**3GPP TSG-SA3 Meeting #103- *S3-211596-r5***

**e-meeting, 17 – 28 May 2021** Revision of S3-2xxxxx

**Source: Intel**

**Title: Key issue on security aspects of Paging Cause**

**Document for: Approval**

**Agenda Item: 5.19**

# 1 Decision/action requested

***It is requested to approve the key issue for 33.873***

# 2 References

[1] LS S2-2006011: " LS on System support for Multi-USIM devices."

[2] S2-2100080: “Notes of SA2#143E\_CC#0 - pre-meeting moderated email discussion results v3”

[3] 3GPP TS 33.501: "Security architecture and procedures for 5G System."

[4] 3GPP TR 23.761: " Study on system enablers for devices having multiple Universal Subscriber Identity Modules (USIM)"

[5] S2-2103027: “Function Description for Multi-SIM devices”

# 3 Rationale

SA2 has progressed the study on FS\_MUSIM (TR 23.761)[4]. To finalize the work, SA2 has sent an LS to SA3 (S2-2006011)[1], asking for feedback on the following questions.

**"Q1: Please confirm whether** **exposing the Paging Cause in cleartext poses any privacy/security issues."**

This pCR provides a key issue for security and privacy of exposing paging cause in cleartext. As per [2], it was agreed that UE needs to discriminate the case where the absence of Paging Cause in the Uu Paging message is due to a non-voice MT service from the case where the absence of Paging Cause in the Uu Paging message is due to a legacy RAN node (i.e., regardless whether the MT service is voice or not)."

SA2 reached an agreement in the [5] with only voice as paging cause indicator. We propose that exposing paging cause in cleartext doesn't pose any privacy issues (5GS), or for EPS, they are not worth resolving. The issue of sending paging cause in clear text or not should be a moot point either way on whether the Paging Cause is sent indiscriminately or not.

# 4 Detailed proposal

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start Of Changes \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

5.1 Key issue #XX: Security aspects of exposing 'paging cause’.

5.1.1 Key issue details

In TR.23.761[2], the MUSIM device considers sending a paging cause as part of the [Uu] paging message. The [Uu] paging message contains the identity of UE plus a Paging Cause, i.e., indicating the type of traffic that triggered the paging, i.e.., MT Voice. MUSIM system applies to EPS and 5GS. Based on the paging cause, UE makes educated decisions on whether to respond to the other system's paging. The interim conclusion in TR 23.761 is to have only one 'paging cause' value for the voice service.

5.1.2 Threats

It is noted that, while Paging Cause is sent as cleartext, the corresponding UE identity is obfuscated with a temporary identifier (TMSI) or 5G-GUTI. In 5G, this identifier is only refreshed after the completion of every paging service request and response.

### 5.1.3 Potential security requirements

Not Applicable

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Next Changes \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

# 7 Conclusions

Editor’s Note: This clause contains the agreed conclusions that will form the basis for any normative work.

## 7.XX Key issue #XX: Security aspects of exposing 'paging cause’

No solution is pursued for Rel-17.

Note that SA3 can live with exposing paging cause only for voice service, even though additional information is transmitted in clear, which might give more knowledge to the eavesdroppers. In the future, if any new information (in clear) is to be included in an unprotected message, SA3 must be liaised by other WGs for further study and evaluation.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End Of Changes \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***