3GPP TSG-RAN WG4 Meeting # 104-e R4-2214420

**Online Meeting, Aug. 2022**

**Title:** [Draft] LS on new contiguous BW classes for legacy networks

**Response to:** -

**Source:** RAN4

**To:** RAN2

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**1. Overall Description:**

RAN4 have agreed new FR2 CA BW classes for supporting operator block sizes up to 2400 MHz with a mix of 100 MHz and 200 MHz carriers and agreed to introduce new CA BW classes as shown in the table below:

|  |  |  |  |
| --- | --- | --- | --- |
| NR CA bandwidth class | Aggregated channel bandwidth | Number of contiguous CC | Fallback group |
| A | BWChannel ≤ 400 MHz | 1 | 1,2,3,4,5 |
| (unchanged legacy FBG2,3,4) | | | |
| R2 | 200 MHz ≤ BWChannel\_CA ≤ 400 MHz | 2 | 5 |
| R3 | 300 MHz ≤ BWChannel\_CA ≤ 600 MHz | 3 |
| R4 | 400 MHz ≤ BWChannel\_CA ≤ 800 MHz | 4 |
| R5 | 500 MHz ≤ BWChannel\_CA ≤ 1000 MHz | 5 |
| R6 | 600 MHz ≤ BWChannel\_CA ≤ 1200 MHz | 6 |
| R7 | 700 MHz ≤ BWChannel\_CA ≤ 1400 MHz | 7 |
| R8 | 800 MHz ≤ BWChannel\_CA ≤ 1600 MHz | 8 |
| R9 | 900 MHz ≤ BWChannel\_CA ≤ 1800 MHz | 9 |
| R10 | 1000 MHz ≤ BWChannel\_CA ≤ 2000 MHz | 10 |
| R11 | 1100 MHz ≤ BWChannel\_CA ≤ 2200 MHz | 11 |
| R12 | 1200 MHz ≤ BWChannel\_CA ≤ 2400 MHz | 12 |
| NOTE 1: Maximum supported component carrier bandwidths for fallback groups 1, 2, 3, 4 and 5 are 400 MHz, 200 MHz, 100 MHz, 100 MHz and 200 MHz respectively except for CA bandwidth class A. For CA bandwidth classes of fallback group 5, requirements apply for non-interlaced 100 MHz and 200 MHz channel bandwidths (each CA bandwidth class consisting of up to two contiguous sub-blocks each with component carriers of a single channel bandwidth).  NOTE 2: It is mandatory for a UE to be able to fallback to lower order CA bandwidth class configuration within a fallback group. It is not mandatory for a UE to be able to fallback to lower order CA bandwidth class configuration that belong to a different fallback group.  NOTE 3: In this release of the specification, the minimum requirements for intra-band contiguous CA configurations apply for aggregated channel bandwidths up to 1600 MHz (this note is not relevant for UE capability parsing by the network). | | | |

The new fall-back group 5 contains classes with up to 2400 MHz aggregated bandwidth with 12 carriers. The new classes in FBG5 are different from legacy FBGs, because the aggregated channel bandwidth ranges overlap between adjacent classes.

RAN4 have also determined that some UEs have enhanced aggregated bandwidth capability for fallback BW classes compared to the ‘dropping CCs’ interpretation of the BW class fallback rule. Specifically, some UEs have independent maximum limits on number of carriers and aggregated bandwidth. For example: a UE can support R8 to R12 with a 1600MHz aggregated channel bandwidth. RAN4 understanding is that the BW capabilities of such UEs can be indicated by different feature sets of a band combination. RAN4 would like to respectfully request RAN2 to check if a new IE could reduce signaling overhead without potential co-existence issue with the legacy fallback rule and without interoperability issue if it were introduced with the following characteristics :

1. The new IE is optional for a UE to signal. When the IE is not signalled, legacy operation is assumed:
   1. the UE can still communicate to the network the maximum aggregated BW limitation using the existing framework.
   2. The network understands that the UE supports the legacy fallback BW classes.
2. The new IE applies to intra-band carrier contiguous aggregation as well as an intra-band contiguous carrier aggregation component within an inter-band carrier aggregation. The new IE is separately applicable to each, UL, and DL.
3. When signalled for an explicitly supported BW class in FBG5:
   1. It is in addition to the existing signaling for that BW class.
   2. The network understands that the UE has independent maximum limits on number of CCs and max. aggregated bandwidth for that band. For example, when the UE indicates explicit support for R12 and a max. aggregated bandwidth of 1600Mhz using the new IE, it not only means the max. aggregated bandwidth 1600MHz applies to 12 CCs, but also applies to lower order classes, i.e., 11CCs, 10CCs, and so on.
   3. The IE conveys the max. aggregated bandwidth value for each FeatureSetListPerUplink(Downlink)CC. for example, in each FeatureSetUplink(Downlink).
   4. A band may have multiple values of max. aggregated bandwidth associated with different FeatureSetListPerUplink(Downlink)CC.

RAN4 defers to RAN2’s decision on whether to introduce an IE as proposed above and whether there is the feasibility and benefit.

**Xiaomi: prefer to add our question to Ran2.**

**Huawei: we share the similar view as Xiaomi. RAN4 may not only ask RAN2 only the signaling reduction issue, and RAN4 should ask RAN2 if the issue exists for new IE.**

**Qualcomm: for Xiaomi question, you want to insert in 3b. It is applied to R12 and others. The examples you gave is not allowed by legacy signalling. The LS captures that we have to ensure the signalling benefit. What is exact the issue from Huawei.**

**Ericsson: we are against anything breaking fall back rules. RAN2 considers the non-backward compability. UE needs still report old fallback mode. It is not necessary to introduce the new fallback capability. UE needs to support both.**

**ZTE: This LS ask RAN2 to introduce the new signalling capability. In current design of RAN2, there is resource pool. The index is indicated for resource pool. This seems not compatible with RAN2 design principle. We would like to change the wording.**

**Samsung: Our understanding is that RAN4 has no much solid concerns.**

**2. Actions**

RAN4 kindly requests RAN2 to consider the requests above. RAN4 further requests RAN2 to consider if the IE and the new BW classes can be enabled for early indication.

**3. Date of Next TSG WG RAN4 Meetings:**

TSG-RAN WG4 Meeting #104Bis-e Oct. 2022 online

TSG-RAN WG4 Meeting #105-e Nov. 2022 FFS