**3GPP TSG-SA3 Meeting #109e *Ad hoc draft\_S3-230302-r1***

**e-meeting, 16 – 20 January 2023**

**Source: Qualcomm Incorporated**

**Title: A new solution for mitigating privacy attacks exploiting group paging with TMGI**

**Document for: Approval**

**Agenda Item: 5.23**

# 1 Decision/action requested

***This contribution proposes a new solution for mitigating privacy attacks exploiting group paging with TMGI for Multicast-Broadcast services.***

# 2 References

[1] TR 23.700-47

[2] TR 33.883

# 3 Rationale

This contribution proposes a new solution to mitigate privacy attacks exploiting group paging with TMGI. Instead of using TMGI in group paging, this solution introduces a temporary MBS paging identity that is reallocated each time it is used in group paging. The mechanism proposed in this solution is similar to the 5G GUTI reallocation.

# 4 Detailed proposal

It is proposed to include the below pCR in the TR [2].

**\*\*\*\*\* START OF CHANGES \*\*\*\*\***

## 6.K Solution #K: Privacy protection of TMGI during group paging for MBS service

### 6.K.1 Introduction

This solution addresses Key Issue #2.

This solution proposes to use a temporary MBS paging ID (TMPI) instead of the TMGI for group paging. To this end, an AMF allocates a TMPI for an MBS session identified by the TMGI and refreshes the TMPI once the TMPI is used for paging. The AMF provides the TMPI to the UEs during the MBS session join procedure.

When the TMPI is used for group paging, the AMF(s) provides a new TMPI to the UEs while the UEs are in connected state. Reallocating a TMPI each time it is used in group paging can prevent an eavesdropper from inferring the presence of the MBS group members.

If a UE performs a Mobility Registration Update as it moves out of a Registration Area of the serving AMF, a target AMF provides the UE with the TMPI associated with the TMGI during the Registration procedure.

### 6.K.2 Solution details



Figure 6.K.1-1: Procedures for TMPI (re)allocation and provisioning

0a. During the MBS session creation phase, a TMGI is allocated for the MBS session.

0b. When a UE joins an MBS PDU session, if the AMF has the record of the TMGI associated with the MBS PDU session and the corresponding temporary MBS paging ID (TMPI), the AMF provides the TMPI for the MBS session to the UE. Otherwise, the AMF generates a TMPI for the TMGI and creates a record of the TMGI and the TMPI. Then, the AMF provides the TMPI to the UE. In case of UE mobility, the target AMF provides the TMPI associated with the TMGI to the UE during the Registration procedure.

Editor’s Note: For step 0b, alignment with the SA2 procedure is FFS.

1. The MBS session is deactivated as specified in clause 7.2.5.3 of TS 23.247 [6].

2. The MSB session is reactivated as specified in clause 7.2.5.2 of TS 23.247 [6].

2a. During the reactivation, the AMF sends the TMPI of the MBS session as a paging ID. After paging message is sent to the NG-RAN node, the AMF generates a new TMPI and update the TMGI to TMPI mapping record.

2b. Upon receiving the group paging, the UE performs a Service Request procedure and receives a new TMPI from the AMF while it is in CM-CONNECTED state.

### 6.K.3 Evaluation

This solution addresses the Key Issue #2. This solution prevents an attacker from identifying the presence of UEs that have joined a specific MBS session based on group paging.

Editor’s Note: Further evaluation is FFS.

**\*\*\*\*\* END OF CHANGES \*\*\*\*\***