**3GPP TSG-RAN5 Meeting #95-e DraftR5-223200r3
Electronic Meeting,** **9th May – 20th May 2022**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **38.508-1** | **CR** | **2402** | **rev** | **-** | **Current version:** | **17.4.0** |  |
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| *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:***  |  |
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| ***Source to WG:*** | Keysight Technologies UK Ltd |
| ***Source to TSG:*** | R5 |
|  |  |
| ***Work item code:*** | TEI15\_Test, 5GS\_NR\_LTE-UEConTest |  | ***Date:*** | 2022-04-25 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***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 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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
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| ***Reason for change:*** | There are notes indicating that a Rel-15 device is exempted to support all mandatory channel bandwidths defined in 38.101-1 and 38.101-3. This exemption does not apply to Rel-16 and forward devices. |
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| ***Summary of change:*** | Clarify when the device is allowed not to support all mandatory channel bandwidths. This clarification takes into account that the maximum (non-optional) channel bandwidth specified in Table 5.3.5-1 of TS 38.101-1 & TS 38.101-2 is mandatory without IOT bit (i.e. purely mandatory) in a band combination with a single band entry and a single CC entry. |
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| ***Consequences if not approved:*** | Test specifications will remain incorrect. |
|  |  |
| ***Clauses affected:*** | 4.3.1.0 |
|  |  |
|  | **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 depends on endorsement of proposal 1B, 2B in discussion R5-223199r2. |
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| ***This CR's revision history:*** | Revision 1: WI code corrected in the coverpageRevision 2: Align with content in R5-223199r2Revision 3: New proposal on channel bandwidths tables taking into account current RAN5 understanding on exemptions for channel bandwidths either for single CC, CA, DC or SUL band combinations. |

## <<< START OF CHANGES >>>

#### 4.3.1.0 General

The test frequencies are based on operating bands defined in TS 38.101-1 [7], TS 38.101-2 [8] and TS 38.101-3 [9].

#### 4.3.1.0A Mid test channel bandwidth

The Mid test channel bandwidth definition for RF is given in Table 4.3.1.0A-1a and Table 4.3.1.0A-2a for FR1 and FR2 respectively.

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Table 4.3.1.0A-1:Void

Table 4.3.1.0A-1a: Mid Test Channel bandwidths for each NR band, FR1

|  |  |
| --- | --- |
| NR Band | UE Mid Test Channel bandwidth1,2[MHz] |
| Rel-15 UE | Rel-16 UE | Rel-17 UE |
| n1 | 15 | 30 | 30 |
| n2 | 15 | 15 | 25 |
| n3 | 20 | 25 | 30 |
| n5 | 15 | 15 | 15 |
| n7 | 15 | 30 | 30 |
| n8 | 15 | 15 | 203,15 |
| n12 | 10 | 10 | 10 |
| n14 | 10 | 10 | 10 |
| n20 | 15 | 15 | 15 |
| n24 | 10 | 10 | 10 |
| n25 | 15 | 25 | 25 |
| n26 | 15 | 15 | 15 |
| n28 | 15 | 20 | 20 |
| n29 | 104 | 104 | 104 |
| n30 | 10 | 10 | 10 |
| n34 | 10 | 10 | 10 |
| n38 | 15 | 256,15 | 256,15 |
| n39 | 20 | 20 | 20 |
| n40 | 40 | 40 | 50 |
| n41 | 608, 407 | 608, 407 | 608, 407 |
| n48 | 20, 509 | 20, 509 | 20, 509 |
| n50 | 40 | 40 | 40 |
| n51 | 5 | 5 | 5 |
| n53 | 10 | 10 | 10 |
| n65 | 20 | 20 | 20 |
| n66 | 25 | 25 | 303, 25 |
| n70 | 15 | 15 | 15 |
| n71 | 15 | 15 | 2510,254,205 |
| n74 | 15 | 15 | 15 |
| n75 | 154 | 304 | 304 |
| n76 | 54 | 54 | 54 |
| n77 | 60 | 60 | 60 |
| n78 | 60 | 60 | 60 |
| n79 | 80 | 80 | 608,407 |
| n80 | 205 | 205 | 255 |
| n81 | 155 | 155 | 155 |
| n82 | 155 | 155 | 155 |
| n83 | 155 | 155 | 205 |
| n84 | 155 | 155 | 305 |
| n86 | 205 | 205 | 205 |
| n95 | 105 | 105 | 105 |
| n97 | 50 | 50 | 50 |
| n99 | 105 | 105 | 105 |
| Note 1: Values listed in this table assume that the (non-optional) channel bandwidths specified in Table 5.3.5-1 of TS 38.101-1 lower than the maximum are supported. If there are two channel bandwidths that have same distance to the mathematical center, the higher one is selected. However, these channel bandwidths are mandatory with IOT bit as defined in *channelBW-DL/channelBW-UL* UE capabilities (i.e., non-CA band combination). Hence the device might not support them. In such case, select the closest channel bandwidth in both DL and UL. This shall apply independently of UE release.Note 2: For CA, DC and SUL, the mid-test channel bandwidth per component carrier is chosen to test the closest aggregated bandwidth to the mathematical center between minimum and maximum aggregated bandwidth defined for and within a given bandwidth combination set. In case no set of channel bandwidths per component carrier supported by the UE can achieve such aggregated bandwidth, select one combination of bandwidths per component carrier within the bandwidth combination set that minimizes the difference to the target aggregated bandwidth. Note 3: This UE channel bandwidth is applicable if 35 MHz is supported (optional in this release of the specification). Otherwise, use lower value.Note 4: This UE channel bandwidth is applicable only to downlink.Note 5: This UE channel bandwidth is applicable only to uplink.Note 6: This channel bandwidth is applicable to side-link operation.Note 7: This channel bandwidth is applicable to SCS=15 kHz only.Note 8: This channel bandwidth is applicable to SCS=30 kHz and 60 kHz only.Note 9: This channel bandwidth is applicable for use as DL SCell in CA or DL SCell in DC configuration.Note 10: This UE channel bandwidth is applicable if 45 MHz is supported (optional n this release of the specification). Otherwise, use lower value. |

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Table 4.3.1.0A-2: VoidTable 4.3.1.0A-2a: Mid Test Channel bandwidths for each NR band, FR2

|  |  |
| --- | --- |
| NR Band | UE Mid Test Channel bandwidth[MHz] |
| Rel-15 UE | Rel-16 UE | Rel-17 UE |
| n257 | 100, 2003 | 100, 2003 | 100, 2003 |
| n258 | 100, 2003 | 100, 2003 | 100, 2003 |
| n260 | 100, 2003 | 100, 2003 | 100, 2003 |
| n261 | 100, 2003 | 100, 2003 | 100, 2003 |
| Note 1: Values listed in this table assume that the (non-optional) channel bandwidths specified in Table 5.3.5-1 of TS 38.101-2 lower than the maximum are supported. If there are two channel bandwidths that have same distance to the mathematical center, the higher one is selected. However, these channel bandwidths are mandatory with IOT bit as defined in *channelBW-DL/channelBW-UL* UE capabilities (i.e., non-CA band combination). Hence the device might not support them. In such case, select the closest channel bandwidth in both DL and UL. This shall apply independently of UE release.Note 2: For CA, DC and SUL, the mid-test channel bandwidth per component carrier is chosen to test the closest aggregated bandwidth to the mathematical center between minimum and maximum aggregated bandwidth defined for and within a given bandwidth combination set. In case no set of channel bandwidths per component carrier supported by the UE can achieve such aggregated bandwidth, select one combination of bandwidths per component carrier within the bandwidth combination set that minimizes the difference to the target aggregated bandwidth. Note 3: This UE channel bandwidth is applicable if 400 MHz is supported (optional in this release of the specification). Otherwise, use lower value. |

#### 4.3.1.0B Low test channel bandwidth

The low test channel bandwidth definition for RF is given in Table 4.3.1.0B-1a and Table 4.3.1.0B-2a for FR1 and FR2 respectively.

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Table 4.3.1.0B-1: Void

Table 4.3.1.0B-1a: Low Test Channel bandwidths for each NR band, FR1

|  |  |
| --- | --- |
| NR Band | UE Low Test Channel bandwidth[MHz] |
| Rel-15 UE | Rel-16 UE | Rel-17 UE |
| n1 | 5 | 5 | 5 |
| n2 | 5 | 5 | 5 |
| n3 | 5 | 5 | 5 |
| n5 | 5 | 5 | 5 |
| n7 | 5 | 5 | 5 |
| n8 | 5 | 5 | 5 |
| n12 | 5 | 5 | 5 |
| n14 | 5 | 5 | 5 |
| n20 | 5 | 5 | 5 |
| n24 | 5 | 5 | 5 |
| n25 | 5 | 5 | 5 |
| n26 | 5 | 5 | 5 |
| n28 | 5 | 5 | 5 |
| n29 | 54 | 54 | 54 |
| n30 | 5 | 5 | 5 |
| n34 | 5 | 5 | 5 |
| n38 | 5 | 5 | 5 |
| n39 | 5 | 5 | 5 |
| n40 | 5 | 5 | 5 |
| n41 | 10 | 10 | 10 |
| n48 | 5 | 5 | 5 |
| n50 | 5 | 5 | 5 |
| n51 | 5 | 5 | 5 |
| n53 | 5 | 5 | 5 |
| n65 | 5 | 5 | 5 |
| n66 | 5 | 5 | 5 |
| n70 | 5 | 5 | 5 |
| n71 | 5 | 5 | 5 |
| n74 | 5 | 5 | 5 |
| n75 | 52 | 52 | 52 |
| n76 | 52 | 52 | 52 |
| n77 | 10 | 10 | 10 |
| n78 | 10 | 10 | 10 |
| n79 | 40 | 40 | 10 |
| n80 | 53 | 53 | 53 |
| n81 | 53 | 53 | 53 |
| n82 | 53 | 53 | 53 |
| n83 | 53 | 53 | 53 |
| n84 | 53 | 53 | 53 |
| n86 | 53 | 53 | 53 |
| n95 | 53 | 53 | 53 |
| n97 | 5 | 5 | 5 |
| n99 | 53 | 53 | 53 |
| Note 1: Values listed in this table assume that the (non-optional) channel bandwidths specified in Table 5.3.5-1 of TS 38.101-1 lower than the maximum are supported. However, these channel bandwidths are mandatory with IOT bit as defined in *channelBW-DL/channelBW-UL* UE capabilities (i.e., non-CA band combination). Hence the device might not support them. In such case, select the closest channel bandwidth in both DL and UL. This shall apply independently of UE release.Note 2: For CA, DC and SUL, the low-test channel bandwidth per component carrier is chosen to allow minimum aggregated bandwidth defined for a given bandwidth combination set. In case no set of channel bandwidths per component carrier supported by the UE can achieve minimum aggregated bandwidth, select one combination of bandwidths per component carrier within the bandwidth combination set that minimizes the aggregated bandwidth. Note 3: This UE channel bandwidth is applicable only to uplink.Note 3: This UE channel bandwidth is applicable only to downlink. |

Table 4.3.1.0B-2: Void

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Table 4.3.1.0B-2a: Low Test Channel bandwidths for each NR band, FR2

|  |  |
| --- | --- |
|  | UE Low Test Channel bandwidth[MHz] |
| NR Band | Rel-15 UE | Rel-16 UE | Rel-17 UE |
| n257 | 50 | 50 | 50 |
| n258 | 50 | 50 | 50 |
| n260 | 50 | 50 | 50 |
| n261 | 50 | 50 | 50 |
| Note 1: Values listed in this table assume that the (non-optional) channel bandwidths specified in Table 5.3.5-1 of TS 38.101-2 lower than the maximum are supported. However, these channel bandwidths are mandatory with IOT bit as defined in *channelBW-DL/channelBW-UL* UE capabilities (i.e., non-CA band combination). Hence the device might not support them. In such case, select the closest channel bandwidth in both DL and UL. This shall apply independently of UE release.Note 2: For CA, DC and SUL, the low-test channel bandwidth per component carrier is chosen to allow minimum aggregated bandwidth defined for a given bandwidth combination set. In case no set of channel bandwidths per component carrier supported by the UE can achieve minimum aggregated bandwidth, select one combination of bandwidths per component carrier within the bandwidth combination set that minimizes the aggregated bandwidth.  |

#### 4.3.1.0C High test channel bandwidth

The high test channel bandwidth definition for RF is given in Table 4.3.1.0C-1a and Table 4.3.1.0C-2a for FR1 and FR2 respectively.

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Table 4.3.1.0C-1: Void

Table 4.3.1.0C-1a: High Test Channel bandwidths for each NR band, FR1

|  |  |
| --- | --- |
| NR Band | UE High Test Channel bandwidth1,2[MHz] |
| Rel-15 UE | Rel-16 UE | Rel-17 UE |
| n1 | 20 | 50 | 50 |
| n2 | 20 | 20 | 40 |
| n3 | 30 | 40 | 50 |
| n5 | 20 | 20 | 253 |
| n7 | 20 | 50 | 50 |
| n8 | 20 | 20 | 20, 353,5 |
| n12 | 15 | 15 | 15 |
| n14 | 10 | 10 | 10 |
| n20 | 20 | 20 | 20 |
| n24 | 10 | 10 | 10 |
| n25 | 20 | 40 | 40, 453,5 |
| n26 | 20 | 20 | 20 |
| n28 | 30 | 30 | 30 |
| n29 | 103 | 103 | 103 |
| n30 | 10 | 10 | 10 |
| n34 | 15 | 15 | 15 |
| n38 | 20 | 25,406 | 25,406 |
| n39 | 40 | 40 | 40 |
| n40 | 507, 808 | 507, 808 | 507, 1008 |
| n41 | 507, 1008 | 507, 1008 | 507, 1008 |
| n48 | 40, 507,9, 1008,9 | 40, 507,9, 1008,9 | 40, 507,9, 1006,8 |
| n50 | 507, 604,8, 803,8 | 507, 604,8, 803,8 | 507, 604,8, 803,8 |
| n51 | 5 | 5 | 5 |
| n53 | 10 | 10 | 10 |
| n65 | 50 | 50 | 50 |
| n66 | 40 | 40 | 40, 455 |
| n70 | 154,253 | 154,253 | 154,253 |
| n71 | 20 | 20 | 204, 303, 353,5 |
| n74 | 20 | 20 | 20 |
| n75 | 20 | 50 | 50 |
| n76 | 53 | 53 | 53 |
| n77 | 507, 1008 | 507, 1008 | 507, 1008 |
| n78 | 507, 1008 | 507, 1008 | 507, 1008 |
| n79 | 507, 1008 | 507, 1008 | 507, 1008 |
| n80 | 30 | 30 | 40 |
| n81 | 204 | 204 | 204 |
| n82 | 204 | 204 | 204 |
| n83 | 204 | 204 | 304 |
| n84 | 204 | 204 | 504 |
| n86 | 404 | 404 | 404 |
| n95 | 154 | 154 | 154 |
| n97 | 504,7, 1004,8 | 504,7, 1004,8 | 504,7, 1004,8 |
| n99 | 104 | 104 | 104 |
| Note 1: Values listed in this table assume that the maximum (non-optional) channel bandwidth specified in Table 5.3.5-1 of TS 38.101-1 is mandatory without IOT bit in *supportedBandwidthDL/* *supportedBandwidthUL* UE capabilities (i.e., purely mandatory) in a band combination with a single band entry and a single CC entry (i.e., non-CA band combination). In case values listed above are higher than *supportedBandwidthDL/supportedBandwidthUL* signalled by the UE, select the value signalled by the UE accordingly. This exemption applies only to Rel-15 and Rel-16. Note 2: For CA, DC and SUL, the High-test channel bandwidth per component carrier is chosen to allow maximum aggregated bandwidth defined for a given bandwidth combination set. In case no set of channel bandwidths per component carrier supported by the UE can achieve maximum aggregated bandwidths, select one combination of bandwidth per component carrier within the bandwidth combination set that maximizes the aggregated bandwidth. This exemption applies only to Rel-15 and Rel-16.Note 3: This channel bandwidth is applicable only to downlink.Note 4: This channel bandwidth is applicable only to uplink.Note 5: This channel bandwidth is optional in this release of the specification. To be used if supported by the device. Otherwise, use the lower value.Note 6: This channel bandwidth is applicable to side-link operation.Note 7: This channel bandwidth is applicable to SCS=15 kHz only.Note 8: This channel bandwidth is applicable to SCS=30 kHz and 60 kHz only.Note 9: This channel bandwidth is applicable for use as DL SCell in CA or DL SCell in DC configuration. |

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Table 4.3.1.0C-2: Void

Table 4.3.1.0C-2a: High Test Channel bandwidths for each NR band, FR2

|  |  |
| --- | --- |
|  | UE High Test Channel bandwidth1,2[MHz] |
| NR Band | Rel-15 UE | Rel-16 UE | Rel-17 UE |
| n257 | 200, 4003 | 200, 4003 | 200, 4003 |
| n258 | 200, 4003 | 200, 4003 | 200, 4003 |
| n260 | 200, 4003 | 200, 4003 | 200, 4003 |
| n261 | 200, 4003 | 200, 4003 | 200, 4003 |
| Note 1: Values listed in this table assume that the maximum (non-optional) channel bandwidth specified in Table 5.3.5-1 of TS 38.101-2 is mandatory without IOT bit in *supportedBandwidthDL/* *supportedBandwidthUL* UE capabilities (i.e., purely mandatory) in a band combination with a single band entry and a single CC entry (i.e., non-CA band combination). In case values listed above are higher than *supportedBandwidthDL/supportedBandwidthUL* signalled by the UE, select the value signalled by the UE accordingly. This exemption applies only to Rel-15 and Rel-16. Note 2: For CA, DC and SUL, the High-test channel bandwidth per component carrier is chosen to allow maximum aggregated bandwidth defined for a given bandwidth combination set. In case no set of channel bandwidth per component carrier supported by the UE can achieve maximum aggregated bandwidths, select one combination of bandwidths per component carrier within the bandwidth combination set that maximizes the aggregated bandwidth. This exemption applies only to Rel-15 and Rel-16.Note 3: This channel bandwidth is optional in this release of the specification. To be used if supported by the device. Otherwise, use the lower value. |

## <<< END OF CHANGES >>>