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Universal Terrestrial Radio Access (UTRA), Evolved UTRA (E-UTRA) and Evolved Packet Core (EPC): User Equipment (UE) conformance specification for UE positioning, Part 5: Test scenarios and assistance data
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Foreword

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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:

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Introduction

The present document is part 5 of a multi-part TS:

3GPP TS 37. 571-1: Universal Terrestrial Radio Access (UTRA) and Evolved UTRA (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification for UE positioning; Part 1: Conformance test specification.

3GPP TS 37. 571-2: Universal Terrestrial Radio Access (UTRA) and Evolved UTRA (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification for UE positioning; Part 2: Protocol conformance.

3GPP TS 37. 571-3: Universal Terrestrial Radio Access (UTRA) and Evolved UTRA (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification for UE positioning; Part 3: Implementation Conformance Statement (ICS).

3GPP TS 37. 571-4: Universal Terrestrial Radio Access (UTRA) and Evolved UTRA (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification for UE positioning; Part 4: Test suites.

3GPP TS 37. 571-5: Universal Terrestrial Radio Access (UTRA) and Evolved UTRA (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification for UE positioning; Part 5: Test scenarios and assistance data.

1 Scope

The present document specifies the test scenarios and assistance data required for the conformance test for FDD or TDD mode of UTRA and E-UTRA for the User Equipment (UE) that supports one or more of the defined positioning methods. For UTRA these are Assisted Global Positioning System (A-GPS) and Assisted Global Navigation Satellite System (A-GNSS). For E-UTRA these are A-GNSS, Observed Time Difference of Arrival (OTDOA) and Enhanced Cell ID (ECID).

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] 3GPP TS 36.101: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception".

[3] 3GPP TS 34.123-1: "User Equipment (UE) conformance specification; Part 1: Protocol conformance specification".

[4] 3GPP TS 34.171: "Terminal conformance specification; Assisted Global Positioning System (A-GPS); Frequency Division Duplex (FDD)".

[5] 3GPP TS 34.172: "Terminal conformance specification; Assisted Global Navigation Satellite System (A-GNSS); Frequency Division Duplex (FDD)".

[6] 3GPP TS 37.571-1: “Universal Terrestrial Radio Access (UTRA) and Evolved UTRA (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification for UE positioning; Part 1: Terminal conformance”.

[7] 3GPP TS 37.571-2: “Universal Terrestrial Radio Access (UTRA) and Evolved UTRA (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification for UE positioning; Part 2: Protocol conformance”.

[8] 3GPP TS 36.355: "Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Positioning Protocol (LPP)".

[9] IS-GPS-200, Revision D, Navstar GPS Space Segment/Navigation User Interfaces, March 7th, 2006.

[10] IS-GPS-705, Navstar GPS Space Segment/User Segment L5 Interfaces, September 22, 2005.

[11] IS-GPS-800, Navstar GPS Space Segment/User Segment L1C Interfaces, September 4, 2008.

[12] IS-QZSS, Quasi Zenith Satellite System Navigation Service Interface Specifications for QZSS, Ver.1.1, July 31, 2009.

[13] Galileo OS Signal in Space ICD (OS SIS ICD), Draft 0, Galileo Joint Undertaking, May 23rd, 2006.

[14] Global Navigation Satellite System GLONASS Interface Control Document, Version 5.1, 2008.

[15] Specification for the Wide Area Augmentation System (WAAS), US Department of Transportation, Federal Aviation Administration, DTFA01-96-C-00025, 2001.

[16] 3GPP TS 25.331: “Radio Resource Control (RRC); Protocol specification”

[17] STANAG 4294: NATO STANAG 4294. Navstar Global Positioning System (GPS) System Characteristics.

[18] 3GPP TS 36.104: "Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception".

[19] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)".

[20] 3GPP TS 36.508: "Common test environments for User Equipment (UE) conformance testing".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [1], TS 36.101 [2], 3GPP TS 36.104 [18] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [1].

Horizontal Dilution Of Precision (HDOP): measure of position determination accuracy that is a function of the geometrical layout of the satellites used for the fix, relative to the receiver antenna

3.2 Symbols

For the purposes of the present document, the following symbols apply:

E1	Galileo E1 navigation signal with carrier frequency of 1575.420 MHz.
E5	Galileo E5 navigation signal with carrier frequency of 1191.795 MHz.
E6	Galileo E6 navigation signal with carrier frequency of 1278.750 MHz.
G1	GLONASS navigation signal in the L1 sub-bands with carrier frequencies 1602 MHz ± k × 562.5 kHz.
G2	GLONASS navigation signal in the L2 sub-bands with carrier frequencies 1246 MHz ± k × 437.5 kHz.
k	GLONASS channel number, k = -7…13.
L1 C/A	GPS or QZSS L1 navigation signal carrying the Coarse/Acquisition code with carrier frequency of 1575.420 MHz.
L1C	GPS or QZSS L1 Civil navigation signal with carrier frequency of 1575.420 MHz.
L2C	GPS or QZSS L2 Civil navigation signal with carrier frequency of 1227.600 MHz.
L5	GPS or QZSS L5 navigation signal with carrier frequency of 1176.450 MHz.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 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 TR 21.905 [1].

A-GNSS	Assisted Global Navigation Satellite System
A-GPS	Assisted - Global Positioning System
AWGN	Additive White Gaussian Noise
C/A	Coarse/Acquisition
DUT	Device Under Test
ECEF	Earth Centred, Earth Fixed
E-UTRA	Evolved UMTS Terrestrial Radio Access
E-UTRAN	Evolved UMTS Terrestrial Radio Access Network
FDD	Frequency Division Duplex

FFS	For further study
GLONASS	GLObal'naya NAvigatsionnaya Sputnikovaya Sistema (English: Global Navigation Satellite System)
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GSS	GNSS System Simulator
HDOP	Horizontal Dilution Of Precision
ICD	Interface Control Document
IS	Interface Specification
LOS	Line Of Sight
LPP	LTE Positioning Protocol
PPM	Parts per million
QZSS	Quasi-Zenith Satellite System
RRC	Radio Resource Control
SBAS	Space Based Augmentation System
SS	System simulator
SV	Space Vehicle
SV ID	Space Vehicle Identification
TDD	Time Division Duplex
TTFF	Time To First Fix
UE	User Equipment
WGS-84	World Geodetic System 1984

4 General

4.1 GPS and GNSS orbital model information, assistance data and assistance data files

The following subclauses 5 and 6 define the GPS and GNSS orbital model information, the assistance data and the assistance data files for the test cases as follows:

Subclause 5.1: data for A-GPS Signalling test cases defined in TS 34.123-1 [3] subclauses 17.2.1 to 17.2.4

Subclause 5.2: data for A-GPS Minimum Performance test cases defined in TS 34.171 [4]

Subclause 6.1: data for A-GNSS Signalling test cases defined in TS 34.123-1 [3] subclauses 17.2.5 to 17.2.7 and in TS 37.571-2 [7].

Subclause 6.2: data for A-GNSS Minimum Performance test cases defined in TS 34.172 [5] and in TS 37.571-1 [6].

The orbital model information is defined and where appropriate is given in Yuma format in .txt files for each scenario in the appropriate data file specified in Annex A or Annex B.

Where the assistance data is fixed or is not required on a per-satellite basis, then it is defined in the following subclauses. Where assistance data is required on a per-satellite basis, or where the values of the data also vary with time then it is specified in comma-separated-variable files in the appropriate data file specified in Annex A or Annex B. These files specify the values to be used for each satellite, indexed by satellite PRN or SV ID, and, where applicable, the values to be used indexed by both time and satellite PRN or SV ID.

4.2 OTDOA assistance data

The following subclause 7 defines the OTDOA assistance data for the test cases as follows:

Subclause 7.1: data for OTDOA Signalling test cases defined in TS 37.571-2 [7].

Subclause 7.2: data for OTDOA Measurement test cases defined in TS 37.571-1 [6].

5 GPS information

5.1 GPS Scenario and Assistance data for Assisted GPS signalling tests

5.1.1 General

This subclause defines the GPS scenario and the associated assistance data that shall be used for all Assisted GPS signalling tests defined in TS 34.123-1 [3] subclauses 17.2.1 to 17.2.4.

The satellite simulator (SS) shall generate the six satellite signals defined in subclause 5.1.2 and shall provide assistance data as defined in subclause 5.1.3.

5.1.2 GPS Scenario

The following GPS scenario shall be used. The assistance data specified in the following subclauses is consistent with this GPS scenario:

- Yuma Almanac data: see file Tokyo Yuma.txt in the GPS data sig zip file specified in Annex A
- UE location and Reference location: static at latitude: 35 degrees 40 minutes north, longitude: 139 degrees 45 minutes east, (Tokyo) height: = 50m
- Start time: 12th September 2003 21:30:00
- Visible satellites simulated: PRNs: 4, 6, 9, 10, 13, 22.
- Ionospheric model: see values in subclause 5.1.6
- The levels of the simulated satellites shall all be at -125dBm +/- 6dB

5.1.3 Assistance Data

Where assistance data is required on a per-satellite basis, or where the values of the data also varies with time it is specified in comma-separated-variable files in the GPS data sig zip file specified in Annex A. These files specify the values to be used for each satellite, indexed by satellite PRN, and, where applicable, the values to be used indexed by both time and satellite PRN.

Assistance data that is marked as “time varying” and the GPS TOW msec field are only specified and used in 1 second increments. Interpolation between these values shall not be used.

The accuracy of the GPS TOW msec and assistance data that is marked as “time varying” in the provided assistance data shall be within +/- 2 s relative to the GPS time in the system simulator.

Assistance data Information Elements and fields that are not specified shall not be used.

The information elements detailed below are fully defined in 3GPP TS 25.331 [16]

5.1.3.1 Assistance Data Reference Time

Reference Time

Reference Time (Fields occurring once per message)

Information Element	Units	Value/remark	Release
GPS Week	weeks	211	
GPS TOW msec	msec	509400 s. Start time. Add integer number of 1 seconds as required. (Note)	
UE Positioning GPS ReferenceTime Uncertainty		125 (2.127 seconds)	Rel-7 onwards
Note: GPS TOW msec This is the value of GPS TOW msec when the GPS scenario is started in the GPS simulator. The value of GPS TOW msec to be used in the Reference Time IE shall be calculated at the time the IE is required by adding the elapsed time since the time the scenario was started in the GPS simulator to this value, rounded up to the next 1 second interval. This "current GPS TOW msec" is then also used to determine the value of any other Information Elements marked as "Time varying" in subclause 5.1.3			

5.1.3.2 Assistance Data Reference UE Position

Reference UE Position

Information Element	Units	Value/remark
Latitude sign		0
Degrees Of Latitude	degrees	3.56666666666667 10E1
Degrees Of Longitude	degrees	1.39750000000000 10E2
Altitude Direction		0
Altitude	m	50
Uncertainty semi-major	m	3000
Uncertainty semi-minor	m	3000
Orientation of major axis	degrees	0
Uncertainty Altitude	m	500
Confidence	%	68

5.1.3.3 Assistance Data Navigation Model

Satellite Information

Information Element	Units	Value/remark
Number of satellites	-	6

Navigation Model (Fields occurring once per satellite)

Information Element	Units	Value/remark
SatID	-	PRNs: 4, 6, 9, 10, 13, 22.
Satellite Status		0 (see note)
Note: For consistency Satellite Status is also given in file: Navigation model.csv		

Ephemeris and Clock correction Information Elements (Fields occurring once per satellite)

Information Element	Units	Value/remark
C/A or P on L2		See file: Navigation model.csv
URA Index		See file: Navigation model.csv
SV Health		See file: Navigation model.csv
IODC	-	See file: Navigation model.csv
L2 P Data Flag		See file: Navigation model.csv
SF 1 Reserved	-	See file: Navigation model.csv
T_{GD}	sec	See file: Navigation model.csv
t_{oc}	sec	See file: Navigation model.csv
af_2	sec/sec^2	See file: Navigation model.csv
af_1	sec/sec	See file: Navigation model.csv
af_0	sec	See file: Navigation model.csv
C_{rs}	meters	See file: Navigation model.csv
Δn	semi-circles/sec	See file: Navigation model.csv
M_0	semi-circles	See file: Navigation model.csv
C_{uc}	radians	See file: Navigation model.csv
E	-	See file: Navigation model.csv
C_{us}	radians	See file: Navigation model.csv
$(A)^{1/2}$	$meters^{1/2}$	See file: Navigation model.csv
t_{oe}	sec	See file: Navigation model.csv
Fit Interval Flag		See file: Navigation model.csv
AODO	sec	See file: Navigation model.csv
C_{ic}	radians	See file: Navigation model.csv
$OMEGA_0$	semi-circles	See file: Navigation model.csv
C_{is}	radians	See file: Navigation model.csv
i_0	semi-circles	See file: Navigation model.csv
C_{rc}	meters	See file: Navigation model.csv
ω	semi-circles	See file: Navigation model.csv
OMEGAdot	semi-circles/sec	See file: Navigation model.csv
Idot	semi-circles/sec	See file: Navigation model.csv

5.1.3.4 Assistance Data Ionospheric Model

Ionospheric Model

Information Element	Units	Value/remark
α_0	seconds	4.6566129 10E-9
α_1	sec/semi-circle	1.4901161 10E-8
α_2	$sec/(semi\text{-}circle)^2$	-5.96046 10E-8
α_3	$sec/(semi\text{-}circle)^3$	-5.96046 10E-8
β_0	seconds	79872
β_1	sec/semi-circle	65536
β_2	$sec/(semi\text{-}circle)^2$	-65536
β_3	$sec/(semi\text{-}circle)^3$	-393216

5.1.3.5 Assistance Data Almanac

Almanac (Fields occurring once per message)

Information Element	Units	Value/remark
WN_a	weeks	212

Satellite Information

Information Element	Units	Value/remark
Number of satellites	-	24

Almanac (Fields occurring once per satellite)

Information Element	Units	Value/remark
DataID	-	See file: Almanac.csv
SatID	-	PRNs: 1 to 24
e	dimensionless	See file: Almanac.csv
t_{oa}	sec	See file: Almanac.csv
δi	semi-circles	See file: Almanac.csv
OMEGADOT	semi-circles/sec	See file: Almanac.csv
SV Health		See file: Almanac.csv
$A^{1/2}$	$meters^{1/2}$	See file: Almanac.csv
$OMEGA_0$	semi-circles	See file: Almanac.csv
M_0	semi-circles	See file: Almanac.csv
ω	semi-circles	See file: Almanac.csv
af_0	seconds	See file: Almanac.csv
af_1	sec/sec	See file: Almanac.csv

5.1.3.6 Assistance Data Acquisition Assistance

GPS Acquisition Assist - Information Elements appearing once per message

Information Element	Units	Value/remark	Release
GPS TOW msec	msec	509400 s. Start time. Add integer number of 1 seconds as required. (Note)	
UE Positioning GPS ReferenceTime Uncertainty		125 (2.127 seconds)	Rel-7 onwards
Note: GPS TOW msec This is the value of GPS TOW msec when the GPS scenario is started in the GPS simulator. The value of GPS TOW msec to be used in the Acquisition Assistance IE shall be calculated at the time the IE is required by adding the elapsed time since the time the scenario was started in the GPS simulator to this value, rounded up to the next 1 second interval.			

Satellite Information

Information Element	Units	Value/remark
Number of satellites	-	6

GPS Acquisition Assist - Information Elements appearing once per satellite

Information Element	Units	Value/remark
SatID	-	PRNs: 4, 6, 9, 10, 13, 22.
Doppler (0^{th} order term)	Hz	Time varying. See file: Acquisition assist .csv (Note)
Doppler (1^{st}order term)	Hz/s	Time varying. See file: Acquisition assist .csv (Note)
Doppler Uncertainty	Hz	Time varying. See file: Acquisition assist .csv (Note)
Code Phase	chips	Time varying. See file: Acquisition assist .csv (Note)
Integer Code Phase	-	Time varying. See file: Acquisition assist .csv (Note)
GPS Bit number	-	Time varying. See file: Acquisition assist .csv (Note)
Code Phase Search Window	chips	Time varying. See file: Acquisition assist .csv (Note)
Azimuth	Degrees	Time varying. See file: Acquisition assist .csv (Note)
Elevation	Degrees	Time varying. See file: Acquisition assist .csv (Note)
Note: Acquisition Assist Information Elements This field is “Time varying” and its value depends on the “current GPS TOW msec”. The value of this field to be used shall be determined by taking the “current GPS TOW msec” value and selecting the field value in the Acquisition assist.csv file corresponding to the value of “current GPS TOW msec”.		

5.2 GPS Scenarios and Assistance Data for Assisted GPS Minimum Performance tests

5.2.1 General

This subclause defines the GPS scenarios and assistance data IEs which shall be available for use as specified in all A-GPS Minimum Performance test cases defined in TS 34.171 [4].

Subclauses 5.2.2 and 5.2.3 list the assistance data IEs required for minimum performance testing of UE-based mode, and subclauses 5.2.4 and 5.2.5 list the assistance data available for minimum performance testing of UE-assisted mode. Subclause 5.2.6 lists the values of the assistance data IE fields for all minimum performance testing.

The A-GPS minimum performance requirements are defined by assuming that all relevant and valid assistance data is received by the UE in order to perform GPS measurements and/or position calculation. This subclause does not include nor consider delays occurring in the various signalling interfaces of the network.

5.2.1.1 Satellite constellations and assistance data for A-GPS minimum performance testing

The satellite constellations for minimum performance testing shall consist of 24 satellites. Almanac assistance data shall be available for all these 24 satellites. At least 9 of the satellites shall be visible to the UE (that is above 5 degrees elevation with respect to the UE). Other assistance data shall be available for 9 of these visible satellites. In each test, signals are generated for only a sub-set of these satellites for which other assistance data is available. The number of satellites in this sub-set is specified in the test. The satellites in this sub-set shall all be above 15 degrees elevation with respect to the UE. The HDOP for the test shall be calculated using this sub-set of satellites. The selection of satellites for this sub-set shall be selected consistent with achieving the required HDOP for the test.

5.2.1.2 GPS Scenarios for A-GPS minimum performance testing

This subclause defines the GPS scenarios that shall be used for all Assisted GPS minimum performance tests defined in TS 34.171 [4]

The GPS scenarios achieve the required HDOP for the Test Cases and they also satisfy the requirement that for each test instance that the reference location shall change sufficiently such that the UE shall have to use the new assistance data.

The satellites to be simulated in each test case are specified in subclause 5.2.1.2.5.

The viable running time during which the scenario maintains the required HDOP or HDOPs is given. Once this time has been reached the scenario shall be restarted from its nominal start time.

5.2.1.2.1 GPS Scenario #1

The following GPS scenario #1 shall be used during the TTFF tests defined in TS 34.171 [4]. The assistance data specified in the following subclauses for GPS scenario #1 is consistent with this GPS scenario.

Yuma Almanac data: see file GPS 1 Yuma.txt in the GPS data perf zip file specified in Annex A.

UE location: the UE location is calculated as a random offset from the reference location using the method described in subclause 5.2.1.2.4. The reference location is: latitude: 33 degrees 45 minutes 0.019 seconds north, longitude: 84 degrees 23 minutes 0.011 seconds west, (Atlanta USA), height: = 300m.

Nominal start time: 22nd January 2005 (Saturday) 00:08:00.

Viable running time to maintain specified HDOP values: 19 minutes.

Visible satellites available for simulation and for which Assistance Data (other than Almanac) shall be generated: PRNs: 2, 6, 10, 17, 18, 21, 26, 29, 30.

Ionospheric model: see values in subclause 5.2.6.6.

Tropospheric model: STANAG with SRI equal to 324.8, as defined in STANAG 4294 [17].

5.2.1.2.2 GPS Scenario #2

The following GPS scenario #2 shall be used during the TTFF tests defined in TS 34.171 [4]. The assistance data specified in the following subclauses for GPS scenario #2 is consistent with this GPS scenario.

Yuma Almanac data: see file GPS 2 Yuma.txt in the GPS data perf zip file specified in Annex A.

UE location: the UE location is calculated as a random offset from the reference location using the method described in subclause 5.2.1.2.4. The reference location is: latitude: 37 degrees 48 minutes 59.988 seconds south, longitude: 144 degrees 58 minutes 0.013 seconds east, (Melbourne Australia), height: = 100m.

Nominal start time: 22nd January 2004 (Thursday) 00:08:00.

Viable running time to maintain specified HDOP values: 19 minutes.

Visible satellites available for simulation and for which Assistance Data (other than Almanac) shall be generated: PRNs: 3, 11, 14, 15, 18, 22, 23, 25, 31.

Ionospheric model: see values in subclause 5.2.6.6.

Tropospheric model: STANAG with SRI equal to 324.8, as defined in STANAG 4294 [17].

5.2.1.2.3 GPS Scenario #3

The following GPS scenario #3 shall be used during the Moving Scenario and Periodic Location test case defined in TS 34.171 [4]. The assistance data specified in the following subclauses for GPS scenario #3 is consistent with this GPS scenario.

Yuma Almanac data: see file GPS 3 Yuma.txt in the GPS data perf zip file specified in Annex A.

UE location: the UE location is given as a trajectory as shown in Figure 5.6.1 of TS 34.171 [4]. The reference location is at the centre of the trajectory and is at: latitude: 37 degrees 48 minutes 59.988 seconds south, longitude: 144 degrees 58 minutes 0.013 seconds east, (Melbourne Australia), height: = 100m.

Start time: 22nd January 2004 (Thursday) 00:08:00.

Start location: at the point between l_{11} and l_{12} in Figure 5.6.1 of TS 34.171 [4], going in a clock-wise direction.

Visible satellites available for simulation and for which Assistance Data (other than Almanac) shall be generated: PRNs: 3, 11, 14, 15, 18, 22, 23, 25, 31.

Viable running time to maintain specified HDOP values: 19 minutes.

Ionospheric model: see values in subclause 5.2.6.6.

Tropospheric model: STANAG with SRI equal to 324.8, as defined in STANAG 4294 [17].

5.2.1.2.4 UE Location for TTFF test cases

This subclause defines the method for generating the random UE locations that are required to be used for the TTFF tests defined in TS 34.171 [4].

For every Test Instance in each TTFF test case, the UE location shall be randomly selected to be within 3 km of the Reference Location. The Altitude of the UE shall be randomly selected between 0 m to 500 m above WGS-84 reference ellipsoid. These values shall have uniform random distributions.

The UE location is calculated as an offset from the Reference Location.

5.2.1.2.4.1 UE Location Offset

The UE location offset shall be calculated by selecting the next pair of random numbers, representing a pair of latitude and longitude offsets in degrees, from a standard uniform random number generator, with the following properties:

The ranges of the latitude and longitude offsets values shall be such that when translated onto the surface of the earth they shall lie within a 3km radius circle, centred on the Reference location specified for the GPS scenario under consideration. For the purposes of this calculation make the following assumptions:

a) Over the 3km radius circle at the Reference location the earth is flat and the meridians and parallels form a rectangular grid

b) The earth is spherical with a radius of 6371141m (equal to the WGS 84 value at 35 degrees latitude)

The resolution used for the latitude and longitude offsets values shall be 90/2E23 for the latitude offset values and 360/2E24 for the longitude offset values, representing the coding resolution in degrees specified in 3GPP TS 23.032 [19].

5.2.1.2.4.2 UE Altitude

The UE altitude value shall be calculated by selecting the next random number from a standard uniform random number generator, in the range 0 to 500, representing meters. The resolution used for the random number shall be 1, representing 1 meter.

5.2.1.2.5 Satellites to be simulated in each test case

The satellites to be simulated in each test case have been selected in order to achieve the required HDOP for that test case.

Satellites to be simulated

Test case	PRNs GPS #1	PRNs GPS #2	PRNs GPS #3
Sensitivity Coarse Time Assistance	2, 6, 10, 17, 18, 21, 26, 29	3, 11, 14, 15, 22, 23, 25, 31	-
Sensitivity Fine Time Assistance	2, 6, 10, 17, 18, 21, 26, 29	3, 11, 14, 15, 22, 23, 25, 31	-
Nominal Accuracy	2, 6, 10, 17, 18, 21, 26, 29	3, 11, 14, 15, 22, 23, 25, 31	-
Dynamic Range	2, 6, 10, 17, 26, 29	3, 14, 15, 22, 25, 31	-
Multi-Path scenario	2, 6, 17, 21, 26	3, 14, 15, 22, 25	-
Moving Scenario and Periodic location	-	-	3, 14, 15, 22, 25

5.2.2 Information elements required for normal UE based testing

The following A-GPS assistance data IEs and fields shall be present for each test. Fields not specified shall not be present. The values of the fields are specified in subclause 5.2.6.

a) UE positioning GPS reference time IE

Name of the IE	Fields of the IE	Release
Reference time		
	GPS Week	
	GPS TOW msec	
	UE Positioning GPS ReferenceTime Uncertainty	Rel-7 onwards
	GPS TOW Assist	
	SatID	
	TLM Message	
	TLM Reserved	
	Alert	
	Anti-Spoof	

b) UE positioning GPS reference UE position IE

Name of the IE	Fields of the IE
Reference UE position	Ellipsoid point with Altitude and uncertainty ellipsoid

c) UE positioning GPS navigation model IE

Name of the IE	Fields of the IE
Navigation Model	All satellite information

d) UE positioning GPS ionospheric model IE

Name of the IE	Fields of the IE
Ionospheric Model	All

5.2.3 Information elements required for UE based Sensitivity Fine Time Assistance test case

The A-GPS assistance data IEs and fields that shall be present for the Sensitivity Fine Time Assistance test case shall be those specified in subclause 5.2.2 with the following exception. Fields not specified shall not be present. The values of the fields are specified in subclause 5.2.6.

UE positioning GPS reference time IE

Name of the IE	Fields of the IE	Release
Reference time		
	GPS Week	
	GPS TOW msec	
	UTRAN GPS reference time	
	UTRAN GPS timing of cell frames	
	CHOICE mode	
	FDD	
	Primary CPICH Info	
	SFN	
	UE Positioning GPS ReferenceTime Uncertainty	Rel-7 onwards
	SFN-TOW Uncertainty	Not present Rel-7 onwards
	TUTRAN-GPS drift rate	
	GPS TOW Assist	
	SatID	
	TLM Message	
	TLM Reserved	
	Alert	
	Anti-Spoof	

5.2.4 Information elements available for normal UE assisted testing

The following A-GPS assistance data IEs and fields shall be available for use in each test. Fields not specified shall not be present. The values of the fields are specified in subclause 5.2.6.

a) UE positioning GPS reference time IE

Name of the IE	Fields of the IE	Release
Reference time		
	GPS Week	
	GPS TOW msec	
	UE Positioning GPS ReferenceTime Uncertainty	Rel-7 onwards
	GPS TOW Assist	
	SatID	
	TLM Message	
	TLM Reserved	
	Alert	
	Anti-Spoof	

b) UE positioning GPS reference UE position IE

Name of the IE	Fields of the IE
Reference UE position	Ellipsoid point with Altitude and uncertainty ellipsoid

c) UE positioning GPS almanac IE

Name of the IE	Fields of the IE
Almanac	
	Almanac Reference Week
	All Satellite information

d) UE positioning GPS navigation model IE

Name of the IE	Fields of the IE
Navigation Model	All satellite information

e) UE positioning GPS acquisition assistance IE

Name of the IE	Fields of the IE	Release
Acquisition Assistance		
	GPS TOW msec	
	UE Positioning GPS ReferenceTime Uncertainty	Rel-7 onwards
	Satellite information	
	SatID	
	Doppler (0^{th} order term)	
	Extra Doppler	
	Doppler (1^{st} order term)	
	Doppler Uncertainty	
	Code Phase	
	Integer Code Phase	
	GPS Bit number	
	Code Phase Search Window	
	Azimuth and Elevation	
	Azimuth	
	Elevation	

5.2.5 Information elements available for UE assisted Sensitivity Fine Time Assistance test case

The A-GPS assistance data IEs and fields that shall be available for use for the Sensitivity Fine Time Assistance test case shall be those specified in subclause 5.2.4 with the following exceptions. Fields not specified shall not be present. The values of the fields are specified in subclause 5.2.6.

a) UE positioning GPS reference time IE

Name of the IE	Fields of the IE	Release
Reference time		
	GPS Week	
	GPS TOW msec	
	UTRAN GPS reference time	
	UTRAN GPS timing of cell frames	
	CHOICE mode	
	FDD	
	Primary CPICH Info	
	SFN	
	UE Positioning GPS ReferenceTime Uncertainty	Rel-7 onwards

	SFN-TOW Uncertainty	Not present Rel-7 onwards
	TUTRAN-GPS drift rate	
	GPS TOW Assist	
	SatID	
	TLM Message	
	TLM Reserved	
	Alert	
	Anti-Spoof	

b) UE positioning GPS acquisition assistance IE

Name of the IE	Fields of the IE	Release
Acquisition Assistance		
	GPS TOW msec	
	UTRAN GPS reference time	
	UTRAN GPS timing of cell frames	
	CHOICE mode	
	FDD	
	Primary CPICH Info	
	SFN	
	UE Positioning GPS ReferenceTime Uncertainty.	Rel-7 onwards
	Satellite information	
	SatID	
	Doppler (0^{th} order term)	
	Extra Doppler	
	Doppler (1^{st} order term)	
	Doppler Uncertainty	
	Code Phase	
	Integer Code Phase	
	GPS Bit number	
	Code Phase Search Window	
	Azimuth and Elevation	
	Azimuth	
	Elevation	

5.2.6 Contents of Information elements for A-GPS Minimum performance testing

5.2.6.1 General

This subclause defines the assistance data values that shall be used for all Assisted GPS minimum performance tests. It is given for GPS scenarios #1, #2 and #3 where it is different for each scenario; otherwise it is marked “All” where the same value is used for all scenarios.

Where assistance data is required on a per-satellite basis, or where the values of the data also varies with time it is specified in comma-separated-variable files with suffixes XX in the GPS data perf zip file specified in Annex A, where XX is 01, 02 and 03 for GPS scenarios #1, #2 and #3 respectively. These files specify the values to be used for each satellite, indexed by satellite PRN, and, where applicable, the values to be used indexed by both time and satellite PRN.

Assistance data that is marked as “time varying” is specified and used in 80 ms increments. Interpolation between these values shall not be used.

Assistance data Information Elements and fields that are not specified shall not be used.

The information elements detailed below are fully defined in 3GPP TS 25.331 [16]

5.2.6.2 IE Random Offset Values

This subclause defines the methods for generating the random offsets that are required to be applied to some assistance data IEs for certain tests.

5.2.6.2.1 GPS TOW msec

For every Test Instance in each TTFF test case, the IE GPS TOW msec shall have a random offset, relative to GPS system time, within the allowed error range of Coarse Time Assistance defined in the test case. This offset value shall have a uniform random distribution.

Note: For the Moving Scenario and Periodic Update Test Case the value of the IE GPS TOW msec shall be set to the nominal value, i.e. no offset shall be used.

The offset value shall be calculated by selecting the next random number from a standard uniform random number generator, in the range specified for the GPS Coarse Time assistance error range in the Test Requirements, Test parameters table for the test under consideration. The resolution used for the random number shall be 0.01, representing 10ms.

5.2.6.2.2 UTRAN GPS timing of cell frames

In addition, for every Fine Time Assistance Test Instance the IE UTRAN GPS timing of cell frames shall have a random offset, relative to the true value of the relationship between the two time references, within the allowed error range of Fine Time Assistance defined in the test case. This offset value shall have a uniform random distribution.

The offset value shall be calculated by selecting the next random number from a standard uniform random number generator with the following properties:

The range shall be the number of UMTS chips whose duration is less than the range specified for the GPS Fine Time assistance error range in the Test Requirements, Test parameters table for the test under consideration.

The resolution used for the random number shall be 1, representing 1 UMTS chip.

5.2.6.3 Assistance Data Reference Time

Contents of UE positioning GPS reference time IE

Reference Time (Fields occurring once per message)

Information Element	Units	Value/remark GPS #1	Value/remark GPS #2	Value/remark GPS #3
GPS Week	weeks	282	230	230
GPS TOW msec	msec	518880000. Start time. Add number of ms as required. (Note 1)	346080000. Start time. Add number of ms as required. (Note 1)	346080000. Start time. Add number of ms as required. (Note 1)
UTRAN GPS reference time		Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Absent
UTRAN GPS timing of cell frames		Note 2	Note 2	-
CHOICE mode		Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Present for Sensitivity Fine Time Assistance test case. Absent otherwise	-
FDD		-	-	-
Primary CPICH Info		100	100	-
SFN		Note 2	Note 2	-
UE Positioning GPS ReferenceTime Uncertainty. Note 3		For Sensitivity Fine Time Assistance test case: '51' (10.2uS). Otherwise: '125' (2.127s)	For Sensitivity Fine Time Assistance test case: '51' (10.2uS). Otherwise: '125' (2.127s)	'125' (2.127s)
SFN-TOW Uncertainty. Note 4		lessThan10. Present for Sensitivity Fine Time Assistance test case. Absent otherwise	lessThan10. Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Absent
TUTRAN-GPS drift rate		0. Present for Sensitivity Fine Time Assistance test case. Absent otherwise	0. Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Absent

Note 1: GPS TOW msec

This is the value in ms of GPS TOW msec when the GPS scenario is initially started in the GPS simulator. For all TTFF test cases, each time a GPS scenario is used, the GPS start time shall be advanced by 120 seconds from the value last used so that, at the time the fix is made, it is at least 2 minutes later than the previous fix made with that scenario.

The actual value of GPS TOW msec to be used in the Reference Time IE (before the addition of the random offset, if applicable) shall be calculated at the time the IE is required by adding the elapsed time since the time the scenario was started in the GPS simulator to this value. The accuracy shall be such that the Maximum Test System Uncertainty for Coarse Time Assistance, specified in Table F.1.2 of TS 34.171 [4], shall be met.

For all TTFF test cases a random offset is then added to the value of GPS TOW msec as described in subclause 5.2.6.2

Note 2: UTRAN GPS timing of cell frames and SFN

The values of UTRAN GPS timing of cell frames (before the addition of the random offset) and SFN shall be calculated at the time the IE is required. The accuracy of the relationship between the two fields shall be such that the Maximum Test System Uncertainty for Fine Time Assistance, specified in Table F.1.2 of TS 34.171 [4], shall be met.

A random offset is then added to the value of UTRAN GPS timing of cell frames as described in subclause 5.2.6.2

Note 3: This IE only present for Rel-7 onwards.

Note 4: This IE not present for Rel-7 onwards.

Satellite Information

Information Element	Units	Value/remark GPS All
Number of satellites	-	9

Reference Time - GPS TOW Assist (Fields occurring once per satellite)

Information Element	Units	Value/remark GPS #1	Value/remark GPS #2	Value/remark GPS #3
SatID		PRNs: 2, 6, 10, 17, 18, 21, 26, 29, 30	PRNs: 3, 11, 14, 15, 18, 22, 23, 25, 31	PRNs: 3, 11, 14, 15, 18, 22, 23, 25, 31

Reference Time - GPS TOW Assist (Fields occurring once per satellite)

Information Element	Units	Value/remark GPS All
TLM Message	Bit string	10922
TLM Reserved	Bit string	2
Alert		0
Anti-Spoof		1

5.2.6.4 Assistance Data Reference UE Position

Contents of UE positioning GPS reference UE position IE

The uncertainty of the semi-major axis is 3 km. The uncertainty of the semi-minor axis is 3 km. The orientation of the major axis is 0 degrees. The uncertainty of the altitude information is 500 m. The confidence factor is 68%.

Reference UE Position

Information Element	Units	Value/remark GPS #1	Value/remark GPS #2	Value/remark GPS #3
Latitude sign		0	1	1
Degrees of latitude	degrees	33.750005	37.816663	37.816663
Degrees of longitude	degrees	-84.383517	144.966670	144.966670
Altitude Direction		0	0	0
Altitude	m	300	100	100
Uncertainty semi-major	m	3000	3000	3000
Uncertainty semi-minor	m	3000	3000	3000
Orientation of major axis	degrees	0	0	0
Uncertainty altitude	m	500	500	500
Confidence	%	68	68	68

5.2.6.5 Assistance Data Navigation Model

Contents of UE positioning GPS navigation model IE

Satellite Information

Information Element	Units	Value/remark GPS All
Number of satellites	-	9

Navigation Model (Fields occurring once per satellite)

Information Element	Units	Value/remark GPS #1	Value/remark GPS #2	Value/remark GPS #3
SatID	-	PRNs: 2, 6, 10, 17, 18, 21, 26, 29, 30	PRNs: 3, 11, 14, 15, 18, 22, 23, 25, 31	PRNs: 3, 11, 14, 15, 18, 22, 23, 25, 31
Satellite Status		0 (Note)	0 (Note)	0 (Note)
Note: For consistency Satellite Status is also given in file: Navigation model XX.csv				

Ephemeris and Clock Correction Information Elements (Fields occurring once per satellite)

Information Element	Units	Value/remark GPS All
C/A or P on L2		See file: Navigation model XX.csv
URA Index		See file: Navigation model XX.csv
SV Health		See file: Navigation model XX.csv
IODC	-	See file: Navigation model XX.csv
L2 P Data Flag		See file: Navigation model XX.csv
SF 1 Reserved	-	See file: Navigation model XX.csv
T_{GD}	sec	See file: Navigation model XX.csv
t_{oc}	sec	See file: Navigation model XX.csv
af_2	sec/sec^2	See file: Navigation model XX.csv
af_1	sec/sec	See file: Navigation model XX.csv
af_0	sec	See file: Navigation model XX.csv
C_{rs}	meters	See file: Navigation model XX.csv
Δn	semi-circles/sec	See file: Navigation model XX.csv
M_0	semi-circles	See file: Navigation model XX.csv
C_{uc}	radians	See file: Navigation model XX.csv
e	-	See file: Navigation model XX.csv
C_{us}	radians	See file: Navigation model XX.csv
$(A)^{1/2}$	$meters^{1/2}$	See file: Navigation model XX.csv
t_{oe}	sec	See file: Navigation model XX.csv
Fit Interval Flag		See file: Navigation model XX.csv
AODO	sec	See file: Navigation model XX.csv
C_{ic}	radians	See file: Navigation model XX.csv
$OMEGA_0$	semi-circles	See file: Navigation model XX.csv
C_{is}	radians	See file: Navigation model XX.csv
i_0	semi-circles	See file: Navigation model XX.csv
C_{rc}	meters	See file: Navigation model XX.csv
ω	semi-circles	See file: Navigation model XX.csv
OMEGAdot	semi-circles/sec	See file: Navigation model XX.csv
Idot	semi-circles/sec	See file: Navigation model XX.csv

5.2.6.6 Assistance Data Ionospheric Model

Contents of UE positioning GPS ionospheric model IE

Ionospheric Model

Information Element	Units	Value/remark GPS All
α_0	seconds	4.6566129 10E-9
α_1	sec/semi-circle	1.4901161 10E-8
α_2	$sec/(semi\text{-}circle)^2$	-5.96046 10E-8
α_3	$sec/(semi\text{-}circle)^3$	-5.96046 10E-8
β_0	seconds	79872
β_1	sec/semi-circle	65536
β_2	$sec/(semi\text{-}circle)^2$	-65536
β_3	$sec/(semi\text{-}circle)^3$	-393216

5.2.6.7 Assistance Data Almanac

Contents of UE positioning GPS almanac

Almanac (Field occurring once per message)

Information Element	Units	Value/remark GPS #1	Value/remark GPS #2	Value/remark GPS #3
WN_a	weeks	27	230	230

Satellite Information

Information Element	Units	Value/remark GPS All
Number of satellites	-	24

Almanac (Fields occurring once per satellite)

Information Element	Units	Value/remark GPS All
DataID	-	See file: Almanac XX.csv

Almanac (Fields occurring once per satellite)

Information Element	Units	Value/remark GPS #1	Value/remark GPS #2	Value/remark GPS #3
SatID	-	PRNs: 1, 2, 4, 5, 6, 7, 9, 10, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 29, 30	PRNs: 1, 2, 3, 4, 5, 6, 7, 8, 11, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 25, 27, 28, 30, 31	PRNs: 1, 2, 3, 4, 5, 6, 7, 8, 11, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 25, 27, 28, 30, 31

Almanac (Fields occurring once per satellite)

Information Element	Units	Value/remark GPS All
e	dimensionless	See file: Almanac XX.csv
t_{oa}	sec	See file: Almanac XX.csv
δi	semi-circles	See file: Almanac XX.csv
OMEGADOT	semi-circles/sec	See file: Almanac XX.csv
SV Health		See file: Almanac XX.csv
$A^{1/2}$	$meters^{1/2}$	See file: Almanac XX.csv
$OMEGA_0$	semi-circles	See file: Almanac XX.csv
M_0	semi-circles	See file: Almanac XX.csv
ω	semi-circles	See file: Almanac XX.csv
af_0	seconds	See file: Almanac XX.csv
af_1	sec/sec	See file: Almanac XX.csv

5.2.6.8 Assistance Data Acquisition Assistance

Contents of UE positioning GPS acquisition assistance IE

GPS Acquisition Assistance (Fields occurring once per message)

Information Element	Units	Value/remark GPS #1	Value/remark GPS #2	Value/remark GPS #3
GPS TOW msec	msec	51888000 ms. Start time. Add number of ms as required. (Note 1)	346080000 ms. Start time. Add number of ms as required. (Note 1)	346080000 ms. Start time. Add number of ms as required. (Note 1)
UTRAN GPS reference time		Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Absent
UTRAN GPS timing of cell frames		Note 2	Note 2	-
CHOICE mode		Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Present for Sensitivity Fine Time Assistance test case. Absent otherwise	-
FDD		-	-	-
Primary CPICH Info		100	100	-
SFN		Note 2	Note 2	-
UE Positioning GPS ReferenceTime Uncertainty. Note 3		For Sensitivity Fine Time Assistance test case: '51' (10.2uS). Otherwise: '125' (2.127s)	For Sensitivity Fine Time Assistance test case: '51' (10.2uS). Otherwise: '125' (2.127s)	'125' (2.127s)

Note 1: GPS TOW msec

This is the value in ms of GPS TOW msec when the GPS scenario is initially started in the GPS simulator. For all TTFF test cases, each time a GPS scenario is used, the GPS start time shall be advanced by 120 seconds from the value last used so that, at the time the fix is made, it is at least 2 minutes later than the previous fix made with that scenario.

The actual value of GPS TOW msec to be used in the Acquisition Assistance IE (before the addition of the random offset, if applicable) shall be calculated at the time the IE is required by adding the elapsed time since the time the scenario was started in the GPS simulator to this value. The accuracy shall be such that the Maximum Test System Uncertainty for Coarse Time Assistance, specified in Table F.1.2 of TS 34.171 [4], shall be met.

For all TTFF test cases a random offset is then added to the value of GPS TOW msec as described in subclause 5.2.6.2

This "final GPS TOW msec" value is then also used to determine the value of the Acquisition Assistance Information Elements marked as "Time varying"

Note 2: UTRAN GPS timing of cell frames and SFN.

The values of UTRAN GPS timing of cell frames (before the addition of the random offset) and SFN shall be calculated at the time the IE is required. The accuracy of the relationship between the two fields shall be such that the Maximum Test System Uncertainty for Fine Time Assistance, specified in Table F.1.2 of TS 34.171 [4], shall be met.

A random offset is then added to the value of UTRAN GPS timing of cell frames as described in subclause 5.2.6.2

Note 3: This IE only present for Rel-7 onwards.

Satellite Information

Information Element	Units	Value/remark GPS All
Number of satellites	-	9

GPS Acquisition Assistance (Fields occurring once per satellite)

Information Element	Units	Value/remark GPS #1	Value/remark GPS #2	Value/remark GPS #3
SatID	-	PRNs: 2, 6, 10, 17, 18, 21, 26, 29, 30	PRNs: 3, 11, 14, 15, 18, 22, 23, 25, 31	PRNs: 3, 11, 14, 15, 18, 22, 23, 25, 31

GPS Acquisition Assistance (Fields occurring once per satellite)

Information Element	Units	Value/remark GPS All
Doppler (0^{th} order term)	Hz	Time varying. See file: Acquisition assist XX.csv (Note)
Doppler (1^{st} order term)	Hz/sec	Time varying. See file: Acquisition assist XX.csv (Note)
Doppler Uncertainty	Hz	Time varying. See file: Acquisition assist XX.csv (Note)
Code Phase	chips	Time varying. See file: Acquisition assist XX.csv (Note)
Integer Code Phase	-	Time varying. See file: Acquisition assist XX.csv (Note)
GPS Bit number	-	Time varying. See file: Acquisition assist XX.csv (Note)
Code Phase Search Window	chips	Time varying. See file: Acquisition assist XX.csv (Note)
Azimuth	deg	Time varying. See file: Acquisition assist XX.csv (Note)
Elevation	deg	Time varying. See file: Acquisition assist XX.csv (Note)
Note: Acquisition Assistance Information Elements. This field is "Time varying" and its value depends on the "final GPS TOW msec" as described above. The value of this field to be used shall be determined by taking the "final GPS TOW msec" value and selecting the nearest field value in the Acquisition assist.csv file corresponding to the value of "final current GPS TOW msec".		

6 GNSS information

6.1 GNSS Scenarios and Assistance Data for Assisted GNSS signalling tests

6.1.1 General

Editor's note: in the following subclauses values marked "TBD" need to be determined

This subclause defines the GNSS scenario and the associated assistance data that shall be used for all Assisted GNSS signalling tests defined in TS 34.123-1 [3] subclauses 17.2.5 to 17.2.7 and in TS 37.571-2 [7].

In all cases the Assistance Data is given in the two necessary formats, RRC format for TS 34.123-1 [3] subclauses 17.2.5 to 17.2.7 and LPP format for TS 37.571-2 [7]. Other information is also given separately for TS 34.123-1 [3] subclauses 17.2.5 to 17.2.7 and TS 37.571-2 [7] where it differs between the specifications.

The satellite simulator (SS) shall generate all the UE supported GNSS satellite signals defined in subclause 6.1.2 and shall provide assistance data dependent on the UE capabilities defined in subclause 6.1.3.

The A-GNSS signalling test cases may include several sub-test cases dependent on the GNSS supported by the UE. Each sub-test case is identified by a Sub-Test Case Number as defined below. In some cases the detailed assistance data content defined in subclause 6.1.3 depends on the particular sub-test case.

Table 6.1.1-1: Sub-Test Case Number Definition for TS 34.123-1 subclauses 17.2.5 to 17.2.7

Sub-Test Case Number	Supported GNSS
1	UE supporting A-GLONASS only
2	UE supporting A-Galileo only
3	UE supporting A-GPS and Modernized GPS only
4	UE supporting A-GPS and A-GLONASS only

Table 6.1.1-2: Sub-Test Case Number Definition for TS 37.571-2

Sub-Test Case Number	Supported GNSS
1	UE supporting GNSS with A-GPS only
2	UE supporting GNSS with A-GLONASS only
3	UE supporting GNSS with A-Galileo only
4	UE supporting GNSS with A-GPS and A-GLONASS only
7	UE supporting GNSS(1) and OTDOA
Note 1: Any GNSS of GPS, GLONASS, Galileo (FFS)	

The term SV ID used in this subclause is defined as the satellite PRN for GPS and Galileo, and as the satellite Slot Number for GLONASS.

In this subclause all information for Galileo is for further study (FFS).

6.1.2 GNSS Scenario

The following GNSS scenario shall be used. The assistance data specified in the following subclauses is consistent with this GNSS scenario:

- Yuma Almanac data: the required file(s) in the GNSS data sig zip file specified in Annex B are given below.

Table 6.1.2-1: Yuma Almanac data files for TS 34.123-1 subclauses 17.2.5 to 17.2.7

Sub-Test Case Number	Yuma file(s)
1	GNSS 1-1 Yuma.txt
2	GNSS 1-2 Yuma.txt
3	GNSS 1-3 Yuma.txt
4	GNSS 1-1 Yuma.txt and GNSS 1-3 Yuma.txt

Table 6.1.2-2: Yuma Almanac data files for TS 37.571-2

Sub-Test Case Number	Yuma file(s)
1	GNSS 1-3 Yuma.txt
2	GNSS 1-1 Yuma.txt
3	GNSS 1-2 Yuma.txt
4	GNSS 1-1 Yuma.txt and GNSS 1-3 Yuma.txt
7	[FFS]

- UE location and Reference location:

Static at latitude: 35 degrees 44 minutes 39.432 seconds north, longitude: 139 degrees 40 minutes 48.633 seconds east, (Tokyo Japan 2012), height: = 300m.

- Nominal start time:

1st January 2012 00:30:00.

- Visible satellites simulated are given below

Table 6.1.2-3: Satellites to be simulated for TS 34.123-1 subclauses 17.2.5 to 17.2.7

Sub-Test Case Number	SV IDs of Satellites to be simulated
1	3, 4, 9, 10, 18, 20
2	[FFS]
3	8, 11, 17, 19, 27, 28 (Note)
4	GPS: 7, 8, 19, 27. GLONASS: 3, 10, 18, 20
Note: For this sub-test the satellite simulator shall generate all the GPS signals supported by the UE for all the simulated satellites.	

Table 6.1.2-4: Satellites to be simulated for TS 37.571-2

Sub-Test Case Number	SV IDs of Satellites to be simulated
1	8, 11, 17, 19, 27, 28
2	3, 4, 9, 10, 18, 20
3	[FFS]
4	GPS: 7. 8, 19, 27. GLONASS: 3, 10, 18, 20
7	[FFS]

- Ionospheric model: see values in subclause 6.1.3
- The levels of the simulated satellites shall all be at -125dBm +/- 6dB

6.1.3 Assistance Data

This subclause defines the GNSS scenarios and assistance data IEs which shall be available for use as specified in all A-GNSS signalling test cases defined in TS 34.123-1 [3] subclauses 17.2.5 to 17.2.7 and for TS 37.571-2 [7].

6.1.3.1 Default Assistance Data for TS 34.123-1 subclauses 17.2.5 to 17.2.7

The assistance data listed in subclause 6.1.3.1 are the assistance data elements pushed by the SS in some tests defined in TS 34.123-1 [3] subclauses 17.2.5 to 17.2.7. During the test the UE may request additional assistance data as specified in the tests and the SS shall then provide any other assistance data available as defined in subclause 6.1.3.

Table 6.1.3.1-1: GNSS assistance data to be provided to the UE

GNSS Assistance Data IE to be provided to the UE	Mode used in test case	
	UE-based	**UE-assisted**
GPS reference time	Yes for sub-tests 3, 4	Yes for sub-tests 3, 4
GPS reference UE position	Yes for sub-tests 3, 4	No
GPS navigation model	Yes for sub-tests 3, 4	No
GPS ionospheric model	Yes for sub-tests 3, 4	No
GPS UTC model	Yes for sub-test 4	No
GPS acquisition assistance	No	Yes for sub-tests 3, 4
GANSS reference time	Yes for sub-tests 1, 2	Yes for sub-tests 1, 2
GANSS reference UE position	Yes for sub-tests 1, 2	No
GANSS ionospheric model	Yes for sub-test 2	No
GANSS additional ionospheric model	Yes for sub-test 1	No
GANSS Time Models	Yes for sub-test 4	No
GANSS navigation model	Yes for sub-test 2	No
GANSS additional navigation models	Yes for sub-tests 1, 4	No
GANSS reference measurement information	No	Yes for sub-tests 1, 2, 4
GANSS auxiliary information	Yes for sub-tests 1, 3, 4. Note.	Yes for sub-tests 1, 3, 4. Note.
Note: Also if UE supports multiple signals per GNSS		

6.1.3.2 Assistance Data values for TS 34.123-1 subclauses 17.2.5 to 17.2.7

Where assistance data is required on a per-satellite basis, or where the values of the data also varies with time it is specified in comma-separated-variable files in the GNSS data sig zip file specified in Annex B. These files specify the values to be used for each satellite, indexed by satellite PRN or SV ID, and, where applicable, the values to be used indexed by both time and satellite PRN or SV ID.

Assistance data that is marked as "time varying" and the GPS TOW msec or GANSS TOD field are only specified and used in 1 second increments. Interpolation between these values shall not be used.

The accuracy of the GPS TOW msec or GANSS TOD and assistance data that is marked as "time varying" in the provided assistance data shall be within +/- 2 s relative to the GNSS time in the system simulator.

Assistance data Information Elements and fields that are not specified shall not be used.

The information elements detailed below are fully defined in 3GPP TS 25.331 [16]

Assistance Data GPS Reference Time

GPS Reference Time (Fields occurring once per message)

Information Element	Units	Value/remark
GPS Week	weeks	1669
GPS TOW msec	msec	1800000 ms. Start time. Add integer number of 1 seconds as required. (Note)
UE Positioning GPS Reference Time Uncertainty		125 (2.127 seconds)
Note: GPS TOW msec This is the value of GPS TOW msec when the GNSS scenario is started in the GNSS simulator. The value of GPS TOW msec to be used in the Reference Time IE shall be calculated at the time the IE is required by adding the elapsed time since the time the scenario was started in the GNSS simulator to this value, rounded up to the next 1 second interval. This "current GPS TOW msec" is then also used to determine the value of any other Information Elements marked as "Time varying" in subclause 6.1.3.2		

Assistance Data GPS Reference UE Position

GPS Reference UE Position

Information Element	Units	Value/remark
Latitude sign		0
Degrees Of Latitude	degrees	35.744287
Degrees Of Longitude	degrees	139.680176
Altitude Direction		0
Altitude	m	300
Uncertainty semi-major	m	3000
Uncertainty semi-minor	m	3000
Orientation of major axis	degrees	0
Uncertainty Altitude	m	500
Confidence	%	68

Assistance Data GPS Navigation Model

Satellite Information

Information Element	Units	Value/remark
Number of satellites	-	6

GPS Navigation Model (Fields occurring once per satellite)

Information Element	Units	Value/remark
SatID	-	PRNs: 8, 11, 17, 19, 27, 28
Satellite Status		0 (see note)
Note: For consistency Satellite Status is also given in file: GPS Navigation model.csv		

GPS Ephemeris and Clock correction Information Elements (Fields occurring once per satellite)

Information Element	Units	Value/remark
C/A or P on L2		See file: GPS Navigation model.csv
URA Index		See file: GPS Navigation model.csv
SV Health		See file: GPS Navigation model.csv
IODC	-	See file: GPS Navigation model.csv
L2 P Data Flag		See file: GPS Navigation model.csv
SF 1 Reserved	-	See file: GPS Navigation model.csv
T_{GD}	sec	See file: GPS Navigation model.csv
t_{oc}	sec	See file: GPS Navigation model.csv
af_2	sec/sec^2	See file: GPS Navigation model.csv
af_1	sec/sec	See file: GPS Navigation model.csv
af_0	sec	See file: GPS Navigation model.csv
C_{rs}	meters	See file: GPS Navigation model.csv
Δn	semi-circles/sec	See file: GPS Navigation model.csv
M_0	semi-circles	See file: GPS Navigation model.csv
C_{uc}	radians	See file: GPS Navigation model.csv
e	-	See file: GPS Navigation model.csv
C_{us}	radians	See file: GPS Navigation model.csv
$(A)^{1/2}$	$meters^{1/2}$	See file: GPS Navigation model.csv
t_{oe}	sec	See file: GPS Navigation model.csv
Fit Interval Flag		See file: GPS Navigation model.csv
AODO	sec	See file: GPS Navigation model.csv
C_{ic}	radians	See file: GPS Navigation model.csv
$OMEGA_0$	semi-circles	See file: GPS Navigation model.csv
C_{is}	radians	See file: GPS Navigation model.csv
i_0	semi-circles	See file: GPS Navigation model.csv
C_{rc}	meters	See file: GPS Navigation model.csv
ω	semi-circles	See file: GPS Navigation model.csv
OMEGAdot	semi-circles/sec	See file: GPS Navigation model.csv
Idot	semi-circles/sec	See file: GPS Navigation model.csv

Assistance Data GPS Ionospheric Model

GPS Ionospheric Model

Information Element	Units	Value/remark
α_0	seconds	4.6566129 10E-9
α_1	sec/semi-circle	1.4901161 10E-8
α_2	$sec/(semi\text{-}circle)^2$	-5.96046 10E-8
α_3	$sec/(semi\text{-}circle)^3$	-5.96046 10E-8
β_0	seconds	79872
β_1	sec/semi-circle	65536
β_2	$sec/(semi\text{-}circle)^2$	-65536
β_3	$sec/(semi\text{-}circle)^3$	-393216

Assistance Data GPS UTC model

GPS UTC Model

Information Element	Units	Value/remark
A_1	sec/sec	0
A_0	seconds	0
t_{ot}	seconds	40
WN_t	weeks	9
Δt_{LS}	seconds	6
WN_{LSF}	weeks	TBD
DN	days	2
Δt_{LSF}	seconds	14

Assistance Data GPS Almanac

GPS Almanac (Fields occurring once per message)

Information Element	Units	Value/remark
WN_a	weeks	1669

Satellite Information

Information Element	Units	Value/remark
Number of satellites	-	24

GPS Almanac (Fields occurring once per satellite)

Information Element	Units	Value/remark
DataID	-	See file: GPS Almanac.csv
SatID	-	PRNs: 1, 2, 4, 5, 6, 7, 9, 10, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 29, 30
e	dimensionless	See file: GPS Almanac.csv
t_{oa}	sec	See file: GPS Almanac.csv
δi	semi-circles	See file: GPS Almanac.csv
OMEGADOT	semi-circles/sec	See file: GPS Almanac.csv
SV Health		See file: GPS Almanac.csv
$A^{1/2}$	$meters^{1/2}$	See file: GPS Almanac.csv
$OMEGA_0$	semi-circles	See file: GPS Almanac.csv
M_0	semi-circles	See file: GPS Almanac.csv
ω	semi-circles	See file: GPS Almanac.csv
af_0	seconds	See file: GPS Almanac.csv
af_1	sec/sec	See file: GPS Almanac.csv

Assistance Data GPS Acquisition Assistance

GPS Acquisition Assist - Information Elements appearing once per message

Information Element	Units	Value/remark
GPS TOW msec	msec	1800000 ms. Start time. Add integer number of 1 seconds as required. (Note)
UE Positioning GPS Reference Time Uncertainty		125 (2.127 seconds)
Note: GPS TOW msec This is the value of GPS TOW msec when the GNSS scenario is started in the GNSS simulator. The value of GPS TOW msec to be used in the Acquisition Assistance IE shall be calculated at the time the IE is required by adding the elapsed time since the time the scenario was started in the GNSS simulator to this value, rounded up to the next 1 second interval.		

Satellite Information

Information Element	Units	Value/remark
Number of satellites	-	6

GPS Acquisition Assist - Information Elements appearing once per satellite

Information Element	Units	Value/remark
SatID	-	PRNs: 8, 11, 17, 19, 27, 28.
Doppler (0^{th} order term)	Hz	Time varying. See file: GPS Acquisition assist .csv (Note)
Doppler (1^{st}order term)	Hz/s	Time varying. See file: GPS Acquisition assist .csv (Note)
Doppler Uncertainty	Hz	Time varying. See file: GPS Acquisition assist .csv (Note)
Code Phase	chips	Time varying. See file: GPS Acquisition assist .csv (Note)
Integer Code Phase	-	Time varying. See file: GPS Acquisition assist .csv (Note)
GPS Bit number	-	Time varying. See file: GPS Acquisition assist .csv (Note)
Code Phase Search Window	chips	Time varying. See file: GPS Acquisition assist .csv (Note)
Azimuth	Degrees	Time varying. See file: GPS Acquisition assist .csv (Note)
Elevation	Degrees	Time varying. See file: GPS Acquisition assist .csv (Note)
Note: This field is “Time varying” and its value depends on the “current GPS TOW msec”. The value of this field to be used shall be determined by taking the “current GPS TOW msec” value and selecting the field value in the GPS Acquisition assist.csv file corresponding to the value of “current GPS TOW msec”.		

Assistance Data GANSS reference time

GANSS reference time: sub-test 1

Information Element	Units	Value/remark
GANSS Day		5845
GANSS TOD	Seconds	12586 s. Start time. Add integer number of 1 seconds as required. (Note)
GANSS TOD Uncertainty		125 (2.127 seconds)
GANSS Time ID		2 (GLONASS)
Note: GANSS TOD This is the value of GANSS TOD when the GNSS scenario is started in the GNSS simulator. The value of GANSS TOD to be used in the Reference Time IE shall be calculated at the time the IE is required by adding the elapsed time since the time the scenario was started in the GNSS simulator to this value, rounded up to the next 1 second interval. This “current GANSS TOD” is then also used to determine the value of any other Information Elements marked as “Time varying” in subclause 6.1.3.3		

GANSS reference time: sub-test 2

Information Element	Units	Value/remark
GANSS Day		FFS
GANSS TOD	Seconds	FFS. Start time. Add integer number of 1 seconds as required. (Note)
GANSS TOD Uncertainty		125 (2.127 seconds)
GANSS Time ID		Not present (Galileo)
Note: GANSS TOD This is the value of GANSS TOD when the GNSS scenario is started in the GNSS simulator. The value of GANSS TOD to be used in the Reference Time IE shall be calculated at the time the IE is required by adding the elapsed time since the time the scenario was started in the GNSS simulator to this value, rounded up to the next 1 second interval. This “current GANSS TOD” is then also used to determine the value of any other Information Elements marked as “Time varying” in subclause 6.1.3.3		

Assistance Data GANSS reference UE position

GANSS reference UE position

Information Element	Units	Value/remark
Latitude sign		0
Degrees Of Latitude	degrees	37.744287

Degrees Of Longitude	degrees	139.680176
Altitude Direction		0
Altitude	m	300
Uncertainty semi-major	m	3000
Uncertainty semi-minor	m	3000
Orientation of major axis	degrees	0
Uncertainty Altitude	m	500
Confidence	%	68

Assistance Data GANSS ionospheric model

GANSS ionospheric model.

Information Element	Units	Value/remark
a_{i0}		FFS
a_{i1}		FFS
a_{i2}		FFS
Storm Flag 1		0
Storm Flag 2		0
Storm Flag 3		0
Storm Flag 4		0
Storm Flag 5		0

Assistance Data GANSS additional ionospheric model

GANSS additional ionospheric model

Information Element	Units	Value/remark
Data Id		00
α_0	Seconds	4.6566129 10E-9
α_1	sec/semi-circle	1.4901161 10E-8
α_2	sec/(semi-circle)^2	-5.96046 10E-8
α_3	sec/(semi-circle)^3	-5.96046 10E-8
β_0	Seconds	79872
β_1	sec/semi-circle	65536
β_2	sec/(semi-circle)^2	-65536
β_3	sec/(semi-circle)^3	-393216

Assistance Data GANSS time model

GANSS time model

Information Element	Units	Value/remark
GANSS Time Model Reference Time	16s	1800 (s)
T_{A0}	Seconds	0
GNSS_TO_ID		0 (GPS)

Assistance Data GANSS navigation model

GANSS navigation model

Information Element	Units	Value/remark
Non-Broadcast Indication		Not present

Satellite Information

Information Element	Units	Value/remark
Number of satellites	-	6

Satellite Information (Fields occurring once per satellite)

Information Element	Units	Value/remark
SatID		SV IDs: FFS
SV Health		0 (Note)
IOD		FFS (Note)
Note: For consistency SV Health and IOD are also given in file: GANSS Navigation model.csv		

GANSS Clock Model (Fields occurring once per satellite)

Information Element	Units	Value/remark
Satellite clock model		
t_{oc}	seconds	See file: GANSS Navigation model.csv
a_{f2}	sec/sec^2	See file: GANSS Navigation model.csv
a_{f1}	sec/sec	See file: GANSS Navigation model.csv
a_{f0}	sec	See file: GANSS Navigation model.csv
T_{GD}	sec	See file: GANSS Navigation model.csv
Model ID		See file: GANSS Navigation model.csv

GANSS Orbit Model (Fields occurring once per satellite)

Information Element	Units	Value/remark
t_{oe}	seconds	See file: GANSS Navigation model.csv
ω	semi-circles	See file: GANSS Navigation model.csv
Δn	semi-circles/sec	See file: GANSS Navigation model.csv
M_0	semi-circles	See file: GANSS Navigation model.csv
OMEGAdot	semi-circles/sec	See file: GANSS Navigation model.csv
e		See file: GANSS Navigation model.csv
Idot	semi-circles/sec	See file: GANSS Navigation model.csv
sqrtA	meters$^{1/2}$	See file: GANSS Navigation model.csv
i_0	semi-circles	See file: GANSS Navigation model.csv
$OMEGA_0$	semi-circles	See file: GANSS Navigation model.csv
C_{rs}	meters	See file: GANSS Navigation model.csv
C_{is}	radians	See file: GANSS Navigation model.csv
C_{us}	radians	See file: GANSS Navigation model.csv
C_{rc}	meters	See file: GANSS Navigation model.csv
C_{ic}	radians	See file: GANSS Navigation model.csv
C_{uc}	radians	See file: GANSS Navigation model.csv

Assistance Data GANSS additional navigation models

GANSS additional navigation models

Information Element	Units	Value/remark
Non-Broadcast Indication		Not present

Satellite Information

Information Element	Units	Value/remark
Number of satellites	-	6

Satellite Information (Fields occurring once per satellite)

Information Element	Units	Value/remark
SatID		Slot Numbers: 3, 4, 9, 10, 18, 20
SV Health		011110 (Note)
IOD		13 (Note)
Note: For consistency SV Health and IOD are also given in file: GANSS Additional Navigation model.csv		

GANSS additional Clock Models (Fields occurring once per satellite)

Information Element	Units	Value/remark
GLONASS Satellite Clock Model		
$\tau_n(t_b)$	seconds	See file: GANSS Additional Navigation model.csv
$\gamma_n(t_b)$		See file: GANSS Additional Navigation model.csv
$\Delta\tau_n$	seconds	See file: GANSS Additional Navigation model.csv

GANSS additional orbit models (Fields occurring once per satellite)

Information Element	Units	Value/remark
GLONASS Earth-Centered, Earth-fixed Parameters		
E_n	days	See file: GANSS Additional Navigation model.csv
P1	minutes	See file: GANSS Additional Navigation model.csv
P2		See file: GANSS Additional Navigation model.csv
M		See file: GANSS Additional Navigation model.csv
$x_n(t_b)$	kilometers	See file: GANSS Additional Navigation model.csv
$\dot{x}_n(t_b)$	kilometers/sec	See file: GANSS Additional Navigation model.csv
$\ddot{x}_n(t_b)$	kilometers/sec^2	See file: GANSS Additional Navigation model.csv
$y_n(t_b)$	kilometers	See file: GANSS Additional Navigation model.csv
$\dot{y}_n(t_b)$	kilometers/sec	See file: GANSS Additional Navigation model.csv
$\ddot{y}_n(t_b)$	kilometers/sec^2	See file: GANSS Additional Navigation model.csv
$z_n(t_b)$	kilometers	See file: GANSS Additional Navigation model.csv
$\dot{z}_n(t_b)$	kilometers/sec	See file: GANSS Additional Navigation model.csv
$\ddot{z}_n(t_b)$	kilometers/sec^2	See file: GANSS Additional Navigation model.csv

Assistance Data GANSS reference measurement information

GANSS reference measurement information: sub-test 1, 4 (Fields occurring once per message)

Information Element	Units	Value/remark
GANSS Signal ID		Not present

Satellite Information

Information Element	Units	Value/remark
Number of satellites	-	6

GANSS reference measurement information: sub-test 1, 4 (Fields occurring once per satellite)

Information Element	Units	Value/remark
SatID		Slot Numbers: 3, 4, 9, 10, 18, 20
Doppler (0^{th} order term)	m/s	Time varying. See file: GANSS reference measurement information subtest1_4.csv (Note)
Doppler (1^{st}order term)	m/s^2	Time varying. See file: GANSS reference measurement information subtest1_4.csv (Note)
Doppler Uncertainty	m/s	Time varying. See file: GANSS reference measurement information subtest1_4.csv (Note)
Code Phase	ms	Time varying. See file: GANSS reference measurement information subtest1_4.csv (Note)
Integer Code Phase	ms	Time varying. See file: GANSS reference measurement information subtest1_4.csv (Note)
Code Phase Search Window		Time varying. See file: GANSS reference measurement information subtest1_4.csv (Note)
Azimuth	Degrees	Time varying. See file: GANSS reference measurement information subtest1_4.csv (Note)
Elevation	Degrees	Time varying. See file: GANSS reference measurement information subtest1_4.csv (Note)
Note: For sub-test 1: this field is "Time varying" and its value depends on the "current GANSS TOD". The value of this field to be used shall be determined by taking the "current GANSS TOD" value and selecting the field value in the GANSS reference measurement information subtest1_4.csv file corresponding to the value of "current GANSS TOD". For sub-test 4: this field is "Time varying" and its value depends on the "current GPS TOW msec". The value of this field to be used shall be determined by taking the "current GPS TOW msec" value and selecting the field value in the GANSS reference measurement information subtest1_4.csv file corresponding to the value of "current GPS TOW msec".		

GANSS reference measurement information: sub-test 2 (Fields occurring once per message)

Information Element	Units	Value/remark
GANSS Signal ID		Not present

Satellite Information

Information Element	Units	Value/remark
Number of satellites	-	6

GANSS reference measurement information: sub-test 2 (Fields occurring once per satellite)

Information Element	Units	Value/remark
SatID		SV IDs: FFS.
Doppler (0^{th} order term)	m/s	Time varying. See file: GANSS reference measurement information subtest2.csv (Note)
Doppler (1^{st}order term)	m/s^2	Time varying. See file: GANSS reference measurement information subtest2.csv (Note)
Doppler Uncertainty	m/s	Time varying. See file: GANSS reference measurement information subtest2.csv (Note)
Code Phase	ms	Time varying. See file: GANSS reference measurement information subtest2.csv (Note)
Integer Code Phase	ms	Time varying. See file: GANSS reference measurement information subtest2.csv (Note)
Code Phase Search Window		Time varying. See file: GANSS reference measurement information subtest2.csv (Note)
Azimuth	Degrees	Time varying. See file: GANSS reference measurement information subtest2.csv (Note)
Elevation	Degrees	Time varying. See file: GANSS reference measurement information subtest2.csv (Note)
Note: This field is "Time varying" and its value depends on the "current GANSS TOD". The value of this field to be used shall be determined by taking the "current GANSS TOD" value and selecting the field value in the GANSS reference measurement information subtest2.csv file corresponding to the value of "current GANSS TOD".		

Assistance Data GANSS almanac

GANSS almanac: sub-test 1, 4 (Fields occurring once per message)

Information Element	Units	Value/remark
Week Number	Weeks	N/A

Satellite Information GLO-KP: sub-tests 1, 4

Information Element	Units	Value/remark
Number of satellites	-	24

GANSS almanac: sub-tests 1, 4 (Fields occurring once per satellite)

Information Element	Units	Value/remark
N^A	Days	1
n^A	-	Slot Numbers: 1, 2, 3 …….22, 23, 24
H_n^A	-	TBD, 1, 5, 6, TBD, 1, 5, 6, -2, -7, 0, TBD, -2, -7, 0, TBD, 4, -3, 3, 2, 4, -3, 3, 2

GANSS almanac: sub-test 1, 4 (Fields occurring once per satellite)

Information Element	Units	Value/remark
λ_n^A	semi-circles	See file: GANSS Almanac subtest1_4.csv
$t_{\lambda n}^A$	seconds	See file: GANSS Almanac subtest1_4.csv
Δi_n^A	semi-circles	See file: GANSS Almanac subtest1_4.csv
ΔT_n^A	sec/orbit period	See file: GANSS Almanac subtest1_4.csv
$\Delta T\_DOT_n^A$	sec/orbit period^2	See file: GANSS Almanac subtest1_4.csv
ε_n^A		See file: GANSS Almanac subtest1_4.csv
ω_n^A	semi-circles	See file: GANSS Almanac subtest1_4.csv
τ_n^A	seconds	See file: GANSS Almanac subtest1_4.csv
C_n^A		See file: GANSS Almanac subtest1_4.csv
M_n^A		See file: GANSS Almanac subtest1_4.csv

GANSS almanac: sub-test 2 (Fields occurring once per message)

Information Element	Units	Value/remark
Week Number	Weeks	FFS

GANSS almanac: sub-test 2 (Field occurring once per message)

Information Element	Units	Value/remark
T_{oa}		FFS
IOD_a		FFS

Satellite Information KP: sub-test 2

Information Element	Units	Value/remark
Number of satellites	-	24

GANSS almanac: sub-test 2 (Fields occurring once per satellite)

Information Element	Units	Value/remark
SV ID		SV IDs: FFS
e		See file: GANSS Almanac subtest2.csv
δi	semi-circles	See file: GANSS Almanac subtest2.csv
OMEGADOT	semi-circles/sec	See file: GANSS Almanac subtest2.csv
SV Health KP		See file: GANSS Almanac subtest2.csv
delta $A^{1/2}$	$meters^{1/2}$	See file: GANSS Almanac subtest2.csv
$OMEGA_0$	semi-circles	See file: GANSS Almanac subtest2.csv
M_0	semi-circles	See file: GANSS Almanac subtest2.csv
ω	semi-circles	See file: GANSS Almanac subtest2.csv
af_0	Seconds	See file: GANSS Almanac subtest2.csv
af_1	sec/sec	See file: GANSS Almanac subtest2.csv

Assistance Data GANSS auxiliary information

GANSS auxiliary information: sub-test 1, 4 (Fields occurring once per message)

Information Element	Units	Value/remark
GANSS-ID-3		Present (GLONASS)

Aux Info List: sub-test 1, 4

Information Element	Units	Value/remark
Number of satellites	-	6

GANSS auxiliary information: sub-test 1, 4 (Fields occurring once per satellite)

Information Element	Units	Value/remark
Sat ID		Slot Numbers: 3, 4, 9, 10, 18, 20
Signals Available		G1
Channel Number		5, 6, -2, -7, -3, 2

GANSS auxiliary information: sub-test 3 (Fields occurring once per message)

Information Element	Units	Value/remark
GANSS-ID-1		Present (Modernized GPS)

Aux Info List: sub-test 3

Information Element	Units	Value/remark
Number of satellites	-	6

GANSS auxiliary information: sub-test 3 (Fields occurring once per satellite)

Information Element	Units	Value/remark
Sat ID		PRNs: 8, 11, 17, 19, 27, 28
Signals Available		L1C and others as supported by the UE

Assistance Data GANSS ID

GANSS ID: sub-test 1, 4

Information Element	Units	Value/remark
GANSS ID		3 (GLONASS)

GANSS ID: sub-test 2

Information Element	Units	Value/remark
GANSS ID		Not present (Galileo)

GANSS ID: sub-test 3

Information Element	Units	Value/remark
GANSS ID		1 (Modernized GPS)

6.1.3.3 Default Assistance Data for TS 37.571-2

This subclause defines the GNSS assistance data elements which shall be provided to the UE in certain tests in TS 37.571-2 [7] in the LPP Provide Assistance Data messages in the absence of a corresponding LPP Request Assistance Data message. The GNSS assistance data provided depends on the mode being used in the test case, the assistance data supported by the UE and the GNSS(s) supported by the UE. GNSS assistance data IEs not supported by the UE shall not be sent. GNSS assistance data IEs supported by the UE but not listed below shall not be sent.

Table 6.1.3.3-1: Default GNSS assistance data to be provided to the UE

GNSS Assistance Data IE supported by UE	Mode used in test case		
	UE-based	UE-assisted. GNSS-Acquisition Assistance supported by UE	UE-assisted. GNSS-Acquisition Assistance not supported by UE
GNSS-Reference Time	Yes	Yes	Yes
GNSS-ReferenceLocation	Yes	No	Yes
GNSS-IonosphericModel	Yes	No	No
GNSS-TimeModelList	Yes for sub-test 4	No	Yes for sub-test 4
GNSS-NavigationModel	Yes	No	Yes
GNSS-AcquisitionAssistance	No	Yes	No
GNSS-Almanac	No	No	Yes
GNSS-UTC-Model	Yes for sub-test 4	No	No
GNSS-AuxiliaryInformation	Yes for sub-tests 2, 4. Note.	Yes for sub-tests 2, 4. Note.	Yes for sub-tests 2, 4. Note.
Note: Also if UE supports multiple signals per GNSS			

6.1.3.4 Assistance Data values for TS 37.571-2

Where assistance data is required on a per-satellite basis, or where the values of the data also varies with time it is specified in comma-separated-variable files in the GNSS data zip file specified in Annex B. These files specify the values to be used for each satellite, indexed by satellite SV ID, and, where applicable, the values to be used indexed by both time and satellite SV ID.

Assistance data that is marked as “time varying” and the gnss-TimeOfDay field are only specified and used in 1 second increments. Interpolation between these values shall not be used.

The accuracy of the gnss-TimeOfDay and assistance data that is marked as “time varying” in the provided assistance data shall be within +/- 2 s relative to the GNSS time in the system simulator.

Assistance data Information Elements and fields that are not specified shall not be used.

The information elements detailed below are fully defined in 3GPP TS 36.355 [8]

GNSS REFERENCE TIME:

GNSS-ReferenceTime: sub-tests 1, 4

Information Element	Units	Value/remark
gnss-SystemTime		
gnss-TimeID		0 (gps)
gnss-DayNumber		11683
gnss-TimeOfDay		1800 s. Start time. Add integer number of 1 seconds as required. (Note)
gnss-TimeOfDayFrac-msec		Not present
notificationOfLeapSecond		Not present
gps-TOW-Assist		
satelliteID		PRNs: 8, 11, 17, 19, 27, 28.
tlmWord		10922 (for all PRNs)
antiSpoof		1 (for all PRNs)
alert		0 (for all PRNs)
tlmRsvdBits		2 (for all PRNs)
referenceTimeUnc		'117' (2.274 seconds)
gnss-ReferenceTimeForCells		Not present
Note: gnss-TimeOfDay This is the value of gnss-TimeOfDay when the GNSS scenario is started in the GNSS simulator. The value of gnss-TimeOfDay to be used in the Reference Time IE shall be calculated at the time the IE is required by adding the elapsed time since the time the scenario was started in the GNSS simulator to this value, rounded up to the next 1 second interval. This "current gnss-TimeOfDay" is then also used to determine the value of any other Information Elements marked as "Time varying" in subclause 6.1.3.4.		

GNSS-ReferenceTime: sub-test 2

Information Element	Units	Value/remark
gnss-SystemTime		
gnss-TimeID		4 (glonass)
gnss-DayNumber		5845
gnss-TimeOfDay		12586 s. Start time. Add integer number of 1 seconds as required. (Note)
gnss-TimeOfDayFrac-msec		Not present
notificationOfLeapSecond		00
gps-TOW-Assist		Not present
referenceTimeUnc		'117' (2.274 seconds)
gnss-ReferenceTimeForCells		Not present
Note: gnss-TimeOfDay This is the value of gnss-TimeOfDay when the GNSS scenario is started in the GNSS simulator. The value of gnss-TimeOfDay to be used in the Reference Time IE shall be calculated at the time the IE is required by adding the elapsed time since the time the scenario was started in the GNSS simulator to this value, rounded up to the next 1 second interval. This "current gnss-TimeOfDay" is then also used to determine the value of any other Information Elements marked as "Time varying" in subclause 6.1.3.4.		

GNSS-ReferenceTime: sub-test 3

Information Element	Units	Value/remark
gnss-SystemTime		
gnss-TimeID		3 (galileo)
gnss-DayNumber		FFS
gnss-TimeOfDay		FFS s. Start time. Add integer number of 1 seconds as required. (Note)
gnss-TimeOfDayFrac-msec		Not present
notificationOfLeapSecond		Not present
gps-TOW-Assist		Not present
referenceTimeUnc		'117' (2.274 seconds)
gnss-ReferenceTimeForCells		Not present

Note: gnss-TimeOfDay
This is the value of gnss-TimeOfDay when the GNSS scenario is started in the GNSS simulator. The value of gnss-TimeOfDay to be used in the Reference Time IE shall be calculated at the time the IE is required by adding the elapsed time since the time the scenario was started in the GNSS simulator to this value, rounded up to the next 1 second interval. This "current gnss-TimeOfDay" is then also used to determine the value of any other Information Elements marked as "Time varying" in subclause 6.1.3.4.

GNSS REFERENCE LOCATION:

GNSS-ReferenceLocation

Information Element	Units	Value/remark
threeDlocation		
latitudeSign		0
degreesLatitude	degrees	35.744287
degreesLongitude	degrees	139.680176
altitudeDirection		0
altitude	m	300
uncertaintySemiMajor	m	3000
uncertaintySemiMinor	m	3000
orientationMajorAxis	degrees	0
uncertaintyAltitude	m	500
confidence	%	68

GNSS IONOSPHERIC MODEL:

GNSS-IonosphericModel: sub-tests 1, 2, 4

Information Element	Units	Value/remark
klobucharModel		
dataID		00
alfa0	seconds	4.6566129 10E-9
alfa1	sec/semi-circle	1.4901161 10E-8
alfa2	sec/(semi-circle)^2	-5.96046 10E-8
alfa3	sec/(semi-circle)^3	-5.96046 10E-8
beta0	seconds	79872
beta1	sec/semi-circle	65536
beta2	sec/(semi-circle)^2	-65536
beta3	sec/(semi-circle)^3	-393216
neQuickModel		Not present

GNSS-IonosphericModel: sub-test 3

Information Element	Units	Value/remark
GNSS-IonospericModel		
klobucharModel		Not present
neQuickModel		
ai0		FFS
ai1		FFS
ai2		FFS
ionoStormFlag1		0
ionoStormFlag2		0
ionoStormFlag3		0
ionoStormFlag4		0
ionoStormFlag5		0

GNSS TIME MODEL:

GNSS-TimeModelList: sub-test 4

Information Element	Units	Value/remark
gnss-TimeModelRefTime	16 seconds	1800 (s)
tA0		0
gnss-TO-ID		1 (GPS)
weekNumber		1669
deltaT		TBD

GNSS NAVIGATION MODEL:

GNSS-NavigationModel: sub-test 1

Information Element	Units	Value/remark
nonBroadcastFlag		0
gnss-SatelliteList		(SIZE) 6

GNSS-NavModelSatelliteElement: sub-test 1

Information Element	Units	Value/remark
svID		PRNs: 8, 11, 17, 19, 27, 28
svHealth		0
iod		TBD
gnss-ClockModel		
nav-ClockModel		
navToc		See file: GNSS Navigation Model subtest1.csv
navaf2		See file: GNSS Navigation Model subtest1.csv
navaf1		See file: GNSS Navigation Model subtest1.csv
navaf0		See file: GNSS Navigation Model subtest1.csv
navTgd		See file: GNSS Navigation Model subtest1.csv
gnss-OrbitModel		
nav-KeplerianSet		
navURA		See file: GNSS Navigation Model subtest1.csv
navFitFlag		See file: GNSS Navigation Model subtest1.csv
navToe		See file: GNSS Navigation Model subtest1.csv
navOmega		See file: GNSS Navigation Model subtest1.csv
navDeltaN		See file: GNSS Navigation Model subtest1.csv
navM0		See file: GNSS Navigation Model subtest1.csv
navOmegaADot		See file: GNSS Navigation Model subtest1.csv
navE		See file: GNSS Navigation Model subtest1.csv
navIDot		See file: GNSS Navigation Model subtest1.csv
navAPowerHalf		See file: GNSS Navigation Model subtest1.csv
navI0		See file: GNSS Navigation Model subtest1.csv
navOmegaA0		See file: GNSS Navigation Model subtest1.csv
navCrs		See file: GNSS Navigation Model subtest1.csv
navCis		See file: GNSS Navigation Model subtest1.csv
navCus		See file: GNSS Navigation Model subtest1.csv
navCrc		See file: GNSS Navigation Model subtest1.csv
navCic		See file: GNSS Navigation Model subtest1.csv
navCuc		See file: GNSS Navigation Model subtest1.csv

GNSS-NavigationModel: sub-test 2

Information Element	Units	Value/remark
nonBroadcastFlag		0
gnss-SatelliteList		(SIZE) 6

GNSS-NavModelSatelliteElement: sub-test 2

Information Element	Units	Value/remark
svID		Slot Numbers: 3, 4, 9, 10, 18, 20
svHealth		01111000
iod		13
gnss-ClockModel		
glonass-ClockModel		
gloTau		See file: GNSS Navigation Model subtest2.csv
gloGamma		See file: GNSS Navigation Model subtest2.csv
gloDeltaTau		See file: GNSS Navigation Model subtest2.csv
gnss-OrbitModel		
glonass-ECEF		
gloEn		See file: GNSS Navigation Model subtest2.csv
gloP1		See file: GNSS Navigation Model subtest2.csv
gloP2		See file: GNSS Navigation Model subtest2.csv
glom		See file: GNSS Navigation Model subtest2.csv
gloX		See file: GNSS Navigation Model subtest2.csv
gloXdot		See file: GNSS Navigation Model subtest2.csv
gloXdotdot		See file: GNSS Navigation Model subtest2.csv
gloY		See file: GNSS Navigation Model subtest2.csv
gloYdot		See file: GNSS Navigation Model subtest2.csv
gloYdotdot		See file: GNSS Navigation Model subtest2.csv
gloZ		See file: GNSS Navigation Model subtest2.csv
gloZdot		See file: GNSS Navigation Model subtest2.csv
gloZdotdot		See file: GNSS Navigation Model subtest2.csv

GNSS-NavigationModel: sub-test 3

Information Element	Units	Value/remark
nonBroadcastFlag		0
gnss-SatelliteList		(SIZE) 6

GNSS-NavModelSatelliteElement: sub-test 3

Information Element	Units	Value/remark
svID		SV IDs: FFS
svHealth		0
iod		FFS
gnss-ClockModel		
standardClockModelList		(SIZE) 1
stanClockToc		See file: GNSS Navigation Model subtest3.csv
stanClockAF2		See file: GNSS Navigation Model subtest3.csv
stanClockAF1		See file: GNSS Navigation Model subtest3.csv
stanClockAF0		See file: GNSS Navigation Model subtest3.csv
stanClockTgd		See file: GNSS Navigation Model subtest3.csv
gnss-OrbitModel		
keplerianSet		
keplerToe		See file: GNSS Navigation Model subtest3.csv
keplerW		See file: GNSS Navigation Model subtest3.csv
keplerDeltaN		See file: GNSS Navigation Model subtest3.csv
keplerM0		See file: GNSS Navigation Model subtest3.csv
keplerOmegaDot		See file: GNSS Navigation Model subtest3.csv
keplerE		See file: GNSS Navigation Model subtest3.csv
keplerIDot		See file: GNSS Navigation Model subtest3.csv
keplerAPowerHalf		See file: GNSS Navigation Model subtest3.csv
keplerI0		See file: GNSS Navigation Model subtest3.csv
keplerOmega0		See file: GNSS Navigation Model subtest3.csv
keplerCrs		See file: GNSS Navigation Model subtest3.csv
keplerCis		See file: GNSS Navigation Model subtest3.csv
keplerCus		See file: GNSS Navigation Model subtest3.csv
keplerCrc		See file: GNSS Navigation Model subtest3.csv
keplerCic		See file: GNSS Navigation Model subtest3.csv
keplerCuc		See file: GNSS Navigation Model subtest3.csv

GNSS-NavigationModel: sub-test 4

Information Element	Units	Value/remark
GNSS-GenericAssistData		(SIZE) 2
gnss-ID		0 (gps)
GNSS-NavigationModel		See GNSS-NavigationModel: sub-test 1
gnss-ID		4 (glonass)
GNSS-NavigationModel		See GNSS-NavigationModel: sub-test 2

GNSS ACQUISITION ASSISTANCE:

GNSS-AcquisitionAssistance: sub-test 1

Information Element	Units	Value/remark
GNSS-AcquisitionAssistance		
gnss-SignalID		0 (GPS L1 C/A)
gnss-AcquisitionAssistList		(SIZE) 6

GNSS-AcquisitionAssistElement: sub-test 1

Information Element	Units	Value/remark
svID		PRNs: 8, 11, 17, 19, 27, 28.
doppler0		Time varying. See file: GNSS Acquisition Assistance subtest1.csv (Note)
doppler1		Time varying. See file: GNSS Acquisition Assistance subtest1.csv (Note)
dopplerUncertainty		Time varying. See file: GNSS Acquisition Assistance subtest1.csv (Note)
codePhase		Time varying. See file: GNSS Acquisition Assistance subtest1.csv (Note)
intCodePhase		Time varying. See file: GNSS Acquisition Assistance subtest1.csv (Note)
codePhaseSearchWindow		Time varying. See file: GNSS Acquisition Assistance subtest1.csv (Note)
azimuth		Time varying. See file: GNSS Acquisition Assistance subtest1.csv (Note)
elevation		Time varying. See file: GNSS Acquisition Assistance subtest1.csv (Note)
codePhase1023		Time varying. See file: GNSS Acquisition Assistance subtest1.csv (Note)
Note: This field is “Time varying” and its value depends on the “current gnss-TimeOfDay”. The value of this field to be used shall be determined by taking the “current gnss-TimeOfDay” value and selecting the field value in the GNSS Acquisition Assistance subtestX.csv file corresponding to the value of “current gnss-TimeOfDay”.		

GNSS-AcquisitionAssistance: sub-test 2

Information Element	Units	Value/remark
GNSS-AcquisitionAssistance		
gnss-SignalID		0 (GLONASS G1)
gnss-AcquisitionAssistList		(SIZE) 6

GNSS-AcquisitionAssistElement: sub-test 2

Information Element	Units	Value/remark
svID		Slot Numbers: 3, 4, 9, 10, 18, 20
doppler0		Time varying. See file: GNSS Acquisition Assistance subtest2.csv (Note)
doppler1		Time varying. See file: GNSS Acquisition Assistance subtest2.csv (Note)
dopplerUncertainty		Time varying. See file: GNSS Acquisition Assistance subtest2.csv (Note)
codePhase		Time varying. See file: GNSS Acquisition Assistance subtest2.csv (Note)
intCodePhase		Time varying. See file: GNSS Acquisition Assistance subtest2.csv (Note)
codePhaseSearchWindow		Time varying. See file: GNSS Acquisition Assistance subtest2.csv (Note)
azimuth		Time varying. See file: GNSS Acquisition Assistance subtest2.csv (Note)
elevation		Time varying. See file: GNSS Acquisition Assistance subtest2.csv (Note)
codePhase1023		Time varying. See file: GNSS Acquisition Assistance subtest2.csv (Note)
Note: This field is “Time varying” and its value depends on the “current gnss-TimeOfDay”. The value of this field to be used shall be determined by taking the “current gnss-TimeOfDay” value and selecting the field value in the GNSS Acquisition Assistance subtestX.csv file corresponding to the value of “current gnss-TimeOfDay”.		

GNSS-AcquisitionAssistance: sub-test 3

Information Element	Units	Value/remark
GNSS-AcquisitionAssistance		
gnss-SignalID		0 (Galileo E1)
gnss-AcquisitionAssistList		(SIZE) 6

GNSS-AcquisitionAssistElement: sub-test 3

Information Element	Units	Value/remark
svID		SV IDs: FFS
doppler0		Time varying. See file: GNSS Acquisition Assistance subtest3.csv (Note)
doppler1		Time varying. See file: GNSS Acquisition Assistance subtest3.csv (Note)
dopplerUncertainty		Time varying. See file: GNSS Acquisition Assistance subtest3.csv (Note)
codePhase		Time varying. See file: GNSS Acquisition Assistance subtest3.csv (Note)
intCodePhase		Time varying. See file: GNSS Acquisition Assistance subtest3.csv (Note)
codePhaseSearchWindow		Time varying. See file: GNSS Acquisition Assistance subtest3.csv (Note)
azimuth		Time varying. See file: GNSS Acquisition Assistance subtest3.csv (Note)
elevation		Time varying. See file: GNSS Acquisition Assistance subtest3.csv (Note)
codePhase1023		Time varying. See file: GNSS Acquisition Assistance subtest3.csv (Note)
Note: This field is “Time varying” and its value depends on the “current gnss-TimeOfDay”. The value of this field to be used shall be determined by taking the “current gnss-TimeOfDay” value and selecting the field value in the GNSS Acquisition Assistance subtestX.csv file corresponding to the value of “current gnss-TimeOfDay”.		

GNSS-AcquisitionAssistance: sub-test 4

Information Element	Units	Value/remark
GNSS-GenericAssistData		(SIZE) 2
gnss-ID		0 (gps)
GNSS-AcquisitionAssistance		See GNSS-AcquisitionAssistance: sub-test 1
gnss-ID		4 (glonass)
GNSS-AcquisitionAssistance		See GNSS-AcquisitionAssistance: sub-test 2

GNSS ALMANAC:

GNSS-Almanac: sub-test 1

Information Element	Units	Value/remark
GNSS-Almanac		
weekNumber		1669
toa		TBD
ioda		Not present
completeAlmanacProvided		1 (TRUE)
gnss-AlmanacList		(SIZE) 24

GNSS-AlmanacElement: sub-test 1

Information Element	Units	Value/remark
keplerianNAV-Almanac		
svID		PRNs: 1, 2, 4, 5, 6, 7, 9, 10, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 29, 30
navAlmE		See file: GNSS Almanac subtest1.csv
navAlmDeltaI		See file: GNSS Almanac subtest1.csv
navAlmOMEGADOT		See file: GNSS Almanac subtest1.csv
navAlmSVHealth		See file: GNSS Almanac subtest1.csv
navAlmSqrtA		See file: GNSS Almanac subtest1.csv
navAlmOMEGAo		See file: GNSS Almanac subtest1.csv
navAlmOmega		See file: GNSS Almanac subtest1.csv
navAlmMo		See file: GNSS Almanac subtest1.csv
navAlmaf0		See file: GNSS Almanac subtest1.csv
navAlmaf1		See file: GNSS Almanac subtest1.csv

GNSS-Almanac: sub-test 2

Information Element	Units	Value/remark
GNSS-Almanac		
completeAlmanacProvided		1 (TRUE)
gnss-AlmanacList		(SIZE) 24

GNSS-AlmanacElement: sub-test 2

Information Element	Units	Value/remark
keplerianGLONASS		
gloAlm-NA		1
gloAlmnA		Slot Numbers: 1, 2, 3 …….22, 23, 24
gloAlmHA		TBD, 1, 5, 6, TBD, 1, 5, 6, -2, -7, 0, TBD, -2, -7, 0, TBD, 4, -3, 3, 2, 4, -3, 3, 2
gloAlmLambdaA		See file: GNSS Almanac subtest2.csv
gloAlmtlambdaA		See file: GNSS Almanac subtest2.csv
gloAlmDeltaIa		See file: GNSS Almanac subtest2.csv
gloAlmDeltaTA		See file: GNSS Almanac subtest2.csv
gloAlmDeltaTdotA		See file: GNSS Almanac subtest2.csv
gloAlmEpsilonA		See file: GNSS Almanac subtest2.csv
gloAlmOmegaA		See file: GNSS Almanac subtest2.csv
gloAlmTauA		See file: GNSS Almanac subtest2.csv
gloAlmCA		See file: GNSS Almanac subtest2.csv
gloAlmMA		See file: GNSS Almanac subtest2.csv

GNSS-Almanac: sub-test 3

Information Element	Units	Value/remark
GNSS-Almanac		
weekNumber		FFS
toa		FFS
ioda		FFS
completeAlmanacProvided		1 (TRUE)
gnss-AlmanacList		(SIZE) 24

GNSS-AlmanacElement: sub-test 3

Information Element	Units	Value/remark
keplerianAlmanacSet		
svID		SV IDs: FFS
kepAlmanacE		See file: GNSS Almanac subtest3.csv
kepAlmanacDeltaI		See file: GNSS Almanac subtest3.csv
kepAlmanacOmegaDot		See file: GNSS Almanac subtest3.csv
kepSVHealth		See file: GNSS Almanac subtest3.csv
kepAlmanacAPowerHalf		See file: GNSS Almanac subtest3.csv
kepAlmanacOmega0		See file: GNSS Almanac subtest3.csv
kepAlmanacW		See file: GNSS Almanac subtest3.csv
kepAlmanacM0		See file: GNSS Almanac subtest3.csv
kepAlmanacAF0		See file: GNSS Almanac subtest3.csv
kepAlmanacAF1		See file: GNSS Almanac subtest3.csv

GNSS-Almanac: sub-test 4

Information Element	Units	Value/remark
GNSS-GenericAssistData		(SIZE) 2
gnss-ID		0 (gps)
GNSS-Almanac		See GNSS-Almanac: sub-test 1
gnss-ID		4 (glonass)
GNSS-Almanac		See GNSS-Almanac: sub-test 2

GNSS UTC MODEL:

GNSS-UTC-Model: sub-test 4

Information Element	Units	Value/remark
GNSS-UTC-Model		
utcModel1		

UTC-ModelSet1: sub-test 4

Information Element	Units	Value/remark
gnss-Utc-A1		0
gnss-Utc-A0		0
gnss-Utc-Tot		40
gnss-Utc-WNt		9
gnss-Utc-DeltaTls		6
gnss-Utc-WNlsf		TBD
gnss-Utc-DN		2
gnss-Utc-DeltaTlsf		14

GNSS AUXILIARY INFORMATION:

GNSS-AuxiliaryInformation: sub-test 1

Information Element	Units	Value/remark
GNSS-AuxiliaryInformation		
gnss-ID-GPS		(SIZE) 6
svID		PRNs: 8, 11, 17, 19, 27, 28.
signalsAvailable		L1C and others as supported by the UE

GNSS-AuxiliaryInformation: sub-test 2

Information Element	Units	Value/remark
GNSS-AuxiliaryInformation		
gnss-ID-GLONASS		(SIZE) 6
svID		Slot Numbers: 3, 4, 9, 10, 18, 20
signalsAvailable		G1
channelNumber		5, 6, -2, -7, 0, 3, 4

GNSS- AuxiliaryInformation: sub-test 4

Information Element	Units	Value/remark
GNSS-GenericAssistData		(SIZE) 2
gnss-ID		0 (gps)
GNSS-AuxiliaryInformation		See GNSS-AuxiliaryInformation: sub-test 1
gnss-ID		4 (glonass)
GNSS-AuxiliaryInformation		See GNSS-AuxiliaryInformation: sub-test 2

GNSS GENERIC ASSISTANCE DATA

GNSS- GenericAssistData: sub-test 1

Information Element	Units	Value/remark
GNSS-GenericAssistData		(SIZE) 1
gnss-ID		0 (gps)

GNSS- GenericAssistData: sub-test 2

Information Element	Units	Value/remark
GNSS-GenericAssistData		(SIZE) 1
gnss-ID		4 (glonass)

GNSS- GenericAssistData: sub-test 3

Information Element	Units	Value/remark
GNSS-GenericAssistData		(SIZE) 1
gnss-ID		3 (galileo)

GNSS- GenericAssistData: sub-test 4

Information Element	Units	Value/remark
GNSS-GenericAssistData		(SIZE) 2
gnss-ID		0 (gps)
gnss-ID		4 (glonass)

6.2 GNSS Scenarios and Assistance Data for Assisted GNSS Minimum Performance tests

6.2.1 General

This subclause defines the GNSS scenarios and assistance data IEs which shall be available for use as specified in all A-GNSS Minimum Performance test cases defined in TS 34.172 [5] and in TS 37.571-1 [6].

Subclauses 6.2.2 and 6.2.3 list the assistance data IEs required for minimum performance testing of UE-based mode, and subclauses 6.2.4 and 6.2.5 list the assistance data available for minimum performance testing of UE-assisted mode. Subclause 6.2.7 lists the values of the assistance data IE fields for all minimum performance testing.

In all cases the Assistance Data is given in the two necessary formats, RRC format for TS 34.172 [5] and LPP format for TS 37.571-1 [6]. Other information is also given separately for TS 34.172 [5] and TS 37.571-1 [6] where it differs between the specifications.

The A-GNSS minimum performance requirements are defined by assuming that all relevant and valid assistance data is received by the UE in order to perform GNSS measurements and/or position calculation. This subclause does not include nor consider delays occurring in the various signalling interfaces of the network.

The term SV ID used in this subclause is defined as the satellite PRN for GPS, Modernized GPS and Galileo, and as the satellite Slot Number for GLONASS.

In this subclause all information for Galileo is for further study (FFS).

6.2.1.1 Satellite constellations and assistance data for A-GNSS minimum performance testing

For all Assisted GNSS minimum performance tests defined in TS 34.172 [5] and for Assisted GNSS minimum performance Sub-Test Case Numbers 2, 3, 4 and 5 defined in TS 37.571-1 [6], the satellite constellation shall consist of 24 satellites for GLONASS; 27 satellites for GPS, Modernized GPS and Galileo; 3 satellites for QZSS; and 2 satellites for SBAS. Almanac assistance data shall be available for all these satellites. At least 7 of the satellites per GPS, Modernized GPS, Galileo or GLONASS constellation shall be visible to the UE (that is, above 15 degrees elevation with respect to the UE). At least 1 of the satellites for QZSS shall be within 15 degrees of zenith; and at least 1 of the satellites for SBAS shall be visible to the UE. All other satellite specific assistance data shall be available for all visible satellites. In each test, signals are generated for only 6 satellites (or 7 if SBAS is included). The HDOP for the test shall be calculated using these satellites. The simulated satellites for GPS, Modernized GPS, Galileo and GLONASS shall be selected from the visible satellites for each constellation, consistent with achieving the required HDOP for the test.

For Assisted GNSS minimum performance Sub-Test Case Number 1 defined in TS 37.571-1 [6], the satellite constellations for minimum performance testing shall consist of 24 satellites. Almanac assistance data shall be available for all these 24 satellites. At least 9 of the satellites shall be visible to the UE (that is above 5 degrees elevation with respect to the UE). Other assistance data shall be available for 9 of these visible satellites. In each test, signals are generated for only a sub-set of these satellites for which other assistance data is available. The number of satellites in this sub-set is specified in the test. The satellites in this sub-set shall all be above 15 degrees elevation with respect to the UE. The HDOP for the test shall be calculated using this sub-set of satellites. The selection of satellites for this sub-set shall be selected consistent with achieving the required HDOP for the test.

6.2.1.2 GNSS Scenarios for A-GNSS minimum performance testing

This subclause defines the GNSS scenarios that shall be used for all Assisted GNSS minimum performance tests defined in TS 34.172 [5] and in TS 37.571-1 [6].

The GNSS scenarios achieve the required HDOP for the Test Cases and they also satisfy the requirement that for each test instance the reference location shall change sufficiently such that the UE shall have to use the new assistance data.

The viable running time during which the scenario maintains the required HDOP or HDOPs is given. Once this time has been reached the scenario shall be restarted from its nominal start time.

The test cases include sub-test cases dependent on the GNSS supported by the UE. Each sub-test case is identified by a Sub-Test Case Number as defined below. For each GNSS scenario the parameters that vary with the sub-test are given for each sub-test.

Table 6.2.1.2-1: Sub-Test Case Number Definition for TS 34.172

Sub-Test Case Number	Supported GNSS
1	UE supporting A-GLONASS only
2	UE supporting A-Galileo only
3	UE supporting A-GPS and Modernized GPS only
4	UE supporting A-GPS and A-GLONASS only

Table 6.2.1.2-2: Sub-Test Case Number Definition for TS 37.571-1

Sub-Test Case Number	Supported GNSS
1	UE supporting A-GPS L1C/A only
2	UE supporting A-GLONASS only
3	UE supporting A-Galileo only
4	UE supporting A-GPS and Modernized GPS only
5	UE supporting A-GPS and A-GLONASS only

6.2.1.2.1 GNSS Scenario #1

The following GNSS scenario #1 shall be used during the TTFF tests defined in TS 34.172 [5] and in TS 37.571-1 [6] with the exception of the Nominal Accuracy test. The assistance data specified in the following subclauses for GNSS scenario #1 is consistent with this GNSS scenario.

Yuma Almanac data: the required file(s) in the GNSS data perf zip file specified in Annex B are given below.

Table 6.2.1.2.1-1: Yuma Almanac data files for TS 34.172

Sub-Test Case Number	Yuma file(s)
1	GNSS 1-1 Yuma.txt
2	GNSS 1-2 Yuma.txt
3	GNSS 1-3 Yuma.txt
4	GNSS 1-1 Yuma.txt and GNSS 1-3 Yuma.txt

Table 6.2.1.2.1-2: Yuma Almanac data files for TS 37.571-1

Sub-Test Case Number	Yuma file(s)
1	GNSS 1-3 Yuma.txt
2	GNSS 1-1 Yuma.txt
3	GNSS 1-2 Yuma.txt
4	GNSS 1-3 Yuma.txt
5	GNSS 1-1 Yuma.txt and GNSS 1-3 Yuma.txt

UE location: the UE location is calculated as a random offset from the reference location using the method described in subclause 6.2.1.2.6. The reference location is: latitude: 35 degrees 44 minutes 39.432 seconds north, longitude: 139 degrees 40 minutes 48.633 seconds east, (Tokyo Japan 2012), height: = 300m.

Nominal start time: 1st January 2012 00:30:00.

Viable running time to maintain specified HDOP values: 30 minutes.

Visible satellites available for simulation and for which Assistance Data (other than Almanac) shall be generated are given below.

Table 6.2.1.2.1-3: Visible satellites for TS 34.172

Sub-Test Case Number	SV IDs of Visible satellites
1	3, 4, 9, 10, 18, 19, 20
2	[FFS]
3	1, 4, 7, 8, 11, 17, 19, 20, 27, 28
4	GPS: 1, 4, 7, 8, 11, 17, 19, 20, 27, 28. GLONASS: 3, 4, 9, 10, 18, 19, 20

Table 6.2.1.2.1-4: Visible satellites for TS 37.571-1

Sub-Test Case Number	SV IDs of Visible satellites
1	1, 4, 7, 8, 11, 17, 19, 20, 27, 28
2	3, 4, 9, 10, 18, 19, 20
3	[FFS]
4	1, 4, 7, 8, 11, 17, 19, 20, 27, 28
5	GPS: 1, 4, 7, 8, 11, 17, 19, 20, 27, 28. GLONASS: 3, 4, 9, 10, 18, 19, 20

The satellites to be simulated in each test case have been selected in order to achieve the required HDOP. They are defined below.

Table 6.2.1.2.1-5: Satellites to be simulated for TS 34.172

Sub-Test Case Number	SV IDs of Satellites to be simulated
1	3, 4, 9, 10, 18, 20
2	[FFS]
3	8, 11, 17, 19, 27, 28 (Note)
4	GPS: 8, 19, 27. GLONASS: 3, 10, 20
Note: For this sub-test the satellite simulator shall generate all the GPS signals supported by the UE for all the simulated satellites.	

Table 6.2.1.2.1-6: Satellites to be simulated for TS 37.571-1

Sub-Test Case Number	SV IDs of Satellites to be simulated
1	Test case dependant. See Table 6.2.1.2.1-7
2	3, 4, 9, 10, 18, 20
3	[FFS]
4	8, 11, 17, 19, 27, 28 (Note)
5	GPS: 8, 19, 27. GLONASS: 3, 10, 20
Note: For this sub-test the satellite simulator shall generate all the GPS signals supported by the UE for all the simulated satellites.	

Table 6.2.1.2.1-7: Satellites to be simulated for TS 37.571-1 sub-test 1

Test case	SV IDs of Satellites to be simulated
Sensitivity Coarse Time Assistance	TBD
Sensitivity Fine Time Assistance	TBD
Nominal Accuracy	TBD
Dynamic Range	TBD
Multi-Path scenario	TBD

Ionospheric model: see values in subclause 6.2.7.

Tropospheric model: STANAG with SRI equal to 324.8, as defined in STANAG 4294 [17].

6.2.1.2.2 GNSS Scenario #2

The following GNSS scenario #2 shall be used during the TTFF tests defined in TS 34.172 [5] and in TS 37.571-1 [6] with the exception of the Nominal Accuracy test. The assistance data specified in the following subclauses for GNSS scenario #2 is consistent with this GNSS scenario.

Yuma Almanac data: the required file(s) in the GNSS data perf zip file specified in Annex B are below.

Table 6.2.1.2.2-1: Yuma Almanac data files for TS 34.172

Sub-Test Case Number	Yuma file(s)
1	GNSS 2-1 Yuma.txt
2	GNSS 2-2 Yuma.txt
3	GNSS 2-3 Yuma.txt
4	GNSS 2-1 Yuma.txt and GNSS 2-3 Yuma.txt

Table 6.2.1.2.2-2: Yuma Almanac data files for TS 37.571-1

Sub-Test Case Number	Yuma file(s)
1	GNSS 2-3 Yuma.txt
2	GNSS 2-1 Yuma.txt
3	GNSS 2-2 Yuma.txt
4	GNSS 2-3 Yuma.txt
5	GNSS 2-1 Yuma.txt and GNSS 2-3 Yuma.txt

UE location: the UE location is calculated as a random offset from the reference location using the method described in subclause 6.2.1.2.6. The reference location is: latitude: 37 degrees 22 minutes 0.009 seconds north, longitude: 121 degrees 58 minutes 59.972 seconds east, (San Jose, USA), height: = 100m.

Nominal start time: 10th November 2009, 14:30:00.

Viable running time to maintain specified HDOP values: 15 minutes.

Visible satellites available for simulation and for which Assistance Data (other than Almanac) shall be generated are given below.

Table 6.2.1.2.2-3: Visible satellites for TS 34.172

Sub-Test Case Number	SV IDs of Visible satellites
1	7, 8, 9, 10, 18, 19, 20
2	[FFS]
3	5, 7, 10, 11, 13, 15, 17
4	GPS: 5, 7, 10, 11, 13, 15, 17. GLONASS: 7, 8, 9, 10, 18, 19, 20

Table 6.2.1.2.2-4: Visible satellites for TS 37.571-1

Sub-Test Case Number	SV IDs of Visible satellites
1	5, 7, 10, 11, 13, 15, 17,[TBD], [TBD]
2	7, 8, 9, 10, 18, 19, 20
3	[FFS]
4	5, 7, 10, 11, 13, 15, 17
5	GPS: 5, 7, 10, 11, 13, 15, 17. GLONASS: 7, 8, 9, 10, 18, 19, 20

The satellites to be simulated in each test case have been selected in order to achieve the required HDOP. They are defined below.

Table 6.2.1.2.2-5: Satellites to be simulated for TS 34.172

Sub-Test Case Number	SV IDs of Satellites to be simulated
1	7, 8, 9, 10, 18, 19
2	[FFS]
3	5, 7, 10, 13, 15, 17 (Note)
4	GPS: 10, 15, 17. GLONASS: 8, 10, 18
Note: For this sub-test the satellite simulator shall generate all the GPS signals supported by the UE for all the simulated satellites.	

Table 6.2.1.2.2-6: Satellites to be simulated for TS 37.571-1

Sub-Test Case Number	SV IDs of Satellites to be simulated
1	Test case dependant. See Table 6.2.1.2.2-7
2	7, 8, 9, 10, 18, 19
3	[FFS]
4	5, 7, 10, 13, 15, 17 (Note)
5	GPS: 10, 15, 17. GLONASS: 8, 10, 18
Note: For this sub-test the satellite simulator shall generate all the GPS signals supported by the UE for all the simulated satellites.	

Table 6.2.1.2.2-7: Satellites to be simulated for TS 37.571-1 sub-test 1

Test case	SV IDs of Satellites to be simulated
Sensitivity Coarse Time Assistance	TBD
Sensitivity Fine Time Assistance	TBD
Nominal Accuracy	TBD
Dynamic Range	TBD
Multi-Path scenario	TBD

Ionospheric model: see values in subclause 6.2.7.

Tropospheric model: STANAG with SRI equal to 324.8, as defined in STANAG 4294 [17].

6.2.1.2.3 GNSS Scenario #3

The following GNSS scenario #3 shall be used during the Nominal Accuracy test defined in TS 34.172 [5] and in TS 37.571-1 [6]. The assistance data specified in the following subclauses for GNSS scenario #3 is consistent with this GNSS scenario.

The scenario used varies dependent on the SBAS supported by the UE and also whether QZSS is supported. The scenario to be used is defined below. Where more than one SBAS is supported use the scenario for MSAS if MSAS and QZSS are supported, otherwise use the scenario for the first supported SBAS in the list.

Table 6.2.1.2.3-1: Scenarios used for Scenario #3

SBAS supported	Scenarios used	
	UE supports QZSS	UE does not support QZSS
None	GNSS Scenario #1 with QZSS Scenario #1	GNSS Scenario #1
WAAS	[FFS]	GNSS Scenario #2 with WAAS
EGNOS	[FFS]	GNSS Scenario #3A with EGNOS
MSAS	GNSS Scenario #1 with QZSS Scenario #1 and MSAS	GNSS Scenario #1 with MSAS
GAGAN	[FFS]	GNSS Scenario #3B with GAGAN

6.2.1.2.3.1 GNSS Scenario #3A

[FFS]

6.2.1.2.3.2 GNSS Scenario #3B

[FFS]

6.2.1.2.3.3 QZSS Scenario #1

Yuma Almanac data: see file QZSS 1 Yuma.txt in the GNSS data perf zip file specified in Annex B.

UE location: as for GNSS scenario #1.

Nominal start time: as for GNSS scenario #1.

Viable running time to maintain specified requirements: as for GNSS scenario #1.

Satellite meeting specified requirements to be used for simulation and for which Assistance Data (other than Almanac) shall be generated: PRN 193.

6.2.1.2.3.4 WAAS Scenario

Satellite positions: (PRN 135)133.0 degrees west, height: 35786037.417m, (PRN 138)107.3 degrees west, height: 35786037.417m.

UE location: as for related GNSS scenario.

Satellite used for simulation: PRN 135.

6.2.1.2.3.5 EGNOS Scenario

Satellite positions: (PRN 120)15.5 degrees west, height: 35786037.417m, (PRN 124) 21.5 degrees west, height: 35786037.417m.

UE location: as for related GNSS scenario.

Satellite used for simulation: PRN 120.

6.2.1.2.3.6 MSAS Scenario

Satellite positions: (PRN 129)140.0 degrees east, height: 35786037.417m, (PRN 137)145 degrees east, height: 35786037.417m

UE location: as for related GNSS scenario.

Satellite used for simulation: PRN 129.

6.2.1.2.3.7 GAGAN Scenario

[FFS]

6.2.1.2.4 GNSS Scenario #4

The following GNSS scenario #4 shall be used during the Nominal Accuracy test defined in TS 34.172 [5] and in TS 37.571-1 [6]. The assistance data specified in the following subclauses for GNSS scenario #4 is consistent with this GNSS scenario.

The scenario used varies dependent on the SBAS supported by the UE and also whether QZSS is supported. The scenario to be used is defined below. Where more than one SBAS is supported use the scenario for MSAS if MSAS and QZSS are supported, otherwise use the scenario for the first supported SBAS in the list.

Table 6.2.1.2.4-1: Scenarios used for Scenario #4

SBAS supported	Scenarios used	
	UE supports QZSS	UE does not support QZSS
None	GNSS Scenario #4D with QZSS Scenario #2	GNSS Scenario #2
WAAS	[FFS]	GNSS Scenario #4C with WAAS
EGNOS	[FFS]	GNSS Scenario #4A with EGNOS
MSAS	GNSS Scenario #4D with QZSS Scenario #2 and MSAS	GNSS Scenario #4D with MSAS
GAGAN	[FFS]	GNSS Scenario #4B with GAGAN

6.2.1.2.4.1 GNSS Scenario #4A

[FFS]

6.2.1.2.4.2 GNSS Scenario #4B

[FFS]

6.2.1.2.4.3 GNSS Scenario #4C

Yuma Almanac data: the required file(s) in the GNSS data perf zip file specified in Annex B are given below.

Table 6.2.1.2.4.3-1: Yuma Almanac data files for TS 34.172

Sub-Test Case Number	Yuma file(s)
1	GNSS 4C-1 Yuma.txt
2	GNSS 4C -2 Yuma.txt
3	GNSS 4C -3 Yuma.txt
4	GNSS 4C -1 Yuma.txt and GNSS 4C -3 Yuma.txt

Table 6.2.1.2.4.3-2: Yuma Almanac data files for TS 37.571-1

Sub-Test Case Number	Yuma file(s)
1	GNSS 4C -3 Yuma.txt
2	GNSS 4C-1 Yuma.txt
3	GNSS 4C -2 Yuma.txt
4	GNSS 4C -3 Yuma.txt
5	GNSS 4C -1 Yuma.txt and GNSS 4C -3 Yuma.txt

UE location: the UE location is calculated as a random offset from the reference location using the method described in subclause 6.2.1.2.6. The reference location is: latitude: 37 degrees 24 minutes 53.391 seconds north, longitude: 122 degrees 1 minutes 3.722 seconds east, (Sunnyvale, USA), height: = 50m.

Nominal start time: 1st June 2012, 00:00:00.

Viable running time to maintain specified HDOP values: 30 minutes.

Visible satellites available for simulation and for which Assistance Data (other than Almanac) shall be generated are given below.

Table 6.2.1.2.4.3-3: Visible satellites for TS 34.172

Sub-Test Case Number	SV IDs of Visible satellites
1	8, 9, 10, 18, 19, 20, 21
2	[FFS]
3	7, 8, 10, 15, 17, 19, 25, 26, 27, 28
4	GPS: 7, 8, 10, 15, 17, 19, 25, 26, 27, 28. GLONASS: 8, 9, 10, 18, 19, 20, 21

Table 6.2.1.2.4.3-4: Visible satellites for TS 37.571-1

Sub-Test Case Number	SV IDs of Visible satellites
1	7, 8, 10, 15, 17, 19, 25, 26, 27, 28
2	8, 9, 10, 18, 19, 20, 21
3	[FFS]
4	7, 8, 10, 15, 17, 19, 25, 26, 27, 28
5	GPS: 7, 8, 10, 15, 17, 19, 25, 26, 27, 28. GLONASS: 8, 9, 10, 18, 19, 20, 21

The satellites to be simulated in each test case have been selected in order to achieve the required HDOP. They are defined below.

Table 6.2.1.2.4.3-5: Satellites to be simulated for TS 34.172

Sub-Test Case Number	SV IDs of Satellites to be simulated
1	8, 9, 10,18, 19, 20
2	[FFS]
3	8, 15, 17, 26, 27, 28 (Note)
4	GPS: 15, 26, 27. GLONASS: 9, 10,19
Note: For this sub-test the satellite simulator shall generate all the GPS signals supported by the UE for all the simulated satellites.	

Table 6.2.1.2.4.3-6: Satellites to be simulated for TS 37.571-1

Sub-Test Case Number	SV IDs of Satellites to be simulated
1	Test case dependant. See Table 6.2.1.2.4.3-7
2	8, 9, 10, 18, 19, 20
3	[FFS]
4	8, 15, 17, 26, 27, 28 (Note)
5	GPS: 15, 26, 27. GLONASS: 9, 10,19
Note: For this sub-test the satellite simulator shall generate all the GPS signals supported by the UE for all the simulated satellites.	

Table 6.2.1.2.4.3-7: Satellites to be simulated for TS 37.571-1 sub-test 1

Test case	SV IDs of Satellites to be simulated
Sensitivity Coarse Time Assistance	TBD
Sensitivity Fine Time Assistance	TBD
Nominal Accuracy	TBD
Dynamic Range	TBD
Multi-Path scenario	TBD

Ionospheric model: see values in subclause 6.2.7.

Tropospheric model: STANAG with SRI equal to 324.8, as defined in STANAG 4294 [17].

6.2.1.2.4.4 GNSS Scenario #4D

[FFS]

6.2.1.2.4.5 QZSS Scenario #2

Yuma Almanac data: see file QZSS 2 Yuma.txt in the GNSS data perf zip file specified in Annex B.

UE location: as for GNSS scenario #4D.

Nominal start time: as for GNSS scenario #4D.

Viable running time to maintain specified requirements: as for GNSS scenario #4D.

Satellite meeting specified requirements to be used for simulation and for which Assistance Data (other than Almanac) shall be generated: PRN [FFS].

6.2.1.2.4.6 WAAS Scenario

Satellite positions: (PRN 135)133.0 degrees west, height: 35786037.417m, (PRN 138)107.3 degrees west, height: 35786037.417m.

UE location: as for related GNSS scenario.

Satellite used for simulation: PRN 138.

6.2.1.2.4.7 EGNOS Scenario

Satellite positions: (PRN 120)15.5 degrees west, height: 35786037.417m, (PRN 124) 21.5 degrees west, height: 35786037.417m.

UE location: as for related GNSS scenario.

Satellite used for simulation: PRN 124.

6.2.1.2.4.8 MSAS Scenario

Satellite positions: (PRN 129)140.0 degrees east, height: 35786037.417m, (PRN 137)145 degrees east, height: 35786037.417m.

UE location: as for related GNSS scenario.

Satellite used for simulation: PRN 137.

6.2.1.2.4.9 GAGAN Scenario

[FFS]

6.2.1.2.5 GNSS Scenario #5

The following GNSS scenario #5 shall be used during the Moving Scenario and Periodic Update test cases defined in TS 34.172 [5] and in TS 37.571-1 [6]. The assistance data specified in the following subclauses for GNSS scenario #5 is consistent with this GNSS scenario.

Yuma Almanac data: the required file(s) in the GNSS data perf zip file specified in Annex B are below.

Table 6.2.1.2.5-1: Yuma Almanac data files for TS 34.172

Sub-Test Case Number	Yuma file(s)
1	GNSS 5-1 Yuma.txt
2	GNSS 5-2 Yuma.txt
3	GNSS 5-3 Yuma.txt
4	GNSS 5-1 Yuma.txt and GNSS 5-3 Yuma.txt

Table 6.2.1.2.5-2: Yuma Almanac data files for TS 37.571-1

Sub-Test Case Number	Yuma file(s)
1	GNSS 5-3 Yuma.txt
2	GNSS 5-1 Yuma.txt
3	GNSS 5-2 Yuma.txt
4	GNSS 5-3 Yuma.txt
5	GNSS 5-1 Yuma.txt and GNSS 5-3 Yuma.txt

UE location: the UE location is given as a trajectory as shown in Figure 5.6.1 of TS 34.172 [5] and in Figure 7.1 of TS 37.571-1 [6]. The reference location is at the centre of the trajectory and is at: latitude: 37 degrees 22 minutes 0.009 seconds north, longitude: 121 degrees 58 minutes 59.972 seconds east, (San Jose, USA), height: = 100m.

Start location: at the point between l_{11} and l_{12} in Figure 5.6.1 of TS 34.172 [5] and in Figure 7.1 of TS 37.571-1 [6], going in a clock-wise direction.

Nominal start time: 10th November 2009, 14:30:00.

Viable running time to maintain specified HDOP values: 15 minutes.

Visible satellites available for simulation and for which Assistance Data (other than Almanac) shall be generated are given below.

Table 6.2.1.2.5-3: Visible satellites for TS 34.172

Sub-Test Case Number	SV IDs of Visible satellites
1	7, 8, 9, 10, 18, 19, 20
2	[FFS]
3	5, 7, 10, 11, 13, 15, 17
4	GPS: 5, 7, 10, 11, 13, 15, 17. GLONASS: 7, 8, 9, 10, 18, 19, 20

Table 6.2.1.2.5-4: Visible satellites for TS 37.571-1

Sub-Test Case Number	SV IDs of Visible satellites
1	5, 7, 10, 11, 13, 15, 17, [TBD], [TBD]
2	7, 8, 9, 10, 18, 19, 20
3	[FFS]
4	5, 7, 10, 11, 13, 15, 17
5	GPS: 5, 7, 10, 11, 13, 15, 17. GLONASS: 7, 8, 9, 10, 18, 19, 20

The satellites to be simulated in each test case have been selected in order to achieve the required HDOP. They are defined below.

Table 6.2.1.2.5-5: Satellites to be simulated for TS 34.172

Sub-Test Case Number	SV IDs of Satellites to be simulated
1	7, 8, 9, 10, 18, 19
2	[FFS]
3	5, 7, 10, 13, 15, 17 (Note)
4	GPS: 10, 15, 17. GLONASS: 8, 10, 18
Note: For this sub-test the satellite simulator shall generate all the GPS signals supported by the UE for all the simulated satellites.	

Table 6.2.1.2.5-6: Satellites to be simulated for TS 37.571-1

Sub-Test Case Number	SV IDs of Satellites to be simulated
1	[TBD]
2	7, 8, 9, 10, 18, 19
3	[FFS]
4	5, 7, 10, 13, 15, 17 (Note)
5	GPS: 10, 15, 17. GLONASS: 8, 10, 18
Note: For this sub-test the satellite simulator shall generate all the GPS signals supported by the UE for all the simulated satellites.	

Ionospheric model: see values in subclause 6.2.7.

Tropospheric model: STANAG with SRI equal to 324.8, as defined in STANAG 4294 [17].

6.2.1.2.6 UE Location for TTFF test cases

This subclause defines the method for generating the random UE locations that are required to be used for the TTFF tests defined in TS 34.172 [5] and in TS 37.571-1 [6].

For every Test Instance in each TTFF test case, the UE location shall be randomly selected to be within 3 km of the Reference Location. The Altitude of the UE shall be randomly selected between 0 m to 500 m above WGS-84 reference ellipsoid. These values shall have uniform random distributions.

The UE location is calculated as an offset from the Reference Location.

6.2.1.2.6.1 UE Location Offset

The UE location offset shall be calculated by selecting the next pair of random numbers, representing a pair of latitude and longitude offsets in degrees, from a standard uniform random number generator, with the following properties:

The ranges of the latitude and longitude offsets values shall be such that when translated onto the surface of the earth they shall lie within a 3km radius circle, centred on the Reference location specified for the GNSS scenario under consideration. For the purposes of this calculation make the following assumptions:

a) Over the 3km radius circle at the Reference location the earth is flat and the meridians and parallels form a rectangular grid

b) The earth is spherical with a radius of 6371141m (equal to the WGS 84 value at 35 degrees latitude)

The resolution used for the latitude and longitude offsets values shall be 90/2E23 for the latitude offset values and 360/2E24 for the longitude offset values, representing the coding resolution in degrees specified in 3GPP TS 23.032.

6.2.1.2.6.2 UE Altitude

The UE altitude value shall be calculated by selecting the next random number from a standard uniform random number generator, in the range 0 to 500, representing meters. The resolution used for the random number shall be 1, representing 1 meter.

6.2.2 Information elements required for normal UE based testing for TS 34.172

The following A-GPS and A-GANSS assistance data IEs and fields shall be present for each test as appropriate for the GNSS(s) used during the test. Fields not specified shall not be present. The values of the fields are specified in subclause 6.2.7.

The information elements are given with reference to 3GPP TS 25.331 [34], where the details are defined.

a) GPS Reference Time IE

Fields of the IE
GPS Week
GPS TOW msec
UE Positioning GPS ReferenceTime Uncertainty
GPS TOW Assist
SatID
TLM Message
TLM Reserved
Alert
Anti-Spoof

b) GANSS Reference Time IE

Fields of the IE
GANSS Day
GANSS TOD
GANSS TOD Uncertainty
GANSS Time ID

c) GANSS Time Model IE This information element is only required for multi system tests.

Fields of the IE
GANSS Time Model Reference Time
T_{A0}
GNSS_TOD_ID For each GNSS included in the test.

d) GPS Reference UE Position IE

Fields of the IE
Ellipsoid point with Altitude and uncertainty ellipsoid

e) GANSS Reference UE Position IE

Fields of the IE
Ellipsoid point with Altitude and uncertainty ellipsoid

f) GPS Navigation Model IE

Fields of the IE
All satellite information

g) GANSS Navigation Model IE

Fields of the IE
All satellite information

GANSS	Clock and Orbit Model Choice
Galileo	Model-1

h) GANSS Additional Navigation Model IE

Fields of the IE
All satellite information

GANSS	Clock and Orbit Model Choice
Modernized GPS	Model-3
GLONASS	Model-4
QZSS QZS-L1	Model-2
QZSS QZS-L1C/L2C/L5	Model-3
SBAS	Model-5

i) GPS Ionospheric Model IE

Fields of the IE
All

j) GANSS Ionospheric Model IE

Fields of the IE
All

k) GANSS Additional Ionospheric Model IE

Fields of the IE
All

l) GPS UTC Model IE

Fields of the IE
All

m) GANSS Auxiliary Information IE

Fields of the IE
GANSS Auxiliary Information

6.2.3 Information elements required for UE based Sensitivity Fine Time Assistance test case for TS 34.172

The A-GPS and A-GANSS assistance data IEs and fields that shall be present for the Sensitivity Fine Time Assistance test case shall be those specified in subclause 6.2.2 with the following exception. Fields not specified shall not be present. The values of the fields are specified in subclause 6.2.7.

a) GPS Reference Time IE

Fields of the IE
GPS Week
GPS TOW msec
UTRAN GPS reference time
UTRAN GPS timing of cell frames
CHOICE mode
FDD
Primary CPICH Info
SFN
UE Positioning GPS ReferenceTime Uncertainty
TUTRAN-GPS drift rate
GPS TOW Assist
SatID
TLM Message
TLM Reserved
Alert
Anti spoof

b) GANSS Reference Time IE

Fields of the IE
GANSS Day
GANSS TOD
GANSS TOD Uncertainty
GANSS Time ID
UTRAN GANSS reference time
UTRAN GANSS timing of cell frames
CHOICE mode
FDD

Primary CPICH Info
SFN
TUTRAN-GANSS drift rate

6.2.4 Information elements available for normal UE assisted testing for TS 34.172

The following A-GPS and A-GANSS assistance data IEs and fields shall be present for each test as appropriate for the GNSS(s) used during the test. Fields not specified shall not be present. The values of the fields are specified in subclause 6.2.7.

a) GPS Reference Time IE

Fields of the IE
GPS Week
GPS TOW msec
UE Positioning GPS ReferenceTime Uncertainty
GPS TOW Assist
SatID
TLM Message
TLM Reserved
Alert
Anti-Spoof

b) GANSS Reference Time IE

Fields of the IE
GANSS Day
GANSS TOD
GANSS TOD Uncertainty
GANSS Time ID

c) GANSS Time Model IE This information element is only required for multi system tests.

Fields of the IE
GANSS Time Model Reference Time
T_{A0}
GNSS_TOD_ID For each GNSS included in the test.

d) GPS Reference UE Position IE

Fields of the IE
Ellipsoid point with Altitude and uncertainty ellipsoid

e) GANSS Reference UE Position IE

Fields of the IE
Ellipsoid point with Altitude and uncertainty ellipsoid

f) GPS Almanac IE

Fields of the IE
Almanac Reference Week
All Satellite information

g) GANSS Almanac IE

Fields of the IE
GANSS Almanac Model

GANSS	Almanac Model Choice
Galileo	Model-1
Modernized GPS	Model-3,4
GLONASS	Model-5
QZSS QZS-L1	Model-2
QZSS QZS-L1C/L2C/L5	Model-3,4
SBAS	Model-6

h) GPS Navigation Model IE

Fields of the IE
All satellite information

i) GANSS Navigation Model IE

Fields of the IE
All satellite information

GANSS	Clock and Orbit Model Choice
Galileo	Model-1
Modernized GPS	Model-3
GLONASS	Model-4
QZSS QZS-L1	Model-2
QZSS QZS-L1C/L2C/L5	Model-3
SBAS	Model-5

j) GPS Acquisition Assistance IE

Fields of the IE
GPS TOW msec
UE Positioning GPS ReferenceTime Uncertainty
Satellite information
SatID
Doppler (0^{th} order term)
Extra Doppler
Doppler (1^{st} order term)
Doppler Uncertainty
Code Phase
Integer Code Phase
GPS Bit number
Code Phase Search Window
Azimuth and Elevation
Azimuth
Elevation

k) GANSS Reference Measurement Information IE

Fields of the IE
Satellite information
SatID
Doppler (0^{th} order term)

Extra Doppler
Doppler (1st order term)
Doppler Uncertainty
Code Phase
Integer Code Phase
Code Phase Search Window
Azimuth and Elevation
Azimuth
Elevation

l) GANSS Auxiliary Information IE

Fields of the IE
GANSS Auxiliary Information

6.2.5 Information elements available for UE assisted Sensitivity Fine Time Assistance test case for TS 34.172

The A-GPS and A-GANSS assistance data IEs and fields that shall be available for use for the Sensitivity Fine Time Assistance test case shall be those specified in subclause 6.2.4 with the following exceptions. Fields not specified shall not be present. The values of the fields are specified in subclause 6.2.7.

a) GPS Reference Time IE

Fields of the IE
GPS Week
GPS TOW msec
UTRAN GPS reference time
UTRAN GPS timing of cell frames
CHOICE mode
FDD
Primary CPICH Info
SFN
UE Positioning GPS ReferenceTime Uncertainty
TUTRAN-GPS drift rate
GPS TOW Assist
SatID
TLM Message
TLM Reserved

b) GANSS Reference Time IE

Fields of the IE
GANSS Day
GANSS TOD
GANSS TOD Uncertainty
GANSS Time ID
UTRAN GANSS timing of cell frames
CHOICE mode
FDD
Primary CPICH Info
SFN
TUTRAN-GANSS drift rate

c) GPS Acquisition Assistance IE

Fields of the IE
GPS TOW msec

UTRAN GPS reference time
UTRAN GPS timing of cell frames
CHOICE mode
FDD
Primary CPICH Info
SFN
UE Positioning GPS ReferenceTime Uncertainty
Satellite information
SatID
Doppler (0^{th} order term)
Extra Doppler
Doppler (1^{st} order term)
Doppler Uncertainty
Code Phase
Integer Code Phase
GPS Bit number
Code Phase Search Window
Azimuth and Elevation
Azimuth
Elevation

6.2.6 Information elements available for A-GNSS test cases in TS 37.571-1

The following A-GNSS assistance data elements shall be provided to the UE in the tests. The assistance data provided depends on the mode being used in the test case, the assistance data supported by the UE and the GNSSs supported by the UE. Assistance data IEs not supported by the UE shall not be sent. Assistance data IEs supported by the UE but not listed below shall not be sent. The values of the fields are specified in subclause 6.2.7.

The information elements are given with reference to 3GPP TS 36.355 [8], where the details are defined.

Assistance Data to be provided to the UE for A-GNSS test cases in TS 37.571-1

Assistance Data IE supported by UE	**Mode used in test case**		
	UE-based	**UE-assisted, GNSS-AcquisitionAssistance supported by UE**	**UE-assisted, GNSS-AcquisitionAssistance not supported by UE**
GNSS-Reference Time	Yes	Yes	Yes
GNSS-ReferenceLocation	Yes	No	Yes
GNSS-IonosphericModel	Yes	No	No
GNSS-TimeModelList	Yes(1)	No	Yes(1)
GNSS-NavigationModel	Yes	No	Yes
GNSS-AcquisitionAssistance	No	Yes	No
GNSS-Almanac	No	No	Yes
GNSS-UTC-Model	Yes	No	No
GNSS-AuxiliaryInformation	Yes(2)	Yes(2)	Yes(2)
Note 1: In case more than a single GNSS is supported by the UE. Note 2: In case the UE supports GLONASS, or more than one GNSS signal.			

a) **GNSS- Reference Time IE**

GNSS- Reference Time IE

Information Element	All tests except Sensitivity Fine Time Assistance	Sensitivity Fine Time Assistance test
GNSS-ReferenceTime		
gnss-SystemTime		
gnss-TimeID	Yes	Yes
gnss-DayNumber	Yes	Yes
gnss-TimeOfDay	Yes	Yes
gnss-TimeOfDayFrac-msec	Yes	Yes
notificationOfLeapSecond	Yes if gnss-TimeID = 'glonass'	Yes if gnss-TimeID = 'glonass'
gps-TOW-Assist	Yes if gnss-TimeID = 'gps'	Yes if gnss-TimeID = 'gps'
referenceTimeUnc	Yes	No
gnss-ReferenceTimeForOneCell	No	Yes
networkTime		Yes
secondsFromFrameStructureStart		Yes
fractionalSecondsFromFrameStructureStart		Yes
frameDrift		Yes
cellID		Yes
physCellId		Yes
cellGlobalIdEUTRA		Yes
earfcn		Yes
referenceTimeUnc		Yes

b) **GNSS-ReferenceLocation IE**

GNSS-ReferenceLocation IE

Name of the IE	Fields of the IE
GNSS-ReferenceLocation	threeDlocation

c) **GNSS-IonosphericModel IE**

GNSS-IonosphericModel IE

Name of the IE	Fields of the IE
GNSS-IonosphericModel	KlobucharModelParameter
	NeQuickModelParameter(1)
Note 1: Only required if GNSSs supported include Galileo.	

d) **GNSS-TimeModelList IE** This information element is only required for multi system tests.

GNSS-TimeModelList IE

Name of the IE	Fields of the IE
GNSS-TimeModelList	
	gnss-TO-ID For each GNSS included in the test.
	deltaT

e) **GNSS-NavigationModel IE**

GNSS-NavigationModel IE

Name of the IE	Fields of the IE
GNSS-NavigationModel	

GNSS Clock and Orbit Model Choices

GNSS	Clock and Orbit Model Choice
GPS	Model-2
Modernized GPS	Model-3
GLONASS	Model-4
QZSS QZS-L1	Model-2
QZSS QZS-L1C/L2C/L5	Model-3
SBAS	Model-5
Galileo	Model-1

f) **GNSS-AcquisitionAssistance IE**

GNSS-AcquisitionAssistance IE

Name of the IE	Fields of the IE
GNSS-AcquisitionAssistance	

g) **GNSS-Almanac IE**

GNSS-Almanac IE

Name of the IE	Fields of the IE
GNSS-Almanac	

GNSS Almanac Choices

GNSS	Almanac Model Choice
GPS	Model-2
Modernized GPS	Model-3,4
GLONASS	Model-5
QZSS QZS-L1	Model-2
QZSS QZS-L1C/L2C/L5	Model-3,4
SBAS	Model-6
Galileo	Model-1

h) **GNSS-UTC-Model IE**

GNSS-UTC-Model IE

Name of the IE	Fields of the IE
GNSS-UTC-Model	

GNSS UTC Model Choices

GNSS	UTC Model Choice
GPS	Model-1
Modernized GPS	Model-2
GLONASS	Model-3
QZSS QZS-L1	Model-1
QZSS QZS-L1C/L2C/L5	Model-2
SBAS	Model-4
Galileo	Model-1

i) **GNSS-AuxiliaryInformation IE**

GNSS-AuxiliaryInformation IE

Name of the IE	Fields of the IE
GNSS-AuxiliaryInformation	

6.2.7 Contents of Information elements for A-GNSS Minimum performance testing

6.2.7.1 General

This subclause defines the assistance data values that shall be used for all Assisted GNSS minimum performance tests defined in TS 34.172 [5] and in TS 37.571-1 [6]. It is given for GNSS scenarios #1, #2, #3, #4 and #5 and QZSS Scenarios #1 and #2, where it is different for each scenario; otherwise it is marked "All" where the same value is used for all scenarios.

Where assistance data is required on a per-satellite basis, or where the values of the data also varies with time it is specified in comma-separated-variable files in the GNSS data perf zip file specified in Annex B. These files specify the values to be used for each satellite, indexed by satellite PRN or SV ID, and, where applicable, the values to be used indexed by both time and satellite PRN or SV ID.

Assistance data that is marked as "time varying" is specified and used in 80 [FFS] ms increments. Interpolation between these values shall not be used.

Assistance data Information Elements and fields that are not specified shall not be used.

6.2.7.2 IE Random Offset Values

This subclause defines the methods for generating the random offsets that are required to be applied to some assistance data IEs for certain tests defined in TS 34.172 [5] and in TS 37.571-1 [6].

6.2.7.2.1 GNSS TOW

Editor's note: the following subclause needs further study for the case using GANSS TOD

For every Test Instance in each TTFF test case, the IE GPS TOW msec or GANSS TOD or gnss-TimeofDay plus gnss-TimeofDayFrac-msec shall have a random offset, relative to GNSS system time, within the allowed error range of Coarse Time Assistance defined in the test case. This offset value shall have a uniform random distribution.

The offset value shall be calculated by selecting the next random number from a standard uniform random number generator, in the range specified for the GNSS Coarse Time assistance error range in the Test Requirements, Test parameters table for the test under consideration. The resolution used for the random number shall be 0.01, representing 10ms.

6.2.7.2.2 GNSS/cellular time offset

In addition, for every Fine Time Assistance Test Instance the IE UTRAN GPS timing of cell frames or the UTRAN GANSS timing of cell frames or fractionalSecondsFromFrameStructureStart shall have a random offset, relative to the

true value of the relationship between the two time references, within the allowed error range of Fine Time Assistance defined in the test case. This offset value shall have a uniform random distribution.

The offset value shall be calculated by selecting the next random number from a standard uniform random number generator with the following properties:

For UTRAN GPS timing of cell frames the range shall be the number of UMTS chips whose duration is less than the range specified for the GNSS Fine Time assistance error range in the Test Requirements, Test parameters table for the test under consideration. For UTRAN GANSS timing of cell frames or fractionalSecondsFromFrameStructureStart the range shall be the range specified for the GNSS Fine Time assistance error range in the Test Requirements, Test parameters table for the test under consideration.

For UTRAN GPS timing of cell frames the resolution used for the random number shall be 1, representing 1 UMTS bit. For UTRAN GANSS timing of cell frames or fractionalSecondsFromFrameStructureStart the resolution used for the random number shall be 1us.

6.2.7.3 Contents of Information elements for A-GNSS Minimum performance testing in TS 34.172

Assistance Data Reference Time

Contents of UE positioning GPS reference time (sub-tests 3 and 4)

Reference Time (Fields occurring once per message)

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
GPS Week	Weeks	1669	1557	1557
GPS TOW msec	msec	1800000 ms. Start time. Add number of ms as required. (Note 1)	225000000 ms. Start time. Add number of ms as required. (Note 1)	225000000 ms. Start time. Add number of ms as required. (Note 1)
UTRAN GPS reference time		Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Absent
UTRAN GPS timing of cell frames		Note 2	Note 2	-
CHOICE mode		Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Present for Sensitivity Fine Time Assistance test case. Absent otherwise	-
FDD		-	-	-
Primary CPICH Info		100	100	-
SFN		Note 2	Note 2	-
UE Positioning GPS ReferenceTime Uncertainty		For Sensitivity Fine Time Assistance test case: ‘51’ (10.2uS). Otherwise: ‘125’ (2.127s)	For Sensitivity Fine Time Assistance test case: ‘51’ (10.2uS). Otherwise: ‘125’ (2.127s)	‘125’ (2.127s)
TUTRAN-GPS drift rate		0. Present for Sensitivity Fine Time Assistance test case. Absent otherwise	0. Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Absent

Note 1: GPS TOW msec

This is the value in ms of GPS TOW msec when the GPS scenario is initially started in the GNSS simulator. For all TTFF test cases, each time a GPS scenario is used, the GPS start time shall be advanced by 120 seconds from the value last used so that, at the time the fix is made, it is at least 2 minutes later than the previous fix made with that scenario.

The actual value of GPS TOW msec to be used in the Reference Time IE (before the addition of the random offset, if applicable) shall be calculated at the time the IE is required by adding the elapsed time since the time the scenario was started in the GNSS simulator to this value. The accuracy shall be such that the Maximum Test System Uncertainty for Coarse Time Assistance, specified in Table F.1.2 of TS 34.172 [5], shall be met.

For all TTFF test cases a random offset is then added to the value of GPS TOW msec as described in subclause 6.2.7.2.

Note 2: UTRAN GPS timing of cell frames and SFN.

The values of UTRAN GPS timing of cell frames (before the addition of the random offset) and SFN shall be calculated at the time the IE is required. The accuracy of the relationship between the two fields shall be such that the Maximum Test System Uncertainty for Fine Time Assistance, specified in Table F.1.2 of TS 34.172 [5], shall be met.

A random offset is then added to the value of UTRAN GPS timing of cell frames as described in subclause 6.2.7.2.

Satellite Information

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
Number of satellites	-	10	7	7

Reference Time - GPS TOW Assist (Fields occurring once per satellite)

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
SatID		PRNs: 1, 4, 7, 8, 11, 17, 19, 20, 27, 28	PRNs: 5, 7, 10, 11, 13, 15, 17	PRNs: 5, 7, 10, 11, 13, 15, 17

Reference Time - GPS TOW Assist (Fields occurring once per satellite)

Information Element	Units	Value/remark GNSS All
TLM Message	Bit string	10922
TLM Reserved	Bit string	2
Alert	Boolean	0
Anti-Spoof	Boolean	1

Contents of UE positioning GANSS reference time (sub-tests 1 and 2)

GANSS reference time: sub-test 1

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
GANSS Day	days	5845	5063	5063
GANSS TOD	seconds	12586 Start time. (Note 1)	62986 Start time. (Note 1)	62986 Start time. (Note 1)
GANSS TOD Uncertainty		125 (2.127 seconds)	125 (2.127 seconds)	125 (2.127 seconds)
GANSS Time ID		2 (GLONASS)	2 (GLONASS)	2 (GLONASS)
UTRAN GANSS reference time		Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Absent
UTRAN GANSS timing of cell frames		Note 2	Note 2	-
CHOICE mode		Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Present for Sensitivity Fine Time Assistance test case. Absent otherwise	-
FDD		-	-	-
Primary CPICH Info		100	100	-
SFN		Note 2	Note 2	-
TUTRAN-GANSS drift rate		0. Present for Sensitivity Fine Time Assistance test case. Absent otherwise	0. Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Absent

Note 1: GANSS TOD

This is the value in seconds of GANSS TOD when the GNSS scenario is initially started in the GNSS simulator. For all TTFF test cases, each time a GNSS scenario is used, the GNSS start time shall be advanced by 120 seconds from the value last used so that, at the time the fix is made, it is at least 2 minutes later than the previous fix made with that scenario.

The actual value of GANSS TOD to be used in the Reference Time IE (before the addition of the random offset, if applicable) shall be calculated at the time the IE is required by adding the elapsed time since the time the scenario was started in the GNSS simulator to this value. The accuracy shall be such that the Maximum Test System Uncertainty for Coarse Time Assistance, specified in Table F.1.2 of TS 34.172 [5], shall be met.

For all TTFF test cases a random offset is then added to the value of GANSS TOD as described in subclause 6.2.7.2.

Note 2: UTRAN GANSS timing of cell frames and SFN.

The values of UTRAN GANSS timing of cell frames (before the addition of the random offset) and SFN shall be calculated at the time the IE is required. The accuracy of the relationship between the two fields shall be such that the Maximum Test System Uncertainty for Fine Time Assistance, specified in Table F.1.2 of TS 34.172 [5], shall be met.

A random offset is then added to the value of UTRAN GPS timing of cell frames as described in subclause 6.2.7.2.

GANSS reference time: sub-test 2

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
GANSS Day	days	FFS	FFS	FFS
GANSS TOD	seconds	FFS. Start time. (Note 1)	FFS. Start time. (Note 1)	FFS. Start time. (Note 1)
GANSS TOD Uncertainty		125 (2.127 seconds)	125 (2.127 seconds)	125 (2.127 seconds)
GANSS Time ID		Not present (Galileo	Not present (Galileo)	Not present (Galileo
UTRAN GANSS reference time		Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Absent
UTRAN GANSS timing of cell frames		Note 2	Note 2	-
CHOICE mode		Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Present for Sensitivity Fine Time Assistance test case. Absent otherwise	-
FDD		-	-	-
Primary CPICH Info		100	100	-
SFN		Note 2	Note 2	-
TUTRAN-GANSS drift rate		0. Present for Sensitivity Fine Time Assistance test case. Absent otherwise	0. Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Absent

Note 1: GANSS TOD

This is the value in seconds of GANSS TOD when the GNSS scenario is initially started in the GNSS simulator. For all TTFF test cases, each time a GNSS scenario is used, the GNSS start time shall be advanced by 120 seconds from the value last used so that, at the time the fix is made, it is at least 2 minutes later than the previous fix made with that scenario.

The actual value of GANSS TOD to be used in the Reference Time IE (before the addition of the random offset, if applicable) shall be calculated at the time the IE is required by adding the elapsed time since the time the scenario was started in the GNSS simulator to this value. The accuracy shall be such that the Maximum Test System Uncertainty for Coarse Time Assistance, specified in Table F.1.2 of TS 34.172 [5], shall be met.

For all TTFF test cases a random offset is then added to the value of GANSS TOD as described in subclause 6.2.7.2.

Note 2: UTRAN GANSS timing of cell frames and SFN.

The values of UTRAN GANSS timing of cell frames (before the addition of the random offset) and SFN shall be calculated at the time the IE is required. The accuracy of the relationship between the two fields shall be such that the Maximum Test System Uncertainty for Fine Time Assistance, specified in Table F.1.2 of TS 34.172 [5], shall be met.

A random offset is then added to the value of UTRAN GPS timing of cell frames as described in subclause 6.2.7.2.

Assistance Data Time Model

Contents of UE positioning GANSS time model (sub-test 4)

GANSS time model

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
GANSS Time Model Reference Time	16s	1800 (s)	225000 (s)	225000 (s)
T_{A0}	seconds	0	0	0
GNSS_TOD_ID		0 (GPS)	0 (GPS)	0 (GPS)

Assistance Data Reference UE Position

The uncertainty of the semi-major axis is 3 km. The uncertainty of the semi-minor axis is 3 km. The orientation of the major axis is 0 degrees. The uncertainty of the altitude information is 500 m. The confidence factor is 68%.

Contents of UE positioning GPS reference UE position (sub-tests 3 and 4)

GPS reference UE position

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
Latitude sign		0	0	0
Degrees of latitude	degrees	35.744287	37.366669	37.366669
Degrees of longitude	degrees	139.680176	-121.983326	-121.983326
Altitude Direction		0	0	0
Altitude	m	300	100	100
Uncertainty semi-major	m	3000	3000	3000
Uncertainty semi-minor	m	3000	3000	3000
Orientation of major axis	degrees	0	0	0
Uncertainty altitude	m	500	500	500
Confidence	%	68	68	68

Contents of UE positioning GANSS reference UE position (sub-tests 1 and 2)

GANSS reference UE position

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
Latitude sign		0	0	0
Degrees Of Latitude	degrees	35.744287	37.366669	37.366669
Degrees Of Longitude	degrees	139.680176	-121.983326	-121.983326
Altitude Direction		0	0	0
Altitude	m	300	300	300
Uncertainty semi-major	m	3000	3000	3000
Uncertainty semi-minor	m	3000	3000	3000
Orientation of major axis	degrees	0	0	0
Uncertainty Altitude	m	500	500	500
Confidence	%	68	68	68

Assistance Data Navigation Model

Contents of UE positioning GPS navigation model (sub-tests 3 and 4)

Satellite Information

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
Number of satellites	-	10	7	7

GPS Navigation Model (Fields occurring once per satellite)

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
SatID	-	PRNs: 1, 4, 7, 8, 11, 17, 19, 20, 27, 28	PRNs: 5, 7, 10, 11, 13, 15, 17	PRNs: 5, 7, 10, 11, 13, 15, 17
Satellite Status	Boolean	0 (Note)	0 (Note)	0 (Note)
Note: For consistency Satellite Status is also given in file: GPS Navigation model XX.csv				

GPS Ephemeris and Clock Correction parameters (Fields occurring once per satellite)

Information Element	Units	Value/remark GNSS All
C/A or P on L2	Boolean	See file: GPS Navigation model XX.csv
URA Index	Boolean	See file: GPS Navigation model XX.csv
SV Health	Boolean	See file: GPS Navigation model XX.csv
IODC	-	See file: GPS Navigation model XX.csv
L2 P Data Flag	Boolean	See file: GPS Navigation model XX.csv
SF 1 Reserved	-	See file: GPS Navigation model XX.csv
T_{GD}	Sec	See file: GPS Navigation model XX.csv
t_{oc}	Sec	See file: GPS Navigation model XX.csv
af_2	sec/sec^2	See file: GPS Navigation model XX.csv
af_1	sec/sec	See file: GPS Navigation model XX.csv
af_0	Sec	See file: GPS Navigation model XX.csv
C_{rs}	Meters	See file: GPS Navigation model XX.csv
Δn	semi-circles/sec	See file: GPS Navigation model XX.csv
M_0	semi-circles	See file: GPS Navigation model XX.csv
C_{uc}	Radians	See file: GPS Navigation model XX.csv
E	-	See file: GPS Navigation model XX.csv
C_{us}	Radians	See file: GPS Navigation model XX.csv
$(A)^{1/2}$	$meters^{1/2}$	See file: GPS Navigation model XX.csv
t_{oe}	Sec	See file: GPS Navigation model XX.csv
Fit Interval Flag	Boolean	See file: GPS Navigation model XX.csv
AODO	Sec	See file: GPS Navigation model XX.csv
C_{ic}	Radians	See file: GPS Navigation model XX.csv
$OMEGA_0$	semi-circles	See file: GPS Navigation model XX.csv
C_{is}	Radians	See file: GPS Navigation model XX.csv
i_0	semi-circles	See file: GPS Navigation model XX.csv
C_{rc}	Meters	See file: GPS Navigation model XX.csv
ω	semi-circles	See file: GPS Navigation model XX.csv
OMEGAdot	semi-circles/sec	See file: GPS Navigation model XX.csv
Idot	semi-circles/sec	See file: GPS Navigation model XX.csv

Contents of UE positioning GANSS navigation model (sub-test 2)

GANSS navigation model

Information Element	Units	Value/remark GNSS All
Non-Broadcast Indication	-	Not present

Satellite Information

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
Number of satellites	-	FFS	FFS	FFS

GANSS navigation model (Fields occurring once per satellite)

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
SatID	-	FFS	FFS	FFS
SV Health		0 (Note)	0 (Note)	0 (Note)
IOD		FFS (Note)	FFS (Note)	FFS (Note)
Note: For consistency SV Health and IOD are also given in file: Galileo Navigation model XX.csv				

GANSS Clock Model (Fields occurring once per satellite)

Galileo Satellite clock model ("Model 1")

Information Element	Units	Value/remark GNSS All
toc		See file: Galileo Navigation model XX.csv
af2		See file: Galileo Navigation model XX.csv
af1		See file: Galileo Navigation model XX.csv
af0		See file: Galileo Navigation model XX.csv
TGD		See file: Galileo Navigation model XX.csv

GANSS Orbit Model (Fields occurring once per satellite)

Galileo orbit model: Keplerian Parameters ("Model 1")

Information Element	Units	Value/remark GNSS All
toe		See file: Galileo Navigation model XX.csv
ω		See file: Galileo Navigation model XX.csv
Δn		See file: Galileo Navigation model XX.csv
M0		See file: Galileo Navigation model XX.csv
OMEGAdot		See file: Galileo Navigation model XX.csv
e		See file: Galileo Navigation model XX.csv
Idot		See file: Galileo Navigation model XX.csv
sqrtA		See file: Galileo Navigation model XX.csv
i0		See file: Galileo Navigation model XX.csv
OMEGA0		See file: Galileo Navigation model XX.csv
Crs		See file: Galileo Navigation model XX.csv
Cis		See file: Galileo Navigation model XX.csv
Cus		See file: Galileo Navigation model XX.csv
Crc		See file: Galileo Navigation model XX.csv
Cic		See file: Galileo Navigation model XX.csv
Cuc		See file: Galileo Navigation model XX.csv

Contents of UE positioning GANSS additional navigation models (sub-tests 1 and 4)

GANSS additional navigation models

Information Element	Units	Value/remark GNSS All
Non-Broadcast Indication	-	Not present

Satellite Information

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
Number of satellites	-	7	7	7

GANSS additional navigation models (Fields occurring once per satellite)

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
SatID	-	Slot Numbers: 3, 4, 9, 10, 18, 19, 20	Slot Numbers: 7, 8, 9, 10, 18, 19, 20	Slot Numbers: 7, 8, 9, 10, 18, 19, 20
SV Health		011110 (Note)	011110 (Note)	011110 (Note)
IOD		13 (Note)	69 (Note)	69 (Note)
Note: For consistency SV Health and IOD are also given in file: GLONASS Navigation model XX.csv				

GANSS additional clock models (Fields occurring once per satellite)

GLONASS Satellite Clock Model (“Model 4”)

Information Element	Units	Value/remark GNSS All
$\tau_n(t_b)$	Seconds	See file: GLONASS Navigation model XX.csv
$\gamma_n(t_b)$		See file: GLONASS Navigation model XX.csv
$\Delta\tau_n$	Seconds	See file: GLONASS Navigation model XX.csv

GANSS additional orbit models (Fields occurring once per satellite)

GLONASS Earth-Centered, Earth-fixed Parameters (“Model 4”)

Information Element	Units	Value/remark GNSS All
E_n	Days	See file: GLONASS Navigation model XX.csv
P1	Minutes	See file: GLONASS Navigation model XX.csv
P2		See file: GLONASS Navigation model XX.csv
M		See file: GLONASS Navigation model XX.csv
$x_n(t_b)$	Km	See file: GLONASS Navigation model XX.csv
$\dot{x}_n(t_b)$	km/sec	See file: GLONASS Navigation model XX.csv
$\ddot{x}_n(t_b)$	km/sec^2	See file: GLONASS Navigation model XX.csv
$y_n(t_b)$	Km	See file: GLONASS Navigation model XX.csv
$\dot{y}_n(t_b)$	km/sec	See file: GLONASS Navigation model XX.csv
$\ddot{y}_n(t_b)$	km/sec^2	See file: GLONASS Navigation model XX.csv
$z_n(t_b)$	Km	See file: GLONASS Navigation model XX.csv
$\dot{z}_n(t_b)$	km/sec	See file: GLONASS Navigation model XX.csv
$\ddot{z}_n(t_b)$	km/sec^2	See file: GLONASS Navigation model XX.csv

Assistance Data Ionospheric Model

Contents of UE positioning GPS ionospheric model (sub-tests 3 and 4)

GPS Ionospheric ModelInformation Element	Units	Value/remark GNSS All
α_0	Seconds	4.6566129 10E-9
α_1	sec/semi-circle	1.4901161 10E-8
α_2	sec/(semi-circle)^2	-5.96046 10E-8
α_3	sec/(semi-circle)^3	-5.96046 10E-8
β_0	Seconds	79872
β_1	sec/semi-circle	65536
β_2	sec/(semi-circle)^2	-65536
β_3	sec/(semi-circle)^3	-393216

Contents of UE positioning GANSS ionospheric model (sub-test 2)

GANSS ionospheric model

Information Element	Units	Value/remark GNSS All
a_{i0}		FFS
a_{i1}		FFS
a_{i2}		FFS
GANSS Ionosphere Regional Storm Flags		
Storm Flag 1		0
Storm Flag 2		0
Storm Flag 3		0
Storm Flag 4		0
Storm Flag 5		0

Contents of UE positioning GANSS additional ionospheric model (sub-test 1)

GANSS additional ionospheric model

Information Element	Units	Value/remark GNSS All
Data Id		00
α_0	Seconds	4.6566129 10E-9
α_1	sec/semi-circle	1.4901161 10E-8
α_2	sec/(semi-circle)^2	-5.96046 10E-8
α_3	sec/(semi-circle)^3	-5.96046 10E-8
β_0	Seconds	79872
β_1	sec/semi-circle	65536
β_2	sec/(semi-circle)^2	-65536
β_3	sec/(semi-circle)^3	-393216

Assistance Data Almanac

Contents of UE positioning GPS almanac (sub-tests 3 and 4)

GPS Almanac (Field occurring once per message)

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
WN_a	Weeks	1669	1557	1557

Satellite Information

Information Element	Units	Value/remark GNSS All
Number of satellites	-	27

GPS Almanac (Fields occurring once per satellite)

Information Element	Units	Value/remark GNSS All
DataID	-	See file: GPS Almanac XX.csv

GPS Almanac (Fields occurring once per satellite)

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
SatID	-	PRNs: 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 29, 30, 31	PRNs: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 25, 27, 28, 30, 31	PRNs: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 25, 27, 28, 30, 31

GPS Almanac (Fields occurring once per satellite)

Information Element	Units	Value/remark GNSS All
e	Dimensionless	See file: GPS Almanac XX.csv
t_{oa}	Sec	See file: GPS Almanac XX.csv
δi	semi-circles	See file: GPS Almanac XX.csv
OMEGADOT	semi-circles/sec	See file: GPS Almanac XX.csv
SV Health	Boolean	See file: GPS Almanac XX.csv
$A^{1/2}$	$meters^{1/2}$	See file: GPS Almanac XX.csv
$OMEGA_0$	semi-circles	See file: GPS Almanac XX.csv
M_0	semi-circles	See file: GPS Almanac XX.csv
ω	semi-circles	See file: GPS Almanac XX.csv
af_0	Seconds	See file: GPS Almanac XX.csv
af_1	sec/sec	See file: GPS Almanac XX.csv

Contents of UE positioning GANSS almanac (sub-tests 1, 2 and 4)

GANSS almanac: sub-tests 1, 4 (Field occurring once per message)

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
Week Number	Weeks	N/A	N/A	N/A

Satellite Information GLO-KP: sub-tests 1, 4

Information Element	Units	Value/remark GNSS All
Number of satellites	-	24

GANSS almanac: sub-tests 1, 4 (Fields occurring once per satellite)

GLONASS Keplerian Parameters ("Model 5")

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
N^A	Days	1	680	680
n^A	-	Slot Numbers: 1, 2, 3 …….22, 23, 24	Slot Numbers: 1, 2, 3 …….22, 23, 24	Slot Numbers: 1, 2, 3 …….22, 23, 24
H_n^A	-	TBD, 1, 5, 6, TBD, 1, 5, 6, -2, -7, 0, TBD, -2, -7, 0, TBD, 4, -3, 3, 2, 4, -3, 3, 2	TBD, 1, 5, 6, TBD, 1, 5, 6, -2, -7, 0, TBD, -2, -7, 0, TBD, 4, -3, 3, 2, 4, -3, 3, 2	TBD, 1, 5, 6, TBD, 1, 5, 6, -2, -7, 0, TBD, -2, -7, 0, TBD, 4, -3, 3, 2, 4, -3, 3, 2

GANSS almanac: sub-tests 1, 4 (Fields occurring once per satellite)

GLONASS Keplerian Parameters ("Model 5")

Information Element	Units	Value/remark GNSS All
λ_n^A	semi-circles	See file: GLONASS Almanac XX.csv
$t_{\lambda n}^A$	Seconds	See file: GLONASS Almanac XX.csv
Δi_n^A	semi-circles	See file: GLONASS Almanac XX.csv
ΔT_n^A	sec/orbit-period	See file: GLONASS Almanac XX.csv
$\Delta T\_DOT_n^A$	sec/orbit-period	See file: GLONASS Almanac XX.csv
ε_n^A	dimensionless	See file: GLONASS Almanac XX.csv
ω_n^A	semi-circles	See file: GLONASS Almanac XX.csv
τ_n^A	Seconds	See file: GLONASS Almanac XX.csv
C_n^A	dimensionless	See file: GLONASS Almanac XX.csv
M_n^A	dimensionless	See file: GLONASS Almanac XX.csv

GANSS almanac: sub-test 2 (Field occurring once per message)

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
Week Number	Weeks	FFS	FFS	FFS

GANSS almanac: sub-test 2 (Field occurring once per message)

Galileo Keplerian Parameters ("Model 1")

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
T_{oa}		FFS	FFS	FFS
IOD_a		FFS	FFS	FFS

Satellite Information KP: sub-test 2

Information Element	Units	Value/remark GNSS All
Number of satellites	-	27

GANSS almanac: sub-test 2 (Fields occurring once per satellite)

Galileo Keplerian Parameters ("Model 1")

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
SV ID	-	FFS	FFS	FFS

GANSS almanac: sub-test 2 (Fields occurring once per satellite)

Galileo Keplerian Parameters ("Model 1")

Information Element	Units	Value/remark GNSS All
E	-	See file: Galileo Almanac XX.csv
δi	semi-circles	See file: Galileo Almanac XX.csv
OMEGADOT	semi-circles/sec	See file: Galileo Almanac XX.csv
SV Health KP	-	See file: Galileo Almanac XX.csv
delta $A^{1/2}$	$(meters)^{1/2}$	See file: Galileo Almanac XX.csv
$OMEGA_0$	semi-circles	See file: Galileo Almanac XX.csv
M_0	semi-circles	See file: Galileo Almanac XX.csv
ω	semi-circles	See file: Galileo Almanac XX.csv
af_0	Seconds	See file: Galileo Almanac XX.csv
af_1	sec/sec	See file: Galileo Almanac XX.csv

Assistance Data UTC Model

Contents of UE positioning GPS UTC model (sub-test 4)

GPS UTC model

Information Element	Units	Value/remark GNSS All
A_1	sec/sec	0
A_0	Seconds	0
t_{ot}	Seconds	40
WN_t	Weeks	9
Δt_{LS}	Seconds	6
WN_{LSF}	Weeks	TBD
DN	Days	2
Δt_{LSF}	Seconds	14

Assistance Data Acquisition Assistance and Reference Measurement Information

Contents of UE positioning GPS acquisition assistance (sub-tests 3 and 4)

GPS Acquisition Assistance (Fields occurring once per message)

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
GPS TOW msec	msec	1800000 ms. Start time. Add number of ms as required. (Note 1)	225000000 ms. Start time. Add number of ms as required. (Note 1)	225000000ms. Start time. Add number of ms as required. (Note 1)
UTRAN GPS reference time		Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Absent
UTRAN GPS timing of cell frames		Note 2	Note 2	-
CHOICE mode		Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Present for Sensitivity Fine Time Assistance test case. Absent otherwise	-
FDD		-	-	-
Primary CPICH Info		100	100	-
SFN		Note 2	Note 2	-
UE Positioning GPS ReferenceTime Uncertainty		For Sensitivity Fine Time Assistance test case: '51' (10.2uS). Otherwise: '125' (2.127s)	For Sensitivity Fine Time Assistance test case: '51' (10.2uS). Otherwise: '125' (2.127s)	'125' (2.127s)

Note 1: GPS TOW msec

This is the value in ms of GPS TOW msec when the GPS scenario is initially started in the GNSS simulator. For all TTFF test cases, each time a GPS scenario is used, the GPS start time shall be advanced by 120 seconds from the value last used so that, at the time the fix is made, it is at least 2 minutes later than the previous fix made with that scenario.

The actual value of GPS TOW msec to be used in the Acquisition Assistance IE (before the addition of the random offset, if applicable) shall be calculated at the time the IE is required by adding the elapsed time since the time the scenario was started in the GNSS simulator to this value. The accuracy shall be such that the Maximum Test System Uncertainty for Coarse Time Assistance, specified in Table F.1.2 of TS 34.172 [5], shall be met.

For all TTFF test cases a random offset is then added to the value of GPS TOW msec as described in subclause 6.2.7.2.

This "final GPS TOW msec" value is then also used to determine the value of the Acquisition Assistance Information Elements marked as "Time varying".

Note 2: UTRAN GPS timing of cell frames and SFN

The values of UTRAN GPS timing of cell frames (before the addition of the random offset) and SFN shall be calculated at the time the IE is required. The accuracy of the relationship between the two fields shall be such that the Maximum Test System Uncertainty for Fine Time Assistance, specified in Table F.1.2 of TS 34.172 [5], shall be met.

A random offset is then added to the value of UTRAN GPS timing of cell frames as described in subclause 6.2.7.2

Satellite Information

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
Number of satellites	-	10	7	7

GPS Acquisition Assistance (Fields occurring once per satellite)

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
SatID	-	PRNs: 1, 4, 7, 8, 11, 17, 19, 20, 27, 28	PRNs: 5, 7, 10, 11, 13, 15, 17	PRNs: 5, 7, 10, 11, 13, 15, 17

GPS Acquisition Assistance (Fields occurring once per satellite)

Information Element	Units	Value/remark GNSS All
Doppler (0^{th} order term)	Hz	Time varying. See file: Acquisition assist XX.csv (Note)
Doppler (1^{st} order term)	Hz/sec	Time varying. See file: Acquisition assist XX.csv (Note)
Doppler Uncertainty	Hz	Time varying. See file: Acquisition assist XX.csv (Note)
Code Phase	Chips	Time varying. See file: Acquisition assist XX.csv (Note)
Integer Code Phase	-	Time varying. See file: Acquisition assist XX.csv (Note)
GPS Bit number	-	Time varying. See file: Acquisition assist XX.csv (Note)
Code Phase Search Window	Chips	Time varying. See file: Acquisition assist XX.csv (Note)
Azimuth	Deg	Time varying. See file: Acquisition assist XX.csv (Note)
Elevation	Deg	Time varying. See file: Acquisition assist XX.csv (Note)
Note: Acquisition Assistance Information Elements This field is “Time varying” and its value depends on the “final GPS TOW msec” as described above. The value of this field to be used shall be determined by taking the “final GPS TOW msec” value and selecting the nearest field value in the Acquisition assist.csv file corresponding to the value of “final current GPS TOW msec”.		

Contents of UE positioning GANSS reference measurement information (sub-tests 1, 2 and 4)

GANSS reference measurement information: sub-test 1, 4 (Fields occurring once per message)

Information Element	Units	Value/remark GNSS All
GANSS Signal ID		Not present

Satellite Information: sub-test 1, 4

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
Number of satellites	-	7	7	7

GANSS reference measurement information: sub-test 1, 4 (Fields occurring once per satellite)

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
SatID	-	Slot Numbers: 3, 4, 9, 10, 18, 19, 20	Slot Numbers: 7, 8, 9, 10, 18, 19, 20	Slot Numbers: 7, 8, 9, 10, 18, 19, 20

GANSS reference measurement information: sub-test 1, 4 (Fields occurring once per satellite)

Information Element	Units	Value/remark GNSS All
Doppler (0^{th} order term)	m/s	Time varying. See file: GANSS reference measurement information subtest1_4.csv (Note)
Doppler (1^{st}order term)	m/s^2	Time varying. See file: GANSS reference measurement information subtest1_4.csv (Note)
Doppler Uncertainty	m/s	Time varying. See file: GANSS reference measurement information subtest1_4.csv (Note)
Code Phase	ms	Time varying. See file: GANSS reference measurement information subtest1_4.csv (Note)
Integer Code Phase	ms	Time varying. See file: GANSS reference measurement information subtest1_4.csv (Note)
Code Phase Search Window		Time varying. See file: GANSS reference measurement information subtest1_4.csv (Note)
Azimuth	Degrees	Time varying. See file: GANSS reference measurement information subtest1_4.csv (Note)
Elevation	Degrees	Time varying. See file: GANSS reference measurement information subtest1_4.csv (Note)
Note: For sub-test 1: this field is “Time varying” and its value depends on the “current GANSS TOD”. The value of this field to be used shall be determined by taking the “current GANSS TOD” value and selecting the field value in the GANSS reference measurement information subtest1_4.csv file corresponding to the value of “current GANSS TOD”. For sub-test 4: this field is “Time varying” and its value depends on the “current GPS TOW msec”. The value of this field to be used shall be determined by taking the “current GPS TOW msec” value and selecting the field value in the GANSS reference measurement information subtest1_4.csv file corresponding to the value of “current GPS TOW msec”.		

GANSS reference measurement information: sub-test 2 (Fields occurring once per message)

Information Element	Units	Value/remark GNSS All
GANSS Signal ID		Not present

Satellite Information: sub-test 2

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
Number of satellites	-	FFS	FFS	FFS

GANSS reference measurement information: sub-test 2 (Fields occurring once per satellite)

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
SatID	-	FFS	FFS	FFS

GANSS reference measurement information: sub-test 2 (Fields occurring once per satellite)

Information Element	Units	Value/remark GNSS All
Doppler (0^{th} order term)	m/s	Time varying. See file: GANSS reference measurement information subtest2.csv (Note)
Doppler (1^{st}order term)	m/s^2	Time varying. See file: GANSS reference measurement information subtest2.csv (Note)
Doppler Uncertainty	m/s	Time varying. See file: GANSS reference measurement information subtest2.csv (Note)
Code Phase	ms	Time varying. See file: GANSS reference measurement information subtest2.csv (Note)
Integer Code Phase	ms	Time varying. See file: GANSS reference measurement information subtest2.csv (Note)
Code Phase Search Window		Time varying. See file: GANSS reference measurement information subtest2.csv (Note)
Azimuth	Degrees	Time varying. See file: GANSS reference measurement information subtest2.csv (Note)
Elevation	Degrees	Time varying. See file: GANSS reference measurement information subtest2.csv (Note)
Note: This field is “Time varying” and its value depends on the “current GANSS TOD”. The value of this field to be used shall be determined by taking the “current GANSS TOD” value and selecting the field value in the GANSS reference measurement information subtest2.csv file corresponding to the value of “current GANSS TOD”.		

Assistance Data Auxiliary Information

Contents of UE positioning GANSS auxiliary information (sub-tests 1, 3 and 4)

GANSS auxiliary information: sub-test 1, 4 (Fields occurring once per message)

Information Element	Units	Value/remark GNSS All
GANSS-ID-3		Present (GLONASS)

Aux Info List: sub-test 1, 4

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
Number of satellites	-	7	7	7

GANSS auxiliary information: sub-test 1, 4 (Fields occurring once per satellite)

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
SatID	-	Slot Numbers: 3, 4, 9, 10, 18, 19, 20	Slot Numbers: 7, 8, 9, 10, 18, 19, 20	Slot Numbers: 7, 8, 9, 10, 18, 19, 20
Signals Available	-	10000000 (G1)	10000000 (G1)	10000000 (G1)
Channel number	-	5, 6, -2, -7,-3, 3, 2	5, 6, -2, -7, -3, 3, 2	5, 6, -2, -7, -3, 3, 2

GANSS auxiliary information: sub-test 3 (Fields occurring once per message)

Information Element	Units	Value/remark GNSS All
GANSS-ID-1		Present (Modernized GPS)

Aux Info List: sub-test 3

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
Number of satellites	-	10	7	7

GANSS auxiliary information: sub-test 3 (Fields occurring once per satellite)

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
SatID	-	PRNs: 1, 4, 7, 8, 11, 17, 19, 20, 27, 28	PRNs: 5, 7, 10, 11, 13, 15, 17	PRNs: 5, 7, 10, 11, 13, 15, 17
Signals Available	-	L1C and others as supported by the UE	L1C and others as supported by the UE	L1C and others as supported by the UE

Assistance Data GANSS ID

Contents of GANSS ID

GANSS ID: sub-test 1, 4

Information Element	Units	Value/remark GNSS All
GANSS ID		3 (GLONASS)

GANSS ID: sub-test 2

Information Element	Units	Value/remark GNSS All
GANSS ID		Not present (Galileo)

GANSS ID: sub-test 3

Information Element	Units	Value/remark GNSS All
GANSS ID		1 (Modernized GPS)

6.2.7.4 Contents of Information elements for A-GNSS Minimum performance testing in TS 37.571-1

GNSS REFERENCE TIME:

GNSS-ReferenceTime: sub-tests 1, 5

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
gnss-SystemTime				
gnss-TimeID		0 (gps)	0 (gps)	0 (gps)
gnss-DayNumber	days	11683	10899	10899
gnss-TimeOfDay	s	1800s. Start time. (Note 1)	225000s. Start time. (Note 1)	225000s. Start time. (Note 1)
gnss-TimeOfDayFrac-msec	ms	0 (Note 1)	0 (Note 1)	0 (Note 1)
notificationOfLeapSecond		Not present	Not present	Not present
gps-TOW-Assist				
satelliteID		Sub-test 1: PRNs: 1, 7, 8, 11, 17, 19, 20, 27, 28 Sub-test 5: PRNs: 1, 4, 7, 8, 11, 17, 19, 20, 27, 28	Sub-test 1: PRNs: 5, 7, 10, 11, 13, 15, 17, [TBD], [TBD] Sub-test 5: PRNs: 5, 7, 10, 11, 13, 15, 17	Sub-test 1: PRNs: 5, 7, 10, 11, 13, 15, 17, [TBD], [TBD] Sub-test 5: PRNs: 5, 7, 10, 11, 13, 15, 17
tlmWord		10922 (for all PRNs)	10922 (for all PRNs)	10922 (for all PRNs)
antiSpoof		1 (for all PRNs)	1 (for all PRNs)	1 (for all PRNs)
alert		0 (for all PRNs)	0 (for all PRNs)	0 (for all PRNs)
tlmRsvdBits		2 (for all PRNs)	2 (for all PRNs)	2 (for all PRNs)
referenceTimeUnc		'117' (2.274 seconds) Absent for Sensitivity Fine Time Assistance test case. Present otherwise	'117' (2.274 seconds) Absent for Sensitivity Fine Time Assistance test case. Present otherwise	'117' (2.274 seconds)
gnss-ReferenceTimeForCells		Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Absent
GNSS-ReferenceTimeForOneCell				
networkTime				
secondsFromFrameStructureStart	s	Note 2	Note 2	
fractionalSecondsFromFrameStructureStart	250ns	Note 2	Note 2	
frameDrift		0	0	
cellID				
CHOICE eUTRA				
physCellId		0	0	
cellGlobalIdEUTRA		'0000 0000'B	'0000 0000'B	
earfcn		TBD	TBD	
referenceTimeUnc		'24' (11.11us)	'24' (11.11us)	

Note 1: gnss-TimeOfDay and gnss-TimeOfDayFrac-msec.
This is the value of gnss-TimeOfDay and gnss-TimeOfDayFrac-msec when the GNSS scenario is initially started in the GNSS simulator. For all TTFF test cases, each time a GNSS scenario is used, the GNSS start time shall be advanced by 120 seconds from the value last used so that, at the time the fix is made, it is at least 2 minutes later than the previous fix made with that scenario.
The actual value of gnss-TimeOfDay and gnss-TimeOfDayFrac-msec to be used in the Reference Time IE (before the addition of the random offset, if applicable) shall be calculated at the time the IE is required by adding the elapsed time since the time the scenario was started in the GNSS simulator to this value. The accuracy shall be such that the Maximum Test System Uncertainty for Coarse Time Assistance, specified in Table C.1.2 of TS 37.571-1 [6], shall be met.
For all TTFF test cases a random offset is then added to the value of gnss-TimeOfDay and gnss-TimeOfDayFrac-msec as described in subclause 6.2.7.2.

Note 2: secondsFromFrameStructureStart and fractionalSecondsFromFrameStructureStart.
The values of secondsFromFrameStructureStart and fractionalSecondsFromFrameStructureStart (before the addition of the random offset) shall be calculated at the time the IE is required. The accuracy of the values

used shall be such that the Maximum Test System Uncertainty for Fine Time Assistance, specified in Table C.1.2 of 37.571-1 [6], shall be met.
A random offset is then added to the value of secondsFromFrameStructureStart and fractionalSecondsFromFrameStructureStart as described in subclause 6.2.7.2.

GNSS-ReferenceTime: sub-test 2

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
gnss-SystemTime				
gnss-TimeID		4 (glonass)	4 (glonass)	4 (glonass)
gnss-DayNumber	days	5845	5063	5063
gnss-TimeOfDay	s	12586 s. Start time. (Note 1)	62986 s. Start time.. (Note 1)	62986 s. Start time. (Note 1)
gnss-TimeOfDayFrac-msec	ms	0 (Note 1)	0 (Note 1)	0 (Note 1)
notificationOfLeapSecond		00	00	00
gps-TOW-Assist		Not present	Not present	Not present
referenceTimeUnc		'117' (2.274 seconds) Absent for Sensitivity Fine Time Assistance test case. Present otherwise	'117' (2.274 seconds) Absent for Sensitivity Fine Time Assistance test case. Present otherwise	'117' (2.274 seconds)
gnss-ReferenceTimeForCells		Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Absent
GNSS-ReferenceTimeForOneCell				
networkTime				
secondsFromFrameStructureStart	s	Note 2	Note 2	
fractionalSecondsFromFrameStructureStart	250ns	Note 2	Note 2	
frameDrift		0	0	
cellID				
CHOICE eUTRA				
physCellId		0	0	
cellGlobalIdEUTRA		'0000 0000'B	'0000 0000'B	
earfcn		TBD	TBD	
referenceTimeUnc		'24' (11.11us)	'24' (11.11us)	

Note 1: gnss-TimeOfDay and gnss-TimeOfDayFrac-msec
This is the value of gnss-TimeOfDay and gnss-TimeOfDayFrac-msec when the GNSS scenario is initially started in the GNSS simulator. For all TTFF test cases, each time a GNSS scenario is used, the GNSS start time shall be advanced by 120 seconds from the value last used so that, at the time the fix is made, it is at least 2 minutes later than the previous fix made with that scenario.
The actual value of gnss-TimeOfDay and gnss-TimeOfDayFrac-msec to be used in the Reference Time IE (before the addition of the random offset, if applicable) shall be calculated at the time the IE is required by adding the elapsed time since the time the scenario was started in the GNSS simulator to this value. The accuracy shall be such that the Maximum Test System Uncertainty for Coarse Time Assistance, specified in Table C.1.2 of TS 37.571-1 [6], shall be met.
For all TTFF test cases a random offset is then added to the value of gnss-TimeOfDay and gnss-TimeOfDayFrac-msec as described in subclause 6.2.7.2.

Note 2: secondsFromFrameStructureStart and fractionalSecondsFromFrameStructureStart.
The values of secondsFromFrameStructureStart and fractionalSecondsFromFrameStructureStart (before the addition of the random offset) shall be calculated at the time the IE is required. The accuracy of the values used shall be such that the Maximum Test System Uncertainty for Fine Time Assistance, specified in Table C.1.2 of 37.571-1 [6], shall be met.
A random offset is then added to the value of secondsFromFrameStructureStart and fractionalSecondsFromFrameStructureStart as described in subclause 6.2.7.2.

GNSS-ReferenceTime: sub-test 3

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
gnss-SystemTime				
gnss-TimeID		3 (galileo)	3 (galileo)	3 (galileo)
gnss-DayNumber		FFS	FFS	FFS
gnss-TimeOfDay		FFS s. Start time. (Note 1)	FFS s. Start time. (Note 1)	FFS s. Start time. (Note 1)
gnss-TimeOfDayFrac-msec		0 (Note 1)	0 (Note 1)	0 (Note 1)
notificationOfLeapSecond		Not present	Not present	Not present
gps-TOW-Assist		Not present	Not present	Not present
referenceTimeUnc		'117' (2.274 seconds) Absent for Sensitivity Fine Time Assistance test case. Present otherwise	'117' (2.274 seconds) Absent for Sensitivity Fine Time Assistance test case. Present otherwise	'117' (2.274 seconds)
gnss-ReferenceTimeForCells		Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Absent
GNSS-ReferenceTimeForOneCell				
networkTime				
secondsFromFrameStructureStart	s	Note 2	Note 2	
fractionalSecondsFromFrameStructureStart	250ns	Note 2	Note 2	
frameDrift		0	0	
cellID				
CHOICE eUTRA				
physCellId		0	0	
cellGlobalIdEUTRA		'0000 0000'B	'0000 0000'B	
earfcn		TBD	TBD	
referenceTimeUnc		'24' (11.11us)	'24' (11.11us)	

Note 1: gnss-TimeOfDay and gnss-TimeOfDayFrac-msec

This is the value of gnss-TimeOfDay and gnss-TimeOfDayFrac-msec when the GNSS scenario is initially started in the GNSS simulator. For all TTFF test cases, each time a GNSS scenario is used, the GNSS start time shall be advanced by 120 seconds from the value last used so that, at the time the fix is made, it is at least 2 minutes later than the previous fix made with that scenario.

The actual value of gnss-TimeOfDay and gnss-TimeOfDayFrac-msec to be used in the Reference Time IE (before the addition of the random offset, if applicable) shall be calculated at the time the IE is required by adding the elapsed time since the time the scenario was started in the GNSS simulator to this value. The accuracy shall be such that the Maximum Test System Uncertainty for Coarse Time Assistance, specified in Table C.1.2 of TS 37.571-1 [6], shall be met.

For all TTFF test cases a random offset is then added to the value of gnss-TimeOfDay and gnss-TimeOfDayFrac-msec as described in subclause 6.2.7.2.

Note 2: secondsFromFrameStructureStart and fractionalSecondsFromFrameStructureStart.

The values of secondsFromFrameStructureStart and fractionalSecondsFromFrameStructureStart (before the addition of the random offset) shall be calculated at the time the IE is required. The accuracy of the values used shall be such that the Maximum Test System Uncertainty for Fine Time Assistance, specified in Table C.1.2 of 37.571-1 [6], shall be met.

A random offset is then added to the value of secondsFromFrameStructureStart and fractionalSecondsFromFrameStructureStart as described in subclause 6.2.7.2.

GNSS REFERENCE LOCATION:

GNSS-ReferenceLocation

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
threeDlocation				
latitudeSign		0	0	0
degreesLatitude	degrees	35.744287	37.366669	37.366669
degreesLongitude	degrees	139.680176	-121.983326	-121.983326
altitudeDirection		0	0	0
altitude	m	300	100	100
uncertaintySemiMajor	m	3000	3000	3000
uncertaintySemiMinor	m	3000	3000	3000
orientationMajorAxis	degrees	0	0	0
uncertaintyAltitude	m	500	500	500
confidence	%	68	68	68

GNSS IONOSPHERIC MODEL:

GNSS-IonosphericModel: sub-tests 1, 2, 4, 5

Information Element	Units	Value/remark GNSS All
klobucharModel		
dataID		00
alfa0	Seconds	4.6566129 10E-9
alfa1	sec/semi-circle	1.4901161 10E-8
alfa2	$sec/(semi\text{-}circle)^2$	-5.96046 10E-8
alfa3	$sec/(semi\text{-}circle)^3$	-5.96046 10E-8
beta0	Seconds	79872
beta1	sec/semi-circle	65536
beta2	$sec/(semi\text{-}circle)^2$	-65536
beta3	$sec/(semi\text{-}circle)^3$	-393216
neQuickModel		Not present

GNSS-IonosphericModel: sub-test 3

Information Element	Units	Value/remark GNSS All
GNSS-IonospericModel		
klobucharModel		Not present
neQuickModel		
ai0		FFS
ai1		FFS
ai2		FFS
ionoStormFlag1		0
ionoStormFlag2		0
ionoStormFlag3		0
ionoStormFlag4		0
ionoStormFlag5		0

GNSS TIME MODEL LIST:

GNSS-TimeModelList: sub-test 5

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
gnss-TimeModelRefTime		1800 (s)	225000 (s)	225000 (s)
tA0		0	0	0
gnss-TO-ID		1 (GPS)	1 (GPS)	1 (GPS)
weekNumber		1669	1557	1557
deltaT		TBD	TBD	TBD

GNSS NAVIGATION MODEL:

GNSS-NavigationModel: sub-test 1

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
nonBroadcastFlag		0	0	0
gnss-SatelliteList		(SIZE) 9	(SIZE) 9	(SIZE) 9

GNSS-NavModelSatelliteElement: sub-test 1

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
svID		PRNs: 1, 7, 8, 11, 17, 19, 20, 27, 28	PRNs: 5, 7, 10, 11, 13, 15, 17 [TBD], [TBD]	PRNs: 5, 7, 10, 11, 13, 15, 17 [TBD], [TBD]
svHealth		0	0	0
iod		2	2	2

GNSS-NavModelSatelliteElement: sub-test 1

Information Element	Units	Value/remark GNSS All
gnss-ClockModel		
nav-ClockModel		
navToc		See file: GNSS Navigation Model subtest1 XX.csv
navaf2		See file: GNSS Navigation Model subtest1 XX.csv
navaf1		See file: GNSS Navigation Model subtest1 XX.csv
navaf0		See file: GNSS Navigation Model subtest1 XX.csv
navTgd		See file: GNSS Navigation Model subtest1 XX.csv
gnss-OrbitModel		
nav-KeplerianSet		
navURA		See file: GNSS Navigation Model subtest1 XX.csv
navFitFlag		See file: GNSS Navigation Model subtest1 XX.csv
navToe		See file: GNSS Navigation Model subtest1 XX.csv
navOmega		See file: GNSS Navigation Model subtest1 XX.csv
navDeltaN		See file: GNSS Navigation Model subtest1 XX.csv
navM0		See file: GNSS Navigation Model subtest1 XX.csv
navOmegaADot		See file: GNSS Navigation Model subtest1 XX.csv
navE		See file: GNSS Navigation Model subtest1 XX.csv
navIDot		See file: GNSS Navigation Model subtest1 XX.csv
navAPowerHalf		See file: GNSS Navigation Model subtest1 XX.csv
navI0		See file: GNSS Navigation Model subtest1 XX.csv
navOmegaA0		See file: GNSS Navigation Model subtest1 XX.csv
navCrs		See file: GNSS Navigation Model subtest1 XX.csv
navCis		See file: GNSS Navigation Model subtest1 XX.csv
navCus		See file: GNSS Navigation Model subtest1 XX.csv
navCrc		See file: GNSS Navigation Model subtest1 XX.csv
navCic		See file: GNSS Navigation Model subtest1 XX.csv
navCuc		See file: GNSS Navigation Model subtest1 XX.csv

GNSS-NavigationModel: sub-test 2

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
nonBroadcastFlag		0	0	0
gnss-SatelliteList		(SIZE) 7	(SIZE) 7	(SIZE) 7

GNSS-NavModelSatelliteElement: sub-test 2

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
svID		Slot Numbers: 3, 4, 9, 10, 18, 19, 20	Slot Numbers: 7, 8, 9, 10, 18, 19, 20	Slot Numbers: 7, 8, 9, 10, 18, 19, 20
svHealth		01111000	01111000	01111000
iod		13	69	69

GNSS-NavModelSatelliteElement: sub-test 2

Information Element	Units	Value/remark GNSS All
gnss-ClockModel		
glonass-ClockModel		
gloTau		See file: GNSS Navigation Model subtest2 XX.csv
gloGamma		See file: GNSS Navigation Model subtest2 XX.csv
gloDeltaTau		See file: GNSS Navigation Model subtest2 XX.csv
gnss-OrbitModel		
glonass-ECEF		
gloEn		See file: GNSS Navigation Model subtest2 XX.csv
gloP1		See file: GNSS Navigation Model subtest2 XX.csv
gloP2		See file: GNSS Navigation Model subtest2 XX.csv
glom		See file: GNSS Navigation Model subtest2 XX.csv
gloX		See file: GNSS Navigation Model subtest2 XX.csv
gloXdot		See file: GNSS Navigation Model subtest2 XX.csv
gloXdotdot		See file: GNSS Navigation Model subtest2 XX.csv
gloY		See file: GNSS Navigation Model subtest2 XX.csv
gloYdot		See file: GNSS Navigation Model subtest2 XX.csv
gloYdotdot		See file: GNSS Navigation Model subtest2 XX.csv
gloZ		See file: GNSS Navigation Model subtest2 XX.csv
gloZdot		See file: GNSS Navigation Model subtest2 XX.csv
gloZdotdot		See file: GNSS Navigation Model subtest2 XX.csv

GNSS-NavigationModel: sub-test 3

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
nonBroadcastFlag		0	0	0
gnss-SatelliteList		(SIZE) FFS	(SIZE) FFS	(SIZE) FFS

GNSS-NavModelSatelliteElement: sub-test 3

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
svID		FFS	FFS	FFS
svHealth		0	0	0
iod		FFS	FFS	FFS

GNSS-NavModelSatelliteElement: sub-test 3

Information Element	Units	Value/remark GNSS All
gnss-ClockModel		
standardClockModelList		(SIZE) 1
stanClockToc		See file: GNSS Navigation Model subtest3 XX.csv
stanClockAF2		See file: GNSS Navigation Model subtest3 XX.csv
stanClockAF1		See file: GNSS Navigation Model subtest3 XX.csv
stanClockAF0		See file: GNSS Navigation Model subtest3 XX.csv
stanClockTgd		See file: GNSS Navigation Model subtest3 XX.csv
gnss-OrbitModel		
keplerianSet		
keplerToe		See file: GNSS Navigation Model subtest3 XX.csv
keplerW		See file: GNSS Navigation Model subtest3 XX.csv
keplerDeltaN		See file: GNSS Navigation Model subtest3 XX.csv
keplerM0		See file: GNSS Navigation Model subtest3 XX.csv
keplerOmegaDot		See file: GNSS Navigation Model subtest3 XX.csv
keplerE		See file: GNSS Navigation Model subtest3 XX.csv
keplerIDot		See file: GNSS Navigation Model subtest3 XX.csv
keplerAPowerHalf		See file: GNSS Navigation Model subtest3 XX.csv
keplerI0		See file: GNSS Navigation Model subtest3 XX.csv
keplerOmega0		See file: GNSS Navigation Model subtest3 XX.csv
keplerCrs		See file: GNSS Navigation Model subtest3 XX.csv
keplerCis		See file: GNSS Navigation Model subtest3 XX.csv
keplerCus		See file: GNSS Navigation Model subtest3 XX.csv
keplerCrc		See file: GNSS Navigation Model subtest3 XX.csv
keplerCic		See file: GNSS Navigation Model subtest3 XX.csv
keplerCuc		See file: GNSS Navigation Model subtest3 XX.csv

GNSS-NavigationModel: sub-test 5

Information Element	Units	Value/remark GNSS All
GNSS-GenericAssistData		(SIZE) 2
gnss-ID		0 (gps)
GNSS-NavigationModel		See GNSS-NavigationModel: sub-test 5
gnss-ID		4 (glonass)
GNSS-NavigationModel		See GNSS-NavigationModel: sub-test 2

GNSS-NavigationModel: sub-test 5

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
nonBroadcastFlag		0	0	0
gnss-SatelliteList		(SIZE) 10	(SIZE) 7	(SIZE) 7

GNSS-NavModelSatelliteElement: sub-test 5

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
svID		PRNs: 1, 4, 7, 8, 11, 17, 19, 20, 27, 28	PRNs: 5, 7, 10, 11, 13, 15, 17	PRNs: 5, 7, 10, 11, 13, 15, 17
svHealth		0	0	0
iod		2	2	2

GNSS-NavModelSatelliteElement: sub-test 5

Information Element	Units	Value/remark GNSS All
gnss-ClockModel		
nav-ClockModel		
navToc		See file: GNSS Navigation Model subtest5 XX.csv
navaf2		See file: GNSS Navigation Model subtest5 XX.csv
navaf1		See file: GNSS Navigation Model subtest5 XX.csv
navaf0		See file: GNSS Navigation Model subtest5 XX.csv
navTgd		See file: GNSS Navigation Model subtest5 XX.csv
gnss-OrbitModel		
nav-KeplerianSet		
navURA		See file: GNSS Navigation Model subtest5 XX.csv
navFitFlag		See file: GNSS Navigation Model subtest5 XX.csv
navToe		See file: GNSS Navigation Model subtest5 XX.csv
navOmega		See file: GNSS Navigation Model subtest5 XX.csv
navDeltaN		See file: GNSS Navigation Model subtest5 XX.csv
navM0		See file: GNSS Navigation Model subtest5 XX.csv
navOmegaADot		See file: GNSS Navigation Model subtest5 XX.csv
navE		See file: GNSS Navigation Model subtest5 XX.csv
navIDot		See file: GNSS Navigation Model subtest5 XX.csv
navAPowerHalf		See file: GNSS Navigation Model subtest5 XX.csv
navI0		See file: GNSS Navigation Model subtest5 XX.csv
navOmegaA0		See file: GNSS Navigation Model subtest5 XX.csv
navCrs		See file: GNSS Navigation Model subtest5 XX.csv
navCis		See file: GNSS Navigation Model subtest5 XX.csv
navCus		See file: GNSS Navigation Model subtest5 XX.csv
navCrc		See file: GNSS Navigation Model subtest5 XX.csv
navCic		See file: GNSS Navigation Model subtest5 XX.csv
navCuc		See file: GNSS Navigation Model subtest5 XX.csv

GNSS ACQUISITION ASSISTANCE:

GNSS-AcquisitionAssistance: sub-test 1

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
GNSS-AcquisitionAssistance				
gnss-SignalID		0 (GPS L1 C/A)	0 (GPS L1 C/A	0 (GPS L1 C/A)
gnss-AcquisitionAssistList		(SIZE) 9	(SIZE) 9	(SIZE) 9

GNSS-AcquisitionAssistElement: sub-test 1

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
svID		PRNs: 1, 7, 8, 11, 17, 19, 20, 27, 28	PRNs: 5, 7, 10, 11, 13, 15, 17 [TBD], [TBD]	PRNs: 5, 7, 10, 11, 13, 15, 17 [TBD], [TBD]

GNSS-AcquisitionAssistElement: sub-test 1

Information Element	Units	Value/remark GNSS All
doppler0		Time varying. See file: GNSS Acquisition Assistance subtest1 XX.csv (Note)
doppler1		Time varying. See file: GNSS Acquisition Assistance subtest1 XX.csv (Note)
dopplerUncertainty		Time varying. See file: GNSS Acquisition Assistance subtest1 XX.csv (Note)
codePhase		Time varying. See file: GNSS Acquisition Assistance subtest1 XX.csv (Note)
intCodePhase		Time varying. See file: GNSS Acquisition Assistance subtest1 XX.csv (Note)
codePhaseSearchWindow		Time varying. See file: GNSS Acquisition Assistance subtest1 XX.csv (Note)
azimuth		Time varying. See file: GNSS Acquisition Assistance subtest1 XX.csv (Note)
elevation		Time varying. See file: GNSS Acquisition Assistance subtest1 XX.csv (Note)
codePhase1023		Time varying. See file: GNSS Acquisition Assistance subtest1 XX.csv (Note)
Note: This field is “Time varying” and its value depends on the “current gnss-TimeOfDay”. The value of this field to be used shall be determined by taking the “current gnss-TimeOfDay” value and selecting the field value in the GNSS Acquisition Assistance subtestX.csv file corresponding to the value of “current gnss-TimeOfDay”.		

GNSS-AcquisitionAssistance: sub-test 2

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
GNSS-AcquisitionAssistance				
gnss-SignalID		0 (GLONASS G1)	0 (GLONASS G1)	0 (GLONASS G1)
gnss-AcquisitionAssistList		(SIZE) 7	(SIZE) 7	(SIZE) 7

GNSS-AcquisitionAssistElement: sub-test 2

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
svID		Slot Numbers: 3, 4, 9, 10, 18, 19, 20	Slot Numbers: 7, 8, 9, 10, 18, 19, 20	Slot Numbers: 7, 8, 9, 10, 18, 19, 20

GNSS-AcquisitionAssistElement: sub-test 2

Information Element	Units	Value/remark GNSS All
doppler0		Time varying. See file: GNSS Acquisition Assistance subtest2 XX.csv (Note)
doppler1		Time varying. See file: GNSS Acquisition Assistance subtest2 XX.csv (Note)
dopplerUncertainty		Time varying. See file: GNSS Acquisition Assistance subtest2 XX.csv (Note)
codePhase		Time varying. See file: GNSS Acquisition Assistance subtest2 XX.csv (Note)
intCodePhase		Time varying. See file: GNSS Acquisition Assistance subtest2 XX.csv (Note)
codePhaseSearchWindow		Time varying. See file: GNSS Acquisition Assistance subtest2 XX.csv (Note)
azimuth		Time varying. See file: GNSS Acquisition Assistance subtest2 XX.csv (Note)
elevation		Time varying. See file: GNSS Acquisition Assistance subtest2 XX.csv (Note)
codePhase1023		Time varying. See file: GNSS Acquisition Assistance subtest2 XX.csv (Note)
Note: This field is “Time varying” and its value depends on the “current gnss-TimeOfDay”. The value of this field to be used shall be determined by taking the “current gnss-TimeOfDay” value and selecting the field value in the GNSS Acquisition Assistance subtestX.csv file corresponding to the value of “current gnss-TimeOfDay”.		

GNSS-AcquisitionAssistance: sub-test 3

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
GNSS-AcquisitionAssistance				
gnss-SignalID		0 (Galileo E1)	0 (Galileo E1)	0 (Galileo E1)
gnss-AcquisitionAssistList		(SIZE) FFS	(SIZE) FFS	(SIZE) FFS

GNSS-AcquisitionAssistElement: sub-test 3

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
svID		SV IDs: FFS	SV IDs: FFS	SV IDs: FFS

GNSS-AcquisitionAssistElement: sub-test 3

Information Element	Units	Value/remark GNSS All
doppler0		Time varying. See file: GNSS Acquisition Assistance subtest3 XX.csv (Note)
doppler1		Time varying. See file: GNSS Acquisition Assistance subtest3 XX.csv (Note)
dopplerUncertainty		Time varying. See file: GNSS Acquisition Assistance subtest3 XX.csv (Note)
codePhase		Time varying. See file: GNSS Acquisition Assistance subtest3 XX.csv (Note)
intCodePhase		Time varying. See file: GNSS Acquisition Assistance subtest3 XX.csv (Note)
codePhaseSearchWindow		Time varying. See file: GNSS Acquisition Assistance subtest3 XX.csv (Note)
azimuth		Time varying. See file: GNSS Acquisition Assistance subtest3 XX.csv (Note)
elevation		Time varying. See file: GNSS Acquisition Assistance subtest3 XX.csv (Note)
codePhase1023		Time varying. See file: GNSS Acquisition Assistance subtest3 XX.csv (Note)
Note: This field is “Time varying” and its value depends on the “current gnss-TimeOfDay”. The value of this field to be used shall be determined by taking the “current gnss-TimeOfDay” value and selecting the field value in the GNSS Acquisition Assistance subtestX.csv file corresponding to the value of “current gnss-TimeOfDay”.		

GNSS-AcquisitionAssistance: sub-test 5

Information Element	Units	Value/remark GNSS All
GNSS-GenericAssistData		(SIZE) 2
gnss-ID		0 (gps)
GNSS-AcquisitionAssistance		See GNSS-AcquisitionAssistance: sub-test 5
gnss-ID		4 (glonass)
GNSS-AcquisitionAssistance		See GNSS-AcquisitionAssistance: sub-test 2

GNSS-AcquisitionAssistance: sub-test 5

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
GNSS-AcquisitionAssistance				
gnss-SignalID		0 (GPS L1 C/A)	0 (GPS L1 C/A	0 (GPS L1 C/A)
gnss-AcquisitionAssistList		(SIZE) 10	(SIZE) 7	(SIZE) 7

GNSS-AcquisitionAssistElement: sub-test 5

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
svID		PRNs: 1, 4, 7, 8, 11, 17, 19, 20, 27, 28	PRNs: 5, 7, 10, 11, 13, 15, 17	PRNs: 5, 7, 10, 11, 13, 15, 17

GNSS-AcquisitionAssistElement: sub-test 5

Information Element	Units	Value/remark GNSS All
doppler0		Time varying. See file: GNSS Acquisition Assistance subtest5 XX.csv (Note)
doppler1		Time varying. See file: GNSS Acquisition Assistance subtest5 XX.csv (Note)
dopplerUncertainty		Time varying. See file: GNSS Acquisition Assistance subtest5 XX.csv (Note)
codePhase		Time varying. See file: GNSS Acquisition Assistance subtest5 XX.csv (Note)
intCodePhase		Time varying. See file: GNSS Acquisition Assistance subtest5 XX.csv (Note)
codePhaseSearchWindow		Time varying. See file: GNSS Acquisition Assistance subtest5 XX.csv (Note)
azimuth		Time varying. See file: GNSS Acquisition Assistance subtest5 XX.csv (Note)
elevation		Time varying. See file: GNSS Acquisition Assistance subtest5 XX.csv (Note)
codePhase1023		Time varying. See file: GNSS Acquisition Assistance subtest5 XX.csv (Note)
Note: This field is “Time varying” and its value depends on the “current gnss-TimeOfDay”. The value of this field to be used shall be determined by taking the “current gnss-TimeOfDay” value and selecting the field value in the GNSS Acquisition Assistance subtestX.csv file corresponding to the value of “current gnss-TimeOfDay”.		

GNSS ALMANAC:

GNSS-Almanac: sub-test 1

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
GNSS-Almanac				
weekNumber		1669	1557	1557
toa		TBD	TBD	TBD
ioda		Not present	Not present	Not present
completeAlmanacProvided		1 (TRUE)	1 (TRUE)	1 (TRUE)
gnss-AlmanacList		(SIZE) 24	(SIZE) 24	(SIZE) 24

GNSS-AlmanacElement: sub-test 1

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
keplerianNAV-Almanac				
svID		PRNs: 1, 2, 4, 5, 6, 7, 9, 10, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 29, 30	PRNs: 1, 2, 3, 4, 5, 6, 7, 8, 11, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 25, 27, 28, 30, 31	PRNs: 1, 2, 3, 4, 5, 6, 7, 8, 11, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 25, 27, 28, 30, 31

GNSS-AlmanacElement: sub-test 1

Information Element	Units	Value/remark GNSS All
navAlmE		See file: GNSS Almanac subtest1 XX.csv
navAlmDeltaI		See file: GNSS Almanac subtest1 XX.csv
navAlmOMEGADOT		See file: GNSS Almanac subtest1 XX.csv
navAlmSVHealth		See file: GNSS Almanac subtest1 XX.csv
navAlmSqrtA		See file: GNSS Almanac subtest1 XX.csv
navAlmOMEGAo		See file: GNSS Almanac subtest1 XX.csv
navAlmOmega		See file: GNSS Almanac subtest1 XX.csv
navAlmMo		See file: GNSS Almanac subtest1 XX.csv
navAlmaf0		See file: GNSS Almanac subtest1 XX.csv
navAlmaf1		See file: GNSS Almanac subtest1 XX.csv

GNSS-Almanac: sub-test 2

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
GNSS-Almanac				
completeAlmanacProvided		1 (TRUE)	1 (TRUE)	1 (TRUE)
gnss-AlmanacList		(SIZE) 24	(SIZE) 24	(SIZE) 24

GNSS-AlmanacElement: sub-test 2

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
keplerianGLONASS				
gloAlm-NA		1	680	680
gloAlmnA		Slot Numbers: 1, 2, 3 …….22, 23, 24	Slot Numbers: 1, 2, 3 …….22, 23, 24	Slot Numbers: 1, 2, 3 …….22, 23, 24
gloAlmHA		TBD, 1, 5, 6, TBD, 1, 5, 6, -2, -7, 0, TBD, -2, -7, 0, TBD, 4, -3, 3, 2, 4, -3, 3, 2	TBD, 1, 5, 6, TBD, 1, 5, 6, -2, -7, 0, TBD, -2, -7, 0, TBD, 4, -3, 3, 2, 4, -3, 3, 2	TBD, 1, 5, 6, TBD, 1, 5, 6, -2, -7, 0, TBD, -2, -7, 0, TBD, 4, -3, 3, 2, 4, -3, 3, 2

GNSS-AlmanacElement: sub-test 2

Information Element	Units	Value/remark GNSS All
gloAlmLambdaA		See file: GNSS Almanac subtest2 XX.csv
gloAlmtlambdaA		See file: GNSS Almanac subtest2 XX.csv
gloAlmDeltaIa		See file: GNSS Almanac subtest2 XX.csv
gloAlmDeltaTA		See file: GNSS Almanac subtest2 XX.csv
gloAlmDeltaTdotA		See file: GNSS Almanac subtest2 XX.csv
gloAlmEpsilonA		See file: GNSS Almanac subtest2 XX.csv
gloAlmOmegaA		See file: GNSS Almanac subtest2 XX.csv
gloAlmTauA		See file: GNSS Almanac subtest2 XX.csv
gloAlmCA		See file: GNSS Almanac subtest2 XX.csv
gloAlmMA		See file: GNSS Almanac subtest2 XX.csv

GNSS-Almanac: sub-test 3

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
GNSS-Almanac				
weekNumber		FFS	FFS	FFS
toa		FFS	FFS	FFS
ioda		Not present	Not present	Not present
completeAlmanacProvided		1 (TRUE)	1 (TRUE)	1 (TRUE)
gnss-AlmanacList		(SIZE) 27	(SIZE) 27	(SIZE) 27

GNSS-Almanac: sub-test 3

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
keplerianAlmanacSet				
svID		SV IDs: FFS	SV IDs: FFS	SV IDs: FFS

GNSS-AlmanacElement: sub-test 3

Information Element	Units	Value/remark GNSS All
kepAlmanacE		See file: GNSS Almanac subtest3 XX.csv
kepAlmanacDeltaI		See file: GNSS Almanac subtest3 XX.csv
kepAlmanacOmegaDot		See file: GNSS Almanac subtest3 XX.csv
kepSVHealth		See file: GNSS Almanac subtest3 XX.csv
kepAlmanacAPowerHalf		See file: GNSS Almanac subtest3 XX.csv
kepAlmanacOmega0		See file: GNSS Almanac subtest3 XX.csv
kepAlmanacW		See file: GNSS Almanac subtest3 XX.csv
kepAlmanacM0		See file: GNSS Almanac subtest3 XX.csv
kepAlmanacAF0		See file: GNSS Almanac subtest3 XX.csv
kepAlmanacAF1		See file: GNSS Almanac subtest3 XX.csv

GNSS-Almanac: sub-test 5

Information Element	Units	Value/remark GNSS All
GNSS-GenericAssistData		(SIZE) 2
gnss-ID		0 (gps)
GNSS-Almanac		See GNSS-Almanac: sub-test 5
gnss-ID		4 (glonass)
GNSS-Almanac		See GNSS-Almanac: sub-test 2

GNSS-Almanac: sub-test 5

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
GNSS-Almanac				
weekNumber		1669	1557	1557
toa		TBD	TBD	TBD
ioda		Not present	Not present	Not present
completeAlmanacProvided		1 (TRUE)	1 (TRUE)	1 (TRUE)
gnss-AlmanacList		(SIZE) 27	(SIZE) 27	(SIZE) 27

GNSS-AlmanacElement: sub-test 5

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
keplerianNAV-Almanac				
svID		PRNs: 1, 2, 4, 5, 6, 7, 9, 10, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 29, 30, [TBD], [TBD], [TBD]	PRNs: 1, 2, 3, 4, 5, 6, 7, 8, 11, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 25, 27, 28, 30, 31, [TBD], [TBD], [TBD]	PRNs: 1, 2, 3, 4, 5, 6, 7, 8, 11, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 25, 27, 28, 30, 31, [TBD], [TBD], [TBD]

GNSS-AlmanacElement: sub-test 5

Information Element	Units	Value/remark GNSS All
navAlmE		See file: GNSS Almanac subtest5 XX.csv
navAlmDeltaI		See file: GNSS Almanac subtest5 XX.csv
navAlmOMEGADOT		See file: GNSS Almanac subtest5 XX.csv
navAlmSVHealth		See file: GNSS Almanac subtest5 XX.csv
navAlmSqrtA		See file: GNSS Almanac subtest5 XX.csv
navAlmOMEGAo		See file: GNSS Almanac subtest5 XX.csv
navAlmOmega		See file: GNSS Almanac subtest5 XX.csv
navAlmMo		See file: GNSS Almanac subtest5 XX.csv
navAlmaf0		See file: GNSS Almanac subtest5 XX.csv
navAlmaf1		See file: GNSS Almanac subtest5 XX.csv

GNSS UTC MODEL:

GNSS-UTC-Model: sub-test 5

Information Element	Units	Value/remark GNSS All
GNSS-UTC-Model		
utcModel1		

UTC-ModelSet1: sub-test 5

Information Element	Units	Value/remark GNSS All
gnss-Utc-A1		0
gnss-Utc-A0		0
gnss-Utc-Tot		40
gnss-Utc-WNt		9
gnss-Utc-DeltaTls		6
gnss-Utc-WNlsf		TBD
gnss-Utc-DN		2
gnss-Utc-DeltaTlsf		14

GNSS AUXILIARY INFORMATION:

GNSS-AuxiliaryInformation: sub-test 1

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
GNSS-AuxiliaryInformation				
gnss-ID-GPS		(SIZE) 9	(SIZE) 9	(SIZE) 9

GNSS-ID-GPS-SatElement: sub-test 1

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
svID		PRNs: 1, 7, 8, 11, 17, 19, 20, 27, 28	PRNs: 5, 7, 10, 11, 13, 15, 17 [TBD], [TBD]	PRNs: 5, 7, 10, 11, 13, 15, 17 [TBD], [TBD]
signalsAvailable		L1C and others as supported by the UE	L1C and others as supported by the UE	L1C and others as supported by the UE

GNSS-AuxiliaryInformation: sub-test 2

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
GNSS-AuxiliaryInformation				
gnss-ID-GLONASS		(SIZE) 7	(SIZE) 7	(SIZE) 7

GNSS-ID-GLONASS-SatElement: sub-test 2

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
svID		Slot Numbers: 3, 4, 9, 10, 18, 19, 20	Slot Numbers: 7, 8, 9, 10, 18, 19, 20	Slot Numbers: 7, 8, 9, 10, 18, 19, 20
signalsAvailable		G1	G1	G1
channelNumber		5, 6, -2, -7, -3, 3, 2	5, 6, -2, -7, -3, 3, 2	5, 6, -2, -7, -3, 3, 2

GNSS- AuxiliaryInformation: sub-test 5

Information Element	Units	Value/remark GNSS All
GNSS-GenericAssistData		(SIZE) 2
gnss-ID		0 (gps)
GNSS-AuxiliaryInformation		See GNSS-AuxiliaryInformation: sub-test 5
gnss-ID		4 (glonass)
GNSS-AuxiliaryInformation		See GNSS-AuxiliaryInformation: sub-test 2

GNSS-AuxiliaryInformation: sub-test 5

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
GNSS-AuxiliaryInformation				
gnss-ID-GPS		(SIZE) 10	(SIZE) 7	(SIZE) 7

GNSS-ID-GPS-SatElement: sub-test 5

Information Element	Units	Value/remark GNSS #1	Value/remark GNSS #2	Value/remark GNSS #5
svID		PRNs: 1, 4, 7, 8, 11, 17, 19, 20, 27, 28	PRNs: 5, 7, 10, 11, 13, 15, 17	PRNs: 5, 7, 10, 11, 13, 15, 17
signalsAvailable		L1C and others as supported by the UE	L1C and others as supported by the UE	L1C and others as supported by the UE

GNSS GENERIC ASSISTANCE DATA

GNSS- GenericAssistData: sub-test 1

Information Element	Units	Value/remark GNSS All
GNSS-GenericAssistData		(SIZE) 1
gnss-ID		0 (gps)

GNSS- GenericAssistData: sub-test 2

Information Element	Units	Value/remark GNSS All
GNSS-GenericAssistData		(SIZE) 1
gnss-ID		4 (glonass)

GNSS- GenericAssistData: sub-test 3

Information Element	Units	Value/remark GNSS All
GNSS-GenericAssistData		(SIZE) 1
gnss-ID		3 (galileo)

GNSS- GenericAssistData: sub-test 5

Information Element	Units	Value/remark GNSS All
GNSS-GenericAssistData		(SIZE) 2
gnss-ID		0 (gps)
gnss-ID		4 (glonass)

7 OTDOA

7.1 OTDOA Assistance data for OTDOA signalling tests

7.1.1 General

This subclause defines the OTDOA assistance data that shall be used for the OTDOA signalling tests defined in TS 37.571-2 [7].

7.1.2 OTDOA Assistance Data

This subclause defines the OTDOA assistance data elements which shall be provided to the UE in the OTDOA signalling tests defined in TS 37.571-2 [7].

Editor's note: the following information is currently also given in 37.571-2. A decision is needed as to which specification will maintain it.

OTDOA REFERENCE CELL INFO:

OTDOA-ReferenceCellInfo

Information Element	Value/remark	Comment
OTDOA-ReferenceCellInfo		
physCellId	0	
cellGlobalId	'0000 0000'B	
earfcnRef	Not present	Same as the serving cell
antennaPortConfig	Not present	Same as the serving cell
cpLength	Normal	
prsInfo SEQUENCE		
prs-Bandwidth	PRS are transmitted over the used system bandwidth as specified in TS 36.508 [20]	
prs-ConfigurationIndex	2	
numDL-Frames	sf-1	
prs-MutingInfo-r9	Not present	PRS muting is not used.

OTDOA NEIGHBOUR CELL INFO LIST:

OTDOA-NeighbourCellInfoList

Information Element	Value/remark	Comment
OTDOA-NeighbourCellInfoList ::= SEQUENCE (SIZE(1..3)) OF SEQUENCE		
SEQUENCE (SIZE(1)) OF SEQUENCE		Cell 2
physCellId	2	
cellGlobalId	'0000 0010'B	
earfcn	Not present	Same as for the reference cell
cpLength	Not present	Same as for the reference cell
prsInfo	Not present	Same as for the reference cell
antennaPortConfig	Not present	Same as for the reference cell
slotNumberOffset	Not present	Slot timing is the same as for reference cell
prs-SubframeOffset	Not present	
expectedRSTD	8192	Value 0
expectedRSTD-Uncertainty	10	About 1 μs
SEQUENCE		Cell 4
physCellId	4	
cellGlobalId	'0000 0100'B	
earfcn	Not present	Same as for the reference cell
cpLength	Not present	Same as for the reference cell
prsInfo	Not present	Same as for the reference cell
antennaPortConfig	Not present	Same as for the reference cell
slotNumberOffset	Not present	Slot timing is the same as for reference cell
prs-SubframeOffset	Not present	
expectedRSTD	8192	Value 0
expectedRSTD-Uncertainty	10	About 1 μs

7.2 OTDOA Assistance data for OTDOA measurement tests

7.2.1 General

This subclause defines the OTDOA assistance data that shall be used for the OTDOA measurement tests defined in TS 37.571-1 [6].

7.2.2 OTDOA Assistance Data

This subclause defines the OTDOA assistance data elements which shall be provided to the UE in the OTDOA measurement tests defined in TS 37.571-1 [6].

OTDOA REFERENCE CELL INFO:

OTDOA-ReferenceCellInfo for test cases 7.1.1 and 7.1.2

Information Element	Value/remark	Comment
OTDOA-ReferenceCellInfo		Cell 1
physCellId	0	Set according sub-clause 4.7.1 and Table 9.1.1.5-1 and Table 9.1.2.5-1 in TS 37.571-1 [6]
cellGlobalId	'0000 0000'B	
earfcnRef	Not present	Same as the serving cell
antennaPortConfig	Not present	Same as the serving cell
cpLength	Normal	
prsInfo SEQUENCE		
prs-Bandwidth	n50	
prs-ConfigurationIndex	Test case 7.1.1: 1131 Test case 7.1.2: 1134	
numDL-Frames	sf-1	
prs-MutingInfo-r9 CHOICE		
po8-r9	‘1111 0000’	

OTDOA-ReferenceCellInfo for test cases 7.1.3 and 7.1.4

Information Element	Value/remark	Comment
OTDOA-ReferenceCellInfo		Cell 1
physCellId	0	Set according sub-clause 4.7.1 and Table 9.1.3.5-1 and Table 9.1.4.5-1 in TS 37.571-1 [6]
cellGlobalId	'0000 0000'B	
earfcnRef	Not present	Same as the serving cell
antennaPortConfig	Not present	Same as the serving cell
cpLength	Normal	
prsInfo SEQUENCE		
prs-Bandwidth	Test 1, 2: n6 Test 3, 4: n50	
prs-ConfigurationIndex	2	
numDL-Frames	Test,1, 2: sf-6 Test 3, 4: sf-1	
prs-MutingInfo-r9 CHOICE		
po8-r9	‘1111 0000’	

OTDOA NEIGHBOUR CELL INFO LIST:

OTDOA-NeighbourCellInfoList for test cases 7.1.1 and 7.1.2

Information Element	Value/remark	Comment
OTDOA-NeighbourCellInfoList ::= SEQUENCE (SIZE(1)) OF SEQUENCE		
SEQUENCE (SIZE(15)) OF SEQUENCE	Sequence contains 15 instances of the following data.	
physCellId	See table of Sequence data values below	
cellGlobalId	See table of Sequence data values below	
earfcn	Not present	Same as for the reference cell
cpLength	Not present	Same as for the reference cell
prsInfo		
prs-Bandwidth	n50	
prs-ConfigurationIndex	Test case 7.1.1: 1131 Test case 7.1.2: 1134	
numDL-Frames	sf-1	
prs-MutingInfo-r9 CHOICE		
po8-r9	See table of Sequence data values below	
antennaPortConfig	Not present	Same as for the reference cell
slotNumberOffset	Not present	Slot timing is the same as for reference cell
prs-SubframeOffset	Not present	
expectedRSTD	See table of Sequence data values below	
expectedRSTD-Uncertainty	51	About 5 µs

Sequence data values for 15 instances of sequence for test cases 7.1.1 and 7.1.2

Cell	Value physCellId	Value cellGlobalId	Value po8-r9	Value expectedRSTD	Comment
Cell 2	6 (Note 1)	‘0000 0110’B	‘0000 1111’	8222	Note 2
Cell 3	12 (Note 1)	‘0000 1100’B	‘1111 0000’	8222	Note 3
Dummy cell	1	'0000 0001'B	‘0000 1111’	8253	Note 4
Dummy cell	2	'0000 0010'B	‘1111 0000’	8221	Note 4
Dummy cell	3	'0000 0011'B	‘0000 1111’	8211	Note 4
Dummy cell	8	'0000 1000'B	‘1111 0000’	8233	Note 4
Dummy cell	10	'0000 1010'B	‘1111 0000’	8226	Note 4
Dummy cell	11	'0000 1011'B	‘0000 1111’	8232	Note 4
Dummy cell	16	'0001 0000'B	‘1111 0000’	8223	Note 4
Dummy cell	111	'0110 1111'B	‘0000 1111’	8236	Note 4
Dummy cell	118	‘0111 0110’B	‘0000 1111’	8223	Note 4
Dummy cell	119	‘0111 0111’B	‘1111 0000’	8221	Note 4
Dummy cell	120	‘0111 1000’B	‘0000 1111’	8223	Note 4
Dummy cell	122	‘0111 1010’B	‘1111 0000’	8243	Note 4
Dummy cell	125	‘0111 1101’B	‘0000 1111’	8253	Note 4

Notes:
1. Set according sub-clause 4.7.1 and Table 9.1.1.5-1 and Table 9.1.2.5-1 in TS 37.571-1 [6]
2. Data for cell 2 is used at a random position in the first 7 instances of the sequence
3. Data for cell 3 is used at a random position in the final 8 instances of the sequence
4. Data for this cell is used at any position in the 15 instances of the sequence

OTDOA-NeighbourCellInfoList for test cases 7.1.3 and 7.1.4

Information Element	Value/remark	Comment
OTDOA-NeighbourCellInfoList ::= SEQUENCE (SIZE(1)) OF SEQUENCE		
SEQUENCE (SIZE(15)) OF SEQUENCE	Sequence contains 15 instances of the following data.	
physCellId	See table of Sequence data values below	
cellGlobalId	See table of Sequence data values below	
earfcn	Not present	Same as for the reference cell
cpLength	Not present	Same as for the reference cell
prsInfo		
prs-Bandwidth	Test 1, 2: n6 Test 3, 4: n50	
prs-ConfigurationIndex	2	
numDL-Frames	Test,1, 2: sf-6 Test 3, 4: sf-1	
prs-MutingInfo-r9 CHOICE		
po8-r9	See table of Sequence data values below	
antennaPortConfig	Not present	Same as for the reference cell
slotNumberOffset	Not present	Slot timing is the same as for reference cell
prs-SubframeOffset	Not present	
expectedRSTD	See table of Sequence data values below	
expectedRSTD-Uncertainty	51	About 5 μs

Sequence data values for 15 instances of sequence for test cases 7.1.3 and 7.1.4

Cell	Value physCellId	Value cellGlobalId	Value po8-r9	Value expectedRSTD	Comment
Cell 2	Test 1: 6 Test 2: 7 Test 3: 6 Test 4: 9 (Note)	Test 1: '0000 0110'B Test 2: '0000 0111'B Test 3: '0000 0110'B Test 4: '0000 1001'B	'1111 0000'	Test 1: 8222 Test 2: 8192 Test 3: 8192 Test 4: 8161	
Dummy cell	1	'0000 0001'B	'0000 1111'	8253	
Dummy cell	2	'0000 0010'B	'1111 0000'	8221	
Dummy cell	3	'0000 0011'B	'0000 1111'	8211	
Dummy cell	8	'0000 1000'B	'1111 0000'	8233	
Dummy cell	10	'0000 1010'B	'1111 0000'	8226	
Dummy cell	11	'0000 1011'B	'0000 1111'	8232	
Dummy cell	16	'0001 0000'B	'1111 0000'	8223	
Dummy cell	111	'0110 1111'B	'0000 1111'	8236	
Dummy cell	118	'0111 0110'B	'0000 1111'	8223	
Dummy cell	119	'0111 0111'B	'1111 0000'	8221	
Dummy cell	120	'0111 1000'B	'0000 1111'	8223	
Dummy cell	122	'0111 1010'B	'1111 0000'	8243	
Dummy cell	125	'0111 1101'B	'0000 1111'	8253	
Dummy cell	126	'0111 1110'B	'1111 0000'	8257	
Note: Set according sub-clause 4.7.1 and Table 9.1.3.5-1 and Table 9.1.4.5-1 in TS 37.571-1 [6]					

Annex A (normative): GPS data files

A.1 GPS data files for signalling tests

The GPS data files for use in GPS signalling tests defined in TS 34.123-1 [3] subclauses 17.2.1 to 17.2.4 are contained in archive GPS_Data_Sig_V2.zip which accompanies this document.

A.2 GPS data files for Minimum Performance tests

The GPS data files for use in GPS Minimum Performance tests defined in TS 34.171 [4] are contained in archive GPS_Data_Perf_V5.zip which accompanies this document. The different scenarios are designated with suffixes XX in the zip file, where XX is 01, 02, 03 etc. for scenarios #1, #2, #3 etc.

Annex B (normative): GNSS data files

B.1 GNSS data files for signalling tests

The GNSS data files for use in GNSS signalling tests defined in TS 34.123-1 [3] subclauses 17.2.5 to 17.2.7 and in TS 37.571-2 [7] are contained in archive GNSS_Data_Sig_V1.zip which accompanies the present document.

[Editor's note: These files are not yet available]

B.2 GNSS data files for Minimum Performance tests

The GNSS data files for use in GNSS Minimum Performance tests defined in TS 34.172 [5] and in TS 37.571-1 [6] are contained in archive GNSS_Data_Perf_V1.zip which accompanies the present document. The different scenarios are designated with suffixes XX in the zip file, where XX is 01, 02, 03 etc. for scenarios #1, #2, #3 etc.

[Editor's note: These files are not yet available.

Annex C (informative): Change history

Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
2010-08	RAN5#48	R5-104318			Initial draft created as TS 36.571-5		0.0.0
2010-11	RAN5#49	R5-106146			Initial draft created from TS 36.571-5 with minor updates	0.0.0	0.1.0
2010-11	RAN5#49	R5-106615			Editor's notes added	0.1.0	0.1.1
2010-11	RAN5#49	R5-106614			Version 1.0.0 prepared for presentation to RAN Plenary	0.1.1	1.0.0
2011-05	RAN5#51	R5-112807			Version 1.1.0 with additional values and editorial changes	1.0.0	1.1.0
2011-08	RAN5#52	R5-113136			Additional values and editorial changes	1.1.0	-
2011-08	RAN5#52	R5-113137			Version 2.0.0 prepared for presentation to RAN Plenary	1.1.0	2.0.0
2011-09	RAN#53	RP-111127			v2.0.0 approved at RAN#53 and raised to v9.0.0 with no change	2.0.0	9.0.0
2011-12	RAN5#53	R5-115203	0001	-	Removal of editor's notes on OTDOA values	9.0.0	9.1.0
2011-12	RAN5#53	R5-115204	0002	-	Correction of references	9.0.0	9.1.0

History

Document history		
V9.1.0	January 2012	Publication