tailBeaconX™ STC

Instructions for Continued Airworthiness and Maintenance Manual

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1 Revision History

Revision	Date	Comments
A	10/04/2021	Initial release
B	2/3/2022	Updated based on October 2021 FAA feedback. Add info on ground testing.

2 Warnings / Disclaimers

All device operational procedures must be learned on the ground.

uAvionix is not liable for damages arising from the use or misuse of this product.

This equipment is classified by the United States Department of Commerce's Bureau of Industry and Security (BIS) as Export Control Classification Number (ECCN) 7A994.

These items are controlled by the U.S. Government and authorized for export only to the country of ultimate destination for use by the ultimate consignee or end-user(s) herein identified. They may not be resold, transferred, or otherwise disposed of, to any other country or to any person other than the authorized ultimate consignee or end-user(s), either in their original form or after being incorporated into other items, without first obtaining approval from the U.S. government or as otherwise authorized by U.S. law and regulations.

3 Limited Warranty

uAvionix products are warranted to be free from defects in material and workmanship for two years from the installation of tailBeaconX on the aircraft. For the duration of the warranty period, uAvionix, at its sole option, will repair or replace any product which fails in normal use. Such repairs or replacement will be made at no charge to the customer for parts or labor, provided that the customer shall be responsible for any transportation cost.

Restrictions: This warranty does not apply to cosmetic damage, consumable parts, damage caused by accident, abuse, misuse, fire or flood, theft, damage caused by unauthorized servicing, or product that has been modified or altered.

Disclaimer of Warranty: IN NO EVENT, SHALL UAVIONIX BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM THE USE, MISUSE OR INABILITY TO USE THE PRODUCT OR FROM DEFECTS IN THE PRODUCT. SOME STATES DO NOT ALLOW THE EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

Warranty Service: Warranty repair service shall be provided directly by uAvionix. Proof of purchase for the product from uAvionix or authorized reseller is required to obtain and better expedite warranty service.

Please email or call uAvionix support with a description of the problem you are experiencing. Also, please provide the model, serial number, shipping address and a daytime contact number.

You will be promptly contacted with further troubleshooting steps or return instructions. It is recommended to use a shipping method with tracking and insurance.

4 Table of Contents

5 Introduction

This document provides Instructions for Continued Airworthiness (ICA) and Maintenance Manual (MM) for the tailBeaconX Mode S with Extended Squitter transponder as installed under STC _____. This document satisfies the requirements for continued airworthiness as defined by 14 CFR Part 23.1529 and Appendix A. Information in this document is required to maintain the continued airworthiness of the tailBeaconX Mode S Extended Squitter transponder.

5.1 Publications

When performing tailBeaconX system maintenance it is required the following documents are available.

Part Number	uAvionix Document
UAV-1004270-001	tailBeaconX TSO User and Installation Guide
UAV-1003599-001	tailBeaconX STC Installation Manual
UAV-1003601-001	tailBeaconX Flight Manual Supplement
UAV-1004045-001	AV-30-C Instructions for Continued Airworthiness

Owner/operators may obtain these documents at www.uavionix.com or by contacting a uAvionix dealer.

5.2 Revision and Distribution

This document is required for maintaining the continued airworthiness of the aircraft. When this document is revised, every page will be revised to indicate current revision level.

Owner/operators may obtain the latest revision of this document at www.uavionix.com or by contacting a uAvionix dealer. They may also register for updates and support at www.uavionix.com.

5.3 Acronyms and Abbreviations

The following acronyms may be used in this document:

ADS-B	Automatic Dependent Surveillance Broadcast
AML	Approved Model List
ATC	Air Traffic Control
ATCRBS	Air Traffic Control Radar Beacon System
CFR	Code of Federal Regulations
FCC	Federal Communications Commission
FAA	Federal Aviation Administration
GPS	Global Positioning System
ICA	Instructions for Continued Airworthiness
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
LED	Light Emitting Diode
MM	Maintenance Manual
RTCA	Radio Technical Commission for Aeronautics
SBAS	Satellite Based Augmentation System
STC	Supplemental Type Certificate
TSO	Technical Standard Order
VFR	Visual Flight Rules
WAAS	Wide Area Augmentation System

6 System Description

6.1 Features and Installation

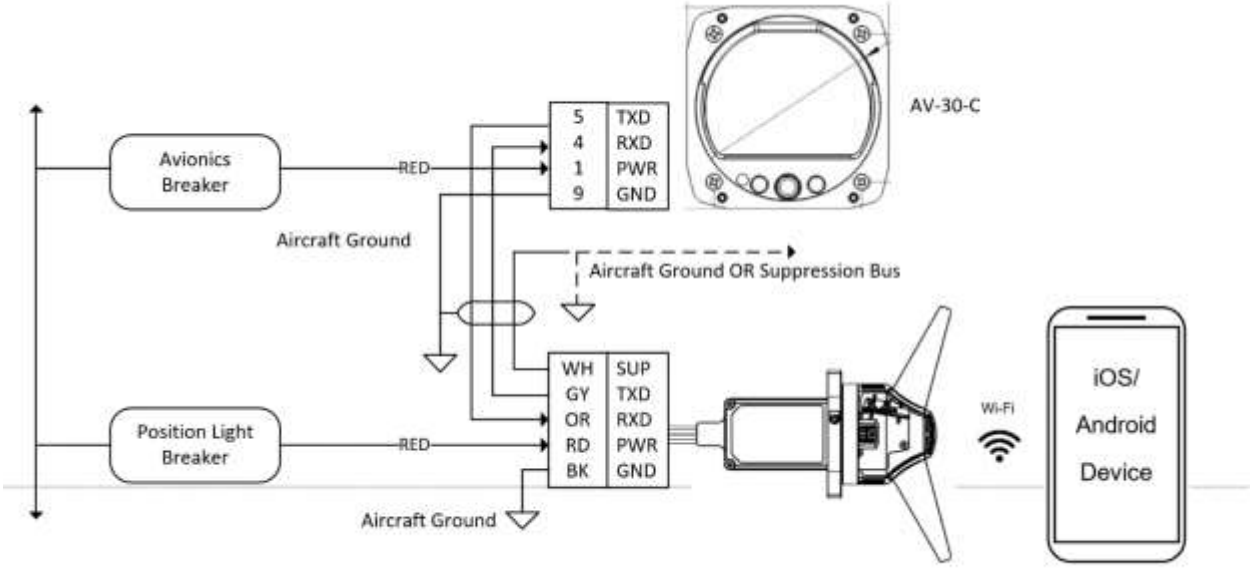
tailBeaconX is a tail mounted Mode S Extended Squitter ADS-B Transponder that meets all the requirements for compliance to 14 CFR Part 91.215 and 14 CFR Part 91.225 as follows:

Function	TSO/RTCA/SAE	Class/Type
Air Traffic Control Radar Beacon System/Mode Select (ATCRBS / Mode S) Airborne Equipment	TSO-C112e RTCA/DO-181E	Level 2els, Class 1 *[1]*
Extended Squitter Automatic Dependent Surveillance – Broadcast (ADS-B) and Traffic Information Service – Broadcast (TIS-B) Equipment Operating on the Radio Frequency of 1090 MHz	TSO-C166b RTCA/DO-260B	Class B1S
Airborne Navigation Sensor Using the Global Positioning System (GPS) Augmented by the Satellite Based Augmentation System (SBAS)	TSO-C145e INCOMP RTCA/DO-229E	Beta 1
Position Light (White)	TSO-C30c SAE/AS8037	Type III

This device transmits Mode A, Mode C, Mode S and Automatic Dependent Surveillance-Broadcast (ADS-B) data through the 1090 MHz Extended Squitter data link.

tailBeaconX replaces an existing rear (white) position light. It must be installed as shown in the *tailBeaconX STC Installation Manual*.

6.2 Interfaces



7 Control and Operation

tailBeaconX requires serial connection to an AV-30-C control head or equivalent equipment. tailBeaconX receives transponder control and pressure altitude information from the control head. Status and annunciation information is provided by tailBeaconX to the control head.

8 Instructions for Continued Airworthiness

This section provides Instructions for Continued Airworthiness of the tailBeaconX system as installed under STC _____ and satisfies the requirements for continued airworthiness as defined by 14 CFR Part 23.1529 and Part 23 Appendix A.

8.1 Airworthiness Limitations

The Airworthiness Limitations section is FAA-approved and specifies maintenance required under 14 CFR Part 43.16 and 14 CFR Part 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA-approved.

There are no new or additional airworthiness limitations associated with this equipment and/or installation.

8.2 Servicing Information

The tailBeaconX unit maintenance is ‘on condition’ only. See *tailBeaconX STC User and Installation Manual* Section 7 for equipment removal and installation. No component-level overhaul is required.

8.2.1 On-Condition Servicing

On Condition replacement and/or servicing may be required when conditions, symptoms, and/or servicing should take place only after the system is troubleshot based on guidance provided in this manual and per common avionics maintenance practices.

8.2.2 Special Tools

The following tools are needed to perform maintenance tasks.

- Ground power source (capable of supplying sufficient power to the aircraft systems and avionics)
- iOS or Android Mobile Device with “uAvionix skyBeacon Installer” App
- Dark glasses for viewing LEDs directly at close range
- Transponder ramp test set

8.3 Maintenance Intervals

Periodic checks of the tailBeaconX system installed by the STC referenced in Section 5 are specified in Table 8-1 at specific intervals.

Table 8-1 Maintenance Intervals

Item	Description/Procedure	Section No.	Interval
Equipment Removal and Replacement	Removal and installation of the tailBeaconX unit.	See *tailBeaconX STC User and Installation Manual* Section 7	On Condition
Equipment Visual Inspection	Conduct a visual check of the tailBeaconX unit, and associated wiring to ensure continued installation integrity.	8.4	12 Calendar Months
ADS-B Firmware Version	Confirm the ADS-B software version is current per Service Bulletins, update if not current.	See *tailBeaconX TSO User and Installation Guide* Section 9.6	12 Calendar Months
Lightning Strike – Actual or Suspected	Inspect the wired connections, tailBeaconX unit, and surrounding areas.	8.5	On Condition
Testing – ADS-B	The tailBeaconX must be tested and shown to comply with Title 14 CFR Part 91.227.		Installation, software update, or replacement of tailBeaconX

Testing – Transponder	The tailBeaconX requires ATC transponder testing and inspection to comply with CFR Part 91.413. See *Note 1*.		24 Calendar Months
Control Head Altitude Encoder	The control head pressure altitude reporting system must be inspected and found to comply with 14 CFR 91.411. See *Note 2*.	*AV-30-C Instructions for Continued Airworthiness*	24 Calendar Months

Note 1 - Mode S transponders respond to a minimal set of transponder interrogations while on-ground. tailBeaconX can be placed in an airborne state for test purposes by entering "Ground Test Mode" using the installer application, or by using certain compatible control heads. During transponder testing, ensure static pressure test set is NOT connected. For more details see tailBeaconX TSO User and Installation Guide (UAV-1004270-001) Section 9.5.

Note 2 - tailBeaconX must be in Standby mode during 91.411 testing to ensure no false position report broadcasts during pressure altitude system testing.

8.4 Visual Inspection

Perform a visual inspection as detailed in this section. Check tailBeaconX system components for damage or other defects and replace as required. Inspection may require the temporary removal of a unit to gain access to connectors. Follow guidance in the *tailBeaconX TSO User and Installation Guide* for equipment removal and replacement. Refer to model specific Aircraft Maintenance Manual for instructions on removing access panels or covers, as required.

8.4.1 tailBeaconX Visual Inspection

- Inspect the tailBeaconX unit and verify it is securely mounted.
- Inspect the unit fasteners and verify they are properly torqued and show no wear or damage. Additionally –

    - Verify unit support structure is in good condition and its integrity is not compromised.
    - Inspect for corrosion and treat as required.
- Inspect the condition of the wiring.
    - Verify that all wiring and cables are securely fastened.
    - Verify that the harness shows no signs of cracking, chafing, abrasion, melting, or any other form of damage.
    - Inspect the tailBeaconX connectors for corrosion, evidence of moisture, or other defects.

8.4.2 Position Light Visual Inspection

The rear position light is designed with 2 white LEDs. If any one LED fails, the unit must be repaired or replaced.

Note: Use dark glasses or cover the device to ensure eye safety during LED inspection.

8.5 Post Lightning Strike Inspection

Inspection of the tailBeaconX unit must be performed following a suspected or actual lightning strike. The tailBeaconX and nearby aircraft structure and cabling must be inspected to verify no damage has occurred where lightning may have attached. A tailBeaconX with visible signs of damage should be replaced. Grounding hardware and nearby aircraft structure supporting tailBeaconX installation must be inspected for damage. Repair any damaged components.

9 Post-Installation Test Procedures

Procedures that must be completed when the tailBeaconX is removed and re-installed or replaced with a new unit are detailed in this section.

Refer to *tailBeaconX TSO User and Installation Guide* Section 9.4 and 9.5 for Post-Installation Checks.

If no other service is to be performed, continue to the Return to Service Procedure in Section 11.

10 Troubleshooting

This section provides troubleshooting information to assist if problems occur after maintenance activities.

Table 10-1 Troubleshooting Actions

Problem / Indication	Cause	Action
Unable to see Beacon-XXXX Wi-Fi network	• Device not receiving power • Device in ALT Mode	• Ensure circuit breaker is closed, navigation light switch is on and wiring is correct. • Ensure the device control head is configured to set the tailBeaconX to STBY mode.
Position light not functioning	• Device not receiving power • Voltage less than 9 volts	• Ensure circuit breaker is closed, navigation light switch is on and wiring to red and black wires are correct. • Ensure system voltage greater than 11 volts (may require the engine to be running).
Control Head - Maintenance Required Failure Annunciation	• Invalid ICAO address configuration • Misconfigured tailBeaconX	• Configure a valid ICAO address using the installer app
Control Head - Position Failure Annunciation	• No GPS position available	• Ensure device has a clear view of the sky • Allow GPS up to 15 minutes to obtain position

11 Return to Service Procedure

After removing and re-installing or replacing the tailBeaconX, perform the system configuration procedures in the *tailBeaconX TSO User and Installation Guide* Section 9.

11.1 Maintenance Records

After conducting the required return-to-service procedures in accordance with this document, the aircraft may be returned to service.

Record the following information in the appropriate aircraft maintenance logs.

- Part number and serial number of the unit that was replaced or re-installed.
- Any other applicable information related to the maintenance work performed on the aircraft.

Appendix A includes an installation record that should be completed and updated as appropriate with every maintenance action.

12 Support

For additional questions or support please visit:

http://www.uavionix.com/support/

Appendix A – Installation Record

A copy of this appendix must be used to record installation information and must be kept in the aircraft permanent records.

A copy of this form must be submitted by visiting:
https://uavionix.com/logbook/

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tailBeaconX Installation and Configuration Log

Date:	By:
Aircraft Information	
Make:	Model:
Serial Number:	Registration Number:
tailBeaconX Information	
Serial Number:	Wi-Fi SSID:
ADS-B Software Version:	GPS Software Version:
tailBeaconX Configuration	
Aircraft Registration/Callsign:	ICAO Number (hex):
Maximum Aircraft Speed:	V_{SO} (knots):
ADS-B In Capability: □ 978 □ 1090	Emitter Type:
Aircraft Length:	Aircraft Width:
GPS Antenna Offset (Lat):	GPS Antenna Offset (Lon):
Customer Information	
Name:	
Email:	
Telephone:	
Address:	