**3GPP TSG-RAN WG4 Meeting #109 R4-2318119**

**Chicago, USA, November 13th – 17th, 2023**

**Agenda item: 7.14, 7.15, 7.23, 7.24, 7.25, 7.26, 7.27, 9.2**

**Source:** Moderator (Huawei)

**Title:** Topic summary for [109][113] LTE\_NR\_Other\_WI

**Document for:** Information

# Introduction

*Briefly introduce background, the scope of this summary (e.g. list of treated agenda items).*

The contributions for the following agenda items are summarised in this document:

7.14 NR CA band combinations with two SUL cells in Rel-18 (2)  
7.15 Rel-18 band combinations for concurrent operation of NR/LTE Uu bands/band combinations and one NR/LTE V2X PC5 band (1)  
7.23 Rel-18 downlink interruption for NR and EN-DC band combinations at dynamic Tx switching (2)  
7.24 Additional NR bands for UL-MIMO in Rel-18 (3)  
7.25 Adding new NR FDD bands for RedCap in Rel-18 (1)  
7.26 Adding new channel bandwidth(s) support to existing NR bands (4)  
7.27 Simultaneous Rx/Tx inter-band combinations for NR CA/DC, NR SUL and LTE/NR DC in Rel-18 (5)  
9.2 Additional LTE bands for UE categories M1/M2/NB1/NB2 in Rel-18 (0)

# Topic #1: NR CA band combinations with two SUL cells in Rel-18

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2318928 | CMCC | CR for 38.101-1: Add delta RIB requirements for CA\_n78C\_n84A-n89A |
| R4-2319617 | ZTE | Draft CR for TS 38.101-1 to correct SUL band combination with inter-band CA for two SUL cells |

*The moderator can suggest a limited number of papers which could be presented.*

## Open issues summary

*Moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

No open issues for the topic.

# Topic #2: Rel-18 band combinations for concurrent operation of NR/LTE Uu bands/band combinations and one NR/LTE V2X PC5 band

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2318329 | CATT | CR on release independent for concurrent operation of NR/LTE Uu bands/band combinations and one NR/LTE V2X PC5 band  <Moderator: Current version is shown as: 17.10.0, but Release is: Rel-18. Typo?> |

*The moderator can suggest a limited number of papers which could be presented.*

## Open issues summary

*Moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

No open issues for the topic.

# Topic #3: Rel-18 downlink interruption for NR and EN-DC band combinations at dynamic Tx switching

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2320248 | China Telecom | CR to R16 38.307 Release independent requirements for 2CC 1Tx-2Tx switching |
| R4-2320249 | China Telecom | CR to R17 38.307 Release independent requirements for 3CC 1Tx-2Tx switching and 2CC or 3CC 2Tx-2Tx switching  <Moderator: Should B.14-1 be B.4.14-1? B.15-1 be B.4.15-1? Typo?> |

*The moderator can suggest a limited number of papers which could be presented.*

## Open issues summary

*Moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

No open issues for the topic.

# Topic #4: Additional NR bands for UL-MIMO in Rel-18

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2320072 | Huawei, HiSilicon | TS 38.101-1 big CR for NR\_bands\_UL\_MIMO\_R18 |
| R4-2320073 | Huawei, HiSilicon | Revised WID: Additional NR bands for UL-MIMO in Rel-18 |
| R4-2320074 | Huawei, HiSilicon, Bell Mobility, TELUS | Draft CR for 38.101-1 PC2 and PC3 UL-MIMO configurations for SUL band n86 |

*The moderator can suggest a limited number of papers which could be presented.*

## Open issues summary

*Moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions..*

No open issues for the topic.

# Topic #5: Adding new NR FDD bands for RedCap in Rel-18

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2320550 | Ericsson | CR for adding RedCap UE for release independent feature |

*The moderator can suggest a limited number of papers which could be presented.*

## Open issues summary

*Moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

No open issues for the topic.

# Topic #6: Adding new channel bandwidths support to existing NR bands

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2318433 | Apple | n8 30MHz DL REFSENS and PC2 RSD  ***Proposal****: RAN4 to take the n8 DL 30MHz PC3 REFSENS and PC2 RSD values in the table below into consideration for the corresponding specifications development.*   |  |  |  |  | | --- | --- | --- | --- | | n8 | PC3 REFSENS (dBm) | 1Tx | -81.2 | | PC2 RSD (dB) | 1Tx | 2.3 | | 2Tx | 5.1 | |
| R4-2320996 | Skyworks Solutions Inc. | n8 PC3 30MHz REFSENS  **Observation 1:**   * **In Figure 4, the measured PA noise (plain blue line) does not rise linearly (dashed blue line) between DL n8 25MHz and n8 DL35MHz CBW,** * **the measured MSD leads to lower REFSENS than the legacy agreements,** * **the band n8 30MHz CBW MSD is approximately 0.6dB higher than the MSD for 25MHz CBW.**   **Proposal 1: Consider adopting the following band n8 REFSENS requirements and uplink configuration of** Table 1, Table 2**, changes highlighted in green.**  Table 1 band n8 REFSENS requirements   | **Operating band / SCS / Channel bandwidth** | | | | | | | | | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Operating Band** | **SCS kHz** | **5**  **MHz (dBm)** | **10**  **MHz (dBm)** | **15**  **MHz (dBm)** | **20**  **MHz (dBm)** | **25**  **MHz (dBm)** | **30 MHz (dBm)** | **35 MHz (dBm)** | **40**  **MHz (dBm)** | **45 MHz (dBm)** | **50**  **MHz (dBm)** | | n8 | 15 | -97.0 | -93.8 | -91.4 | -85.8 | -83.6 | -82.2 | -78.4 |  |  |  | | 30 |  | -94.1 | -91.7 | -87.2 | -84.7 | -82.8 | -78.5 |  |  |  |   Table 2 band n8 REFSENS uplink configuration   | **Operating band / SCS (kHz) / Channel bandwidth (MHz) / Duplex mode** | | | | | | | | | | | | | | | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Operating Band** | **SCS** | **5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** | **45** | **50** | **60** | **70** | **80** | **90** | **100** | **Duplex Mode** | | n8 | 15 | 25 | 251 | 201 | 201 | Note 5 | Note 5 | Note 5 |  |  |  |  |  |  |  |  | FDD | |  | 30 |  | 121 | 101 | 101 | Note 5 | Note 5 | Note 5 |  |  |  |  |  |  |  |  |  | | Note 5: For this DL channel bandwidth, the UL configuration of the highest UL channel bandwidth specified in Table 5.3.6-1 and the default Tx-Rx frequency separation specified in Table 5.4.4-1 shall be used. | | | | | | | | | | | | | | | | | |   **Observation 2: If not already captured in a draft CR, consider bringing the changes highlighted in yellow to Table 5.3.6-1 – to be confirmed with proponent CBW request.**  **Table 5.3.6-1: FDD asymmetric UL and DL channel bandwidth combinations**   |  |  |  |  | | --- | --- | --- | --- | | **NR Band** | **Channel bandwidths for UL (MHz)** | **Channel bandwidths for DL (MHz)** | **Asymmetric channel bandwidth combination set** | | n5 | 20 | 25 | 0 | | n8 | 20 | 35 | 0 | |  | 10, 15, 20 | 25, 35 | 1 | |  | [10, 15, 20] | [25, 30, 35] | [2] | | n24 | 10 | 5 | 0 | | n25 | 40 | 45 | 0 | | n26 | 20 | 25, 30 | 0 | | n66 | 5, 10 | 20, 40 | 0 | |  | 20 | 40 |  | |  | 5, 10 | 20, 25, 30, 40 | 1 | |  | 20, 25, 30 | 40 |  | |  | 5, 10, 15 | 20, 25, 30, 35, 40 | 2 | |  | 20, 25, 30 | 40 |  | | n70 | 5, 10 | 15 | 0 | |  | 5, 10, 15 | 20, 25 |  | | n71 | 5 | 10 | 0 | |  | 10 | 15 |  | |  | 15 | 20 |  | |  | 5 | 10 | 1 | |  | 10 | 15 |  | |  | 15 | 20 |  | |  | 20 | 35 |  | |  | 20 | 25, 30, 35 | 2 | | n911 | 10 | 5 | 0 | | n921 | 5 | 10, 15, 20 | 0 | |  | 10 | 15, 20 |  | | n931 | 10 | 5 | 0 | | n941 | 5 | 10, 15, 20 | 0 | |  | 10 | 15, 20 |  | | n105 | 20 | 25, 30, 35 | 0 | | NOTE 1: The assignment of the paired UL and DL channels are subject to a TX-RX separation as specified in clause 5.4.4.  NOTE 2: As indicated in TS38.306 [15], it is mandatory for UEs to support asymmetric channel BCS0 if there is an asymmetric BCS0 defined for the band. | | | | |
| R4-2320677 | Huawei, HiSilicon, China Unicom | DraftCR for Adding 30MHz BW for band n8 |
| R4-2320321 | Ericsson | draft CR 38.101-1 corrections table 5.3.5-1 |
| R4-2319584 | Ericsson | Revised Basket WID on adding channel bandwidth support to existing NR bands  <Moderator: reserved for email approval> |
| R4-2319585 | Ericsson | Big CR to TS 38.104: Adding channel BW support in existing NR bands  <Moderator: reserved for email approval> |
| R4-2319586 | Ericsson | Big CR to TS 38.101-1: Adding channel BW support in existing NR bands  <Moderator: reserved for email approval> |

*The moderator can suggest a limited number of papers which could be presented.*

## Open issues summary

*Moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 6-1 Additional CBWs for band n8

*Sub-topic description:*

For 30MHz channel bandwidth, the PC3 REFSENS and PC2 RSD were agreed in RAN4#108bis based on contribution from Murata and Huawei. Two companies provided additional contribution to this meeting.

*Open issues and candidate options:*

**Issue 6-1-1: PC3 REFSENS for 30MHz DL CBW**

UL RB allocation: 20 RBs at the bottom of the channel for 20 MHz CBW.

* Proposals

Table 6-1-1-1: Two antenna port QPSK PREFSENS for n8

| Source | SCS / Channel bandwidth | |
| --- | --- | --- |
| SCS kHz | 30MHz (dBm) |
| R4-2318433 (Apple) | 15 | -81.2 |
| 30 | - |
| R4-2320996 (Skyworks) | 15 | -82.2 |
| 30 | -82.8 |
| R4-2315442 (Murata) | 15 | -81.3 |
| 30 |  |
| R4-2316774 (Huawei, HiSilicon) | 15 | -80.6 |
| 30 | -80.7 |
| Average | 15 | **-81.3** |
| 30 | **[-81.4]** |

* Recommended WF
  + Take the average values as REFSENS

Agreement:

* Agree on the follow numbers

| SCS / Channel bandwidth | |
| --- | --- |
| SCS kHz | 30MHz (dBm) |
| 15 | **-81.3** |
| 30 | **-81.4** |

**Issue 6-1-2: PC2 REFSENS Degradation (RSD)**

* Proposals

Table 6-1-2-1: PC2 RSD for n8

| Source | Tx arch / Channel bandwidth | | Remark |
| --- | --- | --- | --- |
| Tx | 30MHz (dB) | REFSENS+RSD (dBm) |
| R4-2318433 (Apple) | 1Tx | 2.3 | -78.9 |
| 2Tx | 5.1 | -76.1 |
| R4-2315442 (Murata) | 1Tx | 2.9 | -78.4 |
| 2Tx | 6.6 | -74.7 |
| R4-2316774 (Huawei, HiSilicon) | 1Tx | 3.6 | -77 |
| 2Tx | 6.8 | -73.8 |
| Average | 1Tx | **3.2** | **-78.1** |
| 2Tx | **6.5** | **-74.9** |

Note 1: REFSENS + RSD = PC2 Sensitivity (based on individual contribution)

Note 2: Average RSD = Average PC2 Sensitivity – Average REFSENS

* Recommended WF
  + Take the average values as PC2 RSD

Agreement:

| Tx arch / Channel bandwidth | |
| --- | --- |
| Tx | 30MHz (dB) |
| 1Tx | **3.2** |
| 2Tx | **6.5** |

**Issue 6-1-3: Asymmetric channel bandwidth combination set**

Rel-18 spec:

**Table 5.3.6-1: FDD asymmetric UL and DL channel bandwidth combinations**

|  |  |  |  |
| --- | --- | --- | --- |
| **NR Band** | **Channel bandwidths for UL (MHz)** | **Channel bandwidths for DL (MHz)** | **Asymmetric channel bandwidth combination set** |
| n5 | 20 | 25 | 0 |
| n8 | 20 | 35 | 0 |
|  | 10, 15, 20 | 25, 35 | 1 |

* Proposals
  + Option 1 (Skyworks): define new BCS2 with UL [10, 15, 20], DL [25, 30, 35]
  + Option 2 (Huawei): add 30MHz to existing BCS0 and BCS1
  + Option 3: others
* Recommended WF
  + TBA

CHTTL: it is not good idea to touch BCS0. For Rel-18 we are OK to modify BCS1.

Huawei: BCS1 was introduced in early stage of Rel-18. OK to change BCS1 and not change BCS0.

Skyworks: we propose BCS2.

Qualcomm: need check whether it is OK to modify BCS1 internally.

Moderator: Return to draft CR.

Ericsson: we agree with Skyworks to use BCS2. Do not agree to change BCS1.

# Topic #7: Simultaneous Rx/Tx inter-band combinations in Rel-18

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2319510 | Huawei, HiSilicon | draft CR to 38.101-1: Removal of the non-simultaneous Note for CA\_n40-n41 |
| R4-2318424 | Apple | CR on Simultaneous RXTX 38101-3-i30\_s00-05 |
| R4-2319761 | Samsung | Discussion on Simultaneous RxTx Note handling for 38.101-3  ***Observation 1: Mandatory simultaneous Rx/Tx notes are added into Clause 5.2 of TS 38.101-1 for CA and Clause 5.5 of 38.101-3 for EN-DC.***  ***Observation 2: If CA\_nXA-nYA is required to support mandatory simultaneous Rx/Tx, mandatory simultaneous Rx/Tx is supposed to apply to all NR-CA band combinations of the same band pair (band X and band Y). Similarly, If DC\_XA-nYA is required to support mandatory simultaneous Rx/Tx, mandatory simultaneous Rx/Tx is supposed to apply to all EN-DC band combinations of the same band pair (band X and band Y).***  ***Observation 3: Mandatory simultaneous Rx/Tx notes are missing for some higher order EN-DC, such as DC\_XA\_nYC, DC\_XC\_nYA, DC\_XA\_nY(2A), and so on, which may cause confusion to vendors for implementation and RAN5 for conformance test.***  *Proposal 1: It is proposed to only add the general Note X to each configuration tables, but do not remove the mandatory simultaneous Rx/Tx note for the higher order EN-DC combos for which the note is already added.*  **Note X: If the mandatory simultaneous Rx/Tx capability is applied to an EN-DC configuration, the mandatory simultaneous Rx/Tx capability is also applied to other higher order configurations sharing the same band pair, without additional indication of NOTE Y (Note Y corresponds to the mandatory simultaneous Rx/Tx note in each configuration table).**  *Proposal 2: It is proposed to implement above method from Rel-15, and maintenance corrections CRs for 38.101-3 are provided [3][4][5][6] in this meeting.* |
| R4-2320020 | Nokia, Nokia Shanghai Bell | Discussion on Simultaneous Rx/Tx  [**Observation 1:** The Simultaneous Rx/Tx UE capability is conditional mandatory and therefore it needs to be accurately noted in the RAN4 specification whether it is expected supported by the UE for a given band combination.](#_Toc149912997)  [**Observation 2:** There is a large number of Notes within TS 38.101-1 related to simultaneous Rx/Tx, it is not always clear which mandates the simultaneous Rx/Tx capability and which doesn’t.](#_Toc149912998)  [**Observation 3:** If a lower order band combination (CA or DC) is mandated to support the simultaneous Rx/Tx capability, then all higher order band combinations also is mandated to support simultaneous Rx/Tx capability.](#_Toc149912999)  [**Observation 4:** It seems at least some combination of CA TDD-TDD has associated a wrong use and purpose of the notes related to Simultaneous Rx/Tx.](#_Toc149913000)  [**Proposal 1: RAN4 shall review combinations with simultaneous Rx/Tx currently in the specifications to assess whether all needed requirements are captured as expected.**](#_Toc149913001)  [**Proposal 2: RAN4 shall discuss whether or not all of the notes, as listed in Table 1, are needed or these can be simplified/merged.**](#_Toc149913002)  [**Observation 5:** Note 13 and Note 15 in Table 5.2A.2.1-1 seems redundant.](#_Toc149913003)  [**Proposal 3: Void Note 13 and Note 15 in Table 5.2A.2.1-1 and apply Note 9 were used in the Table.**](#_Toc149913004)  [**Proposal 4: RAN4 shall remove notes related to simultaneous Rx/Tx in all band combination tables except for the two band CA and DC combinations.**](#_Toc149913005)  [**Observation 6:** Current band combinations in the specification with no Notes related to simultaneous Rx/Tx seems to indicate operation both with and without simultaneous Rx/Tx.](#_Toc149913006) |
| R4-2320758 | Apple | Simultaneous RxTx and missing MSD test points  **Observation:** With the introduction of simultaneous Rx/Tx requirements for CA\_n40A-n41A higher order combinations may require relaxation due to harmonic or IMD impact. At least CA\_n8A-n40A-n41A, CA\_n28A-n40A-n41A and CA\_n40A-n41A-n79A seem to require MSD. Similar cases could be present for the other combinations where simultaneous Rx/Tx requirements were added.  **Proposal:** Use maintenance phase to identify combinations with missing requirements and introduce MSD where required. |
| R4-2319508 | Huawei, HiSilicon | Revised WID on Simultaneous Rx-Tx basket  <Moderator: reserved for email approval> |
| R4-2319509 | Huawei, HiSilicon | Big CR to 38.101-1 on simultaneous Rx-Tx basket  <Moderator: reserved for email approval> |
| R4-2319553 | Huawei Device Co., Ltd | Draft TR 38.894  <Moderator: reserved for email approval> |

*The moderator can suggest a limited number of papers which could be presented.*

## Open issues summary

*Moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 7-1 simultaneous Rx-Tx requirements in TS 38.101-1

**Issue 7-1-1: Further clarification on the simultaneous Rx-Tx requirements**

*Background: in the approved WF R4-2317576*

**<Way forward>:** RAN4 shall review the use of notes related to simultaneous Rx/Tx currently used in the specifications and whether all potential needed requirements are captured as expected. Companies are asked to provide proposals for simplification and increasing consistency.

**<Way forward>:**

* Companies are asked to identify missing requirements for existing band combinations without note of mandatory simultaneous Rx/Tx
  + Handling the missing requirement of the band combinations in simultaneous Rx-Tx WI instead of Maintenance session

It is observed that the following statements have been specified, but further clarification might be needed.

5.2A.2 Inter-band CA – TS 38.101-1:

|  |
| --- |
| If the mandatory simultaneous Rx/Tx capability applies for a lower order band combination, when the applicable lower order band combination is a band pair in a higher order band combination, the mandatory simultaneous Rx/Tx capability also applies for the band pair in the higher order band combination. |

5.2B Operating bands for DC – TS 38.101-1:

|  |
| --- |
| If the mandatory simultaneous Rx/Tx capability applies for a band combination, the mandatory simultaneous Rx/Tx capability also applies for the band combination when the applicable band combination is a subset of a higher order band combination. |

* Proposals:
  + - Proposal 1 (Nokia): Void Note 13 and Note 15 in Table 5.2A.2.1-1 and apply Note 9 were used in the Table.
    - Proposal 2 (Nokia): RAN4 shall remove notes related to simultaneous Rx/Tx in all band combination tables except for the two band CA and DC combinations.
* Recommended WF
  + TBA

CHTTL: for proposal 1, the note 13 may be needed. For note 15, it can be merged to note 9. For proposal 2, we can further discuss it later on.

Huawei: Note 13 and note 15 are with the same meaning as Note 9. They can be merged. And we can simplify the merged note. For proposal 2, we share the similar view as Nokia. The general part is clear that the higher order band combination the simultaneous Rx-Tx note does not apply.

Nokia: As Huawei mentioned, they have the same meaning. We have the same understanding that there is no need to add the higher order band combination.

CHTTL: proposal 2 is not agreeable. There is a lot of changes to existing specs. The Rx-Tx simultaneous may be optional if we remove the notes. We were working on the general solution before but in the end we agree on case-by-case solution.

Nokia: This is exactly the reason why we discussed it. For some bands, the notes are added while for others not. We need the generic solution.

Agreement:

* Work on merging Note 13 and Note 15, and check if Note 9 can be used in the table.

### Sub-topic 7-2 simultaneous Rx-Tx requirements in TS 38.101-3

***Background****: For the simultaneous Rx/Tx capability for a lower order DC configuration, it has been specified in TS 38.101-3 sub-clause 5.5B.1 General*

|  |
| --- |
| If the mandatory simultaneous Rx/Tx capability applies for a lower order DC configuration, when the applicable lower order DC configuration is a band pair in a higher order DC configuration, the mandatory simultaneous Rx/Tx capability also applies for the band pair in the higher order DC configuration. |

**Issue 7-2-1: Further clarification on the simultaneous Rx-Tx requirements**

Observation 3: Mandatory simultaneous Rx/Tx notes are missing for some higher order EN-DC, such as DC\_XA\_nYC, DC\_XC\_nYA, DC\_XA\_nY(2A), and so on, which may cause confusion to vendors for implementation and RAN5 for conformance test. (R4-2319761)

* Proposals:
  + Proposal 1 (Samsung): It is proposed to only add the general Note X to each configuration tables, but do not remove the mandatory simultaneous Rx/Tx note for the higher order EN-DC combos for which the note is already added.
    - Note X: If the mandatory simultaneous Rx/Tx capability is applied to an EN-DC configuration, the mandatory simultaneous Rx/Tx capability is also applied to other higher order configurations sharing the same band pair, without additional indication of NOTE Y (Note Y corresponds to the mandatory simultaneous Rx/Tx note in each configuration table).
  + Proposal 2 (Samsung): It is proposed to implement above method from Rel-15, and maintenance corrections CRs for 38.101-3 are provided [3][4][5][6] in this meeting.
* Recommended WF
  + TBA

CHTTL: We propose to modify Note X.

Huawei: the proposal from Samsung can already be covered by general part cited as background. It is not needed.

Skyworks: Uplink configuration of DC\_XA\_nY(2A) is not valid configuration.

Apple: We also have CRs for this. At the moment, the note may not be applied to all the band pairs.

### Sub-topic 7-3 simultaneous Rx-Tx requirements for higher order combinations containing CA\_n40A-n41A

**Issue 7-2-1: Further clarification on the simultaneous Rx-Tx requirements**

**Observation:** With the introduction of simultaneous Rx/Tx requirements for CA\_n40A-n41A higher order combinations may require relaxation due to harmonic or IMD impact. At least CA\_n8A-n40A-n41A, CA\_n28A-n40A-n41A and CA\_n40A-n41A-n79A seem to require MSD. Similar cases could be present for the other combinations where simultaneous Rx/Tx requirements were added. (R4-2320758)

* Proposals:
  + Proposal 1 (Apple): Use maintenance phase to identify combinations with missing requirements and introduce MSD where required.
* Recommended WF
  + TBA

Apple: we identified that MSD requirements may be needed for some band combinations, where the MSD is not specified. We provided some papers, but we do not have full list.

CHTTL: I checked TR especially for CA\_n40-n41. The main purpose is to support simultaneous Rx-Tx. For EN-DC, we have non-simultaneous part.

Chair: Extend the basket WI to June next year and continue discussion on the open issues.

# Topic #8: Additional LTE bands for UE categories M1/M2/NB1/NB2 in Rel-18

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| N/A |  |  |

*The moderator can suggest a limited number of papers which could be presented.*

## Open issues summary

*Moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

No open issues for this topic.