**3GPP TSG RAN WG2#119-e R2-2208960**

**e-Meeting, 17th - 29th August, 2022**

**Title: [DRAFT] Reply LS on authenticity and replay protection of system information**

**Response to: R2-2206976 / S3-221700**

**Release: Rel-18**

**Work Item: Study on 5G security enhancement against false base stations (FS\_5GFBS)**

**Source: Samsung [To be RAN2]**

**To: SA3**

**Cc: -**

**Contact person: Vinay Kumar Shrivastava**

**shrivastava@samsung.com**

**Send any reply LS to: 3GPP Liaisons Coordinator,** **mailto:3GPPLiaison@etsi.org**

**Attachments:** **None**

# 1 Overall description

RAN2 would like to thank SA3 for their LS (R2-2206976/S3-221700) which concerns approach to enhance 5GS to mitigate false base stations. SA3 has asked following questions to RAN2:

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| --- |
| Several Key Issues (KIs) have been identified in TR 33.809, among which is KI#2 on the authenticity and replay protection of System Information (SI). SA3 would like to seek feedback from RAN2 on the following questions: 1. How many bytes in each of the existing SIBs can be used to carry additional security information?
2. What are the impacts of introducing a new SIB for carrying security information that can be requested by a UE on demand to validate the security of existing SIBs? How many bytes in this new SIB can be used to carry security information at maximum?
3. What are the impacts of scheduling a new SIB so that a UE can acquire the new SIB to validate the security of existing SIBs? More specifically, what periodicity can this new SIB be broadcasted?
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RAN2 would like to respond to above-listed questions as follows:

1. The physical layer imposes a limit to the maximum size a SIB can take. The maximum SIB1 or SI message, which can carry multiple SIBs, size is 2976 bits. Actual size of the existing SIBs can vary widely with configurations/deployments. SIB’s content may also evolve in the future e.g. with addition of new fields in future releases. Therefore, the available size varies per each SIB and there is no definite answer on available bytes in existing SIBs to carry security information.
2. RAN2 would need to define a new SIB available on demand. The new SIB could carry up to 2976 bits. It is RAN2 understanding that proposed enhancements would not be applicable to the legacy UEs. At the same time, introduction/addition of security information to existing SIBs might make it difficult to introduce/deploy new features in the future and therefore a separate SIB is preferred to reduce the impact on the air interface. Also, SIB segmentation feature can enable larger message size (e.g. 2976 bits x 64 segments). Further, RAN2 impacts can be investigated in the future if needed by SA3.
3. The existing SI framework schedules SIBs by mapping SIB(s) to SI message(s). The new SIB can be mapped to a separate SI message or can be mapped together with other SIB(s) in an SI message. The existing SI framework supports flexible scheduling periodicities (which can be 80/160/320/640/1280/2560/5120 ms) for an SI message. A specific periodicity for an SI message carrying the new SIB can be selected by the network configuration. Further, network can decide when to start/stop broadcasting of the SIB by implementation. RAN2 would need a more detailed understanding of the proposed designs to form a view on what scheduling configuration would be feasible.

Also, RAN2 would like to request SA3 to provide the following information on the requirements of the security information to be broadcast so that RAN2 can make a better analysis for this feature:

* size of the security information or feasible ranges for the size
* latency requirements for the delivery of the security information
* the
* whether all or some SIBs need to be protected
* whether the security information should be updated whenever any of the SIB contents change
* whether PWS messages, which are not broadcast periodically, should also be protected
* whether the UE should re-acquire the security information whenever it changes as well as all other SIBs

# 2 Actions

**To: SA3**

**ACTION:** RAN2 kindly asks SA3 to take into account the above information in their work and provide responses to the RAN2 questions, if necessary.

# 3 Dates of next TSG RAN WG 2 meetings

RAN2#119-bis-e 10 -19 October 2022 Online

RAN2#120 14 -18 November 2022 Europe