3GPP TSG-RAN WG2 Meeting #105 R2-19xxxxx

Athens, Greece, 24 – 28 February, 2019

Agenda Item: 10.x.x.x

Source: Qualcomm Incorporated

Title: Summary of email discussion [104#32][NR] Filtering in NR UE capability enquiry (Qualcomm)

Document for: Discussion, Decision

# Introduction

In RAN2#104 meeting, RAN2 discussed the following document addressing the lack of E-UTRA capability “filtering” in NR UE capability enquiry procedure as defined in TS38.331.

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| [R2-1817378](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_104/Docs/R2-1817378.zip) EUTRA UE capability filtering in NR UE capability enquiry Qualcomm Incorporated CR Rel-15 38.331 15.3.0 0292 1 F NR\_newRAT-Core R2-1814239 |

No conclusion was reached in the meeting and the following email discussion was agreed.

[104#32][NR] Filtering in NR UE capability enquiry (Qualcomm)

 To progress the filtering of the E-UTRA capabilities in the NR UE capability enquiry

 Intended outcome: Agreeable CR to next meeting

 Deadline: Thursday 2019-02-07

# Proposed solution

The proposed solution in [R2-1817378](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_104/Docs/R2-1817378.zip) was to let *capabilityRequestFilter* currently defined in TS38.331 contain the *UECapabilityEnquiry* message as defined in TS36.331 to provide the UE E-UTRA capability filters. It was clarified in the proposal that certain fields in *UECapabilityEnquiry* message which are irrelevant in this particular scenario should be omitted.

# Discussion

It is proposed to discuss applicability of UE capability filters currently defined in TS36.331, and possibly new filters, when UE E-UTRA capability is requested in NR UE capability enquiry procedure.

* 1. Existing UE capability filters defined in TS36.331

The following UE capability filters are defined currently in TS36.331. Companies are requested to provide their view for each of them whether it should be applicable when UE E-UTRA capability is requested in NR UE capability enquiry procedure.

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|  | **Field name** | **Description** |
| **a** | UE-CapabilityRequest | List of RATs for which UE capability is requested |
| **b** | requestedFrequencyBands-r11 | 1 to 16 frequency bands |
| **c** | requestReducedFormat-r13 | Request to provide supported CA band combinations in the supportedBandCombinationReduced-r13 |
| **d** | requestSkipFallbackComb-r13 | Request to exclude fallback CA band combinations |
| **e** | requestedMaxCCsDL-r13 | 2 to 32 CCs |
| **f** | requestedMaxCCsUL-r13 | 2 to 32 CCs |
| **g** | requestReducedIntNonContComb-r13 | Request to exclude supported intra-band non-contiguous CA band combinations |
| **h** | requestDiffFallbackCombList-r14 | List of CA band combinations for which the UE is requested to provide different capabilities for their fallback band combinations |
| **i** | requestedFreqBandsNR-MRDC-r15 | List of NR and/ or E-UTRA frequency bands for which the UE is requested to provide its supported NR CA and/or MR-DC band combination |
| **j** | requestSTTI-SPT-Capability-r15 | Request to include the short TTI and SPT capabilities |
| **k** | eutra-nr-only-r15 | Request to include EN-DC capability, but not NR standalone capability |

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| --- | --- | --- |
| **Company** | **Items applicable** | **Comment** |
| Huawei | Item k is not applicable | If from NR side to require LTE capability, LTE capability is anyway needed and therefore eutra-nr-only-r15 seems not needed. |
| DOCOMO | All items except for k | NR standalone capability is anyway needed for gNB. |
| Samsung | All except k | Although some filters may be more important than others (affect size more), we think that transfer of capabilities of a given RAT should as much as possible be agnostic of RAT used for its transferAgree that k should not be included when requesting LTE capabilities in NR |
| Nokia, Nokia Shanghai Bell | All except k | Agree with the views above. |
| Ericsson | All except k | Agree with Docomo. |

* 1. New UE capability filters

Companies are requested to provide their view on whether any new UE capability filter should be defined for the case UE E-UTRA capability is requested in NR UE capability enquiry procedure.

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| **Company** | **Yes / No** | **Description / Comment** |
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* 1. Signaling solution

Companies are requested to provide their view on how the applicable UE capability filters should be signaled to the UE in NR UE capability enquiry message.

1. *capabilityRequestFilter* (38.331) carrying *UECapabilityEnquiry* message (36.331)
2. *capabilityRequestFilter* (38.331) carrying newly defined IE for UE E-UTRA capability filters either in 36.331 or in 38.331
3. *Other solution A (please define)*
4. *Other solution B (please define)*

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| --- | --- | --- |
| **Company** | **Solution** | **Comment** |
| Huawei | 1 | We think solution 1 is the clean way to define the filter. If later on LTE filter is extended, there is no need to introduce each parameter one by one. |
| DOCOMO | 1 | Agree that it is clean and simple |
| Samsung | 1 | This is simple i.e. we can just refer to LTE. We may just need to clarify that network only includes *eutra* in *ue-CapabilityRequest*. |
| Nokia, Nokia Shanghai Bell | 1 | The filter itself including a UECapabilityEnquiry defined in TS 36.331 further including all sorts of possible filters seems awkward unless it is clearly indicated that a Rel-15 UE shall support all of the filters (and then it would be simple) as RAN2 have now mandated the support of the skipping fallbacks (and therefore, also for the reduced format) from Rel-14 onwards as of last meeting (see R2-1817184 and R2-1817185 to TS 36.306), which means most UEs should start to anyway support the flags. |
| Ericsson | 1 | Although it could have been good to have a cleaner structure for eutra request in NR UE capability enquiry (e.g. for NR the entire FreqBandList IE is echoed back in capabilities, with additional filters within the IE), we agree that it may be simpler to refer to LTE. |

# Conclusion

All companies participated in this email discussion agreed:

* All UE capability filters, except for *eutra-nr-only-r15* flag, should be applicable when the UE E-UTRA capability is requested in NR.
* To adopt the option 1 for the signaling solution: *capabilityRequestFilter* (TS38.331) carrying *UECapabilityEnquiry* message (TS36.331)

It was commented additionally that the *UECapabilityEnquiry* message carried in *capabilityRequestFilter* should indicate only *eutra* in *UE-CapabilityRequest*.

Based on this email discussion, the rapporteur of the email discussion would like to make the following proposals.

**Proposal 1:** Adopt the signaling solution that *capabilityRequestFilter* (defined in TS38.331) contains the entire *UECapabilityEnquiry* message (defined in TS36.331)

**Proposal 2:** All UE capability filters, except for *eutra-nr-only-r15* flag, is applicable when the UE E-UTRA capability is requested in NR.

**Proposal 3:** The network is only allowed to indicate *eutra* in *UE-CapabilityRequest* when the UE E-UTRA capability is requested in NR.

**Proposal 4:** RAN2 is asked to review the CR provided in [1]

# Reference

[1] R2-19xxxxx EUTRA UE capability filtering in NR UE capability enquiry Qualcomm Incorporated