**3GPP TSG- Meeting #**

**meeting, February 21 – March 3, 2022**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** | CRnum | **rev** |  | **Current version:** |  |  |
|  | | | | | | | | |
| *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 38.176-2 Maintenance | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | MCC, | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_IAB-Perf | | | | |  | ***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 is big CR to TS 38.176-2 that includes following endorsed during RAN4#102-e meeting draft CRs to 38.176-2:   1. R4-2204578, Draft CR for clean-up to 38.176-2, Samsung:   There are typos in clause 3 and clause 4   1. R4-2207311, Draft CR for TS 38.176-2, CATT: 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. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. R4-2204578: Editorial corrections to definition in clause 3 and delcaration table in clause 4. 2. R4-2207311: Update the co-existence and co-location tables according the the latest R16 TS 38.141-2 v16.10.0 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | 1. R4-2204578: Typos would still exist in specifciation 2. R4-2207311: The co-existence and co-location requirements are incomplete. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 3.1, 4.6, 6.7.5.4.5.1, 6.7.5.5.5.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **N** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **N** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **N** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**<Start of change from R4-2204578>**

## 3.1 Terms

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

**active transmitter unit:** transmitter unit which is ON, and has the ability to send modulated data streams that are parallel and distinct to those sent from other transmitter units to one or more *IAB type 1-H* *TAB connectors* at the *transceiver array boundary*

**Aggregated IAB-DU channel bandwidth**: The RF bandwidth in which an IAB-DU transmits and receives multiple contiguously aggregated carriers. The aggregated IAB-DU channel bandwidth is measured in MHz.

**Aggregated IAB-MT channel bandwidth**: The RF bandwidth in which an IAB-MT transmits and receives multiple contiguously aggregated carriers. The aggregated IAB-MT channel bandwidth is measured in MHz.

**basic limit:** emissions limit relating to the power supplied by a single transmitter to a single antenna transmission line in ITU-R SM.329 [16] used for the formulation of unwanted emission requirements for FR1

**beam:** beam (of the antenna) is the main lobe of the radiation pattern of an *antenna array*

NOTE: For certain *antenna array*, there may be more than one beam.

**beam centre direction:** direction equal to the geometric centre of the half-power contour of the beam

**beam direction pair:** data set consisting of the *beam centre direction* and the related *beam peak direction*

**beam peak direction:** direction where the maximum EIRP is found

**beamwidth:** beam which has a half-power contour that is essentially elliptical, the half-power beamwidths in the two pattern cuts that respectively contain the major and minor axis of the ellipse

**Carrier aggregation:** aggregation of two or more component carriers in order to support wider *transmission bandwidths*

**Carrier aggregation configuration:** a set of one or more *operating bands* across which the IAB-DU or IAB-MT aggregates carriers with a specific set of technical requirements

**Channel edge:** lowest or highest frequency of the NR carrier, separated by the *IAB-MT channel bandwidth* or *IAB-DU channel bandwidth*.

**co-location reference antenna**: a passive antenna used as reference for co-location requirements

**Contiguous spectrum:** spectrum consisting of a contiguous block of spectrum with no *sub-block gap(s)*.

**directional requirement:** requirement which is applied in a specific direction within the *OTA coverage range* for the Tx and when the AoA of the incident wave of a received signal is within the *OTA REFSENS RoAoA* or the *minSENS RoAoA* as appropriate for the receiver

**equivalent isotropic radiated power:** equivalent power radiated from an isotropic directivity device producing the same field intensity at a point of observation as the field intensity radiated in the direction of the same point of observation by the discussed device

NOTE: Isotropic directivity is equal in all directions (i.e. 0 dBi).

**equivalent isotropic sensitivity:** sensitivity for an isotropic directivity device equivalent to the sensitivity of the discussed device exposed to an incoming wave from a defined AoA

NOTE 1: The sensitivity is the minimum received power level at which specific requirement is met.

NOTE 2: Isotropic directivity is equal in all directions (i.e. 0 dBi).

**fractional bandwidth:** *fractional bandwidth* FBW is defined as



**highest carrier:** The carrier with the highest carrier frequency transmitted/received in a specified frequency band.

**IAB-DU channel bandwidth**: RF bandwidth supporting a single IAB-DU RF carrier with the *transmission bandwidth* configured in the uplink or downlink

NOTE 1: The *IAB-DU channel bandwidth* is measured in MHz and is used as a reference for transmitter and receiver RF requirements.

NOTE 2: It is possible for the IAB to transmit to and/or receive from one or more IAB-MT bandwidth parts that are smaller than or equal to the *IAB transmission bandwidth configuration*, in any part of the *IAB transmission bandwidth configuration*.

**IAB-donor**:gNB that provides network access to UEs via a network of backhaul and access links.

**IAB-DU RF Bandwidth:** RF bandwidth in which an IAB-DU transmits and/or receives single or multiple carrier(s) within a supported *operating band*

**IAB-DU RF Bandwidth edge:** frequency of one of the edges of the *IAB-DU RF Bandwidth*.

**IAB-MT channel bandwidth**: RF bandwidth supporting a single IAB-MT RF carrier with the *transmission bandwidth* configured in the uplink or downlink

NOTE 1: The *IAB-MT channel bandwidth* is measured in MHz and is used as a reference for transmitter and receiver RF requirements.

**IAB-MT RF Bandwidth**: RF bandwidth in which an IAB-MT transmits and/or receives single or multiple carrier(s) within a supported *operating band*

NOTE: In single carrier operation, the *IAB-MT RF Bandwidth* is equal to the *IAB-MT channel bandwidth*.

**IAB-MT RF Bandwidth edge:** frequency of one of the edges of the *IAB-MT RF Bandwidth*.

**IAB RF Bandwidth:** RF bandwidth in which an IAB-DU or IAB-MT transmits and/or receives single or multiple carrier(s) within a supported *operating band*

**IAB RF Bandwidth edge:** frequency of one of the edges of the *IAB RF Bandwidth*.

**IAB type 1-H:** IAB-DU or IAB-MT operating at FR1 with a *requirement set* consisting of conducted requirements defined at individual *TAB connectors* and OTA requirements defined at RIB

**IAB type 1-O:** IAB-DU or IAB-MT operating at FR1 with a *requirement set* consisting only of OTA requirements defined at the RIB

**IAB type 2-O:** IAB-DU or IAB-MT operating at FR2 with a *requirement set* consisting only of OTA requirements defined at the RIB

**inter-band gap**: The frequency gap between two supported consecutive *operating bands*.

**Inter RF Bandwidth gap:** frequency gap between two consecutive *IAB-DU* or *IAB-MT RF Bandwidths* that are placed within two supported *operating bands*

**lowest Carrier:** The carrier with the lowest carrier frequency transmitted/received in a specified frequency band.

**maximum carrier output power:** mean power level measured per carrier at the indicated interface, during the *transmitter ON period* in a specified reference condition

**maximum carrier TRP output power:** mean power level measured perRIB during the *transmitter ON period* for a specific carrier in a specified reference condition and corresponding to the declared *rated carrier TRP output* power (Prated,c,TRP)

**measurement bandwidth**: RF bandwidth in which an emission level is specified

**minSENS:** the lowest declared EIS value for the OSDD's declared for OTA sensitivity requirement.

**minSENS RoAoA:** The *reference RoAoA* associated with the OSDD with the lowest declared EIS

**multi-band connector**: *TAB connector* of *IAB type 1-H* associated with a transmitter or receiver that is characterized by the ability to process two or more carriers in common active RF components simultaneously, where at least one carrier is configured at a different *operating band* than the other carrier(s) and where this different *operating band* is not a *sub-band* or *superseding-band* of another supported *operating band*

**multi-band RIB:** *operating band* specific RIB associated with a transmitter or receiver that is characterized by the ability to process two or more carriers in common active RF components simultaneously, where at least one carrier is configured at a different *operating band* than the other carrier(s) and where this different *operating band* is not a *sub-band* or *superseding-band* of another supported *operating band*

**Non-contiguous spectrum:** spectrum consisting of two or more *sub-blocks* separated by *sub-block gap(s)*.

**operating band:** frequency range in which NR operates (paired or unpaired), that is defined with a specific set of technical requirements

NOTE: The *operating band*(s) for an IAB-DU and IAB-MT are declared by the manufacturer

**OTA coverage range**: a common range of directions within which TX OTA requirements that are neither specified in the *OTA peak directions sets* nor as *TRP requirement* are intended to be met

**OTA peak directions set:** set(s) of *beam peak directions* within which certain TX OTA requirements are intended to be met, where all *OTA peak directions set(s)* are subsets of the *OTA coverage range*

NOTE: The *beam peak directions* are related to a corresponding contiguous range or discrete list of *beam centre directions*by the *beam direction pairs* included in the set.

**OTA REFSENS RoAoA:** the RoAoA determined by the contour defined by the points at which the achieved EIS is 3dB higher than the achieved EIS in the reference direction assuming that for any AoA, the receiver gain is optimized for that AoA

NOTE: This contour will be related to the average element/sub-array radiation pattern 3dB beamwidth.

**OTA sensitivity directions declaration:** set of manufacturer declarations comprising at least one set of declared minimum EIS values (with *IAB-DU* or *IAB-MT channel bandwidth*), and related directions over which the EIS applies

NOTE: All the directions apply to all the EIS values in an OSDD.

**Parent node**: IAB-MT's next hop neighbour node; the parent node can be IAB-node or IAB-donor.

**polarization match:** condition that exists when a plane wave, incident upon an antenna from a given direction, has a polarization that is the same as the receiving polarization of the antenna in that direction

**radiated interface boundary**: *operating band* specific radiated requirements reference where the radiated requirements apply

NOTE: For requirements based on EIRP/EIS, the *radiated interface boundary* is associated to the far-field region

**Radio Bandwidth:** frequency difference between the upper edge of the highest used carrier and the lower edge of the lowest used carrier

**rated beam EIRP:** For a declared beam and *beam direction pair*, the *rated beam EIRP* level is the maximum power that the IAB-DU or IAB-MT is declared to radiate at the associated *beam peak direction* during the *transmitter ON period*

**rated carrier output power:** mean power level associated with a particular carrier the manufacturer has declared to be available at the indicated interface, during the *transmitter ON period* in a specified reference condition

**rated carrier TRP output power:** mean power level declared by the manufacturer per carrier, for IAB-DU or IAB-MT operating in single carrier, multi-carrier, or carrier aggregation configurations that the manufacturer has declared to be available at the RIB during the *transmitter ON period*

**rated total output power:** mean power level associated with a particular *operating band* the manufacturer has declared to be available at the indicated interface, during the *transmitter ON period* in a specified reference condition

**rated total TRP output power:** mean power level declared by the manufacturer, that the manufacturer has declared to be available at the RIB during the *transmitter ON period*

**reference beam direction pair:** declared *beam direction pair*, including reference *beam centre direction* and reference *beam peak direction* where the reference *beam peak direction* is the direction for the intended maximum EIRP within the *OTA peak directions set*

**receiver target:** AoA in which reception is performedby *IAB type 1-H* or *IAB type 1-O*

**receiver target redirection range:** union of all the *sensitivity RoAoA* achievable through redirecting the *receiver target* related to particular OSDD

**receiver target reference direction:** direction inside the *OTA sensitivity directions declaration* declared by the manufacturer for conformance testing. For an OSDD without *receiver target redirection range*, this is a direction inside the *sensitivity RoAoA*

**reference RoAoA**: the *sensitivity RoAoA* associated with the *receiver target reference direction* for each OSDD.

**requirement set:** one of the NR requirement sets as defined for *IAB type 1-H*, *IAB type 1-O*, and *IAB type 2-O*

**sensitivity RoAoA:** RoAoA within the *OTA sensitivity directions declaration*, within which the declared EIS(s) of an OSDD is intended to be achieved at any instance of time for a specific IAB-DU or IAB-MT direction setting

**single-band connector:** *IAB type 1-H* *TAB connector* supporting operation either in a single *operating band* only, or in multiple *operating bands* but does not meet the conditions for a *multi-band connector*.

**sub-band**: A *sub-band* of an operating band contains a part of the uplink and downlink frequency range of the operating band.

**sub-block:** one contiguous allocated block of spectrum for transmission and reception by the same IAB-DU or IAB-MT

NOTE: There may be multiple instances of *sub-blocks* within a *IAB RF Bandwidth*.

**sub-block gap:** frequency gap between two consecutive sub-blocks within a *IAB RF Bandwidth*, where the RF requirements in the gap are based on co-existence for un-coordinated operation

**superseding-band**: A *superseding-band* of an operating band includes the whole of the uplink and downlink frequency range of the operating band.

**TAB connector:** *transceiver array boundary* connector

**TAB connector RX min cell group:** *operating band* specific declared group of *TAB connectors* to which *IAB type 1-H* conducted RX requirements are applied

NOTE: Within this definition, the group corresponds to the group of *TAB connectors* which are responsible for receiving a cell when the *IAB type 1-H* setting corresponding to the declared minimum number of cells with reception on all *TAB connectors* supporting an *operating band*, but its existence is not limited to that condition

**TAB connector TX min cell group:** *operating band* specific declared group of *TAB connectors* to which *IAB type 1-H* conducted TX requirements are applied.

NOTE: Within this definition, the group corresponds to the group of *TAB connectors* which are responsible for transmitting a cell when the *IAB type 1-H* setting corresponding to the declared minimum number of cells with transmission on all *TAB connectors* supporting an *operating band*, but its existence is not limited to that condition

**total radiated power:** is the total power radiated by the antenna

NOTE: The *total radiated power* is the power radiating in all direction for two orthogonal polarizations. *Total radiated power* is defined in both the near-field region and the far-field region

**transceiver array boundary:** conducted interface between the transceiver unit array and the composite antenna

**transmission bandwidth:** RF Bandwidth of an instantaneous transmission from an IAB-DU or IAB-MT, measured in resource block units

**transmitter OFF period:** time period during which the IAB-DU or IAB-MT transmitter is not allowed to transmit

**transmitter ON period**: time period during which the IAB-DU or IAB-MT transmitter is transmitting data and/or reference symbols

**transmitter transient period:** time period during which the transmitter is changing from the OFF period to the ON period or vice versa

**<Unchanged part skipped>**

## 4.6 Manufacturer's declarations

The following IAB manufacturer's declarations listed in table 4.6-1, when applicable to the IAB under test, are required to be provided by the manufacturer for radiated requirements testing for *IAB type 1-H,* *IAB type 1-O* and *IAB type 2-O*. Declarations may be provided independently for IAB-MT and IAB-DU. The applicability columns for different IAB-types in table 4.6-1 designate applicability for both IAB-DU and IAB-MT, unless otherwise stated.

For the *IAB type 1-H* declarations required for the conducted requirements testing, refer to TS 38.176-1 [3], clause 4.6.

Table 4.6-1: Manufacturers declarations for *IAB type 1-H, IAB type 1-O* and *IAB type 2-O* radiated test requirements

| **Declaration identifier** | **Declaration** | **Description** | **Applicability**  **(Note 1)** | | |
| --- | --- | --- | --- | --- | --- |
|  |  |  | ***IAB* *type 1-H***  **(Note 2)** | ***IAB type 1-O*** | ***IAB type 2-O*** |
| D.1 | Coordinate system reference point | Location of coordinated system reference point in reference to an identifiable physical feature of the IAB-MT or IAB-DU enclosure. | x | x | x |
| D.2 | Coordinate system orientation | Orientation of the coordinate system in reference to an identifiable physical feature of the IAB enclosure. | x | x | x |
| D.3 | Beam identifier | A unique title to identify a beam, e.g. a, b, c or 1, 2, 3. The vendor may declare any number of beams with unique identifiers. The minimum set to declare for conformance, corresponds to the beams at the reference beam direction with the highest intended EIRP, and covering the properties listed below:  1) A beam with the narrowest intended BeWθ and narrowest intended BeWϕ possible when narrowest intended BeWθ is used.  2) A beam with the narrowest intended BeWϕ and narrowest intended BeWθ possible when narrowest intended BeWϕ is used.  3) A beam with the widest intended BeWθ and widest intended BeWϕ possible when widest intended BeWθ is used.  4) A beam with the widest intended BeWϕ and widest intended BeWθ possible when widest intended BeWϕ is used.  5) A beam which provides the highest intended EIRP of all possible beams.  When selecting the above five beam widths for declaration, all beams that the IAB is intended to produce shall be considered, including beams that during operation may be identified by any kind of cell or UE specific reference signals, with the exception of any type of beam that is created from a group of transmitters that are not all phase synchronised.  (Note 3) | x | x | x |
| D.4 | *Operating bands* and frequency ranges | List of NR *operating band(s)* supported by the IAB-DU or IAB-MT and if applicable, frequency range(s) within the *operating band(s)* that the IAB can operate in supported bands declared for every beam (D.3).  (Note 4) | c | x | x |
| D.5 | IAB requirements set | Declaration of one of the IAB *requirement*'*s set* as defined for *IAB type 1-H*, *IAB type 1-O*, *or IAB type 2-O*. | c | x | x |
| D.6 | IAB class | Declared as Wide Area IAB-DU, Medium Range IAB-DU, or Local Area IAB-DU.  Declared as Wide Area IAB-MT, or Local Area IAB-MT. | c | x | x |
| D.7 | IAB channel band width and SCS support | IAB-DU or IAB-MT supported SCS and channel bandwidth per supported SCS. Declared for each beam (D.3) and each *operating band* (D.4). | c | x | x |
| D.8 | *OTA peak directions set* reference beam direction pair | The beam direction pair, describing the reference beam peak direction and the reference beam centre direction. Declared for every beam (D.3). | x | x | x |
| D.9 | OTA peak directions set | The OTA peak directions set for each beam. Declared for every beam (D.3). | x | x | x |
| D.10 | *OTA peak directions set* maximum steering direction(s) | The *beam direction pair(s)* corresponding to the following points:  1) The beam peak direction corresponding to the maximum steering from the reference beam centre direction in the positive Φ direction, while the θ value being the closest possible to the reference beam centre direction.  2) The beam peak direction corresponding to the maximum steering from the reference beam centre direction in the negative *Φ* direction, while the θ value being the closest possible to thereference beam centre direction*.*  3) The beam peak direction corresponding to the maximum steering from the reference beam centre direction in the positive *θ* direction, while theΦ value being the closest possible to the reference beam centre direction.  4) The beam peak direction corresponding to the maximum steering from the reference beam centre direction in the negative *θ* direction, while the Φ value being the closest possible to thereference beam centre direction*.*  The maximum steering direction(s) may coincide with the reference beam centre direction.  Declared for every beam (D.3). | x | x | x |
| D.11 | Rated beam EIRP | The rated EIRP level per carrier (Prated,c,EIRP) at the *beam peak direction* associated with a particular *beam direction pair* for each of the declared maximum steering directions (D.10), as well as the reference *beam direction pair* (D.8). Declared for every beam (D.3).  (Note 12, 14, 18) | x | x | x |
| D.12 | Beamwidth | The *beamwidth* for the reference *beam direction pair* and the four maximum steering directions. Declared for every beam (D.3). | x | x | x |
| D.13 | Equivalent beams | List of beams which are declared to be equivalent.  Equivalent beams imply that the beams are expected to have identical *OTA peak directions sets* and intended to have identical spatial properties at all steering directions within the *OTA peak directions set* when presented with identical signals. All declarations (D.4 – D.12) made for the beams are identical and the transmitter unit*,* RDN and antenna array responsible for generating the beam are of identical design. | x | x | x |
| D.14 | Parallel beams | List of beams which have been declared equivalent (D.13) and can be generated in parallel using independent RF power resources.  Independent power resources mean that the beams are transmitted from mutually exclusive transmitter units. | x | x | x |
| D.15 | Number of carriers at maximum TRP | The number of carriers per operating band the IAB is capable of generating at maximum TRP declared for every beam (D.3). | n/a | x | x |
| D.16 | Operating bands with multi-band dependencies | List of *operating bands* which are generated using transceiver units supporting operation in multiple *operating bands* through common active RF components. Declared for each *operating band* for which multi-band transceiver is used. | c | x | n/a |
| D.17 | Maximum radiated IAB RF Bandwidth | Maximum *Base Station RF Bandwidth* in the *operating band*, declared for each supported operating band (D.4).  (Note 15) | c | x | x |
| D.18 | Maximum *Radio Bandwidth* of the *operating band* with multi-band dependencies | Largest *Radio Bandwidth* that can be supported by the *operating bands* with multi-band dependencies.  Declared for each supported *operating band* which has multi-band dependencies (D.16). | c | x | n/a |
| D.19 | Total RF bandwidth (BWtot) | Total RF bandwidth BWtot of transmitter and receiver, declared per the band combinations (D.52). | c | x | x |
| D.20 | CA-only operation | Declared of CA-only (with equal power spectral density among carriers) but not multiple carriers operation, declared per *operating band* (D.4) and per beam (D.3). | c | x | x |
| D.21 | Maximum number of supported carriers per *operating band* in multi-band operations | Maximum number of supported carriers per supported *operating band* declared to have multi-band dependencies (D.16). | c | x | n/a |
| D.22 | Contiguous or non-contiguous spectrum operation support | Ability of IAB-DU or IAB-MT to support contiguous or non-contiguous (or both) frequency distribution of carriers when operating multi-carrier in an operating band. | c | x | x |
| D.23 | OSDD identifier | A unique identifier for the OSDD. | x | x | n/a |
| D.24 | OSDD operating band support | Operating band supported by the OSDD, declared for every OSDD (D.23).  (Note 5) | x | x | n/a |
| D.25 | OTA sensitivity supported IAB channel bandwidth and SCS | The IAB-DU or IAB-MTsupported SCS and channel bandwidth per supported SCS by each OSDD. | x | x | n/a |
| D.26 | Redirection of receiver target support | Ability to redirect the receiver target related to the OSDD. | x | x | n/a |
| D.27 | Minimum EIS for FR1 (EISminSENS) | The minimum EISminSENS requirement (i.e. maximum allowable EIS value) applicable to all sensitivity RoAoA per OSDD.  Declared per NR supported channel BW for the OSDD (D.30).  The lowest EIS value for all the declared OSDD's is called minSENS, while its related range of angles of arrival is called *minSENS RoAoA*.  (Note 6) | x | x | n/a |
| D.28 | EIS REFSENS for FR2 (EISREFSENS\_50M) | The EISREFSENS\_50M level applicable in the OTA REFSENS RoAoA, (used as a basis for the derivation of the FR2 EISREFSENS for other channel bandwidths supported by IAB).(Note 7) | n/a | n/a | x |
| D.29 | Receiver target reference direction Sensitivity Range of Angle of Arrival | The sensitivity RoAoA associated with the receiver target reference direction (D.31) for each OSDD. | x | x | n/a |
| D.30 | Receiver target redirection range | For each OSDD the associated union of all the sensitivity RoAoA achievable through redirecting the receiver target related to the OSDD.  (Note 8) | x | x | n/a |
| D.31 | Receiver target reference direction | For each OSDD an associated direction inside the receiver target redirection range (D.30).  (Note 9) | x | x | n/a |
| D.32 | Conformance test directions sensitivity RoAoA | For each OSDD that includes a receiver target redirection range, four sensitivity RoAoA comprising the conformance test directions (D.33). | x | x | n/a |
| D.33 | Conformance test directions | For each OSDD four conformance test directions.  If the OSDD includes a receiver target redirection range the following four directions shall be declared:  1) The direction determined by the maximum φ value achievable inside the receiver target redirection range, while θ value being the closest possible to the receiver target reference direction.  2) The direction determined by the minimum φ value achievable inside the receiver target redirection range, while θ value being the closest possible to the receiver target reference direction.  3) The direction determined by the maximum θ value achievable inside the receiver target redirection range, while φ value being the closest possible to the receiver target reference direction.  4) The direction determined by the minimum θ value achievable inside the receiver target redirection range, while φ value being the closest possible to the receiver target reference direction.  If an OSDD does not include a receiver target redirection range the following 4 directions shall be declared:  1) The direction determined by the maximum φ value achievable inside the sensitivity RoAoA, while θ value being the closest possible to the receiver target reference direction.  2) The direction determined by the minimum φ value achievable inside the sensitivity RoAoA, while θ value being the closest possible to the receiver target reference direction.  3) The direction determined by the maximum θ value achievable inside the sensitivity RoAoA, while φ value being the closest possible to the receiver target reference direction.  4) The direction determined by the minimum θ value achievable inside the sensitivity RoAoA, while φ value being the closest possible to the receiver target reference direction. | x | x | n/a |
| D.34 | OTA coverage range | Declared as a single range of directions within which selected TX OTA requirements are intended to be met.  (Note 10) | x | x | x |
| D.35 | *OTA coverage range* reference direction | The direction describing the reference direction of the *OTA converge range* (D.34).  (Note 11) | x | x | x |
| D.36 | OTA coverage range maximum directions | The directions corresponding to the following points:  1) The direction determined by the maximum φ value achievable inside the *OTA coverage range*, while θ value being the closest possible to the *OTA coverage range* reference direction.  2) The direction determined by the minimum φ value achievable inside the *OTA coverage range*, while θ value being the closest possible to the *OTA coverage range* reference direction.  3) The direction determined by the maximum θ value achievable inside the *OTA coverage range*, while φ value being the closest possible to the *OTA coverage range* reference direction.  4) The direction determined by the minimum θ value achievable inside the OTA coverage range, while φ value being the closest possible to the OTA coverage range reference direction. | x | x | x |
| D.37 | The rated carrier OTA IAB power, Prated,c,TRP | Prated,c,TRP is declared as TRP OTA power per carrier, declared per supported operating band.  (Notes 12, 14, 18) | n/a | x | x |
| D.38 | Rated transmitter TRP, Prated,t,TRP | Rated total radiated output power*.*  Declared per supported *operating band*.  (Notes 12,14, 18) | n/a | x | x |
| D.39 | CLTA placement for co-location test | The manufacturer shall declare the side of EUT where radiating elements are placed closest to the edge of EUT when applicable. The CLTA shall be placed at the EUT side where radiating elements are placed closest. | n/a | x | n/a |
| D.40 | Spurious emission category | Declare the IAB-DU or IAB-MTspurious emission category as either category A or B with respect to the limits for spurious emissions, as defined in Recommendation ITU-R SM.329 [5]. | c | x | x |
| D.41 | Additional operating band unwanted emissions | The manufacturer shall declare whether the IAB under test is intended to operate in geographic areas where the additional operating band unwanted emission limits defined in clause 6.7.4 apply. | c | x | x |
| D.42 | Co-existence with other systems | The manufacturer shall declare whether the IAB under test is intended to operate in geographic areas where one or more of the systems GSM850, GSM900, DCS1800, PCS1900, UTRA FDD, UTRA TDD, E-UTRA and/or PHS operating in another operating band are deployed. | c | x | x |
| D.43 | Co-location with other base stations | The manufacturer shall declare whether the IAB under test is intended to operate co-located with Base Stations of one or more of the systems GSM850, GSM900, DCS1800, PCS1900, UTRA FDD, UTRA TDD and/or E-UTRA operating in another operating band. | c | x | n/a |
| D.44 | Single-band RIB or multi-band RIB | List of single-band RIB and/or multi-band RIB for the supported operating bands (D.4). | c | x | n/a |
| D.45 | Single or multiple carrier | IAB capability to operate with a single carrier (only) or multiple carriers. Declared per supported operating band, per RIB.  (Note 17) | c | x | x |
| D.46 | Maximum number of supported carriers per *operating band* | Maximum number of supported carriers. Declared per supported operating band, per RIB.  (Note 15) | c | x | x |
| D.47 | Total maximum number of supported carriers | Maximum number of supported carriers for all supported operating bands. Declared per RIB. | c | x | x |
| D.48 | Other band combination multi-band restrictions | Declare any other limitation under simultaneous operation in the declared band combinations (D.16), which have any impact on the test configuration generation. | c | x | n/a |
| D.49 | Ncells | Number corresponding to the minimum number of cells that can be transmitted by an IAB-DU or IAB-MT in a particular *operating band*. Declared per *operating band* (D.4). | c | n/a | n/a |
| D.50 | Maximum supported power difference between carriers | Maximum supported power difference between carriers in each supported *operating band*. Declared per *operating band* (D.4). | c | x | x |
| D.51 | Maximum supported power difference between carriers in different *operating bands* | Maximum supported power difference between any two carriers in any two different supported *operating bands*. Declared per operating bands combination (D.52). (Note 19) | c | x | n/a |
| D.52 | Operating band combination support | List of *operating bands* combinations supported by *single-band RIB(s)* and/or *multi-band RIB(s)* of the IAB-DU or IAB-MT. | c | x | n/a |
| D.53 | OTA REFSENS RoAoA | Range of angles of arrival associated with the OTA REFSENS. | n/a | x | x |
| D.54 | OTA REFSENS receiver target reference direction | Reference direction inside the OTA REFSENS RoAoA (D.53). | n/a | x | x |
| D.55 | OTA REFSENS conformance test directions | The following four OTA REFSENS conformance test directions shall be declared:  1) The direction determined by the maximum φ value achievable inside the OTA REFSENS RoAoA, while θ value being the closest possible to the OTA REFSENS receiver target reference direction.  2) The direction determined by the minimum φ value achievable inside the OTA REFSENS RoAoA, while θ value being the closest possible to the OTA REFSENS receiver target reference direction.  3) The direction determined by the maximum θ value achievable inside the OTA REFSENS RoAoA, while φ value being the closest possible to the OTA REFSENS receiver target reference direction.  4) The direction determined by the minimum θ value achievable inside the OTA REFSENS RoAoA, while φ value being the closest possible to the OTA REFSENS receiver target reference direction. | n/a | x | x |
| D.56 | Supported frequency range of the NR *operating band* | List of supported frequency ranges representing *fractional bandwidths* (FBW) of *operating bands* with FBW larger than 6%. | x | x | x |
| D.57 | Rated beam EIRP at lower end of the *fractional bandwidth* (Prated,c,FBWlow) | The rated EIRP level per carrier at lower frequency range of the *fractional bandwidth* (Prated,c,FBWlow), at the *beam peak direction* associated with a particular *beam direction pair* for each of the declared maximum steering directions (D.10), as well as the reference *beam direction pair* (D.8).  Declared per beam for all supported frequency ranges (D.56).  (Notes 12, 13, 14, 15, 18) | x | x | x |
| D.58 | Rated beam EIRP at higher frequency range of the *fractional bandwidth* (Prated,c,FBWhigh) | The rated EIRP level per carrier at higher frequency range of the *fractional bandwidth* (Prated,c,FBWhigh), at the *beam peak direction* associated with a particular *beam direction pair* for each of the declared maximum steering directions (D.10), as well as the reference *beam direction pair* (D.8).  Declared per beam for all supported frequency ranges in (D.56).  (Notes 12, 13, 14 ,15, 18) | x | x | x |
| D.59 | Relation between supported maximum RF bandwidth, number of carriers and Rated maximum TRP | If the rated transmitter TRP and total number of supported carriers are not simultaneously supported, the manufacturer shall declare the following additional parameters:  - The reduced number of supported carriers at the rated transmitter TRP;  - The reduced total output power at the maximum number of supported carriers. | n/a | x | x |
| D.60 | Inter-band CA | Declaration of operating band(s) combinations supporting inter‑band CA. Declared per operating band combination (D.52). | c | x | x |
| D.61 | Intra-band contiguous CA | Declaration of operating band(s) supporting intra-band contiguous CA. Declared per *operating band* with CA support. | c | x | x |
| D.62 | Intra-band non-contiguous CA | Declaration of operating band(s) supporting intra-band non‑contiguous CA. Declared per operating band with CA support. | c | x | x |
| D.63 | Total maximum number of supported carriers in multi-band operation | Maximum number of supported carriers for all supported *operating bands* declared to have multi-band dependencies (D.16)*.* | c | x | n/a |
| D.IAB-1 | Same RF implementation | Declaration whether IAB-MT and IAB-DU have the same RF implementation. | c | x | x |
| D.IAB-2 | IAB-MT test model PT-RS configuration | Declaration of PT-RS configuration in IAB-MT test model: without PT-RS, with PT-RS or both. | n/a | n/a | x |
| D.100 | PUSCH mapping type | IAB-DU only: Declaration of the supported PUSCH mapping type for FR1 as specified in TS 38.211 [7], i.e., type A, type B or both. | c | x | n/a |
| D.101 | PUSCH additional DM-RS positions | IAB-DU only: Declaration of the supported additional DM-RS position(s) for FR2, i.e., pos0, pos1, or both. | n/a | n/a | x |
| D.102 | PUCCH format | IAB-DU only: Declaration of the supported PUCCH format(s) as specified in TS 38.211 [7], i.e., format 0, format 1, format 2, format 3, format 4. | c | x | x |
| D.103 | PRACH format and SCS | IAB-DU only: Declaration of the supported PRACH format(s) as specified in [x], i.e., format: 0, A1, A2, A3, B4, C0, C2.  Declaration of the supported SCS(s) per supported PRACH format with short sequence, as specified in TS 38.211 [7], i.e.:  - For *IAB type 1-O*: 15 kHz, 30 kHz or both.  - For *IAB type 2-O*: 60 kHz, 120 kHz or both. | c | x | x |
| D.104 | Additional DM-RS for PUCCH format 3 | IAB-DU only: Declaration of the supported additional DM-RS for PUCCH format 3: without additional DM-RS, with additional DM-RS or both. | c | x | x |
| D.105 | Additional DM-RS for PUCCH format 4 | IAB-DU only: Declaration of the supported additional DM-RS for PUCCH format 4: without additional DM-RS, with additional DM-RS or both. | c | x | x |
| D.106 | PUSCH PT-RS | IAB-DU only: Declaration of PT-RS in PUSCH support: without PT-RS, with PT-RS or both. | n/a | n/a | x |
| D.107 | PUCCH multi-slot | Declaration of multi-slot PUCCH support. | c | x | n/a |
| D.108 | UL CA | IAB-DU only: For the highest supported SCS, declaration of the carrier combination with the largest aggregated bandwidth. If there is more than one combination, the carrier combination with the largest number of carriers shall be declared. | c | x | x |
| D.109 | Modulation order | IAB-DU only: Declaration of the supported modulation orders:  QPSK, 16QAM, 64QAM | c | x | x |
| D.110 | Transform precoding | IAB-DU only: Declaration on the supporting of transform precoding | c | x | x |
| D.200 | 256QAM for PDSCH for FR1 | Declaration of the supported of 256QAM modulation scheme for PDSCH for FR1, i.e. supported or not supported. | c | x | n/a |
| D.201 | Maximum number of ports across all configured NZP-CSI-RS resources per CC | Declaration of the maximum number of ports across all configured NZP-CSI-RS resources per CC, i.e. 2, 4, 8, 12, 16, 24, 32, 40, 48 … ,256 or not supported. | c | x | n/a |
| D.202 | Maximum number of PDSCH MIMO layers | Declaration of the the maximum number of spatial multiplexing layer(s) supported by the UE for DL reception, i.e. 2, 4, 8 or not supported. | c | x | x |
| D.203 | 1 port of DL PTRS | Declaration of the supported of PT-RS with 1 antenna port in DL reception, i.e. supported or not supported. | n/a | n/a | x |
| NOTE 1: Manufacturer declarations applicable per IAB *requirement set* were marked as "x". Manufacturer declarations not applicable per IAB *requirement set* were marked as "n/a".  NOTE 2: For *IAB type 1-H*, the only radiated declarations are related to EIRP and EIS requirements. For *IAB type 1-H* declarations required for the conducted requirements testing, refer to TS 38.176-1 [3]. For declarations marked as 'c', related conducted declarations in TS 38.176-1 [3] apply. When separately declared, they shall still use the same declaration identifier.  NOTE 3: Depending on the capability of the system some of these beams may be the same. For those same beams, testing is not repeated.  NOTE 4: These *operating bands* are related to their respective single‑band RIBs.  NOTE 5: As each identified OSDD has a declared minimum EIS value (D.27), multiple operating band can only be declared if they have the same minimum EIS declaration.  NOTE 6: If the *IAB type 1-H* or *IAB type 1-O* is not capable of redirecting the receiver target related to the OSDD then there is only one RoAoA applicable to the OSDD.  NOTE 7: Although EISREFSENS\_50M level is based on a reference measurement channel with BWChannel = 50 MHz, it does not imply that IAB-DU or IAB-MT has to support 50 MHz channel bandwidth.  NOTE 8: Not applicable for *IAB type 2-O*.  NOTE 9: For an OSDD without receiver target redirection range, this is a direction inside the sensitivity RoAoA.  NOTE 10: *OTA coverage range* is used for conformance testing of such TX OTA requirements as occupied bandwidth, frequency error, TAE or EVM.  NOTE 11: The *OTA coverage reference* direction may be the same as the Reference beam direction pair (D.8) but does not have to be.  NOTE 12: If an *IAB type 2-O* is capable of 64QAM DL operation but not capable of 256QAM DL operation, then up to two rated output power declarations may be made. One declaration is applicable when configured for 64QAM transmissions and the other declaration is applicable when not configured for 64QAM transmissions.  NOTE 13: If D.57 and D.58 are declared for certain frequency range (D.56), there shall be no "Rated beam EIRP" declaration (D.11) for the *operating band* containing that particular frequency range.  NOTE 14: If an *IAB type 1-H* or *IAB type 1-O* is capable of 256QAM DL operation then two rated output power declarations may be made. One declaration is applicable when configured for 256QAM transmissions and the other declaration is applicable when not configured for 256QAM transmissions.  NOTE 15: Parameters for contiguous or non-contiguous spectrum operation in the operating band are assumed to be the same unless they are separately declared.  NOTE 16: void  NOTE 17: In case of IAB *type 1-H*, this declaration applies per *TAB connector*.  NOTE 18: If a *IAB type 2-O* is capable of 256QAM DL operation, then up to three rated output power declarations may be made. One declaration is applicable when configured for 256QAM transmissions, a different declaration is applicable when configured for 64QAM transmissions and the other declaration is applicable when not configured neither for 256QAM nor 64QAM transmissions.  NOTE 19: The power difference is declared at highest rated output power (D.38). | | | | | |

**<End of change from R4-2204578>**

**<Start of the changes from R4-2207311>**

6.7.5.4.5.1 Test requirement for *IAB type 1-O*

The power of any spurious emission shall not exceed the test limits in table 6.7.5.4.5-1 for a IAB where requirements for co-existence with the system listed in the first column apply. For a *multi-band RIB*, the exclusions and conditions in the Note column of table 6.7.5.4.5-1 apply for each supported *operating band*.

Table 6.7.5.4.5.1-1: 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** | ***Test limits*** | ***Measurement bandwidth*** | **Note** |
| --- | --- | --- | --- | --- |
| GSM900 | 921 – 960 MHz | -45.4 dBm | 100 kHz |  |
|  | 876 – 915 MHz | -49.4 dBm | 100 kHz |  |
| DCS1800 | 1805 – 1880 MHz | -35.4 dBm | 100 kHz |  |
|  | 1710 – 1785 MHz | -49.4 dBm | 100 kHz |  |
| PCS1900 | 1930 – 1990 MHz | -35.4 dBm | 100 kHz |  |
|  | 1850 – 1910 MHz | -49.4 dBm | 100 kHz |  |
| GSM850 or | 869 – 894 MHz | -45.4 dBm | 100 kHz |  |
| CDMA850 | 824 – 849 MHz | -49.4 dBm | 100 kHz |  |
| UTRA FDD | 2110 – 2170 MHz | -40.4 dBm | 1 MHz |  |
| Band I or  E-UTRA Band 1 or NR Band n1 | 1920 – 1980 MHz | -37.4 dBm | 1 MHz |  |
| UTRA FDD | 1930 – 1990 MHz | -40.4 dBm | 1 MHz |  |
| Band II or  E-UTRA Band 2 or NR Band n2 | 1850 – 1910 MHz | -37.4 dBm | 1 MHz |  |
| UTRA FDD | 1805 – 1880 MHz | -40.4 dBm | 1 MHz |  |
| Band III or  E-UTRA Band 3 or NR Band n3 | 1710 – 1785 MHz | -37.4 dBm | 1 MHz |  |
| UTRA FDD Band IV or  E-UTRA Band 4 | 2110 – 2155 MHz | -40.4 dBm | 1 MHz |  |
|  | 1710 – 1755 MHz | -37.4 dBm | 1 MHz |  |
| UTRA FDD Band V or  E-UTRA Band 5 or NR Band n5 | 869 – 894 MHz | -40.4 dBm | 1 MHz |  |
|  | 824 – 849 MHz | -37.4 dBm | 1 MHz |  |
| UTRA FDD | 860 – 890 MHz | -40.4 dBm | 1 MHz |  |
| Band VI, XIX or | 815 – 830 MHz | -37.4 dBm | 1 MHz |  |
| E-UTRA Band 6, 18, 19 or NR Band n18 | 830 – 845 MHz | -37.4 dBm | 1 MHz |  |
| UTRA FDD Band VII or  E-UTRA Band 7 or NR Band n7 | 2620 – 2690 MHz | -40.4 dBm | 1 MHz |  |
|  | 2500 – 2570 MHz | -37.4 dBm | 1 MHz |  |
| UTRA FDD Band VIII or  E-UTRA Band 8 or NR Band n8 | 925 – 960 MHz | -40.4 dBm | 1 MHz |  |
|  | 880 – 915 MHz | -37.4 dBm | 1 MHz |  |
| UTRA FDD Band IX or  E-UTRA Band 9 | 1844.9 – 1879.9 MHz | -40.4 dBm | 1 MHz |  |
|  | 1749.9 – 1784.9 MHz | -37.4 dBm | 1 MHz |  |
| UTRA FDD Band X or  E-UTRA Band 10 | 2110 – 2170 MHz | -40.4 dBm | 1 MHz |  |
|  | 1710 – 1770 MHz | -37.4 dBm | 1 MHz |  |
| UTRA FDD Band XI or XXI or  E-UTRA Band 11 or 21 | 1475.9 – 1510.9 MHz | -40.4 dBm | 1 MHz |  |
|  | 1427.9 – 1447.9 MHz | -37.4 dBm | 1 MHz |  |
|  | 1447.9 – 1462.9 MHz | -37.4 dBm | 1 MHz |  |
| UTRA FDD Band XII or  E-UTRA Band 12 or NR Band n12 | 729 – 746 MHz | -40.4 dBm | 1 MHz |  |
|  | 699 – 716 MHz | -37.4 dBm | 1 MHz |  |
| UTRA FDD Band XIII or  E-UTRA Band 13 | 746 – 756 MHz | -40.4 dBm | 1 MHz |  |
|  | 777 – 787 MHz | -37.4 dBm | 1 MHz |  |
| UTRA FDD Band XIV or  E-UTRA Band 14 or NR band n14 | 758 – 768 MHz | -40.4 dBm | 1 MHz |  |
|  | 788 – 798 MHz | -37.4 dBm | 1 MHz |  |
| E-UTRA Band 17 | 734 – 746 MHz | -40.4 dBm | 1 MHz |  |
|  | 704 – 716 MHz | -37.4 dBm | 1 MHz |  |
| UTRA FDD Band XX or E-UTRA Band 20 or NR Band n20 | 791 – 821 MHz | -40.4 dBm | 1 MHz |  |
|  | 832 – 862 MHz | -37.4 dBm | 1 MHz |  |
| UTRA FDD Band XXII or E-UTRA Band 22 | 3510 – 3590 MHz | -40 dBm | 1 MHz | This requirement does not apply to IAB-DU and IAB-MT operating in band n77 or n78. |
|  | 3410 – 3490 MHz | -37 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 | -40.4 dBm | 1 MHz |  |
|  | 1626.5 – 1660.5 MHz | -37.4 dBm | 1 MHz |  |
| UTRA FDD Band XXV or  E-UTRA Band 25 or NR band n25 | 1930 – 1995 MHz | -40.4 dBm | 1 MHz |  |
|  | 1850 – 1915 MHz | -37.4 dBm | 1 MHz |  |
| UTRA FDD Band XXVI or  E-UTRA Band 26 or NR Band n26 | 859 – 894 MHz | -40.4 dBm | 1 MHz |  |
|  | 814 – 849 MHz | -37.4 dBm | 1 MHz |  |
| E-UTRA Band 27 | 852 – 869 MHz | -40.4 dBm | 1 MHz |  |
|  | 807 – 824 MHz | -37.4 dBm | 1 MHz |  |
| E-UTRA Band 28 or NR Band n28 | 758 – 803 MHz | -40.4 dBm | 1 MHz |  |
|  | 703 – 748 MHz | -37.4 dBm | 1 MHz |  |
| E-UTRA Band 29 or NR Band n29 | 717 – 728 MHz | -40.4 dBm | 1 MHz |  |
| E-UTRA Band 30 or NR Band n30 | 2350 – 2360 MHz | -40.4 dBm | 1 MHz |  |
|  | 2305 – 2315 MHz | -37.4 dBm | 1 MHz |  |
| E-UTRA Band 31 | 462.5 – 467.5 MHz | -40.4 dBm | 1 MHz |  |
|  | 452.5 – 457.5 MHz | -37.4 dBm | 1 MHz |  |
| UTRA FDD band XXXII or E-UTRA band 32 | 1452 – 1496 MHz | -40.4 dBm | 1 MHz |  |
| UTRA TDD Band a) or E-UTRA Band 33 | 1900 – 1920 MHz | -40.4 dBm | 1 MHz |  |
| UTRA TDD Band a) or E-UTRA Band 34 or NR band n34 | 2010 – 2025 MHz | -40.4 dBm | 1 MHz |  |
| UTRA TDD Band b) or E-UTRA Band 35 | 1850 – 1910 MHz | -40.4 dBm | 1 MHz |  |
| UTRA TDD Band b) or E-UTRA Band 36 | 1930 – 1990 MHz | -40.4 dBm | 1 MHz |  |
| UTRA TDD Band c) or E-UTRA Band 37 | 1910 – 1930 MHz | -40.4 dBm | 1 MHz |  |
| UTRA TDD Band d) or E-UTRA Band 38 or NR Band n38 | 2570 – 2620 MHz | -40.4 dBm | 1 MHz |  |
| UTRA TDD Band f) or E-UTRA Band 39 or NR band n39 | 1880 – 1920MHz | -40.4 dBm | 1 MHz |  |
| UTRA TDD Band e) or E-UTRA Band 40 or NR Band n40 | 2300 – 2400MHz | -40.4 dBm | 1 MHz |  |
| E-UTRA Band 41 or NR Band n41, n90 | 2496 – 2690 MHz | -40.4 dBm | 1 MHz | This is not applicable IAB-DU and IAB-MT operating in Band n41. |
| E-UTRA Band 42 | 3400 – 3600 MHz | -40 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 | -40 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 | -40.4 dBm | 1 MHz |  |
| E-UTRA Band 45 | 1447 – 1467 MHz | -40.4 dBm | 1 MHz |  |
| E-UTRA Band 46 or NR Band n46 | 5150 – 5925 MHz | -39.5 dBm | 1 MHz |  |
| E-UTRA Band 47 | 5855 – 5925 MHz | -39.5 dBm | 1 MHz |  |
| E-UTRA Band 48 or NR Band n48 | 3550 – 3700 MHz | -40 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 | -40.4 dBm | 1 MHz |  |
| E-UTRA Band 51 or NR Band n51 | 1427 – 1432 MHz | -40.4 dBm | 1 MHz |  |
| E-UTRA Band 53 or NR Band n53 | 2483.5 - 2495 MHz | -40.4 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 | -40.4 dBm | 1 MHz |  |
|  | 1920 – 2010 MHz | -37.4 dBm | 1 MHz |  |
| E-UTRA Band 66 or NR Band n66 | 2110 – 2200 MHz | -40.4 dBm | 1 MHz |  |
|  | 1710 – 1780 MHz | -37.4 dBm | 1 MHz |  |
| E-UTRA Band 67 | 738 – 758 MHz | -40.4 dBm | 1 MHz |  |
| E-UTRA Band 68 | 753 -783 MHz | -40.4 dBm | 1 MHz |  |
|  | 698-728 MHz | -37.4 dBm | 1 MHz |  |
| E-UTRA Band 69 | 2570 – 2620 MHz | -40.4 dBm | 1 MHz |  |
| E-UTRA Band 70 or NR Band n70 | 1995 – 2020 MHz | -40.4 dBm | 1 MHz |  |
|  | 1695 – 1710 MHz | -37.4 dBm | 1 MHz |  |
| E-UTRA Band 71 or NR Band n71 | 617 – 652 MHz | -40.4 dBm | 1 MHz |  |
|  | 663 – 698 MHz | -37.4 dBm | 1 MHz |  |
| E-UTRA Band 72 | 461 – 466 MHz | -40.4 dBm | 1 MHz |  |
|  | 451 – 456 MHz | -37.4 dBm | 1 MHz |  |
| E-UTRA Band 74 or NR Band n74 | 1475 – 1518 MHz | -40.4 dBm | 1 MHz |  |
|  | 1427 – 1470 MHz | -37.4 dBm | 1MHz |  |
| E-UTRA Band 75 or NR Band n75 | 1432 – 1517 MHz | -40.4 dBm | 1 MHz |  |
| E-UTRA Band 76 or NR Band n76 | 1427 – 1432 MHz | -40.4 dBm | 1 MHz |  |
| NR Band n77 | 3.3 – 4.2 GHz | -40 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 | -40 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 | -39.5 dBm | 1 MHz | This requirement does not apply to IAB-DU and IAB-MT operating in Band n79 |
| NR Band n80 | 1710 – 1785 MHz | -37.4 dBm | 1 MHz |  |
| NR Band n81 | 880 – 915 MHz | -40.4 dBm | 1 MHz |  |
| NR Band n82 | 832 – 862 MHz | -45.4 dBm | 1 MHz |  |
| NR Band n83 | 703 – 748 MHz | -49.4 dBm | 1 MHz |  |
| NR Band n84 | 1920 – 1980 MHz | -35.4 dBm | 1 MHz |  |
| E-UTRA Band 85 | 728 – 746 MHz | -49.4 dBm | 1 MHz |  |
|  | 698 – 716 MHz | -35.4 dBm | 1 MHz |  |
| NR Band n86 | 1710 – 1780 MHz | -49.4 dBm | 1 MHz |  |
| NR Band n89 | 824 – 849 MHz | -45.4 dBm | 1 MHz |  |
| NR Band n91 | 1427 – 1432 MHz | -49.4 dBm | 1 MHz |  |
|  | 832 – 862 MHz | -40.4 dBm | 1 MHz |  |
| NR Band n92 | 1432 – 1517 MHz | -37.4 dBm | 1 MHz |  |
|  | 832 – 862 MHz | -40.4 dBm | 1 MHz |  |
| NR Band n93 | 1427 – 1432 MHz | -37.4 dBm | 1 MHz |  |
|  | 880 – 915 MHz | -40.4 dBm | 1 MHz |  |
| NR Band n94 | 1432 – 1517 MHz | -37.4 dBm | 1 MHz |  |
|  | 880 – 915 MHz | -40.4 dBm | 1 MHz |  |
| NR Band n95 | 2010 – 2025 MHz | -37.4 dBm | 1 MHz |  |
| NR Band n96 | 5925 – 7125 MHz | -39.5 dBm | 1 MHz |  |

NOTE 1: As defined in the scope for spurious emissions in this clause the co-existence requirements in table 6.7.5.4.5.1-1do 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 6.7.5.4.5.1-1 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.

### **<Next change>**

6.7.5.5.5.1 Test requirement for *IAB type 1-O*

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

The requirements assume co-location with base stations of the same class.

NOTE: For co-location with UTRA, the requirements are based on co-location with UTRA FDD or TDD base stations.

This requirement is a co-location requirement as defined in clause 4.9, in TS 38.174 [2], the power levels are specified at the CLTAoutput.

The output of the CLTA of any spurious emission shall not exceed the test limit in table 6.7.5.5.5.1-1.

For a *multi-band RIB*, the exclusions and conditions in the notes column of table 6.7.5.5.5.1-1 apply for each supported operating band.

Table 6.7.5.5.5.1-1: *IAB-DU and IAB-MT spurious emissions basic limits for co-location with BS or IAB-Node*

| **Co-located system** | **Frequency range for** | ***Test 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 | -115.9 dBm | -108.9 dBm | -87.9 dBm | 100 kHz |  |
| DCS1800 | 1710 – 1785 MHz | -115.9 dBm | -108.9 dBm | --97.9 dBm | 100 kHz |  |
| PCS1900 | 1850 – 1910 MHz | -115.9 dBm | -108.9 dBm | --97.9 dBm | 100 kHz |  |
| GSM850 or CDMA850 | 824 – 849 MHz | -115.9 dBm | -108.9 dBm | -87.9 dBm | 100 kHz |  |
| UTRA FDD Band I or E-UTRA Band 1 or NR Band n1 | 1920 – 1980 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA FDD Band II or E-UTRA Band 2 or NR Band n2 | 1850 – 1910 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA FDD Band III or E-UTRA Band 3 or NR Band n3 | 1710 – 1785 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA FDD Band IV or E-UTRA Band 4 | 1710 – 1755 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA FDD Band V or E-UTRA Band 5 or NR Band n5 | 824 – 849 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA FDD Band VI, XIX or E-UTRA Band 6, 19 | 830 – 845 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA FDD Band VII or E-UTRA Band 7 or NR Band n7 | 2500 – 2570 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA FDD Band VIII or E-UTRA Band 8 or NR Band n8 | 880 – 915 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA FDD Band IX or E-UTRA Band 9 | 1749.9 – 1784.9 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA FDD Band X or E-UTRA Band 10 | 1710 – 1770 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA FDD Band XI or E-UTRA Band 11 | 1427.9 –1447.9 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA FDD Band XII or  E-UTRA Band 12 or NR Band n12 | 699 – 716 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA FDD Band XIII or  E-UTRA Band 13 | 777 – 787 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA FDD Band XIV or  E-UTRA Band 14 or NR Band n14 | 788 – 798 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| E-UTRA Band 17 | 704 – 716 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| E-UTRA Band 18 or NR Band n18 | 815 – 830 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA FDD Band XX or E-UTRA Band 20 or NR Band n20 | 832 – 862 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA FDD Band XXI or E-UTRA Band 21 | 1447.9 – 1462.9 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA FDD Band XXII or E-UTRA Band 22 | 3410 – 3490 MHz | -113.7 dBm | -108.7 dBm | -105.7 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 | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| E-UTRA Band 24 | 1626.5 – 1660.5 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA FDD Band XXV or  E-UTRA Band 25 or NR Band n25 | 1850 – 1915 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA FDD Band XXVI or  E-UTRA Band 26 or NR Band n26 | 814 – 849 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| E-UTRA Band 27 | 807 – 824 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| E-UTRA Band 28 or NR Band n28 | 703 – 748 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| E-UTRA Band 30 or NR Band n30 | 2305 – 2315 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| E-UTRA Band 31 | 452.5 – 457.5 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA TDD Band a) or E-UTRA Band 33 | 1900 – 1920 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA TDD Band a) or E-UTRA Band 34 or NR band n34 | 2010 – 2025 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA TDD Band b) or E-UTRA Band 35 | 1850 – 1910 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA TDD Band b) or E-UTRA Band 36 | 1930 – 1990 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA TDD Band c) or E-UTRA Band 37 | 1910 – 1930 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA TDD Band d) or E-UTRA Band 38 or NR Band n38 | 2570 – 2620 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA TDD Band f) or E-UTRA Band 39 or NR band n39 | 1880 – 1920MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| UTRA TDD Band e) or E-UTRA Band 40 or NR Band n40 | 2300 – 2400MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| E-UTRA Band 41 or NR Band n41, n90 | 2496 – 2690 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz | This is not applicable to IAB-DU and IAB-MT operating in Band n41 |
| E-UTRA Band 42 | 3400 – 3600 MHz | -113.7 dBm | -108.7 dBm | -105.7 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 | -113.7 dBm | -108.7 dBm | -105.7 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 | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| E-UTRA Band 45 | 1447 – 1467 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| E-UTRA Band 46 or NR Band n46 | 5150 – 5925 MHz | N/A | -108.6 dBm | -105.6 dBm | 100 kHz |  |
| E-UTRA Band 48 or NR Band n48 | 3550 – 3700 MHz | -113.7 dBm | -108.7 dBm | -105.7 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 | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| E-UTRA Band 51 or NR Band n51 | 1427 – 1432 MHz | N/A | N/A | -105.9 dBm | 100 kHz |  |
| E-UTRA Band 53 or NR Band n53 | 2483.5 – 2495 MHz | N/A | -108.9 dBm | -105.9 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 | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| E-UTRA Band 66 or NR Band n66 | 1710 – 1780 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| E-UTRA Band 68 | 698 – 728 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| E-UTRA Band 70 or NR Band n70 | 1695 – 1710 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| E-UTRA Band 71 or NR Band n71 | 663 – 698 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| E-UTRA Band 72 | 451 – 456 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| E-UTRA Band 74 or NR Band n74 | 1427 – 1470 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| NR Band n77 | 3.3 – 4.2 GHz | -113.7 dBm | -108.7 dBm | -105.7 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 | -113.7 dBm | -108.7 dBm | -105.7 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 | -113.6 dBm | -108.6 dBm | -105.6 dBm | 100 kHz | This is not applicable to IAB-DU and IAB-MT operating in Band n79 |
| NR Band n80 | 1710 – 1785 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| NR Band n81 | 880 – 915 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| NR Band n82 | 832 – 862 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| NR Band n83 | 703 – 748 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| NR Band n84 | 1920 – 1980 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| E-UTRA Band 85 | 698 – 716 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| NR Band n86 | 1710 – 1780 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| NR Band n89 | 824 – 849 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| NR Band n91 | 832 – 862 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| NR Band n92 | 832 – 862 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| NR Band n93 | 880 – 915 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| NR Band n94 | 880 – 915 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| NR Band n95 | 2010 – 2025 MHz | -113.9 dBm | -108.9 dBm | -105.9 dBm | 100 kHz |  |
| NR Band n96 | 5925 – 7125 MHz | N/A | -107.6 dBm | -104.6 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 [15].

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.

### **<End of the changes from R4-2207311>**