**3GPP TSG-RAN WG4 Meeting #94-e *draft R4-2002470***

**Electronic Meeting, 24 Feb. – 6 Mar., 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **37.141** | **CR** | **0925** | **rev** | **1** | **Current version:** | **15.9.0** |  |
|  | | | | | | | | |
| *For* ***[HELP](http://www.3gpp.org/3G_Specs/CRs.htm" \l "_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 |  | Radio Access Network | **X** | Core Network |  |

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|  | | | | | | | | | | |
| ***Title:*** | CR to TS 37.104 on channel spacing correction | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | ZTE | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_newRAT-Core | | | | |  | ***Date:*** | | | 2020-2-11 |
|  |  | | | |  | |  | | |  |
| ***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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The channel spacing currently captured in TS 37.141 for carriers between E-UTRA and NR is incorrect. There is no 30kHz channel raster cases but 30kHz channel raster granularity. Hence it is proposed to correct current version | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Delete the 30kHz channel raster and change to 30kHz channel raster granularity. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Channel spacing not calculated correctly. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2, 4.5.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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's revision history:*** |  |

**--------------Start of text change-------------**

# 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 37.104: "E-UTRA, UTRA and GSM/EDGE; Multi-Standard Radio (MSR) Base Station (BS) radio transmission and reception".

[3] 3GPP TS 25.104: "Base Station (BS) radio transmission and reception (FDD) ".

[4] 3GPP TS 25.105: "Base Station (BS) radio transmission and reception (TDD) ".

[5] 3GPP TS 36.104: "Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception".

[6] 3GPP TS 45.005: "Radio transmission and reception".

[7] ITU-R Recommendation M.1545, "Measurement uncertainty as it applies to test limits for the terrestrial component of International Mobile Telecommunications-2000".

[8] "Title 47 of the Code of Federal Regulations (CFR)", Federal Communications Commission.

[9] 3GPP TS 36.141: "Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) conformance testing".

[10] 3GPP TS 25.141: "Base Station (BS) conformance testing (FDD) ".

[11] 3GPP TS 51.021: "Base Station System (BSS) equipment specification; Radio aspects".

[12] 3GPP TS 25.142: "Base Station (BS) conformance testing (TDD) ".

[13] Recommendation ITU-R SM.329-10, "Unwanted emissions in the spurious domain".

[14] 3GPP TR 25.942: "Radio Frequency (RF) system scenarios".

[15] ITU-R recommendation SM.328: "Spectra and bandwidth of emissions".

[16] IEC 60721: "Classification of environmental conditions".

[17] IEC 60721-3-3: "Classification of environmental conditions - Part 3-3: Classification of groups of environmental parameters and their severities - Stationary use at weather protected locations".

[18] IEC 60721-3-4: "Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 4: Stationary use at non-weather protected locations".

[19] ETSI EN 300 019-1-3, *European Standard (Telecommunications series)*, “Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-3: Classification of environmental conditions; Stationary use at weather protected locations”

[20] ETSI EN 300 019-1-4, *European Standard (Telecommunications series)*, “Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-4: Classification of environmental conditions; Stationary use at non-weather protected locations”.

[21] IEC 60068-2-1 (2007): "Environmental testing - Part 2: Tests. Tests A: Cold".

[22] IEC 60068-2-2 (2007): "Environmental testing - Part 2: Tests. Tests B: Dry heat".

[23] IEC 60068-2-6 (2007): "Environmental testing - Part 2: Tests - Test Fc: Vibration (sinusoidal)".

[24] CEPT ECC Decision (13)03, "The harmonised use of the frequency band 1452-1492 MHz for Mobile/Fixed Communications Networks Supplemental Downlink (MFCN SDL)".

[25] CEPT ECC Decision (17)06, “The harmonised use of the frequency bands 1427-1452 MHz and 1492-1518 MHz for Mobile/Fixed Communications Networks Supplemental Downlink (MFCN SDL)”.

[26] 3GPP TS 38.141-1: "NR; Base Station (BS) conformance testing Part 1: Conducted conformance testing".

[27] 3GPP TS 38.104: "NR; Base Station (BS) radio transmission and reception".

[28] 3GPP TS 38.101-1: "NR; User Equipment (UE) radio transmission and reception; Part 1: Range 1 Standalone"

**--------------Start of next change-------------**

## 4.5 Channel arrangement

### 4.5.1 Channel spacing

The GSM/EDGE carrier spacing is 200 kHz [6].

The nominal UTRA FDD channel spacing is 5 MHz. The nominal channel spacing is 1.6 MHz for the 1.28 Mcps UTRA TDD Option. These can be adjusted to optimise performance in a particular deployment scenario [3,4].

In E-UTRA the spacing between carriers will depend on the deployment scenario, the size of the frequency block available and the channel bandwidths. The nominal channel spacing between two adjacent E-UTRA carriers is defined as following:

Nominal Channel spacing = (BWChannel(1) + BWChannel(2))/2

where BWChannel(1) and BWChannel(2) are the channel bandwidths of the two respective E-UTRA carriers. The channel spacing can be adjusted to optimize performance in a particular deployment scenario [5].

The standalone NB-IoT carrier spacing is 200 kHz.

In NR the spacing between carriers will depend on the deployment scenario, the size of the frequency block available and the *BS channel bandwidths*. The nominal channel spacing between two adjacent NR carriers is defined as following:

- For NR FR1 operating bands with 100 kHz channel raster,

Nominal Channel spacing = (BWChannel(1) + BWChannel(2))/2

- For NR FR1 operating bands with 15 kHz channel raster,

Nominal Channel spacing = (BWChannel(1) + BWChannel(2))/2 + {-5kHz, 0kHz, 5kHz}

where BWChannel(1) and BWChannel(2) are the *BS channel bandwidths* of the two respective NR carriers. The channel spacing can be adjusted depending on the channel raster to optimize performance in a particular deployment scenario [27].

The spacing between E-UTRA and NR carriers will depend on the deployment scenario, the size of the frequency block available and the channel bandwidths. The nominal channel spacing between and E-UTRA carrier and an adjacent NR carrier is defined as following:

- For NR operating bands with 100 kHz channel raster,

Nominal Channel spacing = (BWE-UTRA\_Channel + BWNR\_Channel)/2

- For NR operating bands with 15 kHz channel raster,

Nominal Channel spacing = (BWE-UTRA\_Channel + BWNR\_Channel)/2+{-5kHz, 0kHz, 5kHz} for ∆FRaster equals to 15 kHz

Nominal Channel spacing = (BWE-UTRA\_Channel + BWNR\_Channel)/2+{-10 kHz, 0 kHz, 10 kHz} for ∆FRaster equals to 30 kHz

where BWE-UTRA\_Channel and BWNR\_Channel are the channel bandwidths of the E-UTRA and NR carriers, ∆FRaster is the band dependent channel raster granularity defined in TS38.101-1[28]. The channel spacing can be adjusted depending on the channel raster to optimize performance in a particular deployment scenario.

**-------------End of change-------------**