**3GPP TSG-RAN WG4 Meeting #99-e *8483***

 **Electronic meeting, 19 – 27 May, 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **37.141** | **CR** | **0977** | **rev** | **1** | **Current version:** | **16.9.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network |  |

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| ***Title:***  | CR to TS 37.141: Regional requirements for band 41, n41, and n90 in Japan, Rel-16 |
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| ***Source to WG:*** | NEC, , KDDI Corporation, Nokia |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** | NR\_newRAT-Perf |  | ***Date:*** | 2021-05-11 |
|  |  |  |  |  |
| ***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 canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | In RAN4#98, CRs to be aligned with BWA system in Japan were agreed for 36 and 38 series. This is to update the 37 series for the corresponding changes. |
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| ***Summary of change:*** | Updated the regional requirements list.Added regional requirements for rated output power for Band 41.Added text to indicate emission limits may be applied to the sum of the emission power over all antenna connectors for Band 41.Updated additional BS spurious emissions limits for Band 41.Deleted the additional OBUE limits for Band 41.Updated the intermodulation requirements for Band 41. |
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| ***Consequences if not approved:*** | Regional specifications in Japan do not meet 3GPP specifications. |
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| ***Clauses affected:*** | 4.3, 6.2.1.2A, 6.6.1.5.5, 6.6.2.5.1, 6.6.2.5.4.5, 6.6.4.5.6, 6.7.5.4 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS37.104 |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ... |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

**[Start of change]**

## 4.3 Regional requirements

Some requirements in the present document may only apply in certain regions either as optional requirements, or set by local and regional regulation as mandatory requirements. It is normally not stated in the 3GPP specifications under what exact circumstances that the requirements apply, since this is defined by local or regional regulation.

Table 4.3-1lists all requirements in the present specification that may be applied differently in different regions. There are additional single-RAT regional requirements that may apply. These are referenced from the present specification, but listed in the specification for the RATs concerned [3][4][5][6][27].

Table 4.3-1: List of regional requirements

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| --- | --- | --- |
| Clause number | Requirement | Comments |
| 4.5 | Operating bands and Band Categories | Some bands may be applied regionally. |
| 6.2.1.2A | Base station output power | Additional requirements may apply as defined in TS 37.104 [2] clause 6.2.2. |
| 6.6.1.5.1 | Spurious emissions(Category A) | Category A limits are mandatory for regions where Category A limits for spurious emissions, as defined in ITU-R Recommendation SM.329 [13] apply. |
| 6.6.1.5.2 | Spurious emissions(Category B) | Category B limits are mandatory for regions where Category B limits for spurious emissions, as defined in ITU-R Recommendation SM.329 [13] apply. |
| 6.6.1.5.3 | Additional requirement for BC2 (Category B) | Category B limits are mandatory for regions where Category B limits for spurious emissions, as defined in ITU-R Recommendation SM.329 [13] apply. |
| 6.6.1.5.5 | Additional spurious emissions requirements | These requirements may be applied for the protection of system operating in frequency ranges other than the MSR BS operating band. In addition to the requirements in clauses 6.6.1.5.1, 6.6.1.5.2, 6.6.1.5.3, 6.6.1.5.4 and 6.6.1.5.5, the BS may have to comply with the applicable emission limits established by FCC Title 47 [8], when deployed in regions where those limits are applied, and under the conditions declared by the manufacturer. |
| 6.6.1.5.6 | Co-location (spurious emissions) | These requirements may be applied for the protection of other BS receivers when a BS operating in another frequency band is co-located with any BS. |
| 6.6.2.5.4.1 | Additional requirements (Operating band unwanted emissions) | In addition to the requirements in clauses 6.6.2.5.1 and 6.6.2.5.2, the BS may have to comply with the applicable emission limits established by FCC Title 47 [8], when deployed in regions where those limits are applied and under the conditions declared by the manufacturer. |
| 6.6.2.5.4.2 | Unsynchronized operation for BC3 (Operating band unwanted emissions) | The requirements for unsynchronized TDD co-existence may apply regionally. |
| 6.6.2.5.4.3 | Protection of DTT (Operating band unwanted emissions) | The requirements for protection of DTT may apply regionally. |
| 6.6.2.5.4.4 | Co-existence with services in adjacent frequency bands (Operating band unwanted emissions) | This regional requirement may be applied for the protection of systems operating in frequency bands adjacent to band 1 as defined in clause 4.5, in geographic areas in which both an adjacent band service and UTRA and/or E-UTRA are deployed. |
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| 6.6.2.5.4.6 | Additional band 32 unwanted emissions  | These requirements may apply in certain regions  |
| 6.6.3.5  | Occupied bandwidth | The requirement may be applied regionally. There may also be regional requirements to declare the Occupied bandwidth according to the definition. |
| 6.6.4.5.6 | Adjacent Channel Leakage Power Ratio (ACLR) | For Band 41 operation in Japan, absolute ACLR limits shall be applied to the sum of the absolute ACLR power over all *antenna connectors*. |
| 6.7.2A | Additional requirements for Band 41 | These requirements may apply in certain regions for Band 41 |
| 6.7.5.4 | Additional test requirements for Band 41 | These requirements may apply in certain regions for Band 41 |
| 7.5.2.5 | Co-location requirement (blocking) | These requirements may be applied for the protection of the BS receiver when a BS operating in another frequency band is co-located with any BS. |

**[Unaffected Portions Skipped]**

#### 6.2.1.2A Additional requirement (regional)

The additional requirement is in TS 37.104 [2] clause 6.2.2.

**[Unaffected Portions Skipped]**

The following requirement may apply to BS operating in Band 41 in certain regions. This requirement is also applicable at the frequency range from ΔfOBUE below the lowest frequency of the BS downlink operating band up to ΔfOBUE above the highest frequency of the BS downlink operating band.

For Band 41 NR operation, the additional BS spurious emissions limits shall be applied to the sum of the emission power over all *antenna connectors.*

The power of any spurious emission shall not exceed:

Table 6.6.1.5.5-3: Additional BS Spurious emissions limits for BS operating in Band 41

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency range | Maximum Level | Measurement Bandwidth | Note |
| 2505MHz – 2535MHz | -42dBm | 1 MHz |  |
|  |  |  |  |
| NOTE: This requirement applies for carriers allocated within 2545-2645 MHz. |

**[Unaffected Portions Skipped]**

##### 6.6.2.5.1 Test requirements for Band Categories 1 and 3

For a Wide Area BS operating in Band Category 1 or Band Category 3, the requirement applies outside the Base Station RF Bandwidth edges. In addition, for a Wide Area BS operating in non-contiguous spectrum, it applies inside any sub-block gap. In addition, for a Wide Area BS operating in multiple bands, it applies inside any Inter RF Bandwidth gap.

For a Medium Range BS operating in Band Category 1 the requirement applies outside the Base Station RF Bandwidth edges. In addition, for a Medium Range BS operating in non-contiguous spectrum, it applies inside any sub-block gap. In addition, for a Medium Range BS operating in multiple bands, it applies inside any Inter RF Bandwidth gap.

For a Local Area BS operating in Band Category 1 the requirement applies outside the Base Station RF Bandwidth edges. In addition, for a Local Area BS operating in non-contiguous spectrum, it applies inside any sub-block gap. In addition, for a Local Area BS operating in multiple bands, it applies inside any Inter RF Bandwidth gap.

Outside the Base Station RF Bandwidth edges, emissions shall not exceed the maximum levels specified in Tables 6.6.2.5.1-1 to 6.6.2.5.1-4 below, where:

- Δf is the separation between the Base Station RF Bandwidth edge frequency and the nominal -3 dB point of the measuring filter closest to the carrier frequency.

- f\_offset is the separation between the Base Station RF Bandwidth edge frequency and the centre of the measuring filter.

- f\_offsetmax is the offset to the frequency ΔfOBUE outside the downlink operating band.

- Δfmax is equal to f\_offsetmax minus half of the bandwidth of the measuring filter.

For a BS operating in multiple bands, inside any Inter RF Bandwidth gaps with Wgap < 2\* ΔfOBUE, emissions shall not exceed the cumulative sum of the test requirements specified at the Base Station RF Bandwidth edges on each side of the Inter RF Bandwidth gap. The test requirement for Base Station RF Bandwidth edge is specified in Table 6.6.2.5.1-1 to 6.6.2.5.1-4 below, where in this case:

- Δf is the separation between the Base Station RF Bandwidth edge frequency and the nominal -3 dB point of the measuring filter closest to the carrier frequency.

- f\_offset is the separation between the Base Station RF Bandwidth edge frequency and the centre of the measuring filter.

- f\_offsetmax is equal to the Inter RF Bandwidth gap minus half of the bandwidth of the measuring filter.

- Δfmax is equal to f\_offsetmax minus half of the bandwidth of the measuring filter.

For BS capable of multi-band operation where multiple bands are mapped on the same antenna connector, the operating band unwanted emission limits apply also in a supported operating band without any carriers transmitted, in the case where there are carriers transmitted in other supported operating band(s). In this case where there is no carrier transmitted in an operating band the operating band unwanted emission limit, as defined in the tables of the present clause for the largest frequency offset (Δfmax), of a band where there are no carriers transmitted shall apply from ΔfOBUE below the lowest frequency, up to ΔfOBUE above the highest frequency of the supported downlink operating band without any carrier transmitted. And no cumulative limits are applied in the inter-band gap between a supported downlink band with carrier(s) transmitted and a downlink band without any carrier transmitted.

Inside any sub-block gap for a BS operating in non-contiguous spectrum, emissions shall not exceed the cumulative sum of the test requirements specified for the adjacent sub blocks on each side of the sub block gap. The test requirement for each sub block is specified in Tables 6.6.2.5.1-1 to 6.6.2.5.1-4 below, where in this case:

- Δf is the separation between the sub block edge frequency and the nominal -3 dB point of the measuring filter closest to the sub block edge frequency.

- f\_offset is the separation between the sub block edge frequency and the centre of the measuring filter.

- f\_offsetmax is equal to the sub block gap bandwidth minus half of the bandwidth of the measuring filter.

- Δfmax is equal to f\_offsetmax minus half of the bandwidth of the measuring filter.

For Band 41 NR operation in Japan, the operating band unwanted emissions limits shall be applied to the sum of the emission power over all *antenna connectors.*

**[Unaffected Portions Skipped]**

6.6.2.5.4.5 Void

Table 6.6.2.5.4.5-1: Void

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**[Unaffected Portions Skipped]**

##### 6.6.4.5.6 NR test requirement

For NR, the requirements shall apply outside the Base Station RF Bandwidth or Radio Bandwidth whatever the type of transmitter considered (single carrier or multi-carrier) and for all transmission modes foreseen by the manufacturer's specification.

For a BS operating in non-contiguous spectrum, the ACLR requirement shall apply in *sub-block gaps* for the frequency ranges defined in table 6.6.4.5.6-2a, while the CACLR requirement shall apply in *sub-block gaps* for the frequency ranges defined in table 6.6.4.5.4-1.

For BS operating in multiple bands, where multiple bands are mapped onto the same *antenna connector*, the ACLR requirement shall apply in *Inter RF Bandwidth gaps* for the frequency ranges defined in table 6.6.4.5.6-2a, while the CACLR requirement in clause 6.6.4.5.4 shall apply in *Inter RF Bandwidth gaps* for the frequency ranges defined in table 6.6.4.5.4-1.

The requirement shall apply during the *transmitter ON period*. The ACLR is defined with a square filter of bandwidth equal to the transmission bandwidth configuration of the transmitted signal (BWConfig) centred on the assigned channel frequency and a filter centred on the adjacent channel frequency according to the tables below.

The ACLR absolute *limit* in table 6.6.4.5.6-2 or the ACLR (CACLR) *limit* in table 6.6.4.5.6-1, 6.6.4.5.6-2a or 6.6.4.5.4-1, whichever is less stringent, shall apply for each *antenna connector*.

For Band 41 operation in Japan, absolute ACLR limits shall be applied to the sum of the absolute ACLR power over all *antenna connectors*.

**[Unaffected Portions Skipped]**

#### 6.7.5.4 Additional test requirement for Band 41

In the frequency range relevant for this test, the transmitter intermodulation level shall not exceed the maximum levels according to Table 6.6.1.5.5-3 and Table 6.6.4.5.1-2 with a square filter in the first adjacent channel, in the presence of a wanted signal and an interfering signal according to Table 6.7.4‑1 in TS 37.104 [2] for a BS E-UTRA single-RAT operating in Band 41. The measurement may be limited to frequencies on which third and fifth order intermodulation products appear, considering the width of these products and excluding the bandwidths of the wanted and interfering signals.

**[End of change]**