DATA SET 306

IDENTIFICATION

1. GENERAL

1.01 This section describes the identification of Data Set (DS) 306A-type.

1.02 The DS 306A-type accepts balanced serial binary data signals from the customer at the synchronous rate of 1.344 megabits per second (Mb/s) and processes these signals for direct application to the T1 carrier line in bipolar form at a rate of 1.544 Mb/s. The received bipolar line signals are processed in the data set and delivered to the customer as balanced serial binary data signals at the 1.344 Mb/s rate.

1.03 The DS 306A-type is different from other wideband data sets in that it provides the following unique features:

(a) The data sets are synchronous at one specific rate—1.344 Mb/s.

(b) A clock signal called SCT is sent to the business machine and the business machine returns the clock signal, now called SCTE, along with the data information.

(c) Provision is made for the data set to transmit at the same bit rate as it receives by using a recovered clock signal instead of the master transmit oscillator.

(d) Balanced dc data signals.

1.04 The DS 306A-type is normally located on the customer's premises and provides the interface between his business machine equipment and the wideband data transmission system. The transmission system provides a full-duplex wideband data channel for the transmission of synchronous data at 1.344 Mb/s. In addition to the wideband channel, a voice frequency coordination circuit is normally provided.

1.05 When DS 306A-type is connected to the T1 line through a T1 Line Terminating Unit (LTU) and associated power supply (KS-15620-L14), the LTU provides proper line terminations, maintenance functions, and powering arrangements. For information concerning the T1 LTU, refer to the section entitled Digital Transmission Systems, T1 Carrier J98713F Line Terminating Unit, Description (365-200-103).

1.06 When a voice coordination circuit is used with DS 306A-type, a telephone set or Data Auxiliary Set (DAS) 804A5 can be provided with the voice circuit. The telephone set or DAS 804A5 is used for voice communication between stations.

2. DESCRIPTION

PHYSICAL DESCRIPTION

2.01 The DS 306A-L1 consists of a 33A1 Data Unit (DU), 41A power unit, 840129985 cord assembly, and a P3BG cord (Fig. 1 and 2). The intended application for DS 306A-L1 is in the wideband data test bay.

2.02 The DS 306A-L1/2 consists of a 33A1 DU, 32A1 DU, 41A power unit, 840129985 cord assembly, 840129977 cable assembly, and a P3BG cord (Fig. 3 and 4). The intended application for DS 306A-L1/2 is at the customer's location.

2.03 The DS 306A-type can be mounted on 23-inch relay racks of both the No. 5 crossbar-type and bulb angle-type or in KS-20018-type cabinets with 23-inch mounting. The LTU and associated power supply can be mounted in the same cabinet with the data set, or they can be separated from the data set by up to 750 feet. The private line terminal associated with the voice coordination channel should not be mounted in the data station cabinet unless appropriate contact protection is provided on the relay coils.

2.04 The DS 306A-L1/2 measures approximately 23 inches wide, 6 inches high, and 10 inches deep. It weighs approximately 30 pounds and will operate over a temperature range of 40 to 120°F and a relative humidity of up to 95 percent.

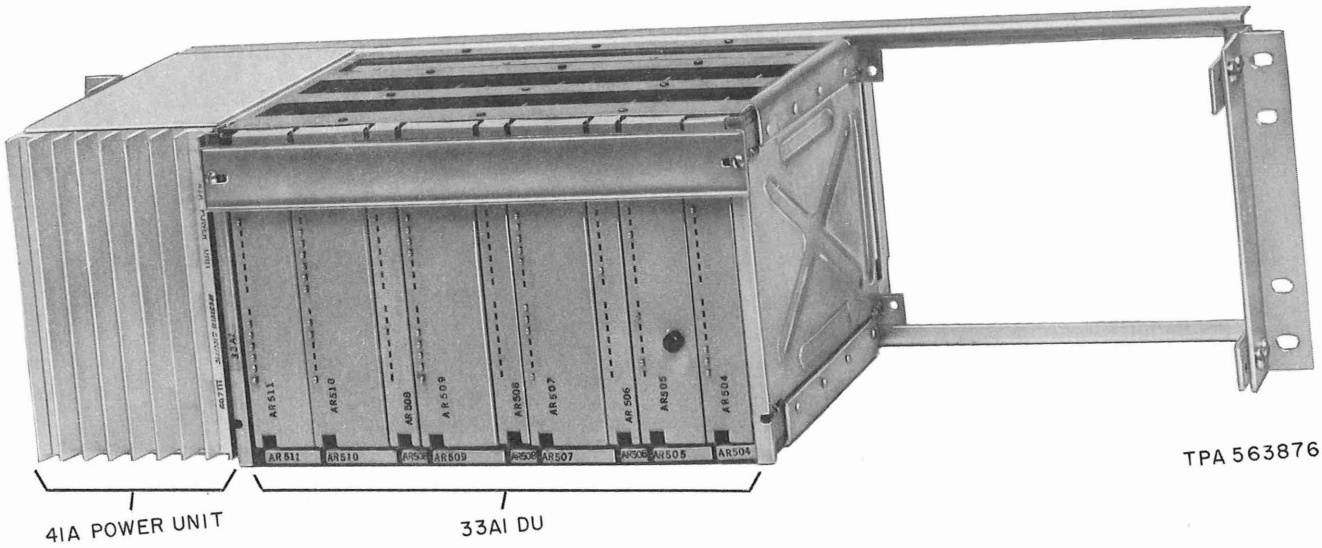

Fig. 1—Front View of Data Set 306A-L1

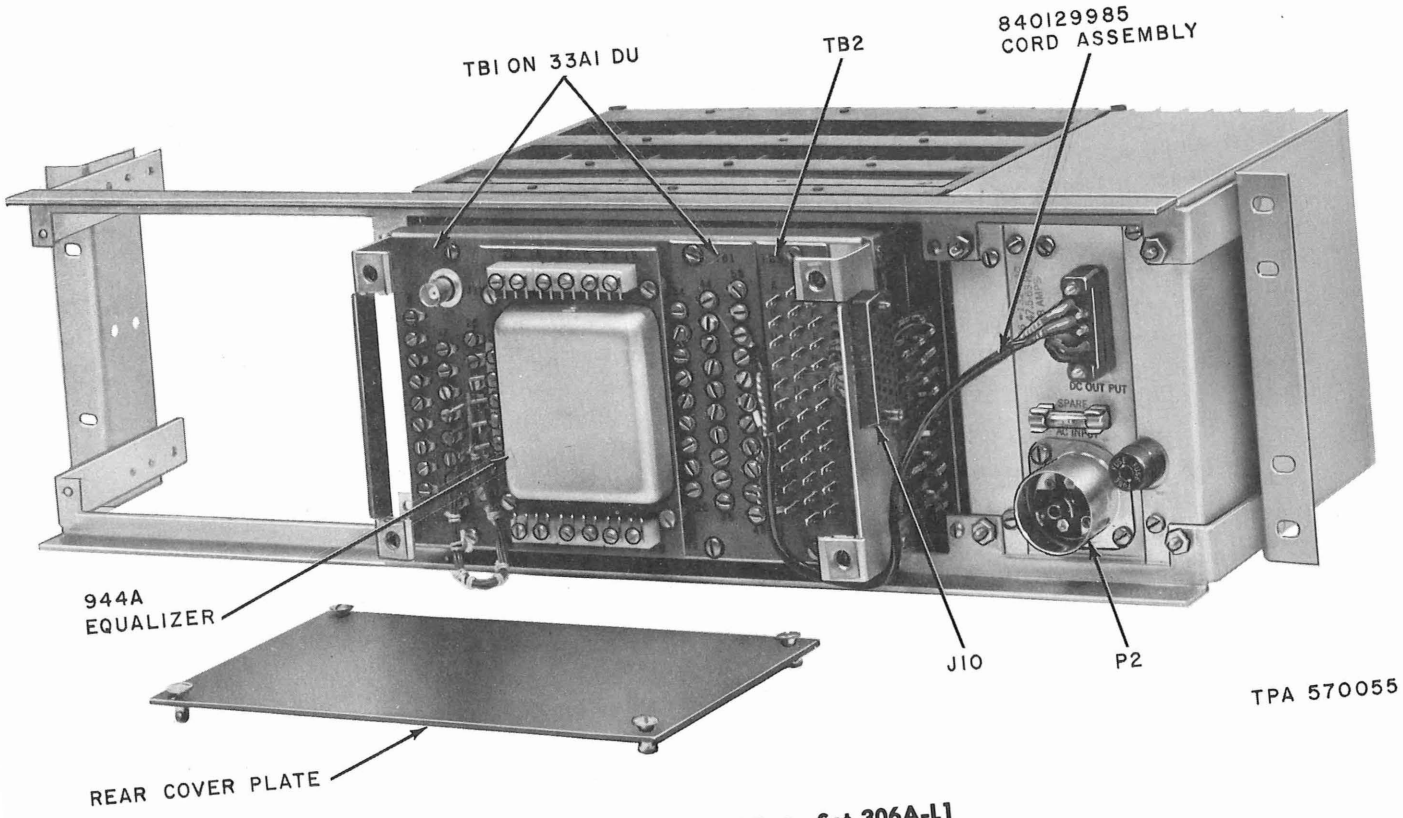

Fig. 2—Rear View of Data Set 306A-L1

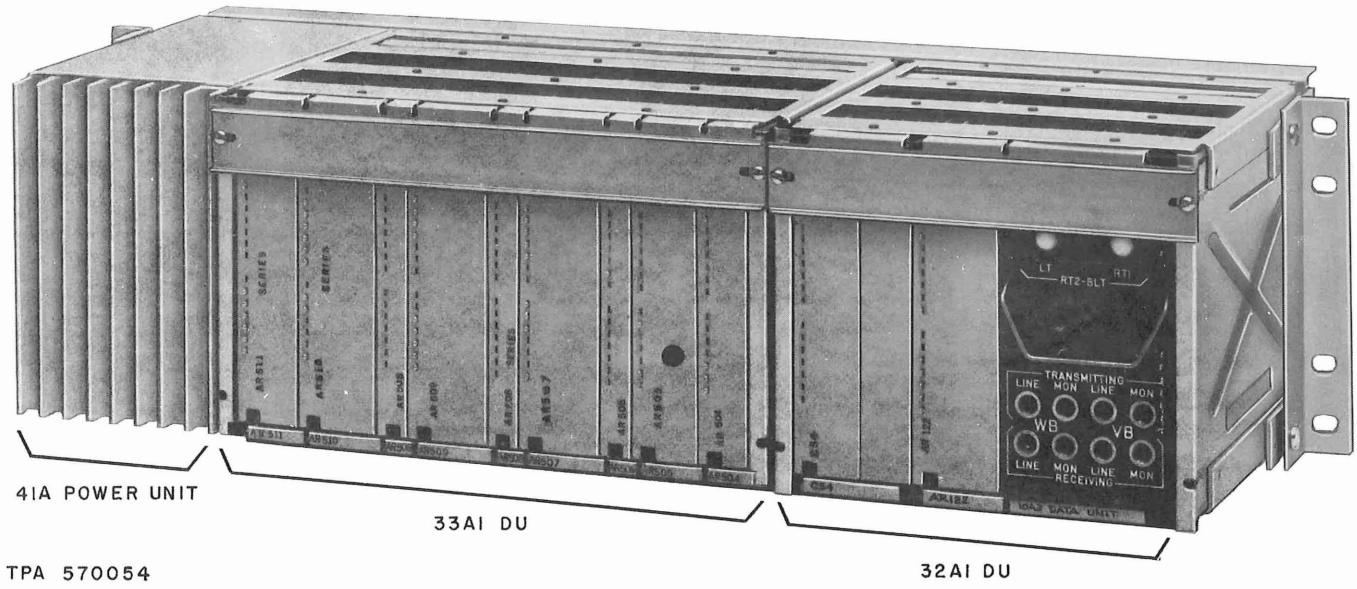

Fig. 3—Front View of Data Set 306A-L1/2

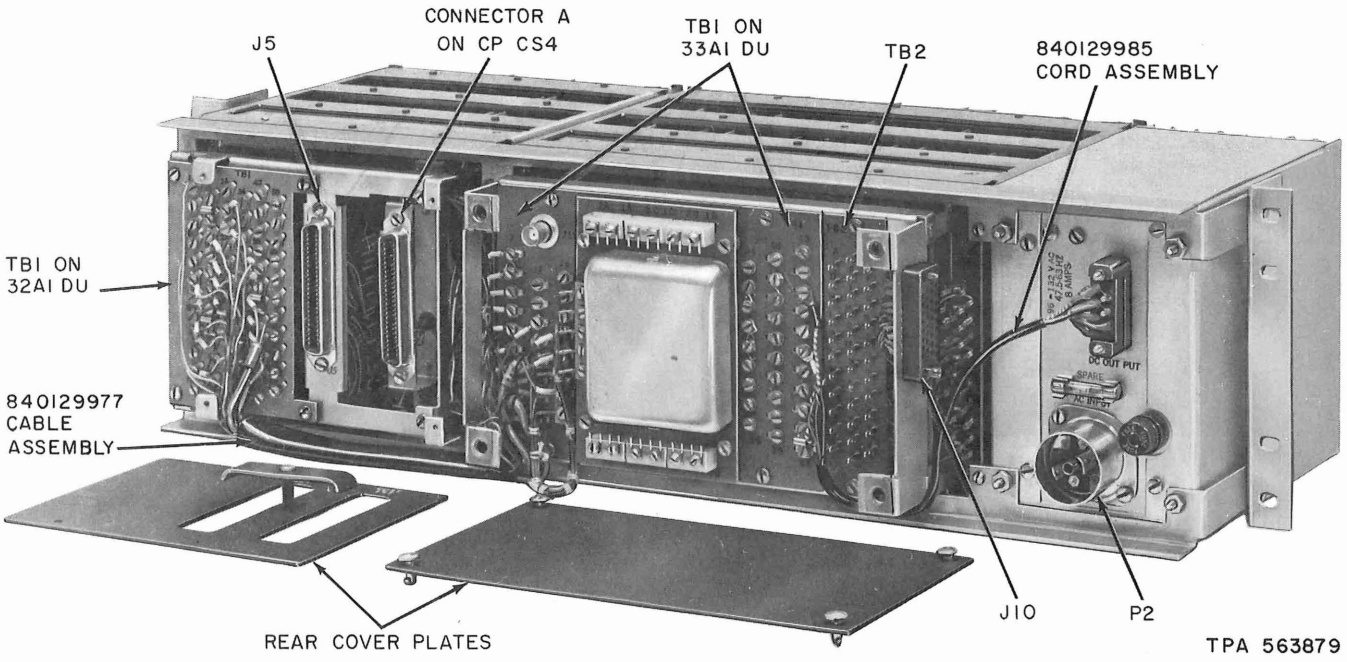

Fig. 4—Rear View of Data Set 306A-L1/2

2.05 The DS 306A-L1/2 consumes approximately 45 watts of power and when DAS 804A5 is used with the data set, the power consumption is increased by approximately 3 watts.

2.06 The 33A1 DU consists of 9 plug-in circuit packs and the 32A1 DU consists of two plug-in circuit packs and a 10A3 DU. The circuit packs have test points brought out to numbered pins on the faceplate.

2.07 Customer interface connections are made through a 34-pin connector on the 33A1 DU. The customer-provided cable must be compatible

with the Winchester MRA-34-S-SFC-J interface connector. Bridging access to all the customer interface leads is provided by test points on the rear of the 33A1 DU.

FUNCTIONAL DESCRIPTION

2.08 The DS 306A-type provides for full-duplex high-speed synchronous data transmission over 4-wire T1 carrier facilities. The data set generates a 1.344 MHz clock called Serial Clock Transmit (SCT) which is passed to the business machine. The SCT signal is used by the business machine to synchronize the clocking of data from the business machine with the data set. The business machine also derives a clock signal called Serial Clock Transmit External (SCTE) which is returned to the data set at the same frequency and in proper phase alignment with the send data to time data into the data set.

2.09 The 1.344-Mb/s data transceiver (33A1 DU) accepts the customer's 1.344-Mb/s data and converts it to a 1.544-Mb/s bipolar pulse stream. The 200 kilobit per second (kb/s) difference between the customer and line bit rates is due to the data being organized in frames such that every 193rd line bit is a framing bit that alternates between a 1 and a 0. Within the frame, every 8th bit is a 1 or a stuffing bit. The stuffing bits are necessary to keep the T1 repeater in synchronization.

2.10 On the receiving end, the framing and stuffing bits are removed and the 1.344-Mb/s data stream is regenerated and transmitted to the business machine along with the recovered 1.344-MHz clock. There is no format restriction on the data that the customer elects to send.

2.11 The DS 306A-type uses two types of customer interface signals: high-speed clock and data signals and control signals. The high-speed interface signals are dc-coupled balanced signals that meet the international balanced interface standard CCITT Recommendation V35 Appendix 4. The control interface signals are the EIA type and meet the requirements of EIA Standard RS-232-C. Both types of interface signals are transmitted over twisted pair conductors.

2.12 The DS 306A-L1/2 provides two test features that are described as follows.

(a) ***Local Test (LT)***—The local test condition, which is initiated by depressing the TEST button on DAS 804A5 or by operating the LT key on the 10A3 DU, disconnects the station from the T1 line at the LTU and establishes a loopback, allowing the customer's data to be transmitted through the complete data set and checked by the customer.

(b) ***Remote Test (RT)***—The remote test condition, which is initiated by depressing the LRT key on the 10A3 DU or by a 2800-Hz tone sent over the voice coordination line, enables two tests: Remote Test 1 (RT1) and Remote Test 2 (RT2). The RT1 condition allows remote testing of the T1 line facility on a loop-back basis with the wideband data station disconnected at the LTU. The RT2 condition allows testing of a complete data set, looped at the business machine interface, with the business machine disconnected.

3. REFERENCES

3.01 Detailed information concerning the wideband data station using DS 306A is contained in the following list of Bell System Practices:

SECTION	TITLE
593-801-100	Wideband Data Station Using Data Set 306, Point-to-Point, Limited Distance, Description and Operation
593-801-200	Wideband Data Station Using Data Set 306, Point-to-Point, Limited Distance, Installation and Connections
593-801-500	Wideband Data Station Using Data Set 306, Point-to-Point, Limited Distance, Test Procedures
590-100-122	32A-Type Data Unit, Description and Operation
590-100-123	33-Type Data Unit, Description.