**3GPP TSG-RAN4 Meeting #102e *R4-2206623***

**Online, 21st February – 3rd March 2022**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **36.101** | **CR** | **5855** | **rev** | **-** | **Current version:** | **15.17.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Big CR for TS 36.101 Maintenance (Rel-15) | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | MCC, Xiaomi | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LTE\_CA\_R14\_2DL1UL-Core LTE\_CA\_R14\_3DL1UL-Core LTE\_CA\_R14\_4DL1UL-Core LTE\_CA\_R14\_5DL1UL-Core  TEI14 | | | | |  | ***Date:*** | | | 2022-03-07 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-15 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | This big CRs merge the mutiple endorsed draft CRs. The reason for change in each endorsed draft CR is copied below.  R4-2205308 Draft CR for 36.101 to clarify the restriction of band 28 for CA\_20-28 (R15), Huawei, HiSilicon  <Reason for change>  The frequency restriction of band 28 is missing for some higher order band combinations of which CA\_20-28 is a subset.  R4-2203618 Correction to Cat1bis RMCs, Rohde & Schwarz  <Reason for change>  For RMC R.86 Note 4 is applicable, however the RMC has not been added to the description of the note. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The summary of change in each endorsed draft CR is copied below.  R4-2205308 Draft CR for 36.101 to clarify the restriction of band 28 for CA\_20-28 (R15), Huawei, HiSilicon  <Summary of change>  The clarification “This restriction also apply for any band combinations when CA\_20-28 is a subset of a higher order band combination.” is added to solve this issue.  R4-2203618 Correction to Cat1bis RMCs, Rohde & Schwarz  <Summary of change>  Update Note 4 to add R.86 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The consequences if not approved for each endorsed draft CR are copied below.  R4-2205308 Draft CR for 36.101 to clarify the restriction of band 28 for CA\_20-28 (R15), Huawei, HiSilicon  <Consequences if not approved>  The frequency restriction of band 28 is missing for some higher order band combinations of which CA\_20-28 is a subset.  R4-2203618 Correction to Cat1bis RMCs, Rohde & Schwarz  <Consequences if not approved>  Wrong RMC remains in the spec. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | R4-2205308 Draft CR for 36.101 to clarify the restriction of band 28 for CA\_20-28 (R15), Huawei, HiSilicon  <Clauses affected>  5.5A  R4-2203618 Correction to Cat1bis RMCs, Rohde & Schwarz  <Clauses affected>  A.3.4.3.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **x** |  | Test specifications | | | | TS/TR 36.521-1 | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

***<Start of change1>***

## 5.5A Operating bands for CA

E-UTRA carrier aggregation is designed to operate in the operating bands defined in Tables 5.5A-1, 5.5A-2, 5.5A-2a, 5.5A-2b, 5.5A-2c and 5.5A-3.

Table 5.5A-1: Intra-band contiguous CA operating bands

|  |  |
| --- | --- |
| E-UTRA CA Band | E-UTRA Band  (Table 5.5.1) |
| CA\_1 | 1 |
| CA\_2 | 2 |
| CA\_3 | 3 |
| CA\_5 | 5 |
| CA\_7 | 7 |
| CA\_8 | 8 |
| CA\_12 | 12 |
| CA\_23 | 23 |
| CA\_27 | 27 |
| CA\_28 | 28 |
| CA\_38 | 38 |
| CA\_39 | 39 |
| CA\_40 | 40 |
| CA\_41 | 41 |
| CA\_42 | 42 |
| CA\_43 | 43 |
| CA\_48 | 48 |
| CA\_66 | 66 |
| CA\_70 | 70 |

Table 5.5A-2: Inter-band CA operating bands (two bands)

|  |  |
| --- | --- |
| E-UTRA CA Band | E-UTRA Band  (Table 5.5.1) |
| CA\_1-3 | 1, 3 |
| CA\_1-1-3 | 1,3 |
| CA\_1-1-5 | 1,5 |
| CA\_1-1-7 | 1,7 |
| CA\_1-1-28 | 1,28 |
| CA\_1-3-3 | 1, 3 |
| CA\_1-5 | 1, 5 |
| CA\_1-7 | 1, 7 |
| CA\_1-7-7 | 1, 7 |
| CA\_1-8 | 1, 8 |
| CA\_1-11 | 1, 11 |
| CA\_1-18 | 1, 18 |
| CA\_1-19 | 1, 19 |
| CA\_1-20 | 1, 20 |
| CA\_1-21 | 1, 21 |
| CA\_1-26 | 1, 26 |
| CA\_1-28 | 1, 28 |
| CA\_1-32 | 1, 32 |
| CA\_1-38 | 1, 38 |
| CA\_1-40 | 1, 40 |
| CA\_1-41 | 1, 41 |
| CA\_1-42 | 1, 42 |
| CA\_1-42-42 | 1, 42 |
| CA\_1-43 | 1, 43 |
| CA\_1-46 | 1, 46 |
| CA\_2-4 | 2, 4 |
| CA\_2-2-4 | 2, 4 |
| CA\_2-2-4-4 | 2, 4 |
| CA\_2-4-4 | 2, 4 |
| CA\_2-5 | 2, 5 |
| CA\_2-2-5 | 2, 5 |
| CA\_2-2-7 | 2, 7 |
| CA\_2-7 | 2, 7 |
| CA\_2-7-7 | 2, 7 |
| CA\_2-12 | 2, 12 |
| CA\_2-2-12 | 2, 12 |
| CA\_2-2-12-12 | 2, 12 |
| CA\_2-2-29 | 2, 29 |
| CA\_2-12-12 | 2, 12 |
| CA\_2-13 | 2, 13 |
| CA\_2-2-13 | 2, 13 |
| CA\_2-14 | 2, 14 |
| CA\_2-2-14 | 2, 14 |
| CA\_2-17 | 2, 17 |
| CA\_2-28 | 2, 28 |
| CA\_2-29 | 2, 29 |
| CA\_2-30 | 2, 30 |
| CA\_2-2-30 | 2, 30 |
| CA\_2-46 | 2, 46 |
| CA\_2-2-46 | 2, 46 |
| CA\_2-46-46 | 2, 46 |
| CA\_2-48-48 | 2, 48 |
| CA\_2-49 | 2, 49 |
| CA\_2-66 | 2, 66 |
| CA\_2-48 | 2, 48 |
| CA\_2-2-66 | 2, 66 |
| CA\_2-2-66-66 | 2, 66 |
| CA\_2-66-66 | 2, 66 |
| CA\_2-66-66-66 | 2, 66 |
| CA\_2-71 | 2, 71 |
| CA\_2-2-71 | 2, 71 |
| CA\_3-5 | 3, 5 |
| CA\_3-7 | 3, 7 |
| CA\_3-3-7 | 3, 7 |
| CA\_3-3-7-7 | 3, 7 |
| CA\_3-7-7 | 3, 7 |
| CA\_3-8 | 3, 8 |
| CA\_3-3-8 | 3, 8 |
| CA\_3-11 | 3, 11 |
| CA\_3-18 | 3, 18 |
| CA\_3-19 | 3, 19 |
| CA\_3-3-19 | 3, 19 |
| CA\_3-20 | 3, 20 |
| CA\_3-3-20 | 3, 20 |
| CA\_3-3-21 | 3, 21 |
| CA\_3-3-28 | 3, 28 |
| CA\_3-3-41 | 3, 41 |
| CA\_3-3-42 | 3, 42 |
| CA\_3-21 | 3, 21 |
| CA\_3-26 | 3, 26 |
| CA\_3-27 | 3, 27 |
| CA\_3-28 | 3, 28 |
| CA\_3-31 | 3, 31 |
| CA\_3-32 | 3, 32 |
| CA\_3-38 | 3, 38 |
| CA\_3-40 | 3, 40 |
| CA\_3-40-40 | 3, 40 |
| CA\_3-41 | 3, 41 |
| CA\_3-42 | 3, 42 |
| CA\_3-42-42 | 3, 42 |
| CA\_3-43 | 3, 43 |
| CA\_3-46 | 3, 46 |
| CA\_3-3-46 | 3, 46 |
| CA\_3-69 | 3, 69 |
| CA\_4-5 | 4, 5 |
| CA\_4-4-5 | 4, 5 |
| CA\_4-7 | 4, 7 |
| CA\_4-4-7 | 4, 7 |
| CA\_4-7-7 | 4, 7 |
| CA\_4-12 | 4, 12 |
| CA\_4-4-12 | 4, 12 |
| CA\_4-4-12-12 | 4, 12 |
| CA\_4-12-12 | 4, 12 |
| CA\_4-13 | 4, 13 |
| CA\_4-4-13 | 4, 13 |
| CA\_4-17 | 4, 17 |
| CA\_4-27 | 4, 27 |
| CA\_4-28 | 4, 28 |
| CA\_4-29 | 4, 29 |
| CA\_4-4-29 | 4, 29 |
| CA\_4-30 | 4, 30 |
| CA\_4-4-30 | 4, 30 |
| CA\_4-46 | 4, 46 |
| CA\_4-46-46 | 4, 46 |
| CA\_4-48 | 4, 48 |
| CA\_4-71 | 4,71 |
| CA\_4-4-71 | 4, 71 |
| CA\_5-5-40 | 5, 40 |
| CA\_5-7 | 5, 7 |
| CA\_5-7-7 | 5, 7 |
| CA\_5-12 | 5, 12 |
| CA\_5-12-12 | 5, 12 |
| CA\_5-13 | 5 ,13 |
| CA\_5-17 | 5, 17 |
| CA\_5-25 | 5, 25 |
| CA\_5-28 | 5, 28 |
| CA\_5-29 | 5, 29 |
| CA\_5-30 | 5, 30 |
| CA\_5-38 | 5, 38 |
| CA\_5-40 | 5, 40 |
| CA\_5-40-40 | 5, 40 |
| CA\_5-41 | 5, 41 |
| CA\_5-46 | 5, 46 |
| CA\_5-48 | 5, 48 |
| CA\_5-66 | 5, 66 |
| CA\_5-5-66 | 5, 66 |
| CA\_5-66-66 | 5, 66 |
| CA\_5-5-66-66 | 5, 66 |
| CA\_7-8 | 7, 8 |
| CA\_7-7-8 | 7, 8 |
| CA\_7-12 | 7, 12 |
| CA\_7-20 | 7, 20 |
| CA\_7-22 | 7, 22 |
| CA\_7-26 | 7, 26 |
| CA\_7-7-26 | 7, 26 |
| CA\_7-28 | 7, 28 |
| CA\_7-30 | 7, 30 |
| CA\_7-32 | 7, 32 |
| CA\_7-40 | 7, 40 |
| CA\_7-42 | 7, 42 |
| CA\_7-42-42 | 7, 42 |
| CA\_7-46 | 7, 46 |
| CA\_7-7-46 | 7, 46 |
| CA\_7-7-66 | 7, 66 |
| CA\_7-66 | 7, 66 |
| CA\_7-66-66 | 7, 66 |
| CA\_7-7-66-66 | 7, 66 |
| CA\_8-11 | 8, 11 |
| CA\_8-20 | 8, 20 |
| CA\_8-27 | 8, 27 |
| CA\_8-28 | 8, 28 |
| CA\_8-32 | 8, 32 |
| CA\_8-38 | 8, 38 |
| CA\_8-39 | 8, 39 |
| CA\_8-40 | 8, 40 |
| CA\_8-41 | 8, 41 |
| CA\_8-42 | 8, 42 |
| CA\_8-46 | 8, 46 |
| CA\_11-18 | 11, 18 |
| CA\_11-26 | 11, 26 |
| CA\_11-28 | 11, 28 |
| CA\_11-41 | 11, 41 |
| CA\_11-42 | 11, 42 |
| CA\_11-46 | 11, 46 |
| CA\_12-25 | 12, 25 |
| CA\_12-30 | 12, 30 |
| CA\_12-46 | 12, 46 |
| CA\_12-48 | 12, 48 |
| CA\_12-48 | 12, 48 |
| CA\_12-66 | 12, 66 |
| CA\_12-66-66 | 12, 66 |
| CA\_13-46 | 13, 46 |
| CA\_13-48 | 13, 48 |
| CA\_13-48-48 | 13, 48 |
| CA\_13-66 | 13, 66 |
| CA\_13-66-66 | 13, 66 |
| CA\_14-66 | 14, 66 |
| CA\_14-66-66 | 14, 66 |
| CA\_14-66-66-66 | 14, 66 |
| CA\_14-30 | 14, 30 |
| CA\_18-281 | 18, 28 |
| CA\_19-21 | 19, 21 |
| CA\_19-282 | 19, 28 |
| CA\_19-42 | 19, 42 |
| CA\_19-46 | 19, 46 |
| CA\_20-281 | 20, 28 |
| CA\_20-31 | 20, 31 |
| CA\_20-32 | 20, 32 |
| CA\_20-38 | 20, 38 |
| CA\_20-40 | 20, 40 |
| CA\_20-40-40 | 20, 40 |
| CA\_20-42 | 20, 42 |
| CA\_20-42-42 | 20, 42 |
| CA\_20-43 | 20, 43 |
| CA\_20-67 | 20, 67 |
| CA\_20-75 | 20, 75 | |
| CA\_20-76 | 20, 76 | |
| CA\_21-28 | 21, 28 |
| CA\_21-42 | 21, 42 |
| CA\_21-46 | 21, 46 |
| CA\_23-29 | 23, 29 |
| CA\_25-26 | 25, 26 |
| CA\_25-25-26 | 25, 26 |
| CA\_25-41 | 25, 41 |
| CA\_25-25-41 | 25, 41 |
| CA\_25-46 | 25, 46 |
| CA\_26-41 | 26, 41 |
| CA\_26-46 | 26, 46 |
| CA\_26-48 | 26,48 |
| CA\_26-48-48 | 26,48 |
| CA\_28-38 | 28,38 |
| CA\_28-40 | 28, 40 |
| CA\_28-41 | 28, 41 |
| CA\_28-42 | 28, 42 |
| CA\_28-46 | 28, 46 |
| CA\_29-30 | 29, 30 |
| CA\_29-66 | 29, 66 |
| CA\_29-66-66 | 29, 66 |
| CA\_29-70 | 29, 70 |
| CA\_30-66 | 30, 66 |
| CA\_30-66-66 | 30, 66 |
| CA\_32-42 | 32, 42 |
| CA\_32-43 | 32, 43 |
| CA\_34-39 | 34, 39 |
| CA\_34-41 | 34, 41 |
| CA\_38-40 | 38, 40 |
| CA\_38-40-40 | 38, 40 |
| CA\_39-41 | 39, 41 |
| CA\_39-40 | 39, 40 |
| CA\_39-42 | 39, 42 |
| CA\_39-46 | 39, 46 |
| CA\_40-41 | 40, 41 |
| CA\_40-42 | 40, 42 |
| CA\_40-43 | 40, 43 |
| CA\_40-46 | 40, 46 |
| CA\_41-42 | 41, 42 |
| CA\_41-46 | 41, 46 |
| CA\_41-48 | 41, 48 |
| CA\_42-43 | 42,43 |
| CA\_42-46 | 42, 46 |
| CA\_46-48 | 46, 48 |
| CA\_46-48-48 | 46, 48 |
| CA\_46-66 | 46, 66 |
| CA\_46-46-66 | 46, 66 |
| CA\_46-66-66 | 46, 66 |
| CA\_46-70 | 46, 70 |
| CA\_46-71 | 46, 71 |
| CA\_48-66 | 48, 66 |
| CA\_48-66-66 | 48, 66 |
| CA\_48-48-66-66 | 48, 66 |
| CA\_48-48-66 | 48, 66 |
| CA\_48-71 | 48, 71 |
| CA\_48-48-71 | 48, 71 |
| CA\_66-70 | 66,70 |
| CA\_66-66-70 | 66,70 |
| CA\_66-71 | 66, 71 |
| CA\_66-66-71 | 66, 71 |
| CA\_70-71 | 70, 71 |
| NOTE 1: The frequency range in band 28 is restricted for this CA band combination to 703-733 MHz for the UL and 758-788 MHz for the DL. This restriction also apply for any band combinations when CA\_20-28 is a subset of a higher order band combination.  NOTE 2: The frequency range in band 28 is restricted for this CA band combination to 718-748 MHz for the UL and 773-803 MHz for the DL | |

Table 5.5A-2a: Inter-band CA operating bands (three bands)

|  |  |
| --- | --- |
| E-UTRA CA Band | E-UTRA Band  (Table 5.5.1) |
| CA\_1-3-5 | 1, 3, 5 |
| CA\_1-1-3-5 | 1, 3, 5 |
| CA\_1-1-3-7 | 1, 3, 7 |
| CA\_1-3-7 | 1, 3, 7 |
| CA\_1-3-3-7 | 1, 3, 7 |
| CA\_1-3-3-7-7 | 1, 3, 7 |
| CA\_1-3-7-7 | 1, 3, 7 |
| CA\_1-3-8 | 1, 3, 8 |
| CA\_1-3-3-8 | 1, 3, 8 |
| CA\_1-3-3-43 | 1, 3, 43 |
| CA\_1-3-11 | 1, 3, 11 |
| CA\_1-3-18 | 1, 3, 18 |
| CA\_1-3-19 | 1, 3, 19 |
| CA\_1-3-3-19 | 1, 3, 19 |
| CA\_1-3-20 | 1, 3, 20 |
| CA\_1-3-3-20 | 1, 3, 20 |
| CA\_1-3-21 | 1, 3, 21 |
| CA\_1-3-3-21 | 1, 3, 21 |
| CA\_1-3-26 | 1, 3, 26 |
| CA\_1-3-28 | 1, 3, 28 |
| CA\_1-3-3-28 | 1, 3, 28 |
| CA\_1-1-3-28 | 1, 3, 28 |
| CA\_1-3-32 | 1, 3, 32 |
| CA\_1-3-38 | 1, 3, 38 |
| CA\_1-3-40 | 1, 3, 40 |
| CA\_1-3-41 | 1, 3, 41 |
| CA\_1-3-42 | 1, 3, 42 |
| CA\_1-3-3-42 | 1, 3, 42 |
| CA\_1-3-43 | 1, 3, 43 |
| CA\_1-5-7 | 1, 5, 7 |
| CA\_1-5-7-7 | 1, 5, 7 |
| CA\_1-5-40 | 1, 5, 40 |
| CA\_1-5-41 | 1, 5, 41 |
| CA\_1-5-46 | 1, 5, 46 |
| CA\_1-7-8 | 1, 7, 8 |
| CA\_1-7-7-8 | 1, 7, 8 |
| CA\_1-7-20 | 1, 7, 20 |
| CA\_1-7-26 | 1, 7, 26 |
| CA\_1-7-7-26 | 1, 7, 26 |
| CA\_1-7-28 | 1, 7, 28 |
| CA\_1-7-32 | 1, 7, 32 |
| CA\_1-7-40 | 1, 7, 40 |
| CA\_1-7-42 | 1, 7, 42 |
| CA\_1-7-46 | 1, 7, 46 |
| CA\_1-8-11 | 1, 8, 11 |
| CA\_1-8-20 | 1, 8, 20 |
| CA\_1-8-28 | 1, 8, 28 |
| CA\_1-8-38 | 1, 8, 38 |
| CA\_1-8-40 | 1, 8, 40 |
| CA\_1-11-18 | 1, 11, 18 |
| CA\_1-11-28 | 1, 11, 28 |
| CA\_1-18-281 | 1, 18, 28 |
| CA\_1-19-21 | 1, 19, 21 |
| CA\_1-19-282 | 1, 19, 28 |
| CA\_1-19-42 | 1, 19, 42 |
| CA\_1-20-28 | 1, 20, 28 |
| CA\_1-20-32 | 1, 20, 32 |
| CA\_1-20-42 | 1, 20, 42 |
| CA\_1-20-43 | 1, 20, 43 |
| CA\_1-21-28 | 1, 21, 28 |
| CA\_1-21-42 | 1, 21, 42 |
| CA\_1-28-42 | 1, 28, 42 |
| CA\_1-32-42 | 1, 32, 42 |
| CA\_1-32-43 | 1, 32, 43 |
| CA\_1-41-42 | 1, 41, 42 |
| CA\_1-42-42 | 1, 42, 42 |
| CA\_1-42-43 | 1, 42, 43 |
| CA\_2-4-5 | 2, 4, 5 |
| CA\_2-2-4-5 | 2, 4, 5 |
| CA\_2-4-4-5 | 2, 4, 5 |
| CA\_2-4-12-12 | 2, 4, 12 |
| CA\_2-5-12-12 | 2, 5, 12 |
| CA\_2-2-5-30 | 2, 5, 30 |
| CA\_2-5-46 | 2, 5, 46 |
| CA\_2-2-5-66 | 2, 5, 66 |
| CA\_2-2-7-12 | 2, 7, 12 |
| CA\_2-2-7-66 | 2, 7, 66 |
| CA\_2-7-66-66 | 2, 7, 66 |
| CA\_2-2-12-30 | 2, 12, 30 |
| CA\_2-2-12-66 | 2, 12, 66 |
| CA\_2-2-12-66-66 | 2, 12, 66 |
| CA\_2-2-13-66 | 2, 13, 66 |
| CA\_2-2-14-66-66 | 2, 14, 66 |
| CA\_2-2-30-66 | 2, 30, 66 |
| CA\_2-4-7 | 2, 4, 7 |
| CA\_2-4-7-7 | 2, 4, 7 |
| CA\_2-4-12 | 2, 4, 12 |
| CA\_2-2-4-12 | 2, 4, 12 |
| CA\_2-2-5-66-66 | 2, 5, 66 |
| CA\_2-4-4-12 | 2, 4, 12 |
| CA\_2-4-13 | 2, 4, 13 |
| CA\_2-4-28 | 2, 4, 28 |
| CA\_2-4-29 | 2, 4, 29 |
| CA\_2-4-30 | 2, 4, 30 |
| CA\_2-4-71 | 2, 4, 71 |
| CA\_2-2-4-71 | 2, 4, 71 |
| CA\_2-5-7 | 2, 5, 7 |
| CA\_2-5-12 | 2, 5, 12 |
| CA\_2-2-5-12 | 2, 5, 12 |
| CA\_2-5-13 | 2, 5, 13 |
| CA\_2-5-28 | 2, 5, 28 |
| CA\_2-5-29 | 2, 5, 29 |
| CA\_2-5-30 | 2, 5, 30 |
| CA\_2-5-46 | 2, 5, 46 |
| CA\_2-5-66 | 2, 5, 66 |
| CA\_2-5-66-66 | 2, 5, 66 |
| CA\_2-7-12 | 2, 7, 12 |
| CA\_2-7-28 | 2, 7, 28 |
| CA\_2-7-30 | 2, 7, 30 |
| CA\_2-7-46 | 2, 7, 46 |
| CA\_2-7-66 | 2, 7, 66 |
| CA\_2-7-7-66 | 2, 7, 66 |
| CA\_2-12-30 | 2, 12, 30 |
| CA\_2-12-66 | 2, 12, 66 |
| CA\_2-12-66-66 | 2, 12, 66 |
| CA\_2-13-46 | 2, 13, 46 |
| CA\_2-13-48 | 2, 13, 48 |
| CA\_2-13-48-48 | 2, 13, 48 |
| CA\_2-13-66 | 2, 13, 66 |
| CA\_2-13-66-66 | 2, 13, 66 |
| CA\_2-14-30 | 2, 14, 30 |
| CA\_2-2-14-30 | 2, 14, 30 |
| CA\_2-14-66 | 2, 14, 66 |
| CA\_2-2-14-66 | 2, 14, 66 |
| CA\_2-14-66-66 | 2, 14, 66 |
| CA\_2-14-66-66-66 | 2, 14, 66 |
| CA\_2-2-29-30 | 2, 29, 30 |
| CA\_2-29-30 | 2, 29, 30 |
| CA\_2-29-66 | 2, 29, 66 |
| CA\_2-30-66 | 2, 30, 66 |
| CA\_2-30-66-66 | 2, 30, 66 |
| CA\_2-46-48 | 2, 46, 48 |
| CA\_2-46-66 | 2, 46, 66 |
| CA\_2-46-46-66 | 2, 46, 66 |
| CA\_2-48-66 | 2, 48,66 |
| CA\_2-48-48-66 | 2, 48, 66 |
| CA\_2-66-71 | 2, 66, 71 |
| CA\_2-2-66-71 | 2, 66, 71 |
| CA\_2-66-66-71 | 2, 66, 71 |
| CA\_3-5-7 | 3, 5, 7 |
| CA\_3-5-7-7 | 3, 5, 7 |
| CA\_3-5-40 | 3, 5, 40 |
| CA\_3-5-40-40 | 3, 5, 40 |
| CA\_3-5-41 | 3, 5, 41 |
| CA\_3-3-7-8 | 3, 7, 8 |
| CA\_3-3-7-7-8 | 3, 7, 8 |
| CA\_3-7-7-8 | 3, 7, 8 |
| CA\_3-7-8 | 3, 7, 8 |
| CA\_3-7-20 | 3, 7, 20 |
| CA\_3-3-7-20 | 3, 7, 20 |
| CA\_3-7-26 | 3, 7, 26 |
| CA\_3-7-7-26 | 3, 7, 26 |
| CA\_3-7-28 | 3, 7, 28 |
| CA\_3-3-7-28 | 3, 7, 28 |
| CA\_3-7-32 | 3, 7, 32 |
| CA\_3-7-38 | 3, 7, 38 |
| CA\_3-7-40 | 3, 7, 40 |
| CA\_3-7-42 | 3, 7, 42 |
| CA\_3-7-46 | 3, 7, 46 |
| CA\_3-8-11 | 3, 8, 11 |
| CA\_3-8-20 | 3, 8, 20 |
| CA\_3-8-28 | 3, 8, 28 |
| CA\_3-8-32 | 3, 8, 32 |
| CA\_3-8-38 | 3, 8, 38 |
| CA\_3-8-40 | 3, 8, 40 |
| CA\_3-11-18 | 3, 11,18 |
| CA\_3-11-26 | 3, 11, 26 |
| CA\_3-11-28 | 3, 11, 28 |
| CA\_3-19-21 | 3, 19, 21 |
| CA\_3-3-19-21 | 3, 19, 21 |
| CA\_3-19-42 | 3, 19, 42 |
| CA\_3-20-28 | 3, 20, 28 |
| CA\_3-3-20-28 | 3, 20, 28 |
| CA\_3-20-32 | 3, 20, 32 |
| CA\_3-20-42 | 3, 20, 42 |
| CA\_3-20-43 | 3, 20, 43 |
| CA\_3-21-28 | 3, 21, 28 |
| CA\_3-21-42 | 3, 21, 42 |
| CA\_3-28-38 | 3, 28, 38 |
| CA\_3-28-40 | 3, 28, 40 |
| CA\_3-28-41 | 3, 28, 41 |
| CA\_3-28-42 | 3, 28, 42 |
| CA\_3-32-42 | 3, 32, 42 |
| CA\_3-32-43 | 3, 32, 43 |
| CA\_3-41-42 | 3, 41, 42 |
| CA\_3-42-43 | 3, 42, 43 |
| CA\_4-5-12 | 4, 5, 12 |
| CA\_4-4-5-12 | 4, 5, 12 |
| CA\_4-5-12-12 | 4, 5, 12 |
| CA\_4-5-13 | 4, 5, 13 |
| CA\_4-5-29 | 4, 5, 29 |
| CA\_4-5-30 | 4, 5, 30 |
| CA\_4-4-5-30 | 4, 5, 30 |
| CA\_4-7-12 | 4, 7, 12 |
| CA\_4-7-28 | 4, 7, 28 |
| CA\_4-12-30 | 4, 12, 30 |
| CA\_4-4-12-30 | 4, 12, 30 |
| CA\_4-29-30 | 4, 29, 30 |
| CA\_4-4-29-30 | 4, 29, 30 |
| CA\_5-7-28 | 5, 7, 28 |
| CA\_5-7-46 | 5, 7, 46 |
| CA\_5-12-46 | 5, 12, 46 |
| CA\_5-12-48 | 5, 12, 48 |
| CA\_5-12-66 | 5, 12, 66 |
| CA\_5-30-66 | 5, 30, 66 |
| CA\_5-30-66-66 | 5, 30, 66 |
| CA\_5-40-41 | 5, 40, 41 |
| CA\_5-46-66 | 5, 46, 66 |
| CA\_7-8-20 | 7, 8, 20 |
| CA\_7-8-38 | 7, 8, 38 |
| CA\_7-8-40 | 7, 8, 40 |
| CA\_7-12-66 | 7, 12, 66 |
| CA\_7-20-28 | 7, 20, 28 |
| CA\_7-20-32 | 7, 20, 32 |
| CA\_7-20-38 | 7, 20, 38 |
| CA\_7-20-42 | 7, 20, 42 |
| CA\_7-28-38 | 7, 28, 38 |
| CA\_7-30-66 | 7, 30, 66 |
| CA\_7-46-66 | 7, 46, 66 |
| CA\_8-11-28 | 8, 11, 28 |
| CA\_8-20-28 | 8, 20, 28 |
| CA\_8-28-41 | 8, 28, 41 |
| CA\_8-39-41 | 8, 39 ,41 |
| CA\_12-30-66 | 12, 30, 66 |
| CA\_12-30-66-66 | 12, 30, 66 |
| CA\_13-46-66 | 13, 46, 66 |
| CA\_13-48-66 | 13, 48, 66 |
| CA\_13-48-48-66 | 13, 48, 66 |
| CA\_14-30-66 | 14, 30, 66 |
| CA\_14-30-66-66 | 14, 30, 66 |
| CA\_19-21-42 | 19, 21, 42 |
| CA\_20-32-42 | 20, 32, 42 |
| CA\_20-32-43 | 20, 32, 43 |
| CA\_25-26-41 | 25, 26, 41 |
| CA\_25-25-26-41 | 25, 26, 41 |
| CA\_20-38-40-40 | 20, 38, 40 |
| CA\_21-28-42 | 21, 28, 42 |
| CA\_29-30-66-66 | 29, 30, 66 |
| CA\_20-38-40 | 20, 38, 40 |
| CA\_28-41-42 | 28, 41, 42 |
| CA\_29-30-66 | 29, 30, 66 |
| CA\_29-46-66 | 29, 46, 66 |
| CA\_29-66-70 | 29, 66, 70 |
| CA\_29-66-66-70 | 29, 66, 70 |
| CA\_32-42-43 | 32, 42, 43 |
| CA\_46-48-66 | 46, 48, 66 |
| CA\_46-48-71 | 46, 48, 71 |
| CA\_46-48-48-71 | 46, 48, 71 |
| CA\_66-70-71 | 66, 70, 71 |
| CA\_66-66-70-71 | 66, 70, 71 |
| NOTE 1: The frequency range in band 28 is restricted for this CA band combination to 703-733 MHz for the UL and 758-788 MHz for the DL  NOTE 2: The frequency range in band 28 is restricted for this CA band combination to 718-748 MHz for the UL and 773-803 MHz for the DL | |

Table 5.5A-2b: Inter-band CA operating bands (four bands)

|  |  |
| --- | --- |
| E-UTRA CA Band | E-UTRA Band  (Table 5.5) |
| CA\_1-3-5-7 | 1, 3, 5, 7 |
| CA\_1-3-5-7-7 | 1, 3, 5, 7 |
| CA\_1-3-5-40 | 1, 3, 5, 40 |
| CA\_1-3-5-41 | 1, 3, 5, 41 |
| CA\_1-3-7-7-26 | 1, 3, 7, 26 |
| CA\_1-3-7-8 | 1, 3, 7, 8 |
| CA\_1-3-7-20 | 1, 3, 7, 20 |
| CA\_1-3-3-7-20 | 1, 3, 7, 20 |
| CA\_1-3-7-26 | 1, 3, 7, 26 |
| CA\_1-3-7-28 | 1, 3, 7, 28 |
| CA\_1-3-3-7-28 | 1, 3, 7, 28 |
| CA\_1-3-7-32 | 1, 3, 7, 32 |
| CA\_1-3-7-40 | 1, 3, 7, 40 |
| CA\_1-3-7-42 | 1, 3, 7, 42 |
| CA\_1-3-8-11 | 1, 3, 8, 11 |
| CA\_1-3-8-20 | 1, 3, 8, 20 |
| CA\_1-3-8-28 | 1, 3, 8, 28 |
| CA\_1-3-8-38 | 1, 3, 8, 38 |
| CA\_1-3-11-28 | 1, 3, 11, 28 |
| CA\_1-3-8-40 | 1, 3, 8, 40 |
| CA\_1-3-19-21 | 1, 3,19, 21 |
| CA\_1-3-3-19-21 | 1, 3,19, 21 |
| CA\_1-3-19-42 | 1, 3,19, 42 |
| CA\_1-3-20-28 | 1, 3, 20, 28 |
| CA\_1-3-3-20-28 | 1, 3, 20, 28 |
| CA\_1-3-20-32 | 1, 3, 20, 32 |
| CA\_1-3-20-42 | 1, 3, 20, 42 |
| CA\_1-3-20-43 | 1, 3, 20, 43 |
| CA\_1-3-21-28 | 1, 3, 21, 28 |
| CA\_1-3-21-42 | 1, 3, 21, 42 |
| CA\_1-3-28-42 | 1, 3, 28, 42 |
| CA\_1-3-32-42 | 1, 3, 32, 42 |
| CA\_1-3-32-43 | 1, 3, 32, 43 |
| CA\_1-3-42-43 | 1, 3, 42, 43 |
| CA\_1-5-7-46 | 1, 5, 7, 46 |
| CA\_1-7-8-20 | 1, 7, 8, 20 |
| CA\_1-7-8-40 | 1, 7, 8, 40 |
| CA\_1-7-20-28 | 1, 7, 20, 28 |
| CA\_1-7-20-32 | 1, 7, 20, 32 |
| CA\_1-7-20-42 | 1, 7, 20, 42 |
| CA\_1-8-11-28 | 1, 8, 11, 28 |
| CA\_1-8-20-28 | 1, 8, 20, 28 |
| CA\_1-19-21-42 | 1, 19, 21, 42 |
| CA\_1-20-32-42 | 1, 20, 32, 42 |
| CA\_1-20-32-43 | 1, 20, 32, 43 |
| CA\_1-21-28-42 | 1, 21, 28, 42 |
| CA\_1-32-42-43 | 1, 32, 42, 43 |
| CA\_2-2-5-12-66 | 2, 5, 12, 66 |
| CA\_2-2-5-30-66 | 2, 5, 30, 66 |
| CA\_2-2-7-12-66 | 2. 7, 12, 66 |
| CA\_2-2-12-30-66 | 2, 12, 30, 66 |
| CA\_2-2-14-30-66 | 2, 14, 30, 66 |
| CA\_2-4-5-12 | 2, 4, 5, 12 |
| CA\_2-4-5-29 | 2, 4, 5, 29 |
| CA\_2-4-5-30 | 2, 4, 5, 30 |
| CA\_2-4-7-12 | 2, 4, 7, 12 |
| CA\_2-4-12-30 | 2, 4, 12, 30 |
| CA\_2-4-29-30 | 2, 4, 29, 30 |
| CA\_2-5-7-28 | 2, 5, 7, 28 |
| CA\_2-5-12-66 | 2, 5, 12, 66 |
| CA\_2-5-30-66 | 2, 5, 30, 66 |
| CA\_2-5-30-66-66 | 2, 5, 30, 66 |
| CA\_2-7-12-66 | 2, 7, 12, 66 |
| CA\_2-7-46-66 | 2, 7, 46, 66 |
| CA\_2-12-30-66 | 2, 12, 30, 66 |
| CA\_2-12-30-66-66 | 2, 12, 30, 66 |
| CA\_2-13-48-66 | 2, 13, 48, 66 |
| CA\_2-13-48-48-66 | 2, 13, 48, 66 |
| CA\_2-14-30-66 | 2, 14, 30, 66 |
| CA\_2-14-30-66-66 | 2, 14, 30, 66 |
| CA\_2-29-30-66 | 2, 29, 30, 66 |
| CA\_2-46-48-66 | 2, 46, 48, 66 |
| CA\_3-7-8-20 | 3, 7, 8, 20 |
| CA\_3-7-8-38 | 3, 7, 8, 38 |
| CA\_3-7-8-40 | 3, 7, 8, 40 |
| CA\_3-7-20-28 | 3, 7, 20, 28 |
| CA\_3-7-20-32 | 3, 7, 20, 32 |
| CA\_3-7-20-42 | 3, 7, 20, 42 |
| CA\_3-7-28-38 | 3, 7, 28, 38 |
| CA\_3-8-11-28 | 3, 8, 11, 28 |
| CA\_3-8-20-28 | 3, 8, 20, 28 |
| CA\_3-19-21-42 | 3, 19, 21, 42 |
| CA\_3-20-32-42 | 3, 20, 32, 42 |
| CA\_3-20-32-43 | 3, 20, 32, 43 |
| CA\_3-21-28-42 | 3, 21, 28, 42 |
| CA\_3-28-41-42 | 3, 28, 41, 42 |
| CA\_3-32-42-43 | 3, 32, 42, 43 |
| NOTE 1: The frequency range in band 28 is restricted for this CA band combination to 703-733 MHz for the UL and 758-788 MHz for the DL | |

Table 5.5A-2c: Inter-band CA operating bands (five bands)

|  |  |
| --- | --- |
| E-UTRA CA Band | E-UTRA Band  (Table 5.5) |
| CA\_1-3-7-20-28 | 1, 3, 7, 20, 28 |
| CA\_1-3-7-20-42 | 1, 3, 7, 20, 42 |
| CA\_1-3-8-11-28 | 1, 3, 8, 11, 28 |
| CA\_1-3-20-32-42 | 1, 3, 20, 32, 42 |
| CA\_1-3-20-32-43 | 1, 3, 20, 32, 43 |
| CA\_1-3-32-42-43 | 1, 3, 32, 42, 43 |
| NOTE 1: The frequency range in band 28 is restricted for this CA band combination to 703-733 MHz for the UL and 758-788 MHz for the DL | |

Table 5.5A-3: Intra-band non-contiguous CA operating bands (with two sub-blocks)

|  |  |
| --- | --- |
| E-UTRA CA Band | E-UTRA Band  (Table 5.5) |
| CA\_1-1 | 1 |
| CA\_2-2 | 2 |
| CA\_3-3 | 3 |
| CA\_4-4 | 4 |
| CA\_5-5 | 5 |
| CA\_7-7 | 7 |
| CA\_12-12 | 12 |
| CA\_23-23 | 23 |
| CA\_25-25 | 25 |
| CA\_40-40 | 40 |
| CA\_41-41 | 41 |
| CA\_42-42 | 42 |
| CA\_43-43 | 43 |
| CA\_48-48 | 48 |
| CA\_66-66 | 66 |

Table 5.5A-4: Intra-band non-contiguous CA operating bands (with three sub-blocks)

|  |  |
| --- | --- |
| E-UTRA CA Band | E-UTRA Band  (Table 5.5) |
| CA\_25-25-25 | 25 |
| CA\_41-41-41 | 41 |
| CA\_48-48-48 | 48 |
| CA\_66-66-66 | 66 |

Table 5.5A-5: Intra-band non-contiguous CA operating bands (with four sub-blocks)

|  |  |
| --- | --- |
| E-UTRA CA Band | E-UTRA Band  (Table 5.5) |
| CA\_48-48-48-48 | 48 |

***<End of change1>***

***<Start of change2>***

#### A.3.4.3.2 Two antenna ports (Cell Specific)

The reference measurement channels in Table A.3.4.3.2-1 apply for verifying demodulation performance for CDM-multiplexed UE specific reference symbols with two cell-specific antenna ports.

Table A.3.4.3.2-1: Fixed Reference Channel for CDM-multiplexed DM RS

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Value | | | | | | |
| Reference channel |  | R.31 TDD | R.32 TDD | R.32-1 TDD | R.33 TDD | R.33-1  TDD | R.34  TDD | R.86  TDD |
| Channel bandwidth | MHz | 10 | 10 | 5 | 10 | 10 | 10 | 10 |
| Allocated resource blocks |  | 50 4 | 50 4 | 25 4 | 50 4 | 18 6 | 50 4 | 50 4 |
| Uplink-Downlink Configuration (Note 3) |  | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Allocated subframes per Radio Frame (D+S) |  | 3+2 | 3+2 | 3+2 | 3+2 | 3+2 | 3+2 | 3+2 |
| Modulation |  | QPSK | 16QAM | 16QAM | 64QAM | 64QAM | 64QAM | QPSK |
| Target Coding Rate |  | 1/3 | 1/2 | 1/2 | 3/4 | 3/4 | 1/2 | 1/3 |
| Information Bit Payload |  |  |  |  |  |  |  |  |
| For Sub-Frames 4,9 | Bits | 3624 | 11448 | 5736 | 27376 | 9528 | 18336 | 4392 |
| For Sub-Frames 1,6 |  | 2664 | 7736 | 3112 | 16992 | 7480 | 11832 | 2664 |
| For Sub-Frame 5 | Bits | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| For Sub-Frame 0 | Bits | 2984 | 9528 | 3496 | 22152 | 9528 | 14688 | 3624 |
| Number of Code Blocks per Sub-Frame (Note 5) |  |  |  |  |  |  |  |  |
| For Sub-Frames 4,9 |  | 1 | 2 | 1 | 5 | 2 | 3 | 1 |
| For Sub-Frames 1,6 |  | 1 | 2 | 1 | 3 | 2 | 2 | 1 |
| For Sub-Frame 5 |  | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| For Sub-Frame 0 |  | 1 | 2 | 1 | 4 | 2 | 3 | 1 |
| Binary Channel Bits Per Sub-Frame |  |  |  |  |  |  |  |  |
| For Sub-Frames 4,9 | Bits | 12000 | 24000 | 10800 | 36000 | 12960 | 36000 | 11400 |
| For Sub-Frames 1,6 |  | 7872 | 15744 | 6528 | 23616 | 10368 | 23616 | 7872 |
| For Sub-Frame 5 | Bits | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| For Sub-Frame 0 | Bits | 9840 | 19680 | 7344 | 29520 | 12960 | 29520 | 9840 |
| Max. Throughput averaged over 1 frame | Mbps | 1.556 | 4.79 | 2.119 | 11.089 | 4.354 | 7.502 | 1.7736 |
| UE Category |  | ≥ 1 | ≥ 2 | ≥ 1 | ≥ 2 | ≥ 1 | ≥ 2 | 1bis |
| Note 1: 2 symbols allocated to PDCCH for 20 MHz, 15 MHz and 10 MHz channel BW; 3 symbols allocated to PDCCH for 5 MHz and 3 MHz; 4 symbols allocated to PDCCH for 1.4 MHz. For subframe 1&6, only 2 OFDM symbols are allocated to PDCCH.  Note 2: Reference signal, synchronization signals and PBCH allocated as per TS 36.211 [4].  Note 3: as per Table 4.2-2 in TS 36.211 [4].  Note 4: For R.31, R.32, R.33 ,R.34 and R.86, 50 resource blocks are allocated in sub-frames 4,9 and 41 resource blocks (RB0–RB20 and RB30–RB49) are allocated in sub-frame 0 and the DwPTS portion of sub-frames 1,6. For R.32-1, 25 resouce blocks are allocated in sub-frames 4,9 and 17 resource blocks (RB0–RB7 and RB16–RB24) are allocated in sub-frame 0 and the DwPTS portion of sub-frames 1, 6.  Note 5: If more than one Code Block is present, an additional CRC sequence of L = 24 Bits is attached to each Code Block (otherwise L = 0 Bit).  Note 6: Localized allocation started from RB #0 is applied. | | | | | | | |  |

The reference measurement channels in Table A.3.4.3.2-2 apply with two CRS antenna ports.

***<End of change2>***