**3GPP TSG- Meeting # *R4-2409905***

**, , -**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** |  | **rev** | **1** | **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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Apple, [Samsung], vivo | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***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 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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | During RAN4 #110bis an agreement was reached on scaling the existing PC2 requirements to define the PC3 requirement as follows [R4-2406081]  Issue 2-4-6: How to define TRP PC3 requirements based on PC2  Agreements:  - For the TDD bands support PC2, and the measurement campaign is performed with PC2, RAN4 to define PC3 TRP for that band based on 3dB offset of PC2 requirements. For FDD bands, the offset value will not be specified in Rel-18. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Introduce PC3 TRP requirements for browsing mode in bands n41 and n78 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | PC3 TRP requirements would not be defined | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.2.1.1.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | |  | | |
| ***affected:*** | | **X** |  | Test specifications | | | | 38.521-1 | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | Please refer to R4-2406081 for additional details | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

<< start of changes >>

# 6 FR1 TRP requirements

## 6.1 General

The TRP requirements specified in Clause 6 apply to handheld UE with TAS off and power back-off functions disabled.

The TRP requirements defined in Clause 6.2 should be verified based on the detailed test parameters in Table 5.3-1.

## 6.2 Minimum requirement

### 6.2.1 Minimum requirement for handheld UE

The average measured total radiated power (TRP) of low, mid and high channel for handheld UE shall be higher than the average TRP requirement specified in subclauses 6.2.1.1 and 6.2.1.2. The averaging shall be done in linear scale for the TRP results of both right and left side of the phantom head in case of beside the head and hand phantom positions. For the hand phantom browsing mode position the averaging shall be done in linear scale for the TRP results of both right and left hand phantom measurements.

For UEs which do not support NR FR1 in stand-alone mode, EN-DC mode requirements apply. SA and EN-DC test case applicability is defined in Clause 4.3, and test case applicability based on power class capability is defined in Clause 4.4. The relevant test methodology is defined in Annexes A and B of this specification.

#### 6.2.1.1 Hand phantom browsing mode

Hand phantom browsing mode positions are defined in Clause B.3.1.

##### 6.2.1.1.1 NR FR1

Handheld UE TRP minimum performance requirement for NR FR1 bands in the hand phantom browsing position and the primary mechanical mode are defined in Tables 6.2.1.1.1-1 and 6.2.1.1.1-2.

Table 6.2.1.1.1-1: Handheld PC3 UE TRP minimum performance requirement for NR FR1 bands in the hand phantom browsing position and the primary mechanical mode

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| NR Band | Bandwidth (MHz) | Usage Scenario | Power Class 3 | |
| Average TRP (dBm) | |
| UE width ≤ 72mm | UE width > 72mm |
| n28 | 20 | HL and HR |  |  |
| n41 | 100 | HL and HR |  | 9.5 |
| n78 | 100 | HL and HR |  | 10.0 |
| n79 | 100 | HL and HR |  |  |

Table 6.2.1.1-2: Handheld PC2 UE TRP minimum performance requirement for NR FR1 bands in the hand phantom browsing position and the primary mechanical mode

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| NR Band | Bandwidth (MHz) | Usage Scenario | Power Class 2 | |
| Average TRP (dBm) | |
| UE width ≤ 72mm | UE width > 72mm |
| n28 | 20 | HL and HR |  |  |
| n41 | 100 | HL and HR |  | 12.5 |
| n78 | 100 | HL and HR |  | 13 |
| n79 | 100 | HL and HR |  |  |

##### 6.2.1.1.2 NR FR1 in EN-DC mode

Handheld UE TRP minimum performance requirement for NR FR1 bands (in EN-DC mode) in the hand phantom browsing position and the primary mechanical mode are defined in Tables 6.2.1.1.2-1 and 6.2.1.1.2-2.

Table 6.2.1.1.2-1: Handheld PC3 UE TRP minimum performance requirement for NR FR1 bands (in EN-DC mode) in the hand phantom browsing position and the primary mechanical mode

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| NR Band | Bandwidth (MHz) | Usage Scenario | Power Class 3 | |
| Average TRP (dBm) | |
| UE width ≤ 72mm | UE width > 72mm |
| n28 | 20 | HL and HR |  |  |
| n41 | 100 | HL and HR |  |  |
| n78 | 100 | HL and HR |  |  |
| n79 | 100 | HL and HR |  |  |

Table 6.2.1.1.2-2: Handheld PC2 UE TRP minimum performance requirement for NR FR1 bands (in EN-DC mode) in the hand phantom browsing position and the primary mechanical mode

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| NR Band | Bandwidth (MHz) | Usage Scenario | Power Class 2 | |
| Average TRP (dBm) | |
| UE width ≤ 72mm | UE width > 72mm |
| n28 | 20 | HL and HR |  |  |
| n41 | 100 | HL and HR |  |  |
| n78 | 100 | HL and HR |  |  |
| n79 | 100 | HL and HR |  |  |

#### 6.2.1.2 Beside the head and hand phantom talk mode

Beside the head and hand phantom mode positions are defined in Clause B.3.2 of this specification.

##### 6.2.1.2.1 NR FR1

Handheld UE TRP minimum performance requirement for NR FR1 bands in the beside head and hand phantom talk position and the primary mechanical mode are defined in Tables 6.2.1.2.1-1 and 6.2.1.2.1-2.

Table 6.2.1.2.1-1: Handheld PC3 UE TRP minimum performance requirement for NR FR1 bands in the beside head and hand phantom talk position and the primary mechanical mode

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| NR Band | Bandwidth (MHz) | Usage Scenario | Power Class 3 | |
| Average TRP (dBm) | |
| UE width ≤ 72mm | UE width > 72mm |
| n28 | 20 | BHHL and BHHR |  |  |
| n41 | 100 | BHHL and BHHR |  |  |
| n78 | 100 | BHHL and BHHR |  |  |
| n79 | 100 | BHHL and BHHR |  |  |

Table 6.2.1.2.1-2: Handheld PC2 UE TRP minimum performance requirement for NR FR1 bands in the beside head and hand phantom talk position and the primary mechanical mode

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| NR Band | Bandwidth (MHz) | Usage Scenario | Power Class 2 | |
| Average TRP (dBm) | |
| UE width ≤ 72mm | UE width > 72mm |
| n28 | 20 | BHHL and BHHR |  |  |
| n41 | 100 | BHHL and BHHR |  |  |
| n78 | 100 | BHHL and BHHR |  |  |
| n79 | 100 | BHHL and BHHR |  |  |

##### 6.2.1.2.2 NR FR1 in EN-DC mode

Handheld UE TRP minimum performance requirement for NR FR1 bands (in EN-DC mode) in the beside head and hand phantom talk position and the primary mechanical mode are defined in Tables 6.2.1.2.2-1 and 6.2.1.2.2-2.

Table 6.2.1.2.2-1: Handheld PC3 UE TRP minimum performance requirement for NR FR1 bands (in EN-DC mode) in the beside head and hand phantom talk position and the primary mechanical mode

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| NR Band | Bandwidth (MHz) | Usage Scenario | Power Class 3 | |
| Average TRP (dBm) | |
| UE width ≤ 72mm | UE width > 72mm |
| n28 | 20 | BHHL and BHHR |  |  |
| n41 | 100 | BHHL and BHHR |  |  |
| n78 | 100 | BHHL and BHHR |  |  |
| n79 | 100 | BHHL and BHHR |  |  |

Table 6.2.1.2.2-2: Handheld PC2 UE TRP minimum performance requirement for NR FR1 bands (in EN-DC mode) in the beside head and hand phantom talk position and the primary mechanical mode

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| NR Band | Bandwidth (MHz) | Usage Scenario | Power Class 2 | |
| Average TRP (dBm) | |
| UE width ≤ 72mm | UE width > 72mm |
| n28 | 20 | BHHL and BHHR |  |  |
| n41 | 100 | BHHL and BHHR |  |  |
| n78 | 100 | BHHL and BHHR |  |  |
| n79 | 100 | BHHL and BHHR |  |  |

<< end of changes >>