3GPP TSG-RAN WG4 Meeting #116 R4-251xxxx

Bengaluru, 25th - 29th August, 2025

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | 38.133 | **CR** | draft | **rev** | 1 | **Current version:** | 19.1.0 |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network |  |

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| ***Title:*** | DraftCR on satellite switch delay for soft satellite switch with re-sync for Ku band | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | MediaTek inc., Eutelsat Group | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_NTN\_Ku\_bands-Core | | | | |  | ***Date:*** | | | 20 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | |  |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
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| ***Reason for change:*** | | Introduce RRM requirement for Satellite switching with re-synchronization in Ku-band | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Introduce RRM requirement for Satellite switching with re-synchronization in Ku-band , including   * Satellite switching delay * Interruption time for hard satellite switch with re-sync * Satellite switch delay for soft satellite switch with re-sync | | | | | | | | |
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| ***Consequences if not approved:*** | | RRM requirement for Satellite switching with re-synchronization in Ku-band | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | (new) 6.1C.3.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

## <<< START OF CHANGES 1>>>

6.1C.3.3 NR SAN Satellite switching with re-synchronization for FR2-NTN

The requirements in this clause are applicable to both hard and soft switch over quasi-earth fixed scenario from FR2-NTN cell to FR2-NTN cell. The requirements in this clause apply provided that UE has the valid and applicable parameters of ephemeris information, common TA, DL and UL Polarization information, Koffset, and Kmac for target NR SAN cell during Dswitch\_unchangedPCI, otherwise interruption time may be longer than the requirements in clause 6.1C.3.3.2 for hard satellite switch and satellite switch delay may be longer than the requirements in clause 6.1C.3.3.3 for soft satellite switch.

Requirements for soft satellite switching are applicable for UEs that support *softSatelliteSwitchResyncNTN-r18* [14]when network configures soft satellite switching with resynchronization [2].

Requirements for hard satellite switching are applicable for UEs that support *hardSatelliteSwitchResyncNTN-r18* or *softSatelliteSwitchResyncNTN-r18* [14] when the network configures hard satellite switching with resynchronization [2]; or for UEs that support *hardSatelliteSwitchResyncNTN-r18* but do not support *softSatelliteSwitchResyncNTN-r18* when the network configures soft satellite switching with resynchronization.

Note: UE indicating ‘*mechanical’* via UE capability *ntn-VSAT-AntennaType-r18* is not expected to indicate support of *softSatelliteSwitchResyncNTN-r18* [15].

6.1C.3.3.1 Satellite switching delay

The requirements in clause 6.1C.3.2.1 shall apply except that

- clause 6.1C.3.2.2 is replaced with clause 6.1C.3.3.2, and

- clause 6.1C.3.2.3 is replaced with 6.1C.3.3.3.

6.1C.3.3.2 Interruption time for hard satellite switch with re-sync

The requirements in clause 6.1C.3.2.2 shall apply except that Tinterrupt is replaced with

Tinterrupt = Tsat\_beam +Tsearch + Tprocessing + T∆ + Tmargin ms

where:

- Tsearch, Tprocessing, T∆ and Tmargin are as defined in clause 6.1C.3.2.2,

- Tsat\_beam is additional time for UE to steer the downlink spatial domain reception filter to the target cell.

- For UE indicating ‘*electronic’* via UE capability *ntn-VSAT-AntennaType-r18*, Tsat\_beam is 3\*TSSB, where TSSB is the periodicity of the SSB of the source satellite.

- For UE indicating ‘*mechanical’* via UE capability *ntn-VSAT-AntennaType-r18*, Tsat\_beam is Oangle / 22.5 s, where Oangle is the angle offset observed from UE in degree between the satellite for the serving cell and the satellite for the target cell.

6.1C.3.3.3 Satellite switch delay for soft satellite switch with re-sync

The requirements in clause 6.1C.3.2.3 shall apply except that

- clause 9.2C.5.3 is replaced with clause 9.2C.7.3, and

- Tsoft\_switch is replaced with

Tsoft\_switch = max(*t-service*-*t-serviceStart*, Tsat\_beam + Tsearch + T∆ + Tmargin) + Tprocessing ms

where

- Tsearch, Tprocessing, T∆ and Tmargin are as defined in clause 6.1C.3.2.3,

- Tsat\_beam is additional time for UE to steer the downlink spatial domain reception filter to the target cell.

- For UE indicating ‘*electronic’* via UE capability *ntn-VSAT-AntennaType-r18*, Tsat\_beam is 3\*TSSB, where TSSB is the periodicity of the SSB of the source satellite.

In addition, following scheduling restriction applies during the time period from *t-serviceStart* to *t-service*,

- If *deriveSSB-IndexFromCell* is enabled the UE is not expected to transmit PUCCH/PUSCH/SRS or receive PDCCH/PDSCH/TRS/CSI-RS for CQI on SSB symbols to be measured within SMTC window duration.

- If *deriveSSB-IndexFromCell* is not enabled the UE is not expected to transmit PUCCH/PUSCH/SRS or receive PDCCH/PDSCH/TRS/CSI-RS for CQI on all symbols within SMTC window duration.

The requirements in this clause do not apply if the time span from the last slot of SI transmission within SI modification period where the broadcasting of the last updated value for *t-ServiceStart-r18* and *ssb-TimeOffset-r18* is acquired by the UE for the first time to the first slot corresponding to *t-ServiceStart-r18* is is less than 1 s.

## <<< END OF CHANGES 1>>>