LTE to NR NTN mobility Comments file

Template:

# Xnnn

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| Xnnn | LTE to NR NTN mobility |  |  |  |  |  | vnnn | ToDo |

**[Description]**:

**[Proposed Change]**:

**[Comments]**:

Instructions:

1. Copy the template RIL comments fields above (including the Heading Xnnn)
2. Paste the RIL comments fields at its position while **respecting the order of the RILs in the Review file (i.e. keep the order of the spec).**
3. Fill in the fields, see R19 ASN.1 Guideline.
4. Companies may comment whether they agree or disagree.
5. Can copy spec text and use Word “Track changes”, etc.
6. Do not delete text added by other companies.

# V230

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| V230 | LTE to NR NTN mobility | 1 | Clarification for SMTC offset adjustment for LTE TN to NR NTN mobility | N | vivo (Stephen) |  | v002 | PropAgree |

**[Description]**: When smtc-19 is configured, the offset adjustment behavior should be added in the FD of *smtc* included in RRC Release.

**[Proposed Change]**: The offset adjustment based on the actual propagation delay difference should be added in the FD of *smtc* included in RRC Release. E.g.,

***smtc***

The SSB periodicity/offset/duration configuration of the redirected target NR frequency. It is based on the timing reference of EUTRAN PCell. If the field is absent, the UE uses the SMTC configured in the *measObjectNR* having the same SSB frequency and subcarrier spacing. If E-UTRAN includes *smtc-r19*, the *offset* (derived from parameter *periodicityAndOffset*) is based on the assumption that the difference between the eNB-UE propagation delay for serving cell and gNB-UE propagation delay for neighbour cells is equal to 0 ms, and UE can adjust the actual offset based on the actual propagation delay difference.

**[Comments]**:

**Rapporteur’s comments:** Thanks for raising this RIL. Agree, the modification will be captured in the CR for companies to further comment on. The suggested wording is slightly different from [V230]’s version, the purpose is to align with the field description of measTimingConfig in SIB24.

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| ***smtc***  The SSB periodicity/offset/duration configuration of the redirected target NR frequency. It is based on the timing reference of EUTRAN PCell. If the field is absent, the UE uses the SMTC configured in the *measObjectNR* having the same SSB frequency and subcarrier spacing. If *smtc-r19* is configured, the *offset* (derived from parameter *periodicityAndOffset*) is based on the assumption that the UE's propagation delay difference between serving cell and neighbour cells equals to 0 ms, and UE can adjust the offset based on the actual propagation delay. |

# S905

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| V230 | LTE to NR NTN mobility/TEI19 | 1 | Clarify which neighSatelliteInfoList to use for redirection | R2-250xxxx | Samsung (Jonas) |  | v003 | ToDo |

**[Description]**: The field description of satAssistanceInfoList is currently:



The field is common for both redirection to NR NTN and eMTC NTN. We think that it should be clarified that *neighSatelliteInfoListNR* is used when redirected to NR and *neighSatelliteInfoList* used when redirected to E-UTRAN. Otherwise, it may seem as if neighSatelliteInfoList can be used when redirected to NR NTN, which is not the intention.

**[Proposed Change]**: Clarify in the field description that neighSatelliteInfoListNR is used when redirected to NR and neighSatelliteInfoList when redirected to E-UTRAN. Alternatively, it can state that when the field (satAssistanceInfoList) is configured in *nr-r19*, use *neighSatelliteInfoListNR*, and when the field is configured in *eutra-NTN*, use *neighSatelliteInfoList*.

**[Comments]**:

**Rapporteur’s comments:** Thanks for raising this RIL. This RIL is related with TEI19 for TN to NTN redirection. We can further discuss how to solve it based on companies’ contribution.

# X500

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| X500 | LTE to NR NTN mobility | 1 | Clarify the smtc in the CarrierInforNR-r19 | R2-250xxxx | Xiaomi  (Xiaolong Li) |  | v005 | ToDo |

**[Description]**: The field description of smtc is currently:

***smtc***

The SSB periodicity/offset/duration configuration of the redirected target NR frequency. It is based on the timing reference of EUTRAN PCell. If the field is absent, the UE uses the SMTC configured in the *measObjectNR* having the same SSB frequency and subcarrier spacing.

There are two issues need to be addressed.

The SMTC configuration is mandatory present in the measObjectNR and the smtc configuration is essential for the for the RRC redirection from LTE to NR. However, the measurement on the NR NTN frequency by a RRC Connected UE in an LTE TN cell is currently not supported. So, when the smtc-r19 is absent in CarrierInfoNR-r19, the UE cannot fall back to the SMTC from measObjectNR, due to the lack of a matching NR NTN frequency configuration.

The other issue is that the UE should adjust the offset according to the actual propagation delay for the smtc-r19 in the CarrierInfoNR-r19, which is the same as the cell reselection from LTE to NR NTN.

**[Proposed Change]**:

***smtc***

The SSB periodicity/offset/duration configuration of the redirected target NR frequency. It is based on the timing reference of EUTRAN PCell. If the field is absent, the UE uses the SMTC configured in the *measObjectNR* having the same SSB frequency and subcarrier spacing.

In this release, this field is mandatory present in *CarrierInfoNR-r19*. If the *smtc-19* is present, the *offset* (derived from parameter *periodicityAndOffset*) is based on the assumption that the UE's propagation delay difference between serving cell and neighbour cells equals to 0 ms, and the UE can adjust the offset based on the actual propagation delay.

**[Comments]**:

**Rapporteur’s comments:** Thanks for raising this RIL. This RIL is one of open issues based on last meeting progress. We can further discuss based on companies’ contribution.

# O711

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| O711 | LTE to NR NTN mobility | 1 | Include the satellite information for dedicated priority | R2-250xxxx | OPPO  (Haocheng Wang) |  | v005 | ToDo |

**[Description]**: If NW provides a UE with NR NTN frequencies not in SIB24 without satellite ID information in RRCConnectedRelease message, the UE would not be aware whether this frequency is for TN or NTN and UE cannot associate the related satellite information on this NR NTN frequency. So similar to redirection case, it is also needed to include the satellite ID information in the FreqPriorityNR IE in RRCConnectedRelease message to enable the E-UTRA to provide the dedicated priority for the NR NTN frequencies not provided in SIB24.

**[Proposed Change]**: Include the satellite ID information in the FreqPriorityNR IE in RRCConnectedRelease message.

**[Comments]**:

**Rapporteur’s comments:** Thanks for raising this RIL. This RIL is one of open issues based on last meeting progress. We can further discuss based on companies’ contribution.

# E801

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| E801 | LTE to NR NTN mobility | 1 | Unnecessary complexity by including multiple satellite IDs for a single carrier frequency |  | Ericsson  (Ignacio) |  | V007 | ToDo |

**[Description]**: Provided the large size of NTN cells compared to TN cells. We think there is a low probability that a TN cell will see many satellites in the same carrier frequency operating within its cell coverage. Therefore, we wonder why we introduce the flexibility in signalling to configure multiple Satellite IDs per carrier frequency in SIB24 and RRCConnectionRelease. We understand it should be enough with one, especially in the dedicated message. Otherwise, we fear that the UE may need to try multiple combinations of ephemeris (propagation delay and doppler compensation) to scan a single neighbour carrier frequency which could have an impact on performance.

**[Proposed Change]**:

Use a single satellite ID per carrier frequency instead of a sequence.

CarrierFreqNR-v19xy ::= SEQUENCE {

satAssistanceInfoList-r19 SatelliteId-r18 OPTIONAL -- Need OR

}

**[Comments]**: