**3GPP TSG-RAN WG2#131**

**Bengaluru, IN, Aug. 25th – 29th, 2025**

**Open discussions for regenerative payload in stage 2**

 **[Post131][301][R19 NR NTN] Stage2 CR (Thales)**

      Scope: finalize the running Stage 2 CR

      Intended outcome: Agreed CR

      Deadline: short

# Discussion

The purpose of this discussion is to agree on the necessary or not of a clarification on regenerative payload in stage 2 CR as proposed in R2-2505706 :

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| [R2-2505706](file:///C:\Data\3GPP\Extracts\R2-2505706.docx) Stage 2 updates for regenerative payload NEC discussion Rel-19 NR\_NTN\_Ph3-Core  *Proposal 1: clarify UE supports mobility between gNBs operating with transparent and regenerative NTN payloads in section 16.14.3.2*  *Proposal 2: clarify in section 16.14.3.2.3 that satellite switch with re-synchronization is only for transparent mode*   * **Can be discussed in the post meeting email discussion** |

**Issue #1 : mobility between regenerative and transparent mode**

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| 16.14.3.2 Mobility in RRC\_CONNECTED  16.14.3.2.1 Handover  The same principle as described in 9.2.3.2 applies unless hereunder specified:  During mobility between NTN and Terrestrial Network (TN), a UE is not required to connect to both NTN and TN at the same time.  NOTE: NTN TN handover refers to mobility in both directions, i.e. from NTN to TN (hand-in) and from TN to NTN (hand-out).  DAPS handover is not supported for NTN in this release of the specification.  UE may support mobility between gNBs operating with NTN payloads in different orbits (e.g., GSO, NGSO at different altitudes).  RACH-less handover as specified in 9.2.3.6, in TS 38.321 [6] and in TS 38.331 [12] is supported in NTNs. |

**Proposal 1: clarify UE supports mobility between gNBs operating with transparent and regenerative NTN payloads in section 16.14.3.2**

**1a/ Do you support Proposal 1 ?**

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**1b/ Please comment with bubble on the following TP to modify the text if needed :**

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| 16.14.3.2 Mobility in RRC\_CONNECTED  16.14.3.2.1 Handover  The same principle as described in 9.2.3.2 applies unless hereunder specified:  During mobility between NTN and Terrestrial Network (TN), a UE is not required to connect to both NTN and TN at the same time.  NOTE: NTN TN handover refers to mobility in both directions, i.e. from NTN to TN (hand-in) and from TN to NTN (hand-out).  DAPS handover is not supported for NTN in this release of the specification.  UE may support mobility between gNBs operating with NTN payloads in different orbits (e.g., GSO, NGSO at different altitudes). UE may also support mobility between gNBs operating with transparent and regenerative NTN payloads.  RACH-less handover as specified in 9.2.3.6, in TS 38.321 [6] and in TS 38.331 [12] is supported in NTNs. |

**Issue #2 : Satellite switch with re-synchronization**

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| 16.14.3.2.3 Satellite switch with re-synchronization  Upon both hard and soft satellite switch over in the quasi-Earth fixed scenario with the same SSB frequency and the same gNB, the satellite switch with re-synchronization procedure is supported. The satellite switch with re-sync avoids a L3 mobility for UEs in the cell by maintaining the same PCI on the geographical area covered by quasi-Earth fixed beam.  For soft satellite switch over, the UE can start synchronizing with the target satellite before the source satellite ends to serve the cell. It is not required for the UE to be connected to source satellite when the UE switches to target satellite.  For hard satellite switch over, the UE can only start synchronizing with the target satellite after the switch to the target satellite is initiated.  When both CHO and Satellite switch with re-synchronization are configured, it is up to UE implementation which procedure to initiate, if both of them are triggered simultaneously.  For the re-synchronization to the target satellite, random access can be triggered by a PDCCH order via the target |

**Proposal 2: clarify in section 16.14.3.2.3 that satellite switch with re-synchronization is only for transparent mode**

**2a/ Do you support Proposal 2 ?**

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**2b/ Please comment with bubble on the following TP to modify the text if needed :**

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| 16.14.3.2.3 Satellite switch with re-synchronization  With transparent payload, upon both hard and soft satellite switch over in the quasi-Earth fixed scenario with the same SSB frequency and the same gNB, the satellite switch with re-synchronization procedure is supported. The satellite switch with re-sync avoids a L3 mobility for UEs in the cell by maintaining the same PCI on the geographical area covered by quasi-Earth fixed beam.  For soft satellite switch over, the UE can start synchronizing with the target satellite before the source satellite ends to serve the cell. It is not required for the UE to be connected to source satellite when the UE switches to target satellite.  For hard satellite switch over, the UE can only start synchronizing with the target satellite after the switch to the target satellite is initiated.  When both CHO and Satellite switch with re-synchronization are configured, it is up to UE implementation which procedure to initiate, if both of them are triggered simultaneously.  For the re-synchronization to the target satellite, random access can be triggered by a PDCCH order via the target |