**3GPP TSG SA WG 1 Meeting #104 S1-xxxxx**

**Chicago, USA, 13 - 17 November 2023**

**Source: Huawei**

**pCR Title: 22.137 pCR: Adding requirements into Section 5.2**

**Draft Spec: 3GPP TS 22.137 v.1.0.0**

**Agenda item: 7.1.2**

**Document for: Approval**

**Contact: Fangyuan Zhu <zhufangyuan@huawei.com >**

*Abstract: This document proposes to add requirements into Section 5.2 of TS 22.137.*

**1. Introduction**

Based on the conclusion of S1-232618 in the SA1#103 meeting, the following CPRs are added in the consolidated functional requirements section for FS\_Sensing:

|  |
| --- |
| 1. *Subject to operator’s policy, the 5G system may be able to use sensing assistance information to derive the sensing result.* 2. *Based on location, the 5G network shall be able to ensure that sensing transmitters and sensing receivers use licensed spectrum only in network coverage and under the full control of the operator who provides the coverage.*   *NOTE 1: The above requirement does not apply for public safety and V2X networks with dedicated spectrum, where 5G wireless sensing can be allowed out of coverage or in partial coverage as well.*   1. *Subject to operator’s policy, the 5G network may enable secure means for a trusted third party to provide sensing assistance information.* 2. *Subject to regulation and user’s consent, the 5G network may associate sensing results and identity of the user together for further processing for a sensing target that has a UE and the UE is subscribed in the same network.* |

It is proposed to add these requirments into Section 5.2 of TS 22.137 except for the above fourth requirement.

Regarding the fourth requirement, the rationale of association between sensing results and identity of the user is not clear to us as the following:

1. The user identity can be provided by a trusted third-party as sensing assistance information to the 5G network. However, even if the 5G network can sense targets with UE onboard (e.g., UAV) using NR RF signals, it raises the question:

* How does the 5G network identify a target as the UE with a specific user identity among the detected targets? The TR 22.837 does not describe any service flow for an association procedure with a justified use case. If only a single target is detected, there is no need for the 5G network to perform an association.

This can be easily implemented by the trusted third-party.

1. The user identity might not be provided by a trusted third-party as sensing assistance information to the 5G network. Typically, the user identity used to identify a user (e.g., people, consumers) is beyond the scope of 3GPP. It’s unclear and sensitive how the 5G network establishes an association with the user identity based solely on the sensing results of this detected object.

**2. Reason for Change**

This pCR adds the above requirements agreed in the conclusion of FS\_Sensing study except for the above fourth requirement.

**3. Proposal**

It is proposed to agree the following changes to 3GPP TS 22.137.

\* \* \* First Change \* \* \* \*

## 5.2 Service requirements

### 5.2.1 General

The 5G system shall be able to provide sensing service to detect, identify and/or track one or more objects (e.g., UAVs, birds) and the environment around the object(s).

Editor’s note: “Identify” is FFS.

Based on operator’s policies, operator’s control and regulation, the 5G system shall be able to collect 3GPP sensing data from sensing receivers for processing.

The 5G system shall be able to provide 5G wireless sensing service in a target sensing service area location using sensing transmitters and sensing receivers.

Subject to regulation and operator policy, the 5G network shall be able to activate, configure, and deactivate 5G wireless sensing based on parameters such as location and network conditions (e.g., network load).

Subject to user consent, regulation, and operator’s policy, the 5G system shall be able to collect non-3GPP sensing data from authorized non-3GPP sensors and securely provide it to 5G network.

Subject to user consent, regulation, and operator’s policy, the 5G system should support the joint processing of the 3GPP sensing data and non-3GPP sensing data to derive a combined sensing result.

The 5G system shall support continuity for 5G wireless sensing service (e.g., for sensing a moving object).

Subject to operator’s policy, the 5G System shall be able to provide the 5G wireless sensing service in case of roaming.

Subject to regulation and operator’s policy, 5G network shall provide prioritization among 5G wireless sensing services as well as prioritizing between communication and sensing services.

The 5G network shall enable UEs without 5G coverage to use unlicensed spectrum to provide 5G wireless sensing service.

Subject to regulation, the 5G network shall enable UEs supporting V2X application to perform 5G Wireless sensing when not served by RAN using the allowed ITS spectrum and unlicensed spectrum.

Subject to operator’s policy, the 5G system may be able to use sensing assistance information to derive the sensing result.

### 5.2.2 Configuration and authorization

Subject to regulation and operator’s policies, the 5G network shall be able to configure and/or authorize or revoke authorization of sensing transmitter(s) and sensing receiver(s) for 5G wireless sensing service.

NOTE 1: Such configuration and authorization can be based on sensing transmitter or sensing receiver location, specific time, sensing duration, sensing accuracy, target sensing geographical area, establishing of communication to transfer sensing data, etc.

NOTE 2: Such configuration and authorization can also include the selection of multiple sensing transmitters/receivers for 5G wireless sensing services.

The 5G network shall be able to provide a mechanism for an MNO to configure UEs supporting V2X applications to support 5G Wireless sensing service when not served by RAN.

Based on location, the 5G network shall be able to ensure that sensing transmitters and sensing receivers use licensed spectrum only in network coverage and under the full control of the operator who provides the coverage.

NOTE 3: The above requirement does not apply for public safety and V2X networks with dedicated spectrum, where 5G wireless sensing can be allowed out of coverage or in partial coverage as well.

### 5.2.3 Network exposure

Subject to operator’s policy, the 5G network shall be able to provide secure means to report sensing result to a trusted third-party requesting information about a target object when specific requested conditions are met.

NOTE: These conditions could be e.g., the target object distance from the restricted area border or entering restricted area.

Subject to operator’s policy, the 5G network shall provide secure means for a trusted third-party to request 5G wireless sensing service based on specific parameters (e.g., refresh rate, period of time, sensing KPIs, geographical location) and to receive the corresponding sensing results.

Subject to operator’s policy and regulation, the 5G system shall be able to provide secure means for a trusted third-party to receive sensing results with contextual information.

Subject to user’s consent, regulation and operator’s policy, the 5G network may provide secure means to expose to a trusted third-party the combined sensing result derived from the joint processing of the 3GPP sensing data and non-3GPP sensing data.

Subject to operator’s policy, the 5G network may provide secure means for the operator to expose information towards trusted third-party on whether a given sensing service is available and the estimated quality of the given service for a certain geographic area and time.

Subject to operator’s policy, the 5G network may enable secure means for a trusted third party to provide sensing assistance information.

### 5.2.4 Security

The 5G system shall support encryption, integrity protection, privacy of the 3GPP sensing data, non-3GPP sensing data and sensing results, to protect the data inside the 5G system.

The 5G system shall provide a mechanism to protect identifiable information that can be derived from the 3GPP sensing data from eavesdropping.

The 5G network shall limit the exposure of the sensing results only to a trusted third-party authorized to receive that sensing results.

The 5G system shall support appropriate sensing KPIs of 5G wireless sensing for both situations where consent can be obtained, and where it cannot.

### 5.2.5 Charging

The 5G system shall be able to support charging for the 5G wireless sensing service (e.g., considering sensing KPIs, duration).

\* \* \* End of Changes \* \* \* \*