

14CFR: 121.1(b), 121.363(a)(2)(b), 121.367, 121.379(a), 145.205, 145.219 43.5?, 43.9?  
121.369?

REF: FAA Order 8110.49, FAA Order 8900-1, RTCA DO-178, ARINC 667-1, Advisory Circular 20-115C

A. Definitions

Software	Digital data that is the operating instructions for the core processor component of an electronic device.
IFEC Software	IFEC Software is Classified in ARINC report 667-1 as “Airborne Support Data”.
RTCA DO-178 Level E software	Software whose anomalous behavior, as shown by the system safety assessment process, would cause or contribute to a failure of systems function with no effect on the aircraft operating capability or pilot workload. If a software component is determined to be Level E and this is confirmed by the certification authority, no further guidance in this document {DO-178} applies.
ARINC Report 667-1, Guidance for the Management of Field Loadable Software “Airborne Support Data”	Digital Data which is not considered as part of the aircraft system safety assessment or required for flight operations, maintenance operations, or aircraft production is airborne support data. Examples of this data are maintenance reports, (e.g., configuration reports) sent from the aircraft, In Flight Entertainment (IFE) files, and other airline business data.
Operational Program/Software	Operational software consists of system software developed by the system/component manufacturer. The operational software provides the basic functionality of the system/component. Typically the operational software does not change often. Operational software revisions are typically driven by changes intending to fix functionality not performing as intended or adding/removing functionality.
Configuration Database	A Configuration Database is typically used to customize certain IFEC system functions to meet American Airlines’ preferences. Configuration database is data that sets system or component variables important to the installed configuration. Examples include (but are not limited to): databases that define the number of seats installed in the aircraft, databases that define the IFEC architecture arrangement, flight routes and flight numbers.
Content/Media	Content, also called media, is the data that is actually “played” or displayed for the entertainment of the passenger. Content/Media is subject to change on a regular basis. Examples of content include (but are not limited to): movies, audio programs, video games, maps and map files, video and audio public address announcements, display screen graphics. Content/Media part numbers are

issued by the Content/Media provider and often change on a predetermined operationally determined cycle.

Connectivity Air-Ground Link Management Tables

The passenger connectivity air-ground data links, including satellite segments, utilize handshaking and link management protocols that may be dynamic in nature and global in effectivity. These link management protocols do not affect the functionality of the installed IFE or connectivity system. However incorrect protocols may affect the air-ground service availability.

Portable Data Storage or Loading Device

Portable data storage or loading device is a device used to transport data from a source or intermediate location, to a destination aircraft system. In the context of on-aircraft IFE systems, typically this transport will be from a ground-side data server to an aircraft IFE system.

Examples of portable data storage devices include (but are not limited to): compact disks, DVD, removable hard disk drives, PCMCIA cards, USB memory sticks, solid state disk drives, and memory cards (e.g. SD, SDHC, mini-SD, etc.)

IFEC

In-Flight Entertainment and Connectivity

G. IFEC System data – Configuration Management

1) Operational Software

- i. Operational software intended for loading into an aircraft IFEC component or system, may be, when necessary for visibility for aircraft maintenance and associated with the original certification base of the system, be listed in the aircraft Illustrated Parts Catalog (IPC) for convenience.

2) Databases

- i. Configuration Databases intended for loading into an aircraft component or system, may be, when necessary for visibility for aircraft maintenance, and associated with the original

certification base of the system, be listed in the aircraft Illustrated Parts Catalog (IPC) for convenience.

3) Content/Media

- i. American Airlines Marketing organization manages all aspects of Content/Media. Content version control is typically handled through activation and expiration dates built into the content metadata. **Content/Media software changes frequently and not included in the aircraft Illustrated Parts Catalog (IPC).**

4) Connectivity Air-Ground Link Management and other IFEC tables

- i. Connectivity Air-Ground Link Management and other IFEC tables do not alter the functionality of the IFE or connectivity system. Although incorrect Link Management tables may effect the air-ground service availability. **System tables are not included in the aircraft Illustrated Parts Catalog (IPC).**

I. Wireless Transfer or Transport of IFEC System data

Some IFEC suppliers/vendors have the ability to wirelessly connect via cellular or satellite transmission to the aircraft installed IFEC system and pass software between the suppliers/vendors network control center and the aircraft IFEC system. Supplier/Vendors having wireless connection capability generally will load IFEC software using one of the four methods outlined below.

1) **Method 1 - Manual Transfer and Manual Activation**

- i. This method requires that the aircraft is on the ground and a portable loading device such as (but not limited to) a laptop is used to load the IFEC system data onto the aircraft, or directly into the target component/system. Once the IFEC system data has been loaded, an appropriately trained and qualified aircraft technician initiates and validates the data load using the portable loading device, and performs applicable return-to-service testing.
- ii. A record of maintenance in the Aircraft Maintenance Logbook (AML)

2) **Method 2 - Automated Transfer and Manual Activation**

- i. IFEC data is transferred from a ground-side source to the aircraft via a wireless method, such as, but not limited to cell modems, satellite data connectivity, gatelink, etc. This method requires that the transferred data be stored in a staging area defined in the on board IFEC system. The new data stored in the staging area must not be automatically activated. The on-board storage area must be protected such that data stored in the storage area cannot be automatically installed.
- ii. Once the aircraft is on the ground, an appropriately trained and qualified aircraft technician is required to take actions on the aircraft to activate the data into the target LRU/system, validate that the data is activated correctly, and perform the applicable return-to service testing.
- iii. The wireless transfer of the data from the ground source to the on-board protected storage area can take place during all phases of flight. Other restrictions may take precedence however, such as ground-only operation of cell modems, etc.
- iv. After the data is activated, a record of maintenance in the Aircraft Maintenance Logbook (AML) is generated

3) **Method 3 - Automated Transfer and Remote Manual Activation**

- i. IFEC data is transferred from a ground-side source to the aircraft via a wireless method, such as, but not limited to cell modems, satellite data connectivity, gatelink, etc.
- ii. This method requires that the transferred data be stored in a staging area defined in the on board IFEC system. The new IFEC data stored in the staging area must not be automatically activated. The on-board storage area must be protected, and the process to manage the transfer and eventual loading of the data, must be designed such that data stored in the storage area cannot be automatically activated.
- iii. The wireless transfer of the data from the ground source to the on-board protected storage area can take place during all phases of flight. Other restrictions may take precedence however, such as ground-only operation of cell modems, etc.

- iv. The IFEC system staged data is activated remotely through a wireless connection to the aircraft, by appropriately trained and FAA certified personnel at the IFEC supplier/vendor network control center, when the aircraft is on the ground.
- v. The supplier/vendor will maintain a record of the maintenance on each aircraft as well as maintain a complete list of current software configuration for the aircraft in accordance with the supplier/vendor CFR Part 145 Repair Authorization. The record and configuration data will be readily available

4) **Method 4 - Automated Transfer and Automated Activation**

- i. IFEC content is transferred from a ground-side source to the aircraft via a wireless method, such as, but not limited to cell modems, satellite data connectivity, gatelink, etc.
- ii. The wireless transfer of the data from the ground source to the on-board protected storage area can take place during all phases of flight. Other restrictions may take precedence however, such as ground-only operation of cell modems, etc.
- iii. This method requires that the transferred software be installed on the aircraft and activated based on supplier/vendor computer network control center CFR Part 145 Repair Authorization policies and procedures.
- iv. Once the aircraft software has been automatically installed and activated, an appropriately trained FAA certified person at the IFEC supplier/vendor network control center will create and maintain a record of the maintenance per IFEC supplier/vendor CFR Part 145 Repair Authorization.
- v. If the IFEC software is installed and activated at separate times, an appropriately trained FAA certified person at the IFEC supplier/vendor network control center will create a separate record for installation and activation per IFEC supplier/vendor CFR Part 145 Repair Authorization.
- vi. The supplier/vendor will also update and maintain a list of current software configuration for the aircraft in accordance with the supplier/vendor CFR Part 145 Repair Authorization. The record and configuration data will be readily available