ETSI TS 122 137 V19.1.0 (2026-01)

TECHNICAL SPECIFICATION

5G;
Integrated Sensing and Communication
(3GPP TS 22.137 version 19.1.0 Release 19)

Reference
DTS/TSGS-0122137vj10

Keywords
5G

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° w061004871

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI IPR online database.

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™**, **LTE™** and **5G™** logo are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM**® and the GSM logo are trademarks registered and owned by the GSM Association.

Legal Notice

This Technical Specification (TS) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

The present document may refer to technical specifications or reports using their 3GPP identities. These shall be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between 3GPP and ETSI identities can be found at 3GPP to ETSI numbering cross-referencing.

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

In the present document, modal verbs have the following meanings:

shall indicates a mandatory requirement to do something

shall not indicates an interdiction (prohibition) to do something

The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

should indicates a recommendation to do something

should not indicates a recommendation not to do something

may indicates permission to do something

need not indicates permission not to do something

The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

can indicates that something is possible

cannot indicates that something is impossible

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

will indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

will not indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

might indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

might not indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

is (or any other verb in the indicative mood) indicates a statement of fact

is not (or any other negative verb in the indicative mood) indicates a statement of fact

The constructions "is" and "is not" do not indicate requirements.

1 Scope

The present document describes functional and performance requirements for 5G wireless sensing service.

The aspects addressed in this document include:

- Overview of sensing service and operation;
- Functional requirements for sensing;
- Performance requirements (KPIs) for sensing.

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

3 Definitions of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

3GPP sensing data: data derived from 3GPP radio signals impacted (e.g., reflected, refracted, diffracted) by an object or environment of interest for sensing purposes, and optionally processed within the 5G system.

5G Wireless sensing: 5GS feature providing capabilities to get information about characteristics of the environment and/or objects within the environment (e.g., shape, size, orientation, speed, location, distances or relative motion between objects, etc) using NR radio frequency signals, which, in some cases, can be extended by information created via previously specified functionalities in EPC and/or E-UTRAN.

non-3GPP sensing data: data provided by non-3GPP sensors (e.g., video, LiDAR, sonar) about an object or environment of interest for sensing purposes.

Sensing assistance information: information that is provided to the 5G system from a trusted third-party and can be used to support the derivation of a sensing result. This information does not contain 3GPP sensing data.

NOTE 1: Examples of sensing assistance information are map information, area information, a UE ID attached to or in the proximity of the sensing target, UE position information, UE velocity information etc**.**

Sensing contextual information: information that is exposed with the sensing results by 5G system to a trusted third-party which provides context to the conditions under which the sensing results were derived. This information does not contain 3GPP sensing data.

NOTE 2: Examples includes map information, area information, time of capture, UE location and ID. This contextual information can be required in scenarios where the sensing result is to be combined with data from other sources outside the 5GS.

Sensing group: a set of sensing transmitters and sensing receivers whose location is known and whose sensing data can be collected synchronously.

Sensing receiver: a sensing receiver is an entity that receives the sensing signal which the sensing service will use in its operation. A sensing receiver is part of a RAN node or a UE. A Sensing receiver can be located in the same or different entity as the Sensing transmitter.

Sensing result: processed 3GPP sensing data requested by a service consumer.

Sensing signals: Transmissions on the 3GPP radio interface that can be used for sensing purposes.

NOTE 3: This definition refers to NR radio frequency signals which, in some cases, can be extended by information created via previously specified functionalities in EPC and/or E-UTRAN.

Sensing transmitter: a sensing transmitter is the entity that sends out the sensing signal which the sensing service will use in its operation. A Sensing transmitter is part of a RAN node or a UE. A Sensing transmitter can be located in the same or different entity as the Sensing receiver.

Target sensing service area: a cartesian location area that needs to be sensed by deriving characteristics of the environment and/or objects within the environment with certain sensing service quality from the impacted (e.g., reflected, refracted, diffracted) 3GPP radio signals. This includes both indoor and outdoor environments.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

<ABBREVIATION> <Expansion>

4 Overview

4.1 General

5G wireless sensing is a technology enabler to acquire information about characteristics of the environment and/or objects within the environment, that uses radio frequency to determine the distance (range), angle, or instantaneous linear velocity of objects, etc.

Radio frequency sensing functionality provides services for device-free object localization as there is lack of need for the object to be connected via a device in the network. The estimation of parameters such as signal strength, delay, doppler and angle spectrum information is obtained from scattered and/or reflected radio frequency signals transmitted and received by RAN nodes or UEs by using NR radio frequency signals and, in some cases, previously defined information available in EPC and/or E-UTRAN, without leading to impacts on EPC and E-UTRAN. By processing these radio frequency signals, features such as the location, velocity, geometric information of the objects can be extracted and further exposed together with contextual information towards different applications.

The capabilities to obtain range, velocity, and angle information from the radio frequency signals can provide a broad range of new functionality, such as various objects detection, object recognition (e.g., vehicle, human, animal, UAV) and high accuracy localization, tracking and activity recognition.

This technical specification describes the sensing technology as part of the 5G system for enabling new services and use cases. 5G wireless sensing service provides new possibilities for enhanced usage of the telecommunication infrastructure. It provides input to different verticals (e.g., UAVs, smart home, V2X, factories, railways, public safety, etc) enabling applications offering e.g., intruder detection, assisted automotive maneuvering and navigation, trajectory tracing, collision avoidance, traffic management, health and activity monitoring.

In some cases, 5G wireless sensing can also use non-3GPP type sensors (e.g., Radar, camera) to further support the 3GPP-based sensing.

4.2 Sensing operation

The operation of the 5G wireless sensing service, a.k.a. sensing operation, relies on processing the transmissions, reflections, and scattering of wireless sensing signals.

5G wireless sensing, therefore, has the opportunity to enhance the 5G system from a communication network to a wireless communication and sensing network, where it uses 5G entities to sense objects and the environment in its surroundings.

Sensing operation can be implemented in a couple of different ways, from radar like sensing where the sensing transmitter and sensing receiver are co-located in the same entity (figure 4.2-1), called Monostatic sensing, to have the sensing receiver and sensing transmitter in different entities (figure 4.2-2), also called Bistatic sensing. A more advanced scenario with multiple sensing transmitters and receivers is also possible, called Multistatic sensing. The reflections of the sensing signal sent from the sensing transmitter are received by the sensing receiver and processed to obtain characteristics of the sensed object and its environment (e.g., location). Below figure 4.2-1 and figure 4.2-2 show examples of the sensing operation and the nomenclature used in this specification.

Non-3GPP based sensing is when information from non-3GPP sensors is used to determine characteristics of objects and their environment. These non-3GPP sensors could include radar camera or Wi-Fi sensing. While the mechanism of these types of sensing is not considered in this specification, non-3GPP sensing data from these non-3GPP sensors, if available, can be used in 5G wireless sensing to achieve improved sensing result, or in any other way to enhance the sensing service.

The 5G wireless sensing service could be consumed by either the 3GPP system or trusted third-party.

It is expected that the 5G wireless sensing service will work independently of positioning service.

There are some factors affecting the performance that the 5G wireless sensing service can achieve e.g.,

- Operating frequencies and used bandwidth.
- The propagation environment also plays an important role. Environments with many objects that can block radio signals, leading to interruption of the Line of Sight (LOS) path and reflections/scattering can increase the number of interfering signal paths, as well as clutter and thus make it harder to reach higher resolutions.

Sensing operations, such as authorization, and parameters such as sensing area, sensing operation period and sensing operation time window etc., could be configured and adjusted for efficient use of all kinds of resources, such as energy and radio spectrum, etc.

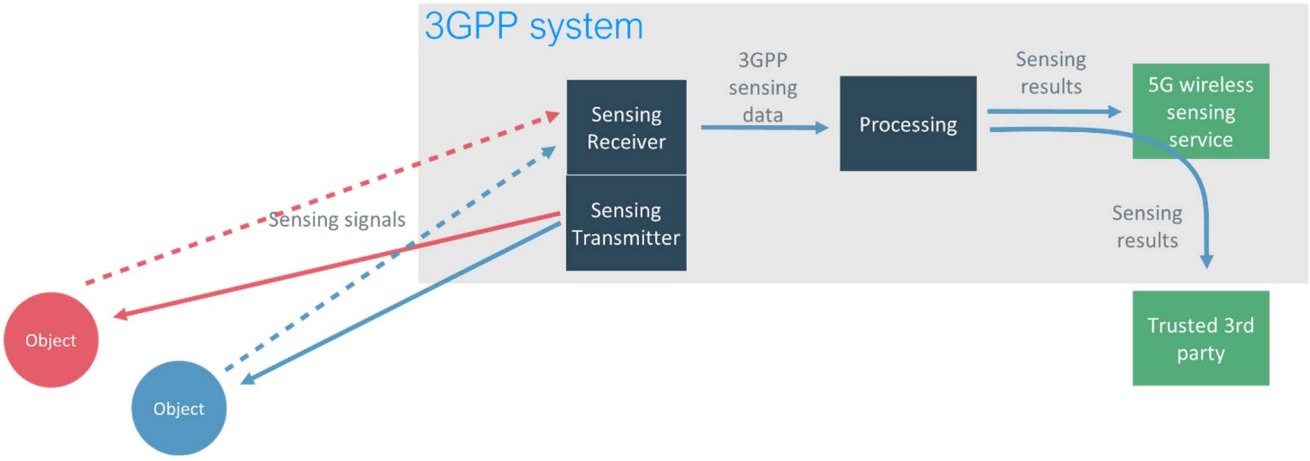

Figure 4.2-1: Example of sensing with co-located sensing receiver and sensing transmitter

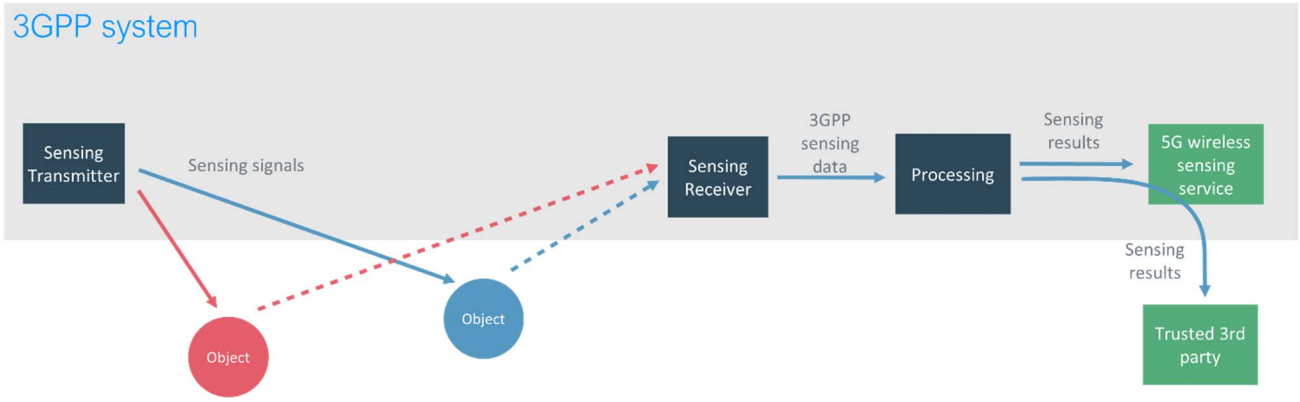

Figure 4.2-2: Example of sensing with separated sensing receiver and sensing transmitter

4.3 Sensing security and privacy aspects

5G wireless sensing service also brings challenges related to confidentiality and privacy. There is a need to protect the sensing data from unauthorized access, interception and eavesdropping, but also to make sure the 5G wireless sensing service is in compliance with regulatory requirements.

The introduction of sensing capabilities can enable tracking of people and objects in the environment, including people not carrying UEs. Thus, additional considerations are needed to protect their rights to privacy.

5 5G wireless sensing service functional requirements

5.1 Description

The 5G system is expected to meet the service requirements for 5G wireless sensing service, which provides capabilities for sensing one or more objects in the environment, monitoring environmental conditions, and human motion and gestures to enable more diversified applications.

The 5G wireless sensing service includes the collection of 3GPP sensing data, secure delivery of the 3GPP sensing data for processing, and secure exposure of the sensing result to trusted third-party. In some scenarios, non-3GPP sensing data can also be used to improve 3GPP sensing service.

It is important to consider energy efficient sensing operations which can include temporarily disabling sensing transmitters and receivers that are not involved in sensing and communication operations or adjusting the sensing

operation parameters (e.g., sensing frequency) to minimize energy consumption. Furthermore, the coordination between the sensing transmitters/receivers is expected to be considered for interference management.

When introducing sensing technology as a new 3GPP system capability, new considerations on authorization for service access and operation access, data confidentiality, data integrity, and user privacy are needed, to ensure that these aspects are taken into account when deriving service requirements.

The following requirements provide guidance on specific 5G wireless sensing capabilities.

5.2 Requirements

5.2.1 General

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

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

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.

Subject to local regulation, 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.

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 and privacy

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.

Subject to regulation and user consent, the 5G network may be able to link sensing results with 3GPP subscriber identity of a UE for a sensing target associated with that UE served by the same network.

NOTE: The purpose of this requirement is to ensure that association of 3GPP subscriber identity and sensing results is possible only with user consent and according to regulatory requirements.

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).

6 5G wireless sensing performance requirements

6.1 Description

5G wireless Sensing service is required to fulfil different performance requirement (e.g., accuracy, resolution, latency, etc.) based on the characteristics of one or multiple target object(s) and/or the environment to be sensed in a target sensing service area. The following set of key performance requirements is used and shown for each service scenario in Table 6.2-1.

- **Accuracy of positioning estimate** describes the closeness of the measured sensing result (i.e., position) of the target object to its true position value. It can be further derived into a horizontal sensing accuracy – referring to the sensing result error in a 2D reference or horizontal plane, and into a vertical sensing accuracy – referring to the sensing result error on the vertical axis or altitude.

- **Accuracy of velocity estimate** describes the closeness of the measured sensing result (i.e., velocity) of the target object to its true velocity.

- **Confidence level** describes the percentage of all the possible measured sensing results that can be expected to include the true sensing result considering the accuracy.

- **Sensing Resolution** describes the minimum difference in the measured magnitude of target objects (e.g., range, velocity) to be allowed to detect objects in different magnitude.

- **Missed detection probability** describes the conditional probability of not detecting the presence of target object/environment when the target object/environment is present. This probability is denoted by the ratio of the number of events falsely identified as negative, over the total number of events with a positive state. It applies only to binary sensing results.

NOTE 1: An event with a positive state refers to the presence of the characteristics of a target object or environment, including the event falsely identified as being negative and truly identified as being positive.

- **False alarm probability** describes the conditional probability of falsely detecting the presence of target object/environment when the target object/environment is not present. This probability is denoted by the ratio of the number of events falsely identified as being positive, over the total number of events with a negative state. It applies only to binary sensing results.

NOTE 2: An event with a negative state refers to the non-presence of the characteristics of a target object or environment, including the event falsely identified as being positive and truly identified as being negative.

- **Max sensing service latency**: time elapsed between the event triggering the determination of the sensing result and the availability of the sensing result at the sensing system interface.

- **Refreshing rate**: rate at which the sensing result is generated by the sensing system. It is the inverse of the time elapsed between two successive sensing results.

5G wireless sensing performance requirements are applied to 3GPP sensing data and sensing results.

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]	5 [3]	1000	1	5	2	Indoor/outdoor (e.g., detection of human, UAV)
	2	95	2	5	1	N/A	1	1	1000	0.2	0.1 to 5	5	Outdoor (e.g., detection of human, UAV)
	3	95	1	1	1 [3], [4]	1	1 [3], [4]	1 x 1 [3]	100 [2], or 1000 (NOTE 3); 5000 for detection in highway	0.05 to 1	2	2	Indoor/outdoor (e.g., detection and 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	0.5	0.5 x 0.5 for factories	100 to 5000	0.1	1	3	Indoor/outdoor (e.g., detection and tracking of human, animal, UAV, AGV, vehicle)
Environment monitoring	5	95	10	0.2 (NOTE 4)	N/A	N/A	N/A	N/A	60000	60 to 600	0.1 to 5	3	Nature of environments monitored by sensing (e.g. rainfall, flooding monitoring)
Motion monitoring	6	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 5)
	7	95	0.2	0.2	0.1	0.1	0.375	0.3	5 to 50	0.1	5	5	Human hand gestures obtained by sensing (NOTE 6)

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: This value is derived from the water level where people feel difficulty in walking.
NOTE 5: To achieve human motion monitoring, different accuracy KPI is needed to measure different human motions. E.g., respiration rate accuracy (2 times/min) is a KPI used to measure the accuracy of sleep monitoring, sit-up rate accuracy (3 times/min) is a KPI used to measure the accuracy of sports monitoring.
NOTE 6: Category 7 has more stringent requirements (e.g., for KPIs such as positioning accuracy and sensing resolution) compared to other categories and typically requires more radio resources.

Annex A (informative): Change history

Change history							
Date	**Meeting**	**TDoc**	**CR**	**Rev**	**Cat**	**Subject/Comment**	**New version**
05.2023	SA1#102	S1-231311				Initial Skeleton	0.0.0
08.2023	SA1#103	S1-232428 S1-232441 S1-232443 S1-232444 S1-232445 S1-232470 S1-232471 S1-232472 S1-232475 S1-232476 S1-232642 S1-232659 S1-232660				Output of approved pCRs from SA1 #103	0.1.0
09.2023	SA#101	SP-231014				MCC Clean-up	1.0.0
11.2023	SA1#104	S1-233087 S1-233124 S1-233307 S1-233367 S1-233309 S1-233088 S1-233310 S1-233089 S1-233342 S1-233313 S1-233327 S1-233328 S1-233086 S1-233339				Output of approved pCRs from SA1#104	1.1.0
12.2023	SA#102	SP-231398				MCC Clean-up	2.0.0
12.2023	SA#102	-				Approved by SA#102	19.0.0
2024-03	SA#103	SP-240201	0001	1	F	Correction on KPI table for sensing	19.1.0

History

Document history		
V19.1.0	January 2026	Publication