**3GPP TSG-RAN WG2 Meeting#109 electronic draft R2-20xxxxx**

**e-meeting, 24th February - 6th March, 2020**

**Source: Intel Corporation**

**Title: Email discussion of Idle mode mobility for non-BL UE**

**Agenda item:** **7.1.8.1**

**Document for:** **Discussion and Decision**

# Introduction

In RAN2#107 meeting, following agreement was made.

FFS if, from Rel-16, it should be possible for a non-BL UE that fullfills S criteria for normal coverage to camp in a “normal” cell, i.e. not standalone, in enhanced coverage.

In the following, we discuss whether a Rel-16 non-BL UE is allowed to camp in enhanced coverage when S criterion for normal coverage is fulfilled and whether network control is not be supported. This discussion considers all the related details provided in RAN2#109-e contributions summarized in [1].

# Is a Rel-16 non-BL UE allowed to camp in a cell (non-standalone case) on enhanced coverage mode when S criteria for normal coverage is fulfilled?

Please include your company view below a Rel-16 non-BL UE allowed to camp in a cell (non-standalone case) on enhanced coverage mode when S criteria for normal coverage is fulfilled:

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| --- | --- | --- |
| **Company** | **Yes/No** | **Any further comments** |
| Intel | Yes | We are OK keeping legacy operation also for Rel-16 UE i.e. it is up to UE implementation to decide whether a UE can camp in a cell (non-standalone case) on enhanced coverage mode when S criteria for normal coverage is fulfilled. Note that when eMTC topic was specified in Rel-13, there was understanding then some UE vendors may use non-BL UE for MTC deployments and therefore, it would be possible for a non-BL UE in RRC\_IDLE to decide whether it requires operating in WB or BR when S criteria for normal coverage is fulfilled. However we understand current concerns from network vendors and could also be ok to allow this restriction under network control. |
| Qualcomm | No | We don’t agree a non-BL UE fulfilling normal S criteria should switch to using BR channels. This behaviour confuses the definition of *UE in CE*. 36.300 section 23.7b does says “*A UE in enhanced coverage is a UE that requires the use of enhanced coverage functionality to access the cell*” and a UE fulfilling normal S criteria does not require the use of enhanced coverage functionality to access the cell.  Furthermore, a non-BL UE should apply cell suitability in the order defined in 36.304, i.e. normal criteria first, then CE and then CE1. |
| Huawei, HiSilicon | Yes | We think it allows UE to take advantage of narrow bandwidth operation while in idle mode, providing power saving gain. |
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# Whether network control is needed to allow non-BL UE to camp on a cell in CE mode when S criteria for normal coverage is fulfilled

Please include your company view below on whether network control should be allow or not a Rel-16 non-BL UE of camping in a cell (non-standalone case) on enhanced coverage mode when S criteria for normal coverage is fulfilled. If supported, provide details on the desirable mechanism for providing the network control:

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| --- | --- | --- |
| **Company** | **Yes/No** | **Mechanism for network control and any further comments** |
| Intel |  | Understanding that legacy operation allows non-BL UEs to camp in a cell (non-standalone case) on enhanced coverage mode when S criteria for normal coverage is fulfilled, we have slight preference for using a new broadcast network indication to barred R16 non-BL UEs of camping in a cell (non-standalone case) on enhanced coverage mode when S criteria for normal coverage is fulfilled (i.e. therefore when this new indication is not sent, Rel-16 non-BL UE would behave same as legacy UEs). |
| Qualcomm |  | The implications of UE in normal coverage *pretending* to be in enhance coverage have not been fully evaluated (e.g. power saving advantage vs impact on specification and impact no UEs that can only use BR channels). |
| Huawei, HiSilicon | **FFS** | Given that some legacy UE may already do this, and some may not, it is probably be better to not have any indication because it is unclear how to define and set the bit. We are open, though. |
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# Miscellaneous proposals

There are also further proposals suggested by [2] and [3].

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| Thales  (0251) | **Proposal 3:** The network may indicate whether the ulfilment of the S-criterion for CE mode is required for all non-BL devices or whether it only applies for the non-BL UEs trying to newly camp (select or re-select) to said cell. |

Please include your company view on the definition of the network control indication described in previous section 3 if network control indication is broadcast:

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No/FFS** | **Any further comments** |
| Intel | FFS | It is not clear whether this differentiation is strictly needed |
| Qualcomm | FFS | RAN2 needs to first decide whether non-BL UE in normal coverage be allowed to camp on a cell in CE mode. Only RAN2 agree then we can discuss network control of this behaviour. |
| Huawei, HiSilicon | FFS | Given that some legacy UE may already do this, and some may not, it is probably be better to not have any indication because it is unclear how to define and set the bit. |

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| Huawei  (1067) | **Proposal3: Absolute priorities rather than ranking applies for non-BL Ues using enhanced coverage when S criteria for normal coverage is fulfilled.** |

Please include your company view on whether absolute priorities rather than ranking should be applied for Rel-16 non-BL Ues camping in a cell (non-standalone case) on enhanced coverage when S criteria for normal coverage is fulfilled.

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| **Company** | **Yes/No/FFS** | **Any further comments** |
| Intel | FFS |  |
| Qualcomm | FFS | Same comment as for previous question. |
| Huawei, HiSilicon | Yes | Since UE is in normal coverage and just operating as enhanced coverage there is no reason for switching to use ranking as a UE truly in enhanced coverage would. |

# Conclusions and Potential proposals

TBA

# References

[1] R2-2001864 Summary of contributions on Idle mode mobility Intel Corportation

[2] R2-2001067   Enhancements to idle mode mobility for non-BL UEs   Huawei, HiSilicon

[3] R2-2000251   Clarification to idle mode mobility for non-BL UEs   THALES