

Publications and Training Solutions

Course Syllabus: 523-0779580

COURSE TITLE: SATCOM (SAT-906, 2000, 2100)
Operations & Flightline Maintenance

PREREQUISITES:

Students should have completed a two-year technical electronics school or have equivalent knowledge of aircraft avionics systems and a working command of the English language.

PURPOSE:

This course provides students with the skills and background knowledge required for troubleshooting and isolating defective components in the SATCOM system using applicable manuals, block diagrams, and maintenance guides.

OBJECTIVES: Upon completing this course, the student should be able to:

1. Provide an overall understanding of Satellite Communication principles, operations, and testing of the subject equipment.
2. Identify system components and the functional/operational characteristics of each line replaceable unit (LRU).
3. Identify typical aircraft system interface/system architecture.
4. Perform fault isolation to a faulty LRU using built-in test diagnostic

COURSE LENGTH: 3 Days

TRAINING DEVICES:

NOT APPLICABLE

TRAINING MATERIALS:

1. PowerPoint Presentation with LCD/Box Light projector
2. TV/VCR equipment
3. Student Handbook
4. An SDU/SRT on aircraft or Test Station for practical aspects of training

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REFERENCES:

1. SAT-906, Satellite Communications System Maintenance Guide 523-0777626
2. SAT-906, SATCOM Satellite Communication System Installation Manual 523-0778263
3. SAT-906, Satellite Communications System Pilot's Guide 523-0777373
4. SAT-2100, 6100, 2100B, 6100B Installation Manual 523-0806495
5. SAT-5000, 6000, 2100, 6100, 2100B, 6100B User's Guide 523-0780338
6. HST User's Guide 523-0790354
7. SATCOM Tool/ORT Instructions 523-0807700

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COURSE OUTLINE

0. Welcome & Introductions

- A. PowerPoint Presentation with LCD/Box Light projector
 - i. TV/VCR equipment
 - ii. Student Handbook
 - iii. An SDU/SRT on aircraft or Test Station for practical aspects of training
 - iv. Welcome
 - v. Student Registration

1. SATCOM System Familiarization

- A. Identify SATCOM System Segments
 - i. Space Segment
 - ii. Ground Segment
 - iii. Airborne Segment
- B. Airborne Segment Components
- C. Identify SATCOM System Operations
 - i. Aero I
 - ii. Aero H
 - iii. Aero H+
- D. Identify SATCOM System Channel Operations
 - i. SATCOM System Architecture
 - 1. P-Channel
 - 2. C-Channel
 - 3. R-Channel
 - 4. T-Channel

2. SATCOM Theory of Operation

- A. Identify Aircraft Earth Station (AES) Components
 - i. SAT-906
 - 1. Satellite Data Unit (SDU-906)
 - 2. Radio Frequency Unit (RFU-906)

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- 3. High Power Amplifier (HPA-901A)
- ii. Satellite Receiver-Transmitter (SRT-2000)
 - 1. What's in the SRT-2000?
 - 2. SRT-2000 Controls and Indicators
- iii. Intermediate Gain Antenna (IGA-2000)
 - 1. What's in the IGA-2000?
 - 2. IGA-2000 Physical Description
- B. Identify AES Associated Components
 - i. Beam Steering Unit
 - ii. Low Noise Amplifier (LNA)/Diplexer
 - iii. High Power Relay
 - iv. Radio Frequency Combiner
 - v. Radio Frequency Splitter
 - vi. Low Gain Antenna
 - vii. High Gain Antenna
 - viii. Collins Control Display Unit
- C. Identify Cabin Interface Components
 - i. Cabin Interface Unit (CIU-906) - if applicable
 - 1. CIU-906 Front Panel Indicators
 - ii. Magnastar – if applicable
 - iii. Telephone Conversion Unit (TCU-906)

3. Other SATCOM Systems Familiarization

- A. SAT-2000
 - i. LRU Familiarization
 - ii. Block Diagrams
- B. SAT-2100
 - i. LRU Familiarization
 - ii. Block Diagrams

4. High Speed Transceiver (HST) Theory of Operation

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- A. Services and Features
- B. Purpose of Equipment
- C. Equipment Specifications
- D. Installation Planning
- E. ORT changes
- F. SATCOM Basic Maintenance Displays

5. SwiftBroadband

- A. Description
- B. Services and Features
- C. Hardware Requirements
 - i. HST Transceiver Definitions
 - ii. Architecture
 - iii. Software and Hardware Compatibility
 - iv. High Speed Data Configuration Module
 - v. Related Components
- D. HST Integration
- E. Theory of Operation
- F. Installation
 - i. Routers and Servers
 - ii. HST Ports
 - iii. Configurations
 - iv. ORT Configuration Requirements
 - v. HSDU Configuration Page
 - vi. SATCOM HSDU Log

6. SATCOM Operation

- A. Navigating Control Display Unit In-flight display screens

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- i. Main Menu
- ii. Directory Display
- iii. Number Entry
- iv. GES Select
- v. Priority
- vi. BITE Status
- vii. Directory Index
- viii. Directory

7. SATCOM and HST Log Menu Operations

- A. MCDU Control Display Unit Log display screens
 - i. SDU Log Menu
 - ii. HST Log Menu

8. SATCOM Installation and Checkout overview

- A. Preparation for installation
 - i. Planning for commissioning
- B. System Setup
 - i. Owner Requirements Table (ORT) overview
- C. System Checkout

9. SATCOM Maintenance

- A. BITE check
- B. BITE Menu pages
- C. Collecting SDU Fault History overview
- D. LRU indicators
- E. Entering MCDU/DLC Maintenance Mode
- F. System Test
 - i. Talk Out Test

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ii. Installation Test

10. Course Critique

EQUIPMENT TYPE:

Equipment	Nomenclature	Part Number
Antenna Control Unit	AIC-5020	822-1693-001
Antenna	ANT-5020	822-1692-001
Adapter, Control	CAD-62	653-9015-001
Control Display Unit	CDU-5000	822-0892-XXX
Control Display Unit	CDU2000	822-0957-001 /-002/-003/-004
Control Display Unit	CDU6100	822-1354-001 /-002/-102/-104
Control Display Unit	CDU-6000	822-1587-010 /-020
Cabin Interface Unit	CIU-906	822-1065-001 /-004 Thru /-013
Data Link Control	DLC-800	622-8587-XXX
Transmitter Module, High Speed	HCM-2100B	822-2248-001 /-401
Amplifier Assembly, High Power	HPA-900	622-8850-200 /-201
Amplifier Assembly, High Power	HPA-901	622-9252-001 /-101
Amplifier Assembly, High Power	HPA-901A	622-0953-001 /-002
Amplifier Assembly, High Power	HPA-901B	277-0906-130 622-9252-XXX 822-2577-001 /-401-

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Equipment	Nomenclature	Part Number
High Speed Satcom Transceiver	HST-2100	822-2020-001
High Speed Satcom Transceiver	HST-2110	822-2231-010 /-020 /-040
High Speed Satcom Transceiver	HST-2110B	822-2232-010 /-020 /-040
High Speed Satcom Transceiver	HST-2120	822-2233-010
High Speed Satcom Transceiver	HST-2120B	822-2234-010
High Speed Satcom Transceiver	HST-900	822-1772-001 /-002 /-003
Intermediate Gain Antenna	IGA-2000	822-1369-001 /-003 /-201 /-401 /-402
Low Noise Amplifier	LNA-5020	822-1694-001
Radio Frequency Unit	RFU-900	622-8849-000 /-001 /-002 /-100 /-157 /-187 /-747 /-787
Satellite Data Unit	SDU-906	822-0314-002 /-147 /-187 /-747 /-757
Satellite Data Unit	SDU-906-1	822-0309-001 /-101
Satellite Data Unit	SDU-906-2	822-0310-001 /-101
Satellite Data Unit	SDU-906-3	822-0311-001 /-101 /-102 /-150 /-151 /-301 /-302 /-303 /-350 /-500 /-551
Satellite Data Unit	SDU-906-4	822-0312-001 /-101 /-102 /-147 /-150 /-151 /-301 /-302 /-303 /-350 /-500 /-551 /-747
Satellite Data Unit	SDU-906-5	822-0313-001 /-101

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Equipment	Nomenclature	Part Number
Satellite Data Unit	SDU-906-6	822-0314-001 /-101 /-102 /-150 /-151 /-201 /-202 /-203 /-204 /-301 /-302 /-303 /-350 /-551 /-600
SATCOM Receiver-Transmitter	SRT-2000-1	822-1404-001 /-301 /-302 /-303 /-401 /-402
SATCOM Receiver-Transmitter	SRT-2000-2	822-1346-001 /-301 /-302 /-303 /-401 /-402
SATCOM Receiver-Transmitter	SRT-2000-3	822-1405-001 /-301 /-302 /-303 /-401 /-402
SATCOM Receiver-Transmitter	SRT-2000-4	822-1348-001 /-301 /-302 /-303 /-401 /-402
SATCOM Receiver-Transmitter	SRT-2000-5	822-1406-001 /-301 /-302 /-303 /-401 /-402
SATCOM Receiver-Transmitter	SRT-2000-6	822-1349-001 /-002 /-301 /-302 /-303 /-401 /-402
SATCOM Receiver-Transmitter	SRT-2000MNT	270-2683-020
SATCOM Receiver-Transmitter	SRT-2100 SRT-2100-3	822-2023-001 /-002 /-010R /-101 /-401 /-601
SATCOM Receiver-Transmitter	SRT-2100B	822-1785-001 /-401
Telephone Conversion Unit	TCU-906	822-1039-001
SATCOM Splitter/Combiner	ZA3PD-2	850-0008-010
SATCOM Splitter/Combiner	ZA3PD-2-N	827-0307-001
SATCOM Splitter/Combiner	ZAPD-2-35	277-0941-010
SATCOM Splitter/Combiner	ZAPD-2-9	850-0009-010

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