**3GPP TSG-RAN WG2 Meeting #109bis-e R2-200xxxx**

**E-meeting, April 20 – April 30, 2020**

**Agenda item:**6.0.3 (TEI16)

**Source:** LG Electronics Inc., MediaTek

**Title:** Report of [AT109bis-e][060][NR16] MAC eLCID and RACH stopping

**Document for:** Discussion and Decision

# 1. Introduction

This document is to report the result of the following email discussion in RAN2#109bis-e Meeting.

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| * [AT109bis-e][060][NR16] MAC eLCID and RACH stopping (LG, Mediatek)   Scope: treat [R2-2003024](file:///C:\Users\mtk04448\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\docs\R2-2003024.zip) and [R2-2002931](file:///C:\Users\mtk04448\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\docs\R2-2002931.zip)  Wanted outcome: if agreement can be reached, one or two in-principle-agreed CRs.  Deadline: April 29 0700 UTC |

# 2. Discussions

## 2.1 eLCID

In R2-2003024, it is proposed that the LCID values indicated by one-byte eLCID field is only used to identify MAC CE, rather than used to identity the logical channel of a MAC SDU (for SRB/DRB) or padding, with following observations and proposal.

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| **Observation 1: According to RAN2 agreement, Set1 LCID (LCID values below 64) should be used for more frequent and high priority MAC CE.**  **Observation 2: LCID values associated with logical channels of SRB/DRB should be put in Set1 LCID because they are frequently used to deliver MAC SDU.**  **Observation 3: Set2 LCID values is only used to identify MAC CE, rather than used to identify logical channel of SRB/DRB or padding.**  **Proposal 1: Set2 LCID (LCID values above 64 identified via one-byte eLCID field) is only used to identify MAC CE, rather than used to identity the logical channel of a MAC SDU or padding.** |

Companies are asked to provide their views whether it is ok to restrict the 1-byte eLCID field to MAC CE.

**Question 1. Do you agree to restrict the 1-byte eLCID field to MAC CE?**

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| **Company** | **Yes/No** | **Comment** |
| OPPO | No | Although we tend to share the view on the spirit (i.e., SDU should prioritize set1 over set2):  On the one hand, the current MAC spec is correct since no MAC CE has been implemented in the 1-byte eLCID field yet.  On the other hand, when MAC CEs are implemented in this 1-byte field (after conclusion from different WI:s), we can rely on the Table 6.2.1-1/2 to know the associated LCID allocation to SDU and/or MAC CE.  So no need for the specification change. |
| Ericsson | No | We think we can treat the 1-byte eLCID space as the regular LCID space, some values are reserved, no need to decide now what they cannot be in future releases. |

**Proposal 1: based on the outcome of the Question 1.**

If companies agree to restrict the 1-byte eLCID field to MAC CE, further discussion is needed whether to explicitly specify this restriction in the MAC specification.

**Question 2. If you agree to restrict the 1-byte eLCID field to MAC CE, do you agree to specify the restriction in the MAC specification?**

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| **Company** | **Yes/No** | **Comment** |
| OPPO | No | As replied to Q1 above. |
| Ericsson | No | No need to specify this restriction. |

**Proposal 2: based on the outcome of the Question 2.**

A text proposal is also provided in R2-2003024. If companies agree to specify the restriction in the MAC specification, it is further asked whether the text proposal provided in R2-2003024 is agreeable.

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| 6.2.1 MAC subheader for DL-SCH and UL-SCH The MAC subheader consists of the following fields:  - LCID: The Logical Channel ID field identifies the logical channel instance of the corresponding MAC SDU or the type of the corresponding MAC CE or padding as described in Tables 6.2.1-1 and 6.2.1-2 for the DL-SCH and UL-SCH respectively. There is one LCID field per MAC subheader. The LCID field size is 6 bits. If the LCID field is set to 34, one additional octet is present in the MAC subheader containing the eLCID field and follow the octet containing LCID field. If the LCID field is set to 33, two additional octets are present in the MAC subheader containing the eLCID field and these two additional octets follow the octet containing LCID field;  - eLCID: The extended Logical Channel ID field identifies the logical channel instance of the corresponding MAC SDU or the type of the corresponding MAC CE as described in tables 6.2.1-1a, 6.2.1-1b, 6.2.1-2a and 6.2.1-2b for the DL-SCH and UL-SCH respectively. The size of the eLCID field is either 8 bits or 16 bits. If the size of the eLCID field is 8 bits, it is only used to identify the type of the correpsonding MAC CE. |

**Question 3. If you agree to restrict the 1-byte eLCID field to MAC CE, and if you agree to specify the restriction in the MAC specification, do you agree to the text proposal provided above?**

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| **Company** | **Yes/No** | **Comment** |
| Ericsson | No | We may add the “or the type of the corresponding MAC CE” part, but not the rest. The second change is not necessary as the mapping of eLCID and LCID values are described in the tables. |
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**Proposal 3: based on the outcome of the Question 3.**

## 2.2 RACH stopping

In R2-2002931, it is proposed to simplify the text about UE optional behavior on stopping ongoing RA procedure by specifying only the general principle, with following reasons.

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| The main point of this text is that the UE is allowed to stop the ongoing RA procedure if the ongoing RA procedure is no more needed. There may be various reasons that the ongoing RA procedure is no more needed, e.g. due to cancelling the SR that triggered the RA procedure, but specifying all the reasons is worthless. As long as this principle is kept, the UE implementation can this into consideration, and may stop the ongoing RA procedure if needed. Anyway, this is an optional UE behavior, and the implementation would not be impacted by specifying only the general principle. Moreover, if only general principle is specified, we don’t have to worry about future update even if a new SR trigger is introduced. |

Companies are asked to provide their views whether it is ok to simplify the text on stopping ongoing RA procedure by specifying only the general principle.

**Question 4. Do you agree to simplify the text on stopping ongoing RA procedure** **by specifying only the general principle?**

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| **Company** | **Yes/No** | **Comment** |
| OPPO | Yes..but | We have the sympathy on the intention to simplify the text, there are currently several cases which can trigger SR besides regular BSR:   * Consistent LBT failure * SCell BFR   The spec captures the cases when SR is triggerd by BSR and SCell MAC CE, however, the consistent LBT failure case is missing and the related discussion is on-going in the NR-U session. Looking at the latest version g00, it makes difficulty to read when SCell BFR case is added, let alone the consistent LBT failure case is coming with several new cases being discussed.  In general, we agree the intention to simplify the text and try to capture the principle, e.g., UE may stop on-going RACH if it’s not needed any more.  However, we do think some examples are good to have, and also these examples should be added without impacting the legacy behavior, i.e., R15 behavior. The reason is that, we do need those scenarios specified otherwise UE would not know in which cases the RACH can be stopped, it would even stop RACH based on its own judgment on the specified principle, and the judgment can be different from UE by UE thus makes the system un-predictable.  Thus, one way is to leave the R15 text there so that the legacy behavior is not touched, meanwhile, we specify the principle with the examples for consistent LBT failure and SCell BFR. |
| Ericsson | Yes | If not acceptable to change for legacy, we may only change the Rel-16 additions of BFR and LBT failure triggered RA due to SR. |

**Proposal 4: based on the outcome of the Question 4.**

A text proposal is also provided in R2-2002931. If companies agree to simplify the text on stopping ongoing RA procedure by specifying only the general principle, it is further asked whether the text proposal provided in R2-2002931 is agreeable.

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| 5.4.4 Scheduling Request The MAC entity may stop, if any, ongoing Random Access procedure if the ongoing Random Access procedure is no more needed due to e.g. cancelling the pending SR that triggered the Random Access procedure. |

**Question 5. If you agree to simplify the text on stopping ongoing RA procedure** **by specifying only the general principle, do you agree to the text proposal provided above?**

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| **Company** | **Yes/No** | **Comment** |
| OPPO | No | See Q4 |
| Ericsson | Yes | Should probably be something like:  The MAC entity may stop an ongoing Random Access procedure if the ongoing Random Access procedure is no more needed due to e.g. cancelling of the reason for the pending SR that triggered the Random Access procedure.  Alternatively:  The MAC entity may stop, if any, ongoing Random Access procedure due to a pending SR for BSR which has no valid PUCCH resources configured, which was initiated by MAC entity prior to the MAC PDU assembly. The ongoing Random Access procedure may be stopped when the MAC PDU is transmitted, regardless of LBT failure indication from lower layers, using a UL grant other than a UL grant provided by Random Access Response or a UL grant determined as specified in clause 5.1.2a for the transmission of the MSGA payload, and this PDU includes a BSR MAC CE which contains buffer status up to (and including) the last event that triggered a BSR (see clause 5.4.5) prior to the MAC PDU assembly, or when the UL grant(s) can accommodate all pending data available for transmission.  The MAC entity may stop an ongoing Random Access procedure due to a pending SR not for BSR if the ongoing Random Access procedure is no more needed due to e.g. cancelling of the reason for pending SR that triggered the Random Access procedure. |

**Proposal 5: based on the outcome of the Question 5.**

# 3. Summary

To be filled later..