**3GPP TSG-SA3 Meeting #115 *draft\_S3-240690-r1***

**Athens, Greece, 26 February - 01 March 2024**

**Source: Nokia, Nokia Shanghai Bell, Verizon, Samsung, AT&T, Charter, Cabelabs, CMCC**

**Title: New SID on Security aspects of 5G NR Femto**

**Document for: Approval**

**Agenda Item: 6**

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm).

Title: Study on security aspects of 5G NR Femto

# Document for: Approval

# Acronym: FS\_5G\_Femto\_Security

# Unique identifier: TBA

# Potential target Release: Rel-19

# 1 Impacts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Affects:** | **UICC apps** | **ME** | **AN** | **CN** | **Others (specify)** |
| **Yes** |  |  | X | X |  |
| **No** |  | X |  |  |  |
| **Don't know** | X |  |  |  | X |

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

|  |  |
| --- | --- |
| X | **Study**  |
|  | **Normative – Stage 1** |
|  | **Normative – Stage 2** |
|  | **Normative – Stage 3** |
|  | **Normative – Other\*** |

## 2.2 Parent Work Item

For a brand-new topic, use “N/A” in the table below. Otherwise indicate the parent Work Item.

|  |
| --- |
| **Parent Work / Study Items**  |
| **Acronym** | **Working Group** | **Unique ID** | **Title (as in 3GPP Work Plan)** |
| FS\_5G\_Femto | SA2 | 1020002 | New SID on System aspects of 5G NR Femto |
|  |  |  |  |

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| **Other related Work /Study Items (if any)** |
| **Unique ID** | **Title** | **Nature of relationship** |
| N/A | N/A | *N/A* |

# 3 Justification

SP-231675 was approved in SA2 during December 2023. In line with this study, SA3 should also study the security impacts of the work tasks identified.

In 3G and 4G, 3GPP defined an architecture for Home eNodeB (HeNB)/Home NodeB (HNB) (or Femto/Femtocell is synonymous of HeNB/HNB in 3GPP and is also well-defined by other STD organizations such as Broadband Forum TR-196) in TS 22.220 and TS 36.300 that enables small access points deployed in customer premises (on a campus or at home) for access to operator, Internet and local services like local printers or local servers. For 5G, SA1 has defined normative requirements for Premises Radio Access Station (PRAS) as part of the PIRates WID (see TS 22.261, clause 6.38). In fact, NR Femto access is limitedly specified (e.g., TS 38.104) since the 5GS architecture is introduced in a flexible manner and no specific architecture for 5G NR Femto access deemed necessary so far.

In this study proposal, apart from alignment with SA2 study item, updates required in HeNB security specifications for 5G enhancements are also considered.

Following are the justifications for the study objectives:

* Security aspects of a 5G NR Femto is currently not explicitly specified in 3GPP standards. Existing Home eNodeB security specifications are in TS 33.320, and we need to study how much can be reused for 5G.
* Security aspects of 5G NR Femto access control mechanism based on the existing CAG concept such that the 5G NR Femto owner able to control the access need to be studied.
* Security impacts of enabling provisioning of subscribers allowed to access 5G NR Femto cells and how to manage 5G NR Femto access control by the Closed Access Group (CAG) owner or an authorized administrator.

# 4 Objectives

Based on the above justification, the following objectives will be studied:

WT#1: Perform a gap analysis to determine potential updates or enhancements needed for 5G NR Femto over the TS 33.320.

 NOTE1: TS 33.320 will be reused as much as possible

NOTE2: Need to coordinate with SA2 and RAN3 for architectural aspects of 5G NR Femto in Rel-19.

WT#2: Study security impacts for interworking between CAG and CSG cells..

WT#3: Study security impacts of enabling provisioning of subscribers allowed to access 5G NR Femto cells and how to manage 5G NR Femto access control by the Closed Access Group (CAG) owner or an authorized administrator.

## TU estimates and dependencies

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Work Task ID | TU Estimate(Study) | TU Estimate(Normative) | RAN Dependency(Yes/No/Maybe)  | Inter Work Tasks Dependency Editor’s Note: This column should highlight if WT#x is self-contained, or is dependent on the completion of other WTs |
| 1. | 2 TUs ( meeting cycles) | 1 TU (2 meeting cycles) | Maybe | SA2 and RAN3 |
| 2. | 0.25 TUs (1 meeting cycles) | 0.25 TUs (1 meeting cycles) | Maybe | Depends on 1. |
| 3. | 0.25 TUs (1 meeting cycles) | 0.25 TUs (1 meeting cycles) | Maybe | Depends on 1. |

Total TU estimates for the study phase: 2.5 TUs (5 meeting cycles)

Total TU estimates for the normative phase: 1.5 TUs (3 meeting cycles)

Total TU estimates: 4

# 5 Expected Output and Time scale

|  |
| --- |
| **New specifications {One line per specification. Create/delete lines as needed}** |
| **Type**  | **TS/TR number** | **Title** | **For info at TSG#**  | **For approval at TSG#** | **Rapporteur** |
| Internal TR | 33.xyz | Study on security aspects of 5G NR Femto | TBD | TBD | *TBD* |

|  |
| --- |
| **Impacted existing TS/TR {One line per specification. Create/delete lines as needed}** |
| **TS/TR No.** | **Description of change**  | **Target completion plenary#** | **Remarks** |
| *N/A* | *N/A*  | *N/A*  | *N/A*  |
|  |  |  |  |

# 6 Work item Rapporteur(s)

*TBD*

# 7 Work item leadership

SA3

# 8 Aspects that involve other WGs

RAN3 for overall architecture aspects.

SA2 for relevant architecture updates.

# 9 Supporting Individual Members

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| --- |
| **Supporting IM name** |
| Nokia |
| Nokia Shanghai Bell |
| Verizon |
| Samsung |
| AT&T |
| Charter |
| Cabelabs |
| CMCC |
|  |