**3GPP TSG-RAN WG4 Meeting # 104-e R4-22XXXXX**

**Electronic Meeting, 15– 26 August 2022**

**Agenda item:** 10.1 Issues arising from basket WIs but not subject to block approval

**Source:** Dominique Brunel (Skyworks Solutions Inc.)

**Title:** Initial Email discussion summary for [104-e][115] NR\_Baskets\_Part\_1

**Document for:** Information

# Introduction

*Briefly introduce background, the scope of this email discussion (e.g. list of treated agenda items) and provide some guidelines for email discussion if necessary.*

Two Topics are to be covered:

* Topic1: Handling of fallbacks and BC in basket WIDs
* Topic 2: Triple beat MSD

*List of candidate target of email discussion for 1st round and 2nd round*

* 1st round:
  + Topic 1: Discuss input
  + Topic 2:
* 2nd round:
  + Topic 1: Discuss input between experts
  + Topic 2: Agree on value or WF

It is appreciated that the delegates for this topic put their contact information in the table below.

Contact information

|  |  |  |
| --- | --- | --- |
| **Company** | **Name** | **Email address** |
| Skyworks (moderator) | Dominique Brunel | [Dominique.brunel@skyworksinc.com](mailto:Dominique.brunel@skyworksinc.com) |
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Note:

1. Please add your contact information in above table once you make comments on this email thread.
2. If multiple delegates from the same company make comments on single email thread, please add you name as suffix after company name when make comments i.e. Company A (XX, XX)

# Topic #1: Handling of fallbacks and BC in basket WIDs

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2212017**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212017.zip) On how to handle the fallbacks of the proposed band combination | Samsung | **Proposal 1: *In the basket WID, rapporteur is supposed to clearly list the precondition to propose the band combination, at least including all the fallback types of this WID, while all the fallbacks shall be completed and specified in advance or at least at the same meeting.***  **Proposal 2: *Proponents should follow the approved guideline in TR 38.862, i.e.***  ***#4 Proponents should prepare and submit the corresponding contributions, e.g. draft CR, TP before RAN4#X meeting. If a draft CR or TP is depending on approval of lower order fallbacks submitted at the same meeting, this need to be clearly mentioned in the cover sheet of the draft CR or in the heading of the TP.*** |
| [**R4-2212380**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212380.zip) On Fallbacks for Basket WIDs | Apple | *Observation 1: In 36.101 and 38.101-x specs it is mandatory to support all the lower order fallbacks of the higher order combination according to the fallback requirements mentioned in the specs.*  *Observation 2: To support lower order fallback combinations of higher order combinations specified in 36.101 and 38.101-x specs, it is required to specify all the fallback combinations in 36.101 and 38.101-x as well.*  *Observation 3: For EN-DC or NE-DC configurations the constituent E-UTRA and NR configurations need to be specified as fallbacks as well.*  *Observation 4: In RAN4 it has been agreed long time ago, that a new combination can only be added, once all the fallbacks have already been specified*  *Observation 5: Fallbacks do not necessarily need to be in the same basket WID, they may also need to be specified in other lower order basket WIDs*  *Observation 6: The proponent of the higher order combination is responsible to request all fallbacks as well, otherwise the rapporteur should reject that combination.*  ***Proposal 1: RAN4 to confirm the agreement that all fallbacks down to a dual carrier configuration need to be requested together with a higher order configuration and no configuration shall be added to the specification with a CR without having added all the lower order fallbacks previously***  ***Proposal 2: All rapporteurs of a Basket WID are required to add the following text to each of the Basket WIDs in the Objective in 4.1 of the WID:***   * **The proponent of a combination needs to check for all fallback configurations down to a dual carrier configuration, if they are already specified. If not, the proponent needs to request the fallbacks and their missing fallbacks to be added to the appropriate basket WIDs. The rapporteur should refrain from adding combinations to the CRs, for which the proponent hasn’t shown that all fallbacks are already in the specification or are specified together with the higher order combination.**   ***Proposal 3:*** ***All rapporteurs of a Basket WID shall not add configurations to the big CRs, for which the proponent has not shown that all lower order fallbacks have already been added to the specification or are added together with that configuration to the same specification*** |
| [**R4-2213167**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213167.zip) Discussion on the fallback configurations | Huawei, HiSilicon | Observation 1: In total, from network deployment, UE implementation and completeness of specification, it’s very important to finish all the possible fallback configurations before a higher order band combination is studied or introduced into spec. And working group is responsible to guarantee specification’s quality to achieve the goal that there is no missing fallback configurations in the spec.  Observation 2: some key checkpoints of fallback configurations are set according to the latest workflow of band combination. The contact person is responsible to carefully analyse the fall back configurations when requesting. Companies are also encouraged to comment the missing fall back configurations in any stage once they find the issues.  **Proposal 1: In order to make fallback rules clear and more visible, the following rules are suggested to be captured into each R18 Basket WI revision.**  **A) When contact person requests a new band combination, all the next level fallback configurations should be listed and recorded into request template and the status (“New”, “Ongoing”, “Completed”) of all the fallback configurations should be declared accurately and clearly. For “New” fallback configurations, contact person should request these fallback configurations together with the higher order band combination in the same meeting.**  **B) A band combination configuration can only be considered as completed when ALL fallback mode configurations (which may be in different baskets or different releases) are completed. It is the responsibility of the contact person/rapporteurs to verify the status of the fallback mode configurations. Other companies are encouraged to check the status of fallback configurations once the higher order band combinations are declared as completed.**  **Proposal 2: In order to improve RAN4’s work efficiency and spec’s quality, it’s proposed to elaborate how to analyse and list all the possible fallback configurations for some general cases and special cases in TR of R18 SI of study on simplification of band combination specification for NR and LTE. And some examples can be listed to help others understand the methods.**  Observation 3: Considering the specific cases, some ENDC band combinations which include SDL bands or DL only Scell bands should be considered as exception for some fall back configurations. |
| [**R4-2213208**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213208.zip) On band combination guidance in basket WIDs | Nokia, Nokia Shanghai Bell | **Proposal 1: RAN4 shall confirm that new band combinations shall be requested one week prior to the RAN4 submission deadline**  **Proposal 2:** **Clarify in the basket WIDs that band combinations shall be requested via an agreed template to the corresponding email reflector.**  Observation 1: Band combinations shall not enter specification without all its fallbacks also specified.  Observation 2: The proponent of a band combinations is obligated to check all required fallbacks and if needed request missing fallbacks together with the proposed new band combination.  **Proposal 3:** **Clarify in the basket WIDs that band combinations shall be requested together with fallbacks if they are not completed yet.**  **Proposal 4: RAN4 shall discuss in the dedicated Rel-18 SI for simplification of band combination specification for NR and LTE (FS\_SimBC) if band combinations and its fallbacks can be submitted for inclusion to the standard in the same RAN4 meeting or the fallbacks first shall be completed sequentially.**  **Proposal 5: Basket band combination WIDs shall include guidance on fallbacks.**  **-------------------------------- Start of TP#1 -----------------------------------------------**  Request for additions of band combinations to this WI shall be provided using an agreed template and send to the 3GPP\_TSG\_RAN\_WG4\_CA email reflector one week (7 days) before a RAN4 meeting submission deadline. When submitting a request, the proponent is obligated to verify the needed fallbacks as described under the preconditions. In case one or more fallbacks are missing the proponent shall ensure these are also requested to corresponding WI(s) and completed.  **-------------------------------- End of TP#1-------------------------------------------------**  **Proposal 6: RAN4 to agree adding the paragraph in TP#1 to the band combination basket WIDs where applicable.** |

## Open issues summary

*Before e-Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 1-1

*Sub-topic description:* Ensuring that all fallbacks are properly requested and specified before requesting/specifying higher order combinations

*Open issues and candidate options before e-meeting:*

Multiple proposal around:

* rules for proponents, rapporteurs
* guidelines in TP, TR, Request file, new WI

**Issue 1-1a: Guidelines to proponents and rapporteurs**

* Proposals
  + Option 1: In the basket WID, rapporteur is supposed to clearly list the precondition to propose the band combination, at least including all the fallback types of this WID, while all the fallbacks shall be completed and specified in advance or at least at the same meeting.
  + Option 2: Proponents should follow the approved guideline in TR 38.862, i.e.

#4 Proponents should prepare and submit the corresponding contributions, e.g. draft CR, TP before RAN4#X meeting. If a draft CR or TP is depending on approval of lower order fallbacks submitted at the same meeting, this need to be clearly mentioned in the cover sheet of the draft CR or in the heading of the TP.

* + Option 3: All rapporteurs of a Basket WID shall not add configurations to the big CRs, for which the proponent has not shown that all lower order fallbacks have already been added to the specification or are added together with that configuration to the same specification
* Recommended WF
  + Discuss the multiple options and try to focus on those that can act as reminders
  + Moderator: re-stating the rules did not work so far…

**Issue 1-1b: Adding guidelines in TP, TR, WID, request sheets…**

* Proposals
  + Option 1: All rapporteurs of a Basket WID are required to add the following text to each of the Basket WIDs in the Objective in 4.1 of the WID: The proponent of a combination needs to check for all fallback configurations down to a dual carrier configuration, if they are already specified. If not, the proponent needs to request the fallbacks and their missing fallbacks to be added to the appropriate basket WIDs. The rapporteur should refrain from adding combinations to the CRs, for which the proponent hasn’t shown that all fallbacks are already in the specification or are specified together with the higher order combination
  + Option 2: In order to make fallback rules clear and more visible, the following rules are suggested to be captured into each R18 Basket WI revision.

A) When contact person requests a new band combination, all the next level fallback configurations should be listed and recorded into request template and the status (“New”, “Ongoing”, “Completed”) of all the fallback configurations should be declared accurately and clearly. For “New” fallback configurations, contact person should request these fallback configurations together with the higher order band combination in the same meeting.

B) A band combination configuration can only be considered as completed when ALL fallback mode configurations (which may be in different baskets or different releases) are completed. It is the responsibility of the contact person/rapporteurs to verify the status of the fallback mode configurations. Other companies are encouraged to check the status of fallback configurations once the higher order band combinations are declared as completed.

* + Option 3: Clarify in the basket WIDs that band combinations shall be requested via an agreed template to the corresponding email reflector.
  + Option 4: Clarify in the basket WIDs that band combinations shall be requested together with fallbacks if they are not completed yet.
  + Option 5: Basket band combination WIDs shall include guidance on fallbacks. RAN4 to agree adding the paragraph in TP#1 to the band combination basket WIDs where applicable.

-------------------------------- Start of TP#1 -----------------------------------------------

Request for additions of band combinations to this WI shall be provided using an agreed template and send to the 3GPP\_TSG\_RAN\_WG4\_CA email reflector one week (7 days) before a RAN4 meeting submission deadline. When submitting a request, the proponent is obligated to verify the needed fallbacks as described under the preconditions. In case one or more fallbacks are missing the proponent shall ensure these are also requested to corresponding WI(s) and completed.

-------------------------------- End of TP#1-------------------------------------------------

* Recommended WF
  + Discuss the multiple options and try to merge them

**Issue 1-1c: Clarify guidelines further**

* Proposals
  + Option 1: RAN4 to confirm the agreement that all fallbacks down to a dual carrier configuration need to be requested together with a higher order configuration and no configuration shall be added to the specification with a CR without having added all the lower order fallbacks previously
  + Option 2: RAN4 shall confirm that new band combinations shall be requested one week prior to the RAN4 submission deadline
* Recommended WF
  + Discuss the multiple options and try to merge them

**Issue 1-1d: How to manage and contribute on this topic in R18**

* Proposals
  + Option 1: In order to improve RAN4’s work efficiency and spec’s quality, it’s proposed to elaborate how to analyse and list all the possible fallback configurations for some general cases and special cases in TR of R18 SI of study on simplification of band combination specification for NR and LTE. And some examples can be listed to help others understand the methods
  + Option 2: RAN4 shall discuss in the dedicated Rel-18 SI for simplification of band combination specification for NR and LTE (FS\_SimBC) if band combinations and its fallbacks can be submitted for inclusion to the standard in the same RAN4 meeting or the fallbacks first shall be completed sequentially.
* Recommended WF
  + Discuss what objectives may be added to the dedicated Rel-18 SI for simplification of band combination specification for NR and LTE (FS\_SimBC) to progress on the topic
  + Moderator: it would be useful that this overall topic is discussed in a dedicated R18 WI rather than this AI but it is fine to start here.

## Companies views’ collection for 1st round

### Open issues

*One of the two formats, i.e. either example 1 or 2 can be used by moderators.*

**Example 2**

Sub topic 1-1a: **Guidelines to proponents and rapporteurs**

|  |  |  |
| --- | --- | --- |
| **Company** |  | **Comments** |
| XXX |  |  |

Sub topic 1-1b: **Adding guidelines in TP, TR, WID, request sheets…**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |

Sub topic 1-1c: **Clarify guidelines further**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |

Sub topic 1-1d: **How to manage and contribute on this topic in R18**

|  |  |  |
| --- | --- | --- |
| **Company** |  | **Comments** |
| XXX |  |  |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary** |
| **Sub-topic #1** | *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd round:* |

### CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provides recommendation on CRs/TPs Status update*

*Note: The tdoc decisions shall be provided in Section 3 and this table is optional in case moderators would like to provide additional information.*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

## Discussion on 2nd round (if applicable)

# Topic #2: Triple beat MSD

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2213132**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213132.zip) Discussion on triple beat MSD of UL DC\_3C\_n28A | Huawei, HiSilicon | Proposal 1: **It’s recommended to adopt the following test configuration for triple beat MSD of DC\_3C\_n28A.**  **Table 2-1: Reference sensitivity exception due to triple beat intermodulation**   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Band / Channel bandwidth / NRB / Duplex mode | | | | | | | | Source of IMD | | ENDC band combination | NR/LTE band | UL Fc  (MHz) | UL/DL BW  (MHz) | UL  LCRB | DL Fc (MHz) | MSD  (dB) | Duplex mode |  | |  | n28 | 718 | 30 | 25(RBSTART=135) | 773 | TBA | FDD | 1st order triple beat α (TX22TX1) | | DC\_3C\_n28A | 3 | 1720 | 20 | 1 (RBSTART=0) | 2550 | N/A | FDD | N/A | |  |  | 1739.8 | 20 | 1 (RBSTART=99) | 2645 |  |  |  |   Proposal 2: **It’s recommended to specify triple beat MSD of DC\_3C\_n28A as 4.6dB** |
| R4-2214069 On Triple Beat Detection Equations | Murata Manufacturing Co Ltd. | Moderator: the contribution is not available |

## Open issues summary

*Before e-Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 2-1

*Sub-topic description:* Triple beat MSD for DC\_3C\_n28

*Open issues and candidate options before e-meeting:* Agree on MSD test point and MSD value

**Issue 2-1a: MSD test point**

* Proposals
  + Option 1: adopt proposed MSD test point:

**Table 2-1: Reference sensitivity exception due to triple beat intermodulation**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Band / Channel bandwidth / NRB / Duplex mode | | | | | | | | Source of IMD |
| ENDC band combination | NR/LTE band | UL Fc  (MHz) | UL/DL BW  (MHz) | UL  LCRB | DL Fc (MHz) | MSD  (dB) | Duplex mode |  |
|  | n28 | 718 | 30 | 25(RBSTART=135) | 773 | TBA | FDD | 1st order triple beat α (TX22TX1) |
| DC\_3C\_n28A | 3 | 1720 | 20 | 1 (RBSTART=0) | 2550 | N/A | FDD | N/A |
|  |  | 1739.8 | 20 | 1 (RBSTART=99) | 2645 |  |  |  |

* + Option 2: Propose a different MSD test point
* Recommended WF
  + Option 1 if the MSD test point is valid

**Issue 2-1b: MSD value**

* Proposals
  + Option 1: 4.6dB
  + Option 2: Other values or need for evaluation by other experts
* Recommended WF
  + Agree assumptions/architecture, then discuss proposed value

## Companies views’ collection for 1st round

### Open issues

**Example 1**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX | Sub topic 1-1a MSD test point:  Sub topic 1-1b MSD value: |
| XXX | Sub topic 1-1a MSD test point:  Sub topic 1-1b MSD value: |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary** |
| **Sub-topic#1** | *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd round:* |

### CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provided recommendation on CRs/TPs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

## Discussion on 2nd round (if applicable)

*Moderator can provide summary of 2nd round here. Note that recommended decisions on tdocs should be provided in the section titled ”Recommendations for Tdocs”.*

# Recommendations for Tdocs

## 1st round

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
|  | WF on … | YYY |  |
|  | LS on … | ZZZ | To: RAN\_X; Cc: RAN\_Y |
|  |  |  |  |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Recommendation** | **Comments** |
| R4-22xxxxx |  | CR on … | XXX | Agreeable, Revised, Merged, Postponed, Not Pursued |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Notes:

1. Please include the summary of recommendations for all tdocs across all sub-topics incl. existing and new tdocs.
2. For the Recommendation column please include one of the following:
   1. CRs/TPs: Agreeable, Revised, Merged, Postponed, Not Pursued
   2. Other documents: Agreeable, Revised, Noted
3. For new LS documents, please include information on To/Cc WGs in the comments column
4. Do not include hyper-links in the documents

## 2nd round

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Recommendation** | **Comments** |
| R4-22xxxxx |  | CR on … | XXX | Agreeable, Revised, Merged, Postponed, Not Pursued |  |
| R4-22xxxxx |  | WF on … | YYY | Agreeable, Revised, Noted |  |
| R4-22xxxxx |  | LS on … | ZZZ | Agreeable, Revised, Noted |  |
|  |  |  |  |  |  |

Notes:

1. Please include the summary of recommendations for all tdocs across all sub-topics.
2. For the Recommendation column please include one of the following:
   1. CRs/TPs: Agreeable, Revised, Merged, Postponed, Not Pursued
   2. Other documents: Agreeable, Revised, Noted
3. Do not include hyper-links in the documents