3GPP TSG-RAN WG2 Meeting #109bis-e R2-2004038

Online, 20th - 30th April 2020

**Agenda item: 4.1**

**Source: MediaTek (offline email discussion rapporteur)**

**Title: Report of [AT109bis-e][303][NBIOT] Cell selection on the dedicated frequency after RRC connection rejection for NB-IoT (Mediatek)**

**Document for: Report**

# 1 Scope of the offline email discussion

This document contains the summary of the offline email discussion “[AT109bis-e][303][NBIOT] Cell selection on the dedicated frequency after RRC connection rejection for NB-IoT (Mediatek)”, as indicated below:

* [AT109bis-e][303][NBIOT] Cell selection on the dedicated frequency after RRC connection rejection for NB-IoT (Mediatek)

Scope: Check if there is support and update based on the comments if the CR is agreeable.

Intended outcome: Report from the discussion and, if agreeable, in-principle agreed CR. The report can be provided in R2-2004038

Deadline: 27-04-2020, 10:00 UTC

Timeline:

* + - Companies input: Monday, April 27th 10:00 UTC
    - Rapporteur summary and updated CR (if needed): Monday, April 27th 15:00 UTC
    - Wording comment, if any, on updated CR: Wednesday, April 29th 10:00 UTC

# 2 Offline email discussion

[R2-2003619](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003619.zip) Discussion on dedicated frequency search after connection rejection MediaTek Inc. discussion Rel-15 NB\_IOTenh2-Core

**Proposal 1: Cell selection on the dedicated frequency after connection rejection.**

Companies are requested to provide comments in the table below (one row for each new comment to better keep track of the discussion – please don’t edit the previous comments).

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree with proposal?** | **Detailed comments** |
| Huawei, HiSilicon | No | We do not see this as a correction but as a new feature and we do not think it is appropriate to introduce this in Rel-15.  We do not see a particular problem. If a particular frequency is overloaded, eNB can redirect a number of UEs at RRC Connection release to other frequencies. This should be sufficient considering the short live of RRC Connection in NB-IoT. This is also more efficient as the eNB knows which frequencies are supported by the UE when the UE is in connected mode.  We do not understand why this makes a difference if the extendedWaitTime parameter is handled in NAS or in AS as described in the document. |
| Qualcomm | **No** | Agree with Huawei, this is not a correction.  The exmaple why eNB may want to reject this UE does not make sense i.e. eNB ran out of C-RNTI. rNB has already allocated Temporary C-RNTI in RAR hence eNB has not run-out.  Blindly redirecting the UE to another frequency/cell can lead to increased network signalling i.e. UE has to do TAU when it is redirected and then again when it returns back to old cell.  In any case, access barring mehcanism is there to manage eNB load and that should be sufficient. |
| MediaTek | Yes | This proposal is try to redirect the UE when it was rejected. The reason doesn’t has to be RAN overload, it just could be one of them. RRC connection release and access barring can not help on this case. Redirection at connection rejection can provide UE another chance, to try to establish the connection in another freqency instead of keeping trying in the same cell. |
| Nokia | No | The motivation for the changes to have this information for redirection in reject is not clear. Changes are quite like new functionality hence agree with HW and QC that it is not correction |
| Ericsson | No | We think the usecase does not seem to be too convincing. It seems it was possible for the RAN to respond to NPRACH transmission from the UE, yet the connection can not be established due to lack of resources after already some signalling between the UE and the network. Considering that RAN has chosen not to use any other precautions such as barring, this indicates a rather temporary congestion case; note that barring is already a temporary congestion case so this seems to be even more temporary when compared to barring. Therefore, this situation, by nature, should not last long which should be acceptable for a delay tolerant UE. The network can as well release UEs in connected mode in the mean time, where possible, with redirection to other frequencies, which would be more beneficial compared to redirecting a UE to another frequency blindly. |
| Lenovo | No | Agree with Ericsson, the issue could be solved by network implementation, such as release the UEs in connected mode in the mean time with redirection to other frequencies. |
| LG | Yes | We see the benefits when the UE is redirected to a particular frequency by the network when the connection request was rejected.  We are not sure if the network could solve this issue without allowing the connection. To solve this, the network should allow the connection first and then, it can send redirection information in RRCConnectionRelease. We think this is an overhead. Or, the network may configure a bit long extendedWaitTime to the UE so that the UE does not attempt unnecessary connection request. However, this may also delay too long for providing services considering the value of e.w.t. Although it is delay tolerant service, we think it is better to provide service quickly if it is possible.  We agree that this is a new feature. |
| ZTE | Not in this release | We can understand the intention and can see the usefulness, but haven’t seen the concrete requirement for such scheme.  For NB-IoT, as the network capacity may depend more on the multi-carriers deployment, the deployment of multiple inter-frequencies may be not much now. Moreover, we have sympathy with some above comments that we already have some precautions from network, e.g., access barring, backoff, redirection with RRC release, offset for idle mode load balancing etc, so we are not sure how serious the issue could be.  We are fine to further discuss this scheme later, e.g., when more specific needs arise. |

Conclusion: **6 companies does not agree with the proposal. The RAN overload issue can be fixed by access barring, back off timer, redirection with RRC release, extended wait time, multi-carrier deployment. Redirection with RRC connection reject is not really need for that case.**

**4 companies says this is not a correction but a new feature.**

**2 companies agree with the proposal.**

Proposal: **Postpone this proposal, until a more concrete use case is found.**

**Proposal 2: Dedicated frequency Qoffset can keep UE on the dedicated frequency for T322 time length from cell reselection after a successful cell selection on the dedicated frequency.**

Companies are requested to provide comments in the table below (one row for each new comment to better keep track of the discussion – please don’t edit the previous comments).

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree with proposal?** | **Detailed comments** |
| Huawei, HiSilicon | no | see answer to Proposal 1 |
| Qualcomm | **No** | As per our response to Proposal 1, legacy mechanims are sufficient to address the highlighted issue. |
| MediaTek | **yes** |  |
| Nokia | **No** | Questionis not specific. We agree that this information will keep the UE in specific frequency. But here the issue is related inclusion in RRC connection Reject. |
| Ericsson | **No** | Please see our reply above to the previous question. |
| Lenovo | **No** | Please see our answer to proposal1. |
| LG | **Yes** | If the differences are not big enough, yes. |
| ZTE | **No** |  |

Conclusion: **6 Companies disagree with this proposal and 2 companies agree.**

Proposal: **Postpone**.

[R2-2003621](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003621.zip) Cell selection on the dedicated frequency after RRC connection rejection for NB-IoT in 36.304 MediaTek Inc. CR Rel-15 36.304 15.5.0 0787 - F NB\_IOTenh2-Core

Companies are requested to provide comments in the table below (one row for each new comment to better keep track of the discussion – please don’t edit the previous comments).

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree with the intent of the CR?** | **Detailed comments** |
| Qualcomm | **No** | See answer to Proposal 1. |
| MediaTek | **yes** |  |
| Ericsson | **No** | We do not think the CR is needed as stated above. |
| LG | **Yes** |  |
| ZTE | **No** |  |

Conclusion: **3 companies disagree with the intention, and 2 companies agree.**

Proposal: **Postpone**

[R2-2003622](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003622.zip) Cell selection on the dedicated frequency after RRC connection rejection for NB-IoT in 36.331 MediaTek Inc. CR Rel-15 36.331 15.9.0 4280 - F NB\_IOTenh2-Core

Companies are requested to provide comments in the table below (one row for each new comment to better keep track of the discussion – please don’t edit the previous comments).

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree with the intent of the CR?** | **Detailed comments** |
| Huawei, HiSilicon | no | We do not agree that there is no interoperability issue if the eNB is implemented according to the CR and the UE is not. The UE does not expect to receive an IE that it does not support. Thus the change requires to introduce a capability. |
| Qualcomm | **No** | See answer to Proposal 1. |
| MediaTek | **yes** | If UE does not support this proposal, UE would not decode the IE in the non-critical extension, so there is no interoperability issue. |
| Ericsson | **No** | We do not think the CR is needed as stated above. |
| LG | **Yes** |  |
| ZTE | **No** |  |

Conclusion: **4 companies disagree with the intention and 2 companies agree.**

Proposal: **Postpone**

# 3 Conclusion

**Proposal: Postpone until a more concrete use case is found.**

**In principle agreed CR:**

None.

# 4 List of referenced documents

[1][R2-2003619](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003619.zip) Discussion on dedicated frequency search after connection rejection MediaTek Inc. discussion Rel-15 NB\_IOTenh2-Core

[2][R2-2003621](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003621.zip) Cell selection on the dedicated frequency after RRC connection rejection for NB-IoT in 36.304 MediaTek Inc. CR Rel-15 36.304 15.5.0 0787 - F NB\_IOTenh2-Core

[3][R2-2003622](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003622.zip) Cell selection on the dedicated frequency after RRC connection rejection for NB-IoT in 36.331 MediaTek Inc. CR Rel-15 36.331 15.9.0 4280 - F NB\_IOTenh2-Core