AT&T

SLC® Series 5 Carrier System

950A Maintenance Test Set — 5STEA00

Data Sheet

This data sheet describes the 950A maintenance test set (MTS) (COMCODE 105560627) and is intended for the end-user of the unit. The 950A is a maintenance test set for *SLC*® Series 5 Carrier System basic rate interface transmission extension (T-BRITE and BRITE II) channel units — the AUA90 and AUA93. The 950A has three primary functions:

- Activates loopbacks at the local channel unit or remote channel units.
- Monitors circuits via alarm LEDs for the local and remote loops and carrier channels.
- Inserts pseudorandom data patterns into the customer's channels using either a locally generated pattern or the KS20908 receiver and KS20909 transmitter data test sets.

This data sheet is reissued to add information about BRITE II applications of the 950A MTS.

Figure 1 is a functional block diagram of the 950A MTS, and Figure 2 shows the faceplate.

The 950A is designed to fit into an empty channel unit slot of the *SLC* Series 5 Carrier bank. The MTS will operate in a line interface unit (LIU) or line switch unit (LSU) slot, but cannot be seated fully into the backplane connector. Since the 950A is grounded through the backplane, an electrostatic discharge (ESD) wrist strap should be worn for protection when the MTS is used in an LIU or LSU slot. All signals, except ground (which is received through the cable), are received through connectors mounted on the 950A board and the channel unit faceplate. The 950A communicates with the channel unit through a 15-pin connector which is mounted on the circuit board. A cable assembly (COMCODE 846264729)

attaches the 950A MTS to the faceplate of the channel unit — the cable assembly is supplied with the 950A MTS. The pins and associated signals are listed in Table 1.

Table 1. 950A Signals via 15-Pin Connector

Pin	Signal	Function
1	DAT0X	Data bus between channel unit and 950A
2	DAT1X	Data bus between channel unit and 950A
3	+5V	+5 volts
4	GND	Ground
5	BCLK	64 kHz clock
6	FCLK	8 kHz clock
7	SEL	Chip select of address decoder
8	ADR2	High order address select for data bus source/destination
9	ADR0	Low order address select for data bus source/destination
10	ADR1	Middle address select for data bus source/destination
11	R	Data from channel unit
12	T	Data to channel unit
13	DC3	B1-B2 switch setting when 950A is activated
14	DC2	CARRIER-LOOP switch setting when 950A is activated
15	DC1	TRMT/RCV-RCV switch setting when 950A is activated

TRMT-RCV: The TRMT-RCV jack provides access for data to and from the KS20908 receiver (RCV jack) and KS20909 transmitter (TRMT jack) test sets.

CLOCK: The 9-pin CLOCK connector on the faceplate of the 950A provides the 8 kHz and 64 kHz clocks to the KS-type test sets — via the ED-3C792 test unit and a cable assembly (COMCODE 842725111).

Switches on the faceplate of the 950A select the function performed by the MTS — Table 2 lists T-BRITE applications of the switches and Table 3 lists BRITE II applications of the switches.

Table 2. 950A Switch Settings for T-BRITE Applications

Switch	Function
2B+D	A 4-position switch which selects the type of loopback to be performed:
NONE	No BRI loopbacks are performed. Used during end-to-end testing with another test set.
BRI	Initiates a loopback on the BRITE unit specified by the ADDRESS and CARRIER - LOOP switches.
NT1	Requests a loopback at the NT1.
EC	Tests the echo canceling hybrid circuit in a D4/*SLC*® 96 AHG 13 AMI U-BRITE unit. The test cannot be performed on the AUA90 T-BRITE channel unit but could be requested for a D4/*SLC* 96 AHG 13 AMI U-BRITE unit from a *SLC* Series 5 RT if connected to D4 or *SLC* 96 banks. There is no EC test for the BRITE II (ANSI U-BRITE) AUA93 channel units.
ADDRESS	A 6-position switch which selects the location of the BRITE channel unit to test. Position 1 is the channel unit connected to the MTS. With tandem banks, four units can be addressed from a T-BRITE unit connected to D4/*SLC* 96 AMI U-BRITE units.
COUNTER - RESET	Momentary pushbutton switch that resets the COUNTER - ERRORS display to 0 (zero).
KS - ST	Selects the source of the data to be transmitted and monitored by the test card. KS selects data from KS test sets. Data from the KS20909 data transmitter is sent to the channel unit. Data received from the channel unit is sent to the KS20908 data receiver which counts and displays errors in the received data. ST selects a SELF TEST mode, with data generated locally on the 950A MTS. A 127 bit word is generated and sent to the channel unit. The data received back from the channel unit is compared to the data sequence that was sent. Errors in the received data are counted and displayed on a 7-segment LED display on the faceplate.
946A-950A	Enables the 950A to do end-to-end testing (for example, transmit data from one MTS at one BRITE channel unit and receive data at another MTS at another BRITE channel unit, in a format compatible with the D4/*SLC* 96 BRITE channel units). The 946A setting allows the 950A to communicate with a 946A MTS. The 950A setting allows the 950A to communicate with another 950A MTS or with other commercially available MTSs. If the 950A is not communicating with another MTS, this switch can be set to either position.

Table 2. 950A Switch Settings for T-BRITE Applications (Continued)

Switch	Function
ACT	A momentary switch which activates the MTS. Depress this switch once to activate the card. When the card is activated, this in turn activates the loopbacks and data transmission functions. Service is interrupted when the MTS is activated. The alarm LEDs display information without the card being activated. Depressing the ACT switch while the 950A MTS is activated will deactivate the card.
B2-B1	Selects which B channel is involved in transmission testing. The loopbacks initiated by the 950A are 2B+D loopbacks. However, the 950A and the KS-type test sets can only generate and monitor 64 kb/s data. Thus, only one B channel is monitored at a time.
CARRIER-LOOP	Determines the direction of the loopback — toward the loop or toward the carrier. The direction is with respect to the channel unit to which the test set is connected.
RCV-TRMT/RCV	Allows transmit and receive testing or receive only testing. In transmit and receive testing, data is inserted onto a B channel and monitored by the 950A or the KS test sets. In receive only testing, the data on the channel is not modified but only monitored.

Table 3. 950A Switch Settings for BRITE II Applications

Switch	Function
2B+D	A 4-position switch which selects the type of loopback to be performed:
NONE	No BRI loopbacks are performed. Used during end-to-end testing with another MTS.
BRI	Initiates a loopback on the BRITE unit specified by the ADDRESS and CARRIER - LOOP switches.
NT1	Requests a loopback at the NT1.
EC	(Echo canceler test.) Neutral (cannot affect the circuit) when used with BRITE II channel units. EC is useful for clearing a COS indication.
ADDRESS	A 6-position switch which selects the location of the BRITE channel unit to test. Position 1 is the channel unit connected to the test card. With tandem banks, up to six units can be addressed from BRITE II channel units.
COUNTER - RESET	Momentary pushbutton switch that resets the COUNTER - ERRORS display to 0 (zero).
KS - ST	Selects the source of the data to be transmitted and monitored by the test card. KS selects data from KS test sets. Data from the KS20909 data transmitter is sent to the channel unit. Data received from the channel unit is sent to the KS20908 data receiver which counts and displays errors in the received data. ST selects a SELF TEST mode, with data generated locally on the 950A test set. A 127 bit word is generated and sent to the channel unit. The data received back from the channel unit is compared to the data sequence that was sent. Errors in the received data are counted and displayed on a 7-segment LED display on the faceplate.
946A-950A	Enables the 950A to do end-to-end testing (for example, transmit data from one MTS at one BRITE channel unit and receive data at another MTS at another BRITE channel unit, in a format compatible with the D4/*SLC*• 96 BRITE channel units). The 946A setting allows the 950A to communicate with a 946A MTS. The 950A setting allows the 950A to communicate with another 950A MTS or with other commercially available MTSs. If the 950A is not communicating with another MTS, this switch can be set to either position.

Table 3. 950A Switch Settings for BRITE II Applications (Continued)

Switch	Function
ACT	A momentary switch which activates the MTS. Depress this switch once to activate the MTS. When the MTS is activated, this in turn activates the loopbacks and data transmission functions. Service is interrupted when the MTS is activated. The alarm LEDs display information without the MTS being activated. Depressing the ACT switch while the 950A MTS is activated will deactivate the MTS.
B2-B1	Selects which B channel is involved in transmission testing. The loopbacks initiated by the 950A are 2B+D loopbacks. However, the 950A and the KS-type test sets can only generate and monitor 64 kb/s data. Thus, only one B channel is monitored at a time.
CARRIER-LOOP	Determines the direction of the loopback — toward the loop or toward the carrier. The direction is with respect to the channel unit to which the test set is connected.
RCV-TRMT/RCV	Allows transmit and receive testing or receive only testing. In transmit and receive testing, data is inserted onto a B channel and monitored by the 950A or the KS test sets. In receive only testing, the data on the channel is not modified but only monitored.

There are eight LEDs and one 7-segment LED display on the test card. The LEDs monitor failures in the transmission circuit and are controlled by the microcontroller on the channel unit. Table 4 lists T-BRITE applications, and Table 5 lists BRITE II applications.

Table 4. 950A LED Indications for T-BRITE Applications

LED	Color	Indication (When Lighted)
LLF	Red	Indicates a loss of framing or loss of signal on the local channel unit's T-interface for T-BRITE.
LCF	Red	Indicates a loss of maintenance channel framing on the carrier side of the local channel unit.
COS	Red	Indicates a failure in the carrier and takes precedence over the LCF LED.
OOS	Red	Indicates a specific code from the *5ESS*® Switch or when certain maintenance functions are being performed.
RLF	Yellow	Indicates a loss of framing or loss of signal on the T or U interface of a remote BRITE unit.
RCF	Yellow	This LED is used only when the *SLC*® Series 5 T-BRITE is used with D4/*SLC* 96 AMI U-BRITE channel units. When lighted, this LED indicates a loss of maintenance channel framing on the carrier side of a remote channel unit in a tandem carrier.
ECF	Yellow	Indicates a failure of the echo canceler circuit on a D4/*SLC* 96 AMI U-BRITE channel unit (accessed remotely from an AUA90 in a *SLC* Series 5 RT). This test is not valid on BRITE II channel units or T-BRITE channel units and shows a pass result if requested.
ACT	Green	Indicates that the test card has been activated by the ACT button.
COUNTER-ERRORS	7-Segment LED Display	The ERROR counter is a 7-segment LED display which shows the number of errors in the received data compared to the expected sequence while in the ST (self test) mode. The counter will count to nine and then hold the count until reset by the COUNTER-RESET button.

Table 5. 950A LED Indications for BRITE II Applications

LED	Color	Indication (When Lighted)
LLF	Red	U-interface digital subscriber line (U-DSL) link in reset has occurred on the U-interface of the AUA93 BRITE II channel unit (no NT1 connection).
LCF	Red	Loss of carrier [three-slot link (TSL) interface in reset] has occurred on the carrier side of the AUA93 BRITE II channel unit (no communication with AHG18 channel unit in the COT).
COS	Red	A timing error has occurred in the channel unit elastic store (an interface between the channel unit microprocessor and the backplane). This is a latching indication — a single error will cause the indicator to light and stay lighted until cleared. This indication can be cleared by activating (via the ACT pushbutton) the 950A.
OOS	Red	The *5ESS*® Switch is not communicating at layer 2 (data link layer) — the switch does not recognize the AUA93 channel unit.
RLF	Yellow	Not valid (never lighted) with an AUA93 channel unit.
RCF	Yellow	Not valid (never lighted) with an AUA93 channel unit since there is *no* information available about upstream failures, only downstream failures.
ECF	Yellow	Not valid (never lighted) with BRITE II channel units.
ACT	Green	Indicates that the test card has been activated by the ACT button.
COUNTER-ERRORS	7-Segment LED Display	The ERROR counter is a 7-segment LED display which shows the number of errors in the received data compared to the expected sequence while in the ST (self test) mode. The counter will count to nine and then hold the count until reset by the COUNTER-RESET button.

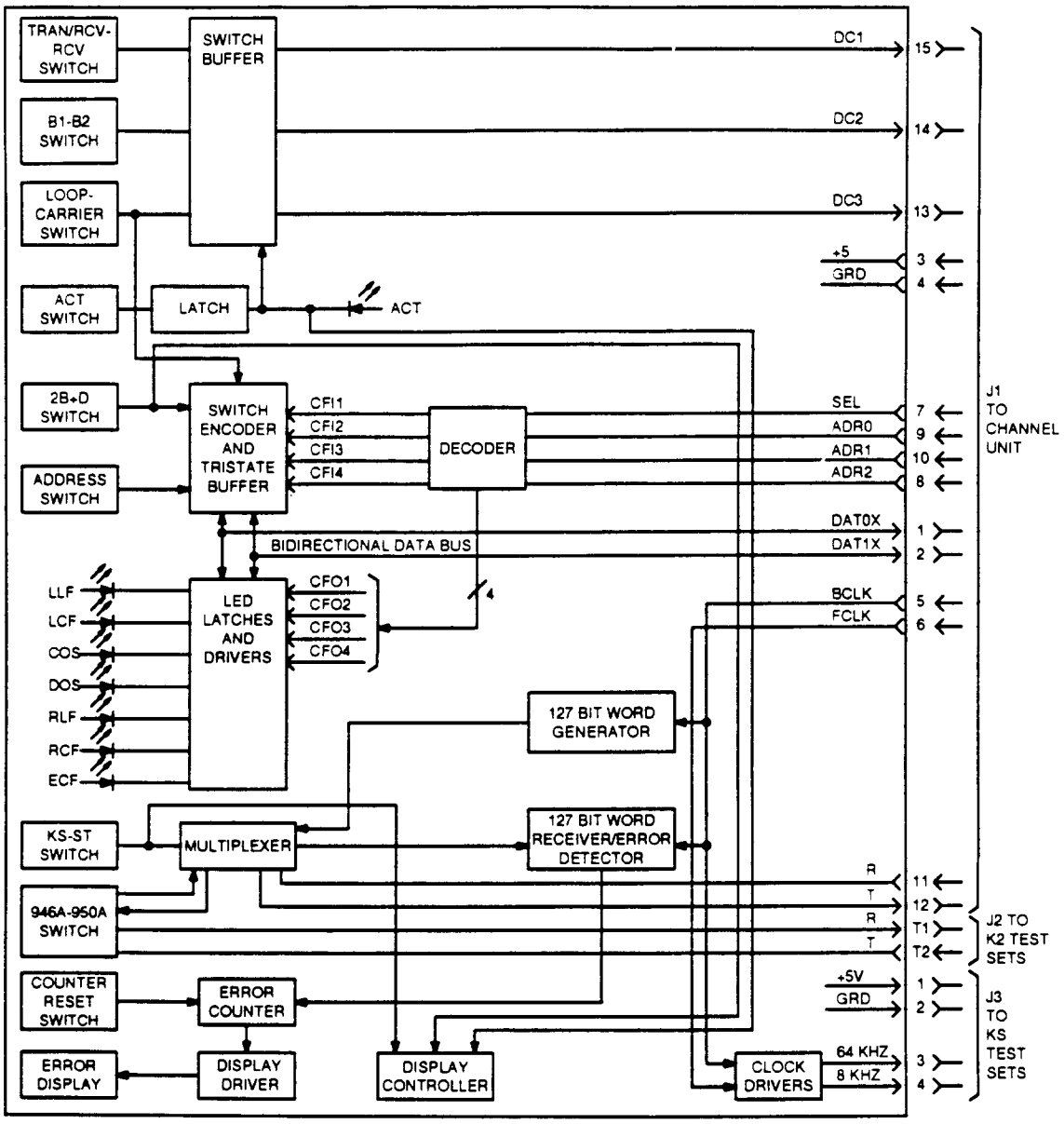

Figure 1. 950A Maintenance Test Set Block Diagram

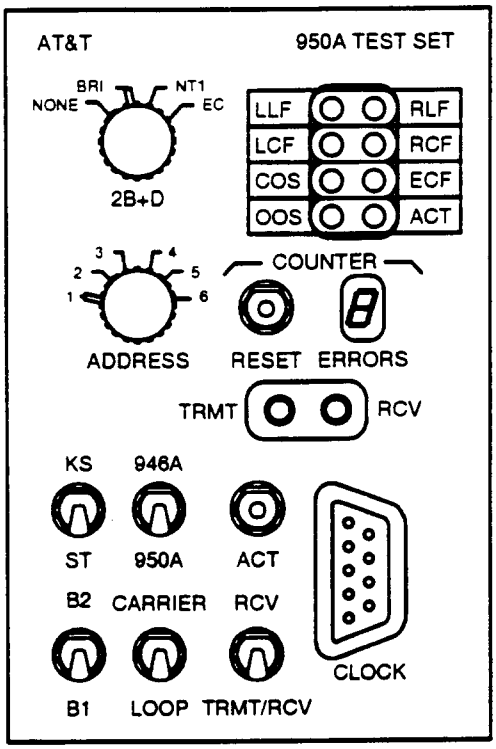

Figure 2. 950A Maintenance Test Set Faceplate

In-hours or emergency out-of-hours technical assistance for the *SLC* Series 5 Carrier System can be obtained by calling the Regional Technical Assistance Center at **1-800-225-RTAC**.

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