IS-GPS-705 WAS-IS MATRIX

Paragraph	From	To	Rationale
20.3.3.1.1.1	Bits 39 through 51 of message type 10 shall contain 13 bits which are a modulo-8192 binary representation of the current GPS week number at the start of the data set transmission interval (see paragraph 6.2.4 of IS-GPS-200). These 13 bits are comprised of 10 LSBs (WN) that represent the 10 MSBs of the 29-bit Z-count as qualified in paragraph 20.3.3.3.1.1 of IS-GPS-200, and 3 MSBs (WNe) which are three extra bits to extend the range of transmission week number from 10 bits to 13 bits.	Bits 39 through 51 of message type 10 shall contain 13 bits which are a modulo-8192 binary representation of the current GPS week number at the start of the data set transmission interval (see paragraph 6.2.4 of IS-GPS-200).	GPS III uses a 32 bit Z count; removed reference to 29-bit Z count which is specific to the GPS II implementation
3.3.4	b. The ten most significant bits of the Z-count are a modulo-1024 binary representation of the sequential number assigned to the current GPS week (see paragraph 6.2.4). The range of this count is from 0 to 1023 with its zero state being defined as the GPS week number zero and every integer multiple of 1024 weeks, thereafter (i.e. 0, 1024, 2048, etc.).	The most significant bits of the Z-count are a binary representation of the sequential number assigned to the current GPS week (see paragraph 6.2.4).	GPS III uses a 32 bit Z count; removed reference to 29-bit Z count which is specific to the GPS II implementation
3.3.1.9	(N/A - new text)	For the angular range of ±13.8 degrees from nadir, L5 ellipticity shall be no worse than 2.4 dB. For Block IIIA the angular range of ±13.8 degrees from nadir, L5 ellipticity shall be no worse than 2.4 dB. Nominal values are listed in section 6.3.3.	New text added to specifically address the L5 ellipticity for GPS III SVs. The reason that the angular range is different from the GPS II SVs is that the 14.3 degrees in the other requirements allows for up to 0.5 degree pointing error. LM historical performance for IIR/IIR-M has been much better than that with less that 0.1 degree pointing error. New text with a smaller angular range value allows LM to take advantage of better pointing error.
3.3.1.7	(N/A - new text)	Is: Table 3-IV. Received Minimum RF Signal Strength in Space Service Volume	Added table to reflect GPS III L5 signal strength
3.3.1.6	(N/A - new text)	Is: The Block III SV shall provide L5 signals with the following characteristic: the L5 off-axis ~~power gain~~ relative power (referenced to peak transmitted power) shall not decrease by more than 2 dB from the Edge-of-Earth (EOE) to nadir, and no more than 18 dB from EOE to 26 degrees off nadir; the power drop off between EOE and ±26 degrees shall be in a monotonically decreasing fashion.	New text added for GPS III-specific requirement. Important signal characteristics. Similar information is provided in IS-GPS-200 for L1 and L2.

Paragraph	From	To	Rationale
3.3.1.6	The SV shall provide I5 and Q5 navigation signal strength at end-of-life (EOL), worst-case in order to meet the minimum levels specified in Table 3-III.	The SV shall provide, at a minimum, worst-case I5 and Q5 navigation signal strength at end-of-life (EOL), in order to meet the levels specified in Table 3-III.	editorial
3.3.1.6.1	The SV shall provide I5 and Q5 navigation signal strength at end-of-life (EOL), worst-case in order to meet the minimum levels specified in Table 3-III.	The SV shall provide, at a minimum, worst-case I5 and Q5 navigation signal strength at end-of-life (EOL), in order to meet the levels specified in Table 3-IV.	editorial
3.3.1.4	Replace the sentence: “In-band spurious transmissions shall be at least 40 dB below the unmodulated L1 and L2 carriers over the allocated 24 MHz channel bandwidth.”	With“In-band spurious transmissions, from the SV, shall be at ~~least~~ or below -40 dBc ~~below the unmodulated L5 carrier~~ over the band specified in 3.3.1.1. In-band spurious transmissions are defined as transmissions within the bands specified in 3.3.1.1 which are not expressly components of the L5 waveform.”	References bandwidth to 3.3.1.1.
3.3.1.2	3.3.1.2 Correlation Loss. Correlation loss is defined as the difference between the SV power received in a 24 MHz bandwidth and the signal power recovered in an ideal correlation receiver. The worst case correlation loss occurs when the I5 carrier is modulated by the sum of the I5-code and the NAV data stream. For this case, the correlation loss apportionment shall be as follows: 1. SV modulation and filter imperfections: 0.6 dB 2. Ideal UE receiver waveform distortion (due to 24 MHz filter): 0.4 dB	Correlation loss is defined as the difference between the SV power received in the bandwidth defined in 3.3.1.1 (excluding signal combining loss) and the signal power recovered in an ideal correlation receiver of the same bandwidth using an exact replica of the waveform within an ideal sharp-cutoff filter bandwidth centered at L5, whose bandwidth corresponds to that specified in 3.3.1.1 and whose phase is linear over that bandwidth. The correlation loss apportionment due to SV modulation and filtering imperfections shall be 0.6 dB maximum.	“References bandwidth to 3.3.1.1
3.3.1.6.1	N/A	included "– GEO Based Antennas" in Table 3-IV table.	Important info to validate received signal levels.
3.3.1.2	Correlation loss is defined as the difference between the SV power received in a 24 MHz bandwidth and the signal power recovered in an ideal correlation receiver. The worst case correlation loss occurs when the I5 carrier is modulated by the sum of the I5-code and the NAV data stream. For this case, the correlation loss apportionment shall be as follows: 1. SV modulation and filter imperfections: 0.6 dB 2. Ideal UE receiver waveform distortion (due to 24 MHz filter): 0.4 dB	Correlation loss is defined as the difference between the SV power received in the bandwidth defined in 3.3.1.1 (excluding signal combining loss) and the signal power recovered in an ideal correlation receiver of the same bandwidth using an exact replica of the waveform within an ideal sharp-cutoff filter bandwidth centered at L5, whose bandwidth corresponds to that specified in 3.3.1.1 and whose phase is linear over that bandwidth. The correlation loss apportionment due to SV modulation and filtering imperfections shall be 0.6 dB maximum.	Correctness

Paragraph	From	To	Rationale
3.2.1.2	The NSI5 and NSQ5 codes, used to protect the user from ~~a malfunction in the SV's reference frequency generation system (reference paragraph 3.2.1),~~ are not for utilization by the user and, therefore, are not defined in this document.	Is: The NDI5 and NSQ5 codes, used to protect the user from ~~receiving~~ tracking anomalous NAV ~~data~~ signals, are not for utilization by the user and, therefore, are not defined in this document.	This statement was changed in IS-GPS-200 to reflect the fact that the cause of anomalous NAV signals is not limited to a malfunction in the SV's reference frequency generation system.
20.3.3.9	270	274	
20.3.3.1.1.1	These 13 bits are comprised of 10 LSBs (WN) that represent the 10 MSBs of the 29-bit Z-count as qualified in paragraph 20.3.3.3.1.1 of IS-GPS-200, and 3 MSBs (WNe) which are three extra bits to extend the range of transmission week number from 10 bits to 13 bits.	sentence deleted	Correction.
20.3.3.1.1	N/A	The CNAV message will contain information that allows users to operate when integrity is assured. This is accomplished using an integrity assured URA value in conjunction with an integrity status flag. The URA value is the RSS of URAoe and URAoc; URA is integrity assured to the enhanced level only when the integrity status flag is "1". Bit 272 of Message Type 10 is the Integrity Status Flag (ISF). A "0" in bit position 272 indicates that the conveying signal is provided with the legacy level of integrity assurance. That is, the probability that the instantaneous URE of the conveying signal exceeds 4.42 times the upper bound value of the current broadcast URA index~~value~~, for more than 5.2 seconds, without an accompanying alert, is less than 1 x 10-5 per hour. A "1" in bit-position 272 indicates that the conveying signal is provided with an enhanced level of integrity assurance. That is, the probability that the instantaneous URE of the conveying signal exceeds 5.73 times the upper bound value of the current broadcast URA index~~value~~, for more than 5.2 seconds, without an accompanying alert, is less than 1 x 10-8 per hour. The probability associated with the nominal and lower bound values of the current broadcast URA index are not defined. In this context, an "alert" is defined as any indication or characteristic in the conveying signal, as specified elsewhere in this document, which signifies that the conveying signal may be invalid and should not be used, such as, not Operational-Healthy, Non-Standard Code, parity error, etc. In this context, the term URA refers to the composite URA, calculated as the root-sum-squared of the individual URA components in the conveying signal.	The Integrity Status Flag is an authenticated requirement specified in SS-SYS-800, SS-CS-800, and SS-SS-800. Failure to include the ISF in this ICD before the next OCX RFP will result in cost impact to the OCX program.
2.1	GP-03-001 , 14 November 2003	to GP-03-001A, current issue	Current Version
1.2		"obtaining" and "coordiantion"	Rationale is the ICC does not have approval authority
Table 20-I		WN_n Week Number URA_{oe} INDEX SV Accuracy	Clarity and consistency.

Paragraph	From	To	Rationale
3.3.1.2	Original Text: "3.3.1.2 Correlation Loss. Correlation loss is defined as the difference between the signal power received in the bandwidth defined in 3.3.1.1 and the signal power recovered in an ideal correlation receiver of the same bandwidth which ideally performs lossless correlation using an exact replica of the waveform with an ideal sharp-cutoff whose bandwidth corresponds to that in 3.3.1.1, and whose phase is linear over that bandwidth. The worst case correlation loss occurs when the I5 carrier is modulated by the sum of the I5-code and the NAV data stream. For this case, the correlation loss apportionment shall be as follows: 1 SV modulation and filter imperfections: 0.6 dB 2 Ideal UE receiver waveform distortion (due to 24 MHz filter): 0.4 dB"	Correlation loss is defined as the difference between the SV power received in the bandwidth defined in 3.3.1.1 (excluding signal combining loss) and the signal power recovered in an ideal correlation receiver of the same bandwidth using an exact replica of the waveform within an ideal sharp-cutoff filter bandwidth centered at L5, whose bandwidth corresponds to that specified in 3.3.1.1 and whose phase is linear over that bandwidth. The correlation loss apportionment due to SV modulation and filtering imperfections shall be 0.6 dB maximum.	The interface specification should not specify loss in a user receiver. The suggested change text provides the user with as much information as required and makes no assumption regarding the user implementation.
3.3.1.3	The phase noise spectral density of the un-modulated carrier shall be such that a phase locked loop of 10 Hz one-sided noise bandwidth shall be able to track the carrier to an accuracy of 0.1 radians root mean square (RMS). See additional supporting material for phase noise characteristics in section 6.3.2.	The phase noise spectral density of the unmodulated carrier shall not exceed the magnitude of a straight line (on a log-log plot) between -30 dBc/Hz at 1 Hz and -60 dBc/Hz at 10 Hz, and another straight line between -60 dBc/Hz at 10 Hz and -80 dBc/Hz at 10 kHz. Spurs in the phase noise spectral density of the unmodulated carrier between 10 Hz and 10 kHz shall not exceed -40 dBc.	Correction: The suggested change text provides the user with as much information as required and makes no assumption regarding the user implementation.
3.3.1.7.2	From "For a given navigation payload redundancy configuration, the absolute value of the mean differential delay shall not exceed 30.0 nanoseconds. The random variations about the mean shall not exceed 3.0 nanoseconds (two-sigma)."	The group delay differential between the radiated L1 and L5 signals (i.e. L1 P(Y) and L5 I5; and L1 P(Y) and L5 Q5) is specified as consisting of random plus bias components. The mean differential is defined as the bias component and will be either positive or negative. For a given navigation payload redundancy configuration, the absolute value of the mean differential delay shall not exceed 30.0 nanoseconds. The random plus non-random variations about the mean shall not exceed 3.0 nanoseconds (95% probability), when including consideration of the temperature and antenna effects during a vehicle orbital revolution.. L1 and L2 group delay differential is described in 3.3.1.7.2 of IS-GPS-200. Corrections for the bias components of the group delay differential are provided to the users in the NAV message using parameters designated as TGD (reference paragraph 20.3.3.3.3.2 of IS-GPS-200) and Inter-Signal Correction (ISC) (reference paragraph 20.3.3.3.1.2).	Tighten the specs for Block III SVs.

Paragraph	From	To	Rationale
3.3.1.7.3	Space Service Volume Group Delay Differential. The group delay differential between the radiated L5 signal with respect to the Earth Coverage signal for users of the Space Service Volume is given by the Block III Space Contractor (TBD). The details are provided in TBD.	Space Service Volume Group Delay Differential. The group delay differential between the radiated L5 signal with respect to the Earth Coverage signal for users of the Space Service Volume are provided in TBD	Consistency and completion.
3.3.1.8	3.3.1.8 Signal Coherence. L5 transmitted signals for a particular SV shall be coherently derived from the same onboard frequency standard. All PRN signals shall be clocked coherently with the P(Y)-code signal transitions. On the L5 channel the chip transitions of the two modulating signals (i.e., that containing the I5-code and that containing the Q5-code) shall be such that the average time difference between the transitions does not exceed 10.0 nanoseconds (two-sigma).	All transmitted signals on the same carrier for a particular SV shall be coherently derived from the same on-board frequency standard. On the L5 channel, the chip transitions of the two modulating signals, L5I and L5Q, shall be such that the average time difference between them, and between each and the transitions of L1P(Y), do not exceed 10 nanoseconds. The variable time difference shall not exceed 1 nanosecond (~~2 sigma~~95% probability), when including consideration of th e temperature and antenna effect changes during a vehicle orbital revolution. Corrections for the bias components of the group delay differentail as provided to the users using parameters designated as ISCs (reference paragraph 20.3.3.3.1.2.)	Need requirement clarification from ICWG.
6.2.1	6.2.1 User Range Accuracy. See paragraph 6.2.1 of IS-GPS-200.	6.2.1 User Range Accuracy. See Section 6.2.1 of IS-GPS-200.	
3.3.2	I5-	I5-codes	consistency – Previously hyphen only used when followed by the word “code.”
none		Suggested Change: change format so figure title appears below respective figure	format
3.3.1.2	3.3.1.2 Correlation Loss. Correlation loss is defined as the difference between the SV power received in a 24 MHz bandwidth and the signal power recovered in an ideal correlation receiver. The worst case correlation loss occurs when the I5 carrier is modulated by the sum of the I5-code and the NAV data stream. For this case, the correlation loss apportionment shall be as follows: 1. SV modulation and filter imperfections: 0.6 dB 2. Ideal UE receiver waveform distortion (due to 24 MHz filter): 0.4 dB	Correlation loss is defined as the difference between the SV power received in the bandwidth defined in 3.3.1.1 (excluding signal combining loss) and the signal power recovered in an ideal correlation receiver of the same bandwidth using an exact replica of the waveform within an ideal sharp-cutoff filter bandwidth centered at L5, whose bandwidth corresponds to that specified in 3.3.1.1 and whose phase is linear over that bandwidth. The correlation loss apportionment due to SV modulation and filtering imperfections shall be 0.6 dB maximum.	Solve the problems stated in Comments (1) and (2)

Paragraph	From	To	Rationale
3.3.4	In each SV the X1 epochs of the P-code of the L1 and L2 offer a convenient unit for precisely counting and communicating time. Time stated in this manner is referred to as Z-count, which is given as a 29-bit binary number consisting of two parts as follows:	In each SV the X1 epochs of the P-code offer a convenient unit for precisely counting and communicating time. Time stated in this manner is referred to as Z-count, which is given as a binary number consisting of two parts as follows:	GPS III uses a 32 bit Z count; removed reference to 29-bit Z count which is specific to the GPS II implementation
3.3.1.1	The L5 signal is contained within a 24 MHz band centered about the L5 nominal frequency.	The requirements specified in this document shall pertain to the signal contained within 24 MHz band centered about the L5 nominal frequency.	Makes wording consistent with other ISs.
20.3.3.7.4	ic = i0 + Δi and Ωc = Ω0 + ΔΩ equations		Correction.
Table 3-IV	N/A	Table 3-IV. Space Service Volume (SSV) Received Minimum RF Signal Strength for GPS III Satellites over the Bandwidth Specified in 3.3.1.1 – GEO Based Antennas SV Blocks Signal I5 Q5 III and Subsequent -182.0 dBW -182.0 dBW	No table 3-IV.
	No draft version number or date.	Filename: IS-GPS-705_06-sept-09(or equivalent)	Not having a unique identifier for this version can lead to confusion between versions for all except the person in control of the latest version. This appears to be a draft of the document including proposed IRN-705-004.
3.3.1.5	Referring to the phase of the I5 carrier when I5i(t) equals zero as the "zero phase angle", the I5 and Q5-code generator output shall control the respective signal phases in the following manner: when I5i(t) equals one, a 180-degree phase reversal of the I5-carrier occurs; when Q5i(t) equals one, the Q5 carrier advances 90 degrees; when the Q5i(t) equals zero, the Q5 carrier shall be retarded 90 degrees (such that when Q5i(t) changes state, a 180-degree phase reversal of the Q5 carrier occurs). The resultant nominal composite transmitted signal phases as a function of the binary state of the modulating signals are as shown in Table 3-II.	Is: Referring to the phase of the I5 carrier when I5i(t) equals zero as the "zero phase angle", the I5 and Q5-code generator output shall control the respective signal phases in the following manner: when I5i(t) equals one, a 180-degree phase reversal of the I5-carrier occurs; when Q5i(t) equals one, the Q5 carrier advances 90 degrees; when the Q5i(t) equals zero, the Q5 carrier will be retarded 90 degrees (such that when Q5i(t) changes state, a 180-degree phase reversal of the Q5 carrier occurs). The resultant nominal composite transmitted signal phases as a function of the binary state of the modulating signals are as shown in Table 3-II.	Changed a will to a shall to have a requirement; to facilitate requirements verification.
20.3.3.8.2		tGNSS = tE – (A0GGTO + A1GGTO (tE – totGGTO + 604800 (WN – WNotGGTO)) + A2GGTO (tE – totGGTO + 604800 (WN – WNotGGTO))2)	Updated subscripts

Paragraph	From	To	Rationale
20.3.3.7.4	ic = i0 + Δi and Ωc = Ω0 + ΔΩ equations	$i_c = i_0 + \Delta i$ $\Omega_c = \Omega_0 + \Delta\Omega$	Correction
Fig. 20-1	N/A	See Figure 20-1	The Integrity Status Flag is an authenticated requirement specified in SS-SYS-800, SS-CS-800, and SS-SS-800. Failure to include the ISF in this ICD before the next OCX RFP will result in cost impact to the OCX program.
6.1	N/A	WGS 84 - World Geodetic System 1984	correctness
20.3.4.3	WGS-84	WGS 84	correctness
20.3.3	From "…(UDRA) may be worse than indicated in the respective message types, and the SV should be used at the user's own risk.	TO "…(UDRA) may be worse than indicated in the respective message types."	"The SV should be used at the user's own risk" is not needed here.
3.3.1.4	FROM "In-band spurious transmissions are defined as transmissions within the band specified in 3.3.1.1 which are not expressly components of the L5 waveform.	TO "In-band spurious transmissions are defined as transmissions within the band specified in 3.3.1.1 which are not expressly components of the L5 signal."	Clarity
20.3.3.7.5	UDRA (dot over the R)	UDRA dot over the D)	Correction.
2 (Section 1.2) 3-6		Recommendation: Replace JPO with GPS Wing throughout the document.	Clarification
2 (Section 1.2) 1-3	ARINC Engineering Services , LLC	SAIC	Clarification.
N/A	Change wording as follows: "Navstar GPS Joint Program Office" & "JPO"	To "Navstar GPS Wing (GPSW)" & "GPSW"	The term is no longer used for the GPS program.
1.2	Change wording as follows: "ARINC Engineering Services, LLC has been designated."	To "Applications International Corporation (SAIC) has been designated…"	The SE&I is the new ICC for this document.
Paragraph 6.3.4 Table 6-II (sheet 4 of 6)	Replace "7912"	With "4912"	The current value will produce an erroneous ranging code value.
3.3.1.9	The transmitted signal shall be right-hand circularly polarized (RHCP). For the angular range of ±14.3 degrees from boresight, L5 ellipticity shall be no worse than 2.4 dB. For Block IIIA the angular range of ±13.8 degrees from nadir, L5 ellipticity shall be no worse than 2.4 dB. Nominal values are listed in section 6.3.3.	The transmitted signal shall be right-hand circularly polarized (RHCP). For the angular range of ±13.8 degrees from nadir, L5 ellipticity shall be no worse than 2.4 dB. Nominal values are listed in section 6.3.3.	Correctness
2.2		Suggested Change: "Navigation" capitalized here while it was not in para 2.1. Make consistent.	consistency
3.1	3.1 Interface Definition.	Suggested Change: "Navigation" capitalized here while it was not in para 2.1. Make consistent.	consistency
3.2.1.1		Suggested Change: eliminate extra space following comma after "length"	grammar
3.2.1.1		Suggested Change: use either "SV-ID" or "SV ID" throughout document	consistency

Paragraph	From	To	Rationale
3.3.1.1	3.3.1.1 Frequency Plan. The L5 signal is contained within a 24 MHz band centered about the L5 nominal frequency. The carrier frequencies for the L1, L2 and L5 signals shall be coherently derived from a common frequency source within the SV. The nominal frequency of this source -- as it appears to an observer on the ground -- is 10.23 MHz. The SV carrier frequency and clock rates -- as they would appear to an observer located in the SV -- are offset to compensate for relativistic effects. The clock rates are offset by Δ f/f = -4.4647E-10, equivalent to a change in the I5 and Q5-code chipping rate of 10.23 MHz offset by a Δ f = -4.5674E-3 Hz. This is equal to 10.22999999543 MHz. The nominal carrier frequency (f0) -- as it appears to an observer on the ground – shall be 1176.45 MHz, or 115 times 10.23 MHz.	Suggested Change: Add the word “the” between “within” and “24 MHz.” Should read “… signal contained with the 24 MHz band …”	readability
3.3.1.5	3.3.1.5 Phase Quadrature. ..."zero phase angle",	Suggested Change: Move comma to inside closing quotation mark	grammar
3.3.1.6	3.3.1.6 Signal Power Levels. The SV shall provide I5 and Q5 navigation signal strength at end-of-life (EOL), worst-case in order to meet the minimum levels…	Change wording to “The SV shall provide worst-case I5 and Q5 navigation signal strength at EOL in order to meet the minimum levels …”	awkward wording, readability
Table 3-IV	…	Suggested Change: Move table so that it appears after first mention in text, not before.	Here Table 3-IV appears before first mention in para 3.3.1.6.1 on page 15.
3.3.1.6.1	3.3.1.6.1	Suggested Change: Change wording to “The SV shall provide worst-case I5 and Q5 navigation signal strength at EOL in order to meet the SSV minimum levels …”	awkward wording, readability
3.3.1.7	3.3.1.7 Equipment Group Delay. ... the users since it is included in the clock correction parameters relayed in the NAV data, and is therefore accounted for by the user computations of system time (reference paragraphs 20.3.3.2.3, 20.3.3.3.2.3 and 20.3.3.3.2.4).	Suggested Change: delete “the” before “users”	readability
3.3.2	"symbols"	N/A	readability – word “symbols” is redundant since the acronym “sps” stands for symbols per second
3.2.2	coder and coded	“encoded” and “encoder”	consistency - “Encoded” and “encoder” are the more commonly used terms. “Encoded” and “encoder” are used in paragraphs 3.3.2 and 3.3.3.1.

Paragraph	From	To	Rationale
3.3.3.1.1	...The navigation message is FEC encoded in a continuous process independent of message boundaries (i.e. at the beginning of each new message, the encoder registers illustrated in Figure 3-7 contains the last six bits of the previous message).	contain	grammar
6.1	N/A	dBi Decibels with respect to isotropic antenna	consistency – “dBW” is defined, but “dBi” is not
6.1	Return	n/a	consistency
6.2.2.2.1	N/A	-	consistency
6.2.2.2.2	N/A	deleted " "	grammar
6.2.2.2.3	n/a	added "."	grammar
6.2.2.2.6	The block of operational planned…	This planned block of operational SVs	readability
6.3.1 -6.3.2	section break	N/A	format/readability
10.1	N/A and "GPS JPO"	"." and "GPSW"	grammar
20.3.3.1.1	…type10 …type 11, provide	…type10, …type 11, provides	readability
20.3.3.1.1	consist	consists	readability
20.3.3.1.1	N/A	(t_{oe} =Ephemeris data reference time of week)	“toe” used here, but not defined until page 72 – should be defined at first use
20.3.3.1.1	assure	insure	word usage
20.3.3.2.1	any message type 30’s (i.e. 30-39)	any message of type 30 to 39	readability
20.3.3.3.1.1	bit length	bit lengths	consistency with wording in paragraph 20.3.3.3.1.3 and elsewhere
20.3.3.3.1.2	bit length	bit lengths	consistency with wording in paragraph 20.3.3.3.1.3 and elsewhere
20.3.3.3.1.2.1	L1/L5 Inter-Signal Group Delay Differential Correction. The L5 correction terms, TGD, ISCL5I5 and ISCL5Q5 are provided by the CS to account for the effect of SV group delay differential between L1 P(Y) and L2 P(Y), L1 P(Y) and L5 I5, and between L1 P(Y) and L5 Q5, respectively.	L1/L5 Inter-Signal Correction. The L5 correction terms, TGD, ISCL5I5 and ISCL5Q5 are provided by the CS to account for the effect of inter-signal biases between L1 P(Y) and L2 P(Y), L1 P(Y) and L5 I5, and between L1 P(Y) and L5 Q5, respectively.	Karl Kovach change for Soon Yi comment.
20.3.3.3.1.2.2	L1-C/A	L1 C/A	consistency - no hyphen used in similar wording elsewhere in document
20.3.3.3.1.2.2	"."	","	grammar
20.3.3.3.1.3	N/A	(T_{iono}=Ionospheric correction parameter)	This quantity is not defined anywhere in this document and should be defined at first use.
none	" "	N/A	format
20.3.3.3.1.4	" "	N/A	format

Paragraph	From	To	Rationale
none	" "	N/A	format
20.3.3.4.6.1	contains	contain	grammar/readability
20.3.3.4.6.1	of	N/A	readability
20.3.3.4.6.1	range	ranges	consistency with rest of document
20.3.3.5.1	range	ranges	consistency with rest of document
20.3.3.6.2	Information required to use these parameters to calculate tUTC (tUTC= Coordinated Universal Time defined by the USNO) is in paragraph 20.3.3.5.2.4 of IS-GPS-200 except the following definition of tUTC shall be used.	Information required to use (and calculate) these parameters tUTC is in paragraph 20.3.3.5.2.4 of IS-GPS-200 except the following definition of dtUTC shall be used.	changed to address comment from 2SOPS
20.3.3.7	types	type	readability
20.3.3.7.1	range	ranges	consistency
20.3.3.7.2	enables	enable	readability
20.3.3.7.2	Users must utilize CDC and EDC data pair of same $t_{op\text{-}D}$ and of same $t_{OD.}$	Users must utilize CDC and EDC data pairs of the same $t_{op\text{-}D}$ and of the same $t_{OD.}$	readability
20.3.3.7.2	N/A	($t_{op\text{-}D}$ =DC data predict time of week)	acronym should be defined at first use – currently not defined until next paragraph
none	" "	N/A	format
none	" "	N/A	format
20.3.3.7.5	has	have	readability
20.3.3.8.1	GPS like	GPS-like	readability
20.3.3.8.1	range	ranges	consistency
Fig 3-1	Block II/IIA	Block II	Block II characteristics are irrelevant to this document
6.1		GPSW Global Positioning Systems Wing	Acronym used in document and not listed
6.1		SSV Space Service Volume	Acronym used in document and not listed
6.2.2.2	N/A	N/A	Block II characteristics are irrelevant to this document
6.2.2.2.1	6.2.2.2.1 Block II SVs. See paragraph 6.2.2.2.2 of IS-GPS-200. These satellites do not broadcast the L5 signal.	N/A	Block II characteristics are irrelevant to this document
3.3.1.6.1	Table 3-IV. Space Service Volume (SSV) Received Minimum RF Signal Strength for GPS III Satellites over the Bandwidth Specified in 3.3.1.1	*Is:* Table 3-IV. Space Service Volume Minimum Received L5 Signal Power - GEO Based Antennas	CRM disposition: minimum power levels apply to GEO orbits.
Fig 3-1		Suggested Change:	If the SV is defined in this update of the ICD then it is not future, it deserves it's own block

Paragraph	From	To	Rationale
3.3.1.7.3	The group delay differential between the radiated L5 signal with respect to the Earth Coverage signal for users of the Space Service Volume is given by the Block III Space Contractor (TBD). The details are provided in TBD.	The group delay differential between the radiated L5 signal with respect to the Earth Coverage signal for users of the Space Service are provided in TBD.	The Space contractor is Lockheed, not TBD
3.3.1.9	3.3.1.9 Signal Polarization. The transmitted signal shall be right-hand circularly polarized (RHCP). For the angular range of ±14.3 degrees from boresight, L5 ellipticity shall be no worse than 2.4 dB. Nominal values are listed in section 6.3.3.	The transmitted signal shall be right-hand circularly polarized (RHCP). For the angular range of ±13.8 degrees from nadir, L5 ellipticity shall be no worse than 2.4 dB. Nominal values are listed in section 6.3.3.	Clarity of requirement and consistency across the baseline.
6.2.2.2.6	The block of operational SVs will be termed "Block III" SVs. The Block III operational SVs will broadcast the L5 signal	See paragraph 6.2.3.2.6 of IS-GPS-200. The III operational SVs do broadcast the L5 signal.	Consistent definitions across ICDs
6.3.2	N/A	A plot of a typical GPS Block III phase noise spectral density will be added when available.	Consistent vision across all SVs
6.3.3	N/A	A table of a typical GPS Block III ellipticity will be added when available.	Consistency between specification and ICD and complete definition of the Block III requirements.
20.3.3.1.1.4 and 20.3.3.2.4	N/A	Text in section 20.3.3.2.4: Clock-related URA (URAoc) accounts for signal-in-space contributions to user range error that include, but are not limited to, the following: the net effect of clock parameter and code phase error in the transmitted signal for single-frequency users who correct the code phase as described in Section 20.3.3.3.1.1.1, as well as the net effect of clock parameter, code phase, and intersignal correction error for dual-frequency L1/L2 and L1/L5 users who correct for group delay and ionospheric effects as described in Section 20.3.3.3.1.2.2.	Complete update for IIIA and OCX
20.3.3.5.1.1	N/A	The equations described in this section are based on (International Earth Rotation and Reference Systems Service) IERS Technical Note 21. However, these equations will be updated to a new Technical Note in the next revision.	
Figure 3-1	6.2.2.2 Operational SVs. The operational satellites are designated Block II, Block IIA... 6.2.2.2.1 Block II SVs. See paragraph 6.2.2.2.1 of ISGPS-200. There satellites do not broadcast the L5 signal.	6.2.2.2 Operational SVs. The operational satellites are designated Block II, Block IIA… N/A	
3.3.1.6.1	" "	"normal"	document synchronization.
3.3.1.6	off-axis power gain	off-axis relative power (referenced to meak transmitted power)	

Paragraph	From	To	Rationale
3.1	"planned future Block III SVs"	"subsequent Blocks of SVs"	
20.3.3.1.1.4 and 20.3.3.2.4	N/A	Integrity properties of the URA are specified with respect to the upper bound values of the URA index (see 20.3.3.1.1)	
6.2.2.2.2 - 6.2.2.2.6			
6.3.1	"due to"	"resultant of"	
20.3.3.1.1 and 20.3.3.1.3	N/A	(Block IIF) or SV (Block IIIA)	
20.3.3.2.1	The clock parameters in a data set shall be valid during the interval of time in which they are transmitted and shall remain valid for an additional period of time after transmission of the next data set has started.	The parameters are applicable during the time in which they are transmitted. Beyond that time they are still applicable, however, the most recent data set should be used since the accuracy degrades over time.	
3.3.1.7.1	3.3.1.7.1 Group Delay Uncertainty. The effective uncertainty of the group delays shall not exceed 3.0 nanoseconds (two sigma).	3.3.1.7.1 Group Delay Uncertainty. The effective uncertainty of the group delays shall not exceed 3.0 nanoseconds (95% probability).	
Table 20-XI		Unable to show changes to figures/tables. Please review redlines.	Fixed subscripts and incorrect bits and effective range.
Note: Administrative changes (i.e. spelling corrections, grammar, minor clarifications) may not be represented in this Was/Is matrix.			