**3GPP TSG RAN Meeting #98-e RP-222xxx**

**Electronic Meeting, December 12-16, 2022**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **36.307** | **CR** | **xxxx** | **rev** |  | **Current version:** | **17.2.0** |  |
|  | | | | | | | | |
| *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 | **x** | Radio Access Network |  | Core Network |  |

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| ***Title:*** | CR to TS 36.307: release independence requirements introduction for NTN IoT, Rel-17 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** | Huawei, HiSilicon, MediaTek Inc. | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LTE\_NBIOT\_eMTC\_NTN\_req-Core | | | | |  | ***Date:*** | | | 2022-12-16 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Core part of LTE\_NBIOT\_eMTC\_NTN\_req WI was declared 100% completed this meeting. However, we were made aware that there is one formal CR missing, which was not captured by RAN4. Formal CR to TS 36.307 was not processed during RAN4#105. Therefore, we are fixing this by this company CR.  Related Draft CR was Endorsed during last RAN4#105 meeting in R4-2219975.  RAN4 Reason for change:  Based on moderator’s recommendation, draft CR to 36.307 is provided to introduce release independence requirements for NTN IoT, covering both the NB-IoT as well as the eMTC. | | | | | | | | |
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| ***Summary of change:*** | | * Correction of the specification’s scope * Adding 36.102 reference * Adding new annex F for the Rel-17 NTN IoT requirements for UE RF, RRM and UE demodulation (placeholder only). | | | | | | | | |
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| ***Consequences if not approved:*** | | Implementation of the LTE\_NBIOT\_eMTC\_NTN\_req-Core work item would not be complete. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 1, 2, 3A.4, F.1, F.2, F.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | |  | | |
| ***affected:*** | |  | **x** | Test specifications | | | |  | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

*------------------------------ Modified section ------------------------------*

# 1 Scope

The present document specifies requirements for Rel-16 UEs supporting release independent features like:

- additional E-UTRA operating frequency bands on top of Rel-16 of TS 36.101 [2] and TS 36.133 [3];

- additional E-UTRA CA configurations (intra-band/inter-band) on top of Rel-16 of TS 36.101 [2] and TS 36.133 [3];

- additional operating bands and/or CA configurations for specific features (like UE category 0, M1, NB1);

- other release independent features (like 4Rx antenna port, high speed scenario, 8Rx antenna port, NB-IoT or eMTC operation over NTN).

*------------------------------ Next modified section ------------------------------*

# 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".

[2] 3GPP TS 36.101: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) Radio Transmission and Reception".

NOTE: The considered release is given in the text of the present document that uses TS 36.101 [2].

[3] 3GPP TS 36.133: "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for Support of Radio Resource Management".

NOTE: The considered release is given in the text of the present document that uses TS 36.133 [3].

[4] 3GPP TS 36.306: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio access capabilities".

NOTE: The considered release is given in the text of the present document that uses TS 36.306 [4].

[5] Void

[6] 3GPP TS 36.102: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception for satellite access".

NOTE: The considered release is given in the text of the present document that uses TS 36.102 [6].

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## 3A.4 Other release independent features

This clause covers requirements for a Rel-16 UE coming from all other release independent features that are not covered under clause 3A.1, 3A.2 and 3A.3, e.g. generic baseband requirements or requirements that are not band/CA configuration specific.

Table 3A.4-1: Additional requirements of other release independent features

|  |  |  |  |
| --- | --- | --- | --- |
| Feature | Release  independent from | Requirements to be fulfilled  (see 36.307 of the REL when the feature was introduced) | Further information |
| RF and performance requirements for 4Rx UEs | Rel-10 | Table C.1-1, Table C.2-1 for single carrier and Table C.1-2, Table C.2-2 for CA | Rel-13 WI LTE\_4Rx\_AP\_DL introduced:  - single carrier RF requirements for bands 1, 2, 3, 7, 20, 39, 41, 42: see Table C.1-1  - CA RF requirements for CA\_3A-42A and other 1UL CA configurations (see TS 36.101 REL-13 [2] Table 7.3.1A-0a NOTE 20): see Table C.1-2  - single carrier performance requirements for demodulation and CSI: see Table C.2-1  REL-14 WI LTE\_4Rx\_AP\_DL\_bands introduced:  - single carrier RF requirements for band 35, 40: see Table C.1-1  - CA RF requirements for some further 1UL CA configurations (see TS 36.101 REL-14 [2]): see Table C.1-2  REL-14 WI LTE\_4Rx\_AP\_DL\_CA introduced:  - CA RF requirements for some 2DL/2UL CA configurations (see TS 36.101 REL-14 [2]): see Table C.1-2  - CA performance requirements for demodulation/SDR and CSI: see Table C2-2  REL-15 WI LTE\_4Rx\_AP\_DL\_bands\_R15 introduced:  - single carrier RF requirements for band 4, 34, 43, 66: see Table C.1-1  - CA RF requirements for some further 1UL CA configurations (see TS 36.101 REL-15 [2]): see Table C.1-2 |
| RF and performance requirements for 8Rx UEs | Rel-13 | Table E.1-1, Table E.2-1 for single carrier and Table E.1-2, Table E.2-2 for CA | Rel-15 WI LTE\_8Rx\_AP\_DL introduced:  - single carrier RF requirements for band 41, 42,43: see Table E.1-1  - CA RF requirements for CA\_41C, CA\_42C and CA\_41A-42A CA configurations (see TS 36.101 Rel-15 [2]): see Table E.1-2  - single carrier performance requirements for demodulation and CSI: see Table E.2-1  - CA performance requirements for demodulation/SDR: see Table E.2-2 |
| RRM and demodulation requirements for high speed scenario | Rel-13 (NOTE 1) | Table D.1-1, Table D.2-1 | Rel-14 WI LTE\_high\_speed introduced band independent RRM and demodulation requirements. see Table D.1-1, Table D.2-1 |
| RF, RRM and demodulation requirements for NB-IoT standalone operation over NTN | Rel-17 | Table F.1-1 for UE RF requirements,  Table F.2-1 for RRM requirements | Rel-18 WI LTE\_NBIoT\_eMTC\_NTN\_req introduced RF, RRM and demodulation requirements for NB-IoT standalone operation over NTN.  See tables F.1-1, F.2-1. |
| RF, RRM and demodulation requirements for eMTC operation over NTN | Rel-17 | Table F.1-2 for UE RF requirements,  Table F.2-2 for RRM requirements | Rel-18 WI LTE\_NBIoT\_eMTC\_NTN\_req introduced RF, RRM and demodulation requirements for eMTC operation over NTN.  See tables F.1-2, F.2-2. |
| NOTE: Rel-13 UEs supporting the high speed scenario requirements are assumed to read the Rel-14 high speed scenario information, which is broadcast to all UEs. | | | |

*------------------------------ Next modified section ------------------------------*

# Annex F (normative): Common requirements for NB-IoT or eMTC operation over NTN

# F.1 Common UE RF requirements

The requirements and test cases listed in Table F.1-1 are specified in TS 36.102 Rel-18 [6].

Table F.1-1: RF requirements for NB-IoT operation over NTN

|  |  |
| --- | --- |
| Clause | Description |
| 5.2B | Operating bands |
| 5.3B | Channel bandwidth |
| 5.4B | Channel arrangement |
| 6.1 | General transmitter characteristics |
| 6.2B | Transmit power |
| 6.3B | Output power dynamics |
| 6.4B | Transmit signal quality |
| 6.5B | Output RF spectrum emissions |
| 6.6B | Transmit intermodulation |
| 7.1 | General receiver characteristics |
| 7.2 | Diversity characteristics |
| 7.3B | Reference sensitivity power level |
| 7.4B | Maximum input level |
| 7.5B | Adjacent Channel Selectivity (ACS) |
| 7.6B | Blocking characteristics |
| 7.7B | Spurious response |
| 7.8B | Intermodulation characteristics |
| 7.9 | RX spurious emissions |

The requirements and test cases listed in Table F.1-2 are specified in TS 36.102 Rel-18 [6].

Table F.1-2: RF requirements for eMTC operation over NTN

|  |  |
| --- | --- |
| Clause | Description |
| 5.2A | Operating bands |
| 5.3A | Channel bandwidth |
| 5.4A | Channel arrangement |
| 6.1 | General transmitter characteristics |
| 6.2A | Transmit power |
| 6.3A | Output power dynamics |
| 6.4A | Transmit signal quality |
| 6.5A | Output RF spectrum emissions |
| 6.6A | Transmit intermodulation |
| 7.1 | General receiver characteristics |
| 7.2 | Diversity characteristics |
| 7.3A | Reference sensitivity power level |
| 7.4A | Maximum input level |
| 7.5A | Adjacent Channel Selectivity (ACS) |
| 7.6A | Blocking characteristics |
| 7.7A | Spurious response |
| 7.8A | Intermodulation characteristics |
| 7.9 | RX spurious emissions |

# F.2 Common RRM requirements

The requirements and test cases listed in Table F.2-1 are specified in 36.133 Rel-18 [3].

Table F.2-1: RRM requirements for NB-IoT operation over NTN

|  |  |
| --- | --- |
| Clause | Description |
| 6.5A | RRC Re-establishment for NB-IoT UEs for Satellite Access |
| 6.6A | Random Access for UE category NB1 for Satellite Access |
| 6.9.A | RRC Connection Redirection to Non-anchor Carrier in NB-IoT for Satellite Access |
| 7.20A | UE transmit timing for NB-IoT for Satellite Access |
| 7.21A | UE timer accuracy for NB-IoT for Satellite Access |
| 7.22A | Timing Advance for NB-IoT for Satellite Access |
| 8.14A | Measurements for UE category NB-IoT for Satellite Access |

The requirements and test cases listed in Table F.2-2 are specified in 36.133 Rel-18 [3].

Table F.2-2: RRM requirements for eMTC operation over NTN

|  |  |
| --- | --- |
| Clause | Description |
| 5.5A | E-UTRAN Handover for Cat-M1 UEs for Satellite Access |
| 6.2.3A | Random Access Requirements for Cat-M1 UEs for Satellite Access |
| 6.7A | RRC Re-establishment for Cat-M1 UEs for Satellite Access |
| 6.8A | RRC Connection Release with Redirection for UE Category M1 for Satellite Access |
| 7.19A | Radio Link Monitoring for UE Category M1 for Satellite Access |
| 7.24A | UE transmit timing for Category M1 for Satellite Access |
| 7.27A | UE timer accuracy for category M1 for Satellite Access |
| 7.28A | Timing Advance for Category M1 for Satellite Access |
| 8.13A | Measurements for UE Category M1 for Satellite Access |

*------------------------------ End of modified section ------------------------------*