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INTERFACE REVISION NOTICE (IRN)

Note: This Summary Signature Page is to be used after all signatories have signed separate Signature Pages.

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|---|--|-----------------------------|
| Affected IS: IS-GPS-705-Rev D | IRN Number IRN-IS-705D-003A | Date: 27-OCT-2016 |
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Document Title: NAVSTAR GPS Space Segment / User Segment L5 Interfaces

Reason For Change (Driver): Extraneous, ambiguous, redundant, or missing editorial and/or administrative information exists within the descriptive texts, phrases and/or references in the public documents (IS-GPS-200, IS-GPS-705, and IS-GPS-800).

Description of Change: As specified in the IRN.

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

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IS705-144 :

WAS :

Among all unique L5-code sequences that could be generated using different initial states as described in Section 3.2.1.1, 126 sequences (63 I5 and 63 Q5) are selected and assigned in Table 3-Ia and Table 3-Ib. An additional 294 sequences (147 I5 and 147 Q5) are selected and assigned with PRN numbers in the below Table 6-II. Any assignment of an L5 PRN number and its code sequence for any additional SV and/or other L5 signal applications, such as Satellite Based Augmentation System (SBAS) satellite signals, will be selected from the sequences of Table 6-II. PRN sequences numbered 211-1023 are reserved for internal system use and are therefore not provided in this section.

IS :

[The additional PRN sequences provided in this section are for information only.](#) Among all unique L5-code sequences that could be generated using different initial states as described in Section 3.2.1.1, 126 sequences (63 I5 and 63 Q5) are selected and assigned in Table 3-Ia and Table 3-Ib. An additional 294 sequences (147 I5 and 147 Q5) are selected and assigned with PRN numbers in the below Table 6-II. Any assignment of an L5 PRN number and its code sequence for any additional SV and/or other L5 signal applications, such as Satellite Based Augmentation System (SBAS) satellite signals, will be selected from the sequences of Table 6-II. PRN sequences numbered 211-1023 are reserved for internal system use and are therefore not provided in this section.

IS705-1518 :

Insertion after object IS705-143

WAS :

N/A

IS :

[Pre-Operational Use:](#)

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IS705-1519 :

Insertion below object IS705-1518

WAS :

N/A

IS :

Before any new signal or group of signals (e.g., L2C, L5, M, L1C, etcetera) is declared operational, the availability of and/or the configuration of the broadcast signal or group of signals may not comply with all requirements of the relevant IS or ICD. For example, the pre-operational broadcast of L2C signals from the IIR-M satellites did not include any NAV or CNAV data as required by IS-GPS-200. Pre-operational use of any new signal or group of signals is at the users own risk.

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IS705-302 :

WAS :

| Table 20-V. Midi Almanac Parameters | | | | |
|-------------------------------------|---------------|--------------------|----------------|------------------------|
| Parameter | No. of Bits** | Scale Factor (LSB) | Valid Range*** | Units |
| t_{oa} | 8 | 2^{12} | 0 to 602,112 | seconds |
| e | 11 | 2^{-16} | 0.0 to 0.03 | dimensionless |
| δ_i^{****} | 11* | 2^{-14} | | semi-circles |
| $\dot{\Omega}$ | 11* | 2^{-33} | -6.33E-07 to 0 | semi-circles/sec |
| \sqrt{A} | 17 | 2^{-4} | 2530 to 8192 | $\sqrt{\text{meters}}$ |
| Ω_0 | 16* | 2^{-15} | | semi-circles |
| ω | 16* | 2^{-15} | | semi-circles |
| M_0 | 16* | 2^{-15} | | semi-circles |
| a_{f0} | 11* | 2^{-20} | | seconds |
| a_{f1} | 10* | 2^{-37} | | sec/sec |

* Parameters so indicated shall be two's complement with the sign bit (+ or -) occupying the MSB;

** See Figure 20-10 for complete bit allocation in message type 37;

*** Unless otherwise indicated in this column, valid range is the maximum range attainable with indicated bit allocation and scale factor;

**** Relative to $i_0 = 0.30$ semi-circles.

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| Table 20-V. Midi Almanac Parameters | | | | |
|-------------------------------------|---------------|--------------------|----------------|------------------------|
| Parameter | No. of Bits** | Scale Factor (LSB) | Valid Range*** | Units |
| t_{oa} | 8 | 2^{12} | 0 to 602,112 | seconds |
| e | 11 | 2^{-16} | 0.0 to 0.03 | dimensionless |
| δ_i^{****} | 11* | 2^{-14} | | semi-circles |
| $\dot{\Omega}$ | 11* | 2^{-33} | -1.19E-07 to 0 | semi-circles/sec |
| \sqrt{A} | 17 | 2^{-4} | 2530 to 8192 | $\sqrt{\text{meters}}$ |
| Ω_0 | 16* | 2^{-15} | | semi-circles |
| ω | 16* | 2^{-15} | | semi-circles |
| M_0 | 16* | 2^{-15} | | semi-circles |
| a_{f0} | 11* | 2^{-20} | | seconds |
| a_{f1} | 10* | 2^{-37} | | sec/sec |

* Parameters so indicated shall be two's complement with the sign bit (+ or -) occupying the MSB;

** See Figure 20-10 for complete bit allocation in message type 37;

*** Unless otherwise indicated in this column, valid range is the maximum range attainable with indicated bit allocation and scale factor;

**** Relative to $i_0 = 0.30$ semi-circles.

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IS705-1497 :

WAS :

A 6-bit value of “000000” in the PRN_a field shall indicate that no further Status Words are contained in the remainder of the data block. In this event, all subsequent bits in the data block field shall be filler bits, i.e., alternating ones and zeros beginning with one.

IS :

A 6-bit value of “000000” in the PRN_a field shall indicate that ~~no further Status~~ Words ~~is~~ are ~~no contained data~~ in the ~~remainder of the reduced data~~ almanac block ~~packet.~~ In this event, all subsequent bits through the last bit of the last packet in the ~~data~~ message block ~~(bit field~~ 272 for MT 31, bit 276 for MT 12) shall be filler bits, i.e., alternating ones and zeros beginning with one.

IS705-313 :

WAS :

| Table 20-VI. Reduced Almanac Parameters | | | | |
|--|-------------|--------------------|----------------|--------------|
| Parameter***** | No. of Bits | Scale Factor (LSB) | Valid Range ** | Units |
| δ_A *** | 8 * | 2^9 | ** | meters |
| Ω_0 | 7 * | 2^{-6} | ** | semi-circles |
| Φ_0 ***** | 7 * | 2^{-6} | ** | semi-circles |
| <p>* Parameters so indicated shall be two’s complement with the sign bit (+ or -) occupying the MSB;</p> <p>** Valid range is the maximum range attainable with indicated bit allocation and scale factor;</p> <p>*** Relative to $A_{ref} = 26,559,710$ meters;</p> <p>**** $\Phi_0 =$ Argument of Latitude at Reference Time = $M_0 + \omega$;</p> <p>***** Relative to following reference values:</p> <p style="margin-left: 40px;">$e = 0$</p> <p style="margin-left: 40px;">$\delta_i = +0.0056$ semi-circles ($i = 55$ degrees)</p> <p style="margin-left: 40px;">$\dot{\omega} = -2.6 \times 10^{-9}$ semi-circles/second</p> | | | | |

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IS :

| Table 20-VI. Reduced Almanac Parameters***** | | | | |
|--|-------------|--------------------|----------------|--------------|
| Parameter | No. of Bits | Scale Factor (LSB) | Valid Range ** | Units |
| δ_A *** | 8 * | 2^{+9} | ** | meters |
| Ω_0 | 7 * | 2^{-6} | ** | semi-circles |
| Φ_0 ***** | 7 * | 2^{-6} | ** | semi-circles |

* Parameters so indicated shall be two's complement with the sign bit (+ or -) occupying the MSB;

** Valid range is the maximum range attainable with indicated bit allocation and scale factor;

*** Relative to $A_{ref} = 26,559,710$ meters;

**** $\Phi_0 = \text{Argument of Latitude at Reference Time} = M_0 + \omega$;

***** Relative to following reference values:

$e = 0$

$\delta_i = +0.0056$ semi-circles ($i = 55$ degrees)

$\dot{\Omega} = -2.6 \times 10^{-9}$ semi-circles/second

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IS705-332 :

WAS :

| Table 20-IX. UTC Parameters | | | | | |
|--|--|---------------|--------------------|----------------|----------------------|
| Parameter Symbol | Parameter Description | No. of Bits** | Scale Factor (LSB) | Valid Range*** | Units |
| A _{0-n} | Bias coefficient of GPS time scale relative to UTC time scale | 16* | 2 ⁻³⁵ | | Seconds |
| A _{1-n} | Drift coefficient of GPS time scale relative to UTC time scale | 13* | 2 ⁻⁵¹ | | sec/sec |
| A _{2-n} | Drift rate correction coefficient of GPS time scale relative of UTC time scale | 7* | 2 ⁻⁶⁸ | | sec/sec ² |
| Δ _{t,LS} | Current or past leap second count | 8* | 1 | | seconds |
| t _{ot} | Time data reference Time of Week | 16 | 2 ⁴ | 0 to 604,784 | seconds |
| WN _{ot} | Time data reference Week Number | 13 | 1 | | weeks |
| WN _{LSF} | Leap second reference Week Number | 8 | 1 | | weeks |
| DN | Leap second reference Day Number | 4 | 1 | 1 to 7 | days |
| Δ _{t,LSF} | Current or future leap second count | 8* | 1 | | seconds |
| <p>* Parameters so indicated shall be two's complement with the sign bit (+ or -) occupying the MSB; ** See Figure 20-6 for complete bit allocation *** Unless otherwise indicated in this column, valid range is the maximum range attainable with indicated bit allocation and scale factor.</p> | | | | | |

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| Table 20-IX. UTC Parameters | | | | | |
|--|--|---------------|--------------------|----------------|----------------------|
| Parameter Symbol | Parameter Description | No. of Bits** | Scale Factor (LSB) | Valid Range*** | Units |
| A _{0-n} | Bias coefficient of GPS time scale relative to UTC time scale | 16* | 2 ⁻³⁵ | | Seconds |
| A _{1-n} | Drift coefficient of GPS time scale relative to UTC time scale | 13* | 2 ⁻⁵¹ | | sec/sec |
| A _{2-n} | Drift rate correction coefficient of GPS time scale relative of UTC time scale | 7* | 2 ⁻⁶⁸ | | sec/sec ² |
| Δ _{tLS} | Current or past leap second count | 8* | 1 | | seconds |
| t _{ot} | Time data reference Time of Week | 16 | 2 ⁴ | 0 to 604,784 | seconds |
| WN _{ot} | Time data reference Week Number | 13 | 1 | | weeks |
| WN _{LSF} | Leap second reference Week Number | 13 | 1 | | weeks |
| DN | Leap second reference Day Number | 4 | 1 | 1 to 7 | days |
| Δ _{tLSF} | Current or future leap second count | 8* | 1 | | seconds |
| <p>* Parameters so indicated shall be two's complement with the sign bit (+ or -) occupying the MSB; ** See Figure 20-6 for complete bit allocation *** Unless otherwise indicated in this column, valid range is the maximum range attainable with indicated bit allocation and scale factor;</p> | | | | | |