**3GPP TSG-RAN4 Meeting #116bis *R4-251XXX***

**Prague, CZ, 13th Oct. 2025 - 17th Oct. 2025**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **38.101-1** | **CR** | **-** | **rev** | **-** | **Current version:** | **19.3.0** |  |
|  |
| *For* ***[HELP](http://www.3gpp.org/3G_Specs/CRs.htm%22%20%5Cl%20%22_blank)*** *on using this form: comprehensive instructions can be found at <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:***  | Draft CR to TS38.101-1 on transmission bandwidth configuration for LP-WUS |
|  |  |
| ***Source to WG:*** | ZTE Corporation, Sanechips |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_LPWUS-Core |  | ***Date:*** | 2025-10-16 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-19 |
|  | *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)* |
|  |  |
| ***Reason for change:*** | - The new CBW 7MHz should be supported for LP-WUS.- The transmission bandwidth configuration in Clause 3.2 is “NRB,LP-WUS”, but in Clause 5.3M.2 it is “NRB\_LP-WUS”, and the definition is not aligned. It’s better to align the symbols in TS38.101-1, TS38.101-2 and TS38.104. |
|  |  |
| ***Summary of change:*** | - Add 7MHz CBW as well. - Align the definition of NRB,LP-WUS. |
|  |  |
| ***Consequences if not approved:*** | The symbols are not aligned. 7MHz is not supported for LP-WUS. |
|  |  |
| ***Clauses affected:*** | 3.2, 5.3M.2 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **x** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** | **x** |  |  Test specifications | TS38.521-1 |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

## << Start of change >>

## 3.2 Symbols

For the purposes of the present document, the following symbols apply:

ΔFGlobal Granularity of the global frequency raster

ΔFRaster Band dependent channel raster granularity

ΔfOOB Δ Frequency of Out Of Band emission

ΔFTX-RX Maximum deviation to the Tx-Rx carrier center frequency separation for asymmetric uplink/downlink channel bandwidth operation

∆MPRc Allowed Maximum Power Reduction relaxation for serving cell *c*

ΔPPowerClass Adjustment to maximum output power for a given power class

RB The starting frequency offset between the allocated RB and the measured non-allocated RB

ΔRIB,c Allowed reference sensitivity relaxation due to support for inter-band CA operation, for serving cell *c*

ΔRIBC Allowed relaxation to the power class 3 reference sensitivity level due to support for intra-band contiguous CA operation

ΔRIBNC Allowed relaxation to the power class 3 reference sensitivity level due to support for intra-band non-contiguous CA operation

ΔRIB,4R Reference sensitivity adjustment due to support for 4 antenna ports

ΔRIB,8R Reference sensitivity adjustment due to support for 8 antenna ports

ΔR1RReference sensitivity adjustment due to support for 1 antenna ports

ΔRLP-WUS Reference sensitivity adjustment for specific bands with FDL\_low higher than 2400 MHz

ΔRXR,2R Reference sensitivity adjustment for two antenna ports XR UEs on bands defined in Table 7.3.2-2b

ΔShift Channel raster offset

TC Allowed operating band edge transmission power relaxation

TC,*c*Allowed operating band edge transmission power relaxation for serving cell *c*

ΔTIB,c Allowed maximum configured output power relaxation due to support for inter-band CA operation, inter-band NR-DC operation and due to support for SUL operations, for serving cell *c*

BWChannel Channel bandwidth

BWChannel,block Sub-block bandwidth, expressed in MHz. BWChannel,block= Fedge,block,high- Fedge,block,low

BWChannel\_CA Aggregated channel bandwidth, expressed in MHz

BWChannel,max Maximum channel bandwidth supported among all bands in a release

BWGB max(GBChannel,low, GBChannel,high)

BWDL Channel bandwidth for DL

BWUL Channel bandwidth for UL

BWinterferer Bandwidth of the interferer

Ceil(x) Rounding upwards; ceil(x) is the smallest integer such that ceil(x) ≥ x

Floor(x) Rounding downwards; floor(x) is the greatest integer such that floor(x) ≤ x

FC Center frequency of a carrier for a numerology defined by the *RF reference frequency* on the channel raster mapped to the carrier according to sub-clause 5.4.2.2FC,block, high Fc of the highest transmitted/received carrier in a *sub-block*

FC,block, low Fc of the lowest transmitted/received carrier in a *sub-block*

FC,low The Fc of the lowest carrier, expressed in MHz

FC,high The Fc of the highest carrier, expressed in MHz

FDL\_low The lowest frequency of the downlink *operating band*

FDL\_high The highest frequency of the downlink *operating band*

FUL\_low The lowest frequency of the uplink *operating band*

FUL\_high The highest frequency of the uplink *operating band*

Fedge,block,low The lower *sub-block* edge, where Fedge,block,low = FC,block,low - Foffset, low.

Fedge,block,high The upper *sub-block* edge, where Fedge,block,high = FC,block,high + Foffset, high.

Fedge , low The *lower edge* of *aggregated channel bandwidth*, expressed in MHz. Fedge,low = FC,low - Foffset,low.

Fedge, high The *higher edge* of *aggregated channel bandwidth*, expressed in MHz. Fedge,high = FC,high + Foffset,high.

FInterferer (offset) Frequency offset of the interferer (between the center frequency of the interferer and the carrier frequency of the carrier measured). For intra-band contiguous CA, the FInterferer (offset) is the frequency separation of the center frequency of the carrier closest to the interferer and the center frequency of the interferer

FInterferer Frequency of the interferer

FIoffset Frequency offset of the interferer (between the center frequency of the interferer and the closest edge of the carrier measured)

Foffset Frequency offset from FC\_high to the *higher edge* or FC\_low to the *lower edge.*

Foffset,high Frequency offset from FC,high to the upper *UE RF Bandwidth edge*, or from FC,block, high to the upper sub-block edge

Foffset,low Frequency offset from FC,low to the lower *UE RF Bandwidth edge*, or from FC,block, low to the lower sub-block edge

FOOB The boundary between the NR out of band emission and spurious emission domains

FREF RF reference frequency

FREF-Offs Offset used for calculating FREF

FREF, shift RF reference frequency for Supplementary Uplink (SUL) bands, the uplink of all FDD bands, and TDD bands

Fuw (offset) The frequency separation of the center frequency of the carrier closest to the interferer and the center frequency of the interferer

Gn100post connector Declared value of the post chipset unit antenna connector gain for band n100, used for conversion of the radiated requirement into a conducted requirement (see principles described in annex M)

Gn101post connector Declared value of the post chipset unit antenna connector gain for band n101, used for conversion of the radiated requirement into a conducted requirement (see principles described in annex M)

GBChannel Minimum guard band defined in clause 5.3.3, expressed in kHz

GBChannel(i) Minimum guard band defined in clause 5.3.3 of carrier *i*

GBChannel,low Minimum guard band defined in clause 5.3.3 for the lowest assigned component carrier in clause 5.3A.3

GBChannel,high Minimum guard band defined in clause 5.3.3 for the highest assigned component carrier in clause 5.3A.3

LCRB Transmission bandwidth which represents the length of a contiguous resource block allocation expressed in units of resources blocks

Max() The largest of given numbers

Min() The smallest of given numbers

 Physical resource block number

NRACLR NR ACLR

NRB Transmission bandwidth configuration, expressed in units of resource blocks

NRB\_agg The number of the aggregated RBs within the fully allocated aggregated channel bandwidth

$N\_{RB\_{\\_agg}}=\sum\_{i=1}^{j}N\_{RB\_{i}}∗2^{μ\_{i}}$ for carrier 1 to j, where *μ* is defined in TS 38.211 [6]

NRB,c The transmission bandwidth configuration of component carrier c, expressed in units of resource blocks

$N\_{RB,cj}=N\_{RB\_{j}}∗2^{μ\_{j}}$ for carrier j, where *μ* is defined in TS 38.211 [6]

NRB,LP-WUS Transmission bandwidth configuration for LP-WUS, expressed in units of resource blocks

NRB,largest BW The largest transmission bandwidth configuration of the component carriers in the bandwidth combination, expressed in units of resource blocks

NRB,low The transmission bandwidth configurations according to Table 5.3.2-1 for the lowest assigned component carrier in clause 5.3A.1

NRB,high The transmission bandwidth configurations according to Table 5.3.2-1 for the highest assigned component carrier in clause 5.3A.1

NREF NR Absolute Radio Frequency Channel Number (NR-ARFCN)

NREF-Offs Offset used for calculating NREF

PCMAX The configured maximum UE output power

PCMAX, *c* The configured maximum UE output power for serving cell *c*

PCMAX, *f*, *c* The configured maximum UE output power for carrier *f* of serving cell *c* in each slot

PEMAX Maximum allowed UE output power signalled by higher layers

PEMAX, *c* Maximum allowed UE output power signalled by higher layers for serving cell *c*

PInterferer Modulated mean power of the interferer

Plargest BW Power of the largest transmission bandwidth configuration of the component carriers in the bandwidth combination

PPowerClass The nominal UE power (i.e., no tolerance)

Pmax,c,ACMaximum output power defined as the sum of measurement of all antenna connectors

Pmax,c,TABC Maximum carrier output power defined as the sum of measurement of all TAB connectors

Prated,c,AC Rated maximum output power defined as the sum of power over all antenna connectors

Prated,c,TABC Rated maximum output power defined as the sum of power over all TAB connectors

P-MPR*c* Power Management Maximum Power Reduction for serving cell *c*

PRB The transmitted power per allocated RB, measured in dBm

PREFSENS\_SL The REFSENS power for Sidelink

PUMAX The measured configured maximum UE output power

Puw Power of an unwanted DL signal

Pw Power of a wanted DL signal

RBstart The lowest RB index of transmitted resource blocks

RBstart\_CA The lowest RB index of transmitted resource blocks for intra-band contiguous CA

SCSc SCS for the component carrier c, expressed in kHz

SCSlargest BW SCS for the largest transmission bandwidth configuration of the component carriers in the bandwidth combination, expressed in kHz

SCSlow SCS for the lowest assigned component carrier in clause 5.3A.1, expressed in kHz

SCShigh SCS for the highest assigned component carrier in clause 5.3A.1, expressed in kHz

*tp* Transient Period value signalled by the UE

*tpstart* Start position of transient period relative to the symbol boundary

T(PCMAX, *f*, *c*) Tolerance for applicable values of PCMAX, *f*, *c* for configured maximum UE output power for carrier *f* of serving cell *c*

TL,c Absolute value of the lower tolerance for the applicable *operating band* as specified in clause 6.2.1

SSREF SS block reference frequency position

UTRAACLR UTRA ACLR

## << Next change >>

## 5.3M UE channel bandwidth for LP-WUS/WUR

### 5.3M.1 General

The LP-WUS carrier bandwidth corresponding to the UE channel bandwidth for LP-WUS is defined as the sum of resource blocks (RBs) occupied by the LP-WUS signal and the guard RBs separating it from the NR signal. The LP-WUS carrier is embedded within the NR channel and is flexibly positionable, provided alignment with the NR PRB grid is maintained.

A guard RB is referred to as an ASCS guard RB when located between an NR RB and an LP-WUS RB, and as an ACS guard RB when positioned between the NR guardband as specified in Table 5.3.3-1 and an LP-WUS RB.

### 5.3M.2 Maximum transmission bandwidth configuration

The maximum transmission bandwidth configuration NRB,LP-WUS for LP-WUS within each NR UE channel bandwidth and subcarrier spacing is specified in Table 5.3M.2-1.

Table 5.3M.2-1: Maximum transmission bandwidth configuration NRB,LP-WUS for LP-WUS

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SCS (kHz) | 3MHz | 5MHz | 7 MHz | 10MHz | 15MHz | 20MHz | 25MHz | 30MHz | 35MHz | 40 MHz | 45MHz | 50MHz | 60MHz | 70MHz | 80MHz | 90MHz | 100MHz |
|  | NRB, LP-WUS | NRB, LP-WUS | NRB, LP-WUS | NRB, LP-WUS | NRB, LP-WUS | NRB, LP-WUS | NRB, LP-WUS | NRB, LP-WUS | NRB, LP-WUS | NRB, LP-WUS | NRB, LP-WUS | NRB, LP-WUS | NRB, LP-WUS | NRB, LP-WUS | NRB, LP-WUS | NRB, LP-WUS | NRB, LP-WUS |
| 15 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | N/A | N/A | N/A | N/A | N/A |
| 30 | N/A | 11 | N/A | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| 60 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

## << End of change >>