



Verification of Avionics Configurations: U.S. Domestic En Route CPDLC

DATA COMMUNICATIONS INTEGRATED SERVICES (DCIS)

L3Harris Technologies

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U.S. Domestic En Route CPDLC: Identifying Operationally Acceptable Avionics

For operators who want to participate in U.S. Domestic En Route CPDLC its important that the aircrafts avionics configuration is verified against the published recommended avionics configuration to avoid interoperability issues and ensure operationally acceptable performance is maintained. The primary components that comprise the avionics configuration are the CMU/CMF/ATSU (part number and/or software load), FMS/FMC (part number and/or software load) and VDR (part number and/or software load with applicable installed service bulletins). The purpose of this document is to provide guidance for operators to identify the avionics on their aircraft that are recommended/required for use in U.S. Domestic En Route CPDLC. For more additional information on how to participate and use U.S. Domestic En Route CPDLC please visit harris.com/DataComm.

Common Terms & Abbreviations

- ATSU- Air Traffic Services Unit
- CMU - Communication Management Unit
- CMF- Communications Management Function
- FMS- Flight Management System
- FMC - Flight Management Computer
- VDR - VHF Data Radio
- CPN- Part Number
- SB- Service Bulletin
- SW- Software Load
- EQ- Equivalent
- VDL Mode 2- (Very High Frequency Digital Link Mode 2)
- MF- Multi Frequency
- PTL- Push to Load
- RAV-E - Recommended Avionics Version En Route list
- EIS – Entry into service

Equipment to Verify

To file as eligible and participate in U.S. Domestic En Route CPDLC operators must ensure that their aircraft are equipped with VDL Mode 2 with multi-frequency capability, FANS 1/A with Push to Load capability (see FAA AC 90-117 for loading requirements) and that VDL Mode 2 is the primary media for CPDLC messages. CPDLC DCL (departure clearance) allows for VDL Mode 0/A, however U.S. Domestic En Route CPDLC requires VDL Mode 2.

On the subsequent pages there will be examples by aircraft type, CMU/CMF/ATSU manufacturer, VDR and explanations on how to easily identify if an aircraft is equipped with the recommended avionics configuration using the RAV-E. The operator will need to verify (3) categories as follows:

- *CMU/Equivalent for MF VDL Mode 2*
- *VDR for MF VDL Mode 2 (and to ensure VDR deafness has been addressed)*

- *FMS SW to ensure Push to Load and other required functionality*

This document will provide guidance for operators to review the Recommended Avionics Version list and verify recommended equipment to participate in U.S. Domestic En Route CPDLC. Operators who do not follow the Recommended Avionics Version list will likely experience interoperability issues which can cause messages to fail or be delayed. This can cause both pilots and controllers to experience added workload and would result in the loss of the very benefits the system is designed to provide. If operators are unsure of the aircraft's specific part number or avionics configuration, they should contact their OEM for further assistance.

CMU Example

Below is the CMU recommended for Bombardier Challengers and Globals that you will see listed in the Recommended Avionics Version List for En Route.

RIU - 4000

Once this has been identified as the CMU, verification and confirmation of the CMU CPN (part number) is required.

When identifying the CMU off the Recommended Avionics Version list confirm your CPN matches one of the acceptable versions in the RAV-E associated with your CMU. In this example you will see there are multiple CMU part numbers for *RIU-4000* (ending -175, -178, etc.) that are acceptable for En route CPDLC located on the RAV-E.

VDR Example

Operators will also need to identify the acceptable radios under the 'VDR for MF VDL Mode 2' column on the RAV-E.

In the example below, the VHF-4000 with CPN 822-1468-210 **MUST** have **Service Bulletin 8**.

Note: These SB's are issued by the avionics OEM and are typically stamped on the avionics box itself. If in doubt, please contact your part OEM.

- **VHF-4000**
 - **CPN 822-1468-210 w/ SB-8**

FMS Example

The last component to be checked is the FMS under the column '*Minimum FMS Version*'. Here is an example of the FMS for a Gulfstream 280 found in the RAV-E.

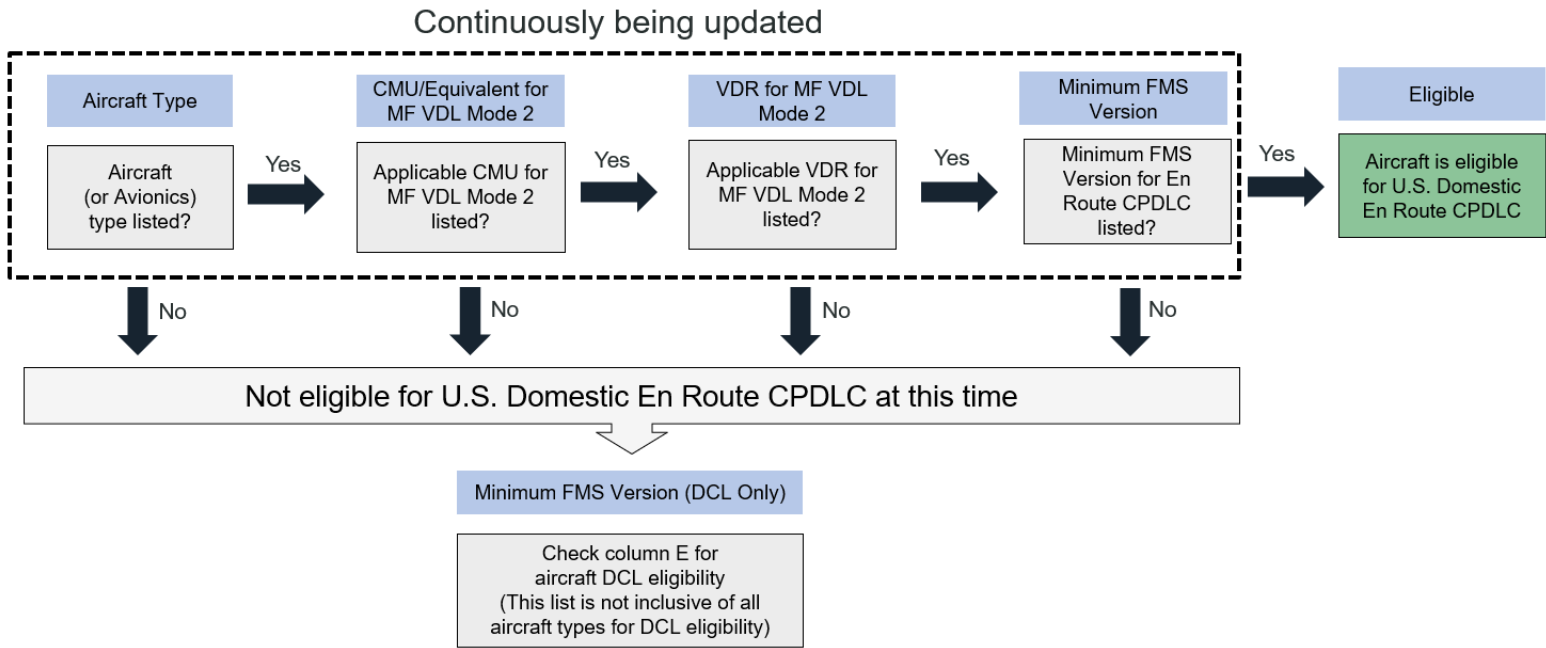
- RC PLF 6200 V3.6.1

General statement:

If you find your part number in the RAV-E for an approved subcomponent of the avionics, that component is considered acceptable. However, all avionics subsystems must have the recommended CPN and applicable SBs. If there are any questions, please contact your aircraft or avionics manufacturer.

Not all systems have all three subcomponents. Some have SW versions inside a CMF (Communication Management Function). The RAV-E accounts for these configurations as well.

RAV-E Verification Flow Chart



*Green text on the RAV indicates "Best In Class" Software and hardware combinations