

Key Definitions for GNSS Service Performance Commitments

General Terms

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II. SIS Coverage and Minimum Received Power

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General Terms

Global Navigation Satellite System (GNSS): A satellite system that provides radionavigation-satellite service.

Radionavigation-satellite Service (RNSS): A radiodetermination-satellite service used for the purpose of radionavigation. This service may also include feeder links necessary for its operation. [Source: *ITU Radio Regulations*]

Radiodetermination: The determination of the position, velocity and/or other characteristics of an object, or the obtaining of information relating to these parameters, by means of the propagation properties of radio waves. [Source: *ITU Radio Regulations*]

Radionavigation: Radiodetermination used for the purposes of navigation, including obstruction warning. [Source: *ITU Radio Regulations*]

Signal in Space (SIS): The state of a radiofrequency signal after transmission and before receipt that represents the point of interface between the signal provider and user segments. This term is often used as an adjective to describe applicability of another term (e.g., SIS accuracy, SIS availability, etc).

I. SIS Constellation Definition

No entries

II. SIS Coverage and Minimum Received Power

Coverage: The surface area or spatial volume where the service is intended to be provided in a manner to meet specified levels of performance. Radionavigation coverage is influenced by system geometry, signal power level, receiver sensitivity, atmospheric noise conditions, and other factors which affect signal availability.

SIS Coverage: The surface area or spatial volume where the GNSS SIS is intended to be provided in a manner to meet specified levels of performance.

III. SIS Accuracy

Accuracy: The statistical difference between the estimate or measurement of a quantity and the true value of that quantity.

SIS Accuracy: There are four main aspects of GNSS SIS accuracy: the pseudorange data set accuracy (i.e., “User Range Error” or URE); the time derivative of the URE; the second time derivative of the URE; and the Coordinated Universal Time (UTC) offset error. These statistical differences are often expressed as 95th percentile values.

User Range Error (URE) or Pseudorange Data Set Accuracy: The ranging error along the line of sight between a user and a satellite due to contributions from the GNSS space and control segments (i.e., excludes error contributions assigned to the GNSS user segment such as troposphere and ionosphere delay compensation, multipath, and receiver noise).

User Range Rate Error (URRE) or Pseudorange Rate Error: The first time derivative of the URE.

User Range Acceleration Error (URAE) or Pseudorange Acceleration Error: The second time derivative of the URE.

Coordinated Universal Time Offset Error (UTC OE): The accuracy of the UTC offset data in the broadcast navigation message portion of the GNSS SIS which relates the GNSS time to UTC.

IV. SIS Integrity

Integrity: The measure of the trust which can be placed in the correctness of the information supplied by a system.

SIS Integrity: The measure of the trust which can be placed in the correctness of the information supplied by the GNSS SIS. Integrity includes the ability of the GNSS SIS to provide timely alerts (alarms or warnings) to receivers when the GNSS SIS should not be used. GNSS SIS integrity is directly related to GNSS SIS reliability.

V. SIS Continuity

Continuity: The probability that a healthy system will continue to be healthy without unscheduled interruption during a specified time interval.

SIS Continuity: The probability that a healthy GNSS SIS will continue to be healthy without unscheduled interruption during a specified time interval. GNSS SIS continuity is directly related to GNSS SIS reliability.

VI. SIS Availability

Availability: The percentage of time that a system is available for use with specified parameters.

SIS Availability: The percentage of time that the GNSS SISs are available for use with specified parameters (i.e., the GNSS SISs are trackable and healthy). Availability can be expressed in different ways (e.g., on a per-slot basis and on a “GNSS constellation-level” basis).

Ancillary Terms

Reliability: The probability that a system will perform its specified functions during a specified time interval.

SIS Reliability: The probability that the GNSS SIS will meet its specified levels of performance during a specified time interval. SIS reliability includes continuity and integrity and is calculated as $1 - (\text{probability of losing SIS continuity} + \text{probability of losing SIS integrity})$.