**3GPP TSG SA WG 1 Meeting #104 S1-23xxxx**

**Chicago, USA, 13 - 17 November 2023** *(revision of S1-23xxxx)*

**Source: Deutsche Telekom AG**

**pCR Title: Pseudo-CR on Correcting references in the KPI table**

**Draft Spec: 3GPP TS 22.127 v 1.0.0**

**Agenda item: x.x**

**Document for: Approval**

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*Abstract: This pCR proposes changes in the existing notes of KPI table in section 6.2*

**1. Introduction**

Existing KPI table notes refer directly to the TR 22.837. It is important to introduce the respective references from the study into normative work.

**2. Reason for Change**

SA1 study on Sensing is already finished and it is not expected to be further updated. Refering it in normative work is not a good practice and there is expectance the KPI references to be seen directly in the TS 22.127.

**4. Proposal**

It is proposed to agree the following changes to 3GPP TS 22.127 v 1.0.0.

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

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 5GAA\_White\_Paper\_C-V2X Use Cases Volume II: Examples and Service Level Requirements.

[3] Moore, Erik George, "Radar Detection, Tracking and Identification for UAV Sense and Avoid Applications" (2019). Electronic Theses and Dissertations. <https://digitalcommons.du.edu/etd/1544/>

[4] Roberto Opromolla, etc., “Perspectives and Sensing Concepts for Small UAS Sense and Avoid”, 2018 IEEE/AIAA 37th Digital Avionics Systems Conference (DASC). <https://www.mdpi.com/2072-4292/13/13/2523>

\* \* \* Next Change \* \* \* \*

## 6.2 Requirements

The 5G system shall be able to provide sensing results with the performance requirements in Table 6.2-1.

Table 6.2-1: Performance requirements for 5G Wireless sensing

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Scenario | Sensing service category | Confidence level [%] | Accuracy of positioning estimate by sensing (for a target confidence level) | | Accuracy of velocity estimate by sensing (for a target confidence level) | | Sensing resolution | | Max sensing service latency  [ms] | Refreshing rate  [s] | Missed detection  [%] | False alarm  [%] | Sensing service description in a target sensing service area |
| Horizontal  [m] | Vertical  [m] | Horizontal  [m/s] | Vertical  [m/s] | Range resolution  [m] | Velocity resolution (horizontal/ vertical)  [m/s x m/s] |
| Object detection and tracking | 1 | 95 | 10 | 10 | N/A | N/A | 10 [3] | 10 [3] | 1000 | 1 | 5 | 2 | Indoor/outdoor (e.g., detection of human, UAV) |
| 2 | 95 | 5 | 1 | 1 | 1 | 1 | 1 | 1000 | 1 | 5 | 5 | Outdoor (e.g., detection of human, UAV) requiring higher performance than category 1 |
| 3 | 95 | 1 | N/A | 1 [3], [4] | N/A | 1 [3], [4] | 1 x 1 [3] | 100 [2], or 1000 (NOTE 3) | 0.1 | 2 | 2 | Indoor/outdoor (e.g., detection tracking of human, animal, UAV) |
| 4 | 99 for public safety, otherwise, 95 | 0.5 | 0.5 | 1.5 for pedestrian,  15 for vehicle, otherwise, 0.1 | 1.5 for pedestrian, otherwise,  N/A | 0.5 | 5 x 5  for factories 0.5 may be needed | 250 | 0.25 | 1 | 5 | Indoor/outdoor (e.g., detection tracking of human, animal, UAV, AGV, vehicle) requiring higher performance than category 3 |
| 5 | 95 | short range radar; 0.02, otherwise; 0.1 | 0.5 | 0.03 | N/A | 0.4 | 0.1 x 0.6 | 50 | 0.05 | 1 | 1 | Indoor/outdoor (e.g., detection tracking of human, animal, UAV, AGV, vehicle) requiring higher performance than category 4 |
| Environment monitoring | 6 | 95 | 10 | 0.2 (NOTE 5) | N/A | N/A | N/A | N/A | 6000 | 60 | 10 | 3 | Nature of environments monitored by sensing (e.g. rainfall, flooding monitoring). |
| Motion monitoring | 7 | 95 | N/A | N/A | N/A | N/A | N/A | N/A | 60000 | 60 | 5 | 5 | Human motions and activities obtained by sensing (NOTE 4). |
| 8 | 95 | 0.2 | 0.2 | 0.1 | 0.1 | 0.375 | 0.3 | 5 | 0.1 | 5 | 5 | Human hand gestures obtained by sensing |
| NOTE 1: For sensing service categories to which UAV, human or vehicle is a sensing target, the typical size (Length x Width x Height) of UAV is 1.6m x 1.5m x 0.7m, the typical size of human is 0.5m x 0.5m x 1.75m, and the typical size of vehicle is 7.5m x 2.5m x 3.5 m.  NOTE 2: The safe distance between pedestrian/vehicle and power transmission station/line is 0.7m/0.95m.  NOTE 3: To realize 1m granularity tracking, when the velocity resolution is 1 m/s, the maximum corresponding sensing service latency is 1 s.  NOTE 4: Human motion rate accuracy for contactless sleep is 2 times/min (0.033 Hz) and for sports monitoring is between 3 times/min (0.05Hz) and 4 times/min (0.07 Hz).  NOTE 5: This value is derived from the water level where people feel difficulty in walking | | | | | | | | | | | | | |

Editor’s note: TBD if sensing service categories 5 and 8 are included in Rel-19.

\* \* \* Next Change \* \* \* \*

<Proposed change in revision marks>