3GPP TSG-RAN2#118-e Tdoc R2-22XXXX

Electronic meeting, 2022-05-09 - 2022-05-20

Agenda Item: 6.24.1

Source: Ericsson

Title: Report from [AT118-e][046][NR17] n77 and DSS (Ericsson)

Document for: Discussion, Decision

# 1 Introduction

This is a report from the following discussion:

* [AT118-e][046][NR17] n77 and DSS (Ericsson)

Scope: Treat R2-2205871 - R2-2205875, R2-2205511.

Ph1 Determine agreeable parts, Ph2 agree CRs

Intended outcome: Report, Agreed CRs

Deadline: Schedule 1

The following delegates participated in the discussion:

|  |  |
| --- | --- |
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The following documents were treated:

n77

Corrections

[R2-2205870](http://www.3gpp.org/ftp//tsg_ran/WG2_RL2/TSGR2_118-e/Docs//R2-2205870.zip) Terminology for n77 extension Ericsson CR Rel-16 36.306 16.8.0 1848 - F TEI17

[R2-2205871](http://www.3gpp.org/ftp//tsg_ran/WG2_RL2/TSGR2_118-e/Docs//R2-2205871.zip) Terminology for n77 extension Ericsson CR Rel-17 36.306 17.0.0 1849 - A TEI17

[R2-2205872](http://www.3gpp.org/ftp//tsg_ran/WG2_RL2/TSGR2_118-e/Docs//R2-2205872.zip) Terminology for n77 extension Ericsson CR Rel-16 36.331 16.8.0 4811 - F TEI17

[R2-2205873](http://www.3gpp.org/ftp//tsg_ran/WG2_RL2/TSGR2_118-e/Docs//R2-2205873.zip) Terminology for n77 extension Ericsson CR Rel-17 36.331 17.0.0 4812 - A TEI17

[R2-2205874](http://www.3gpp.org/ftp//tsg_ran/WG2_RL2/TSGR2_118-e/Docs//R2-2205874.zip) Terminology for n77 extension Ericsson CR Rel-16 38.306 16.8.0 0726 - F TEI17

[R2-2205875](http://www.3gpp.org/ftp//tsg_ran/WG2_RL2/TSGR2_118-e/Docs//R2-2205875.zip) Terminology for n77 extension Ericsson CR Rel-17 38.306 17.0.0 0727 - A TEI17

DSS

[R2-2205511](http://www.3gpp.org/ftp//tsg_ran/WG2_RL2/TSGR2_118-e/Docs//R2-2205511.zip) Editorial correction for NR dynamic spectrum sharing Ericsson CR Rel-17 38.331 17.0.0 3094 - F NR\_DSS\_enh

# 2 Discussion

## 2.1 Terminology for n77 extension

The CRs in [R2-2205870](http://www.3gpp.org/ftp//tsg_ran/WG2_RL2/TSGR2_118-e/Docs//R2-2205870.zip) – [R2-2205875](http://www.3gpp.org/ftp//tsg_ran/WG2_RL2/TSGR2_118-e/Docs//R2-2205875.zip) propose to change the field description for the capability bit “extendedBand-n77-r16”. The change has three parts:

1. Change from that ”*the UE supports the* ***restriction*** *to 3450 – 3550 MHz and 3700 – 3980 MHz ranges*” to ”*the UE supports* ***operation in*** *both 3450 – 3550 MHz and 3700 – 3980 MHz ranges*”
2. Removing reference to the particular note in the RAN4-table in 38.101-1, and instead refer to the table as a whole.
3. Clarifying that a UE that supports the NS value 55 shall also indicate the capability bit.

The actual change results in the following (from 36.306):

This field is only applicable for Ues that indicate support for band n77. If present, the UE supports operation in both 3450 – 3550 MHz and 3700 – 3980 MHz ranges of band n77 in the USA as specified in Table 5.2-1 in TS 38.101-1 [33]. If absent, the UE supports only operation in the 3700 – 3980 MHz range of band n77 in the USA. A UE indicates this field if and only if it supports NS value 55 as specified in TS 38.101-1 [33].

### 2.1.1 “Restriction” to “operation”

The first change of the CR is to change from wording saying that the UE supports “restriction to” certain frequency ranges, and instead say that the UE supports “operation in” frequency ranges.

**Q1: Do you agree to change the description for extendedBand-n77-r16 from wording saying that “*UE supports restriction to <frequency ranges>*” to “*UE supports operation in <frequency ranges>*”?**

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| --- | --- | --- |
| **Company** | **Answer** | **Comments** |
| Ericsson | Yes | To support a restriction to a frequency range, is in our mind less clear than to support operation in a frequency range. |
| Apple | No | We think this is not needed, and also there was sufficient discussion/review of the wording in RAN plenary and we prefer to keep it this way. |
| Qualcomm Incorporated | No | Agree with Apple that changing the word „restriction“ can invite repetition of RAN discussions. |
| Samsung | No | The term "restriction" is also used in RAN4 specification (i.e., NOTE 12 of Table 5.2-1 in TS 38.101-1), so the current text is fine to us. |
| MediaTek | Yes with comments | This part text/wording had been discussed in RAN#93e. It’s always good to clarify definition but we would like to ask to check if no conflict with the use of n77 Canada is foreseen so that new text/wording could be more future-proof (at least for North America).  Meanwhile we have same feeling the term „restricted“ is more suitbale in the context of NOTE12 in 38.101 but is not that coherent in the field description of 36.306. |
| ZTE | No | Similar view as Apple, we prefer to keep it as it is. |
| Huawei, HiSilicon | No | No big difference, we can go with the majority. |
| Xiaomi | No | Agree with Samsung that the term "restriction" can be used to align with the RAN4 specification text. |
| Intel | No | We feel the change might cause another confusion. The intention of “restriction” is because the UE doesn’t support the whole n77 band. If we remove “restriction”, it might cause a question what the UE support in n77 band other than 3450 - 3550 MHz and 3700 - 3980 MHz ranges of band n77. It is safe to keep “restriction” Alternatively, we think we should update the text as ‘the UE supports operation restricted to both 3450 - 3550 MHz and 3700 - 3980 MHz ranges of band n77 in the USA’. |

### 2.1.2 Reference to table as a whole

The second change of the CR is to remove the reference to the particular note in the RAN4 table (i.e. Note 12), and instead refer to the table as a whole.

**Q2: Do you agree to refer to Table 5.2-1 as a whole, rather than to Note 12 in this table specifically?**

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| **Company** | **Answer** | **Comments** |
| Ericsson | Yes | The table as a whole is relevant. |
| Apple | Not sure | Atleast when this CR was introduced, this was specifically to NOTE, so without progress on the other n77 discussion, it might be pre-mature to point to the whole table. We are open to discusison. |
| Qualcomm Incorporated | Yes | We can support removing the reference to Note 12, becasue RAN4 may change the content of the Note in the future (as they did in the past) and then the 306 text will no longer be correct. Such change can be incorporated into rapporteur’s collective CR.  It should be followed in Canadian n77 case. |
| Samsung | No | It should be fine to refer the specific NOTE as the capbility is only about USA. Also, in general, the numbering should not be updated during CR implementation in the future. |
| MediaTek | Yes |  |
| ZTE |  | We don’t think it’s an essential correction. We are also open to discuss. |
| Huawei, HiSilicon | Not sure | Agree with Apple. |
| Xiaomi | No sure | We are just wondering how a global UE supporting the full range of n77 and the NS value 55 indicates its capability. |
| Intel |  | We are ok with the change. However, based on the latest version (v17.5.0), “NOTE 12: In the USA this band is restricted to 3450 – 3550 MHz and 3700 – 3980 MHz” which seems to still relevant to the UE capability. |

### 2.1.3 Clarifying relation between the UE capability and NS-value

The third thing that this CR changes is to clarify that a UE which supports the NS-value also supports the capability bit. It is argued that if a UE supports NS value 55 **without** supporting the extendedBand-n77 capability bit, the UE may connect to the cell without indicating the capability bit would cause errors in the network. This because the network could not (based on reported UE capabilities) serve such a UE.

**Q3: Do you agree to clarify that a UE which supports the NS-value shall also report the UE capability bit extendedBand-n77-r16?**

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| **Company** | **Answer** | **Comments** |
| Ericsson | Yes | It is important that Ues supporting NS-value 55 also indicates the capability bit. If the UE supports NS-value 55 it means the UE would accept accessing a cell broadcasting NS-value 55. The network will use NS-value 55 to bar Ues which do not indicate the capability bit and hence Ues shall not be allowed to connect to the cells (i.e. allowed to support NS-value 55) unless they also indicate the capability bit.  The CR clarifies that either the UE supports both NS-value 55 and the capability bit, or none of them. Current wording would does not preclude that a UE can support the NS-value without the capability bit, and this is important to clarify. |
| Apple | Not sure | Ues implementations will anyway do this, so we think this is not really essential. Open to views from other companies. |
| Qualcomm Incorporated | No | No essential correction. Misunderstanding very unlikely. |
| Samsung | No | Not essential correction. |
| MediaTek | No | By past agreement and 38.307 regarding to the n77 it’s again an early implementation requirement so the text modification in Table C-1 of 38.331 shall be included. Suggest to wait for the conclusion of Q1. |
| ZTE | No | Not essential correction. |
| Huawei, HiSilicon | No | Agree with Qualcomm. |
| Xiaomi | See comment | We think that we could have the following two types of UEs:   * US UE supporting both 3450 – 3550 MHz and 3700 – 3980 MHz ranges of band n77 and NS value 55. * Global UE supporting full-range 3300-4200 MHz of band n77, NS value 55 and other NS values (e.g. “0”).   The capability bit can be used for the network to control the CONNECTED UE access at handover. Then it is not clear how the globle UE indicates its capability, and how the global roaming would work for the two types of UEs. For example, if a network supports the full range of band n77, the US UE should not be allowed to handover to the n77 frequencies not supported by the US UE, but the gobal UE access should be allowed for such network. However the US network supporting 3450 – 3550 MHz and 3700 – 3980 MHz ranges of band n77 and NS value 55 should allow the handover request of both US UE and global UE. If both US UE and gobal UE provide the same capability indication, it seems not possible to differentiate the two types of UEs. |
| Intel | No | The intention of extendedBand-n77 and NS 55 was that either the UE supports both, or it supports neither. It does not seem practical to support just NS\_55 and not the extendedBand-n77 since NS\_55 is introduced to bar UEs not supporting USA extended n77 band. |
| Ericsson - Further input |  | All companies agree that UEs will do what this change clarifies. We think it is important that the UEs indeed do this.  If a UE does not do this, there will be IODT issues which will hit the network/operator: A UE supporting only the NS-value but not the bit would connect to the network. But when the UE connects the NW would not be able to find any configuraiton for the UE since the UE is not even (based on the capabilities) supporting this cell itself (due to missing capability bit.  Of course, to people who has been involved in this discussion it is clear that UEs will either implement both the capability bit and NS\_55, or neither. But to Ericsson, it is also important that the spec is crystal clear on this. We are open to capturing this in some other way if people have a better proposal, but we are not OK leaving room for misunderstanding. |

## 2.1 DSS

The CR [R2-2205511](http://www.3gpp.org/ftp//tsg_ran/WG2_RL2/TSGR2_118-e/Docs//R2-2205511.zip) addresses some editorial comments raised by one company in the ASN.1 review (issue number 97, 99):

* Correct a grammar error to use “an” instead of “a” in the field description of IE *crossCarrierSchedulingConfig;*
* Clarify the legacy field description for IAB-MT so that what was added previously for IAB-MT applied only to IAB-MT, i.e., no impact from or to the newly introduced cross carrier scheduling in Rel-17.

**Q4: Do you agree the editorial changes proposed in the CR R2-2205511 ?**

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| --- | --- | --- |
| **Company** | **Answer** | **Comments** |
| Ericsson | Yes | The editorial comments by 97 and 99 (not from Ericsson) make sense and help improving the spec quality. Further wording suggestion/improvement (if any) are appreciated. |
| Apple | Yes | We agree with the changes, also the IAB part is not only editorial. |
| Qualcomm Incorporated | Yes |  |
| vivo | Yes | The editorial corrections are fine, and the IAB part fairly introduces the new feature. |
| Samsung | Yes |  |
| MediaTek | Yes |  |
| ZTE | Yes |  |
| Huawei, HiSilicon | Yes |  |
| Xiaomi | Yes |  |
| Intel | Yes | We understand that IAB part is also editorial correction. |

# 3 Conclusion

Based on the discussion above we propose:

**No table of figures entries found.**