "Technical Specification Group Radio Access Network; NG-RAN; Xn application protocol (XnAP) "

[3] 3GPP TS 38.300: "Technical Specification Group Radio Access Network; NR; NR and NG-RAN Overall Description; Stage 2"

[4] 3GPP TR 38.821: "Technical Specification Group Radio Access Network; Solutions for NR to support non-terrestrial networks (NTN) "

[5] 3GPP TR 22.865: “Study on satellite access Phase 3”

[x] 3GPP TS 38.331: "NR; Radio Resource Control (RRC) protocol specification".

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| **Next change** |

### 5.2.x Use case #2: NTN Tracking area management

#### 5.2.x.1 Description

Tracking areas (TAs) and cell identities (cell IDs) represents a fixed geographic area within the network where a mobile device can move without requiring an update of its location information. The respective mapping is generally assigned and planned in advance by the operator and configured in the RAN and CN by 3GPP management system. The typical beam footprint size of an NTN cell is much larger compared to usual TN cell, therefore, the coverage of one cell in NTN may cover multiple TAs, the relationship between Cell and TA in NT and NTN is illustrated by Figure 5.2.x-1.



**Figure 5.2.x-1: Cell-TA relationship in TN and NTN**

To avoid Tracking Area Codes (TAC) fluctuations in the NTN earth-moving cells case, the network may broadcast multiple Tracking Area Codes per PLMN ID in an NR NTN cell (see TS 38.331 [x] clause 16.14.3.1). As illustrated in Figure 5.2.x-2, the tracking area is designed to be fixed on ground, when cells sweep on the ground, the tracking area code (i.e. TAC) broadcasted is changed when the cell arrives to the area of next planned earth fixed tracking area location. This implies that the TAC or a list of TACs configuration on gNB needs to be frequently updates by 3GPP management system.



#### **Figure 5.2.x-2: An example of updating TACs in LEO earth-moving scenario**5.2.x.2 Potential requirements

**REQ-NTN-FUN-0X:** The 3GPP management system shall have the capability to configure/update TACs for NTN earth-moving cells.

#### 5.2.x.3 Potential solutions

##### 5.2.x.3.1 Potential solution #<i>: <Potential Solution i Title>

#### 5.2.x.4 Evaluation of potential solutions

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| **End of change** |