3GPP TSG-RAN WG4 Meeting # 102-e draft R4-2207274

Electronic Meeting, 21 Feb – 03 Mar, 2022

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **37.105** | **CR** | **xxxx** | **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 | **x** | Core Network |  |

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| ***Title:*** | CR to TS 37.105: RMR implementation | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_RAIL\_EU\_900MHz-Core, NR\_RAIL\_EU\_1900MHz\_TDD-Core | | | | |  | ***Date:*** | | | 2022-02-28 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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 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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Implementation of RMR900 and RMR1900 co-location blocking to protect AAS BS.  Even if AAS BS was not considered during ECC studies, the AAS BS needs to be protected from RMR BS.  Based on the discussion, it was clarified that the RMR BS is not expected to be collocated with MRFCN BS (including non-AAS and AAS) and such case would need to consider coordination procedures.  Still, this does not mean that we shall ignore this potential thread and the RAN4 driven co-location requirement shall be introduced to protect AAS BS receiver from potential RMR BS emissions. | | | | | | | | |
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| ***Summary of change:*** | | * Introduction of colocation blocking requirements for n100 and n101 | | | | | | | | |
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| ***Consequences if not approved:*** | | Implementation of RMR900 and RMR1900 bands would not be complete. | | | | | | | | |
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| ***Clauses affected:*** | | 7.5.2.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | |  | | |
| ***affected:*** | | **X** |  | Test specifications | | | | TS 37.145-1 CR#, TS 37.145-2 CR# | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | This CR is based on the draft CR content Endorsed in R4-2203057. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

*------------------------------ Modified section -----------------------------*

#### 7.5.2.2 Co-location minimum requirement

This additional blocking requirement may be applied for the protection of *AAS BS receivers* when NR, E-UTRA BS, UTRA BS, CDMA BS or GSM/EDGE BS operating in a different frequency band are co-located with an AAS BS.

The requirements in this subclause assume a 30 dB coupling loss between the interfering transmitter and the *AAS BS receiver* and are based on co-location with base stations of the same class.

For a wanted and an interfering signal coupled to the *TAB connector* using the parameters in table 7.5.2.2-1, the following requirements shall be met:

- For any E-UTRA carrier, the throughput shall be ≥ 95 % of the *maximum throughput* of the reference measurement channel defined in 3GPP TS 36.104 [8], subclause 7.2.1.

- For any UTRA FDD carrier, the BER shall not exceed 0,001 for the reference measurement channel defined in 3GPP TS 25.104 [6], subclause 7.2.1.

- For any UTRA TDD carrier, the BER shall not exceed 0,001 for the reference measurement channel defined in 3GPP TS 25.105 [7], subclause 7.2.1.2.

- For any NR carrier, the throughput shall be ≥ 95% of the maximum throughput of the reference measurement channel defined for *BS type 1-H* in TS 38.104 [28], subclause 7.2.2.

Table 7.5.2.2-1: Blocking requirement for co-location with BS in other frequency bands

| Type of co-located BS | Centre Frequency of Interfering Signal [MHz] | Interfering Signal mean power for WA BS [dBm] | Interfering Signal mean power for MR BS [dBm] | Interfering Signal mean power for LA BS [dBm] | Wanted Signal mean power [dBm] | Type of Interfering Signal |
| --- | --- | --- | --- | --- | --- | --- |
| GSM850 or CDMA850 | 869 - 894 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| GSM900 | 921 - 960 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| DCS1800 | 1 805 - 1 880  (NOTE 4) | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| PCS1900 | 1 930 - 1 990 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band I or E-UTRA Band 1 or NR band n1 | 2 110 - 2 170 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band II or E-UTRA Band 2 or NR band n2 | 1 930 - 1 990 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band III or E-UTRA Band 3 or NR band n3 | 1 805 - 1 880  (NOTE 4) | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band IV or E-UTRA Band 4 | 2 110 - 2 155 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band V or E-UTRA Band 5 or NR band n5 | 869 - 894 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band VI or E-UTRA Band 6 | 875 - 885 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band VII or E-UTRA Band 7 or NR band n7 | 2 620 - 2 690 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band VIII or E-UTRA Band 8 or NR band n8 | 925 - 960 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band IX or E-UTRA Band 9 | 1 844.9 - 1 879.9 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band X or E-UTRA Band 10 | 2 110 - 2 170 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XI or E-UTRA Band 11 | 1 475.9 - 1 495.9 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XII or E-UTRA Band 12 or NR band n12 | 729 - 746 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XIIII or E-UTRA Band 13 or NR band n13 | 746 - 756 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XIV or E-UTRA Band 14 or NR band n14 | 758 - 768 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 17 | 734 - 746 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 18 or NR Band n18 | 860 - 875 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XIX or E-UTRA Band 19 | 875 - 890 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XX or E-UTRA Band 20 or NR band n20 | 791 - 821 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XXI or E-UTRA Band 21 | 1 495.9 - 1 510.9 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XXII or E-UTRA Band 22 | 3 510 - 3 590 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 23 | 2 180 - 2 200 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 24 or NR band n24 | 1 525 - 1 559 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XXV or E-UTRA Band 25 or NR band n25 | 1 930 - 1 995 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XXVI or E-UTRA Band 26 or NR band n26 | 859 - 894 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 27 | 852 - 869 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 28 or NR band n28 | 758 - 803 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 29 or NR Band n29 | 717 - 728 | +16 | +8 | -6 | PREFSENS + 6dB (NOTE 1) | CW carrier |
| E-UTRA Band 30 or NR band n30 | 2 350 - 2 360 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 31 | 462.5 - 467.5 | +16 | +8 | -6 | PREFSENS + 6dB (NOTE 1) | CW carrier |
| UTRA FDD Band XXXII or E-UTRA Band 32 | 1 452 - 1 496  (NOTE-5) | +16 | +8 | -6 | PREFSENS + 6dB (NOTE 1) | CW carrier |
| UTRA TDD Band a) or E-UTRA TDD Band 33 | 1 900 - 1 920 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA TDD Band a) or E-UTRA TDD Band 34 or NR band n34 | 2 010 - 2 025 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA TDD Band b) or E-UTRA TDD Band 35 | 1 850 - 1 910 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA TDD Band b) or E-UTRA TDD Band 36 | 1 930 - 1 990 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA TDD Band c) or E-UTRA TDD Band 37 | 1 910 - 1 930 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA TDD Band d) or E-UTRA Band 38 or NR band n38 | 2 570 - 2 620 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA TDD Band f) or E-UTRA Band 39 or NR band n39 | 1 880 - 1 920 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| UTRA TDD Band e) or E-UTRA Band 40 or NR band n40 | 2 300 - 2 400 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 41or NR band n41 | 2 496 - 2 690 | +16 | +8 | -6 | PREFSENS + x dB (NOTE1) | CW carrier |
| E-UTRA Band 42 | 3 400 - 3 600 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 43 | 3 600 - 3 800 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 44 | 703 - 803 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 45 | 1447 - 1467 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 46 or NR Band n46 | 5150 - 5925 | N/A | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 48 or NR band n48 | 3550 – 3700 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 49 | 3550 – 3700 | N/A | N/A | -6 | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 50 | 1432 – 1517 | +16 | +8 | -6 | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 51 or NR band n51 | 1427– 1432 | N/A | N/A | -6 | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 52 | 3300 - 3400 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 53 or NR Band n53 | 2483.5 - 2495 | N/A | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 65 or NR band n65 | 2110 – 2200 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 66 or NR band n66 | 2110 – 2200 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 67 or NR band n67 | 738 - 758 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 68 | 753 - 783 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 69 | 2570 - 2620 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 70 or NR band n70 | 1995 – 2020 | +16 | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 71 or or NR band n71 | 617 - 652 | +16 | +8 | -6 | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 72 | 461 - 466 | +16 | +8 | -6 | PREFSENS + 6dB\* | CW carrier |
| E-UTRA Band 73 | 460 - 465 | +16 | +8 | -6 | PREFSENS + 6dB\* | CW carrier |
| E-UTRA Band 74 | 1475 - 1518 | +16 | +8 | -6 | PREFSENS + x dB\* | CW carrier |
| NR band n77 | 3300-4200 | +16 | +8 | -6 | PREFSENS + x dB\* | CW carrier |
| NR band n78 | 3300 - 3800 | +16 | +8 | -6 | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 85 or NR band n85 | 728 - 746 | +16 | +8 | -6 | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 87 | 420 - 425 | +16 | +8 | -6 | PREFSENS + 6dB\* | CW carrier |
| E-UTRA Band 88 | 422 - 427 | +16 | +8 | -6 | PREFSENS + 6dB\* | CW carrier |
| NR Band n96 | 5925 - 7125 | N/A | +8 | -6 | PREFSENS + x dB (NOTE 1) | CW carrier |
| NR band n100 | 921 - 925 | +16 | N/A | N/A | PREFSENS + x dB (NOTE 1) | CW carrier |
| NR band n101 | 1900 - 1910 | +16 | N/A | N/A | PREFSENS + x dB (NOTE 1) | CW carrier |
| NOTE 1: PREFSENS depends on the RAT, the BS class and the *channel bandwidth*, see subclause 7.2.2.  "x" is equal to 6 dB in case of UTRA or E-UTRA or NR wanted signals.  NOTE 2: Except for a BS operating in Band 13, these requirements do not apply when the interfering signal falls within any of the supported *uplink operating band* or in the ΔfOOB immediately outside any of the supported *uplink operating band*. For a BS operating in band 13 the requirements do not apply when the interfering signal falls within the frequency range 768 - 797 MHz.  NOTE 3: Some combinations of bands may not be possible to co-site based on the requirements above. The current state-of-the-art technology does not allow a single generic solution for co-location of UTRA TDD or E-UTRA TDD or NR TDD with E-UTRA FDD or NR TDD on adjacent frequencies for 30 dB BS-BS minimum coupling loss. However, there are certain site-engineering solutions that can be used. These techniques are addressed in 3GPP TR 25.942 [12].  NOTE 4: In China, the blocking requirement for co-location with DCS1800 and Band III BS is only applicable in the frequency range 1 805 - 1 850 MHz.  NOTE 5: For an AAS BS operating in band 11,21, or 74 the requirement for co-location with Band 32 applies for interfering signal within the frequency range 1 475.9 - 1 495.9 MHz.  NOTE 6: Co-located TDD base stations that are synchronized and using the same or adjacent operating band can receive without special co-location requirements. For unsynchronized base stations, special co-location requirements may apply that are not covered by the 3GPP specifications. | | | | | | | |

*----------------------------- End of modified section ------------------------------*