

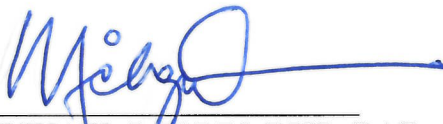
IRN-IS-705D-005
6-SEP-2017

**GLOBAL POSITIONING SYSTEMS DIRECTORATE
SYSTEMS ENGINEERING & INTEGRATION
INTERFACE SPECIFICATION
IS-GPS-705**

NAVSTAR GPS Space Segment/User Segment L5 Interfaces



AUTHENTICATED BY:



MICHAEL J. DUNN, DISL, DAF
Technical Director
Global Positioning Systems Directorate

8 JAN 18

Date

DISTRIBUTION STATEMENT A: Approved For Public Release; Distribution Is Unlimited

IS705-265 :

Section Number :

20.3.3.2.4.0-6

WAS :

For each URA_{NED0} index (N), users may compute a nominal URA_{NED0} value (X) as given by:

- If the value of N is 6 or less, but more than -16, $X = 2^{(1 + N/2)}$,
- If the value of N is 6 or more, but less than 15, $X = 2^{(N - 2)}$,
- N = -16 or N = 15 shall indicate the absence of an accuracy prediction and shall advise the standard positioning service user to use that SV at his own risk.

For N = 1, 3, and 5, X should be rounded to 2.8, 5.7, and 11.3 meters, respectively.

The nominal URA_{NED0} value (X) shall be suitable for use as a conservative prediction of the RMS NED range errors for accuracy-related purposes in the pseudorange domain (e.g., measurement de-weighting RAIM, FOM computations). Integrity properties of the $IAURA_{NED}$ are specified with respect to the scaled (multiplied by either 4.42 or 5.73 as appropriate) upper bound values of the URA_{NED0} index, URA_{NED1} index, and URA_{NED2} index (see 20.3.3.1.1).

URA_{NED0} accounts for zeroth order SIS-contributions to user range error which include, but are not limited to, the following: LSB representation/truncation error; the net effect of clock correction polynomial error and code phase error in the transmitted signal for single-frequency L1C/A or single-frequency L2C users who correct the code phase as described in Section 20.3.3.3.1.1.1; the net effect of clock parameter, code phase, and inter-signal correction error for dual-frequency L1/L2 and L1/L5 users who correct for group delay and ionospheric effects as described in Section 20.3.3.3.1.1.2; radial ephemeris error; anisotropic antenna errors; and signal deformation error. URA_{NED} does not account for user range contributions due to the inaccuracy of the broadcast ionospheric data parameters used in the single-frequency ionospheric model or for other atmospheric effects.

The transmitted URA_{NED1} index is an integer value in the range 0 to 7. The URA_{NED1} index has the following relationship to the URA_{NED1} value:

$$URA_{NED1} = \frac{1}{2^N} \text{ (meters/second)}$$

where

$$N = 14 + URA_{NED1} \text{ Index.}$$

The transmitted URA_{NED2} index is an integer value in the range 0 to 7. URA_{NED2} index has the following relationship to the URA_{NED2} :

$$URA_{NED2} = \frac{1}{2^N} \text{ (meters/second/second)}$$

where

$$N = 28 + URA_{NED2} \text{ Index.}$$

Redlines :

For each URA_{NED0} index (N), users may compute a nominal URA_{NED0} value (X) as given by:

- If the value of N is 6 or less, but more than -16, $X = 2^{(1 + N/2)}$,
- If the value of N is 6 or more, but less than 15, $X = 2^{(N-2)}$,
- N = -16 or N = 15 shall indicate the absence of an accuracy prediction and shall advise the standard positioning service user to use that SV at his own risk.

For N = 1, 3, and 5, X should be rounded to 2.8, 5.7, and 11.3 meters, respectively.

The nominal URA_{NED0} value (X) shall be suitable for use as a conservative prediction of the RMS NED range errors for accuracy-related purposes in the pseudorange domain (e.g., measurement de-weighting RAIM, FOM computations). Integrity properties of the $IAURA_{NED}$ are specified with respect to the scaled (multiplied by either 4.42 or 5.73 as appropriate) upper bound values of the URA_{NED0} index, URA_{NED1} index, and URA_{NED2} index (see 20.3.3.1.1).

URA_{NED0} accounts for zeroth order SIS-contributions to user range error which include, but are not limited to, the following: LSB representation/truncation error; the net effect of clock correction polynomial error and code phase error in the transmitted signal for single-frequency L1C/L2/L5A or single-frequency L2C users who correct the code phase as described in Section 20.3.3.3.1.1.1; the net effect of clock parameter, code phase, and inter-signal correction error for dual-frequency L1/L2 and L1/L5 users who correct for group delay and ionospheric effects as described in Section ~~20.3.3.3.1.1.2~~ 20.3.3.3.1.2; radial ephemeris error; anisotropic antenna errors; and signal deformation error. URA_{NED} does not account for user range contributions due to the inaccuracy of the broadcast ionospheric data parameters used in the single-frequency ionospheric model or for other atmospheric effects.

The transmitted URA_{NED1} index is an integer value in the range 0 to 7. The URA_{NED1} index has the following relationship to the URA_{NED1} value:

$$URA_{NED1} = \frac{1}{2^N} \text{ (meters/second)}$$

where

$$N = 14 + URA_{NED1} \text{ Index.}$$

The transmitted URA_{NED2} index is an integer value in the range 0 to 7. URA_{NED2} index has the following relationship to the URA_{NED2} :

$$URA_{NED2} = \frac{1}{2^N} \text{ (meters/second/second)}$$

where

$$N = 28 + URA_{NED2} \text{ Index.}$$

IS :

For each URA_{NED0} index (N), users may compute a nominal URA_{NED0} value (X) as given by:

- If the value of N is 6 or less, but more than -16, $X = 2^{(1 + N/2)}$,
- If the value of N is 6 or more, but less than 15, $X = 2^{(N - 2)}$,
- N = -16 or N = 15 shall indicate the absence of an accuracy prediction and shall advise the standard positioning service user to use that SV at his own risk.

For N = 1, 3, and 5, X should be rounded to 2.8, 5.7, and 11.3 meters, respectively.

The nominal URA_{NED0} value (X) shall be suitable for use as a conservative prediction of the RMS NED range errors for accuracy-related purposes in the pseudorange domain (e.g., measurement de-weighting RAIM, FOM computations). Integrity properties of the $IAURA_{NED}$ are specified with respect to the scaled (multiplied by either 4.42 or 5.73 as appropriate) upper bound values of the URA_{NED0} index, URA_{NED1} index, and URA_{NED2} index (see 20.3.3.1.1).

URA_{NED0} accounts for zeroth order SIS-contributions to user range error which include, but are not limited to, the following: LSB representation/truncation error; the net effect of clock correction polynomial error and code phase error in the transmitted signal for single-frequency L1/L2/L5 users who correct the code phase as described in Section 20.3.3.3.1.1.1; the net effect of clock parameter, code phase, and inter-signal correction error for dual-frequency L1/L2 and L1/L5 users who correct for group delay and ionospheric effects as described in Section 20.3.3.3.1.2; radial ephemeris error; anisotropic antenna errors; and signal deformation error. URA_{NED} does not account for user range contributions due to the inaccuracy of the broadcast ionospheric data parameters used in the single-frequency ionospheric model or for other atmospheric effects.

The transmitted URA_{NED1} index is an integer value in the range 0 to 7. The URA_{NED1} index has the following relationship to the URA_{NED1} value:

$$UR_{\text{NED1}} = \frac{1}{2^N} \text{ (meters/second)}$$

where

$$N = 14 + UR_{\text{NED1}} \text{ Index.}$$

The transmitted UR_{NED2} index is an integer value in the range 0 to 7. UR_{NED2} index has the following relationship to the UR_{NED2} :

$$UR_{\text{NED2}} = \frac{1}{2^N} \text{ (meters/second/second)}$$

where

$$N = 28 + UR_{\text{NED2}} \text{ Index.}$$

IS705-271 :

Section Number :

20.3.3.3.1.1.1

WAS :

L1/L2 Inter-Signal Group Delay Differential Correction.

Redlines :

L1/L2/[L5](#) Inter-Signal Group Delay Differential Correction.

IS :

L1/L2/L5 Inter-Signal Group Delay Differential Correction.