**3GPP TSG-RAN WG4 Meeting # 94-e-Bis *R4-2005570***

**Electronic Meeting, 20 – 30 April 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.141-1** | **CR** | **<CR#>** | **rev** | **1** | **Current version:** | **15.5.0** |  |
|  | | | | | | | | |
| *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:*** | Draft CR to TS 38.141-1: Clarifications and corrections on extreme test environment | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell, Ericsson | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_newRAT-Perf | | | | |  | ***Date:*** | | | 2020-04-29 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-15 |
|  | *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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
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| ***Reason for change:*** | | The wordings relating to extreme test environment are not aligned between the conducted and OTA tests, and some references to annexes are wrong. | | | | | | | | |
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| ***Summary of change:*** | | Align the wording relating to extreme test environment for the conducted and OTA tests, and correct the wrong references to annexes. | | | | | | | | |
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| ***Consequences if not approved:*** | | Errors remain and would lead to different interpretations. | | | | | | | | |
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| ***Clauses affected:*** | | 6.2.4.1, 7.2.4.1, C.1, C.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **X** |  | Test specifications | | | | TS 38.141-2 CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**<Start of change>**

#### 6.2.4.1 Initial conditions

Test environment:

- Normal, see annex B.2,

- Extreme, see annexes B.3 and B.5.

RF channels to be tested for single carrier: B, M and T; see clause 4.9.1

*Base Station RF Bandwidth* positions to be tested for multi-carrier and/or CA:

- BRFBW, MRFBW and TRFBW for *single-band connector(s)*, see clause 4.9.1.

- BRFBW\_T'RFBW and B'RFBW\_TRFBW for *multi-band connector(s)*, see clause 4.9.1.

Under extreme test environment, it is sufficient to test on one NR-ARFCN or one RF bandwidth position, and with one applicable test configuration defined in clauses 4.7 and 4.8. Testing shall be performed under extreme power supply conditions, as defined in Annex B.5.

NOTE: Tests under extreme power supply conditions also test extreme temperatures.

**<Next change>**

7.2.4.1 Initial conditions

Test environment:

- Normal; see annex B.2.

- Extreme, see annexes B.3 and B.5.

RF channels to be tested for single carrier: B, M and T; see clause 4.9.1.

On each of B, M and T, the test shall be performed under extreme power supply conditions as defined in annex B.5.

NOTE: Tests under extreme power supply conditions also test extreme temperatures.

**<Next change>**

# C.1 Measurement of transmitter

Table C.1-1: Derivation of test requirements (Transmitter tests)

| Test | Minimum requirement in TS 38.104 [2] | Test Tolerance (TT) | Test requirement in the present document |
| --- | --- | --- | --- |
| 6.2 Base station output power | See TS 38.104 [2], clause 6.2 | Normal and extreme conditions:  0.7 dB, f ≤ 3.0 GHz  1.0 dB, 3.0 GHz < f ≤ 6GHz (Note) | Formula:  Upper limit + TT, Lower limit - TT |
| 6.3 Output power dynamics | See TS 38.104 [2], clause 6.3 | 0.4 dB | Formula:  Total power dynamic range – TT (dB) |
| 6.4.1 Transmitter OFF power | See TS 38.104 [2], clause 6.4.1 | 2.0 dB, f ≤ 3.0 GHz  2.5 dB, 3.0 GHz < f ≤ 6 GHz  (Note) | Formula:  Minimum Requirement + TT |
| 6.4.2 Transient period | See TS 38.104 [2], clause 6.4.2 | N/A |  |
| 6.5.2 Frequency error | See TS 38.104 [2], clause 6.5.1 | 12 Hz | Formula:  Frequency Error limit + TT |
| 6.5.4 Time alignment error | See TS 38.104 [2], clause 6.5.3 | 25ns | Formula:  Time alignment error limit + TT+ TT |
| 6.5.3 Modulation quality (EVM) | See TS 38.104 [2], clause 6.5.2 | 1% | Formula:  EVM limit + TT |
| 6.6.2 Occupied bandwidth | See TS 38.104 [2], clause 6.6.2 | 0 Hz | Formula:  Minimum Requirement + TT |
| 6.6.3 Adjacent Channel Leakage Power Ratio (ACLR) | See TS 38.104 [2], clause 6.6.3 | ACLR/CACLR:  BW ≤ 20MHz:  0.8dB  BW > 20MHz:  1.2 dB  Absolute ACLR/CACLR:  0 dB | Formula:  ACLR Minimum Requirement - TT  Absolute limit +TT |
| 6.6.4 Operating band unwanted emissions | See TS 38.104 [2], clause 6.6.4 | Offsets < 10MHz  1.5 dB, f ≤ 3.0GHz  1.8 dB, 3.0GHz < f ≤ 6GHz  (Note)  Offsets ≥ 10MHz  0dB | Formula:  Minimum Requirement + TT |
| 6.6.5.5.1.1 General transmitter spurious emissions requirements  Category A | See TS 38.104 [2], clause 6.6.5.1 | 0dB | Formula:  Minimum Requirement + TT |
| 6.6.5.5.1.1 General transmitter spurious emissions requirements  Category B | See TS 38.104 [2], clause 6.6.5.1 | 0dB | Formula:  Minimum Requirement + TT |
| 6.6.5.5.1.2 Protection of the BS receiver of own or different BS | See TS 38.104 [2], clause 6.6.5.2.2 | 0dB | Formula:  Minimum Requirement + TT |
| 6.6.5.5.1.3 Additional spurious emissions requirements | See TS 38.104 [2], clause 6.6.5.2.3 | 0dB | Formula:  Minimum Requirement + TT |
| 6.6.5.5.1.4 Co-location with other base stations | See TS 38.104 [2], clause 6.6.5.2.4 | 0dB | Formula:  Minimum Requirement + TT |
| 6.7 Transmitter intermodulation | See TS 38.104 [2], clause 6.7 | 0dB | Formula: Ratio + TT |
| NOTE 1: TT values for 4.2 GHz < f ≤ 6.0 GHz apply for BS operates in licensed spectrum only.  NOTE 2: TT values are applicable for normal condition unless otherwise stated. | | | |

# C.2 Measurement of receiver

Table C.2-1: Derivation of test requirements (Receiver tests)

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| --- | --- | --- | --- |
| Test | Minimum requirement in TS 38.104 [2] | Test Tolerance  (TT) | Test requirement in the present document |
| 7.2 Reference sensitivity level | See TS 38.104 [2], clause 7.2 | Normal and extreme conditions:  0.7 dB, f ≤ 3.0 GHz  1.0 dB, 3.0 GHz < f ≤ 4.2 GHz  1.2 dB, 4.2 GHz < f ≤ 6.0 GHz | Formula: Reference sensitivity power level + TT |
| 7.3 Dynamic range | See TS 38.104 [2], clause 7.3 | 0.3 dB | Formula: Wanted signal power + TT |
| 7.4 In-band selectivity and blocking | See TS 38.104 [2], clause 7.4 | 0dB | Formula: Wanted signal power + TT |
| 7.5 Out-of-band blocking | See TS 38.104 [2], clause 7.5 | 0dB | Formula: Wanted signal power + TT |
| 7.6 Receiver spurious emissions | See TS 38.104 [2], clause 7.6 | 0dB | Formula:  Minimum Requirement + TT |
| 7.7 Receiver intermodulation | See TS 38.104 [2], clause 7.7 | 0dB | Formula: Wanted signal power + TT |
| 7.8 In-channel selectivity | See TS 38.104 [2], clause 7.8 | 1.4 dB, f ≤ 3.0 GHz  1.8 dB, 3.0 GHz < f ≤ 4.2 GHz  2.1 dB, 4.2 GHz < f ≤ 6.0 GHz | Formula: Wanted signal power + TT |
| NOTE: TT values are applicable for normal condition unless otherwise stated. | | | |

**<End of change>**