

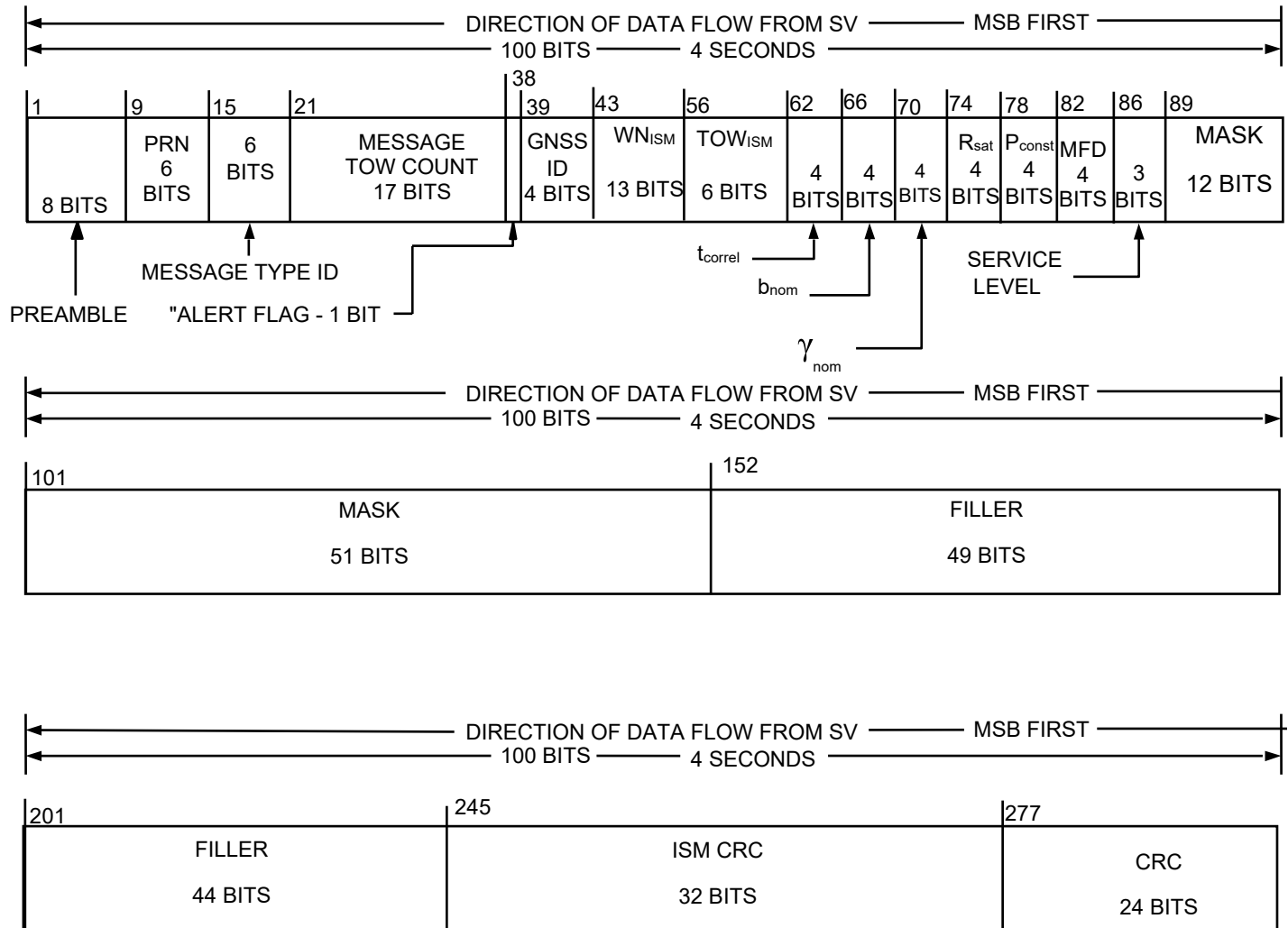
CHANGE NOTICE		
Affected Document: IS-GPS-200 Rev N	IRN/SCN Number IRN-IS-200N-004	Date: 16-JUN-2026
Authority: RFC-000519	Proposed Change Notice PCN-IS-200N_RFC519	Date: 21-AUG-2024
Document Title: NAVSTAR GPS Space Segment/Navigation User Segment Interfaces		
RFC Title: Civil Integrity Support Message (ISM) Formats		
Reason For Change (Driver): Complete the Civil Integrity Support Message format portion to enable the ARAIM capability in time to meet FAA’s needs in support of RTCA/DO-401A and EUROCAE/ED-259B. (Pre-RFC-1200, Pre-RFC 1269, partial Pre-RFC-1326)		
Description of Change: Expand and update current related requirements to build solid definitions for the civil ISM messages: 1. L2C and L5 CNAV MT-40 (IS-GPS-200, IS-GPS-705) 2. L1C Subframe 3 Page 8 (IS-GPS-800)		
Authored By: RE: Tony Anthony		Checked By: RE: Sean Gutierrez
AUTHORIZED SIGNATURES	REPRESENTING	DATE
BARNAS.NEIL.BRYAN.1266034543 Digitally signed by BARNAS.NEIL.BRYAN.1266034543 Date: 2026.08.14 15:32:00 -07'00'	System Delta 831	8/14/2026
BISE.CHAD.M.1262918781 Digitally signed by BISE.CHAD.M.1262918781 Date: 2026.08.11 09:09:56 -06'00'	Mission Delta 31	8/11/2026
DISTRIBUTION STATEMENT A: Approved for Public Release; Distribution Is Unlimited		
THIS DOCUMENT SPECIFIES TECHNICAL REQUIREMENTS AND NOTHING HEREIN CONTAINED SHALL BE DEEMED TO ALTER THE TERMS OF ANY CONTRACT OR PURCHASE ORDER BETWEEN ALL PARTIES AFFECTED.	Interface Control Contractor: SAIC (GPS SE&I) 200 N. Pacific Coast Highway, Suite 1800 El Segundo, CA 90245	
	CODE IDENT 66RP1	

IS200-1808:

Section Number:

30.3.3.0-30

WAS:



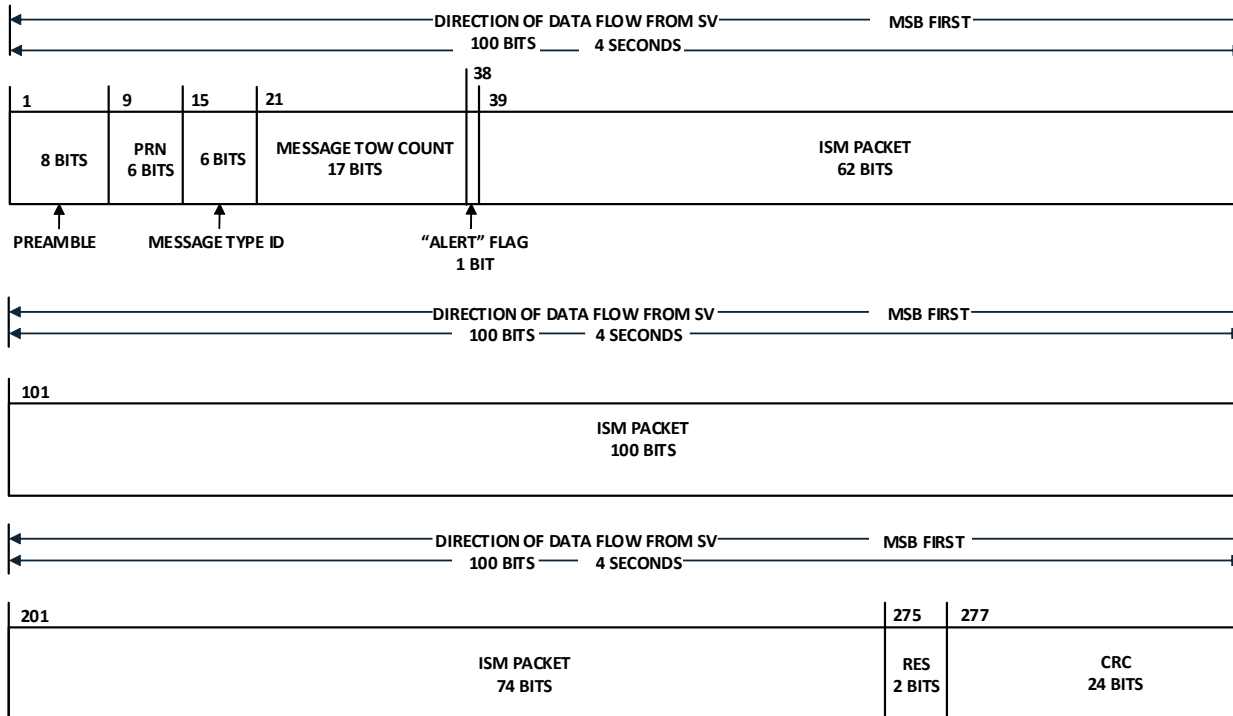
* MESSAGE TOW COUNT = 17 MSBs OF ACTUAL TOW COUNT AT START OF NEXT 12-SECOND MESSAGE

Redlines:

<graphic not available>

- Replaced the GNSS ID through ISM CRC with a 236 bit ISM Packet
- Added two Reserved bits as filler

IS:



* MESSAGE TOW COUNT = 17 MSBs OF ACTUAL TOW COUNT AT START OF NEXT 12-SECOND MESSAGE

IS200-2401:

Insertion after object IS200-1943

Section Number:

30.3.3.1.1.0-9

WAS:

<INSERTED OBJECT>

Redlines:

The nominal URA is a conservative estimate of the pseudorange accuracy and is the RSS of an elevation-dependent nominal value of the URA_{ED} component and the nominal value of the URA_{NED} component.

Object Type: Info-Only

IS:

The nominal URA is a conservative estimate of the pseudorange accuracy and is the RSS of an elevation-dependent nominal value of the URA_{ED} component and the nominal value of the URA_{NED} component.

Object Type: Info-Only

IS200-572:

Section Number:

30.3.3.2.4.0-3

WAS:

The user shall calculate the NED-related URA with the equation (in meters);

$$IAURA_{NED} = URA_{NED0} + URA_{NED1} (t - t_{op} + 604,800 * (WN - WN_{op}))$$

for $t - t_{op} + 604,800 * (WN - WN_{op}) \leq 93,600$ seconds

$$IAURA_{NED} = URA_{NED0} + URA_{NED1} * (t - t_{op} + 604,800 * (WN - WN_{op})) + URA_{NED2} * (t - t_{op} + 604,800 * (WN - WN_{op}) - 93,600)^2$$

for $t - t_{op} + 604,800 * (WN - WN_{op}) > 93,600$ seconds

where

t is the GPS system time

Redlines:

The user shall calculate the NED-related URA with the equation (in meters);

~~for $IAURA_{NED} t - t_{op} + 604,800 (WN - WN_{op}) \leq 93,600$ seconds~~

$$\text{nominal } URA_{NED} = \text{nominal } URA_{NED0} + URA_{NED1} (t - t_{op} + 604,800 * (WN - WN_{op}))$$

$$IAURA_{NED} = \text{Upper Bound } URA_{NED0} + URA_{NED1} (t - t_{op} + 604,800 (WN - WN_{op}))$$

for $t - t_{op} + 604,800 * (WN - WN_{op}) \leq 93,600$ seconds

$$\text{nominal } URA_{NED} = \text{nominal } URA_{NED0} + URA_{NED1} * (t - t_{op} + 604,800 * (WN - WN_{op})) + URA_{NED2} * (t - t_{op} + 604,800 * (WN - WN_{op}) - 93,600)^2$$

$$IAURA_{NED} \text{ for } \text{Upper Bound } URA_{NED0} + URA_{NED1} (t - t_{op} + 604,800 * (WN - WN_{op})) \geq URA_{NED2} (t - t_{op} + 604,800 (WN - WN_{op}) - 93,600)^2 \text{ seconds}$$

where

t is the GPS system time

IS:

The user shall calculate the NED-related URA with the equation (in meters);

for $t - t_{op} + 604,800 (WN - WN_{op}) \leq 93,600$ seconds

$$\text{nominal } URA_{NED} = \text{nominal } URA_{NED0} + URA_{NED1} (t - t_{op} + 604,800 (WN - WN_{op}))$$

$$IAURA_{NED} = \text{Upper Bound } URA_{NED0} + URA_{NED1} (t - t_{op} + 604,800 (WN - WN_{op}))$$

for $t - t_{op} + 604,800 (WN - WN_{op}) > 93,600$ seconds

$$\text{nominal } URA_{NED} = \text{nominal } URA_{NED0} + URA_{NED1} (t - t_{op} + 604,800 (WN - WN_{op})) + URA_{NED2} (t - t_{op} + 604,800 (WN - WN_{op}) - 93,600)^2$$

$$IAURA_{NED} = \text{Upper Bound } URA_{NED0} + URA_{NED1}(t - t_{op} + 604,800 (WN - WN_{op})) + URA_{NED2} (t - t_{op} + 604,800 (WN - WN_{op}) - 93,600)^2$$

where

t is the GPS system time

IS200-576:

Section Number:

30.3.3.2.4.0-8

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.

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 = -15, 1, 3, and 5, X should be rounded to .01, 2.8, 5.7, and 11.3 meters, respectively.

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 = -15, 1, 3, and 5, X should be rounded to .01, 2.8, 5.7, and 11.3 meters, respectively.

IS200-1952:

Section Number:

30.3.3.2.4.0-9

WAS:

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 30.3.3.1.1).

URA_{NED0} accounts for zeroth order SIS-contributions to user range error which include, but are not limited to, the following: CNAV LSB representation/truncation error; the net effect of CNAV clock correction polynomial error and code phase error in the transmitted signal for single-frequency L2C users who correct the code phase as described in Section 30.3.3.3.1.1.1; the net effect of clock parameter, code phase, and inter-signal correction error for dual-frequency L1 C/A and L2C users who correct for group delay and ionospheric effects as described in Section 30.3.3.3.1.1.2; radial ephemeris error; anisotropic antenna errors; and signal deformation error. URA_{NED0} 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.

Redlines:

The nominal URA_{NED} value ~~(X)~~ computed from the non-elevation dependent indices 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, and values of the URA_{NED1} index, and URA_{NED2} index (see 30.3.3.1.1).

~~URA_{NED0} Nominal accounts URA_{NED} for and zeroth $IAURA_{NED}$ order~~ account for SIS contributions to user range error which include, but are not limited to, the following: CNAV LSB representation/truncation error; the net effect of CNAV clock correction polynomial error and code phase error in the transmitted signal for single-frequency L2C users who correct the code phase as described in Section 30.3.3.3.1.1.1; the net effect of clock parameter, code phase, and inter-signal correction error for dual-frequency L1 C/A and L2C users who correct for group delay and ionospheric effects as described in Section 30.3.3.3.1.1.2; radial ephemeris error; anisotropic antenna errors; and signal deformation error. Nominal URA_{NED0} URA_{NED} does and $IAURA_{NED}$ do 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.

IS:

The nominal URA_{NED} value computed from the non-elevation dependent indices 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, and values of the URA_{NED1} index, and URA_{NED2} index (see 30.3.3.1.1).

Nominal URA_{NED} and $IAURA_{NED}$ account for SIS-contributions to user range error which include, but are not limited to, the following: CNAV LSB representation/truncation error; the net effect of CNAV clock correction polynomial error and code phase error in the transmitted signal for single-frequency L2C users who correct the code phase as described in Section 30.3.3.3.1.1.1; the net effect of clock parameter, code phase, and inter-signal correction error for dual-frequency L1 C/A and L2C users who correct for group delay and ionospheric effects as described in Section 30.3.3.3.1.1.2; radial ephemeris error; anisotropic antenna errors; and signal deformation error. Nominal URA_{NED} and $IAURA_{NED}$ do 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.

IS200-1764:**Section Number:**

30.3.3.10.0-1

WAS:

Figure 30-14a contains the structure of Message Type 40, Integrity Support Message (ISM). The contents of Message Type 40 are defined below, followed by material pertinent to the use of the ISM data. Users who implement Advanced Receiver Autonomous Integrity Monitoring (ARAIM) may use these parameters for the ARAIM algorithm as referenced in future TSO and MSO.

Object Type: <blank>

Redlines:

~~Figure 30-14a contains the structure of Message Type 40, Integrity Support Message (ISM).~~ ~~as The depicted contents in~~ ~~of Figure Message 30-14a Type shall 40 contain are the defined parameters below, related followed to by GNSS~~ ~~material constellation pertinent and to satellite the integrity use parameters of used the for ISM ARAIM data algorithms. Users~~ ~~who This implement message Advanced contains Receiver a Autonomous 236-bit Integrity ISM Monitoring Packet (ARAIM)~~ ~~may see use Figure these 30-17) parameters common for among the all ARAIM GPS algorithm Civil as signals referenced that~~ ~~in carry future Integrity TSO Support and Data MSO (ISD).~~

Object Type: <blank> Requirement

IS:

Message Type 40, as depicted in Figure 30-14a shall contain the parameters related to GNSS constellation and satellite integrity parameters used for ARAIM algorithms. This message contains a 236-bit ISM Packet (see Figure 30-17) common among all GPS Civil signals that carry Integrity Support Data (ISD).

Object Type: Requirement

IS200-1765:**Section Number:**

30.3.3.10.1

WAS:

Object Heading 30.3.3.10.1 ISM Parameter Content

Redlines:

Object Heading 30.3.3.10.1 ~~ISM~~ ISD Parameter Content

IS:

Object Heading 30.3.3.10.1 ISD Parameter Content

IS200-2400:

Insertion below object IS200-1765

Section Number:

30.3.3.10.1.1

WAS:

<INSERTED OBJECT>

Redlines:

Object Heading 30.3.3.10.1.1 ISM Packet

Object Type: Header

IS:

Object Heading 30.3.3.10.1.1 ISM Packet

Object Type: Header

IS200-1766:

Section Number:

30.3.3.10.1.1.0-1

WAS:

Message Type 40 shall contain the parameters related to GNSS constellation and satellite integrity parameters used for ARAIM algorithms.

Object Type: <blank>

Redlines:

~~Message~~The Type ISM 40 Packet shall contain the parameters related to GNSS constellation and satellite integrity parameters.

Users ~~used~~who implement Advanced Receiver Autonomous Integrity Monitoring (ARAIM) may use these parameters for the ARAIM ~~algorithms~~algorithm as referenced in applicable standards (e.g. TSO, MSO).

The ISM Packet contains the GNSS ID, and ISD Parameters specific to the constellation's ISD needs.

Object Type: ~~<blank>~~Requirement

IS:

The ISM Packet shall contain the parameters related to GNSS constellation and satellite integrity parameters.

Users who implement Advanced Receiver Autonomous Integrity Monitoring (ARAIM) may use these parameters for the ARAIM algorithm as referenced in applicable standards (e.g. TSO, MSO).

The ISM Packet contains the GNSS ID, and ISD Parameters specific to the constellation's ISD needs.

Object Type: Requirement

IS200-1768:

Section Number:

30.3.3.10.1.1.0-2

WAS:

The CS shall upload the current ISM parameters, when necessary, to the SVs

Redlines:

~~The CS shall upload the current ISM parameters, when necessary, to the SVs~~

IS:

<DELETED OBJECT>

IS200-2387:

Insertion after object IS200-1990

Section Number:

30.3.3.10.1.1.0-3

WAS:

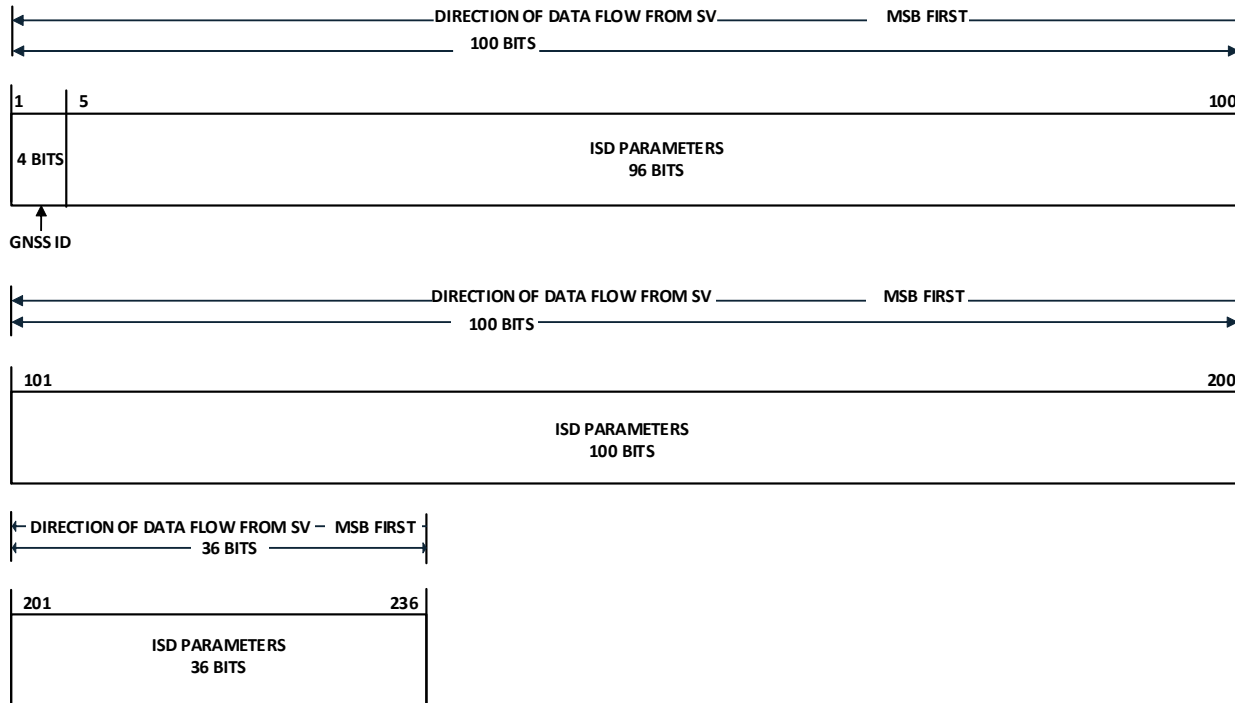
<INSERTED OBJECT>

Redlines:

(see IS: below)

Object Type: [Figure](#)

IS:



Object Type: Figure

IS200-2388:

Insertion after object IS200-2387

Section Number:

30.3.3.10.1.1.0-4

WAS:

<INSERTED OBJECT>

Redlines:

[Figure 30-17 ISM Packet](#)

Object Type: [Figure Caption](#)

IS:

Figure 30-17 ISM Packet

Object Type: Figure Caption

IS200-1775:

Section Number:

30.3.3.10.1.1.1

WAS:

Object Heading 30.3.3.10.1.1.1 GNSS Constellation ID

Redlines:

Object Heading 30.3.3.10.1.1.1 GNSS ~~Constellation~~ ID

IS:

Object Heading 30.3.3.10.1.1.1 GNSS ID

IS200-1776:

Section Number:

30.3.3.10.1.1.1.0-1

WAS:

Bits 39 through 42 of Message Type 40 shall identify the GNSS service to which the associated ISM parameters apply.

Object Type: <blank>

Redlines:

Bits ~~39~~1 through ~~42~~4 of ~~Message~~the Type ~~ISM~~ 40 ~~Packet~~ shall identify the GNSS service to which the associated ISM parameters apply. Furthermore, the GNSS ID is used as a Packet Indicator to show which ISM Packet Overlay applies to the rest of the ISM Packet (see section 30.3.3.10.1.1).

Object Type: ~~<blank>~~ Requirement

IS:

Bits 1 through 4 of the ISM Packet shall identify the GNSS service to which the associated ISM parameters apply.

Furthermore, the GNSS ID is used as a Packet Indicator to show which ISM Packet Overlay applies to the rest of the ISM Packet (see section 30.3.3.10.1.1).

Object Type: Requirement

IS200-1777:

Section Number:

30.3.3.10.1.1.1.0-2

WAS:

The four bits are defined as follows:

0000 = No Data Available

0001 = Galileo

0010 = GLONASS

0011 = BeiDou

0100 = GPS

0101 = SBAS

0110 = QZSS

0111 = IRNSS

1000 through 1111 = Reserved for other systems

Object Type: <blank>

Redlines:

The four bits are defined as follows:

0000 = ~~No Test Data Packet Available~~ (For Test Use Only)

0001 = ~~Galileo~~ Reserved

0010 = ~~GLONASS~~ through

0011 = ~~BeiDou~~ Reserved

0100 = GPS

0101 = ~~SBAS~~

~~0110 = QZSS~~

~~0111 = IRNSS~~

~~1000 through 1111 = Reserved for other systems~~

Object Type: ~~<blank>~~ Info-Only

IS:

The four bits are defined as follows:

0000 = Test Packet (For Test Use Only)

0001 = Reserved

0010 through 0011 = Reserved

0100 = GPS

0101 through 1111 = Reserved

Object Type: Info-Only

IS200-1814:**Section Number:**

30.3.3.10.1.1.1.0-3

WAS:

If users see four bits of '0000', users will ignore the entire ISM.

Redlines:~~If users see four bits of '0000', users will ignore the entire ISM.~~**IS:**

<DELETED OBJECT>

IS200-2389:

Insertion below object IS200-1765

Section Number:

30.3.3.10.1.2

WAS:

<INSERTED OBJECT>

Redlines:*Object Heading* 30.3.3.10.1.2 [ISM Packet Overlay Formats](#)*Object Type:* [Header](#)**IS:***Object Heading* 30.3.3.10.1.2 ISM Packet Overlay Formats*Object Type:* Header

IS200-2392:

Insertion below object IS200-2389

Section Number:

30.3.3.10.1.2.0-1

WAS:

<INSERTED OBJECT>

Redlines:[This section describes the different constellation specific ISM Packet overlays that are currently defined to detail the ISD parameters inside bits 5 through 236 of the ISM Packet.](#)*Object Type:* [Info-Only](#)**IS:**

This section describes the different constellation specific ISM Packet overlays that are currently defined to detail the ISD parameters inside bits 5 through 236 of the ISM Packet.

Object Type: Info-Only

IS200-2390:

Insertion below object IS200-2389

Section Number:

30.3.3.10.1.2.1

WAS:

<INSERTED OBJECT>

Redlines:

Object Heading 30.3.3.10.1.2.1 [Test Packet – GNSS ID = 0000](#)

Object Type: [Header](#)

IS:

Object Heading 30.3.3.10.1.2.1 Test Packet – GNSS ID = 0000

Object Type: Header

IS200-2393:

Insertion below object IS200-2390

Section Number:

30.3.3.10.1.2.1.0-1

WAS:

<INSERTED OBJECT>

Redlines:

[The 236-bit Test Packet shall be applicable when GNSS ID = 0000 \(see Figure 30-18\). This packet is for test purposes and doesn't contain any data operationally useful to the ARAIM function.](#)

Object Type: [Requirement](#)

IS:

The 236-bit Test Packet shall be applicable when GNSS ID = 0000 (see Figure 30-18). This packet is for test purposes and doesn't contain any data operationally useful to the ARAIM function.

Object Type: Requirement

IS200-2394:

Insertion after object IS200-2393

Section Number:

30.3.3.10.1.2.1.0-2

WAS:

<INSERTED OBJECT>

Redlines:

[If user equipment encounters this packet, it should be ignored.](#)

Object Type: [Info-Only](#)

IS:

If user equipment encounters this packet, it should be ignored.

Object Type: Info-Only

IS200-2395:

Insertion after object IS200-2394

Section Number:

30.3.3.10.1.2.1.0-3

WAS:

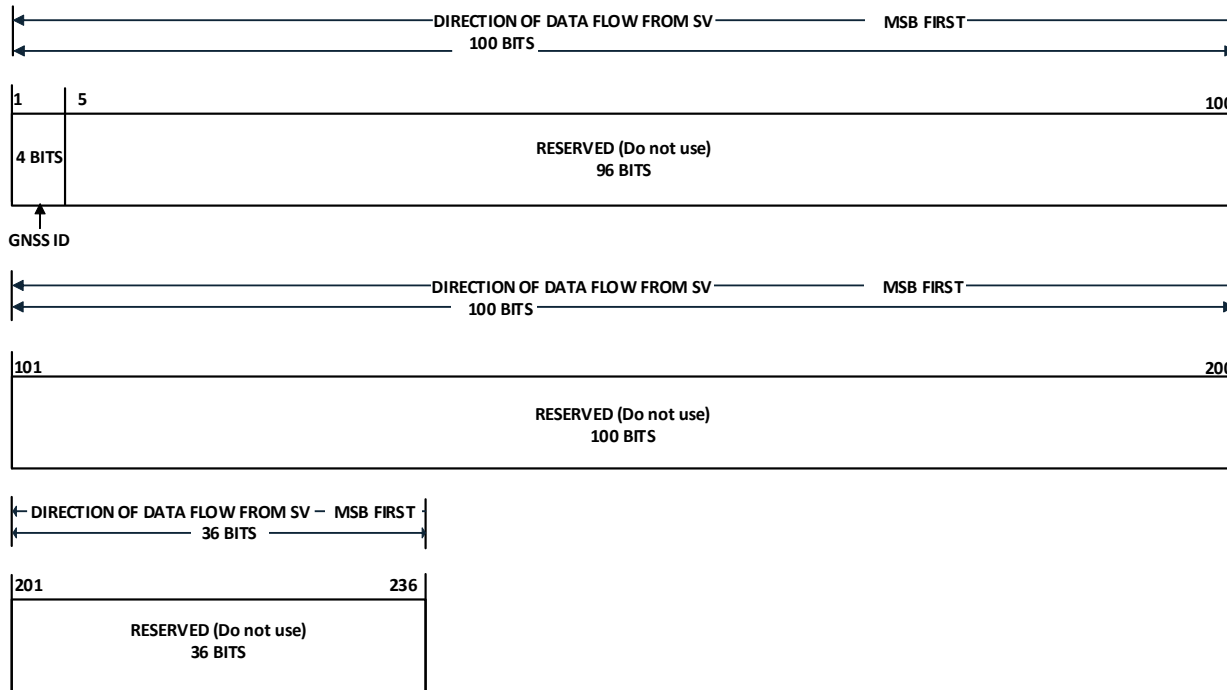
<INSERTED OBJECT>

Redlines:

Object Type: [Figure](#)

(see IS: below)

IS:



Object Type: Figure

IS200-2396:

Insertion after object IS200-2395

Section Number:

30.3.3.10.1.2.1.0-4

WAS:

<INSERTED OBJECT>

Redlines:

[Figure 30-18 Test Packet](#)

Object Type: [Figure Caption](#)

IS:

Figure 30-18 Test Packet

Object Type: Figure Caption

IS200-2391:

Insertion after object IS200-2390

Section Number:

30.3.3.10.1.2.2

WAS:

<INSERTED OBJECT>

Redlines:

Object Heading 30.3.3.10.1.2.2 [GPS ISM Packet – GNSS ID = 0100](#)

Object Type: [Header](#)

IS:

Object Heading 30.3.3.10.1.2.2 GPS ISM Packet – GNSS ID = 0100

Object Type: Header

IS200-2397:

Insertion below object IS200-2391

Section Number:

30.3.3.10.1.2.2.0-1

WAS:

<INSERTED OBJECT>

Redlines:

[Each 236-bit GPS ISM Packet \(see Figure 30-19\) shall be applicable to a specific subset of SVs identified in the GPS PRN Inclusion Mask for the given Service Level, start time, and constellation identified by GNSS ID, which is = 0100.](#)

Object Type: [Requirement](#)

IS:

Each 236-bit GPS ISM Packet (see Figure 30-19) shall be applicable to a specific subset of SVs identified in the GPS PRN Inclusion Mask for the given Service Level, start time, and constellation identified by GNSS ID, which is = 0100.

Object Type: Requirement

IS200-1767:

Section Number:

30.3.3.10.1.2.2.0-2

WAS:

The bit lengths, scale factors, ranges, and units of these parameters are given in Table 30-XIa.

Object Type: <blank>

Redlines:

The bit lengths, scale factors, ranges, and units of ~~these~~[this packet's](#) parameters are given in Table 30-XIa.

Object Type: ~~<blank>~~[Info-Only](#)

IS:

The bit lengths, scale factors, ranges, and units of this packet's parameters are given in Table 30-XIa.

Object Type: Info-Only

IS200-2398:

Insertion after object IS200-2397

Section Number:

30.3.3.10.1.2.2.0-3

WAS:

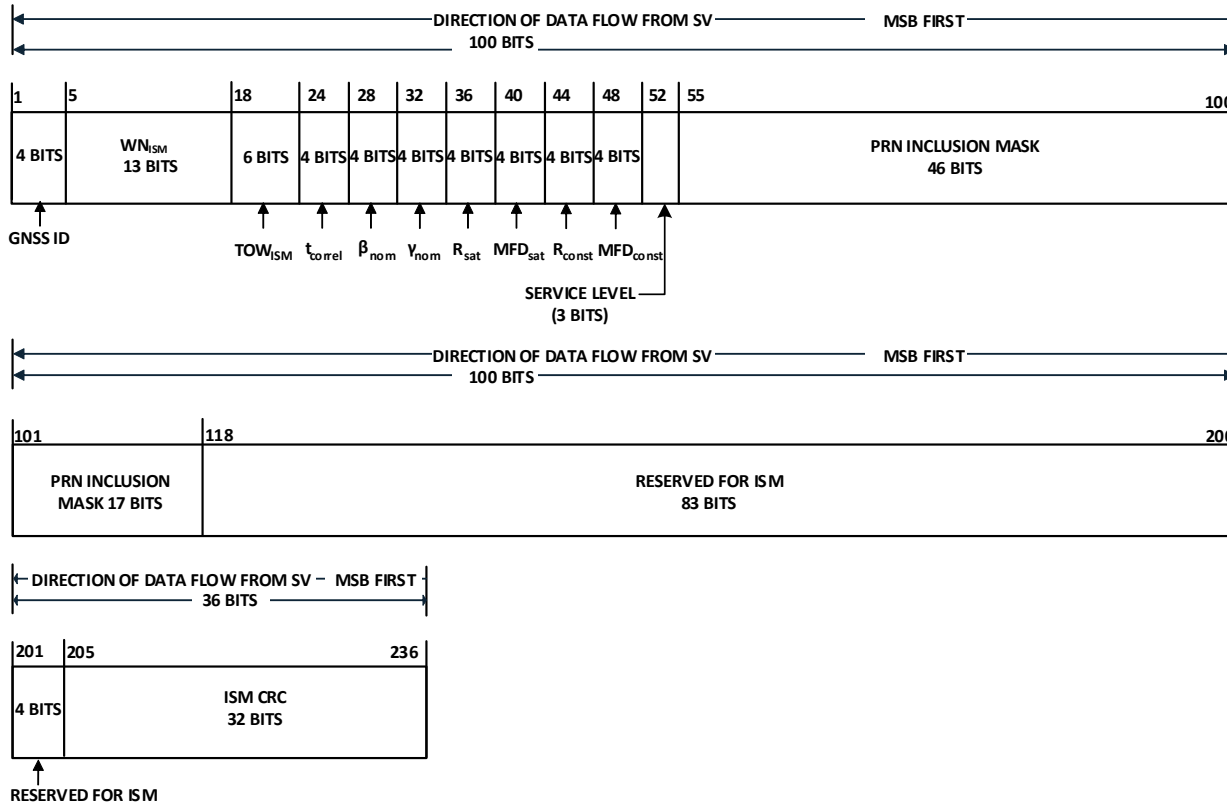
<INSERTED OBJECT>

Redlines:

(see IS: below)

Object Type: [Figure](#)

IS:



Object Type: Figure

IS200-2399:

Insertion after object IS200-2398

Section Number:

30.3.3.10.1.2.2.0-4

WAS:

<INSERTED OBJECT>

Redlines:

[Figure 30-19 GPS ISM Packet](#)

Object Type: [Figure Caption](#)

IS:

Figure 30-19 GPS ISM Packet

Object Type: Figure Caption

IS200-1772:

Section Number:

30.3.3.10.1.2.2.0-5

WAS:

Table 30-XIa. ISM Parameters

Redlines:

Table 30-XIa. ~~–~~ [GPS](#) ISM [Packet](#) Parameters

IS:

Table 30-XIa – GPS ISM Packet Parameters

IS200-1770:

Section Number:

30.3.3.10.1.2.2.0-5.0-1

WAS:

Parameter	No. of Bits**	Scale Factor (LSB)	Valid Range***	Units
GNSS ID	4			
WN_{ISM}	13	1		weeks
TOW_{ISM}	6	4	0 to 164	hours
t_{correl}	4		0 to 12	hours
b_{nom}	4		0 to 2	meters
γ_{nom}	4		0 to 2	
R_{sat}	4		1×10^{-3} to 3.16×10^{-10}	/hours
P_{const}	4		1×10^{-3} to 3.16×10^{-10}	
MFD	4		0.25 to 24	hours
Service Level*	3			
Mask****	63			
* See Table 30-XIb for Service Level Descriptions ** See Figure 30-14a for complete bit allocation in Message Type 40 *** Unless otherwise indicated in this column, valid range is the maximum range attainable with indicated bit allocation and scale factor **** See Table 30-XIb for Mask bit mapping				

Redlines:

Parameter	No. of Bits**	Scale Factor (LSB)	Valid Range***	Units
WN _{ISM}	13	1		weeks
TOW _{ISM}	6	4	0 to 164	hours
t _{correl}	4		0 to 12 See text	hours
b β _{nom}	4	<u>0.1</u>	0 to 2	meters
γ _{nom}	4	<u>0.05</u>	0 to 2	<u>dimensionless</u>
R _{sat}	4		1x10⁻³ to 3.16x10⁻¹⁰ See text	/hours
<u>MFD_{sat}</u>	<u>4</u>		See text	
R R _{const}	<u>4</u>		See text	
MFD _{const}	4		0.25 to 24 See text	hours
Service Level***	3		See text	
<u>GPS PRN Inclusion Mask</u> ****	63		See text	
<u>Reserved For ISM</u>	<u>87</u>		See text	
<u>ISM CRC</u>	<u>32</u>		See text	
* See Figure 30-19 14a for complete bit allocations in <u>the GPS ISM Packet</u> Message Type 40 ** Unless otherwise indicated in this column, valid range is the maximum range attainable with indicated bit allocation and scale factor *** See Table 30-XIb for Service Level Descriptions **** See Table 30-XIb <u>c</u> for <u>GPS PRN Inclusion</u> Mask bit mapping				

IS:

Parameter	No. of Bits*	Scale Factor (LSB)	Valid Range**	Units
WN _{ISM}	13	1		weeks
TOW _{ISM}	6	4	0 to 164	hours
t _{correl}	4		See text	
β _{nom}	4	0.1		meters
γ _{nom}	4	0.05		dimensionless
R _{sat}	4		See text	
MFD _{sat}	4		See text	
R _{const}	4		See text	
MFD _{const}	4		See text	
Service Level***	3		See text	
GPS PRN Inclusion Mask ****	63		See text	
Reserved For ISM	87		See text	
ISM CRC	32		See text	
* See Figure 30-19 for complete bit allocations in the GPS ISM Packet ** Unless otherwise indicated in this column, valid range is the maximum range attainable with indicated bit allocation and scale factor *** See Table 30-XIb for Service Level Descriptions **** See Table 30-XIc for GPS PRN Inclusion Mask bit mapping				

IS200-1779:

Section Number:

30.3.3.10.1.2.2.1.0-1

WAS:

Bits 43 through 55 of Message Type 40 shall provide the ISM Week Number (WN_{ISM}) applicable to the start of the time of validity for a given ISM data issue.

Object Type: <blank>

Redlines:

Bits ~~43~~5 through ~~55~~17 of ~~Message~~[the TypeGPS 40ISM Packet](#) shall provide the ISM Week Number (WN_{ISM}) applicable to the start of the time of validity for a given ISM ~~data~~[Packet issue](#)([see paragraph 6.2.4](#)).

Object Type: ~~<blank>~~[Requirement](#)

IS:

Bits 5 through 17 of the GPS ISM Packet shall provide the ISM Week Number (WN_{ISM}) applicable to the start of the time of validity for a given ISM Packet (see paragraph 6.2.4).

Object Type: Requirement

IS200-1780:

Section Number:

30.3.3.10.1.2.2.1.0-2

WAS:

This parameter describes the time stamp, in terms of weeks, for the ISM parameters.

Object Type: <blank>

Redlines:

This parameter describes the time stamp, in terms of weeks, for the ~~ISM~~[ISD](#) parameters.

Object Type: ~~<blank>~~[Info-Only](#)

IS:

This parameter describes the time stamp, in terms of weeks, for the ISD parameters.

Object Type: Info-Only

IS200-1782:

Section Number:

30.3.3.10.1.2.2.2.0-1

WAS:

Bits 56 through 61 of Message Type 40 shall provide the ISM Time of Week (TOW_{ISM}) applicable to the start of the time of validity for a given ISM data issue.

Object Type: <blank>

Redlines:

Bits ~~56~~18 through ~~61~~23 of ~~Message~~[the TypeGPS 40ISM Packet](#) shall provide the ISM Time of Week (TOW_{ISM}) applicable to the start of the time of validity for a given ISM-~~data~~ ~~issue~~[Packet](#).

Object Type: ~~<blank>~~[Requirement](#)

IS:

Bits 18 through 23 of the GPS ISM Packet shall provide the ISM Time of Week (TOW_{ISM}) applicable to the start of the time of validity for a given ISM Packet.

Object Type: Requirement

IS200-1783:

Section Number:

30.3.3.10.1.2.2.2.0-2

WAS:

This parameter describes the time stamp, in terms of hours, for the ISM parameters.

Object Type: <blank>

Redlines:

This parameter describes the time stamp, in terms of hours, for the ~~ISM~~ISD parameters.

Object Type: ~~<blank>~~Info-Only

IS:

This parameter describes the time stamp, in terms of hours, for the ISD parameters.

Object Type: Info-Only

IS200-1990:

Section Number:

30.3.3.10.1.2.2.2.0-3

WAS:

Users should use the ISM parameters with the most recent WN_{ISM} and TOW_{ISM} time stamp. All time stamps should be in the past.

Object Type: <blank>

Redlines:

Users should use the ISM parameters with the most recent WN_{ISM} and TOW_{ISM} time stamp. All time stamps ~~should~~shall be in the past.

Object Type: ~~<blank>~~Requirement

IS:

Users should use the ISM parameters with the most recent WN_{ISM} and TOW_{ISM} time stamp. All time stamps shall be in the past.

Object Type: Requirement

IS200-1791:

Section Number:

30.3.3.10.1.2.2.3.0-1

WAS:

Bits 62 through 65 of Message Type 40 shall provide the assumed Correlation Time Constant (t_{correl}) value for the ARAIM at the current time for the associated GNSS constellation.

Object Type: <blank>

Redlines:

Bits ~~62~~24 through ~~65~~27 of ~~Message~~the TypeGPS 40ISM Packet shall provide the~~assumed~~ Correlation Time Constant (t_{correl}) value for the ~~ARAIM~~errors atcharacterized theby currentthe timeURA for use consistent with the other parameters in the associated ~~GNSS~~ISM ~~constellation~~packet.

Object Type: ~~<blank>~~Requirement

IS:

Bits 24 through 27 of the GPS ISM Packet shall provide the Correlation Time Constant (t_{correl}) value for the errors characterized by the URA for use consistent with the other parameters in the associated ISM packet.

Object Type: Requirement

IS200-1792:**Section Number:**

30.3.3.10.1.2.2.3.0-2

WAS:

The four bits are defined as follows:

0000 = 0.25 hours

0001 = 0.33 hours

0010 = 0.50 hours

0011 = 0.67 hours

0100 = 0.83 hours

0101 = 1.00 hour

0110 = 1.17 hours

0111 = 1.33 hours

1000 = 1.50 hours

1001 = 2.10 hours

1010 = 3.00 hours

1011 = 4.20 hours

1100 = 6.00 hours

1101 = 8.50 hours

1110 = 12.00 hours

1111 = RESERVED

Object Type: <blank>**Redlines:**

The four bits are defined as follows:

0000 = 0.25 hours

0001 = 0.33 hours

0010 = 0.50 hours

0011 = 0.67 hours

0100 = 0.83 hours

0101 = 1.00 hour

0110 = 1.17 hours

0111 = 1.33 hours

1000 = 1.50 hours

1001 = 2.10 hours

1010 = 3.00 hours

1011 = 4.20 hours

1100 = 6.00 hours

1101 = 8.50 hours

1110 = 12.00 hours

1111 = ~~RESERVED~~[Reserved](#)*Object Type:* ~~<blank>~~[Info-Only](#)

IS:

The four bits are defined as follows:

0000 = 0.25 hours
0001 = 0.33 hours
0010 = 0.50 hours
0011 = 0.67 hours
0100 = 0.83 hours
0101 = 1.00 hour
0110 = 1.17 hours
0111 = 1.33 hours
1000 = 1.50 hours
1001 = 2.10 hours
1010 = 3.00 hours
1011 = 4.20 hours
1100 = 6.00 hours
1101 = 8.50 hours
1110 = 12.00 hours
1111 = Reserved

Object Type: Info-Only

IS200-1802:**Section Number:**

30.3.3.10.1.2.2.4

WAS:*Object Heading* 30.3.3.10.1.2.2.4 Additive Term for Nominal Pseudorange Error Bias**Redlines:***Object Heading* 30.3.3.10.1.2.2.4 [IAURA-Independent](#) Additive Term for Nominal Pseudorange Error Bias**IS:***Object Heading* 30.3.3.10.1.2.2.4 IAURA-Independent Additive Term for Nominal Pseudorange Error Bias**IS200-1803:****Section Number:**

30.3.3.10.1.2.2.4.0-1

WAS:Bits 66 through 69 of Message Type 40 shall provide the assumed Additive Term (b_{nom}) value for ARAIM at the current time for the associated GNSS constellation.*Object Type:* <blank>**Redlines:**Bits ~~66~~28 through ~~69~~31 of ~~Message~~[the Type GPS 40 ISM Packet](#) shall provide the ~~assumed~~[IAURA-Independent](#) Additive Term (~~b_{nom}~~ [β_{nom}](#)) value for ~~ARAIM~~[use at consistent with the current other time parameters for in the associated ISM GNSS packet, constellation](#). The β_{nom} bounds additive biases in the instantaneous URE that do not scale with IAURA, which is defined in section 30.3.3.1.1.*Object Type:* ~~<blank>~~[Requirement](#)**IS:**Bits 28 through 31 of the GPS ISM Packet shall provide the IAURA-Independent Additive Term (β_{nom}) value for use consistent with the other parameters in the ISM packet. The β_{nom} bounds additive biases in the instantaneous URE that do not scale with IAURA, which is defined in section 30.3.3.1.1.*Object Type:* Requirement

IS200-1804:

Section Number:

30.3.3.10.1.2.2.4.0-2

WAS:

The four bits are defined as follows:

0000 = 0.00 meters
0001 = 0.13 meters
0010 = 0.25 meters
0011 = 0.38 meters
0100 = 0.50 meters
0101 = 0.63 meters
0110 = 0.75 meters
0111 = 0.88 meters
1000 = 1.00 meter
1001 = 1.13 meters
1010 = 1.25 meters
1011 = 1.38 meters
1100 = 1.50 meters
1101 = 1.63 meters
1110 = 1.75 meters
1111 = 2.00 meters

Redlines:

~~The four bits are defined as follows:~~

~~0000 = 0.00 meters~~
~~0001 = 0.13 meters~~
~~0010 = 0.25 meters~~
~~0011 = 0.38 meters~~
~~0100 = 0.50 meters~~
~~0101 = 0.63 meters~~
~~0110 = 0.75 meters~~
~~0111 = 0.88 meters~~
~~1000 = 1.00 meter~~
~~1001 = 1.13 meters~~
~~1010 = 1.25 meters~~
~~1011 = 1.38 meters~~
~~1100 = 1.50 meters~~
~~1101 = 1.63 meters~~
~~1110 = 1.75 meters~~
~~1111 = 2.00 meters~~

IS:

<DELETED OBJECT>

IS200-1806:

Section Number:

30.3.3.10.1.2.2.5.0-1

WAS:

Bits 70 through 73 of Message Type 40 shall provide the assumed Scalar Term (γ_{nom}) value for ARAIM at the current time for the associated GNSS constellation.

Object Type: <blank>

Redlines:

Bits ~~70~~32 through ~~73~~35 of ~~Message~~the Type ~~GPS 40~~ISM Packet shall provide the ~~assumed~~ Scalar Term (~~γ_{nom}~~ γ_{nom}) value for ~~ARAIM~~use at ~~consistent with the current other time parameters for~~in the associated ISM GNSS packet, constellation ~~The γ_{nom} bounds normalized additive biases in the instantaneous URE that scale with IAURA, which is defined in section 30.3.3.1.1.~~

Object Type: ~~<blank>~~Requirement

IS:

Bits 32 through 35 of the GPS ISM Packet shall provide the Scalar Term (γ_{nom}) value for use consistent with the other parameters in the ISM packet. The γ_{nom} bounds normalized additive biases in the instantaneous URE that scale with IAURA, which is defined in section 30.3.3.1.1.

Object Type: Requirement

IS200-1807:

Section Number:

30.3.3.10.1.2.2.5.0-2

WAS:

The four bits are defined as follows:

0000 = 0.00

0001 = 0.13

0010 = 0.25

0011 = 0.38

0100 = 0.50

0101 = 0.63

0110 = 0.75

0111 = 0.88

1000 = 1.00

1001 = 1.13

1010 = 1.25

1011 = 1.38

1100 = 1.50

1101 = 1.63

1110 = 1.75

1111 = 2.00

Redlines:

~~The four bits are defined as follows:~~

~~0000 = 0.00~~

~~0001 = 0.13~~

~~0010 = 0.25~~

~~0011 = 0.38~~

~~0100 = 0.50~~

~~0101 = 0.63~~

~~0110 = 0.75~~

~~0111 = 0.88~~

~~1000 = 1.00~~

~~1001 = 1.13~~

~~1010 = 1.25~~

~~1011 = 1.38~~

~~1100 = 1.50~~

~~1101 = 1.63~~

~~1110 = 1.75~~

~~1111 = 2.00~~

IS:

<DELETED OBJECT>

IS200-1797:

Section Number:

30.3.3.10.1.2.2.6.0-1

WAS:

Bits 74 through 77 of Message Type 40 shall provide the assumed Satellite Fault Rate (R_{sat}) value for ARAIM at the current time for the associated GNSS constellation.

Object Type: <blank>

Redlines:

Bits ~~74~~36 through ~~77~~39 of ~~Message~~the Type ~~GPS 40~~ISM Packet shall provide the ~~assumed~~ Satellite Fault Rate (R_{sat}) value for ~~ARAIM~~use at ~~consistent with~~ the ~~current~~other time ~~parameters for~~in the ~~associated~~ISM GNSS ~~packet~~constellation.

R_{sat} is the onset rate at which the instantaneous URE of any given satellite exceeds ± 4.42 times the IAURA.

Object Type: ~~<blank>~~Requirement

IS:

Bits 36 through 39 of the GPS ISM Packet shall provide the Satellite Fault Rate (R_{sat}) value for use consistent with the other parameters in the ISM packet.

R_{sat} is the onset rate at which the instantaneous URE of any given satellite exceeds ± 4.42 times the IAURA.

Object Type: Requirement

IS200-1798:

Section Number:

30.3.3.10.1.2.2.6.0-2

WAS:

The four bits are defined as follows:

0000 = 3.16×10^{-3} /hours

0001 = 1×10^{-3} /hours

0010 = 3.16×10^{-4} /hours

0011 = 1×10^{-4} /hours

0100 = 3.16×10^{-5} /hours

0101 = 1×10^{-5} /hours

0110 = 3.16×10^{-6} /hours

0111 = 1×10^{-6} /hours

1000 = 3.16×10^{-7} /hours

1001 = 1×10^{-7} /hours

1010 = 3.16×10^{-8} /hours

1011 = 1×10^{-8} /hours

1100 = 3.16×10^{-9} /hours

1101 = 1×10^{-9} /hours

1110 = 3.16×10^{-10} /hours

1111 = RESERVED

Object Type: <blank>

Redlines:

The four bits are defined as follows:

0000 = ~~3.16~~ ~~x~~ ~~00~~ ~~x~~ 10^{-38} /~~hours~~ hour

0001 = ~~1~~ ~~x~~ 10^{-3} /~~hours~~

~~0010~~ = ~~3.16~~ ~~x~~ ~~x~~ 10^{-48} /~~hours~~ hour

~~0011~~ 0010 = ~~1~~ ~~x~~ ~~.00~~ 10^{-47} /~~hours~~ hour

~~0100~~ 0011 = ~~3.16~~ ~~x~~ ~~x~~ 10^{-57} /~~hours~~ hour

~~0101~~ 0100 = ~~1~~ ~~x~~ ~~.00~~ 10^{-56} /~~hours~~ hour

~~0110~~ 0101 = ~~3.16~~ ~~x~~ ~~x~~ 10^{-6} /~~hours~~ hour

~~0111~~ 0110 = ~~1~~ ~~x~~ ~~.00~~ 10^{-65} /~~hours~~ hour

~~1000~~ 0111 = ~~3.16~~ ~~x~~ ~~x~~ 10^{-75} /~~hours~~ hour *

~~1001~~ 1000 = ~~1~~ ~~x~~ ~~.00~~ 10^{-74} /~~hours~~ hour *

~~1010~~ 1001 = ~~3.16~~ *Reserved

1010 ~~10⁻⁸~~ = /~~hours~~ Reserved

1011 = ~~1~~ ~~x~~ 10^{-8} /~~hours~~ Reserved

1100 = ~~3.16~~ Reserved

1101 ~~x~~ = ~~10⁻⁹~~ Reserved

1110 /~~hours~~ = Reserved

~~1101~~ 1111 = ~~1~~ Reserved

* *Values ~~10⁻⁹~~ inconsistent /~~hours~~

~~1110~~ with =GPS ~~3.16~~ performance *commitments ~~10⁻¹⁰~~ are /~~hours~~

~~1111~~ included =to RESERVED

support Service Level 4 operations

Object Type: ~~<blank>~~ Info-Only

IS:

The four bits are defined as follows:

$$0000 = 1.00 \times 10^{-8} \text{ /hour}$$

$$0001 = 3.16 \times 10^{-8} \text{ /hour}$$

$$0010 = 1.00 \times 10^{-7} \text{ /hour}$$

$$0011 = 3.16 \times 10^{-7} \text{ /hour}$$

$$0100 = 1.00 \times 10^{-6} \text{ /hour}$$

$$0101 = 3.16 \times 10^{-6} \text{ /hour}$$

$$0110 = 1.00 \times 10^{-5} \text{ /hour}$$

$$0111 = 3.16 \times 10^{-5} \text{ /hour} *$$

$$1000 = 1.00 \times 10^{-4} \text{ /hour} *$$

$$1001 = \text{Reserved}$$

$$1010 = \text{Reserved}$$

$$1011 = \text{Reserved}$$

$$1100 = \text{Reserved}$$

$$1101 = \text{Reserved}$$

$$1110 = \text{Reserved}$$

$$1111 = \text{Reserved}$$

* Values inconsistent with GPS performance commitments are included to support Service Level 4 operations

Object Type: Info-Only

IS200-2126:

Insertion after object IS200-1796

Section Number:

30.3.3.10.1.2.2.7

WAS:

<INSERTED OBJECT>

Redlines:

Object Heading 30.3.3.10.1.2.2.7 [Mean Duration of a Satellite Fault](#)

Object Type: [Header](#)

IS:

Object Heading 30.3.3.10.1.2.2.7 Mean Duration of a Satellite Fault

Object Type: Header

IS200-2127:

Insertion below object IS200-2126

Section Number:

30.3.3.10.1.2.2.7.0-1

WAS:

<INSERTED OBJECT>

Redlines:

[Bits 40 through 43 of the GPS ISM Packet shall provide the mean duration of a satellite fault \(MFD_{sat}\) value for use consistent with the other parameters in the ISM packet.](#)

[MFD_{sat} is the mean duration the instantaneous URE of any given satellite exceeds \$\pm 4.42\$ times the IAURA without a timely notification issued to the user.](#)

Object Type: [Requirement](#)

IS:

Bits 40 through 43 of the GPS ISM Packet shall provide the mean duration of a satellite fault (MFD_{sat}) value for use consistent with the other parameters in the ISM packet.

MFD_{sat} is the mean duration the instantaneous URE of any given satellite exceeds ± 4.42 times the IAURA without a timely notification issued to the user.

Object Type: Requirement

IS200-2128:

Insertion after object IS200-2127

Section Number:

30.3.3.10.1.2.2.7.0-2

WAS:

<INSERTED OBJECT>

Redlines:

The four bits are defined as follows:

0000 = 0.25 hour

0001 = 0.5 hour

0010 = 1.0 hour

0011 = 2.0 hours *

0100 = 4.0 hours *

0101 = 6.0 hours *

0110 = 8.0 hours *

0111 = Reserved

1000 = Reserved

1001 = Reserved

1010 = Reserved

1011 = Reserved

1100 = Reserved

1101 = Reserved

1110 = Reserved

1111 = Reserved

* Values inconsistent with GPS performance commitments are included to support Service Level 4 operations.

Object Type: Info-Only

IS:

The four bits are defined as follows:

0000 = 0.25 hour

0001 = 0.5 hour

0010 = 1.0 hour

0011 = 2.0 hours *

0100 = 4.0 hours *

0101 = 6.0 hours *

0110 = 8.0 hours *

0111 = Reserved

1000 = Reserved

1001 = Reserved

1010 = Reserved

1011 = Reserved

1100 = Reserved

1101 = Reserved

1110 = Reserved

1111 = Reserved

* Values inconsistent with GPS performance commitments are included to support Service Level 4 operations.

Object Type: Info-Only

IS200-1787:**Section Number:**

30.3.3.10.1.2.2.8

WAS:*Object Heading* 30.3.3.10.1.2.2.8 Constellation Fault Probability**Redlines:***Object Heading* 30.3.3.10.1.2.2.8 Constellation Fault ~~Probability~~Rate**IS:***Object Heading* 30.3.3.10.1.2.2.8 Constellation Fault Rate**IS200-1788:****Section Number:**

30.3.3.10.1.2.2.8.0-1

WAS:Bits 78 through 81 of Message Type 40 shall provide the assumed Constellation Fault Probability (P_{const}) value for ARAIM at the current time for the associated GNSS constellation.*Object Type:* <blank>**Redlines:**Bits ~~78~~44 through ~~81~~47 of ~~Message~~the Type ~~GPS 40~~ISM Packet shall provide the ~~assumed Constellation~~constellation ~~Fault~~fault ~~Probability~~rate (~~P_{const}~~ R_{const}) value for ~~ARAIM~~use at ~~consistent with~~the ~~current~~other time ~~parameters for~~in the ~~associated~~ISM ~~GNSS~~packet. R_{const} is constellation the onset rate at which the instantaneous URE of two or more satellites exceed, due to a common cause, ± 4.42 times the IAURA.*Object Type:* ~~<blank>~~Requirement**IS:**Bits 44 through 47 of the GPS ISM Packet shall provide the constellation fault rate (R_{const}) value for use consistent with the other parameters in the ISM packet. R_{const} is the onset rate at which the instantaneous URE of two or more satellites exceed, due to a common cause, ± 4.42 times the IAURA.*Object Type:* Requirement

IS200-1789:

Section Number:

30.3.3.10.1.2.2.8.0-2

WAS:

The four bits are defined as follows:

0000 = 3.16×10^{-3}
0001 = 1×10^{-3}
0010 = 3.16×10^{-4}
0011 = 1×10^{-4}
0100 = 3.16×10^{-5}
0101 = 1×10^{-5}
0110 = 3.16×10^{-6}
0111 = 1×10^{-6}
1000 = 3.16×10^{-7}
1001 = 1×10^{-7}
1010 = 3.16×10^{-8}
1011 = 1×10^{-8}
1100 = 3.16×10^{-9}
1101 = 1×10^{-9}
1110 = 3.16×10^{-10}
1111 = RESERVED

Object Type: <blank>

Redlines:

The four bits are defined as follows:

0000 = 3.16×10^{-10} /hour
0001 = 1×10^{-9} /hour
0010 = 3.16×10^{-9} /hour
0011 = 1×10^{-8} /hour
0100 = 3.16×10^{-8} /hour *
0101 = 1×10^{-7} /hour *
0110 = 3.16×10^{-6} /hour *
0111 = 1×10^{-6} /hour *
1000 = 3.16×10^{-7} /hour *
1001 = 1×10^{-7} Reserved
1010 = 3.16×10^{-8} Reserved
1011 = 1×10^{-8} Reserved
1100 = 3.16×10^{-9} Reserved
1101 = 1×10^{-9} Reserved
1110 = 3.16×10^{-10} Reserved
1111 = RESERVED Reserved

* Values inconsistent with GPS performance commitments are included to support Service Level 4 operations.

Object Type: <blank> Info-Only

IS:

The four bits are defined as follows:

$$0000 = 3.16 \times 10^{-10} \text{ /hour}$$

$$0001 = 1.00 \times 10^{-9} \text{ /hour}$$

$$0010 = 3.16 \times 10^{-9} \text{ /hour}$$

$$0011 = 1.00 \times 10^{-8} \text{ /hour}$$

$$0100 = 3.16 \times 10^{-8} \text{ /hour} *$$

$$0101 = 1.00 \times 10^{-7} \text{ /hour} *$$

$$0110 = 3.16 \times 10^{-7} \text{ /hour} *$$

$$0111 = 1.00 \times 10^{-6} \text{ /hour} *$$

$$1000 = 3.16 \times 10^{-6} \text{ /hour} *$$

$$1001 = \text{Reserved}$$

$$1010 = \text{Reserved}$$

$$1011 = \text{Reserved}$$

$$1100 = \text{Reserved}$$

$$1101 = \text{Reserved}$$

$$1110 = \text{Reserved}$$

$$1111 = \text{Reserved}$$

* Values inconsistent with GPS performance commitments are included to support Service Level 4 operations.

Object Type: Info-Only

IS200-1799:

Section Number:

30.3.3.10.1.2.2.9

WAS:

Object Heading 30.3.3.10.1.2.2.9 Mean Fault Duration

Redlines:

Object Heading 30.3.3.10.1.2.2.9 Mean ~~Fault~~ Duration of a Constellation Fault

IS:

Object Heading 30.3.3.10.1.2.2.9 Mean Duration of a Constellation Fault

IS200-1800:

Section Number:

30.3.3.10.1.2.2.9.0-1

WAS:

Bits 82 through 85 of Message Type 40 shall provide the assumed Mean Fault Duration (MFD) value for ARAIM at the current time for the associated GNSS constellation.

Object Type: <blank>

Redlines:

Bits ~~82~~48 through ~~85~~51 of ~~Message~~the Type ~~GPS 40~~ISM Packet shall provide the ~~assumed~~mean ~~Meanduration~~Fault ~~of~~Duration ~~a constellation fault~~(MFD ~~MFDconst)~~MFDconst) value for ~~ARAIM~~use at ~~consistent with~~the ~~current~~other ~~time~~parameters ~~for~~in the ~~associated~~ISM GNSS ~~packet~~.

MFDconst is the mean duration the instantaneous URE of two or more satellites exceed, due to a common cause, ± 4.42 times the IAURA without a timely notification issued to the user.

Object Type: ~~<blank>~~ Requirement

IS:

Bits 48 through 51 of the GPS ISM Packet shall provide the mean duration of a constellation fault (MFD_{const}) value for use consistent with the other parameters in the ISM packet.

MFD_{const} is the mean duration the instantaneous URE of two or more satellites exceed, due to a common cause, ± 4.42 times the IAURA without a timely notification issued to the user.

Object Type: Requirement

IS200-1801:

Section Number:

30.3.3.10.1.2.2.9.0-2

WAS:

The four bits are defined as follows:

0000 = 0.25 hours

0001 = 0.33 hours

0010 = 0.50 hours

0011 = 0.67 hours

0100 = 0.83 hours

0101 = 1 hour

0110 = 1.25 hours

0111 = 1.50 hours

1000 = 1.75 hours

1001 = 2 hours

1010 = 3 hours

1011 = 4 hours

1100 = 7 hours

1101 = 10 hours

1110 = 17 hours

1111 = 24 hours

Object Type: <blank>

Redlines:

The four bits are defined as follows:

0000 = 0.25 ~~hours~~ hour

0001 = 0.~~33~~5 ~~hours~~ hour

0010 = ~~0.1~~1.50 ~~hours~~ hour

0011 = ~~0.2~~2.67 hours *

0100 = ~~0.4~~4.83 hours *

0101 = ~~1.6~~6.0 ~~hour~~ hours *

0110 = ~~1.8~~8.25 hours *

0111 = ~~1.50~~ ~~hours~~ Reserved

1000 = ~~1.75~~ ~~hours~~ Reserved

1001 = ~~2~~ ~~hours~~ Reserved

1010 = ~~3~~ ~~hours~~ Reserved

1011 = ~~4~~ ~~hours~~ Reserved

1100 = ~~7~~ ~~hours~~ Reserved

1101 = ~~10~~ ~~hours~~ Reserved

1110 = ~~17~~ ~~hours~~ Reserved

1111 = ~~24~~ ~~hours~~ Reserved

* Values inconsistent with GPS performance commitments are included to support Service Level 4 operations.

Object Type: ~~<blank>~~ Info-Only

IS:

The four bits are defined as follows:

0000 = 0.25 hour

0001 = 0.5 hour

0010 = 1.0 hour

0011 = 2.0 hours *

0100 = 4.0 hours *

0101 = 6.0 hours *

0110 = 8.0 hours *

0111 = Reserved

1000 = Reserved

1001 = Reserved

1010 = Reserved

1011 = Reserved

1100 = Reserved

1101 = Reserved

1110 = Reserved

1111 = Reserved

* Values inconsistent with GPS performance commitments are included to support Service Level 4 operations.

Object Type: Info-Only

IS200-1785:

Section Number:

30.3.3.10.1.2.2.10.0-1

WAS:

Bits 86 through 88 of Message Type 40 shall provide the Service Level, as described in Table 30-XIb, applicable to a given page of the ISM data issue.

Object Type: <blank>

Redlines:

Bits ~~86~~52 through ~~88~~54 of ~~Message~~the Type ~~GPS 40~~ISM Packet shall provide the Service Level, as described in Table 30-XIb, ~~applicable for to use a~~consistent given with page ~~the of~~other parameters in the ISM ~~data issue~~packet.

Object Type: ~~<blank>~~Requirement

IS:

Bits 52 through 54 of the GPS ISM Packet shall provide the Service Level, as described in Table 30-XIb, for use consistent with the other parameters in the ISM packet.

Object Type: Requirement

IS200-1786:

Section Number:

30.3.3.10.1.2.2.10.0-2

WAS:

Three bits are allocated to the four identified service levels as follows:

000 = Level 1

001 = Level 2

010 = Level 3

011 = Level 4

100 to 111 = Reserved for future use

Object Type: <blank>

Redlines:

Three bits are allocated to the four identified service levels as follows:

000 = Level 1

001 = Level 2

010 = Level 3

011 = Level 4

100 = Level 5

101 to 111 = Reserved for future use

Object Type: ~~<blank>~~Info-Only

IS:

Three bits are allocated to the four identified service levels as follows:

000 = Level 1

001 = Level 2

010 = Level 3

011 = Level 4

100 = Level 5

101 to 111 = Reserved for future use

Object Type: Info-Only

IS200-1774:

Section Number:

30.3.3.10.1.2.2.10.0-4

WAS:

Service Level	Severity	Description
Level 1	No Data Available	Service Level indicates that users may resort to the Performance Values for integrity solutions instead of this ISM. Users should not use this ISM
Level 2	Non-Safety of Life Use	Service Level indicates that users may only use these parameters for non-safety of life (i.e., uncertified ARAIM) applications.
Level 3	Safety of Life Use (Horizontal)	Service Level indicates that the user should only use these parameters for the applications requiring integrity less than or equivalent to H-ARAIM solutions.
Level 4	Safety of Life Use (Vertical)	Service Level indicates that the user should only use these parameters for the applications requiring integrity less than or equivalent to V-ARAIM solutions.

Redlines:

Service Level	Severity	Description	<u>Notes/Applicability</u>
Level 1	No Data Available	Service Level indicates that users may resort to the Performance Values for integrity solutions instead of this ISM. Users should not use this ISM <u>Broadcast ISD values are invalid. Applicable performance commitments remain valid</u>	<u>Any ISD parameter received for the associated GNSS ID with an effectivity time stamp earlier than the Service Level 1 effectivity time stamp (WN_{ISM} and TOW_{ISM}) is invalid. The Service Level 1 applies to ISD parameters for all other Service Levels</u>
Level 2	Non-Safety of Life Use	Service Level indicates that users may only use these <u>These</u> parameters <u>are</u> for non-safety of life (i.e., uncertified ARAIM) applications	
Level 3	Safety of Life Use (Horizontal)	Service Level indicates that the user should only use these <u>These</u> parameters <u>are</u> for the applications requiring integrity <u>risk</u> less than or equivalent to H-ARAIM solutions	<u>ISD parameters for GPS for Service Level 3 are valid for use with elevation angles greater than or equal to 2 degrees</u>
Level 4	Safety of Life Use (Vertical)	Service Level indicates that the user should only use these <u>These</u> parameters <u>are</u> for the applications requiring integrity <u>risk</u> less than or equivalent to V-ARAIM solutions	<u>ISD parameters for GPS for Service Level 4 are valid for use with elevation angles greater than or equal to 2 degrees</u>
<u>Level 5</u>	<u>Safety of Life Use (Horizontal and Vertical)</u>	<u>These parameters are for applications requiring integrity risk less than or equivalent to H-ARAIM and V-ARAIM solutions. These parameters apply to both Service Level 3 and Service Level 4</u>	

IS:

Service Level	Severity	Description	Notes/Applicability
Level 1	No Data Available	Broadcast ISD parameter values are invalid. Applicable performance commitments remain valid	Any ISD parameter received for the associated GNSS ID with an effectivity time stamp earlier than the Service Level 1 effectivity time stamp (WN_{ISM} and TOW_{ISM}) is invalid. The Service Level 1 applies to ISD parameters for all other Service Levels
Level 2	Non-Safety of Life Use	These parameters are for non-safety of life (i.e., uncertified ARAIM) applications	
Level 3	Safety of Life Use (Horizontal)	These parameters are for applications requiring integrity risk less than or equivalent to H-ARAIM solutions	ISD parameters for GPS for Service Level 3 are valid for use with elevation angles greater than or equal to 2 degrees
Level 4	Safety of Life Use (Vertical)	These parameters are for applications requiring integrity risk less than or equivalent to V-ARAIM solutions	ISD parameters for GPS for Service Level 4 are valid for use with elevation angles greater than or equal to 2 degrees
Level 5	Safety of Life Use (Horizontal and Vertical)	These parameters are for applications requiring integrity risk less than or equivalent to H-ARAIM and V-ARAIM solutions. These parameters apply to both Service Level 3 and Service Level 4	

IS200-1793:

Section Number:

30.3.3.10.1.2.2.11

WAS:

Object Heading 30.3.3.10.1.2.2.11 Satellite Mask

Redlines:

Object Heading 30.3.3.10.1.2.2.11 ~~Satellite~~GPS PRN Inclusion Mask

IS:

Object Heading 30.3.3.10.1.2.2.11 GPS PRN Inclusion Mask

IS200-1794:

Section Number:

30.3.3.10.1.2.2.11.0-1

WAS:

Bits 89 through 151 of Message Type 40 shall provide the PRN inclusion mask. Refer to Table 30-XIc for complete GNSS PRN mapping.

Object Type: <blank>

Redlines:

Bits ~~89~~55 through ~~151~~117 of ~~Message~~the Type ~~GPS 40~~ISM Packet shall provide the GPS PRN ~~inclusion~~Inclusion ~~mask~~Mask. Refer to Table 30-XIc for complete ~~GNSS~~GPS PRN ~~mapping~~Inclusion Mask Mapping.

Object Type: ~~<blank>~~Requirement

IS:

Bits 55 through 117 of the GPS ISM Packet shall provide the GPS PRN Inclusion Mask. Refer to Table 30-XIc for complete GPS PRN Inclusion Mask Mapping.

Object Type: Requirement

IS200-1795:

Section Number:

30.3.3.10.1.2.2.11.0-2

WAS:

The applicability of each PRN is indicated by:

0 = Information in the current ISM does not apply to this PRN

1 = Information in the current ISM does apply to this PRN

Object Type: <blank>

Redlines:

The applicability of each PRN ~~is~~shall be indicated by:

0 = Information in ~~the~~this ~~current~~GPS ISM Packet does not apply to this PRN

1 = Information in ~~the~~this ~~current~~GPS ISM Packet does apply to this PRN

Object Type: ~~<blank>~~Requirement

IS:

The applicability of each PRN shall be indicated by:

0 = Information in this GPS ISM Packet does not apply to this PRN

1 = Information in this GPS ISM Packet does apply to this PRN

Object Type: Requirement

IS200-1815:

Section Number:

30.3.3.10.1.2.2.11.0-3

WAS:

Table 30-XIc. PRN Mapping

Redlines:

Table 30-XIc. ~~— GPS~~ PRN Inclusion Mask Mapping

IS:

Table 30-XIc – GPS PRN Inclusion Mask Mapping

IS200-1816:

Section Number:

30.3.3.10.1.2.2.11.0-4

WAS:

Bits	Galileo	GLONASS	BeiDou	GPS	SBAS	QZSS	IRNSS
89	SVID 1	Freq. 1	RCN 1	PRN 1	PRN 120	PRN 183	PRN ID-1
90	SVID 2	Freq. 2	RCN 2	PRN 2	PRN 121	PRN 184	PRN ID-2
91	SVID 3	Freq. 3	RCN 3	PRN 3	PRN 122	PRN 185	PRN ID-3
92	SVID 4	Freq. 4	RCN 4	PRN 4	PRN 123	PRN 186	PRN ID-4
93	SVID 5	Freq. 5	RCN 5	PRN 5	PRN 124	PRN 187	PRN ID-5
94	SVID 6	Freq. 6	RCN 6	PRN 6	PRN 125	PRN 188	PRN ID-6
95	SVID 7	Freq. 7	RCN 7	PRN 7	PRN 126	PRN 189	PRN ID-7
96	SVID 8	Freq. 8	RCN 8	PRN 8	PRN 127	PRN 190	Reserved
97	SVID 9	Freq. 9	RCN 9	PRN 9	PRN 128	PRN 191	Reserved
98	SVID 10	Freq. 10	RCN 10	PRN 10	PRN 129	PRN 192	Reserved
99	SVID 11	Freq. 11	RCN 11	PRN 11	PRN 130	PRN 193	Reserved
100	SVID 12	Freq. 12	RCN 12	PRN 12	PRN 131	PRN 194	Reserved
101	SVID 13	Freq. 13	RCN 13	PRN 13	PRN 132	PRN 195	Reserved
102	SVID 14	Freq. 14	RCN 14	PRN 14	PRN 133	PRN 196	Reserved
103	SVID 15	Freq. 15	RCN 15	PRN 15	PRN 134	PRN 197	Reserved
104	SVID 16	Freq. 16	RCN 16	PRN 16	PRN 135	PRN 198	Reserved
105	SVID 17	Freq. 17	RCN 17	PRN 17	PRN 136	PRN 199	Reserved
106	SVID 18	Freq. 18	RCN 18	PRN 18	PRN 137	PRN 200	Reserved
107	SVID 19	Freq. 19	RCN 19	PRN 19	PRN 138	PRN 201	Reserved
108	SVID 20	Freq. 20	RCN 20	PRN 20	PRN 139	PRN 202	Reserved
109	SVID 21	Freq. 21	RCN 21	PRN 21	PRN 140	Reserved	Reserved
110	SVID 22	Freq. 22	RCN 22	PRN 22	PRN 141	Reserved	Reserved
111	SVID 23	Freq. 23	RCN 23	PRN 23	PRN 142	Reserved	Reserved
112	SVID 24	Freq. 24	RCN 24	PRN 24	PRN 143	Reserved	Reserved
113	SVID 25	Freq. 25	RCN 25	PRN 25	PRN 144	Reserved	Reserved
114	SVID 26	Freq. 26	RCN 26	PRN 26	PRN 145	Reserved	Reserved
115	SVID 27	Freq. 27	RCN 27	PRN 27	PRN 146	Reserved	Reserved
116	SVID 28	Freq. 28	RCN 28	PRN 28	PRN 147	Reserved	Reserved
117	SVID 29	Freq. 29	RCN 29	PRN 29	PRN 148	Reserved	Reserved
118	SVID 30	Freq. 30	RCN 30	PRN 30	PRN 149	Reserved	Reserved
119	SVID 31	Freq. 31	RCN 31	PRN 31	PRN 150	Reserved	Reserved
120	SVID 32	Freq. 32	RCN 32	PRN 32	PRN 151	Reserved	Reserved
121	SVID 33	Reserved	RCN 33	PRN 33	PRN 152	Reserved	Reserved
122	SVID 34	Reserved	RCN 34	PRN 34	PRN 153	Reserved	Reserved
123	SVID 35	Reserved	RCN 35	PRN 35	PRN 154	Reserved	Reserved
124	SVID 36	Reserved	RCN 36	PRN 36	PRN 155	Reserved	Reserved
125	Reserved	Reserved	RCN 37	PRN 37	PRN 156	Reserved	Reserved
126	Reserved	Reserved	Reserved	PRN 38	PRN 157	Reserved	Reserved
127	Reserved	Reserved	Reserved	PRN 39	PRN 158	Reserved	Reserved
128	Reserved	Reserved	Reserved	PRN 40	Reserved	Reserved	Reserved
129	Reserved	Reserved	Reserved	PRN 41	Reserved	Reserved	Reserved
130	Reserved	Reserved	Reserved	PRN 42	Reserved	Reserved	Reserved
131	Reserved	Reserved	Reserved	PRN 43	Reserved	Reserved	Reserved
132	Reserved	Reserved	Reserved	PRN 44	Reserved	Reserved	Reserved
133	Reserved	Reserved	Reserved	PRN 45	Reserved	Reserved	Reserved
134	Reserved	Reserved	Reserved	PRN 46	Reserved	Reserved	Reserved
135	Reserved	Reserved	Reserved	PRN 47	Reserved	Reserved	Reserved
136	Reserved	Reserved	Reserved	PRN 48	Reserved	Reserved	Reserved

Bits	Galileo	GLONASS	BeiDou	GPS	SBAS	QZSS	IRNSS
137	Reserved	Reserved	Reserved	PRN 49	Reserved	Reserved	Reserved
138	Reserved	Reserved	Reserved	PRN 50	Reserved	Reserved	Reserved
139	Reserved	Reserved	Reserved	PRN 51	Reserved	Reserved	Reserved
140	Reserved	Reserved	Reserved	PRN 52	Reserved	Reserved	Reserved
141	Reserved	Reserved	Reserved	PRN 53	Reserved	Reserved	Reserved
142	Reserved	Reserved	Reserved	PRN 54	Reserved	Reserved	Reserved
143	Reserved	Reserved	Reserved	PRN 55	Reserved	Reserved	Reserved
144	Reserved	Reserved	Reserved	PRN 56	Reserved	Reserved	Reserved
145	Reserved	Reserved	Reserved	PRN 57	Reserved	Reserved	Reserved
146	Reserved	Reserved	Reserved	PRN 58	Reserved	Reserved	Reserved
147	Reserved	Reserved	Reserved	PRN 59	Reserved	Reserved	Reserved
148	Reserved	Reserved	Reserved	PRN 60	Reserved	Reserved	Reserved
149	Reserved	Reserved	Reserved	PRN 61	Reserved	Reserved	Reserved
150	Reserved	Reserved	Reserved	PRN 62	Reserved	Reserved	Reserved
151	Reserved	Reserved	Reserved	PRN 63	Reserved	Reserved	Reserved
SVID = Space Vehicle ID Freq. = Carrier Frequency Number RCN = Ranging Code Number PRN = Pseudorandom Noise Number							

Redlines:

Bits	Galileo	GLONASS	BeiDou	GPS PRN	SBAS	QZSS	IRNSS
8955	SVID-1	Freq-1	RCN-1	PRN 1	PRN-120	PRN-183	PRN-ID-1
9056	SVID-2	Freq-2	RCN-2	PRN 2	PRN-121	PRN-184	PRN-ID-2
9157	SVID-3	Freq-3	RCN-3	PRN 3	PRN-122	PRN-185	PRN-ID-3
9258	SVID-4	Freq-4	RCN-4	PRN 4	PRN-123	PRN-186	PRN-ID-4
9359	SVID-5	Freq-5	RCN-5	PRN 5	PRN-124	PRN-187	PRN-ID-5
9460	SVID-6	Freq-6	RCN-6	PRN 6	PRN-125	PRN-188	PRN-ID-6
9561	SVID-7	Freq-7	RCN-7	PRN 7	PRN-126	PRN-189	PRN-ID-7
9662	SVID-8	Freq-8	RCN-8	PRN 8	PRN-127	PRN-190	Reserved
9763	SVID-9	Freq-9	RCN-9	PRN 9	PRN-128	PRN-191	Reserved
9864	SVID-10	Freq-10	RCN-10	PRN 10	PRN-129	PRN-192	Reserved
9965	SVID-11	Freq-11	RCN-11	PRN 11	PRN-130	PRN-193	Reserved
10066	SVID-12	Freq-12	RCN-12	PRN 12	PRN-131	PRN-194	Reserved
10167	SVID-13	Freq-13	RCN-13	PRN 13	PRN-132	PRN-195	Reserved
10268	SVID-14	Freq-14	RCN-14	PRN 14	PRN-133	PRN-196	Reserved
10369	SVID-15	Freq-15	RCN-15	PRN 15	PRN-134	PRN-197	Reserved
10470	SVID-16	Freq-16	RCN-16	PRN 16	PRN-135	PRN-198	Reserved
10571	SVID-17	Freq-17	RCN-17	PRN 17	PRN-136	PRN-199	Reserved
10672	SVID-18	Freq-18	RCN-18	PRN 18	PRN-137	PRN-200	Reserved
10773	SVID-19	Freq-19	RCN-19	PRN 19	PRN-138	PRN-201	Reserved
10874	SVID-20	Freq-20	RCN-20	PRN 20	PRN-139	PRN-202	Reserved
10975	SVID-21	Freq-21	RCN-21	PRN 21	PRN-140	Reserved	Reserved
11076	SVID-22	Freq-22	RCN-22	PRN 22	PRN-141	Reserved	Reserved
11177	SVID-23	Freq-23	RCN-23	PRN 23	PRN-142	Reserved	Reserved
11278	SVID-24	Freq-24	RCN-24	PRN 24	PRN-143	Reserved	Reserved
11379	SVID-25	Freq-25	RCN-25	PRN 25	PRN-144	Reserved	Reserved
11480	SVID-26	Freq-26	RCN-26	PRN 26	PRN-145	Reserved	Reserved
11581	SVID-27	Freq-27	RCN-27	PRN 27	PRN-146	Reserved	Reserved
11682	SVID-28	Freq-28	RCN-28	PRN 28	PRN-147	Reserved	Reserved
11783	SVID-29	Freq-29	RCN-29	PRN 29	PRN-148	Reserved	Reserved
11884	SVID-30	Freq-30	RCN-30	PRN 30	PRN-149	Reserved	Reserved
11985	SVID-31	Freq-31	RCN-31	PRN 31	PRN-150	Reserved	Reserved
12086	SVID-32	Freq-32	RCN-32	PRN 32	PRN-151	Reserved	Reserved
12187	SVID-33	Reserved	RCN-33	PRN 33	PRN-152	Reserved	Reserved
12288	SVID-34	Reserved	RCN-34	PRN 34	PRN-153	Reserved	Reserved
12389	SVID-35	Reserved	RCN-35	PRN 35	PRN-154	Reserved	Reserved
12490	SVID-36	Reserved	RCN-36	PRN 36	PRN-155	Reserved	Reserved
12591	Reserved	Reserved	RCN-37	PRN 37	PRN-156	Reserved	Reserved
12692	Reserved	Reserved	Reserved	PRN 38	PRN-157	Reserved	Reserved
12793	Reserved	Reserved	Reserved	PRN 39	PRN-158	Reserved	Reserved
12894	Reserved	Reserved	Reserved	PRN 40	Reserved	Reserved	Reserved
12995	Reserved	Reserved	Reserved	PRN 41	Reserved	Reserved	Reserved
13096	Reserved	Reserved	Reserved	PRN 42	Reserved	Reserved	Reserved
13195	Reserved	Reserved	Reserved	PRN 43	Reserved	Reserved	Reserved
13298	Reserved	Reserved	Reserved	PRN 44	Reserved	Reserved	Reserved
13399	Reserved	Reserved	Reserved	PRN 45	Reserved	Reserved	Reserved
134100	Reserved	Reserved	Reserved	PRN 46	Reserved	Reserved	Reserved
135101	Reserved	Reserved	Reserved	PRN 47	Reserved	Reserved	Reserved
136102	Reserved	Reserved	Reserved	PRN 48	Reserved	Reserved	Reserved
137103	Reserved	Reserved	Reserved	PRN 49	Reserved	Reserved	Reserved
138104	Reserved	Reserved	Reserved	PRN 50	Reserved	Reserved	Reserved
139105	Reserved	Reserved	Reserved	PRN 51	Reserved	Reserved	Reserved
140106	Reserved	Reserved	Reserved	PRN 52	Reserved	Reserved	Reserved
141107	Reserved	Reserved	Reserved	PRN 53	Reserved	Reserved	Reserved
142108	Reserved	Reserved	Reserved	PRN 54	Reserved	Reserved	Reserved
143109	Reserved	Reserved	Reserved	PRN 55	Reserved	Reserved	Reserved
144110	Reserved	Reserved	Reserved	PRN 56	Reserved	Reserved	Reserved
145111	Reserved	Reserved	Reserved	PRN 57	Reserved	Reserved	Reserved
146112	Reserved	Reserved	Reserved	PRN 58	Reserved	Reserved	Reserved
147113	Reserved	Reserved	Reserved	PRN 59	Reserved	Reserved	Reserved
148114	Reserved	Reserved	Reserved	PRN 60	Reserved	Reserved	Reserved

Bits	Galileo	GLONASS	BeiDou	GPS PRN	SBAS	QZSS	IRNSS
149 115	Reserved	Reserved	Reserved	PRN 61	Reserved	Reserved	Reserved
150 116	Reserved	Reserved	Reserved	PRN 62	Reserved	Reserved	Reserved
151 117	Reserved	Reserved	Reserved	PRN 63	Reserved	Reserved	Reserved
SVID = Space Vehicle ID Freq. = Carrier Frequency Number RCN = Ranging Code Number PRN = Pseudorandom Noise Number							

IS:

Bit	GPS PRN
55	PRN 1
56	PRN 2
57	PRN 3
58	PRN 4
59	PRN 5
60	PRN 6
61	PRN 7
62	PRN 8
63	PRN 9
64	PRN 10
65	PRN 11
66	PRN 12
67	PRN 13
68	PRN 14
69	PRN 15
70	PRN 16
71	PRN 17
72	PRN 18
73	PRN 19
74	PRN 20
75	PRN 21
76	PRN 22
77	PRN 23
78	PRN 24
79	PRN 25
80	PRN 26
81	PRN 27
82	PRN 28
83	PRN 29
84	PRN 30
85	PRN 31
86	PRN 32
87	PRN 33
88	PRN 34
89	PRN 35
90	PRN 36
91	PRN 37
92	PRN 38
93	PRN 39

Bit	GPS PRN
94	PRN 40
95	PRN 41
96	PRN 42
97	PRN 43
98	PRN 44
99	PRN 45
100	PRN 46
101	PRN 47
102	PRN 48
103	PRN 49
104	PRN 50
105	PRN 51
106	PRN 52
107	PRN 53
108	PRN 54
109	PRN 55
110	PRN 56
111	PRN 57
112	PRN 58
113	PRN 59
114	PRN 60
115	PRN 61
116	PRN 62
117	PRN 63
PRN = Pseudorandom Noise Number	

IS200-2129:

Insertion after object IS200-1793

Section Number:

30.3.3.10.1.2.2.12

WAS:

<INSERTED OBJECT>

Redlines:

Object Heading 30.3.3.10.1.2.2.12 [Reserved for ISM](#)

Object Type: [Header](#)

IS:

Object Heading 30.3.3.10.1.2.2.12 Reserved for ISM

Object Type: Header

IS200-2130:

Insertion below object IS200-2129

Section Number:

30.3.3.10.1.2.2.12.0-1

WAS:

<INSERTED OBJECT>

Redlines:

[Bits 118 through 204 of the GPS ISM Packet are Reserved for ISM use.](#)

Object Type: [Info-Only](#)

IS:

Bits 118 through 204 of the GPS ISM Packet are Reserved for ISM use.

Object Type: Info-Only

IS200-1818:

Section Number:

30.3.3.10.1.2.2.13.0-1

WAS:

Bits 245 through 276 of MT-40 are a 32-bit Cyclic Redundancy Check (CRC) specific to the ISM parameters. The ISM CRC will cover only the ISM parameters in Message Type 40, (Bits 39 to 244). Refer to DO-246E-Change 1 document for more details on the ISM CRC.

Object Type: <blank>

Redlines:

Bits ~~245~~205 through ~~276~~236 of ~~MT-40~~[the GPS ISM Packet](#) is a 32-bit Cyclic Redundancy Check (CRC) specific to the ~~ISM~~[ISD](#) parameters.~~in The~~[the ISM CRC Packet.](#) ~~will This cover~~[This cover](#)~~CRC only covers~~[CRC only covers](#) the ~~ISM parameters~~[data](#) in ~~Message Type 40, (Bits 39 to 244).~~[Refer to DO-246E-Change 1 document for more](#)~~through details~~[204 on](#) in the [GPS ISM CRC Packet](#).

Object Type: ~~<blank>~~[Info-Only](#)

IS:

Bits 205 through 236 of the GPS ISM Packet is a 32-bit Cyclic Redundancy Check (CRC) specific to the ISD in the ISM Packet. This CRC covers the data in bits 1 through 204 in the GPS ISM Packet.

Object Type: Info-Only

IS200-2402:

Insertion after object IS200-1818

Section Number:

30.3.3.10.1.2.2.13.0-2

WAS:

<INSERTED OBJECT>

Redlines:

This sequence of bits and the ISM CRC are represented as polynomials of a bit position operator X (the powers of which denote the distance of the bit from the end of the applicable bit sequence) with coefficients from the Galois field of two elements, or $GF(2)$. $GF(2)$ is the finite field constructed on the set $\{0,1\}$ and the operations of modulo-2 addition and modulo-2 multiplication.

Object Type: [Info-Only](#)

IS:

This sequence of bits and the ISM CRC are represented as polynomials of a bit position operator X (the powers of which denote the distance of the bit from the end of the applicable bit sequence) with coefficients from the Galois field of two elements, or $GF(2)$. $GF(2)$ is the finite field constructed on the set $\{0,1\}$ and the operations of modulo-2 addition and modulo-2 multiplication.

Object Type: Info-Only

IS200-2136:

Insertion after object IS200-1818

Section Number:

30.3.3.10.1.2.2.13.0-3

WAS:

<INSERTED OBJECT>

Redlines:

In this representation, the ISM CRC shall be the remainder polynomial $r(X)$ left over from the polynomial division of the ISM Packet bits 1 through 204 (right-padded with 32 zeros and represented as $m(X) \cdot X^{32}$) by a generator polynomial $g(X)$. The generator polynomial, $g(X)$, which does not depend on the specific ISM Packet data, is:

Object Type: [Requirement](#)

IS:

In this representation, the ISM CRC shall be the remainder polynomial $r(X)$ left over from the polynomial division of the ISM Packet bits 1 through 204 (right-padded with 32 zeros and represented as $m(X) \cdot X^{32}$) by a generator polynomial $g(X)$. The generator polynomial, $g(X)$, which does not depend on the specific ISM Packet data, is:

Object Type: Requirement

IS200-2403:

Insertion after object IS200-2136

Section Number:

30.3.3.10.1.2.2.13.0-4

WAS:

<INSERTED OBJECT>

Redlines:

$g(X) = X^{32} + X^{31} + X^{24} + X^{22} + X^{16} + X^{14} + X^8 + X^7 + X^5 + X^3 + X + 1$

If the terms b_1 through b_{204} signify bits 1 through 204 of the GPS ISM Packet, the information field, $m(X)$, is:

$m(X) = b_1X^{203} + b_2X^{202} + b_3X^{201} + \dots + b_{203}X + b_{204}$

If the terms b_{205} through b_{236} signify bits 205 through 236 of the GPS ISM Packet, the remainder polynomial, $r(X)$, is:

$r(X) = b_{205}X^{31} + b_{206}X^{30} + b_{207}X^{29} + \dots + b_{235}X + b_{236}$

The ISD in the GPS ISM Packet is valid when the ISM CRC matches $r(X)$ in the following equation:

$r(X) = m(X) \cdot X^{32} \bmod g(X)$

Object Type: Info-Only

IS:

$g(X) = X^{32} + X^{31} + X^{24} + X^{22} + X^{16} + X^{14} + X^8 + X^7 + X^5 + X^3 + X + 1$

If the terms b_1 through b_{204} signify bits 1 through 204 of the GPS ISM Packet, the information field, $m(X)$, is:

$m(X) = b_1X^{203} + b_2X^{202} + b_3X^{201} + \dots + b_{203}X + b_{204}$

If the terms b_{205} through b_{236} signify bits 205 through 236 of the GPS ISM Packet, the remainder polynomial, $r(X)$, is:

$r(X) = b_{205}X^{31} + b_{206}X^{30} + b_{207}X^{29} + \dots + b_{235}X + b_{236}$

The ISD in the GPS ISM Packet is valid when the ISM CRC matches $r(X)$ in the following equation:

$r(X) = m(X) \cdot X^{32} \bmod g(X)$

Object Type: Info-Only

IS200-2132:

Insertion after object IS200-1765

Section Number:

30.3.3.10.2

WAS:

<INSERTED OBJECT>

Redlines:

Object Heading 30.3.3.10.2 Use of GPS ISM Data

Object Type: Header

IS:

Object Heading 30.3.3.10.2 Use of GPS ISM Data

Object Type: Header

IS200-2133:

Insertion below object IS200-2132

Section Number:

30.3.3.10.2.0-1

WAS:

<INSERTED OBJECT>

Redlines:

To calculate the nominal pseudorange error bias (b_{nom}), the following equation shall be used:

Object Type: Requirement

IS:

To calculate the nominal pseudorange error bias (b_{nom}), the following equation shall be used:

Object Type: Requirement

IS200-2134:

Insertion after object IS200-2133

Section Number:

30.3.3.10.2.0-2

WAS:

<INSERTED OBJECT>

Redlines:

$b_{nom} = \beta_{nom} + \gamma_{nom} \text{IAURA}$

Object Type: Info-Only

IS:

$b_{nom} = \beta_{nom} + \gamma_{nom} \text{IAURA}$

Object Type: Info-Only

IS200-2135:

Insertion after object IS200-2134

Section Number:

30.3.3.10.2.0-3

WAS:

<INSERTED OBJECT>

Redlines:

Where IAURA is defined in section 30.3.3.1.1.

Object Type: Info-Only

IS:

Where IAURA is defined in section 30.3.3.1.1.

Object Type: Info-Only
