**3GPP TSG-SA5 Meeting #154 *S5-242111d1***

Changsha, China, 15 - 19 April 2024

**Source: CATT**

**Title: pCR TR 28.874 Add use case on 5G system functions on board the NTN**

**Document for: Approval**

**Agenda Item: 6.19.15**

# 1 Decision/action requested

***Approval***

# 2 References

[1] 3GPP TR 28.874: " 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 support of non-terrestrial network architecture with 5G system functions on board the NTN.

# 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".

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

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| **Next change** |

# 5 Use cases

## 5.X Management support for satellite regenerative payloads

### 5.X.1 Support of non-terrestrial network architecture with 5G system functions on board the NTN

#### 5.X.1.1 Description

Support of non-terrestrial network architecture with 5G system functions on board the NTN (i.e. regenerative payloads) provides new architecture option(s) besides the transparent payload as specified in Rel-17 and Rel-18, which makes the deployment of non-terrestrial network more flexible. TR 38.821 [x] gives an overview about the typical scenario based on regenerative payload is depicted below:



Figure 5.x.1.1-1: Non-terrestrial network typical scenario based on regenerative payload

Satellite regenerative payload is effectively equivalent to having all or part of base station functions (e.g. gNB, CU, or DU) and/or CN functions on board the satellite. Support of regenerative payload brings some benefits on radio resource handling in Uu, and radio resource coordination between the gNBs/eNBs via the ISL. But it also introduces system complexity due to moving RAN node, different LEO/MEO deployment and feeder link switchover, etc. Thus, the 3GPP management systems should provide means for an MnS consumer to manage and control different NTN configurations in the following scenarios:

* Feeder link switchover, due to e.g. maintenance, traffic offloading, or (for LEO) due to the satellite and eNB/gNB moving out of visibility with respect to the current NTN GW.
* Configuration enhancement on the interface management between the RAN and the 5GC, e.g., N2/S1 management.

#### 5.X.1.2 Potential requirements

**REQ-NTN-FUN-0X:** The 3GPP management system shall have the capability to manage feeder link switchover.

#### 5.X.1.3 Potential solutions

##### 5.X.1.3.i Potential solution #<i>: <Potential Solution i Title>

#### 5.X.1.4 Evaluation of potential solutions

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| **End of change** |