

3GPP TSG-RAN Meeting #97-e RP-22xxxx

Electronic Meeting, September 12 – 16, 2022

Agenda item: 9.1.5

Source: Moderator (RAN4 Chair)

Title: Email discussion summary for [97e-07-R18-RAN4-HPUEBaskets]

Document for: Information

1 Introduction

In this email thread we will discuss the following topics:

- New WI proposals for high power UE in Rel-18

The following contributions will be covered.

TDoc	Title
RP-222106	New WID on high power for FR1 for DC_R18_xBLTE_yBNR_zDLnUL with power class PC2 and PC1.5
RP-222512	High power for FR1 for NR_CA_R18_intra with power class 2 and 1.5 on TDD band(s)
RP-222287	New WID: High power UE for FR1 NR CA/DC or NR SUL (supplementary uplink) band combination with
RP-222084	New WID on high power for FR1 for NR_CADC_R18_yBDL_xBUL with power class 2 and high power o
RP-222351	WID on High power UE (power class 1.5) for NR TDD bands
RP-222083	New WID on high power for FR1 for FDD single band(s) with power class 2
RP-222341	Discussion on potential basket WID for HPUE FDD bands

In this document, we capture comments and conclusions for this email thread.

2 Topic #1: HPUE basket for EN-DC

2.1 Companies' contributions summary

Table 2:

T-doc number	Title
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2.2 Initial round

2.2.1 Comments & responses

Sub-topic 1-1: Any question or comment on the justification or any other general comment for WI?

Companies are invited to provide the general comments, including comments on justification part, whether the WI is needed, how to handle the work, in the follow table.

Feedback Form 1:

<p>1 – Nokia Japan</p> <p>In our understanding, there must be no generic requirements for PC1.5 for inter band MR-DC. If so, PC1.5 must be removed from the scope and the title. Or perhaps, PC1.5 is intended for Intra MR-DC? If so, that must be clarified in the objective.</p>
<p>2 – Apple (UK) Limited</p> <p>We share the similar view with Nokia. Our understanding is that this basket WID is for HPUE inter-band EN-DC. For PC1.5, since the general requirements have not been specified yet, it should not be included in this basket WID.</p>
<p>3 – Verizon UK Ltd</p> <p>This work item just reserves the power class PC1.5 into the title, and the content is still remaining for the PC2 until the general requirements are clarified. Therefore, we are ok for the current way. However, we are open to the companies' suggestions.</p>
<p>4 – Verizon UK Ltd</p> <p>As mentioned above, the work item just reserves the power class PC1.5 into the title, and the content is still remaining for the PC2 until the general requirements are clarified.</p>
<p>5 – Ericsson LM</p> <p>Our understanding of the discussions so far is that the intention was to include EN-DC both PC2 and PC1.5 in the scope of this WID. (For information, there are yet no PC1.5 combinations requested).</p> <p>We will revise the WID to include also the missing PC2 combinations that DoCoMo requested on the NR Bands reflector August/03. The new TDOC number for the WID revision will be RP-222606.</p>
<p>6 – AT&T GNS Belgium SPRL</p> <p>We think that we could just use HPUE in the WID title as opposed adding PC2 and PC1.5. This will keep the title of the WID generic if we want the ability to update the objectives to capture the additional combinations for PC1.5 after the general requirements are clarified. We also have the same understanding as Ericsson as to the intention of this basket WI.</p>

7 – Guangdong OPPO Mobile Telecom.

Share similar view as Nokia and Apple, PC1.5 should not be included before generic requirements are specified. We also understand the intention of reserving place for PC1.5 in the future, then AT&T suggestion might be good, just use HPUE in the WID title, and in the future add PC1.5 if needed.

8 – Beijing Xiaomi Mobile Software

Agree with Nokia and other companies, for PC1.5 intra-band UL CA, some general requirements (for example, MPR requirements) should be studied first, therefore it is not suitable to be handled by basket WI approach currently.

9 – CHTTL

agree with Nokia

10 – CATT

The fallback rules agreed in R4-2214425 were not captured in the justification section? Based on the guidance in RAN4 reflector, the texts recorded in R4-2214425 are supposed to be added in the Justification of each basket WID.

11 – Skyworks Solutions Inc.

Same view as Nokia and other companies that we should first create general requirements for inter-band PC1.5.

12 – CHTTL

1. The "Example 1" in the justification seems not matched the description of the precondition.
"Example 1: If DC_1A-2A-n3A.n78A is proposed,
- EN-DC Band 1, 2, n3 and n78 requirements shall be completed and specified in advanced."
-> maybe this can be modified or removed?
2. To CATT, actually the fallback rules discussed in previous RAN4 meeting didn't consider the PC2 cases, it might be confused with pc fallback if directly applied here, and the precondition already mentions PC3 need to be specified first before proposing PC2, in our view it is ok.

13 – Huawei Technologies France

We are fine with the WI proposal. Regarding PC 1.5, reserve the power class in the title or come back later when the general requirements are specified are both ok for us.

14 – vivo Communication Technology

Regarding PC1.5, our understanding is similar to Nokia, that the scope of PC1.5 of DC needs to be removed from basket WI, and general requirements for inter-band cases should be introduced before basket can be considered.

Regarding the title, it doesn't matter whether specific power classes should be mentioned, as long as the title and contents do not have contradiction.

15 – Samsung Electronics Co.

We share similar view with Nokia and Apple.

For PC 1.5, the general requirements shall be specified in advance before the basket WI including PC 1.5.

In addition, the preconditions in the justification part need some modification to make it more clear. Constituent LTE inter band CA with 1UL and constituent NR inter band CA with 1 UL shall be completed and specified in advance. In the example of CA_1A-2A, CA_n3-n78 shall be listed as well.

Lastly, We agree with the observation from CHTTL. The fallback principle discussion did not take power class into consideration. We are not quite sure whether the PC fallback principle is proper to be included now, since the lower power class shall be specified “in advance” or “in advance or at least at the same meeting” has not been discussed and decided yet.

16 – ZTE Wistron Telecom AB

To keep a generic title is fine to us.

17 – ZTE Wistron Telecom AB

In addition, the texts agreed in WF R4-2214425 could be added in the Justification in the basket WID.

18 – MediaTek Inc.

Share similar view as Nokia and Apple, for PC1.5, the general requirements should be specified first.

19 – NTT DOCOMO INC.

Thank you, Ericsson, for preparing a revision to include our requests submitted in August RAN4 meeting. We will check the official T-doc when it is provided.

Sub-topic 1-2: Comments and responses on the proposed objectives

The following objectives are proposed in the WID.

————— Core part —————

- PC1.5 and PC2 EN-DC band combinations introduced by this WI will be introduced starting with REL-18.
- Specify the band-combination specific RF requirements for all listed NR EN-DC combinations for
 - 1 (1LTE+1NR) different bands DL with 2 (1LTE+1TDD NR) bands UL, or
 - 3 (2LTE+1NR) different bands DL with 2 (1LTE+1TDD NR) bands UL, or
 - 4 (3LTE+1NR) different bands DL with 2 (1LTE+1TDD NR) bands UL, or
 - 3 (1LTE+2NR) different bands DL with 2 (1LTE+1TDD NR) bands UL, or
 - 4 (2LTE+2NR) different bands DL with 2 (1LTE+1TDD NR) bands UL.

- including at least
 - Applicable frequencies
 - Applicable bandwidths and bandwidth sets
- Analyze combinations that have self-desensitization due to following reasons:
 - TX Harmonic overlap of receive band
 - TX signal overlap of receiver harmonic frequency
 - TX frequency being in close proximity of one of the receive bands
 - Any other identified reasons
- For the combination where self-desensitization exists, specify at least needed
 - Δ TIB and Δ RIB
 - Reference sensitivity exceptions UL
 - RB restrictions for REFSENS test
- Add conformance testing in RAN5 specifications (to follow at a later stage) of all Rel-18 EN-DC combinations that fall into the category defined by the WI title.

Note□the uplink band combination includes at least one TDD band. And, the uplink FDD+TDD band combinations could support LTE 23dBm + NR 23dBm and LTE 23dBm + NR 26dBm, and the TDD+TDD band combinations support only LTE 23dBm + NR 23dBm.

An overview table of these DC configurations is provided in the appended Excel sheet.

_____ - Performance Part

Perf. part

Specify the necessary performance requirements such as release independence in TS 38.307.

Companies are invited to provide comments and responses in the following table.

Feedback Form 2:

<p>1 – Nokia Japan</p> <p>Handling of PC1.5 depends on the answer to the question posted in the Feedback Form 1.</p> <p>Regarding a following NOTE, is there any reason for the basket not to specify TDD(PC3)+TDD(PC2) with HigherPowerLimitCADC? It's covered by Rel-17 HigherPowerLimitCADC WI.</p> <p><i>the TDD+TDD band combinations support only LTE 23dBm + NR 23dBm</i></p>

2 – Apple (UK) Limited

As commented in Feedback Form 1, PC1.5 should not be included in this basket WID which is also consistent with the UL power combinations as described in the Note. We also agree with Nokia that TDD(PC3)+TDD(PC2) can also be specified under PC2 for the UL combination.

3 – Ericsson LM

We agree with the Nokia comment and are happy to remove this the last part of the Note.

4 – Guangdong OPPO Mobile Telecom.

For the TDD+TDD 23+23 restriction, we agree that 23+26 can be added, but this seems to be restriction of PA configurations for PC2 EN-DC, is there need for this kind of restriction? UE can implement any PAs as long as total power PC2 is achieved. Therefore, remove the note is ok.

For the below bullet, not understand why RAN5 work is one of the objective here. Usually RAN5 will handled in a separate WI. Should be removed?

- Add conformance testing in RAN5 specifications (to follow at a later stage) of all Rel-18 EN-DC combinations that fall into the category defined by the WI title.

5 – vivo Communication Technology

For the note, the description: "the uplink band combination includes at least one TDD band" seems not needed since it is already defined in the previous objectives that it is 1 LTE +1 TDD NR need to be considered, and the "FDD+TDD band combination" is meant be "FDD LTE + NR TDD band combination" to be specific. Maybe it is enough to clarify like this:

"Note: For the uplink FDD LTE + TDD NR band combinations, only 23dBm would be considered for FDD LTE."

6 – Samsung Electronics Co.

We share the similar view. TDD(PC3)+TDD(PC2) could also be specified in this WI.

7 – ZTE Wistron Telecom AB

There is some inconsistency between the title and the contents: the title says xLTE (x=1,2,3,4), however, only up to 3 LTE is included.

Sub-topic 1-3: Comments and responses on impacted/new specifications and target completion date & time budget

Companies are invited to provide comments and responses in the following table.

Feedback Form 3:

2.2.2 Summary

Sub-topic 1-1: Any question or comment on the justification or any other general comment for WI?

The first group of comments are related to PC1.5. Companies proposed to remove PC1.5 from title of WID because there are no generic requirements for inter-band EN-DC band combinations with PC1.5. Some companies would like to keep the title more general and could cover PC1.5 in the future after the common requirements for inter-band EN-DC PC1.5 are completed. In the content of WID, there is no any inter-band EN-DC band combination with PC1.5. Moderator thinks it would be OK not to mention PC1.5 in the title and keep the title more generic.

Nokia commented whether PC1.5 inter-band EN-DC or PC1.5 intra-band EN-DC are considered when the title of WID is written. Apple commented that only HPUE for inter-band EN-DC combination is considered in this basket WID. From moderator perspective, in order to limit the number of basket WIs, this HPUE basket WI is expected to cover the high power classes for all the EN-DC band combinations which are covered by the EN-DC band combination basket WIs with PC3 in Rel-18, i.e., both intra-band EN-DC and inter-band EN-DC need be covered. Besides, in TS 38.101-3 the PC1.5 are specified for DC_(n)41AA and DC_41A_n41A, for which just A-MPR requirement is specified. So companies need further align the view on the scope of this basket WIs.

The second group of comments are related to the fallback rule. CATT and ZTE proposed to capture the fallback rule agreed in R4-2214425 in the WID, while CHTTL and Samsung commented that the fallback rule was discussed for PC3 band combinations and captured in PC3 EN-DC basket WIs and therefore there is no need to capture the fallback rule in the WID. The moderator agrees with CHTTL and Samsung views.

The third comment is on the example band combination. CHTTL commented that the example of DC_1A-2A_n3A-n78A does not match the precondition that PC3 shall be completed and specified first.

Based on the comments, the moderator proposes

– **Proposal 1-1:** for EN-DC HPUE basket,

- Change title to High power for FR1 for DC_R18_xBLTE_yBNR_zDLnUL with power class > PC3
- The scope of this basket WIs covers
 - PC2 for intra-band and inter-band EN-DC band combinations
 - PC1.5 for intra-band EN-DC band combinations on TDD band
 - PC1.5 for intra-band EN-DC band combinations on FDD band and inter-band EN-DC band combinations after the generic requirements are completed
- Remove the example 1 in the justification section
- Confirm that the fallback rule agreed in R4-2214425 does not need to be captured in the WID.

Sub-topic 1-2: Comments and responses on the proposed objectives

The first comments are related to whether TDD (PC3)+TDD (PC2) can be specified with support of increasing higher power limit under PC2 for the UL combinations in this basket WI. All the companies who made comments would like to include it. The tentative agreement is to remove the text of the *TDD+TDD band combinations support only LTE 23dBm + NR 23dBm* in the note.

The second comments are also related to the note. Vivo proposed to change the note to "Note: For the uplink FDD LTE + TDD NR band combinations, only 23dBm is considered for LTE FDD band.

The third comment is to remove "Add conformance testing in RAN5 specifications (to follow at a later stage) of all Rel-18 EN-DC combinations that fall into the category defined by the WI title."

Based on the comments, the moderator proposes

– **Proposal 1-2:** for the objectives of EN-DC basket WI

- Change the Note in Section 4.1 to
 - Note: For the uplink FDD LTE + TDD NR band combinations, only 23dBm is considered for LTE FDD band.
- Remove the last bullet "Add conformance testing in RAN5 specifications (to follow at a later stage) of all Rel-18 EN-DC combinations that fall into the category defined by the WI title."

2.3 Intermediate round

2.3.1 Comments & responses

Sub-topic 1-1: Any question or comment on the justification or any other general comment for WI?

Please comment on **Proposal 1-1** in the table below.

Feedback Form 4:

<p>1 – AT&T GNS Belgium SPRL</p> <p>We support the moderator proposal in Proposal 1-1.</p>
<p>2 – Verizon UK Ltd</p> <p>We are fine for the modified Proposal 1-1 from Moderator!</p>
<p>3 – Apple (UK) Limited</p> <p>We propose to remove PC1.5 for intra-band EN-DC band combinations on FDD band from the scope of the WID as we do not even have PC2 for intra-band EN-DC band combinations on FDD band nor PC2 for LTE FDD band.</p>

4 – CATT

Fine with Proposal 1-1.

5 – Ericsson LM

We are fine with proposal 1-1.

Please find updated draft WID in the draft folder (the 2nd draft): [https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_97e/07-R18-RAN4-HPUEBaskets%5D/2nd%20draft%20RP-222606%20New%20WID%20on%20High%20power%20for%](https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_97e/07-R18-RAN4-HPUEBaskets%5D/2nd%20draft%20RP-222606%20New%20WID%20on%20High%20power%20for%20)

6 – MediaTek Inc.

There is no any inter-band EN-DC band combination with PC1.5 in this WID. There is also no PC2 for intra-band EN-DC band combinations on FDD band nor PC2 for LTE FDD band. We think to remove PC1.5 for intra-band EN-DC band combinations on FDD band is one way. Or any comments from companies to address the aforementioned points in the WID.

7 – MediaTek Inc.

Sorry for adding further clearer comments. We think to remove PC1.5 for intra-band EN-DC band combinations on FDD band is one way. Or any ways from companies to address the aforementioned point (PC1.5 for intra-band EN-DC band combinations on FDD band is not included in the WID until completion of general requirements)

8 – Guangdong OPPO Mobile Telecom.

Ok with the proposal, and for clarification of the below one is this for future reservation purpose? If it is, we are ok.

- PC1.5 for intra-band EN-DC band combinations on FDD band and inter-band EN-DC band combinations after the generic requirements are completed

9 – vivo Communication Technology

It seems the current objectives do not include PC2/PC1.5 for intra-band EN-DC band combinations, so the intra-band proposal may not be reflected in the WID objectives.

In addition, "the PC1.5 for inter-band EN-DC band combinations after the generic requirements are completed" seems not reflected in the WID yet, and may need some clarification wording.

10 – Nokia Japan

We suggest making the title generic in terms of Power Class and remove the following text.

- PC1.5 for intra-band EN-DC band combinations on FDD band and inter-band EN-DC band combinations after the generic requirements are completed

<p>11 – Samsung Electronics Co.</p> <p>As Apple mentioned, PC1.5 for intra-band EN-DC band combination needs PC2 for LTE bands either. However, we do not have PC2 for LTE FDD band. Nokia’s suggestion is also fine with us.</p>
<p>12 – ZTE Wistron Telecom AB</p> <p>We are fine with Proposal 1-1.</p>

Sub-topic 1-2: Comments and responses on the proposed objectives

Please comment on **Proposal 1-2** in the table below.

Feedback Form 5:

<p>1 – AT&T GNS Belgium SPRL</p> <p>We support the moderator proposal in Proposal 1-2.</p>
<p>2 – Verizon UK Ltd</p> <p>We are fine for the Moderator 1-2 proposal!</p>
<p>3 – Ericsson LM</p> <p>We are fine with the moderator proposal 1-2</p>
<p>4 – Guangdong OPPO Mobile Telecom.</p> <p>Ok with proposal.</p>
<p>5 – vivo Communication Technology</p> <p>Fine with proposal 1-2.</p>
<p>6 – vivo Communication Technology</p> <p>Fine with proposal 1-2.</p>
<p>7 – vivo Communication Technology</p> <p>Fine with proposal 1-2.</p>
<p>8 – ZTE Wistron Telecom AB</p> <p>Proposal 1-2 is fine to us.</p>

2.3.2 Summary

After the GTW on September-14, the following proposals were endorsed except for the WID title ”power class > PC3”

Sub-topic 1-1: Any question or comment on the justification or any other general comment for WI?

– **Proposal 1-1:** for EN-DC HPUE basket,

- Change title to High power for FR1 for DC_R18_xBLTE_yBNR_zDLnUL with power class > PC3
- The scope of this basket WIs covers
 - PC2 for intra-band and inter-band EN-DC band combinations
 - PC1.5 for intra-band EN-DC band combinations on TDD band
 - ~~PC1.5 for intra-band EN-DC band combinations on FDD band and inter-band EN-DC band combinations after the generic requirements are completed~~
 - ~~Those kind of band combinations won't be included in the WID until completion of general requirements~~
- Remove the example 1 in the justification section
- Confirm that the fallback rule agreed in R4-2214425 does not need to be captured in the WID.

Sub-topic 1-2: Comments and responses on the proposed objectives

– **Proposal 1-2:** for the objectives of EN-DC basket WI

- Change the Note in Section 4.1 to
 - Note: For the uplink FDD LTE + TDD NR band combinations, only 23dBm is considered for LTE FDD band.
- Remove the last bullet "Add conformance testing in RAN5 specifications (to follow at a later stage) of all Rel-18 EN-DC combinations that fall into the category defined by the WI title."

2.4 Final round

2.4.1 Comments & responses

The remaining issue is for the title of WID. Can we agree to the title below?

– High power for FR1 for DC_R18_xBLTE_yBNR_zDLnUL with power class m ($m < 3$)

Please rapportuer circulates the revised WID for the review in the final round.

If you had comment on the title " power class m ($m < 3$)" or the WID, please make comments in the table below.

Feedback Form 6:

<p>1 – AT&T GNS Belgium SPRL</p> <p>We agree with the proposed title as it would be consistent with the proposed title for Topic #3.</p>
<p>2 – QUALCOMM JAPAN LLC.</p> <p>It might be easier to just say with ”transmit power higher than PC3”.</p>
<p>3 – Ericsson LM</p> <p>draft 3 revision of the WID is available in the draft folder and in the link below.</p> <p>https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_97e/Inbox/Drafts/%5B97e-07-R18-RAN4-HPUEBaskets%5D/3rd%20222606%20New%20WID%20on%20High%20power%20for%20FR1%20for%20DC_R18_xBLTE_yBNR_zDnUL.zip</p>
<p>4 – MediaTek Inc.</p> <p>We are fine with the proposed title for its’ clarity.</p>

2.4.2 Summary

3 Topic #2: HPUE basket for NR intra-band CA/DC on TDD band(s)

3.1 Companies’ contributions summary

Table 3:

T-doc number	Title	Sourcing co
RP-222512	High power for FR1 for NR_CA_R18_intra with power class 2 and 1.5 on TDD band(s)	Huawei, HiS

3.2 Initial round

3.2.1 Comments & responses

Sub-topic 2-1: Any question or comment on the justification or any other general comment for WI?

Companies are invited to provide the general comments, including comments on justification part, whether the WI is needed, how to handle the work, in the follow table.

Feedback Form 7:

1 – Nokia Japan

A following text may give readers an interpretation that power class 1.5(PC1.5) intra band "UL" CA combinations on TDD band(s) is one of the objectives.

- *PC2 and power class 1.5(PC1.5) intra band CA combinations on TDD band(s).*

Hence, we suggest the following as alternative.

- PC2 intra band UL CA combinations and PC1.5 intra band DL CA combinations on TDD band(s).

2 – Apple (UK) Limited

The objective of PC1.5 for intra-band UL CA should be removed from the basket WID. The WID can be revised later to include PC1.5 intra-band UL CA once the general requirements are specified.

3 – Verizon UK Ltd

We are ok with Nokia suggestion!

4 – AT&T GNS Belgium SPRL

We are also OK with the Nokia suggestion.

5 – Guangdong OPPO Mobile Telecom.

Share similar view as Apple, PC1.5 for intra-band UL CA hasn't been specified in RAN4, thus basket WI should be included later.

Regarding Nokia proposal, not quite understand the meaning of "PC1.5 intra band DL CA combinations...", is this mean single UL band with TxD?

6 – Beijing Xiaomi Mobile Software

Share same view as Apple.

7 – CATT

The fallback rules agreed in R4-2214425 were not captured in the justification section? Based on the guidance in RAN4 reflector, the texts recorded in R4-2214425 are supposed to be added in the Justification of each basket WID.

8 – Skyworks Solutions Inc.

Same view as Apple.

9 – Huawei Technologies France

We understand the comments from other companies for PC 1.5, and we are fine to include it later when general requirements for PC 1.5 are available.

Regarding the fallback rule mentioned by CATT, we can add it in the revised version.

10 – vivo Communication Technology

Share Apple’s view that PC1.5 need to be removed from basket.

It is not clear how power class would be applied to DL CA

11 – Samsung Electronics Co.

We are OK with Nokia’s suggestion.

12 – ZTE Wistron Telecom AB

Share similar view with Apple that PC1.5 intra-band UL CA should be removed from the basket WID, in other words, PC1.5 intra-band DL CA is only supported currently.

In addition, the texts agreed in WF R4-2214425 could be added in the Justification in the basket WID.

13 – MediaTek Inc.

Share similar view as Apple.

14 – CHTTL

To CATT, actually the fallback rules discussed in previous RAN4 meeting didn’t consider the PC2 and PC1.5 cases, it might be confused with pc fallback if directly applied here.

Sub-topic 2-2: Comments and responses on the proposed objectives

The following objectives are proposed in the WID.

————— Core part —————

This Work Item will focus on PC2 and PC1.5 for intra-band band contiguous or non-contiguous configuration of Table 1, where

1. Limit the scope of this WI includes NR TDD bands
2. Specify the band-combination specific RF requirements including
 - a) UE maximum output power and Tx power tolerance
 - b) A-MPR requirements if needed
3. Define requirements for PC1.5 according to following conditions

- a) Include intra-band DL CA band combinations with PC1.5 on the single carrier uplink in supporting of 2x26dBm PA configuration.
- b) Ensure that the UE RF requirements of PC1.5 shall comply with those of PC2 when the maximum transmit power is limited to 26dBm by gNB configuration.
- c) Treat bands whose corresponding PC2 intra band contiguous or non-contiguous CA are specified if requested

4. FFS on how to handle PC1.5 intra-band UL CA

- a) Need to specify the general requirements for PC1.5 first in a non-spectrum WI before working on those PC1.5 band combinations.

Note 0: Other additional requirements due to the high power on UL may be added via WID revisions, if necessary.

Note 1: The generic requirements of high power UEs for the band combinations considered in this WI are covered in REL-17 or REL-18 WI.

Note 2: RAN4 will not apply its block agreement process to CRs of this basket WI.

The NR intra-band CA band combination configurations of frequency range FR1 that are considered in this WI are defined in the Table 1 below:

Table 1: NR Intra band CA configuration

NR CA configuration	Uplink CA configuration	Power class	contact name, company	Contact
CA_77n(2A)	CA_n77(2A)	PC2		
CA_n78(2A)	n78A	PC2	Ryu Kitagawa, NTT DOCOMO, INC.	ryuu.ki
CA_n77C	n77A	PC1.5	Zheng Zhao, Verizon	Zheng.
CA_n78(2A)	n78A	PC1.5	Ryu Kitagawa, NTT DOCOMO, INC.	ryuu.ki

----- Performance Part

Perf. part

Specify the necessary performance requirements such as release independence in TS 38.307.

Companies are invited to provide comments and responses in the following table.

Feedback Form 8:

1 – Nokia Japan

We don't think a following objective is needed as WI objective.

4) FFS on how to handle PC1.5 intra-band UL CA

a) Need to specify the general requirements for PC1.5 first in a non-spectrum WI before working on those PC1.5 band combinations.

2 – Apple (UK) Limited

We agree with Nokia that the PC1.5 intra-band UL CA should be removed from the WID objective as we also commented in Feedback Form 4.

3 – AT&T GNS Belgium SPRL

For CA_77n(2A) with UL CA_77n(2A) PC2, you can add Ron Borsato, AT&T as contact name, company. Contact email would be ronald.borsato@att.com. We ask for additional companies such as Ericsson, Nokia, Qualcomm, and others to comment if they are willing to be supporting companies for this combination to meet the four company threshold.

4 – Guangdong OPPO Mobile Telecom.

Agree with Nokia and Apple, PC1.5 should be removed.

5 – Huawei Technologies France

We are ok to make revisions to address the above comments for PC 1.5. Once the general requirements are available, the WID can be further updated.

For supporting companies of UL CA_77n(2A) PC2, we will update the table later based on the comments.

6 – vivo Communication Technology

Similar to previous issue that PC1.5 need to be removed.

7 – Samsung Electronics Co.

Agree that PC 1.5 UL CA should be removed.

8 – ZTE Wistron Telecom AB

The following 2 sub-bullet may be clarified further:

- a) Ensure that the UE RF requirements of PC1.5 shall comply with those of PC2 when the maximum transmit power is limited to 26dBm by gNB configuration.
- b) Treat bands whose corresponding PC2 intra band contiguous or non-contiguous CA are specified if requested

And we share similar view with Nokia that bullet 4) is not needed.

4) FFS on how to handle PC1.5 intra-band UL CA

a) ~~Need to specify the general requirements for PC1.5 first in a non-spectrum WI before working on those PC1.5 band combinations.~~

Also, BCS information is missing for all of the configurations in table 1.

Sub-topic 2-3: Comments and responses on impacted/new specifications and target completion date & time budget

Companies are invited to provide comments and responses in the following table.

Feedback Form 9:

3.2.2 Summary

Sub-topic 2-1: Any question or comment on the justification or any other general comment for WI?

The first comments are related to PC1.5. Companies would like to preclude introduction of PC1.5 intra-band UL CA band combination from the WI at the current stage because the general requirements for PC1.5 intra-band UL CA are not finalized, and it can be added into the scope of this basket WI after the general requirements for PC1.5 is finalized. According to moderator understanding, companies are OK not to include PC1.5 intra-band UL CA in the current basket WID.

According to companies' comment, the modification on the description in the justification section is needed.

The second comment is on the fallback rule. CATT and ZTE proposed to add the fallback rule agreed in R4-2214425 in this WID. CHTTL commented that the agreed fallback rule which was discussed in RAN4 meeting does not directly apply to PC2 and PC1.5. In the moderator's view, it would be OK not to capture this fallback rule in this HPUE basket WI because the rule should be captured in the basket WIs with PC3 and all the band combinations should be introduced in the basket WIs with PC3 first.

Based on the comment, the moderator proposes:

- **Proposal 2-1:** for HPUE basket for NR intra-band CA/DC on TDD band(s)
 - Clarify the scope by changing the text of "... for PC2 and power class 1.5 (PC1.5) intra band CA combinations on TDD band(s) to
 - ... for PC2 intra-band UL CA combinations on TDD band and intra-band DL CA combinations with PC1.5 on single carrier uplink on TDD band.
 - Confirm that the fallback rule agreed in R4-2214425 does not need to be captured in the WID

Sub-topic 2-2: Comments and responses on the proposed objectives

The first comments are to remove the objective related to PC1.5 intra-band UL CA. It is acceptable to the companies.

The second comment is on Objective 3) - b) and - c). Could ZTE provide more concrete comment for modification or we can remove them?

The third comment is to add BCS information in the Table 1.

The fourth comment is to add the contact name, company and supporting companies for CA_n77(2A) (there is typo in the table, i.e., CA_77n(2A)). Please rapporteur add those information.

Based on the comments, the moderator proposes

– **Proposal 2-2:** for the objectives of HPUE basket for NR intra-band CA/DC on TDD bands

- Remove the objective 4)
 - Add PC1.5 intra-band UL CA in the future after the general requirements for PC1.5 intra-band UL CA is completed, if needed.
- For objective 3)-b) and -c), the following modifications are proposed to make them clearer
 - 3)-b) Ensure that the UE supporting PC1.5 intra-band UL CA shall comply with PC2 requirements when the maximum transmit power is limited to 26dBm due to the regulation
 - 3)-c) The corresponding PC2 intra-band CA requirements shall be finalized before PC1.5 intra-band UL CA is specified.
- Add BCS information in Table 1.

3.3 Intermediate round

3.3.1 Comments & responses

Sub-topic 2-1: Any question or comment on the justification or any other general comment for WI?

Please comment on **Proposal 2-1** in the table below.

Feedback Form 10:

1 – AT&T GNS Belgium SPRL We support the moderator proposal in Proposal 2-1.
2 – Verizon UK Ltd Verizon is fine for the moderator's Proposal 2-1
3 – Apple (UK) Limited We are fine with Proposal 2-1 by Moderator.

<p>4 – T-Mobile USA Inc.</p> <p>We support the moderator’s Proposal 1-2.</p>
<p>5 – T-Mobile USA Inc.</p> <p>Sorry, 2-1. :)</p>
<p>6 – T-Mobile USA Inc.</p> <p>Sorry, 2-1. :)</p>
<p>7 – Huawei Technologies France</p> <p>We support the moderator’s Proposal 2-1.</p>
<p>8 – CATT</p> <p>After clarification, we are fine with Proposal 2-1.</p>
<p>9 – Beijing Xiaomi Mobile Software</p> <p>We support the moderator’s Proposal 2-1.</p>
<p>10 – MediaTek Inc.</p> <p>Thanks for the clarification. We are fine with Proposal 2-1.</p>
<p>11 – Guangdong OPPO Mobile Telecom.</p> <p>ok with proposal.</p>
<p>12 – vivo Communication Technology</p> <p>We are fine with this proposal.</p>
<p>13 – ZTE Wistron Telecom AB</p> <p>Ok with Proposal 2-1.</p>
<p>14 – ZTE Wistron Telecom AB</p> <p>Ok with Proposal 2-1.</p>

Sub-topic 2-2: Comments and responses on the proposed objectives

Please comment on **Proposal 2-2** in the table below.

Feedback Form 11:

<p>1 – AT&T GNS Belgium SPRL</p> <p>We support the moderator proposal in Proposal 2-2 with the exception of adding the BCS information to the table. RAN4 has decided to treat HPUE cases to cover all defined BCSs and this same approach has</p>

<p>been used in the other HPUE WIDs to replace the BCS column with the Power Class column.</p>
<p>2 – Verizon UK Ltd</p> <p>We are fine for the moderator’s Proposal 2-2!</p>
<p>3 – Apple (UK) Limited</p> <p>Our understanding is that Objective 3 is for PC1.5 single carrier UL only. However, 3b) and 3c) are related to PC1.5 intra-band UL CA which should be postponed till the general requirements are specified.</p>
<p>4 – T-Mobile USA Inc.</p> <p>We agree with Apple.</p>
<p>5 – Huawei Technologies France</p> <p>We support the moderator’s Proposal 2-2. Open to make revisions based on further comments for PC 1.5.</p>
<p>6 – Beijing Xiaomi Mobile Software</p> <p>Agree with Apple.</p>
<p>7 – Guangdong OPPO Mobile Telecom.</p> <p>3b) and 3c) can be removed from the WID as general requirements are not specified.</p>
<p>8 – Nokia Japan</p> <p>We tend to agree with OPPO. At least 3) is not needed anymore since in this WI, PC1.5 is used for DL CA. If we kept 3), it would make readers misunderstand that PC.1.5 intra band UL CA is covered by this WI.</p>
<p>9 – vivo Communication Technology</p> <p>Share Apple/OPPO/Nokia’s view that PC1.5 intra-band UL CA is not needed in this WI.</p>
<p>10 – ZTE Wistron Telecom AB</p> <ul style="list-style-type: none"> - 3 b) could either be removed since the behavior is already specified in RAN4 specs, or could be changed to: <p>Ensure that the PC1.5-capable UE RF requirements of PC1.5 shall comply with those of PC2 RF requirements when the maximum transmit power is limited to 26dBm by gNB configuration.</p> <ul style="list-style-type: none"> - 3 c) is a bit confusing, could be removed. - For other parts are fine to us.

Please rapporteur add contact name, company and supporting companies for CA_n77(2A) (there is typo in the table, i.e., CA_77n(2A) in Table 1.

3.3.2 Summary

The following proposals were endorsed in GTW on September 14.

Sub-topic 2-1: Any question or comment on the justification or any other general comment for WI?

- **Proposal 2-1:** for HPUE basket for NR intra-band CA/DC on TDD band(s)
 - Clarify the scope by changing the text of "... for PC2 and power class 1.5 (PC1.5) intra band CA combinations on TDD band(s) to
 - ... for PC2 intra-band UL CA combinations on TDD band and intra-band DL CA combinations with PC1.5 on single carrier uplink on TDD band.
 - Confirm that the fallback rule agreed in R4-2214425 does not need to be captured in the WID

Sub-topic 2-2: Comments and responses on the proposed objectives

- **Proposal 2-2:** for the objectives of HPUE basket for NR intra-band CA/DC on TDD bands
 - Remove the objective 4)
 - Add PC1.5 intra-band UL CA in the future after the general requirements for PC1.5 intra-band UL CA is completed, if needed.
 - Remove objective 3)-b) and 3)-c)

The major objectives are as follows:

————— Core part —————

This Work Item will focus on PC2 intra-band UL CA combinations on TDD band and PC1.5 ~~for~~ intra-band CA combinations on single carrier uplink on TDD band ~~band contiguous or non-contiguous configuration~~ of Table 1, where

1. Limit the scope of this WI includes NR TDD bands
2. Specify the band-combination specific RF requirements including
 - a) UE maximum output power and Tx power tolerance
 - b) A-MPR requirements if needed
3. Define requirements for PC1.5 according to following conditions
 - a) Include intra-band DL CA band combinations with PC1.5 on the single carrier uplink in supporting of 2x26dBm PA configuration.

- b) ~~Ensure that the UE RF requirements of PC1.5 shall comply with those of PC2 when the maximum transmit power is limited to 26dBm by gNB configuration.~~
- c) ~~Treat bands whose corresponding PC2 intra-band contiguous or non-contiguous CA are specified if requested~~

4. ~~FFS on how to handle PC1.5 intra-band UL CA~~

- a) ~~Need to specify the general requirements for PC1.5 first in a non-spectrum WI before working on those PC1.5 band combinations.~~

Note 0: Other additional requirements due to the high power on UL may be added via WID revisions, if necessary.

Note 1: The generic requirements of high power UEs for the band combinations considered in this WI are covered in REL-17 or REL-18 WI.

Note 2: RAN4 will not apply its block agreement process to CRs of this basket WI.

3.4 Final round

3.4.1 Comments & responses

Please rapportuer circulates the revised WID for final review.

If you have comment, please make comments in the table below.

Feedback Form 12:

1 – AT&T GNS Belgium SPRL

AT&T is OK with the revised WID except that the brackets should be removed for all supporting companies on CA_77n(2A) with UL CA_77n(2A) PC2. AT&T has confirmed with all three companies that they will be supporting companies for this combination.

3.4.2 Summary

Moderator summarizes discussion status and provide the recommendation.

4 Topic #3: HPUE basket for NR inter-band CA/DC and NR SUL with high power on TDD bands

4.1 Companies' contributions summary

T-doc number	Title
RP-222287	New WID: High power UE for FR1 NR CA/DC or NR SUL (supplementary uplink) band combination

4.2 Initial round

4.2.1 Comments & responses

Sub-topic 3-1: Any question or comment on the justification or any other general comment for WI?

Companies are invited to provide the general comments, including comments on justification part, whether the WI is needed, how to handle the work, in the follow table.

Feedback Form 13:

<p>1 – Verizon UK Ltd</p> <p>We support this work item!</p>
<p>2 – AT&T GNS Belgium SPRL</p> <p>We also support this WID and it has accurately captured the AT&T requests for this RAN Plenary meeting.</p>
<p>3 – CATT</p> <p>As this WID is only for NR "inter-band" CA/DC, it would be better to also indicate "inter-band" in the WID title. otherwise, it seems like some overlapping with RP-222512 from the title.</p>
<p>4 – CHTTL</p> <p>Regarding the content in the justification, from the management point of view, it is better to complete the PC3 combinations first before requesting PC2 instead of completing both in the same meeting, as the precondition mentioned in RP-222106.</p>
<p>5 – Huawei Technologies France</p> <p>We support the WI proposal.</p>
<p>6 – E-surfing Digital</p> <p>China Telecom:</p> <p>Thanks for the comments.</p> <p>Response to CATT comment:</p> <p>We are ok to update the WI title in the revision.</p> <p>Response to CHTTL comment:</p> <p>In the current justification, we already captured the following sentence.</p> <p><i>B) When a proponent requests a new higher power band combination, the corresponding PC3 band combination configuration shall be completed or this fallback configuration (means corresponding PC3 band combination in this WI) is also requested together with the higher power band combination in the same meeting.</i></p>

7 – ZTE Wistron Telecom AB

The texts agreed in WF R4-2214425 could be added in the Justification in the basket WID.

8 – CHTTL

To China Telecom:

The text currently mentions PC3 and PC2 can be completed in the same meeting, which is slightly different as I mentioned above.

Sub-topic 3-2: Comments and responses on the proposed objectives

The following objectives are proposed in the WID.

Core part

The objectives of the core part are as follows:

Specify the band-combination specific RF requirements for all listed band combinations as defined in attached excel file of this WI. The band combinations list contains following cases.

High power UE for FR1 NR CA/DC or NR SUL (supplementary uplink) band combination with y bands downlink
#
1
2
3

The requirements that need to analyse and specify include

1. Maximum output power, configured transmitted power.
2. Analysing combinations that have self-desensitization, applicable $\Delta TIB, c$ and $\Delta RIB, c$ and reference sensitivity exceptions including MSD test cases.
3. Other additional impact to the requirements due to the high power on UL, if necessary

Performance Part

Perf. part

Specify the necessary performance requirements such as release independence in TS 38.307.

Companies are invited to provide comments and responses in the following table.

Feedback Form 14:

1 – ZTE Wistron Telecom AB

‘Configured transmitted power’ should be removed from the objectives.

Sub-topic 3-3: Comments and responses on impacted/new specifications and target completion date & time budget

Companies are invited to provide comments and responses in the following table.

Feedback Form 15:

4.2.2 Summary

Sub-topic 3-1: Any question or comment on the justification or any other general comment for WI?

The first comment is on the title and to propose adding ”inter-band” in the title of WID. It seems OK.

The second comment is related to the rule to request the new PC2 combination. CHTTL proposes to complete PC3 combination first before requesting PC2 instead of completing both in the same meeting.

The third comment is to capture the fallback rule agreed in R4-2214425.

Based on the comments, the moderator proposes:

- **Proposal 3-1:** for HPUE basket for NR inter-band CA/DC and NR SUL with high power on TDD bands
 - Change the WID title to ”New WID: High power UE for FR1 **inter-band** NR CA/DC or NR SUL (supplementary uplink) band combination with y bands downlink ($1 < y \leq 6$) and x bands uplink ($x = 1, 2$) and power class z ($z < 3$) and high power on TDD band(s)”
 - Change B) in the justification section to
 - B) When a proponent requests a new higher power band combination, the corresponding PC3 band combination configuration shall be completed **first before requesting** ~~or this fallback configuration (means corresponding PC3 band combination in this WI) is also requested together with the higher power band combination in the same meeting.~~
 - Confirm that the fallback rule agreed in R4-2214425 does not need to be captured in the WID

Sub-topic 3-2: Comments and responses on the proposed objectives

The comment is to remove ”configured transmitted power” from the objective.

- **Proposal 3-2:** remove configured transmitted power from the objective.

4.3 Intermediate round

4.3.1 Comments & responses

Sub-topic 3-1: Any question or comment on the justification or any other general comment for WI?

Please comment on **Proposal 3-1** in the table below.

Feedback Form 16:

1 – AT&T GNS Belgium SPRL

For Proposal 3-1, we are generally OK with the moderator proposal with the following exceptions.

For the WID title change, it is suggested to use “power class z ($z < 3$)” while the other HPUE for EN-DC is suggested to use “with power class $> PC3$ ”. We recommend to align the text between the two WIDs.

For the update to B), we suggest allowing for the case where the PC3 band combination will be completed at the RAN4 meeting prior to the official revised WID being presented to RAN. Given that the combination request must be provided 2 weeks prior to the RAN4 meeting, companies frequently request the HPUE combination given the understanding that the corresponding PC3 combination will be completed at the upcoming RAN4 meeting. If it is not completed, the HPUE combination can always be removed from the official RAN revised WID. However, if we only allow to request the HPUE combination after the PC3 band combination is complete, we are adding an unnecessary one quarter delay.

2 – T-Mobile USA Inc.

We agree with the comments from AT&T.

3 – Verizon UK Ltd

We are generally ok for the Proposal 3-1, and agree with AT&T!

4 – Huawei Technologies France

We think that completing PC3 combination first before requesting PC2 may not be necessary. Based on the RAN4 current status, we haven't see the case that PC2 is finished prior to the fallback power class. Either they could be finished in the same meeting or PC3 is finished firstly. No matter which case, no reason PC3 and PC2 cannot be requested at the same time. So we agree with AT&T.

5 – CHTTL

We think what AT&T's mentioned is still to complete the PC3 first in RAN4 meeting N, and then start the PC2 work on RAN4 meeting N+1, which is same as what we originally suggest, i.e, we dont intend to introduce additional delay.

So probably it can be resolved by "PC3 band combination configuration shall be completed **or to be completed before requesting**"...

From the management point of view, As currently PC3 and PC2 are in different baskets, the main reason is to avoid more dependency on the TPs/draft CRs in the basket, and to avoid PC2 to be completed prior to the PC3 combinations, and make sure the PC3 and it's fallback combination are stable first.

6 – China Telecommunications

Thank you for all the comments. We have uploaded an revision with the following updates:

1. Added "inter-band" in the WI title.
2. Used "power class > PC3" in the WI title.
3. Updated the procedure according to CHTTL comment in comment #5.
4. Removed "configured transmitted power" from the objective.

Please find the revision in:

https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_97e/Inbox/Drafts/%5B97e-07-R18-RAN4-HPUEBaskets%5D/Revision%5C2022287%20WID%20on%20NR_CADC_SUL_yBDL_xBUL_PCz_HPTDD.zip

Sub-topic 3-2: Comments and responses on the proposed objectives

Please comment on **Proposal 3-2** in the table below.

Feedback Form 17:

<p>1 – AT&T GNS Belgium SPRL</p> <p>We support the moderator proposal in Proposal 3-2.</p>
<p>2 – T-Mobile USA Inc.</p> <p>We support the moderator’s Proposal 3-2.</p>
<p>3 – Verizon UK Ltd</p> <p>Yes, we agree the Moderator’s proposal!</p>
<p>4 – China Telecommunications</p> <p>Proposal 3-2 has been implemented in the draft revision of WID.</p>
<p>5 – ZTE Wistron Telecom AB</p> <p>Fine with Proposal 3-2.</p>

4.3.2 Summary

After the GTW on September-14, the following proposals were endorsed except for the WID title "power class > PC3" and NOTE B. More discussions are needed.

Sub-topic 3-1: Any question or comment on the justification or any other general comment for WI?

- **Proposal 3-1:** for HPUE basket for NR inter-band CA/DC and NR SUL with high power on TDD bands

- Change the WID title to "New WID: High power UE for FR1 **inter-band** NR CA/DC or NR SUL (supplementary uplink) band combination with y bands downlink ($1 < y \leq 6$) and x bands uplink ($x=1,2$) and power class $> PC3z$ ($z < 3$) and high power on TDD band(s)"
- Change B) in the justification section to
 - B) When a proponent requests a new higher power band combination, the corresponding PC3 band combination configuration shall be completed **or to be completed before requesting the higher power band combination.**~~or this fallback configuration (means corresponding PC3 band combination in this WI) is also requested together with the higher power band combination in the same meeting.~~
- Confirm that the fallback rule agreed in R4-2214425 does not need to be captured in the WID

Sub-topic 3-2: Comments and responses on the proposed objectives

- **Proposal 3-2:** remove configured transmitted power from the objective.

4.4 Final round

4.4.1 Comments & responses

For the title of "power class $> PC3$ ", can we agree on the revised title based on suggestion from MCC as follows?

- New WID: High power UE for FR1 NR inter-band CA/DC or NR SUL (supplementary uplink) band combination with y bands downlink ($1 < y \leq 6$) and x bands uplink ($x=1,2$) and **power class z ($z < 3$)** and high power on TDD band(s)

Please comment on it if any.

Feedback Form 18:

<p>1 – AT&T GNS Belgium SPRL</p> <p>We agree with the proposed title as it would be consistent with the proposed title for Topic #1.</p>
<p>2 – T-Mobile USA Inc.</p> <p>We are fine with the proposed title, but my version of Microsoft Outlook changes <3 into a heart emoji.</p>
<p>3 – MediaTek Inc.</p> <p>We are fine with the proposed title. We wonder whether "power class m ($m < 3$)" would solve the minor issue encountered by T-Mobile USA.</p>
<p>4 – China Telecommunications</p> <p>An further revision of the WID has been uploaded at:</p>

https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_97e/Inbox/Drafts/%5B97e-07-R18-RAN4-HPUEBaskets%5D/Rev222287%20WID%20on%20NR_CADC_SUL_yBDL_xBUL_PCm_HPTDD.zip

- 1) The WI name is updated as: High power UE for FR1 NR inter-band CA/DC or NR SUL (supplementary uplink) band combination with y bands downlink ($1 < y \leq 6$) and x bands uplink ($x = 1, 2$) and **power class m** ($m < 3$) and high power on TDD band(s)
- 2) Thanks for the good wording proposal from AT&T in Feedback form 19, and it has been reflected in the revised WID.

For NOTE B, please provide the modifications in the table below based on **Proposal 3-1**.

Feedback Form 19:

1 – AT&T GNS Belgium SPRL

AT&T proposes to modify the text for NOTE B as follows. This approach follows the RAN4 operating practice for HPUE combination requests to date.

B) When a proponent requests a new higher power band combination, the corresponding PC3 band combination ~~configuration~~ shall be completed or **planned to be completed at the RAN4 meeting associated with the request. If the fallback configuration is not completed at the RAN4 meeting associated with the request, the new higher power band combination shall be removed from the revised WID for the upcoming RAN Plenary.**~~this fallback configuration (means corresponding PC3 band combination in this WI) is also requested together with the higher power band combination in the same meeting.~~

2 – T-Mobile USA Inc.

We agree with the proposed change for Note B from AT&T.

3 – CHTTL

Thanks for the proposed text from AT&T, the modification provides more details, we are also ok with it.

4 – China Telecommunications

Thanks for the good wording proposal from AT&T, and it has been reflected in the revised WID.

Please rapportuer circulates the revised WID for final review. If companies have comment, please make comments in the table below.

Feedback Form 20:

1 – AT&T GNS Belgium SPRL

Thanks to China Telecom for Revision 2 of the WID and for considering our suggested text for NOTE B. The revised WID looks good to me but there is one small editorial request in NOTE B. There appears to be an extra "to" included which should be deleted as below. Can you please fix in the final version?

"... shall be complete or ~~to~~planned to be completed ..."

4.4.2 Summary

Moderator summarizes discussion status and provide the recommendation.

5 Topic #4: HPUE basket for NR inter-band CA/DC with high power on FDD bands

5.1 Companies' contributions summary

Table 7:

T-doc number	Title
RP-222084	New WID on high power for FR1 for NR_CADC_R18_yBDL_xBUL with power class 2 and high power

5.2 Initial round

5.2.1 Comments & responses

Sub-topic 4-1: Any question or comment on the justification or any other general comment for WI?

Companies are invited to provide the general comments, including comments on justification part, whether the WI is needed, how to handle the work, in the follow table.

Feedback Form 21:

1 – Nokia Japan

Clarification is needed for the following text.

- with power class 2 **and high power on FDD band(s)**

What is the intention of including "and high power on FDD band(s)"? In our understanding, there must not be higher power FDD PC than PC2 for smartphone type UEs. And also, what is the intention of "high power on FDD band(s)"? dual UL with PC2 on one FDD band + PC2 on the other FDD band?

2 – MediaTek Inc.

One clarification question. Regarding power class and high power, is PC1.5 not precluded ?

3 – Apple (UK) Limited

Please clarify whether only single UL PC2 FDD ($x = 1$) is handled in this basket WID, or it can also be 2UL ($x = 2$). If 2UL is also included, what would be the UL power combinations?

4 – Guangdong OPPO Mobile Telecom.

Regarding the question raised by other companies on "PC2 and high power on FDD band", if understand correctly, here is just want to emphasize the FDD HPUE in this band combination. If it is, can be revised as below:

- The high power for FR1 for NR_CADC_R18_yBDL_xBUL with power class 2 **and high power** on FDD band(s) are defined in the tables below

5 – E-surfing Digital

We support the WI.

6 – Huawei Technologies France

We support the WI proposal.

7 – Samsung Electronics Co.

For HPUE FDD single band, at current stage only PC2 is specified, hence higher power class other than PC2 on FDD band(s) is supposed to be removed.

8 – vivo Communication Technology

Generally, support this WI based on the current scope.

Regarding the power class, it is indeed that restricted to power class 2 can be beneficial to avoid confusion.

9 – ZTE Wistron Telecom AB

We support this basket WID.

10 – China Unicom

The purpose of this basket WID is to specify the band-combination specific requirements for CA with PC2 on the FDD band. In order to avoid misunderstandings, the title and objective part could be modified such as "The high power for FR1 for NR_CADC_R18_yBDL_xBUL with power class 2 **and high power** on FDD band(s)"

Currently the WID focuses only on the case of DL CA with UL FDD PC2 single band. The cases of UL FDD+TDD CA (i.e. FDD PC2 + TDD PC3, FDD PC2 + TDD PC2) were removed from the WID after the discussions in RAN4, which identified generic requirements are needed for those cases. The WID could be revised at later stage to include these cases after the generic requirements are completed.

For further clarification, UL CA with FDD PC2 + FDD PC2 was not considered in the work.

Sub-topic 4-2: Comments and responses on the proposed objectives

The following objectives are proposed in the WID.

————— Core part —————

The objectives of the core part are as follows:

1. Specify the band-combination specific RF requirements for cases in the table below, including
 - a) Maximum output power and Tx power tolerance.
 - b) Self-desensitization, applicable $\Delta T_{IB, c}$ and $\Delta R_{IB, c}$ and reference sensitivity exceptions including MSD test cases.
 - c) Other additional impact on the requirements, if identified.

Note: For the combinations with UL harmonic impact, the text proposals for the Work Item can be reviewed in non-block-approval agenda.

High power for FR1 for NR_CADC_R18_yBDL_xBUL with power class 2 and high power on FDD band(s)	
#	Ban
1	Ban

1. The high power for FR1 for NR_CADC_R18_yBDL_xBUL with power class 2 and high power on FDD band(s) are defined in the tables below:

Table 1: Band combination List for Power Class 2 NR Inter-band CA/DC for y bands DL with FDD PC2 on UL

Table 9:

NR CA configuration	Uplink NR CA configuration	contact name, company	Contact email
CA_n1A-n78A	n1A	Basaier Jialade, China Unicom	basejld@chinaunicom.cn
CA_n3A-n78A	n3A	Basaier Jialade, China Unicom	basejld@chinaunicom.cn

————— Performance Part —————

Perf. part

Specify the necessary performance requirements such as release independence in TS 38.307.

Companies are invited to provide comments and responses in the following table.

Feedback Form 22:

<p>1 – Nokia Japan</p> <p>As commented in Feedback form 10, we'd like to understand scope and objective correctly.</p> <p>An table in the objective says "High power for FR1 for NR_CADC_R18_yBDL_xBUL with power class 2 and high power on FDD band(s)" while the same table says Power class cases for UL = 1UL (FDD): PC2 on FDD band.</p> <p>We need to understand what "and high power on FDD band(s)" here means.</p> <p>It would be great if the proponent could share more specific objectives for this WI for the discussion with us.</p>
<p>2 – Apple (UK) Limited</p> <p>Please clarify whether only single UL PC2 FDD (x = 1) is handled in this basket WID, or it can also be 2UL (x = 2). If 2UL is also included, what would be the UL power combinations? Based on the requested combinations in the above table, does it imply only single UL PC2 FDD (x = 1) is handled in this basket WID?</p>
<p>3 – E-surfing Digital</p> <p>We support the WID, and we are fine to start with single FDD UL case considering the previous comments on the inclusion of UL inter-band CA cases.</p>
<p>4 – Samsung Electronics Co.</p> <p>We share similar concern with Nokia and Apple.</p>
<p>5 – vivo Communication Technology</p> <p>We are fine with current scope which limits the uplink to one FDD band with 26dBm maximum power.</p>
<p>6 – China Unicom</p> <p>Quoting our clarification comment made in the previous form:</p> <p><i>"The purpose of this basket WID is to specify the band-combination specific requirements for CA with PC2 on the FDD band. In order to avoid misunderstandings, the title and objective part could be modified such as "The high power for FR1 for NR_CADC_R18_yBDL_xBUL with power class 2 and high power on FDD band(s)"</i></p> <p><i>Currently the WID focuses only on the case of DL CA with UL FDD PC2 single band. The cases of UL FDD+TDD CA (i.e. FDD PC2 + TDD PC3, FDD PC2 + TDD PC2) were removed from the WID after the discussions in RAN4, which identified generic requirements are needed for those cases. The WID could be revised at later stage to include these cases after the generic requirements are completed.</i></p> <p><i>For further clarification, UL CA with FDD PC2 + FDD PC2 was not considered in the work."</i></p>

Sub-topic 4-3: Comments and responses on impacted/new specifications and target completion date & time budget

Companies are invited to provide comments and responses in the following table.

Feedback Form 23:

<p>1 – vivo Communication Technology</p> <p>For the description of impact of 38.101-1, there is following description: “Add PC2/PC1.5 NR inter-band CA high power UE requirements ...”. PC1.5 need to be removed since there is no such objective.</p>
<p>2 – China Unicom</p> <p>The WID document can be revised to correct this information.</p>

5.2.2 Summary

Sub-topic 4-1: Any question or comment on the justification or any other general comment for WI?

The first comments are on the title and scope of this basket WIs, i.e., the question whether UL FDD PC2 + FDD PC2, UL FDD PC2 + TDD PC3, UL FDD PC2 + TDD PC2 and PC1.5 FDD should be included. With clarifications from rapportuer, only inter-band DL CA with PC2 on single carrier uplink on a FDD band will be covered. In the moderator view, it is clarified in the table under the note of objective 1.

Based on the discussions, the moderator proposes

- **Proposal 4-1:** for HPUE basket for NR inter-band CA/DC with high power on FDD band
 - Clarify the scope by changing the WID title to
 - New WID on high power for FR1 for **inter-band** NR_CADC_R18_yBDL_xBUL with power class 2 ~~and high power~~ **on single carrier uplink** on FDD band(s)
 - WID can be updated in future to cover additional types of HPUE band combinations with FDD band(s).

Sub-topic 4-2: Comments and responses on the proposed objectives

The comments are similar to previous ones, i.e., on the scope. Based on the discussions, the moderator propose to change the objective 2) to make it clearer.

- **Proposal 4-2:** for the objective of Rel-18 HPUE basket for NR inter-band CA/DC with high power on FDD band
 - Change the Objective 2) to
 - The NR FR1 inter-band CA/DC band combinations with power class 2 on single carrier uplink on a FDD band are defined in the tables below:

Sub-topic 4-3: Comments and responses on impacted/new specifications and target completion date & time budget

It was proposed to remove PC1.5 in the description of 38.101-1 in the table of impacted specifications.

- **Proposal 4-3:** remove PC1.5 from the description of change in the table of impacted existing TS/TR.

5.3 Intermediate round

5.3.1 Comments & responses

Sub-topic 4-1: Any question or comment on the justification or any other general comment for WI?

Please comment on **Proposal 4-1** in the table below.

Feedback Form 24:

1 – Apple (UK) Limited We are fine with Proposal 4-1 by Moderator.
2 – China Unicom The draft WID has been updated according to moderator and companies suggestions, and uploaded to the draft folder with file name "Rev-RP-222084 New WID on high power for FR1 for inter-band NR_CADC_R18_yBDL_xBU with power class 2 on single carrier uplink on FDD band-v02.doc".
3 – MediaTek Inc. Thanks for the new Proposals 4-1, 4-2 and revised Rev-RP-222084. We are fine with them.
4 – vivo Communication Technology We are fine with the proposal and updated WID version.
5 – ZTE Wistron Telecom AB We support the WID with updates shown in Proposal 4-1.

Sub-topic 4-2: Comments and responses on the proposed objectives

Please comment on **Proposal 4-2** in the table below.

Feedback Form 25:

1 – Apple (UK) Limited We are fine with Proposal 4-2 by Moderator.

2 – vivo Communication Technology

Fine with the proposal.

3 – ZTE Wistron Telecom AB

Fine with Proposal 4-2.

Sub-topic 4-3: Comments and responses on impacted/new specifications and target completion date & time budget

Can we agree on **Proposal 4-3**?

Feedback Form 26:

1 – vivo Communication Technology

Fine with the proposal.

5.3.2 Summary

The following proposals were endorsed in GTW on September 14.

Sub-topic 4-1: Any question or comment on the justification or any other general comment for WI?

- **Proposal 4-1:** for HPUE basket for NR inter-band CA/DC with high power on FDD band
 - Clarify the scope by changing the WID title to
 - New WID on high power for FR1 for **inter-band** NR_CADC_R18_yBDL_xBUL with power class 2 ~~and high power on~~ **single carrier uplink** on FDD band(s)
 - WID can be updated in future to cover additional types of HPUE band combinations with FDD band(s).

Sub-topic 4-2: Comments and responses on the proposed objectives

- **Proposal 4-2:** for the objective of Rel-18 HPUE basket for NR inter-band CA/DC with high power on FDD band
 - Change the Objective 2) to
 - The NR FR1 inter-band CA/DC band combinations with power class 2 on single carrier uplink on a FDD band are defined in the tables below:

Sub-topic 4-3: Comments and responses on impacted/new specifications and target completion date & time budget

- **Proposal 4-3:** remove PC1.5 from the description of change in the table of impacted existing TS/TR.

5.4 Final round

5.4.1 Comments & responses

Please the rapporteur circulates the revised WID for final review. If companies have comment, please make comments in the table below.

Feedback Form 27:

1 – China Unicom

The formal TDoc RP□222626 could be found in the "TSGR_97e / Docs" folder now.

5.4.2 Summary

Moderator summarizes discussion status and provide the recommendation.

6 Topic #5: HPUE basket for TDD bands

6.1 Companies' contributions summary

Table 10:

T-doc number	Title	Sourcing company
RP-222351	WID on High power UE (power class 1.5) for NR TDD bands	CMCC

6.2 Initial round

6.2.1 Comments & responses

Sub-topic 5-1: Any question or comment on the justification or any other general comment for WI?

Companies are invited to provide the general comments, including comments on justification part, whether the WI is needed, how to handle the work, in the follow table.

Feedback Form 28:

1 – Huawei Technologies France

We support the WI proposal.

2 – vivo Communication Technology

Support this WI proposal.

Sub-topic 5-2: Comments and responses on the proposed objectives

The following objectives are proposed in the WID.

Core part

The core objectives of the WI are to develop RF requirements that are applicable to PC1.5 UE mobile device and FWA for NR TDD bands.

- Introduction of high power UE (power class 1.5) operation for NR TDD bands
 - Including bands n34, n39, n40 as in table 1. Other bands based on operators request.
- Specify RF characteristics with dual-PA assumption, including following requirements if needed
 - UE maximum output power
 - Tx power tolerance
 - A-MPR, if needed
- Reuse existing SAR mechanism

Table 1: Power class 1.5 NR TDD bands within FR1

Table 11:

NR FDD band	Contact name, company	Contact email	Other supporting companies (min. 3)
n34	Chunxia GUO, CMCC	guochunxia@chinamobile.com	CATT, ZTE, Huawei
n39	Chunxia GUO, CMCC	guochunxia@chinamobile.com	CATT, ZTE, Huawei
n40	Chunxia GUO, CMCC	guochunxia@chinamobile.com	CATT, ZTE, Huawei

Performance Part

Perf. part

Specify the necessary performance requirements such as release independence in TS 38.307.

Companies are invited to provide comments and responses in the following table.

Feedback Form 29:

<p>1 – MediaTek Inc.</p> <p>One clarification question. Regarding the NR 2GHz TDD bands' TX, is 2TX(26dBm+26dBm) or 4TX(23dBm+23dBm+23dBm) all not precluded ?</p>
<p>2 – Guangdong OPPO Mobile Telecom.</p> <p>Regarding MTK comment, if understand correctly this WI only include 26+26 as other PC1.5 specified.</p>
<p>3 – Huawei Technologies France</p> <p>We share similar understanding with OPPO for the PC 1.5 UE architecture.</p>
<p>4 – China Mobile Com. Corporation</p> <p>To MTK: PC 1.5 UE architecture 26dBm+26dBm is not changed in this WI.</p>
<p>5 – MediaTek Inc.</p> <p>Thanks CMCC for clarification. We are okay with the UE architecture 26dBm+26dBm in this WI.</p>

Sub-topic 5-3: Comments and responses on impacted/new specifications and target completion date & time budget

Companies are invited to provide comments and responses in the following table.

Feedback Form 30:

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6.2.2 Summary

Sub-topic 5-2: Comments and responses on the proposed objectives

Mediatek commented on the UE architecture. The common understanding is that only 26dBm+26dBm will be considered in this basket WI. Since it is a basket WI, no new general requirement will be specified.

It seems the current version of WID is stable. The moderator would like to propose to approve RP-222351.

- **Proposal 5-1:** Approve RP-222351.

6.3 Intermediate round

6.3.1 Comments & responses

Sub-topic 5-2: Comments and responses on the proposed objectives

Can we agree on **Proposal 5-1**? If further modification is needed, please rapporteur circulate the revised version in the reflector.

Feedback Form 31:

6.3.2 Summary

After the GTW on September-14, the following proposal was endorsed.

Sub-topic 5-2: Comments and responses on the proposed objectives

- **Proposal 5-1:** Approve RP-222351.

7 Topic #6: HPUE basket for FDD bands

7.1 Companies' contributions summary

Table 12:

T-doc number	Title	Sourcing company
RP-222083	New WID on high power for FR1 for FDD single band(s) with power class 2	China Unicom
RP-222341	Discussion on potential basket WID for HPUE FDD bands	MediaTek Inc

7.2 Initial round

7.2.1 Comments & responses

Sub-topic 6-1: Any question or comment on the justification or any other general comment for WI RP-222341?

In RP-222341, there are following observations and proposals related to FDD basket WIDs.

Observation 1: Rel-17 PC2 FDD bands WID on 2GHz band n3 was completed. Because band n3 has small TX-RX gap, PC2 band n3 encounters both reference sensitivity degradation and transmission uplink resource block restriction, which limits HPUE(PC2) advantages. The sensitivity desensitization would be more severe for Rel-18 HPUE(PC2) WID on FDD sub-1GHz bands.

Proposal 1: For sub-1GHz bands within HPUE FDD bands WID [1] at RAN#97e, it's suggested to investigate solutions (e.g., PC fallback, Hybrid-duplex operation, or gNB scheduling in time/frequency domain) targeting at reference sensitivity degradation mitigation in a dedicated non-basket WID or merged in FR1 enhancement WID. NR bands n28 and n8 are used as the example bands.

Companies are invited to provide the comments for the proposals and how to handle FDD basket WIs in the follow table.

Feedback Form 32:

1 – Nokia Japan

In general, the proposal itself is about non spectrum related WI. Hence, we don't think it's appropriate to discuss this in this RAN#97-e at all as the other WIs proposed as non spectrum related WI is not discussed. More specifically, it's too early to speculate the impact of PC2 on MSD for n8 or n28. These bands are in RP-222083. We need to wait for the completion of the requirements for them in RP-222083.

2 – MediaTek Inc.

One of the basket WID's objective includes of specifying PC2 sensitivity degradation requirements if needed. In Rel-17 spectrum related WI about PC2 FDD bands n1 and n3 (RP-212633), the objectives contain "*Specify PC2 MSD requirements for NR band n1 and n3. Investigate HD-duplex solution which targets at reduce MSD.*"

In TS 38.101-1 Table 7.3.2-1c/1d, regarding band n3, due to TX interference to RX, MSD of 1TX and 2TX are 2.8dB and 6dB, respectively.

The band n3 TX-RX duplex spacing is 95MHz. The band n28 TX-RX duplex spacing is 55MHz. The band n8 TX-RX duplex spacing is 45MHz. When TX-RX gap is smaller, more severe sensitivity degradation is straightforward.

3 – Apple (UK) Limited

We support the proposal in RP-222341 and the new WID in RP-222340. In R4-2200441, we have evaluated n8 PC2 MSD at 35MHz DL channel BW which can be up to 25 dB even with UL channel BW restricted to 20 MHz. Such high MSD should suffice the justification for the new WID on MSD mitigation for PC2 FDD bands.

4 – Guangdong OPPO Mobile Telecom.

The motivation to solve the large MSD for FDD bands is ok, and helpful, but should be handled as non-spectrum in general since this is general solutions.

5 – Skyworks Solutions Inc.

We support the proposal in RP-222341 and we support the new WID in RP-222340 due to the same concerns about high MSD for FDD bands where the duplex distance is small relative to the maximum UL CBW, like band n3. Regarding the band n3 6dB PC2 "MSD" for a UE supporting Tx diversity at 50MHz CBW, it may be worth reminding that the 6dB is defined as a Reference Sensitivity Degradation (RSD) relative to the PC3 REFSENS level. The PC3 REFSENS is equivalent to a 7dB MSD relative to the ideal RB scaled REFSENS, so in total, the PC2 2Tx MSD can be regarded as 13dB relative to the ideal RB scaled REFSENS. The example of band n3 high MSD/RSD justifies the new WID proposal in RP-222340.

6 – CHTTL

Agree with Nokia's comment

7 – Huawei Technologies France

In general, we are fine to have some study of the solutions to mitigate the MSD for FDD bands. But where to have this kind of study can be further discussed since it is a non-spectrum related topic. On the other hand, whether there is indeed a MSD issue for sub-1GHz band depends on the study outcome of WI in RP-222083.

8 – Samsung Electronics Co.

We also think the proposal in RP-222341 and the new WID(RP-222340) are about non-spectrum related WI, which is not expected to be discussed in RAN#97 meeting.

9 – China Unicom

The proposed WID considered using n28 and n8 as the example bands, but these two bands are included in the HPUE basket for FDD bands WID, so we suggest to check what MSD values we got in these two bands first.

We are okay to have further study on this issue outside of the basket WI.

10 – vivo Communication Technology

We think some study can be done for the proposal. However, the appropriate timing may not be in this meeting as many companies pointed out. It can be considered in a later stage.

11 – MediaTek Inc.

Thanks for China Unicom’s suggestion. We are okay to study MSD issues of FDD PC2 sub-1GHz bands in the non-basket WI or merged in FR1 enhancement WI.

Sub-topic 6-2: Any question or comment on the justification or any other general comment for WI RP-222083?

Companies are invited to provide the general comments, including comments on justification part, whether the WI is needed, how to handle the work, in the follow table.

Feedback Form 33:

1 – E-surfing Digital

China Telecom:

We support the WID, and please add China Telecom as the supporting company for PC2 on n5 and n8.

2 – Huawei Technologies France

We support the WI proposal.

3 – China Unicom

Thanks for the support.

The WID document can be revised to add supporting companies.

Sub-topic 6-3: Comments and responses on the proposed objectives of proposed WIs

The following objectives are proposed in the WID.

Core part

The objectives of the core part are as follows:

1. Scope of this basket WI includes NR FDD bands
2. Specify the band specific RF requirements for all listed power class 2 NR FDD bands including
 - a) UE maximum output power and Tx power tolerance
 - b) A-MPR requirements if needed
 - c) PC2 sensitivity degradation requirements if needed

Note 1: Ensure that the UE RF requirements of power class 2 UEs shall comply with those of power class 3 when the maximum transmit power is limited to 23dBm by gNB configuration.

Note 2: The ability to define 1Tx and 2Tx requirements is subject to data availability.

Note 3: Both 1Tx and 2Tx UE architecture are considered in this WI.

The power class 2 UE for NR FDD bands are defined in the table 1 below:

Table 1: Power class 2 NR FDD bands within FR1

Table 13:

NR FDD band	contact name, company	Contact email	other supporting companies (m
n8	Basaier Jialade, China Unicom	basejld@chinaunicom.cn	CATT, Huawei, HiSilicon, ZTE,
n5	Basaier Jialade, China Unicom	basejld@chinaunicom.cn	CATT, SKT, Huawei, HiSilicon,
n28	Basaier Jialade, China Unicom	basejld@chinaunicom.cn	CATT, Huawei, HiSilicon, ZTE,
n26	Frank Savaglio, Telstra	frank.savaglio@team.telstra.com	Qualcomm, Ericsson, Huawei, H
n25	Bill Shvodian, T-Mobile USA	bill.shvodian@t-mobile.com	Ericsson, Nokia, Nokia Shanghai
n66	Bill Shvodian, T-Mobile USA	bill.shvodian@t-mobile.com	Ericsson, Nokia, Nokia Shanghai
n71	Bill Shvodian, T-Mobile USA	bill.shvodian@t-mobile.com	Ericsson, Nokia, Nokia Shanghai
n85	Bill Shvodian, T-Mobile USA	bill.shvodian@t-mobile.com	Ericsson, Nokia, Nokia Shanghai

Perf part

Specify the necessary performance requirements such as release independence in TS 38.307.

Companies are invited to provide comments and responses in the following table.

Feedback Form 34:

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Sub-topic 6-4: Comments and responses on impacted/new specifications and target completion date & time budget

Companies are invited to provide comments and responses in the following table.

Feedback Form 35:

7.2.2 Summary

Sub-topic 6-1: Any question or comment on the justification or any other general comment for WI RP-222341?

6 companies pointed out that RP-222341/340 is non-spectrum related WI proposal. 3 companies support to start the work. 1 company is OK to have study outside the basket WI.

Companies commented that the potential enhancement work for MSD needs wait for the outcome and/or completion of requirements in basket WI RP-222083.

From the moderator perspective, only spectrum related SI/WI proposal and Rel-17 follow-up/leftover work (MIMO OTA and TRP/TRS) will be handled in this RAN according to guidance from RAN chair. Besides, since there is no consensus to start this work in this RAN, the moderator would like to suggest stopping discussion on RP-222341/340 in this RAN. Companies can have further discussions in December RAN plenary.

In the moderator understanding, regarding the use case of HPUE FDD, one primary use case is to serve the uplink heavy traffic where there is no too high DL data rate is required. For this case, HPUE FDD UE even with a big MSD number can still work according to discussions in the previous Rel-17 WI.

Sub-topic 6-2: Any question or comment on the justification or any other general comment for WI RP-222083?

- **Proposal 6-1:** approve the revised WID RP-222083 where the more supporting companies are added.

7.3 Intermediate round

7.3.1 Comments & responses

Stop discussion on RP-222341/340, and come back in future RAN plenaries if needed.

Sub-topic 6-2: Any question or comment on the justification or any other general comment for WI RP-222083?

Can we agree on Proposal 6-1? Please rapportuer circulate the revised WID in the reflector.

Feedback Form 36:

1 – Verizon UK Ltd

If it is still possible, Verizon would like to include both band n2 and n13 into this WID RP-222083 along with following information,

- contact name, company: Zheng Zhao, Verizon

- contact email: zheng.zhao@verizonwireless.com
- other supporting companies (min. 3): Ericsson, Samsung, Qualcomm
- status (new, ongoing, completed, stopped): completed for PC3, new for PC2

Verizon also support this WID RP-222083.

2 – China Unicom

The draft WID has been updated with additional information from China Telecom and Verizon, and uploaded to the draft folder with file name "Rev-RP-222083 New WID on high power for FR1 for FDD single band(s) with power class 2-v01.doc".

3 – QUALCOMM JAPAN LLC.

We agree that proposals in RP-222340/341 do not belong to a basket so they shouldn't be in the scope of this discussion.

4 – MediaTek Inc.

In our understanding, in **Rel-17 spectrum related WI** about PC2 FDD bands, the objectives clearly contained "*Specify PC2 MSD requirements for NR band n1 and n3. Investigate HD-duplex solution which targets at reduce MSD.*" The "**Investigate solution which targets at reduce MSD**" was in the objectives of spectrum related WI(e.g., HPUE PC2 for FDD bands).

With the comments and suggestions from companies above in the initial round, we are fine with moderator's comment on 7.3.1.

5 – vivo Communication Technology

We are fine with current WID, with the understanding that the MSD reduction may still be studied somewhere.

6 – Nokia Japan

we support the following moderator's suggestion.

- Stop discussion on RP-222341/340, and come back in future RAN plenaries if needed.

7.3.2 Summary

After the GTW on September-14, the following proposals were endorsed.

Sub-topic 6-1: Any question or comment on the justification or any other general comment for WI RP-222341?

Stop discussion on RP-222341/340, and come back in future RAN plenaries if needed.

Sub-topic 6-2: Any question or comment on the justification or any other general comment for WI

RP-222083?

- **Proposal 6-1:** approve the revised WID RP-222083 where the more supporting companies and n2/n13 are added.

7.4 Final round

7.4.1 Comments & responses

Please rapportuer circulates the revised WID for final review. If companies have comments on the content, please make comments in the table below.

Feedback Form 37:

1 – China Unicom

The formal TDoc RP□222625 could be found in the "TSGR_97e / Docs" folder now.

7.4.2 Summary

Moderator summarizes discussion status and provide the recommendation.