

## No. 2738

**Subject:** Notice of Approval for Remote/Oceanic Operations in Accordance with FAA Notice 8110.60.

**Issued by:** Universal Avionics Systems Corporation  
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**NOTE:** Revision C to this Service Letter clarifies GPS/GLONASS information in the table on Page 2.

Universal Avionics has completed certification of the UNS-1D for use as primary means of navigation in remote/oceanic airspace using GPS in accordance with the provisions of FAA Notice 8110.60. FAA evaluation was made on STCs SA5072NM, ST01303LA and SA00876LA.

The UNS-1M, -1Msp, -1B, -1C, -1Csp, and -1K use a GPS module identical to the UNS-1D, therefore FAA has extended approval to those products, as long as the GPS software has been updated to SCN 10.3 (or later FAA approved version), and the basic FMS software is TSO C129 or C129a compliant for enroute/terminal operations.

The Super FMS UNS-1E, -1Esp, -1F -1L use a different GPS engine from the earlier units. Please note that the UNS-1C+, -Csp+, -1D+ and -1K+ are earlier units that have been upgraded to be comparable to the Super FMS but may or may not be configured with the new GPS engine. The new GPS engine allows the use of GLONASS. It is available but cannot be activated at this time.

The following table outlines the various FMS products and possible GPS or GPS/GLONASS configurations:

<b>FMS Model</b>	<b>FMS Part No.</b>	<b>FMS Software Control No.(SCN)</b>	<b>GPS (Note 1)</b>	<b>GPS&amp;GLONASS (Note 2)</b>
UNS-1B	1190-XX-1XXX	405.X/505.X	Yes (Note 3 & 4)	
UNS-1B	1190-XX-2XXX	600.X/700.X 601.X/701.X 602.X/702.X 603.X/703.X 604.X/704.X or later approved SCN	Yes (Note 3 & 4)	
UNS-1C	1017-XX-XXX 1017-XX-XXX	600.X/700.X 601.X/701.X 602.X/702.X 603.X/703.X 604.X/704.X or later approved SCN	Yes (Note 4 & 5)	
UNS-1Csp	1019-XX-XXX 1019-XX-XXX	600.X/700.X 601.X/701 602.X/702.X 603.X/703.X 604.X/704.X or later approved SCN	Yes (Note 4 & 5)	
UNS-1D	1192-XX-XXXXXX	600.X/700.X 601.X/701.X 602.X/702.X 603.X/703.X 604.X/704.X or later approved SCN	Yes (Note 4 & 5)	
UNS-1K	1116-XX-XXX	602.X/702.X 603.X/703.X 604.X/704.X or later approved SCN	Yes (Note 4 & 5)	
UNS-1E	2017-XX-XXX	801.X/901.X or later approved SCN	No	Yes
UNS-1Esp	2019-XX-XXX	801.X/901.X or later approved SCN	No	Yes
UNS-1F	2192-XX-XXXXXX	801.X/901.X or later approved SCN	No	Yes
UNS-1L	2116-XX-XXXX	801.X/901.X or later approved SCN	No	Yes
UNS-1C+	10172-XX-XXX	801.X/901.X or later approved SCN	Yes (Note 4 & 5)	Yes, Optional

<b>FMS Model</b>	<b>FMS Part No.</b>	<b>FMS Software Control No.(SCN)</b>	<b>GPS (Note 1)</b>	<b>GPS&amp;GLONASS (Note 2)</b>
UNS-1Csp+	10192-XX-XXX	801.X/901.X or later approved SCN	Yes (Note 4 & 5)	Yes, Optional
UNS-1D+	11922-XX-XXXXXX	801.X/901.X or later approved SCN	Yes (Note 4 & 5)	Yes, Optional
UNS-1K+	11162-XX-XXXX	801.X/901.X or later approved SCN	Yes (Note 4 & 5)	Yes, Optional
UNS-1M	1013-XX-XXX	22.X or 23.X	Yes (Note 4 & 5)	Not Optional
UNS-1Msp	1114-XX-XXX	22.X or 23.X	Yes (Note 4 & 5)	Not Optional

**NOTES:**

1. 12 Channel RAIM GPS-1000 type internal or external sensor uses only USA satellites.
2. 12 Channel RAIM type GPS and GLONASS GNSS-2400 type internal sensor.
3. Uses external GPS-1000 12 Channel RAIM type sensor unit.
4. Use SCN 10.3 or later in internal or external GPS-1000 type sensor.
5. Uses internal GPS-1000 12 Channel RAIM type sensor unit for standard configuration.

Long range navigation flights in Oceanic or Remote areas requires the use of two independent navigation systems. Two INS/IRS and one GPS (supplements the IRS system) navigators, or two independent GPS navigators which comply with FAA Notice 8110.60 will fulfill the two Long-Range navigator systems requirement. INS systems are classified as Sole Means and GPS systems are classified as either Supplemental or Primary Means navigation systems. The definitions for these classifications are:

Sole Means Navigation System - A sole-means navigation system for a given phase of flight must allow the aircraft to meet, for that phase of flight, all four navigation system performance requirements: accuracy, integrity, availability and continuity of service.

Primary Means Navigation System - This is a navigation system approved for a given operation or phase of flight that must meet accuracy and integrity requirements, but need not meet full availability and continuity of service requirements. Safety is achieved by limiting flight to specific time periods and through appropriate procedural restrictions. There is no requirement to have a sole-means navigation system on board to support a primary-means system.

Supplemental Means Navigation System - This is a navigation system which must be used in conjunction with a sole-means navigation system. Approval for supplemental-means for a given phase of flight requires that a sole-means navigation system for that phase of flight must be on board. Among the navigation system performance requirements for a given phase of flight, a supplemental-means navigation system must meet the same accuracy and integrity requirements as a sole-means system. There is no requirement to meet the availability and continuity requirements.

In addition to the airborne hardware requirements, FAA Notice 8110.60 requires that the pilot use a RAIM prediction program to verify that adequate availability and continuity of service will exist for the proposed flight. Universal Avionics has developed software that will run on IBM-compatible computers that will fulfill this requirement. Different kits exist to provide Offline Flight Planning and RAIM prediction to our customers. Offline flight Planning is used to define the proposed route of flight, and RAIM prediction is used to perform the prediction for that route.

The following navigation class definitions are taken from AC 91-70, dated September 6, 1994.

Class I Navigation – “...any enroute flight operation conducted in controlled or uncontrolled airspace that is entirely within operational service volumes of ICAO standard nav aids (VOR, VOR/DME, NDB). The operational service volume describes a three-dimensional volume of airspace within which any type on enroute navigation is categorized as Class I navigation.”

Class II Navigation – “...any enroute operation that is not categorized as Class I navigation and includes any operation or portion of an operation that takes place outside the operational service volumes of ICAO standard nav aids. For example, an aircraft equipped with only VOR conducts Class II navigation when the flight operates in an area outside the operational service volumes of federal VOR’s/DME’s.”

Universal will provide, at no charge, a package of certification data to anyone who plans to seek approval for oceanic/remote operations using Universal Avionics FMS and GPS. This package contains the following documents:

1. Report Number 20159, “Summary of Compliance to the Requirements of FAA Notice 8110.60”
2. FAA Approval Letter for Ground Based RAIM Prediction Program and Item 1 above.
3. Sample Airplane Flight Manual Supplement showing compliance statement for FAA Notice 8110.60

Note that it will be the responsibility of the operator to get a Letter of Authorization from FAA to conduct flights in remote/oceanic airspace using Universal Avionics FMS and GPS equipment.

To order the 8110.60 Certification Package, complete the form below and fax to Universal Avionics Product Support. Should you have questions, contact our Product Support at 520-573-7627.

To: Universal Avionics Product Support  
Fax: 520-295-2384

Please send 8110.60 Certification Package to: \_\_\_\_\_ (Please print clearly)

Name \_\_\_\_\_

Phone # \_\_\_\_\_ Fax# \_\_\_\_\_

E-mail \_\_\_\_\_

Street Address \_\_\_\_\_  
(No P.O. Box please)

City \_\_\_\_\_ ZIP or Postal Code \_\_\_\_\_

State or Province \_\_\_\_\_ Country \_\_\_\_\_

Aircraft Make \_\_\_\_\_

Aircraft Model \_\_\_\_\_

Aircraft S/N \_\_\_\_\_

FMS/NMS Model and Part Number \_\_\_\_\_

Ship via (circle one) Mail FED EX \_\_\_\_\_ P1 P2  
(your Fed Ex acct #)

*Due to the size of the data package we are unable to Fax it.*