**3GPP TSG- Meeting #**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
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|  |  | **CR** |  | **rev** |  | **Current version:** |  |  |
|  |
| *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 |  | Core Network |  |

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| ***Title:***  | (NR\_NTN\_enh-Core) CR on phase continuity requirements for DMRS bundling |
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| ***Source to WG:*** |  |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** |  |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** |  |  | ***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 canbe 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:*** | Although the phase continuity requirements for DMRS bundling are defined for NR NTN, the bundling conditions do not include NTN-specific aspects. This change incorporates the missing NTN-specific condition. |
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| ***Summary of change:*** | Add “UE specific TA and common TA do not update.” in NTN-specific condition on 6.4.2.2 |
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| ***Consequences if not approved:*** | The NTN-specific condition on the phase continuity requirements for DMRS bundling is missing in the specification |
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| ***Clauses affected:*** | 6.4.2.2 |
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|  | **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 Change >>***

## 6.4 Transmit signal quality

### 6.4.1 Frequency error

The NTN satellite UE basic measurement interval of modulated carrier frequency is 1 UL slot. The NTN satellite UE pre-compensates the uplink modulated carrier frequency by the estimated Doppler shift according to 3GPP TS 38.300 [9] clause 16.14.2. The mean value of basic measurements of NTN UE modulated carrier frequency shall be accurate to within ± 0.1 PPM observed over a period of 1 ms of cumulated measurement intervals compared to ideally pre-compensated reference uplink carrier frequency.

[NOTE: The ideally pre-compensated reference uplink carrier frequency consists of the UL carrier frequency signalled to the UE by SAN and UL pre-compensated Doppler frequency shift.]

### 6.4.2 Transmit modulation quality

#### 6.4.2.1 General

The requirements for transmit modulation quality defined in 3GPP TS 38.101-1 [5] clause 6.4.2 shall apply for NTN satellite UE except for 256QAM and clause 6.4.2.5.

#### 6.4.2.2 Phase continuity requirements for DMRS bundling

For bands that NTN UE indicates the support of DMRS bundling, when the NTN UE is configured with DMRS bundling, the maximum allowable difference between the measured phase value in any slot p-1 and slot p, or slot 0 and any slot p for each antenna connector shall satisfy the requirements as listed in Table 6.4.2.5-1 of TS 38.101-1 [5] for the measurement conditions defined in Table 6.4.2.5-2 of TS 38.101-1 [5], within a measurement time window limited by the UE capability of maximum duration for DMRS bundling [*maxDurationDMRS-Bundling-r17*] for GSO scenario and [*maxDurationDMRS-Bundling-NTN-NGSO-r18*] for NGSO scenario , and defined for each frequency band separately. The phase value for each slot is measured as shown in Annex F.9 of TS 38.101-1 [5]. These requirements apply to PUCCH and PUSCH transmissions with DFT-s-OFDM and CP-OFDM waveforms.

The above requirements are applicable when all the following conditions are met within the measurement time window:

- RB allocation in terms of length and frequency position does not change, and intra-slot and inter-slot frequency hopping is not activated.

- Modulation order does not change.

- No network commanded TA takes effect.

- The TPMI precoder does not change.

- There is no change in UE transmission power level, and no change in the level of P-MPR applied by the UE.

- UE is not scheduled with uplink transmission of other physical channel/signal in-between the PUSCH or PUCCH transmissions.

- Doppler conditions are set to zero and delay conditions are set to constant.

- UE specific TA and common TA do not update.

## ***<< End of Change >>***