**3GPP TSG-RAN WG4 Meeting #** **102-e R4-2207497**

**Electronic Meeting, February 21 – March 3, 2022**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | TS 38.174 | **CR** | 0026 | **rev** | **-** | **Current version:** | 16.5.0 |  |
|  | | | | | | | | |
| *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:*** | Big CR for TS 38.174 Maintenance | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | MCC, CATT | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_IAB-Core | | | | |  | ***Date:*** | | | 2022-03-07 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | This big CR merges the multiple endorsed draft CRs: [R4-2203933](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2203933.zip), R4-2206819  The reasons for changes in each endorsed draft CR are copied below.  [R4-2203933](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2203933.zip): Draft CR for TS 38.174: Update the co-existence and co-location tables to include missing bands  There’re some missing bands in the co-existence and co-location tables.  R4-2206819: draft CR to 38174 on antenna connectors and RIBs  In the current version of 38.174, some symbols, abbreviations and requirements are defined with respect to how the IAB-MT receives a certain signal or power level measured at a certain interface. For FR1, such statement is accurate, but for FR2 there is no such concept as the antenna connector. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The summary of change in each endorsed draft CR is copied below.  [R4-2203933](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2203933.zip): Draft CR for TS 38.174: Update the co-existence and co-location tables to include missing bands  Update the co-existence and co-location tables according the the latest R16 TS 38.104 v16.10.0  R4-2206819: draft CR to 38174 on antenna connectors and RIBs  Specify that the measurement is done at either TAB connectors or RIBs.  Also specify that the timing offset is defined for both IAB-MT and UE. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The consequences if not approved for each endorsed draft CR are coppied below.  [R4-2203933](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2203933.zip): Draft CR for TS 38.174: Update the co-existence and co-location tables to include missing bands  The co-existence and co-location requirements are incomplete.  R4-2206819: draft CR to 38174 on antenna connectors and RIBs  The definitions and requirements are described in a way that only covers FR1 but not FR2, and involves inaccurate description such as “antenna connector”. | | | | | | | | |
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| ***Clauses affected:*** | | [R4-2203933](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2203933.zip): Draft CR for TS 38.174: Update the co-existence and co-location tables to include missing bands  6.5.2.2, 6.5.2.3  R4-2206819: draft CR to 38174 on antenna connectors and RIBs  3.2, 3.3, 12.2.4.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  |  | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR 38.176-1, 38.176-2 | | |
| ***(show related CRs)*** | |  |  | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

### *<Start of the changes>*

## 3.2 Symbols

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

 Percentage of the mean transmitted power emitted outside the occupied bandwidth on the assigned channel

BeWθ,REFSENS Beamwidth equivalent to the *OTA REFSENS RoAoA* in the θ-axis in degrees. Applicable for FR1 only.

BeWφ,REFSENS Beamwidth equivalent to the *OTA REFSENS RoAoA* in the φ-axis in degrees. Applicable for FR1 only.

BWChannel *BS channel bandwidth*

BWChannel\_CA *Aggregated BS Channel Bandwidth*, expressed in MHz. BWChannel\_CA = Fedge,high- Fedge,low.

BWConfig *Transmission bandwidth configuration*, where BWConfig = *N*RB x SCS x 12

BWContiguous Contiguous *transmission bandwidth*, i.e. *BS channel bandwidth* for single carrier or *Aggregated BS channel bandwidth* for contiguously aggregated carriers. For non-contiguous operation within a band the term is applied per *sub-block*.

Δf Separation between the *channel edge* frequency and the nominal -3 dB point of the measuring filter closest to the carrier frequency

Δfmax f\_offsetmax minus half of the bandwidth of the measuring filter

ΔfOBUE Maximum offset of the *operating band* unwanted emissions mask from the downlink *operating band* edge

ΔfOOB Maximum offset of the out-of-band boundary from the uplink *operating band* edge

ΔFR2\_REFSENS Offset applied to the FR2 OTA REFSENS depending on the AoA

ΔminSENS Difference between conducted reference sensitivity and minSENS

ΔOTAREFSENS Difference between conducted reference sensitivity and OTA REFSENS

EISminSENS The EIS declared for the *minSENS RoAoA*

EISREFSENS OTA REFSENS EIS value

EISREFSENS\_50M Declared OTA reference sensitivity basis level for FR2 based on a reference measurement channel with 50MHz *BS channel bandwidth*

Ês Received energy per RE (power normalized to the subcarrier spacing) during the useful part of the symbol, i.e. excluding the cyclic prefix, at the IAB-MT TAB connector or RIB

FFBWhigh Highest supported frequency within supported *operating band*, for which *fractional bandwidth* support was declared

FFBWlow Lowest supported frequency within supported *operating band*, for which *fractional bandwidth* support was declared

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*

Fedge,low The lower edge of *Aggregated BS Channel Bandwidth*, expressed in MHz. Fedge,low = FC,low - Foffset,low.

Fedge,high The upper edge of *Aggregated BS Channel Bandwidth*, expressed in MHz. Fedge,high = FC,high + Foffset,high.

f\_offset Separation between the *channel edge* frequency and the centre of the measuring

f\_offsetmax The offset to the frequency ΔfOBUE outside the downlink *operating band*

Fstep,X Frequency steps for the OTA transmitter spurious emissions (Category B)

FUL,low The lowest frequency of the uplink *operating band*

FUL,high The highest frequency of the uplink *operating band*

Io The total received power density, including signal and interference, as measured at the IAB-MT TAB connector or RIB.

Ioc The power spectral density (integrated in a noise bandwidth equal to the chip rate and normalized to the chip rate) of a band limited noise source (simulating interference from cells, which are not defined in a test procedure) as measured at the IAB-MT TAB connector or RIB.

Iot The received power spectral density of the total noise and interference for a certain IAB-MT (power integrated over the RE and normalized to the subcarrier spacing) as measured at the IAB-MT TAB connector or RIB

 The power spectral density of a white noise source (average power per RE normalised to the subcarrier spacing), simulating interference from cells that are not defined in a test procedure, as measured at the IAB-MT TAB connector or RIB

Ncells The declared number corresponding to the minimum number of cells that can be transmitted by an *BS type 1-H* in a particular *operating band*

NRXU,active The number of active receiver units. The same as the number of *demodulation branches* to which compliance is declared for chapter 8 performance requirements

NRXU,counted The number of active receiver units that are taken into account for conducted Rx spurious emission scaling, as calculated in clause 7.6.1

NRXU,countedpercell The number of active receiver units that are taken into account for conducted RX spurious emissions scaling per cell, as calculated in clause 7.6.1

 Timing offset between uplink and downlink radio frames at the UE / IAB-MT, as defined in clause 4.2.3 in TS 38.213

NTXU,counted The number of *active transmitter units* as calculated in clause 6.1, that are taken into account for conducted TX output power limit in clause 6.2.1, and for unwanted TX emissions scaling

NTXU,countedpercell The number of *active transmitter units* that are taken into account for conducted TX emissions scaling per cell, as calculated in clause 6.1

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

Pmax,c,TABC The *maximum carrier output power per TAB connector*

Pmax,c**,**TRP*Maximum carrier TRP output power* measuredat the RIB(s), and corresponding to the declared *rated carrier TRP output power* (Prated,c,TRP)

Pmax,c,EIRP The maximum carrier EIRPwhen the NR BS is configured at the maximum rated carrier output TRP (Prated,c,TRP)

Prated,c,cell The *rated carrier output power* per *TAB connector TX min cell group*

Prated,c,EIRP *The rated carrier EIRP output power* declaredper RIB

Prated,c,FBWhigh The rated carrier EIRPfor the higher supported frequency range within supported *operating band,* for which *fractional bandwidth* support was declared

Prated,c,FBWlow The rated carrier EIRP for the lower supported frequency range within supported *operating band,* for which *fractional bandwidth* support was declared

Prated,c,sys The sum of Prated,c,TABC for all *TAB connectors* for a single carrier

Prated,c,TABC The *rated carrier output power per TAB connector*

Prated,c,TRP *Rated carrier TRP output power* declaredper RIB

Prated,t,TABC The *rated total output power* declared at *TAB connector*

Prated,t,TRP *Rated total TRP output power* declaredper RIB

PREFSENS Conducted Reference Sensitivity power level

SSB\_RP Received (linear) average power of the resource elements that carry SSB signals and channels, measured at the IAB-MT TAB connector or RIB

Tc Basic time unit, defined in clause 4.1 of TS 38.211 [8]

Wgap *Sub-block gap* or *Inter RF Bandwidth gap* size

## 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

AA Antenna Array

ACLR Adjacent Channel Leakage Ratio

ACS Adjacent Channel Selectivity

AoA Angle of Arrival

AWGN Additive White Gaussian Noise

BFD Beam Failure Detection

BFD-RS BFD Reference Signal

BLER Block Error Rate

BM-RS Beam Management Reference Signal

BS Base Station

BW Bandwidth

BWP Bandwidth Part

CA Carrier Aggregation

CACLR Cumulative ACLR

CBD Candidate Beam Detection

CCE Control Channel Element

CORESET Control Resource Set

CP Cyclic Prefix

CP-OFDM Cyclic Prefix-OFDM

CSI Channel-State Information

CSI-RS CSI Reference Signal

CW Continuous Wave

DCI Downlink Control Information

DL Downlink

DMRS Demodulation Reference Signal

DM-RS Demodulation Reference Signal

DRX Discontinuous Reception

EIS Equivalent Isotropic Sensitivity

EIRP Equivalent Isotropic Radiated Power

E-UTRA Evolved UTRA

EVM Error Vector Magnitude

FBW Fractional Bandwidth

FR Frequency Range

FRC Fixed Reference Channel

GSM Global System for Mobile communications

IAB Integrated Access and Backhaul

IAB-DU IAB Distribution Unit

IAB-MT IAB Mobile Termination

ITU‑R Radiocommunication Sector of the International Telecommunication Union

ICS In-Channel Selectivity

L1-RSRP Layer 1 RSRP

LA Local Area

MCS Modulation and Coding Scheme

MGRP Measurement Gap Repetition Period

MR Medium Range

NB-IoT Narrowband – Internet of Things

NR New Radio

NR-ARFCN NR Absolute Radio Frequency Channel Number

OBUE Operating Band Unwanted Emissions

OOB Out-of-band

OSDD OTA Sensitivity Directions Declaration

OTA Over-The-Air

PCell Primary Cell

PDCCH Physical Downlink Control Channel

PDSCH Physical Downlink Shared Channel

PCell Primary Cell

PRACH Physical RACH

PDCCH Physical Downlink Control Channel

PDSCH Physical Downlink Shared Channel

PRACH Physical RACH

PRB Physical Resource Block

PSCell Primary SCell

PSS Primary Synchronization Signal

pTAG Primary Timing Advance Group

PUCCH Physical Uplink Control Channel

PUSCH Physical Uplink Shared Channel

QAM Quadrature Amplitude Modulation

QCL Quasi Co-Location

RB Resource Block

RDN Radio Distribution Network

RE Resource Element

REFSENS Reference Sensitivity

REG Resource Element Group

RF Radio Frequency

RIB Radiated Interface Boundary

RLM Radio Link Monitoring

RLM-RS Reference Signal for RLM

RMS Root Mean Square (value)

RoAoA Range of Angles of Arrival

RRC Radio Resource Control

RRM Radio Resource Management

RX Receiver

SCell Secondary Cell

SCS Sub-Carrier Spacing

SMTC SSB-based Measurement Timing configuration

SpCell Special Cell

SRS Sounding Reference Signal

SS-RSRP Synchronization Signal based Reference Signal Received Power

SSB Synchronization Signal Block

SSB\_RP Received (linear) average power of the resource elements that carry NR SSB signals and channels, measured at the IAB-MT TAB connector or RIB.

SSS Secondary Synchronization Signal

TA Timing Advance

TAB Transceiver Array Boundary

TCI Transmission Configuration Indicator

TX Transmitter

TRP Total Radiated Power

UTRA Universal Terrestrial Radio Access

WA Wide Area

### *<Next change>*

##### 6.6.5.2.2 Additional spurious emissions requirements

These requirements may be applied for the protection of system operating in other frequency ranges. The limits may apply as an optional protection of such systems that are deployed in the same geographical area as the IAB-Node, or they may be set by local or regional regulation as a mandatory requirement for an NR *operating band*. It is in some cases not stated in the present document whether a requirement is mandatory or under what exact circumstances that a limit applies, since this is set by local or regional regulation. An overview of regional requirements in the present document is given in clause 4.5.

Some requirements may apply for the protection of specific equipment (UE, MS and/or BS) or equipment operating in specific systems (GSM, CDMA, UTRA, E-UTRA, NR, etc.) as listed below.

The spurious emission *basic limits* are provided in table 6.6.5.2.2-1 where requirements for co-existence with the system listed in the first column apply for IAB-MT and IAB-DU. For a *multi-band connector*, the exclusions and conditions in the Note column of table 6.6.5.2.2-1 apply for each supported *operating band*.

Table 6.6.5.2.2-1: IAB-DU and IAB-MT spurious emissions *basic* *limits* for co-existence with systems operating in other frequency bands

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| System type to co-exist with | Frequency range for co-existence requirement | *Basic limits* | *Measurement bandwidth* | Note |
| GSM900 | 921 – 960 MHz | -57 dBm | 100 kHz |  |
|  | 876 – 915 MHz | -61 dBm | 100 kHz |  |
| DCS1800 | 1805 – 1880 MHz | -47 dBm | 100 kHz |  |
|  | 1710 – 1785 MHz | -61 dBm | 100 kHz |  |
| PCS1900 | 1930 – 1990 MHz | -47 dBm | 100 kHz |  |
|  | 1850 – 1910 MHz | -61 dBm | 100 kHz |  |
| GSM850 or | 869 – 894 MHz | -57 dBm | 100 kHz |  |
| CDMA850 | 824 – 849 MHz | -61 dBm | 100 kHz |  |
| UTRA FDD | 2110 – 2170 MHz | -52 dBm | 1 MHz |  |
| Band I or  E-UTRA Band 1 or NR Band n1 | 1920 – 1980 MHz | -49 dBm | 1 MHz |  |
| UTRA FDD | 1930 – 1990 MHz | -52 dBm | 1 MHz |  |
| Band II or  E-UTRA Band 2 or NR Band n2 | 1850 – 1910 MHz | -49 dBm | 1 MHz |  |
| UTRA FDD | 1805 – 1880 MHz | -52 dBm | 1 MHz |  |
| Band III or  E-UTRA Band 3 or NR Band n3 | 1710 – 1785 MHz | -49 dBm | 1 MHz |  |
| UTRA FDD Band IV or  E-UTRA Band 4 | 2110 – 2155 MHz | -52 dBm | 1 MHz |  |
|  | 1710 – 1755 MHz | -49 dBm | 1 MHz |  |
| UTRA FDD Band V or  E-UTRA Band 5 or NR Band n5 | 869 – 894 MHz | -52 dBm | 1 MHz |  |
|  | 824 – 849 MHz | -49 dBm | 1 MHz |  |
| UTRA FDD | 860 – 890 MHz | -52 dBm | 1 MHz |  |
| Band VI, XIX or | 815 – 830 MHz | -49 dBm | 1 MHz |  |
| E-UTRA Band 6, 18, 19 or NR Band n18 | 830 – 845 MHz | -49 dBm | 1 MHz |  |
| UTRA FDD Band VII or  E-UTRA Band 7 or NR Band n7 | 2620 – 2690 MHz | -52 dBm | 1 MHz |  |
|  | 2500 – 2570 MHz | -49 dBm | 1 MHz |  |
| UTRA FDD Band VIII or  E-UTRA Band 8 or NR Band n8 | 925 – 960 MHz | -52 dBm | 1 MHz |  |
|  | 880 – 915 MHz | -49 dBm | 1 MHz |  |
| UTRA FDD Band IX or  E-UTRA Band 9 | 1844.9 – 1879.9 MHz | -52 dBm | 1 MHz |  |
|  | 1749.9 – 1784.9 MHz | -49 dBm | 1 MHz |  |
| UTRA FDD Band X or  E-UTRA Band 10 | 2110 – 2170 MHz | -52 dBm | 1 MHz |  |
|  | 1710 – 1770 MHz | -49 dBm | 1 MHz |  |
| UTRA FDD Band XI or XXI or  E-UTRA Band 11 or 21 | 1475.9 – 1510.9 MHz | -52 dBm | 1 MHz |  |
|  | 1427.9 – 1447.9 MHz | -49 dBm | 1 MHz |  |
|  | 1447.9 – 1462.9 MHz | -49 dBm | 1 MHz |  |
| UTRA FDD Band XII or  E-UTRA Band 12 or NR Band n12 | 729 – 746 MHz | -52 dBm | 1 MHz |  |
|  | 699 – 716 MHz | -49 dBm | 1 MHz |  |
| UTRA FDD Band XIII or  E-UTRA Band 13 | 746 – 756 MHz | -52 dBm | 1 MHz |  |
|  | 777 – 787 MHz | -49 dBm | 1 MHz |  |
| UTRA FDD Band XIV or  E-UTRA Band 14 or NR band n14 | 758 – 768 MHz | -52 dBm | 1 MHz |  |
|  | 788 – 798 MHz | -49 dBm | 1 MHz |  |
| E-UTRA Band 17 | 734 – 746 MHz | -52 dBm | 1 MHz |  |
|  | 704 – 716 MHz | -49 dBm | 1 MHz |  |
| UTRA FDD Band XX or E-UTRA Band 20 or NR Band n20 | 791 – 821 MHz | -52 dBm | 1 MHz |  |
|  | 832 – 862 MHz | -49 dBm | 1 MHz |  |
| UTRA FDD Band XXII or E-UTRA Band 22 | 3510 – 3590 MHz | -52 dBm | 1 MHz | This requirement does not apply to IAB-DU and IAB-MT operating in band n77 or n78. |
|  | 3410 – 3490 MHz | -49 dBm | 1 MHz | This requirement does not apply to IAB-DU and IAB-MT operating in band n77 or n78. |
| E-UTRA Band 24 | 1525 – 1559 MHz | -52 dBm | 1 MHz |  |
|  | 1626.5 – 1660.5 MHz | -49 dBm | 1 MHz |  |
| UTRA FDD Band XXV or  E-UTRA Band 25 or NR band n25 | 1930 – 1995 MHz | -52 dBm | 1 MHz |  |
|  | 1850 – 1915 MHz | -49 dBm | 1 MHz |  |
| UTRA FDD Band XXVI or  E-UTRA Band 26 or NR Band n26 | 859 – 894 MHz | -52 dBm | 1 MHz |  |
|  | 814 – 849 MHz | -49 dBm | 1 MHz |  |
| E-UTRA Band 27 | 852 – 869 MHz | -52 dBm | 1 MHz |  |
|  | 807 – 824 MHz | -49 dBm | 1 MHz |  |
| E-UTRA Band 28 or NR Band n28 | 758 – 803 MHz | -52 dBm | 1 MHz |  |
|  | 703 – 748 MHz | -49 dBm | 1 MHz |  |
| E-UTRA Band 29 or NR Band n29 | 717 – 728 MHz | -52 dBm | 1 MHz |  |
| E-UTRA Band 30 or NR Band n30 | 2350 – 2360 MHz | -52 dBm | 1 MHz |  |
|  | 2305 – 2315 MHz | -49 dBm | 1 MHz |  |
| E-UTRA Band 31 | 462.5 – 467.5 MHz | -52 dBm | 1 MHz |  |
|  | 452.5 – 457.5 MHz | -49 dBm | 1 MHz |  |
| UTRA FDD band XXXII or E-UTRA band 32 | 1452 – 1496 MHz | -52 dBm | 1 MHz |  |
| UTRA TDD Band a) or E-UTRA Band 33 | 1900 – 1920 MHz | -52 dBm | 1 MHz |  |
| UTRA TDD Band a) or E-UTRA Band 34 or NR band n34 | 2010 – 2025 MHz | -52 dBm | 1 MHz |  |
| UTRA TDD Band b) or E-UTRA Band 35 | 1850 – 1910 MHz | -52 dBm | 1 MHz |  |
| UTRA TDD Band b) or E-UTRA Band 36 | 1930 – 1990 MHz | -52 dBm | 1 MHz |  |
| UTRA TDD Band c) or E-UTRA Band 37 | 1910 – 1930 MHz | -52 dBm | 1 MHz |  |
| UTRA TDD Band d) or E-UTRA Band 38 or NR Band n38 | 2570 – 2620 MHz | -52 dBm | 1 MHz |  |
| UTRA TDD Band f) or E-UTRA Band 39 or NR band n39 | 1880 – 1920MHz | -52 dBm | 1 MHz |  |
| UTRA TDD Band e) or E-UTRA Band 40 or NR Band n40 | 2300 – 2400MHz | -52 dBm | 1 MHz |  |
| E-UTRA Band 41 or NR Band n41, n90 | 2496 – 2690 MHz | -52 dBm | 1 MHz | This is not applicable IAB-DU and IAB-MT operating in Band n41. |
| E-UTRA Band 42 | 3400 – 3600 MHz | -52 dBm | 1 MHz | This is not applicable to IAB-DU and IAB-MT operating in Band n77 or n78. |
| E-UTRA Band 43 | 3600 – 3800 MHz | -52 dBm | 1 MHz | This is not applicable to IAB-DU and IAB-MT operating in Band n77 or n78. |
| E-UTRA Band 44 | 703 – 803 MHz | -52 dBm | 1 MHz |  |
| E-UTRA Band 45 | 1447 – 1467 MHz | -52 dBm | 1 MHz |  |
| E-UTRA Band 46 or NR Band n46 | 5150 – 5925 MHz | -52 dBm | 1 MHz |  |
| E-UTRA Band 47 | 5855 – 5925 MHz | -52 dBm | 1 MHz |  |
| E-UTRA Band 48 or NR Band n48 | 3550 – 3700 MHz | -52 dBm | 1 MHz | This is not applicable to IAB-DU and IAB-MT operating in Band n77 or n78. |
| E-UTRA Band 50 or NR band n50 | 1432 – 1517 MHz | -52 dBm | 1 MHz |  |
| E-UTRA Band 51 or NR Band n51 | 1427 – 1432 MHz | -52 dBm | 1 MHz |  |
| E-UTRA Band 53 or NR Band n53 | 2483.5 - 2495 MHz | -52 dBm | 1 MHz | This is not applicable to IAB-DU and IAB-MT operating in Band n41. |
| E-UTRA Band 65 or NR Band n65 | 2110 – 2200 MHz | -52 dBm | 1 MHz |  |
|  | 1920 – 2010 MHz | -49 dBm | 1 MHz |  |
| E-UTRA Band 66 or NR Band n66 | 2110 – 2200 MHz | -52 dBm | 1 MHz |  |
|  | 1710 – 1780 MHz | -49 dBm | 1 MHz |  |
| E-UTRA Band 67 | 738 – 758 MHz | -52 dBm | 1 MHz |  |
| E-UTRA Band 68 | 753 -783 MHz | -52 dBm | 1 MHz |  |
|  | 698-728 MHz | -49 dBm | 1 MHz |  |
| E-UTRA Band 69 | 2570 – 2620 MHz | -52 dBm | 1 MHz |  |
| E-UTRA Band 70 or NR Band n70 | 1995 – 2020 MHz | -52 dBm | 1 MHz |  |
|  | 1695 – 1710 MHz | -49 dBm | 1 MHz |  |
| E-UTRA Band 71 or NR Band n71 | 617 – 652 MHz | -52 dBm | 1 MHz |  |
|  | 663 – 698 MHz | -49 dBm | 1 MHz |  |
| E-UTRA Band 72 | 461 – 466 MHz | -52 dBm | 1 MHz |  |
|  | 451 – 456 MHz | -49 dBm | 1 MHz |  |
| E-UTRA Band 74 or NR Band n74 | 1475 – 1518 MHz | -52 dBm | 1 MHz |  |
|  | 1427 – 1470 MHz | -49 dBm | 1MHz |  |
| E-UTRA Band 75 or NR Band n75 | 1432 – 1517 MHz | -52 dBm | 1 MHz |  |
| E-UTRA Band 76 or NR Band n76 | 1427 – 1432 MHz | -52 dBm | 1 MHz |  |
| NR Band n77 | 3.3 – 4.2 GHz | -52 dBm | 1 MHz | This requirement does not apply to IAB-DU and IAB-MT operating in Band n77 or n78 |
| NR Band n78 | 3.3 – 3.8 GHz | -52 dBm | 1 MHz | This requirement does not apply to IAB-DU and IAB-MT operating in Band n77 or n78 |
| NR Band n79 | 4.4 – 5.0 GHz | -52 dBm | 1 MHz | This requirement does not apply to IAB-DU and IAB-MT operating in Band n79 |
| NR Band n80 | 1710 – 1785 MHz | -49 dBm | 1 MHz |  |
| NR Band n81 | 880 – 915 MHz | -49 dBm | 1 MHz |  |
| NR Band n82 | 832 – 862 MHz | -49 dBm | 1 MHz |  |
| NR Band n83 | 703 – 748 MHz | -49 dBm | 1 MHz |  |
| NR Band n84 | 1920 – 1980 MHz | -49 dBm | 1 MHz |  |
| E-UTRA Band 85 | 728 – 746 MHz | -52 dBm | 1 MHz |  |
|  | 698 – 716 MHz | -49 dBm | 1 MHz |  |
| NR Band n86 | 1710 – 1780 MHz | -49 dBm | 1 MHz |  |
| NR Band n89 | 824 – 849 MHz | -49 dBm | 1 MHz |  |
| NR Band n91 | 1427 – 1432 MHz | -52 dBm | 1 MHz |  |
|  | 832 – 862 MHz | -49 dBm | 1 MHz |  |
| NR Band n92 | 1432 – 1517 MHz | -52 dBm | 1 MHz |  |
|  | 832 – 862 MHz | -49 dBm | 1 MHz |  |
| NR Band n93 | 1427 – 1432 MHz | -52 dBm | 1 MHz |  |
|  | 880 – 915 MHz | -49 dBm | 1 MHz |  |
| NR Band n94 | 1432 – 1517 MHz | -52 dBm | 1 MHz |  |
|  | 880 – 915 MHz | -49 dBm | 1 MHz |  |
| NR Band n95 | 2010 – 2025 MHz | -52 dBm | 1 MHz |  |
| NR Band n96 | 5925 – 7125 MHz | -52 dBm | 1 MHz |  |

NOTE 1: As defined in the scope for spurious emissions in this clause the co-existence requirements in table 6.6.5.2.2-1 do not apply for the ΔfOBUE frequency range immediately outside the downlink *operating band* (see table 5.2-1). Emission limits for this excluded frequency range may be covered by local or regional requirements.

NOTE 2: Table 6.6.5.2.2-1 assumes that two *operating bands*, where the frequency ranges in table 5.2-1 would be overlapping, are not deployed in the same geographical area. For such a case of operation with overlapping frequency arrangements in the same geographical area, special co-existence requirements may apply that are not covered by the 3GPP specifications.

##### 6.6.5.2.3 Co-location with base stations and IAB-Nodes

These requirements may be applied for the protection of other BS, IAB-DU or IAB-MT receivers when GSM900, DCS1800, PCS1900, GSM850, CDMA850, UTRA FDD, UTRA TDD, E-UTRA, NR BS, IAB-DU or IAB-MT are co-located with IAB-MT and/or IAB-DU.

The requirements assume a 30 dB coupling loss between transmitter and receiver and are based on co-location with same class.

The *basic limits* are in table 6.6.5.2.3-1 for an IAB-DU and IAB-MT. Requirements for co-location with a system listed in the first column apply, depending on the declared IAB-DU and IAB-MT class. For a *multi-band connector*, the exclusions and conditions in the Note column of table 6.6.5.2.3-1 shall apply for each supported *operating band*.

Table 6.6.5.2.3-1: IAB-DU and IAB-MT spurious emissions *basic* limits for co-location with BS or IAB-Node

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Co-located system | Frequency range for | *Basic limits* | | | Measurement | Note |
|  | co-location requirement | WA IAB-DU and WA IAB-MT | MR IAB-DU | LA IAB-DU and LA IAB-MT | bandwidth |  |
| GSM900 | 876 – 915 MHz | -98 dBm | -91 dBm | -70 dBm | 100 kHz |  |
| DCS1800 | 1710 – 1785 MHz | -98 dBm | -91 dBm | -80 dBm | 100 kHz |  |
| PCS1900 | 1850 – 1910 MHz | -98 dBm | -91 dBm | -80 dBm | 100 kHz |  |
| GSM850 or CDMA850 | 824 – 849 MHz | -98 dBm | -91 dBm | -70 dBm | 100 kHz |  |
| UTRA FDD Band I or E-UTRA Band 1 or NR Band n1 | 1920 – 1980 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band II or E-UTRA Band 2 or NR Band n2 | 1850 – 1910 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band III or E-UTRA Band 3 or NR Band n3 | 1710 – 1785 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band IV or E-UTRA Band 4 | 1710 – 1755 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band V or E-UTRA Band 5 or NR Band n5 | 824 – 849 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band VI, XIX or E-UTRA Band 6, 19 | 830 – 845 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band VII or E-UTRA Band 7 or NR Band n7 | 2500 – 2570 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band VIII or E-UTRA Band 8 or NR Band n8 | 880 – 915 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band IX or E-UTRA Band 9 | 1749.9 – 1784.9 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band X or E-UTRA Band 10 | 1710 – 1770 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band XI or E-UTRA Band 11 | 1427.9 –1447.9 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band XII or  E-UTRA Band 12 or NR Band n12 | 699 – 716 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band XIII or  E-UTRA Band 13 | 777 – 787 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band XIV or  E-UTRA Band 14 or NR Band n14 | 788 – 798 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 17 | 704 – 716 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 18 or NR Band n18 | 815 – 830 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band XX or E-UTRA Band 20 or NR Band n20 | 832 – 862 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band XXI or E-UTRA Band 21 | 1447.9 – 1462.9 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band XXII or E-UTRA Band 22 | 3410 – 3490 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to IAB-DU and IAB-MT operating in Band n77 or n78 |
| E-UTRA Band 23 | 2000 – 2020 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 24 | 1626.5 – 1660.5 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band XXV or  E-UTRA Band 25 or NR Band n25 | 1850 – 1915 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band XXVI or  E-UTRA Band 26 or NR Band n26 | 814 – 849 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 27 | 807 – 824 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 28 or NR Band n28 | 703 – 748 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 30 or NR Band n30 | 2305 – 2315 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 31 | 452.5 – 457.5 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA TDD Band a) or E-UTRA Band 33 | 1900 – 1920 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA TDD Band a) or E-UTRA Band 34 or NR band n34 | 2010 – 2025 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA TDD Band b) or E-UTRA Band 35 | 1850 – 1910 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA TDD Band b) or E-UTRA Band 36 | 1930 – 1990 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA TDD Band c) or E-UTRA Band 37 | 1910 – 1930 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA TDD Band d) or E-UTRA Band 38 or NR Band n38 | 2570 – 2620 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA TDD Band f) or E-UTRA Band 39 or NR band n39 | 1880 – 1920MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA TDD Band e) or E-UTRA Band 40 or NR Band n40 | 2300 – 2400MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 41 or NR Band n41, n90 | 2496 – 2690 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to IAB-DU and IAB-MT operating in Band n41 |
| E-UTRA Band 42 | 3400 – 3600 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to IAB-DU and IAB-MT operating in Band n77 or n78 |
| E-UTRA Band 43 | 3600 – 3800 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to IAB-DU and IAB-MT operating in Band n77 or n78 |
| E-UTRA Band 44 | 703 – 803 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 45 | 1447 – 1467 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 46 or NR Band n46 | 5150 – 5925 MHz | N/A | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 48 or NR Band n48 | 3550 – 3700 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to IAB-DU and IAB-MT operating in Band n77 or n78 |
| E-UTRA Band 50 or NR Band n50 | 1432 – 1517 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 51 or NR Band n51 | 1427 – 1432 MHz | N/A | N/A | -88 dBm | 100 kHz |  |
| E-UTRA Band 53 or NR Band n53 | 2483.5 – 2495 MHz | N/A | -91 dBm | -88 dBm | 100 kHz | This is not applicable to IAB-DU and IAB-MT operating in Band n41 |
| E-UTRA Band 65 or NR Band n65 | 1920 – 2010 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 66 or NR Band n66 | 1710 – 1780 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 68 | 698 – 728 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 70 or NR Band n70 | 1695 – 1710 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 71 or NR Band n71 | 663 – 698 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 72 | 451 – 456 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 74 or NR Band n74 | 1427 – 1470 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n77 | 3.3 – 4.2 GHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to IAB-DU and IAB-MT operating in Band n77 or n78 |
| NR Band n78 | 3.3 – 3.8 GHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to IAB-DU and IAB-MT operating in Band n77 or n78 |
| NR Band n79 | 4.4 – 5.0 GHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to IAB-DU and IAB-MT operating in Band n79 |
| NR Band n80 | 1710 – 1785 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n81 | 880 – 915 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n82 | 832 – 862 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n83 | 703 – 748 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n84 | 1920 – 1980 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 85 | 698 – 716 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n86 | 1710 – 1780 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n89 | 824 – 849 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n91 | 832 – 862 MHz | N/A | N/A | -88 dBm | 100 kHz |  |
| NR Band n92 | 832 – 862 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n93 | 880 – 915 MHz | N/A | N/A | -88 dBm | 100 kHz |  |
| NR Band n94 | 880 – 915 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n95 | 2010 – 2025 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n96 | 5925 – 7125 MHz | N/A | -90 dBm | -87 dBm | 100 kHz |  |

NOTE 1: As defined in the scope for spurious emissions in this clause, the co-location requirements in table 6.6.5.2.3-1 do not apply for the frequency range extending ΔfOBUE immediately outside the transmit frequency range of a IAB-MT and IAB-DU. The current state-of-the-art technology does not allow a single generic solution for co-location with other system on adjacent frequencies for 30dB antenna to antenna minimum coupling loss. However, there are certain site-engineering solutions that can be used. These techniques are addressed in TR 25.942 [4].

NOTE 2: Table 6.6.5.2.3-1 assumes that two *operating bands*, where the corresponding transmit and receive frequency ranges in table 5.2-1 would be overlapping, are not deployed in the same geographical area. For such a case of operation with overlapping frequency arrangements in the same geographical area, special co-location requirements may apply that are not covered by the 3GPP specifications.

### *<Next change>*

#### 12.2.4.2 Requirements

The cell phase synchronization accuracy measured at IAB DU TAB connectors or RIBs shall be better than 3 µs.

### *<End of the changes>*