

## TWO-POINT PRIVATE LINE TELEPHONE SERVICE FAA, AIRLINES, AND OTHER AGENCIES

### DESCRIPTION

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#### 1. GENERAL

**1.01** This section describes the voice bandwidth channels covered by Federal Aviation Agency (FAA) specification S-1142A for the remote operation and control of radio transmitters, receivers, navigation aids, etc. These channels are required by the FAA, airlines, and other agencies for communication and air traffic control.

**1.02** This section is reissued to add reference to some of the telephone company equipment provided for circuit loopback and alternate loop switching. Since this is a general revision, arrows normally used to indicate changes are omitted.

**1.03** The connecting apparatus that provide aircraft communication and control functions will generally be customer-provided (CP). Examples of CP equipment are:

- (a) **Peripheral Ground/Air Control System:** Provides voice communication, remote selection of radio transmitters and receivers, transmitter push-to-talk operation, and receiver muting
- (b) **FAA Vortac Control System:** Provides voice communication and some monitoring of remote apparatus operation
- (c) **FAA Air Traffic Communication Stations (ATCS) Control System:** Provides for remote control of a number of transmitters and

receivers, but does not provide for voice transmission.

**1.04** Depending on the individual applications, standard private line terminal apparatus such as station sets, signaling arrangements, etc, may or may not be required.

#### 2. TECHNICAL CHARACTERISTICS

**2.01** To insure satisfactory operation of the CP equipment, circuits are arranged to meet specified net loss requirements between 300 and 3000 Hz. The circuit noise requirements are the same as private line voice circuits.

**2.02** Each circuit is arranged to meet specified net loss and noise limits between the points of connection with the customer's apparatus. Circuit requirements may preclude the use of certain kinds of facilities. Where there appears to be trouble in meeting requirements because of facility characteristics (ie, the simultaneous control tone and voice transmission on a compandored system), the problem should be referred through proper channels for solution.

**2.03** Detailed transmission requirements are covered in Section 310-305-500.

#### 3. STATION LOOPBACK ARRANGEMENTS

**3.01** Many devices are in service that have been developed to facilitate loopback testing of 4-wire private line services. Circuit layout record (CLR) information should include the local loopback arrangements and the expected levels during loopback operation. Loopback transmission losses should be determined and recorded by the test center for future reference. The following standard arrangements are in common use; this section will not try to describe in detail locally designed arrangements.

**Data Auxiliary Set (806A3)**

**3.02** The data auxiliary set (DAS) provides a means of remotely or locally looping back or terminating the customer or facility line. The DAS 806A-3 may be activated either locally or by a remote 2400-Hz signal. The block schematic (Fig. 1) shows a simplified DAS 806A-3 installation providing a facility and customer loopback. Part 4 of this section lists reference sections for more detail of DAS operation, maintenance, and optional features.

**SS-1 or SS-1A Selective Switching Systems**

**3.03** This system provides a means to substitute a spare 4-wire facility for a working 4-wire facility by dialing codes via an SS-1 selective signaling system. Automatic and dial-up loopback arrangements are available on both the working and spare or standby facilities. The block schematic (Fig. 2) shows a simplified SS-1 installation providing alternate line switching. Loopback test levels will vary according to local options and equipment. Consult the CLR for correct levels. Drawings FA-25167 and CD FA-25167 (obtainable through local engineering groups via lines of organization) provide detailed application and operation information of the SS-1 System.

**3.04** The functions of this circuit are to provide:

(a) Lamp indications of the idle and telephone modes. Lamp indications at both the control

and remote locations indicating channel switched or restored.

(b) Push-to-talk at the control and remote location.

(c) 30-second time-out feature on bell at the control and remote locations.

(d) Automatic connection of the switched working channel to 4-wire test jacks at both locations.

(e) Automatic loopback arrangement on the spare or standby channel when in idle or nonswitched condition (option).

(f) Fail-safe switched condition in the event of power failure.

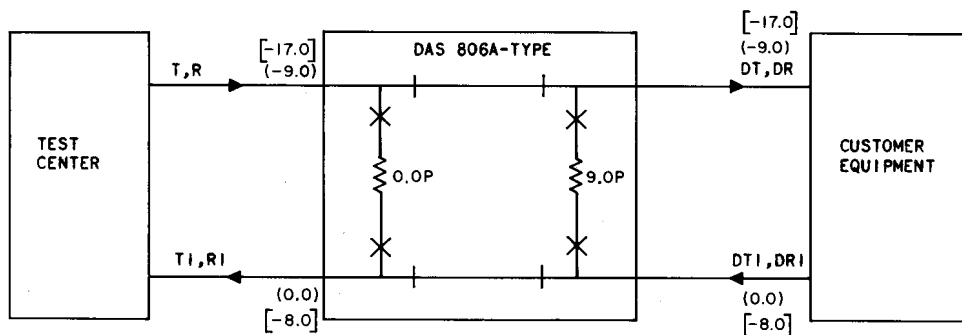
(g) Connection for SS-1 send/receiver unit dial selective signaling arrangements at the control and remote locations.

(h) Common bell at the control location.

(i) Locked-in flashing visual signal at the control location. Turned off by operation of telephone pickup relay.

(j) Dial-up loopback arrangement with lamp indications for the spare or standby channel (option).

(k) Selection of various modes and channel switching can be done at remote or control locations (option).



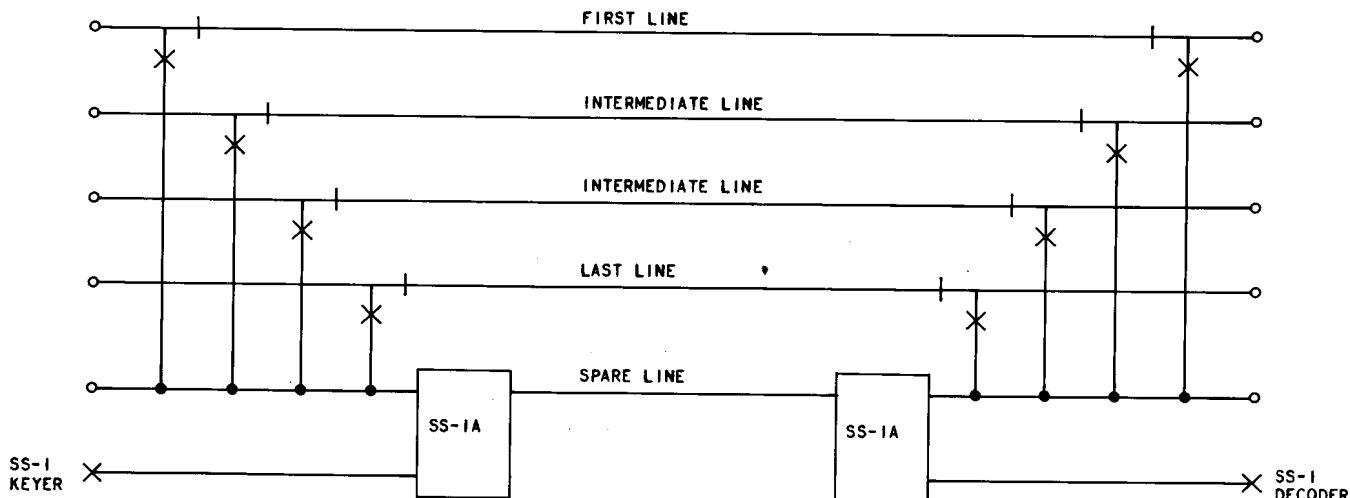
NOTE:

( ) DENOTES TLP

[ ] DENOTES TEST POWER

LOOPBACK LEVELS WILL BE 9.0 dB BELOW TLP TO THE TEST CENTER

**Fig. 1—DAS 806A3—Simplified Application Schematic**



**Fig. 2—SS-1 Selective Switching System—Simplified Application Schematic—Multiple Channel Installation**

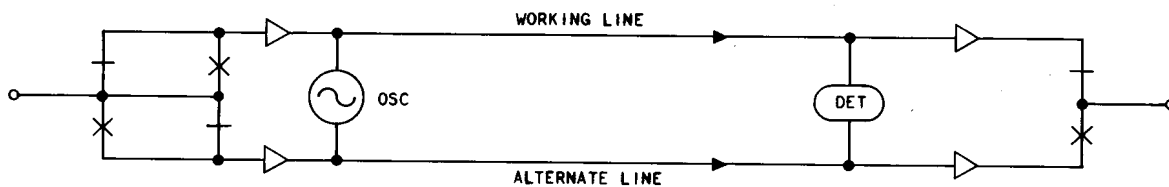
**Line Automatic Sensing and Switching (LASS)**

**3.05** The LASS system (310-305-900 LL) permits the automatic switching of service from a regular to an alternate circuit. Switching is done by continuously monitoring a 2295-Hz pilot tone present on both the regular and alternate lines. When the level of the regular circuit drops 8.0 dBm or more, service automatically switches to the alternate circuit and loops back the circuit not in service. Loopback test levels will vary according to local options and equipment. Consult the CLR for correct levels. Figure 3 is a simplified schematic of LASS. Drawing FA-25226 (obtainable through local engineering groups via lines of organization) provides detailed application and operation information.

**3.06** LASS permits the following operational and maintenance features:

- Automatic switching to alternate circuit

- Will not switch if alternate circuit is in failed condition
- Capability to lock service onto either the primary or alternate circuit by the customer or telephone company for maintenance
- Test jacks available on the nonworking circuit at the customer's location
- Test jacks available to the telephone company for lineup and maintenance
- Display panel at both the customer and telephone company locations to monitor status of service
- Audible and visual alarms to indicate failed circuit status (alarm cutoff provided)
- Automatic loopback optional on the circuit not in service.



**Fig. 3—Line Automatic Sensing and Switching (LASS)—Simplified Application Schematic**

**SECTION 310-305-100**

**4. REFERENCES**

<b>SECTION</b>	<b>TITLE</b>	<b>SECTION</b>	<b>TITLE</b>
310-305-500	Two-Point Private Line Telephone Service—FAA, Airlines, and Other Agencies—Overall Measurements	598-036-200	Data Auxiliary Set 806A-Type—Installation
314-410-501	Transmission Maintenance of 4-Wire Facilities Equipped With Data Auxiliary Set 806A-Type	598-036-300	Data Auxiliary Set 806A-Type—Maintenance
598-036-100	Data Auxiliary Set 806A-Type—Description and Operation	598-036-500	Data Auxiliary Set 806A-Type—Test Procedures
		668-108-510	Data Test Center—904A- and C-Types Test Procedure—Data Auxiliary Set 806A-Type