**3GPP TSG-RAN WG2 Meeting #114-e *draft R2-2106585***

**Online, May 19th - 27th, 2021**

**Agenda item: 6.3.4**

**Source: CATT**

**Title:** **Report of [AT114-e][615][POS] UE capability for SRS activation MAC CE (CATT)**

**Document for: Discussion and Agreement**

# 1 Introduction

This is to report the result of the following email discussion in RAN2#114-e Meeting.

* [AT114-e][615][POS] UE capability for SRS activation MAC CE (CATT)

Scope: Determine if a UE capability is needed for support of the extension of positioning SRS resource ID in MAC, and if needed, evaluate the CRs in R2-2104798 and R2-2104799.

Intended outcome: Agreed CRs if necessary, and report in R2-2106585

Deadline: Thursday 2021-05-27 0000 UTC

# 2 Contact Information

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# 3 Discussion

The CR Corrections on SP Positioning SRS Activation and Deactivation MAC CE was agreed with interoperability revision in the coversheet [1] at RAN2#114-e.

R2-2104797 Corrections on SP Positioning SRS Activation and Deactivation MAC CE CATT CR Rel-16 38.321 16.4.0 1072 3 F NR\_pos-Core R2-2104412

Companies here will continue to discuss and determine if a UE capability is needed for support of the extension of positioning SRS resource ID in MAC. If needed, the CRs in [R2-2104798](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2104798.zip) and [R2-2104799](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2104799.zip) are evaluated as well.

If we want backward compatibility, i.e. both supporting legacy UEs with 5bit resource ID and the new version UEs with 6bits resource ID in MAC CE, UE capability for the extension is expected here. A BC solution with the reserved bit and it would be more consistent to have the capability.

On the other hand, some company think there is no need to introduce the UE capability, because there is no implementation of UE which support the 5bits MAC CE in the field.

So companies here will discuss and determine if a UE capability is needed for the agreed MAC CR on the extension of positioning SRS resource ID in MAC:

* Option 1 : UE capability for the extension:
  + Introducing UE capability for the extension: to create one bit in UE capability indicating UE support this 6bits MAC CE or not.
    - When gNB receives the UE capability supporting 6bits MAC CE, gNB will set the resource ID accordingly with 6bits MAC CE. Otherwise, gNB will set the resource ID still with 5bits format in MAC CE.
  + The CRs on UE’s capability in [R2-2104798](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2104798.zip) and [R2-2104799](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2104799.zip) is available to review in the draft folder
* Option 2: No UE capability for the extension:
  + The extension bit is introduced without capability.

**Q1. Which option do you prefer on a UE capability for the extension? In the comment field please explain your preference.**

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| Company | Option 1/ Option 2 | Detailed Comments |
| Ericsson |  | The way it has been introduced; as Extension bit, then we agree a capability bit would be needed. But no strong view. |
| Huawei, HiSIlicon | Option2 |  |
| Xiaomi | Option 1 | If without UE capability indication, there are some issues for legacy UE when the reserved bit is used. If legacy UE ignores the reserve bit, when the reserved bit is set to one, the SRS source ID recognized by UE is wrong, if legacy UE can’t ignore the reserved bit, the UE will think the MAC CE is wrong when the reserved bit is set to one. |
| CATT | Option 1 | We prefer UE capability because there is interpretation impact on UE. Network cannot know whether UE will interpret the (old) R-bit correctly without the capability indication. The capability bit indicates whether UE supports the extended value range for SRS resource ID or not. |
| Qualcomm | Option 1 | For spec completeness, a capability bit should be added, since there are now two possible implementations. |
| vivo | Option 2 |  |
| ZTE | Option 2 |  |
| Intel | Option 1 | Option 1 is ok.  But we would like to check companies’ view on whether UE (regardless of whether 6bits MAC CE is support or not) can use 5 bits MAC CE for 6 bits SRS resource ID, i.e. .we assume it also requires the change for the UE to support 5bits MAC CE for support 6 bits SRS resource ID. And therefore the network shall not configure use 5bits MAC CE to activate SRS for UEs who cannot support 6 bits MAC CE. |
| Samsung | Option 1 | We agreed to introduce the extension bit in the MAC CE as MSB with the concern that there could be UEs without the extension bit implementation. In the same vein, the capability bit should be introduced to eliminate the uncertainty. |
| Apple | Option 1 | Given the discussion so far, we believe the logical way to conform 3GPP process is to introduce the new capability as the new bit is using an “Extension”. Claiming the 5-bit SRS resource ID shall never be used is directly against the intention of the agreed MAC CR. |
| Nokia | Option 1 | In the last meeting RAN2 chairman provided guidance on ensuring backward compatibility. See his email dated April 14, 2021 in which he said: “*This is just a reminder to avoid non-backwards-compatible CRs if possible, also for Rel-16, i.e. if your CR becomes a bit more cumbersome and complex to make it backwards compatible, then make it BC anyway. We are raising the bar. Only when it becomes really problematic to keep backwards compatibility we should consider NBC, e.g. if it means that we need to maintain several branches, both new and old*”.  In the last meeting, we also agreed in-principle a backward compatible MAC CR. So, we must introduce UE capability signaling for completeness of specifying a backward compatible solution. |

Summary:

**Q2. Do you have any comments/text suggestion on the capability CRs [2][3] if you agreed with a UE capability needed for support of the extension of positioning SRS resource ID in MAC?**

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| Company | Detailed Comments |
| Nokia | On R2-2104798:  - The field name could be changed from srs-ResourceId-ExtPos-r16 to srs-ResourceId-Ext-r16 since the field in the MAC CE is described as “(Positioning) SRS resource ID” i.e. it applies to SRS resource ID or Positioning SRS resource ID.  - Field description of srs-ResourceId-Ext-r16 can be simplified as follows:  ***srs-ResourceId-Ext-r16***  Indicates whether the UE supports the extended 6-bit (Positioning) SRS resource ID in SP Positioning SRS Activation/Deactivation MAC CE, as specified in TS 38.321 [8].  On R2-2104799:  - Please take the above suggested field name change into account in this CR also  - The field description of spatialRelationInfo should also be updated since the extension bit applies to both SRS and positioning SRS. |
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Summary:

# 4 Conclusion

**TBD**

# 5 References

[1] R2-2104797 Corrections on SP Positioning SRS Activation and Deactivation MAC CE CATT CR Rel-16 38.321 16.4.0 1072 3 F NR\_pos-Core R2-2104412

[2] [R2-2104798](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2104798.zip) Corrections on the UE capability of indication on supporting the extension of Positioning SRSresourceID CATT CR Rel-16 38.306 16.4.0 0572 1 F NR\_pos-Core R2-2104417

[3] [R2-2104799](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2104799.zip) Corrections on the UE capability of indication on supporting the extension of Positioning SRSresourceID CATT CR Rel-16 38.331 16.4.1 2580 1 F NR\_pos-Core R2-2104418

[4] R2-2105966 "View on Correction for SP Positioning SRS Activation and Deactivation MAC CE" Ericsson discussion Rel-16 38.321