

ST02893CH

FAA Supplemental Type Certificate



Installation of a SATCOM System on Boeing 767 Series Aircraft
(FAA STC ST02893CH)

OVERVIEW

- » FAA STC ST02893CH.
- » Argentina Civil Aviation Administration STC 1205.18.
- » Brazil Civil Aviation Administration STC 2011S01-10.

INTRODUCTION

The STCs govern the installation of a SATCOM system in accordance with Electronic Cable Specialists (ECS) Master Data List ECS-207397.

YOUR NEEDS

Provides the ability to equip your 767 fleet with a long-range communication system.

YOUR BENEFITS

Long range communication systems exceed the capabilities of conventional systems.

STC AIRCRAFT EFFECTIVITY

- » Boeing 767-300/-300F series aircraft.

STC LIMITATIONS

STC ST2893CH must be installed prior to or in conjunction with STC ST02888CH.

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derivative configurations, and installation lead time
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STC CONFIGURATIONS

- » Configuration 1: Rockwell Collins SATCOM 2100 system installation with no existing Boeing SATCOM provisions. This configuration requires prior or concurrent installation of IGA Antenna and D/LNA under separate approval. Configuration 1 is not FAA Approved.
- » Configuration 2: Rockwell Collins SATCOM 2100 system installation with partial Boeing SATCOM provisions installed; HF/SAT panel installed in P6 panel. This configuration requires prior or concurrent installation of IGA antenna and D/LNA under separate approval.
- » Configuration 3: Rockwell Collins SATCOM 2100 system installation with partial Boeing SATCOM provisions installed; HF/SAT panel installed in P6 panel; E12 avionics rack installed in aft cargo bay. This configuration requires prior or concurrent installation of IGA antenna and D/LNA under separate approval. Configuration 3 is not FAA approved.
- » Configuration 4: E12-1 Shelf Installation

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PRODUCT DESCRIPTION

A SATCOM system will enhance the long range communication ability available from the current High Frequency (HF) System by supplying data services that can be used to support other onboard systems such as Aircraft Communications Addressing and Reporting System (ACARS), which are not available through HF. Additional services available through SATCOM include cockpit communications with administrative and operational personnel. The system is designed to ensure that communications for safety and regularity of flight are not delayed by the transmission and reception of other types of messages.

The Rockwell Collins SATCOM 2100 Satellite Communications System is a mobile avionics communications system that provides continuous world-wide voice and data communications services to and from the aircraft via the Inmarsat satellite constellation. The Rockwell Collins SATCOM System to be installed supports two cockpit communication channels capable of simultaneous full duplex voice communications and one channel of data communications for the ACARS system. The installed system will accommodate the following categories of communications:

- » Air Traffic Control (ATC)
- » Aeronautical Operational Control (AOC)
- » Aeronautical Administrative Communications (AAC)
- » The installed system will not provide Passenger Communication capabilities

The Rockwell Collins SATCOM 2100 System consists of the following Avionics:

- » **Satellite Data Unit (SDU).** The SRT-2100 is a multi-channel receiver/transmitter that provides 45W of power to support a maximum of three Aero-H+ and two Swift64 channels within the spot beams. The SDU is packaged as an ARINC 600 8 MCU LRU and provides the interface to all aircraft avionics, and implements all functionality associated with modulation/ demodulation, error correction, channel rate/frequency selection, and RF translation for three communication channels. The SDU manages the RF link protocols on the satellite side and provides the system interface with communication management Avionics. The SDU interface to other aircraft avionics involves the exchange of ARINC 429 and discrete data.

The following items are an integral part of the SATCOM system and are installed prior to or concurrently with this modification under a separate STC project along with the associated provisions:

Intermediate Gain Antenna (IGA): The IGA-2100B transmits L-Band RF signals from the SDU to a satellite and receives L-Band RF signals from a satellite for the SDU.

Diplexer Low Noise Amplifier (D/LNA): The DLNA-2100B is a three-port RF device which provides signal routing and filtering functions. Signals in the receive band are routed from the antenna port to the receive port; transmit signals are routed from the transmit port to the antenna port. The low noise amplifier establishes the noise floor of the communication system by boosting the signals received from the antenna to a level much greater than the noise level of subsequent components in the receive path.

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MECHANICAL CHANGES

Configurations 2 and 4 only

The Rockwell Collins SRT 2100 SATCOM communications system will be installed on the aircraft.

The following physical changes will be accomplished on an aircraft with partial Boeing SATCOM provisions installed:

- » A new E12-1 avionics shelf will be installed outboard of the aft cargo bay on the right hand side of the aircraft between frame stations 1175 and 1197.
- » A new 8 MCU mounting tray with a fan will be installed on the E12-1 for the Rockwell Collins SATCOM SRT-2100 (see Figure 2).
- » A drip shield will be installed above the new E12-1 shelf to provide protection for the installed avionics against spilled or leaking fluids (see Figure 2).
- » A new access panel will be installed in the existing aft cargo bay liner to provide access to the new E12-1 Avionics shelf.
- » A SATCOM data loader will be installed into existing DZUS rails in the P61 maintenance panel behind the first officer's seat. This data loader port provides a diagnostic and data loading capability from the flight deck (see Figure 3).
- » An existing Boeing HF/SAT switching panel is located in the P5 cockpit overhead panel to provide switching between the SATCOM and HF systems.

See Figure 1 for an installation overview.

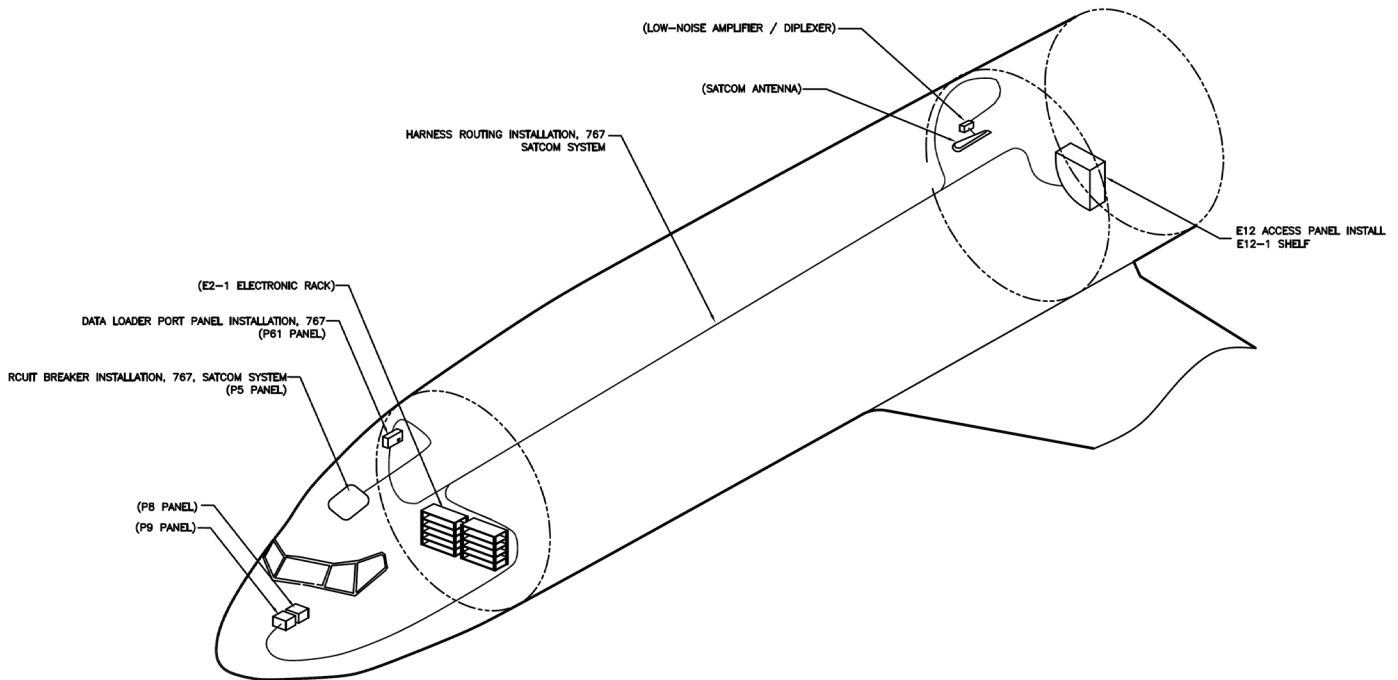


FIGURE 1 - INSTALLATION OVERVIEW

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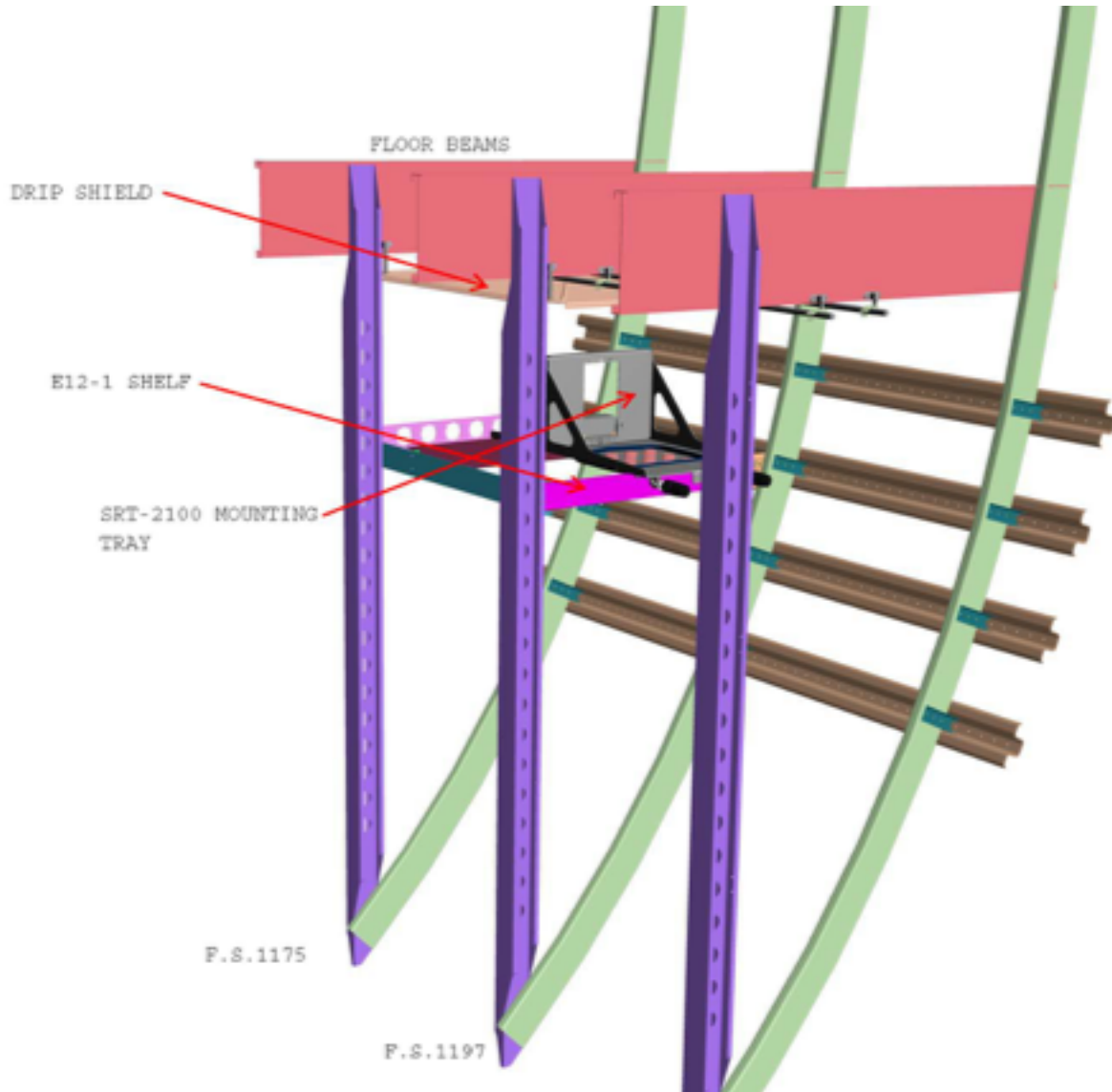


FIGURE 2 – E12-1 SHELF INSTALLATION

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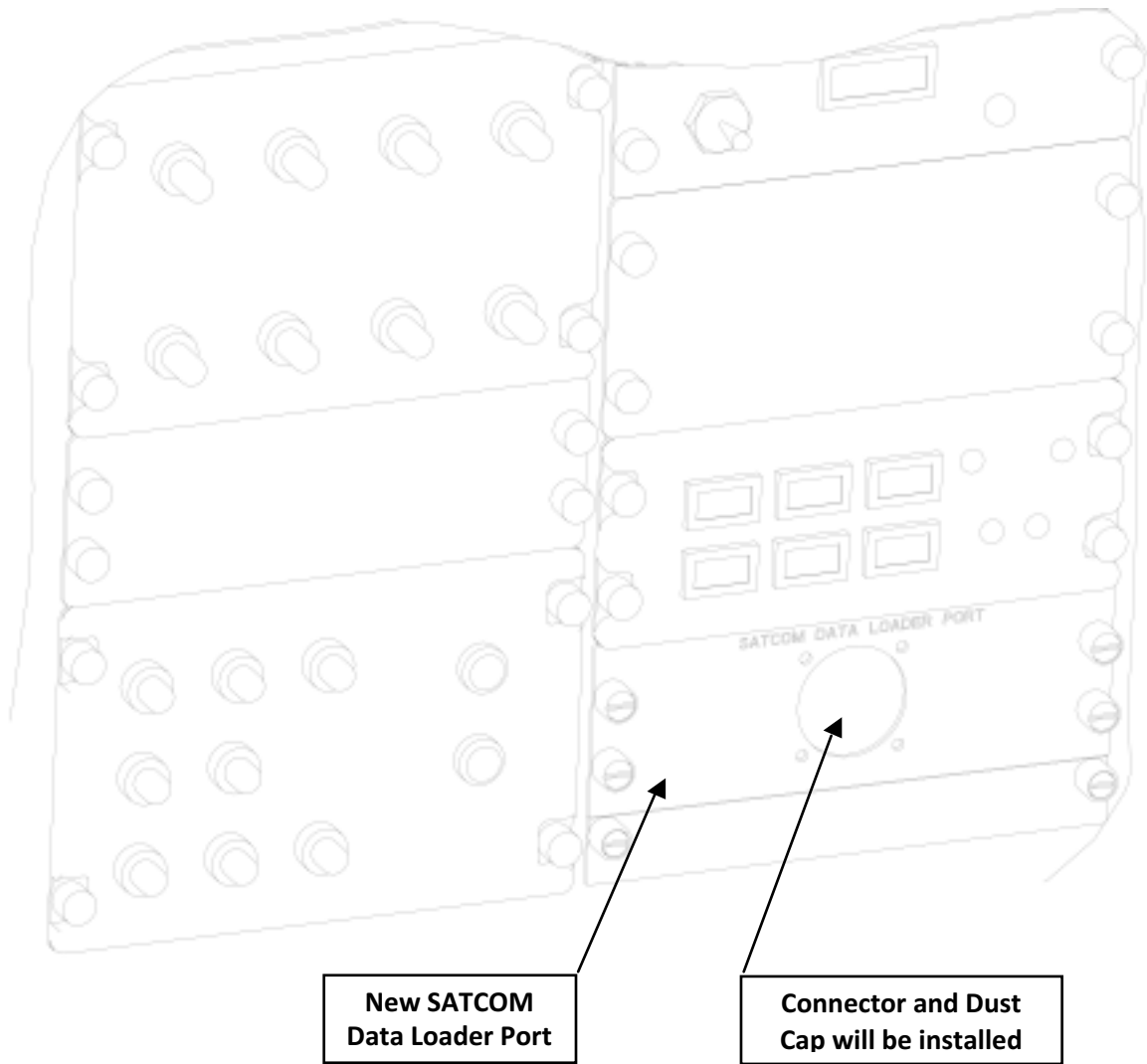


FIGURE 3 - SATCOM DATA LOADER PORT INSTALLATION

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ELECTRICAL CHANGES

Configurations 2 and 4 only

- » Existing 115 VAC circuit breaker provisions will be activated and new power and ground wiring will be installed between the aircraft and the SATCOM SDU, SATCOM tray cooling fan, existing IGA antenna and existing D/LNA.
- » Existing 28 VDC power and ground wiring provisions will be activated between the aircraft and the existing HF/SAT switching relays.
- » New wiring will be installed between the SATCOM SDU mounted on the E12-1 rack and the SATCOM data loader panel, existing IGA and existing D/LNA.
- » ARINC 429 wiring will be installed between the SATCOM SDU and existing IRU-L, an existing Multi-Purpose Interactive Display Unit (MIDU) and the ACARS Management Unit.
- » ARINC 429 wiring provisions from the SATCOM SDU will be capped and stowed at the EICAS Computer L, EICAS Computer R, FMC CDU L and, FMC CDU R.
- » Analog audio and CALL wiring will be installed between the SATCOM SDU and the existing, HF/SAT switching panel, relays and the existing aircraft audio system. The existing relays will switch the new SATCOM audio between the existing HF L and HF R audio inputs and the new SATCOM SDU audio input.
- » New wiring will be installed between the SATCOM SDU and the flight data acquisition unit, the bell chime module of the warning electronics unit or EICAS System, and address and configuration strapping connectors.
- » New SATCOM receive and transmit coaxial cables will be installed between the SATCOM SDU and the E12-1 shelf disconnect.
- » The SATCOM interface with the cockpit voice recorder systems is completed using the existing HF/SAT switching with the existing HF L and HF R audio wiring interface with the aircraft audio system.

See Figure 4 for the system block diagram.

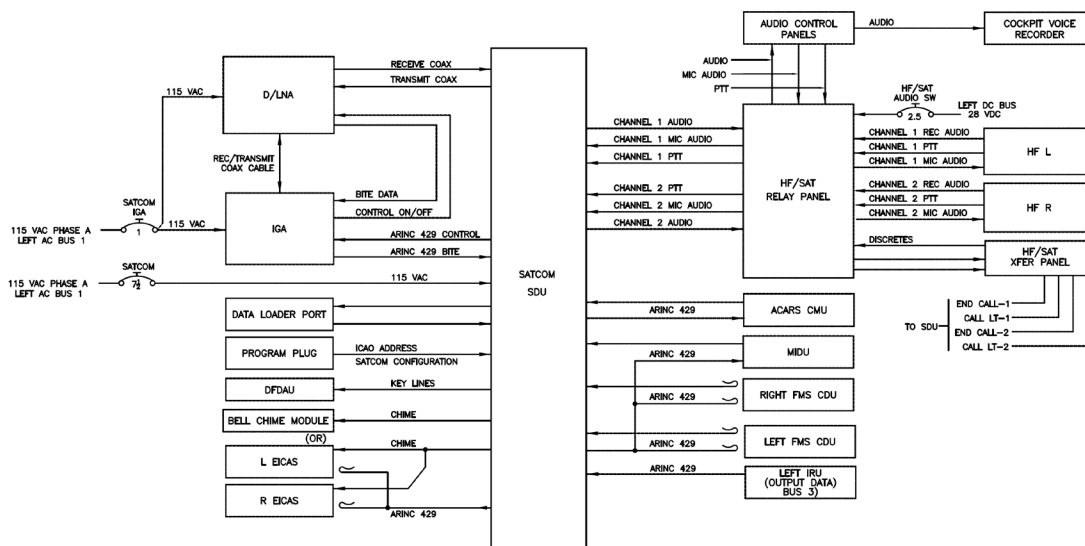


FIGURE 4 - SATCOM SYSTEM BLOCK DIAGRAM

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