3GPP TSG RAN Meeting #28 **RP-050349**

Quebec, Canada, 1 - 3 June 2005

Title	**CR on Addition of GPS scenario and assistance data for A-GPS performance tests in 34.108**
Source	**RAN WG5**
Agenda Item	**7.6.5**

3GPP TSG-RAN WG5 Meeting #27
Bath, UK, 25th – 29th April 2005

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CR-Form-v7

CHANGE REQUEST

⌘ **34.108** **CR** **403** ⌘**rev** **-** ⌘ Current version: **5.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: | UICC apps⌘ ☐ ME [X] Radio Access Network ☐ Core Network ☐

Title:	⌘	Addition of GPS scenario and assistance data for A-GPS performance tests in 34.108
Source:	⌘	3GPP TSG RAN WG5 (Testing)
Work item code:	⌘	A-GPS Performance
Date:	⌘	27/04/2005
Category:	⌘	**B**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	- There is no information on GPS scenarios for performance testing in TS 34.171 given in current document - There are no values given for assistance data for performance testing in TS 34.171 given in current document - Editorial errors exist
Summary of change:	⌘	- GPS scenarios for performance testing detailed. - Values for assistance data for performance testing added - References added - Editorial errors corrected - GPS data file attached to CR for attaching to 34.108
Consequences if not approved:	⌘	- Tests cannot be run or will not be consistent and results will vary. - Editorial errors persist.

Clauses affected:	⌘	2, 10.1, 10.4, 10.5, 10.6, new GPS data file

Other specs affected:	⌘	Y	N		⌘
			X	Other core specifications	
			X	Test specifications	
			X	O&M Specifications	

Other comments: ⌘

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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

[2] 3GPP TS 34.121: "Terminal Conformance Specification; Radio Transmission and Reception (FDD)".

[3] 3GPP TS 34.123-2: "User Equipment (UE) conformance specification; Part 2: Implementation Conformance Statement (ICS) proforma specification".

[4] 3GPP TS 34.124: "ElectroMagnetic Compatibility (EMC) requirements for Mobile terminals and ancillary equipment".

[5] 3GPP TS 34.122: "Terminal Conformance Specification; Radio Transmission and Reception (TDD)".

[6] 3GPP TS 34.109: "Terminal logical test interface; Special conformance testing functions".

[7] 3GPP TS 25.301 "Radio interface protocol architecture".

[8] 3GPP TS 25.214: "Physical layer procedures (FDD)".

[9] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[10] 3GPP TR 25.990: "Vocabulary".

[11] 3GPP TS 25.101: "User Equipment (UE) radio transmission and reception (FDD)".

[12] 3GPP TS 25.102: "User Equipment (UE) radio transmission and reception (TDD)".

[13] 3GPP TS 25.211: "Physical channels and mapping of transport channels onto physical channels (FDD)".

[14] 3GPP TS 25.212: "Multiplexing and channel coding (FDD)".

[15] 3GPP TS 23.107: "Quality of Service (QoS) concept and architecture".

[16] 3GPP TS 26.110: "Codec for circuit switched multimedia telephony service; General description".

[17] 3GPP TS 29.007: "General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".

[18] 3GPP TR 23.910: "Circuit switched data bearer service".

[19] Void.

[20] 3GPP TS 25.104: "Base Station (BS) radio Transmission and Reception (FDD)".

[21] 3GPP TS 25.105: "Base Station (BS) radio Transmission and Reception (TDD)".

[22] 3GPP TS 31.101: "UICC-terminal interface; Physical and logical characteristics".

[23] 3GPP TS 31.102: "Characteristics of the USIM application".

[24] 3GPP TS 33.102: "3G security; Security architecture".

[25] 3GPP TS 33.103: "3G security; Integration guidelines".

[26] 3GPP TS 33.105: "Cryptographic algorithm requirements".

[27] 3GPP TS 25.224: "Physical layer procedures (TDD)".

[28] 3GPP TS 25.221: "Physical channels and mapping of transport channels onto physical channels (TDD)".

[29] 3GPP TS 25.222: "Multiplexing and channel coding (TDD)".

[30] 3GPP TS 25.133: "Requirements for support of radio resource management (FDD)".

[31] 3GPP TS 51.010-1: "Mobile Station (MS) conformance specification; Part 1: Conformance specification".

[32] 3GPP TS 24.008: "Mobile radio interface layer 3 specification; Core network protocols; Stage 3".

[33] 3GPP TS 25.171: "Requirements for support of Assisted Global Positioning System (A-GPS); Frequency Division Duplex (FDD)".

[34] 3GPP TS 25.331: "Radio Resource Control (RRC) protocol specification".

[35] 3GPP TS 25.223: "Spreading and modulation (TDD)".

[36] 3GPP TS 25.304: "User Equipment (UE) procedures in idle mode and procedures for cell reselection in connected mode".

[37] 3GPP TS 25.123: "Requirements for support of radio resource management (TDD)".

[38] 3GPP TS 25.321: "Medium Access Control (MAC) protocol specification".

[39] 3GPP TS 31.120: "UICC-terminal interface; Physical, electrical and logical test specification".

[40] 3GPP TS 31.121: "Base Station System (BSS) equipment specification; Radio aspects".

[41] 3GPP TS 34.171: "Terminal conformance specification; Assisted Global Positioning System (A-GPS); Frequency Division Duplex (FDD)".

[42] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)".

[43] NATO Standard Agreement STANAG 4294 Issue 1

NEXT CHANGED SECTION

10 A-GPS GPS Scenarios and Assistance Data

10.1 General

This clause defines the GPS scenarios and assistance data IEs which shall be available for use as specified in all A-GPS test cases in 3GPP TS 34.171 [35]. and 3GPP TS 34.123-1 [1].

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

Clauses 10.2 and 10.3 list the assistance data IEs required for performance testing of UE-based mode detailed in 3GPP TS 34.171 [41], and clauses 10.4 and 10.5 list the assistance data available for performance testing of UE-assisted mode detailed in 3GPP TS 34.171 [41]. Clause 10.6 lists the values of the assistance data IE fields for performance testing detailed in 3GPP TS 34.171 [41].

Clause 10.7 details the GPS scenario and the values of the assistance data IE fields for signalling testing detailed in 3GPP TS 34.123-1 [1], clause 17.2.

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 clause does not include nor consider delays occurring in the various signalling interfaces of the network.

10.1.1 Satellite constellations and assistance data for performance testing

The satellite constellations for 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 15 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 HDOP for the test shall be calculated using this sub-set of satellites. The selection of satellites for this sub-set shall be random and consistent with achieving the required HDOP for the test.

10.1.2 GPS Scenarios for performance testing

This section defines the GPS scenarios that shall be used for all Assisted GPS performance tests defined in TS 34.171 [35].

They have been selected to be consistent with achieving the required HDOP for the Test Cases and so that for each test instance 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 clause 10.1.2.5

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.

10.1.2.1 GPS Scenario #1

The following GPS scenario #1 shall be used during the TTFF tests defined in TS 34.171 [35]. The assistance data specified in the following sections 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 AC.2

UE location: the UE location is calculated as a random offset from the reference location using the method described in section 10.1.2.4. 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: PRNs: 2, 6, 10, 17, 18, 21, 26, 29, 30

Ionospheric model: see values in section 10.6.6

Tropospheric model: STANAG with SRI equal to 324.8, as defined in [43]

10.1.2.2 GPS Scenario #2

The following GPS scenario #2 shall be used during the TTFF tests defined in TS 34.171 [35]. The assistance data specified in the following sections 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~~C.2

UE location: the UE location is calculated as a random offset from the reference location using the method described in section 10.1.2.4. 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: PRNs: 3, 9, 11, 14, 15, 18, 22, 23, 25, 31

Ionospheric model: see values in section 10.6.6

Tropospheric model: STANAG with SRI equal to 324.8, as defined in [43]

10.1.2.3 GPS Scenario #3

The following GPS scenario #3 shall be used during the Moving Scenario and Periodic Update ~~TTFF~~ test~~s~~ case defined in TS 34.171 [35]. The assistance data specified in the following sections for GPS scenario #~~2~~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~~C.2

UE location: the UE location is given as a trajectory from the reference location in Figure 5.6.1 of TS 34.171 [35]. 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

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

Visible satellites simulated: PRNs: 3, 14, 15, 22, 25

~~Measured HDOP range: 2.0 to 2.1~~

Viable running time to maintain specified HDOP values: 19 minutes

Ionospheric model: see values in section 10.6.6

Tropospheric model: STANAG with SRI equal to 324.8, as defined in [43]

10.1.2.4 UE Location for TTFF test cases

This section defines the method for generating the random UE locations that are required to be used for the TTFF tests defined in TS 34.171 [35].

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 1 000 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.

10.1.2.4.1 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 TS23.032 [~~XX~~42].

10.1.2.4.2 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 1000, representing meters. The resolution used for the random number shall be 1, representing 1 meter.

10.1.2.5 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 Coarse 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, 11, 14, 15, 25, 31	-
Multi-path Performance	2, 6, 17, 21, 26	3, 14, 15, 22, 25	-
Moving Scenario and Periodic Update Performance	-	-	3, 11, 14, 15, 22, 25

10.2 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 clause 10.6.

a) **UE positioning GPS reference time IE.** This information element is defined in clause 10.3.7.96 of 3GPP TS 25.331 [34].

Name of the IE	Fields of the IE
UE positioning GPS reference time	
	GPS Week
	GPS TOW msec
	GPS TOW Assist
	SatID
	TLM Message
	TLM Reserved
	Alert
	Anti-Spoof

b) UE positioning GPS reference UE position IE. This information element is defined in clause 10.3.8.4c of 3GPP TS 25.331 [34].

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

c) UE positioning GPS navigation model IE. This information element is defined in clause 10.3.7.94 of 3GPP TS 25.331 [34].

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

d) UE positioning GPS ionospheric model IE. This information element is defined in clause 10.3.7.92 of 3GPP TS 25.331 [34].

Name of the IE	Fields of the IE
Ionospheric Model	All

10.3 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 clause 10.2 with the following exception. Fields not specified shall not be present. The values of the fields are specified in clause 10.6.

UE positioning GPS reference time IE. This information element is defined in clause 10.3.7.96 of 3GPP TS 25.331 [34].

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

10.4 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 clause 10.6.

a) UE positioning GPS reference time IE. This information element is defined in clause 10.3.7.96 of 3GPP TS 25.331 [34].

Name of the IE	Fields of the IE
UE positioning GPS reference time	

	GPS Week
	GPS TOW msec
	GPS TOW Assist
	SatID
	TLM Message
	TLM Reserved
	Alert
	Anti-Spoof

b) UE positioning GPS reference UE position IE. This information element is defined in clause 10.3.8.4c of 3GPP TS 25.331 [34].

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

c) UE positioning GPS almanac This information element is defined in clause 10.3.7.89 of 3GPP TS 25.331 [34].

Name of the IE	Fields of the IE
UE positioning GPS almanac	
	Almanac Reference Week
	All Satellite information

d) UE positioning GPS navigation model IE. This information element is defined in clause 10.3.7.94 of 3GPP TS 25.331 [34].

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

e) UE positioning GPS acquisition assistance IE. This information element is defined in clause 10.3.7.88 of 3GPP TS 25.331 [34].

Name of the IE	Fields of the IE
Acquisition Assistance	
-	GPS TOW msec
-	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

10.5 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 clause 10.4 with the following exceptions. Fields not specified shall not be present. The values of the fields are specified in clause 10.6.

a) UE positioning GPS reference time IE. This information element is defined in clause 10.3.7.96 of 3GPP TS 25.331 [34].

Name of the IE	Fields of the IE

UE positioning GPS reference time	
	GPS Week
	GPS TOW msec
	UTRAN GPS reference time
	>UTRAN GPS timing of cell frames
	>CHOICE mode
	>>FDD
	>>>Primary CPICH Info
	>SFN
	SFN-TOW Uncertainty
	TUTRAN-GPS drift rate
	GPS TOW Assist
	SatID
	TLM Message
	TLM Reserved
	Alert
	Anti-Spoof

b) UE positioning GPS acquisition assistance IE. This information element is defined in clause 10.3.7.88 of 3GPP TS 25.331 [34].

Name of the IE	Fields of the IE
Acquisition Assistance	
-	GPS TOW msec
-	UTRAN GPS reference time
-	>UTRAN GPS timing of cell frames
-	>CHOICE mode
-	>>FDD
-	>>>Primary CPICH Info
-	>SFN
-	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

10.6 Contents of Information elements for performance testing

~~[Editors note: It is expected that the notes below will be deleted as the IEs are specified in detail]~~

10.6.1 General

This section defines the assistance data values that shall be used for all Assisted GPS performance tests defined in TS 34.171 [35]. 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~~C.2, 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", and the GPS TOW msec field are only specified and used in [100] ms increments. Interpolation between these values shall not be used.

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

10.6.2 IE Random Offset Values

This section defines the methods for generating the random offsets that are required to be applied to one or two assistance data IEs for certain tests defined in TS 34.171 [35].

10.6.2.1 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.

10.6.2.1 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.

10.6.3 Assistance Data Reference Time

Contents of UE positioning GPS reference time IE

~~Information Element~~	~~Value/remark~~	~~Version~~
~~GPS Week~~	~~FFS~~	
~~GPS TOW msec~~	~~FFS~~	
~~UTRAN GPS reference time~~	~~FFS~~	
~~>UTRAN GPS timing of cell frames~~	~~FFS~~	
~~>CHOICE mode~~	~~FFS~~	
~~>>FDD~~	~~FFS~~	
~~>>>Primary CPICH Info~~	~~FFS~~	
~~>>TDD~~	~~Not present~~	
~~>>>cell parameters id~~	~~Not present~~	
~~>SFN~~	~~FFS~~	
~~SFN-TOW Uncertainty~~	~~FFS~~	
~~TUTRAN GPS drift rate~~	~~0~~	
~~GPS TOW Assist~~	~~lessThan10~~	
~~SatID~~	~~FFS~~	
~~TLM Message~~	~~FFS~~	
~~TLM Reserved~~	~~FFS~~	
~~Alert~~	~~FFS~~	
~~Anti-Spoof~~	~~FFS~~	

~~**NOTE 1: For every Test Instance in each TTFF test case, the GPS reference time shall be advanced so that, at the time the fix is made, it is at least 2 minutes later than the previous fix.**~~**Reference Time (Fields occurring once per message)**

Parameter	Units	Value/remark GPS #1	Value/remark GPS #2	Value/remark GPS #3
GPS Week	weeks	282	230	230
GPS TOW msec	msec	~~FFS~~518880000~~ms~~. Start time. Add integer number of [10] ms as required. (Note)	~~FFS ms~~346080000. Start time. Add integer number of [10] ms as required. (Note)	~~FFS ms~~346080000. Start time. Add integer number of [10] ms as required. (Note)
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		FFS	FFS	-
>CHOICE mode		Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Present for Sensitivity Fine Time Assistance test case. Absent otherwise	~~Absent~~
>>FDD		-	-	-
>>>Primary CPICH Info		~~FFS~~ 100	~~FFS~~ 100	~~FFS~~
>SFN		FFS	FFS	~~FFS~~
SFN-TOW Uncertainty		lessThan10	lessThan10	~~lessThan10~~
TUTRAN-GPS drift rate		0	0	~~0~~

Note: 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 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 [10] ms interval. This "current GPS TOW msec" value is then also used to determine the value of any other parameters marked as "Time varying" in clause 10.6

~~**Note: GPS TOW msec**~~

~~This is the value in ms 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 [10] ms interval. This "current GPS TOW msec" is then also used to determine the value of any other parameters marked as "Time varying" in clause 10.6~~

~~NOTE 1: For every Test Instance in each TTFF test case, the GPS reference time shall be advanced so that, at the time the fix is made, it is at least 2 minutes later than the previous fix.~~

Satellite Information

Parameter	Units	Value/remark GPS All
Number of satellites	---	9

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

Parameter	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, 9, 11, 14, 15, 22, 23, 25, 31	PRNs: 3, 9, 11, 14, 15, 22, 23, 25, 31

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

Parameter	Units	Value/remark GPS All
TLM Message		See file: GPS TOW Assist XX.csv
TLM Reserved		See file: GPS TOW Assist XX.csv
Alert		See file: GPS TOW Assist XX.csv
Anti-Spoof		See file: GPS TOW Assist XX.csv

~~NOTE 2: 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 3: 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.~~

~~NOTE 4: For the Moving Scenario and Periodic Update Test Case the values of the IEs GPS TOW msec and IE UTRAN GPS timing of cell frames shall be set to the nominal values.~~

10.6.4 Assistance Data Reference Position

Contents of UE positioning GPS reference UE position IE

~~Information Element~~	~~Value/remark~~	~~Version~~
~~Ellipsoid point with Altitude and uncertainty ellipsoid~~	~~FFS~~	

~~NOTE: There is no limitation on the selection of the reference location, consistent with achieving the required HDOP for the Test Case. For each test instance the reference location shall change sufficiently such that the UE shall have to use the new assistance data.~~ The uncertainty of the semi-major axis is 3 km. The uncertainty of the semi-minor axis is 3 km. The orientation of major axis is 0 degrees. The uncertainty of the altitude information is 500 m. The confidence factor is 68 %.

Reference Position

Parameter	Units	Value/remark GPS #1	Value/remark GPS #2	Value/remark GPS #3
Type of Shape	Bit field	Ellipsoid point with altitude and uncertainty Ellipsoid	Ellipsoid point with altitude and uncertainty Ellipsoid	Ellipsoid point with altitude and uncertainty Ellipsoid
Degrees of latitude	degrees	33.750005277778	-37.816663333333	-37.816663333333
Degrees of longitude	degrees	-84.383516666667	144.966670277778	144.966670277778
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

10.6.5 Assistance Data Navigation Model

Contents of UE positioning GPS navigation model IE

~~Information Element~~	~~Value/remark~~	~~Version~~
~~All satellite information~~	~~FFS~~	

Satellite Information

Parameter	Units	Value/remark GPS All
Number of satellites	---	9

Navigation Model (Fields occurring once per satellite)

Parameter	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, 9, 11, 14, 15, 22, 23, 25, 31	PRNs: 3, 9, 11, 14, 15, 22, 23, 25, 31
Satellite Status	Boolean	0 (Note)	0 (Note)	0 (Note)

Note: For consistency Satellite Status is also given in file: Navigation model XX.csv

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

Parameter	Units	Value/remark GPS All
C/A or P on L2	Boolean	See file: Navigation model XX.csv
URA Index	Boolean	See file: Navigation model XX.csv
SV Health	Boolean	See file: Navigation model XX.csv
IODC	---	See file: Navigation model XX.csv
L2 P Data Flag	Boolean	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	Boolean	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

10.6.6 Assistance Data Ionospheric Model

Contents of UE positioning GPS ionospheric model IE

~~Information Element~~	~~Value/remark~~	~~Version~~
~~All~~	~~FFS~~	

~~NOTE: Typical Ionospheric and Tropospheric delays shall be simulated and the corresponding values inserted into the Ionospheric Model IEs.~~

Ionospheric Model

Parameter	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

10.6.7 Assistance Data Almanac

Contents of UE positioning GPS almanac

~~Information Element~~	~~Value/remark~~	~~Version~~
~~Almanac Reference Week~~	~~FFS~~	
~~Satellite information~~	~~FFS~~	

Almanac (Field occurring once per message)

Parameter	Units	Value/remark GPS #1	Value/remark GPS #2	Value/remark GPS #3
WN_a	weeks	283	230	230

Satellite Information

Parameter	Units	Value/remark GPS All
Number of satellites	---	24

Almanac (Fields occurring once per satellite)

Parameter	Units	Value/remark
DataID	---	See file: Almanac XX.csv

Almanac (Fields occurring once per satellite)

Parameter	Units	Value/remark GPS #1	Value/remark GPS #2	Value/remark GPS #3
SatID	---	PRNs: ~~FFS~~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~~FFS~~	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~~FFS~~

Almanac (Fields occurring once per satellite)

Parameter	Units	Value/remark
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	Boolean	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

10.6.8 Assistance Data Acquisition Assistance

Contents of UE positioning GPS acquisition assistance IE

~~Information Element~~	~~Value/remark~~	~~Version~~

~~Information Element~~	~~Value/remark~~	~~Version~~
~~GPS TOW msec~~	~~FFS~~	
~~UTRAN GPS reference time~~	~~FFS~~	
~~>UTRAN GPS timing of cell frames~~	~~FFS~~	
~~>CHOICE mode~~	~~FFS~~	
~~>>FDD~~	~~FFS~~	
~~>>>Primary CPICH Info~~	~~FFS~~	
~~>SFN~~	~~FFS~~	
~~Satellite information~~	~~FFS~~	
~~>SatID~~	~~FFS~~	
~~>Doppler (0th order term)~~	~~FFS~~	
~~>Extra Doppler~~	~~FFS~~	
~~>>Doppler (1st order term)~~	~~FFS~~	
~~>>Doppler Uncertainty~~	~~FFS~~	
~~>Code Phase~~	~~FFS~~	
~~>Integer Code Phase~~	~~FFS~~	
~~>GPS Bit number~~	~~FFS~~	
~~>Code Phase Search Window~~	~~FFS~~	
~~>Azimuth and Elevation~~	~~FFS~~	
~~>> Azimuth~~	~~FFS~~	
~~>> Elevation~~	~~FFS~~	

~~NOTE: There is no limitation on the selection of the reference location, consistent with achieving the required HDOP for the Test Case. For each test instance the reference location shall change sufficiently such that the UE shall have to use the new assistance data. The uncertainty of the semi-major axis is 3 km. The uncertainty of the semi-minor axis is 3 km. The orientation of major axis is 0 degrees. The uncertainty of the altitude information is 500 m. The confidence factor is 68 %.~~

GPS Acquisition Assist (Fields occurring once per message)

Parameter	Units	Value/remark GPS #1	Value/remark GPS #2	Value/remark GPS #3
GPS TOW msec	msec	FFS ms. Start time. Add integer number of [10] ms as required. (Note)	FFS ms. Start time. Add integer number of [10] ms as required. (Note)	FFS ms. Start time. Add integer number of [10] ms as required. (Note)
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		FFS	FFS	-
>CHOICE mode		Present for Sensitivity Fine Time Assistance test case. Absent otherwise	Present for Sensitivity Fine Time Assistance test case. Absent otherwise	-~~Absent~~
>>FDD		-	-	-~~-~~
>>>Primary CPICH Info		FFS	FFS	-~~FFS~~
>SFN		FFS	FFS	-~~FFS~~
Note: 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 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 [10] ms interval. This “current GPS TOW msec” value is then also used to determine the value of any other parameters marked as “Time varying” in clause 10.6.8				

~~**Note: GPS TOW msec**~~

~~This is the value in seconds 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 [10] ms interval.~~

Satellite Information

Parameter	Units	Value/remark GPS All
Number of satellites	---	9

GPS Acquisition Assist (Fields occurring once per satellite)

Parameter	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, 9, 11, 14, 15, 22, 23, 25, 31	PRNs: 3, 9, 11, 14, 15, 22, 23, 25, 31

GPS Acquisition Assist (Fields occurring once per satellite)

Parameter	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 Assist parameters

This field is "Time varying" and its value depends on the "current GPS TOW msec" as described in clause 10.6.8. 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".

~~**Note: Acquisition Assist parameters**~~

~~This field is "Time varying" and its value depends on the "current GPS TOW msec" as described in clause 10.6.3. 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".~~